Comment #: ES205

Public Information Meeting

US Army Corps of Engineers®

Comment Form (Formulario do Comentarios Escritos)

Buffalo Bayou and Tributaries Resiliency Study

Comment Period: April 29, 2019 through May 31, 2019

We need your thoughts and comments on the effort to develop the Buffalo Bayou and Tributaries Resiliency Study. Your participation is a key element in producing a meaningful and useful feasibility report. The information presented at the public information meetings can be viewed at the website listed below. Please write your questions, comments, or suggestions in the space provided below. Feel free to use additional pages if needed. Forms may be submitted at the public information meeting, mailing to the address on the back of this form, or emailed to BBTRS@usace.army.mil. Comments should be postmarked by May 31, 2019. Thank you for your participation!

Dear Army Corps of Engineers

I live in Old Braeswood, a part of the Braes Bayou watershed that lies just upstream from the Texas Medical Center. There is no reason to solve Buffalo Bayou's problem by making it Braes Bayou's problem.

-01 I cannot believe any assurances given by the Army Corps of Engineers or anybody else that the transfer of water from Buffalo to Braes Bayou would only be done if it caused no damage to Braes Bayou property.

-02 If you are actually looking for a relatively Low-Cost Solution to future flooding in the Buffalo Bayou Watershed during a future Harvey event, build the Levees at Barker and and Addicks Reservoirs higher, not Lower, and ban

-03 any further development in the flood plain behind the Levees. Please apply this thinking in your study

David H Miller MD

5-31-19

Name Nombre: DAVID H. Miller MD

Affiliation Afiliación: OLD BRAESWOOD Homeowner + Medical Center Physician

Address Dirección de Envío: 7516 MORNINGSIDE DRIVE

City Ciudad: HOUSTON **State** Estado: TX **Zip Code** Código Postal: 77030

E-mail Correo Electrónico: davidhmillermd@yahoo.com

Additional information can be found at:
https://www.swg.usace.army.mil/Missions/Projects/Buffalo-Bayou-and-Tributaries-Resiliency-Study/

Comment #: ES206

Public Information Meeting

US Army Corps of Engineers®

Comment Form (Formulario do Comentarios Escritos)

Buffalo Bayou and Tributaries Resiliency Study

Comment Period: April 29, 2019 through May 31, 2019

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No tunnels.

No to option 2.

More detention spaces.

-01 When you build in an area the buildings must either be the same size or if larger the builder must, by law do whatever it takes to not increase any flooding in that area.

Name Nombre: Cyndy Sax

Affiliation Afiliación: Braeswood Civic Club

Address Dirección de Envío: 5314 Carew

City Ciudad: Houston

State Estado: TX

Zip Code Código Postal: 77096

E-mail Correo Electrónico: c.sax@shcglobal.net

Additional information can be found at:
https://www.swg.usace.army.mil/Missions/Projects/Buffalo-Bayou-and-Tributaries-Resiliency-Study/

Comment #: ES207

Public Information Meeting

US Army Corps of Engineers®

Comment Form (Formulario do Comentarios Escritos)

Buffalo Bayou and Tributaries Resiliency Study

Comment Period: April 29, 2019 through May 31, 2019

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-01 Please do not make any plans which will add any more water under any circumstances to the Brays Bayou Watershed.

Our house in Meyerland was flooded by the Tax Day flood and Harvey (26"). We are currently rebuilding up to City of Houston code. It concerns me greatly that USACE is considering diverting stormwater into Brays that previously flooded into Buffalo. The people of Brays have "paid our dues".

-02 USACE should explore other alternatives like the proposed North Canal project on White Oak Bayou and a South Canal through the Clayton Homesite to reduce the flow into Buffalo rather than diverting it into Brays.

Name Nombre: Rebecca Stuart

Affiliation Afiliación: Homeowner

Address Dirección de Envío: 4918 Loch Lomond Dr.

City Ciudad: Houston

State Estado: Tx

Zip Code Código Postal: 77096

E-mail Correo Electrónico: drstuart@swbell.net

Additional information can be found at:
https://www.swg.usace.army.mil/Missions/Projects/Buffalo-Bayou-and-Tributaries-Resiliency-Study/

Comment #: ES208

Public Information Meeting

US Army Corps of Engineers

Comment Form (Formulario do Comentarios Escritos)

Buffalo Bayou and Tributaries Resiliency Study

Comment Period: April 29, 2019 through May 31, 2019

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Option 1, based on success in other sites, should be investigated thoroughly. If the evidence supports this option, it should be prioritized & expedited.

-01 Option 2 - Before this should be done, a very clear Methodology for decision-making needs to be developed & authorized that would prevent additional flow from the Cloddine ditch/Baker Reservoir that could result in flooding Bray's watershed homes & businesses

-02 Option 3 - Concern that sims residents & businesses could be adversely impacted

Name Nombre: Kay Swint

Affiliation Afiliación: Braesmont Civic Clubs President Super-Neighborhood 31 - Recording Sec.

Address Dirección de Envío: 5402 Carew St

City Ciudad: Houston **State** Estado: Tx **Zip Code** Código Postal: 77096

E-mail Correo Electrónico: kayswint@gmail.com

Additional information can be found at:
https://www.swg.usace.army.mil/Missions/Projects/Buffalo-Bayou-and-Tributaries-Resiliency-Study/

From:	Shelly Autin
To:	CESWT-BBTRS
Subject:	[Non-DoD Source] This is the Buffalo Bayou and Tributaries Resiliency Study (United States Army Corps of Engineers-Presentation)
Date:	Friday, May 31, 2019 12:14:00 AM

-01 Please be aware of what your proposal will do in adding more run off into Braes Bayou. Tunnels would be good but sending over flow into Braes Bayou should not be an option. Buffalo Bayou should keep its own water.
Thank you,
Shelly Autin

Sent from my iPad

From: Girrens, Chris J
To: CESWT-BBTRS
Subject: [Non-DoD Source] BBTRS comment
Date: Friday, May 31, 2019 1:04:03 AM

-01 Please have priority for conveyance of water out of the Barker Reservoir, including changes to operating procedures to to release water faster and longer duration to prevent flood pooling on property not owned by the Corps.

-02 De-silt and maintain or increase capacity with excavation. Add more conveyance capacity to empty Barker Reservoir faster, with tunnel and/or widening bayou to gulf.

Thanks

C. J. Girrens
Sent from my iPhone

From: Marcia Livingston
To: CESWT-BBTRS
Subject: [Non-DoD Source] Flood control proposal comment
Date: Friday, May 31, 2019 8:00:11 AM

-01 I am writing as a concerned homeowner in Westbury to urge you to absolutely reject any plan that would bring MORE water into Braes Bayou. By no means should water be diverted from Buffalo Bayou to Braes. We are struggling as it is.

-02 It is about time for the government to look at this infrastructure and limit development that contributes to the destruction of neighborhoods like ours. More reservoirs are a good idea. So are tunnels. But diverting water from one flooding bayou to another is pure folly and would not be quietly abided in this part of town, after what we've been through.

Sincerely,

Marcia Livingston
5814 Portal Dr.
Houston, TX. 77096

Duplicate of Comment #186

Comment #: ES212

From: Carolyn White
To: CESWT-BBTRS
Subject: [Non-DoD Source] REVISED: Comments on BBTRS
Date: Friday, May 31, 2019 8:03:09 AM
Attachments: image001.png
image002.png
image003.png
image004.png
2019-05-30_USACE Comment Letter_BBTRS.pdf

May 30, 2019

Andrew Weber, P.E, Study Manager
USACE Galveston District
P.O. Box 1229
Galveston, TX 77553-1229
ATTN: BBTRS
Email: BBTRS@usace.army.mil

Dear Mr. Weber,

Thank you for providing the opportunity to comment on the Buffalo Bayou and Tributaries Resiliency Study (BBTRS). As Conservation Director of Memorial Park Conservancy (MPC), and a fluvial geomorphologist formerly with the Harris County Flood Control District (HCFCD), I have a strong interest in preserving the natural Buffalo Bayou channel, while achieving site stability, water quality improvements, and public access.

MPC is a non-profit organization that manages 1,100 acres of Memorial Park that is bounded on its southern edge by a natural 3.8-mile segment of Buffalo Bayou. Over many decades adjacent landowners have installed structures to harden the edge of Buffalo Bayou, resulting in deleterious impacts to the natural streambanks. Addicks and Barker reservoir release schedules have also greatly impacted the slope stability by inducing sustained high flows and rapid drawdown. In addition, the last three major storms - Tax Day, Memorial Day, and Harvey - have exacerbated this streambank stress, resulting in extreme land loss. Memorial Park has experienced 20-50 feet of horizontal erosion on multiple entrenched streambanks ranging from 10-20 feet vertical relief. This amount of erosion and sedimentation within Buffalo Bayou has direct impacts to water quality, conveyance capacity, and dredging requirements for the Port of Houston.

MPC advocates addressing the flood damage reduction issues within the Buffalo Bayou watershed through 1) conveyance improvements using natural stable design principles and 2) appropriate siting and design of detention facilities, as outlined below.

Conveyance with Geomorphic Stability

Harris County Flood Control District (HCFCD) has invested much effort in developing a Natural Stable Channel Design Guidance Manual that outlines principles of fluvial geomorphology within a local flood conveyance framework. The USACE staff should work with HCFCD staff to incorporate those guidelines into the BBTRS.

Channel instability and sediment transport issues are remedied through stream restoration that appropriately resets the bayou's:

- channel cross section – building bankfull benches; establishing connectivity to geomorphic floodplain
- longitudinal profile – establishing pool and riffle complex for effective transport of sediment and flow as well as habitat enhancement
- meander pattern – alleviating overtighten meander bends and establishing oxbow habitat

USACE should study the permitted Memorial Park Demonstration Project as an example of reach-scale stream restoration on Buffalo Bayou (SWG-2012-01007).

MPC also recommends that the USACE conduct a comprehensive geomorphic assessment and Watershed Assessment of River Stability and Sediment Supply (WARSSS) of Buffalo Bayou that follows up on the work of Harris County Flood Control District's Charting Buffalo study. The Technical Appendix from this study provides details regarding Buffalo Bayou channel stability, erosion rates, Bank Erosion Hazard Index (BEHI), sediment transport, habitat, as well as recommendations for conveyance improvements.

In looking at conveyance options that were presented at the BBTRS public meeting on May 8th, I noted that some type of bypass channel within the Memorial Park reach is being considered. USACE staff should note that Memorial Park Conservancy, along with project partners is implementing the Master Plan that was approved by Houston City Council in 2015. A large-scale project to construct bypass channels or tunnels within Memorial Park would cause damage to the park and its ecosystem.

In addition to concerns about the park's ecosystem, in a 2016 Initial Biological Assessment, MPC consultants discovered a breeding population of a State-listed reptile, the alligator snapping turtle (*Macrochelys temminckii*). Because of this finding, distributional research of this species within Memorial Park and all of Buffalo Bayou has continued to augment information on the conservation status of the reptile.

<u>Appropriate Detention</u>

The effectiveness of flood damage reduction from a detention facility should be fully understood prior to advancing and publishing alternative information. Detention within lower watershed areas will not effectively remove structures from the floodplain. To address flood damage reduction within Buffalo Bayou watershed, it is more appropriate to look at areas upstream of the reservoirs and remove structures from the floodplain. Buyouts of properties inside the reservoirs and increased reservoir capacity are effective detention alternatives.

In the materials presented at the BBTRS public meeting on May 8th, I noted that a detention basin alternative is being considered within Memorial Park. USACE staff should be aware of the Memorial Park master plan implementation projects currently funded at $205 million to be completed in the next nine years, and executing the plan was made an ordinance by Houston City Council (COH 2018-0367). Memorial Park is Houston's largest urban park with a truly unique ecosystem, as well as state

historic landmark status.

In reviewing the information provided in the public meeting, it seems that USACE staff are not familiar with Memorial Park, the 2015 Master Plan, nor its reverter-holder interests. I, along with other MPC staff, would be happy to meet with USACE staff to discuss the unique features of Memorial Park. In addition, I have a strong interest in USACE continuing to refine the geomorphic analyses that HCFCD started with the Charting Buffalo study and broadened with their Natural Stable Channel Design Guidance Manual. I would be happy to discuss or participate in fluvial geomorphology workshops or field tours. If you have any questions, or would like to discuss further, please contact me at: cwhite@memorialparkconservancy.org or 832-799-0955. Thank you.

Sincerely,

Carolyn White
Conservation Director

Carolyn White
Conservation Director
Memorial Park Conservancy
7575 North Picnic Lane, Houston, Texas 77007
832-799-0955 (Cell)
713.863.8403 (MPC main)
cwhite@memorialparkconservancy.org
CPESC #4723

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May 30, 2019

Andrew Weber, P.E, Study Manager
USACE Galveston District
P.O. Box 1229
Galveston, TX 77553-1229
ATTN: BBTRS
Email: BBTRS@usace.army.mil

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713.863.8403

www.memorialparkconservancy.org

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Sincerely,

Carolyn White
Conservation Director

7575 North Picnic Lane
Houston, TX 77007
713.863.8403

www.memorialparkconservancy.org

From: cary watson
To: CESWT-BBTRS
Subject: [Non-DoD Source] opposition to proposal
Date: Friday, May 31, 2019 8:05:13 AM

-01 Dear Sirs: Any attempt to place more water during flood conditions in Brays Bayou in order to save richer
-02 neighborhoods along Buffalo Bayou is misguided and clearly politically motivated. Please save federal
-03 dollars and stick to ways to strengthen the Addicks Reservoir and Buffalo Bayou independently of Brays Bayou such as making the dam stronger in order to avoid release of any water at all. This will permanently cause property values in Bellaire and Meyerland areas to be adversely affected.

Cary S. Watson

Attorney at Law

Grayson L. Davis, PLLC

2425 Fountain View, Suite 360

Houston, Texas 77057

Office 713 339-4800

Cell 979 220-8495

Fax 713 952-7712

Form Letter #1

Comment #: ES214

From: Robin Acevedo
To: CESWT-BBTRS
Subject: [Non-DoD Source] Flood prevention recommendations
Date: Friday, May 31, 2019 9:26:11 AM

On behalf of the Barker Flood Prevention advocacy group, thank you for the opportunity to provide community input for the Buffalo Bayou and Tributaries Resiliency Study meeting held on April 30. We were pleased with the turnout and hope it will yield valuable feedback.

Our steering committee members also attended, and after careful consideration, have adopted the following recommendations:

1. Limit the Barker Reservoir flood pool to the current government owned land.
2. Increase conveyance out of the Barker and Addicks Reservoirs. Solutions we support include flood tunnel(s), diversion channels, channel improvements and/or bypass.
3. Improve and restore channel conveyance and capacity upstream and downstream of Barker Reservoir and within the reservoir, including dredging, desilting and de-snagging.
4. Add capacity within Barker and Addicks Reservoirs through select excavation in the reservoirs. (Ex. 737-acre project that has been presented to the Corps located due east of Canyon Gate in the Cinco Ranch Area.)
5. Add intermediate detention/retention capacity upstream and downstream of Barker and Addicks Reservoirs.
6. Build infrastructure through a combination of viable solutions to manage Cypress Creek overflow to prevent Cypress Creek runoff from adversely impacting the Barker and Addicks watersheds.
7. Do not increase the Barker Reservoir flood pool by extending spillways.
8. Do not destroy existing neighborhoods, schools and businesses via large scale buyouts.

Barker Flood Prevention has a membership and support base of more than 600 people. We expect that the Corps can rely on this substantial support base in addition to our steering committee and leadership when considering and valuing these recommendations.

We would welcome the opportunity to discuss these further with you.

Yours sincerely,

Marlin Williford and Wendy Duncan
Founding Partners
Barker Flood Prevention

Steering Committee Members:
John Barrett, David Clark, Libby Clark, Chancie Davis, Susana Dias, Patrick Friend, Tim Miller, James Uhl, Erich Schroeder, Jay Wheeler

From: M Colleen Sweeney
To: CESWT-BBTRS
Subject: [Non-DoD Source] No diversion to Brays
Date: Friday, May 31, 2019 9:30:48 AM

Subject: FW: Buffalo Bayou and Tributaries Resiliency Study Comments

To: 'BBTRS@usace.army.mil'
Subject: Buffalo Bayou and Tributaries Resiliency Study Comments

Dear USACE Project Manager:

-01 As a Meyerland resident near Brays Bayou who has experienced three major flood events (Tax Day, Memorial Day, Hurricane Harvey) and subsequent street flooding in relatively small storms (less than 3 inches), I adamantly oppose the proposed construction of a new diversion channel from the Barker Reservoir to Brays Bayou. We do not want to add any more water to the Brays Bayou Watershed under any circumstances.

Thank you for the opportunity to comment.

Colleen Sweeney
5202 Indigo St
Houston TX 77096

From: John Groweg
To: CESWT-BBTRS
Subject: [Non-DoD Source] Buffalo Bayou and Tributaries Resiliency Study
Date: Friday, May 31, 2019 10:01:16 AM

Hello,

I am very concerned about rapid residential development in the Addicks and Barker Reservoir watersheds north of I-10 and south of Hwy 290. Katy, Cyfair, and 99 toll road areas are exploding. The runoff rates into the reservoirs will be accelerated compared to historical data. The reservoirs will be much more at risk of rapid overcapacity than all previous flood events except Harvey because development didn't accelerate until after the 99 toll road opened.

-01

Please make sure that your hydrological studies account for extensive residential development in the reservoir watersheds

Thanks,
John Groweg
1010 Arrow Hill rd
Houston, Texas 77077

Flooded from Barker dam release, outside 500 year flood plain

Sent from my iPhone

From: Kelly Levitt
To: CESWT-BBTRS
Subject: [Non-DoD Source] Buffalo Bayou and Tributaries Resiliency Study
Date: Friday, May 31, 2019 10:03:55 AM

-01 I implore the Army Corps of Engineers to avoid solutions that involve diverting water from one watershed/bayou to another. At some point the decision will have to be made to release water into Braes Bayou (or Sims) despite the consequences for those in that watershed. This is an unacceptable option.

Sincerely,
Kelly Levitt

No Substantive Comments Identified

Comment #: ES218

From: DAVID J GRIFFITHS
To: CESWT-BBTRS
Subject: [Non-DoD Source] Comments on Buffalo Bayou flooding study
Date: Friday, May 31, 2019 10:05:32 AM

I am for acquiring as much floodplain as possible for the detention of storm water.
Janet Griffiths

Sent from my iPhone

Comment #: ES219

From:	Brian Heil
To:	CESWT-BBTRS
Cc:	JB_HEIL@SBCGLOBAL.NET
Subject:	[Non-DoD Source] Buffalo Bayou and Tributaries Resiliency Study Comment Form
Date:	Friday, May 31, 2019 10:38:21 AM
Attachments:	Buffalo Bayou and Tributaries Resiliency Study Comment Form.pdf

See attached comment form please

Brian Heil RA NCARB
Architect

VLK|ARCHITECTS
o: 281.671.2300 | d: 832.678.4382

Blockedwww.vlkarchitects.com

US Army Corps of Engineers

Public Information Meeting

Comment Form (Formulario do Comentarios Escritos)

Buffalo Bayou and Tributaries Resiliency Study

Comment Period: April 29, 2019 through May 31, 2019

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-01 1. Initiate a seven county moratorium on unchecked development and destruction of Katy wetlands. Prohibit development creating excessive impervious surfaces and insufficient detention

-02 2. Widen and clear Buffalo Bayou between Sam Houston Tollway and Shepard Drive. Create additional detention and clear all obstructions.

-03 3. Deepen Addicks and Barker reservoirs, strengthen dam structures and add alternate drainage channels to reroute watershed runoff to these reservoirs

-04 4. Require commercial property owners to retrofit and reduce impervious surfaces and install detention on existing properties, primarily at strip center retail establishments.

-05 5. Notify Harris County residents the voter approved 2 billion dollar bond funding for flood control improvements has been redirected by the county judge Lina Hidalgo and State Representative Rodney Ellis to not be equitably distributed to each district. Initiate a lawsuit against the city and county to reallocate funding

Name Nombre: Brian Heil

Affiliation Afiliación: COH Resident

Address Dirección de Envío: 1010 Orchard Hill

City Ciudad: Houston

State Estado: TX

Zip Code Código Postal: 77077

E-mail Correo Electrónico: jb_heil@sbcglobal.net

Additional information can be found at:
https://www.swg.usace.army.mil/Missions/Projects/Buffalo-Bayou-and-Tributaries-Resiliency-Study/

Comment #: ES220

From: Larry Benthall
To: CESWT-BBTRS
Subject: [Non-DoD Source] comments on Buffalo Bayou and Tributaries Resiliency Study
Date: Friday, May 31, 2019 10:53:51 AM
Attachments: Buffalocomment my comments.pdf

---

attached are my comments in your form

Larry Benthall
8806 Prichett Dr
Houston, TX 77096

Public Information Meeting

US Army Corps of Engineers

Comment Form (Formulario do Comentarios Escritos)

Buffalo Bayou and Tributaries Resiliency Study

Comment Period: April 29, 2019 through May 31, 2019

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-01 I understand the desire of Buffalo Bayou property owners to divert water to someone else's watershed, but I oppose such a plan. On paper, making a decision to divert "when Brays is lower" sounds good, but I see an inevitable conflict of interest leading to a mistake or a political power play that would lead to flooding the Brays watershed from a source for which the Brays Bayou modifications are not designed to handle.

-02 Buffalo Bayou watershed folks should do what the Brays Project did: Modify the watershed to handle a larger flow. The environmental folks need to back off on this one, and allow Buffalo Bayou what Brays allowed.

I like the concept of tunnels, but the proposed solution is too costly and distant. Perhaps talk to Elon Musk about his tunneling technology to build something innovative.

Name Nombre: Larry Benthall

Affiliation Afiliación: homeowner

Address Dirección de Envío: 8806 Prichett Dr

City Ciudad: Houston

State Estado: TX

Zip Code Código Postal: 77096

E-mail Correo Electrónico: Larry.Benthall@gmail.com

Additional information can be found at:
https://www.swg.usace.army.mil/Missions/Projects/Buffalo-Bayou-and-Tributaries-Resiliency-Study/

US Army Corps of Engineers

Comment Form Instructions

Buffalo Bayou and Tributaries Resiliency Study
Public Information Meeting

Comment Period: April 29, 2019 through May 31, 2019

The U.S. Army Corps of Engineers is in the process of developing the Buffalo Bayou and Tributaries Resiliency Study which includes both Flood Risk Management and a Dam Safety Modification Study (DSMS). The flood risk management will identify and evaluate alternatives to reduce flooding upstream of the Addicks and Barker Dams as well as below in the Buffalo Bayou watershed. The DSMS will identify and evaluate alternatives to address Phase II measures of the Dam Safety Modifications on Addicks and Barker. Public input is especially needed regarding alternatives to consider.

USACE Galveston District
ATTN: BBTRS
P.O. Box 1229
Galveston, TX 77553-1229

Place Stamp Here

USACE Galveston District
ATTN: BBTRS
P.O. Box 1229
Galveston, TX 77553-1229

From: Philip Kunetka
To: CESWT-BBTRS
Subject: [Non-DoD Source] Brays Bayou and general flood planning for the Houston Area comment
Date: Friday, May 31, 2019 11:10:44 AM

I am a member of the Brays Bayou Association, have been briefed over the years by many of the experts knowledgable of Houston flooding and I work with multiple elected and community leaders who recognize me as an advocate with objective knowledge on the subject. Additionally, I am President of the Maplewood Civic Club. Maplewood is near Brays Bayou but was not flooded in the recent flood events in the area but is economically affected by Brays flooding.

-01

I wish to object one particular possibility proposed by the Corps. There is a proposal to put a floodgate, or construction of such effect, in the southern side of the Barker Reservoir for the purpose of diverting water destined for the Buffalo Bayou watershed into the Brays Bayou Watershed.

Overall, I object to the concept of "man" deciding who gets potential floodwaters. History has shown that man does a poor job of countermanding the laws of nature. Also, the diversion would actually be putting water from a "more-rarely" flooded watershed into an often flooded watershed. The concept is a poorly thought out overreaction to the single anecdote of Harvey rather than a long-term consideration.

Diversion of water from one watershed to another is fraught with the possibility of human error, both scientific failure of judgement and political expediency. It would put decision makers into the role of picking winners and losers….often done so with less than honorable considerations. It would also pit communities against one another. If one person is about to flood, they would want the floodgates opened - survival mode limiting the further considerations of other people in other places - without thinking about the neighbors over the hill.

The rule of nature is best. By keeping all watersheds consistent, it also allows homeowners and builders to utilize a single, if still difficult to quantitate, floodplain scale.

I can also assure you, the senior political leadership in the Houston area would be opposed.

I believe enhancement to the existing Addicks/Barker system, additional reservoir resources and many other proposals put forth by the Corps are a better and more responsible investment.

Phil Kunetka
President - Maplewood Civic Club
5611 Edith St.
Houston, TX 77081
832-215-3233 cell

Comment #: ES222

From: Cindy Acree
To: CESWT-BBTRS
Cc: Steve Robinson; Harry Thompson
Subject: [Non-DoD Source] Buffalo Bayou and Tributaries Resiliency Study
Date: Friday, May 31, 2019 11:51:25 AM
Attachments: USACE Letter.pdf

Dear Sir/Madam, Attached is correspondence from Willow Fork Drainage District with respect to the Buffalo Bayou and Tributaries Resiliency Study. Please contact us if you have any questions or comments regarding the attachment.

Thank you,

Cindy Acree on behalf of Steve Robinson and Harry Thompson

Cindy Acree

Assistant to Stephen M. Robinson, Annette F. Stephens and Harry H. Thompson

ALLEN BOONE HUMPHRIES ROBINSON LLP

3200 Southwest Freeway, Suite 2600

Houston, Texas 77027

713-860-6418 Phone

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cacree@abhr.com <mailto:cacree@abhllp.com>

WILLOW FORK DRAINAGE DISTRICT

Fort Bend and Harris Counties, Texas
3200 Southwest Freeway, Suite 2600
Houston, Texas 77027

May 31, 2019

U. S. Army Corps of Engineers, Galveston District
Attn: BBTRS
P. O. Box 1229
Galveston, Texas 77553-1229
BBTRS@usace.army.mil

Re: Buffalo Bayou and Tributaries Resiliency Study Update (the "Study")

Dear Sir/Madam:

This letter is to express Willow Fork Drainage District's (the "District") comments to the ongoing Study being undertaken by the U. S. Army Corps of Engineers, Galveston District ("USACE").

The District expresses its gratitude to USACE's commitment to addressing residual risks associated with flood impacts to structures in the flood pool area upstream of both Barker and Addicks Reservoirs and downstream along Buffalo Bayou. We understand this study will investigate flood risk management opportunities in the Houston region, including Fort Bend and Harris Counties, by analyzing the primary watersheds (including the Addicks and Barker Reservoirs), identifying feasible risk reduction measures, and optimizing performance from a multi-objective systems performance perspective.

The District is located immediately adjacent and upstream of Barker Reservoir in Fort Bend and Harris Counties and was created to finance the acquisition or construction of major outfall drainage facilities, trunk storm sewer facilities, and related projects to serve the land located within the District. There are over 11,000 single-family residential homes within the approximately 5,718 acres of land served by the District. The District is directly impacted by the operation and maintenance of Barker Reservoir and experienced extensive flooding of homes, businesses and public facilities during Hurricane Harvey.

CURRENT PROCESS

Contrary to the Study's approximation of a "3-Year" timeframe, the Study itself concedes that only proceeding to a "Washington-level Review" will take a minimum of 3 years, with no discussion into the process for review, budgeting, permitting or implementation necessary to execute the Study's findings. Following these processes, it is conceivable that a solution could be more than 10-15 years or more from completion. In the meantime, the Reservoirs and Buffalo Bayou are still holding the excess silt accumulated from Harvey, and have less capacity than ever before. At this time, no remedial measures have been undertaken by the USACE to reduce the flood risk from Barker Reservoir.

-01

SHORT TERM SOLUTIONS

No study is required to reach a conclusion that additional reservoir capacity is needed today. Interim solutions should be undertaken that provide tangible flood mitigation prior to the completion of the Study and subsequent to implementation. An interim report as a part of the Study could include (1) immediately commence desilting and vegetation removal from all channels within Barker and Addicks Reservoirs, and (2) excavation activities as soon as practicable within Barker and Addicks Reservoirs. Three main issues can begin to be mitigated by prompt excavation of the Reservoirs: (1) flooding downstream of the Reservoirs on Buffalo Bayou; (2) flooding Upstream of the reservoirs from impoundment of water above government owned land; and (3) performance and risk issues related to flow around and over the uncontrolled spillways. By excavating the Reservoirs and Buffalo Bayou, more capacity is created, thus tilting the balance of storage more towards government-owned land than private land, including areas in the District. Whether only removing earth from certain areas, or generally extracting dirt from the Reservoirs, such a process would immediately begin increasing storage and addressing the aforementioned issues.[1]

-02

In addition to excavation, other alternatives must be considered by the Study to mitigate flood risk. For example, the District respectfully recommends USACE investigate the following possible options:

Form Master #1

1. Limit the Barker Reservoir flood pool to the current government owned land.
2. Increase conveyance out of the Reservoirs (e.g. flood tunnel(s), diversion channels, channel improvements and/or bypass).

[1] It is important to note that a 737-acre project (USACE located due east of Canyon Gate in the Cinco Ranch Area) has been presented to the USACE and recommended by the District. An additional alternative would be to pile the excavated dirt into large hill/small mountain within the Reservoir, thus decreasing transportation costs and creating an amenity that could provide recreational use to the community.

Form Master #1

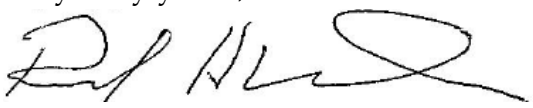
3. Improve and restore channel conveyance and capacity upstream and downstream of Barker Reservoir and within the Reservoir, including dredging, desilting and de-snagging.
4. Add intermediate detention/retention capacity upstream and downstream of the Reservoirs.
5. Build infrastructure through a combination of viable solutions to manage Cypress Creek overflow to prevent Cypress Creek runoff from adversely impacting the Barker and Addicks watersheds.
6. Do not increase the Barker Reservoir flood pool by extending spillways.
7. Do not destroy existing neighborhoods, schools and businesses via large scale buyouts.

-03 It is important that the tool of an Interim Chief's Report be seen as a continuing obligation and option to the USACE. As further alternatives are identified in the future, it is incumbent upon the USACE to implement any viable alternatives in as timely a fashion as possible, and long-term studies simply constrain the swift implementation of likely life-saving flood prevention measures.

-04 Potential non-federal sponsors of the USACE's efforts to alleviate flood risk in the Buffalo Bayou Watershed include the Harris County Flood Control District, Fort Bend Drainage District, the District, the City of Houston, and several other local governmental entities affected by flooding during Hurricane Harvey. Further, Harris County voters resoundingly approved a $2.5 billion flood bond referendum related to 237 qualified projects that will be implemented over the next decade beginning immediately, Fort Bend County has undertaken a drainage study to study every one of its drainage channels over the next 18 to 24 months, and the Texas legislature passed SB 6, SB 7 and SB 8 dedicating more than $3 Billion in funds to address flood planning and resiliency.

The District respectfully requests due consideration of these comments submitted to the USACE.

Very truly yours,



Richard Ward
President, Board of Directors

From:	Lisa Graiff
To:	CESWT-BBTRS
Cc:	Beth White; Place, Charles; Piacentini MaryAnne; Jill Boullion; Jordan Macha; January-Bevers, Deborah; Anne Olson; Sarah Bernhardt (sbernhardt@bayoupreservation.org); Helen Drummond; Stokes, Bob; Scott Jones; Place, Charles
Subject:	[Non-DoD Source] USACE - Buffalo Bayou and Tributaries Resiliency Study - CFMG comments
Date:	Friday, May 31, 2019 12:06:05 PM
Attachments:	190531_USACE-BBTRS-CFMGLetter-FINAL.pdf

Dear BBTRS Coordinator,

Attached are comments from the Greater Houston Conservation Flood Mitigation Group (CFMG) on the Buffalo Bayou and Tributaries Resiliency Study. We are a group of conservation focused non-profits that have a joint interest in nature-based solutions to flooding in our region.

As organizations who have been working in conservation and nature-based flood mitigation in our region for decades, we are here to offer our collective expertise. Please let us know if you have any comments or would like any additional information.

Thanks you for your work on this study.

Best Regards,

Lisa Graiff
Houston Parks Board
on behalf of the Greater Houston Conservation Flood Mitigation Group

lisag@houstonparksboard.org
300 North Post Oak Lane
Houston, TX 77024
O: 713-942-8500 x44
M: 832-335-0078
Blockedwww.houstonparksboard.org

The Houston Parks Board is a 501 (c) (3) non-profit organization dedicated to creating, improving, protecting and advocating for parks for everyone.

May 31, 2019

USACE Galveston District
Attn: BBTRS
P.P. Box 1229
Galveston, TX 77533-1299

RE: USACE Buffalo Bayou and Tributaries Resiliency Study Public Comments

Dear BBTRS Coordinator:

The Conservation Flood Mitigation Group (CFMG) consists of conservation-focused nonprofits that are concerned about the effects of flooding in our region. The group has been meeting informally to share their joint interest in nature-based solutions (NBS) to flooding. The International Union for the Conservation of Nature (IUCN) defines NBS as actions to protect, sustainably manage, and restore natural or modified ecosystems to address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits. As noted in the USACE's *Engineering With Nature* Strategic Plan, significant progress has been made in the development and application of practical methods that demonstrate the benefits of an ecosystem approach to infrastructure development and operations. [see https://ewn.el.erdc.dren.mil/pub/EWN-StrategicPlan2018-2023FINAL.pdf, p. 5].

We are encouraged to see that the USACE is undertaking a study of Buffalo Bayou and tributaries with the intention of increasing resilience. We believe now is the time to work together to protect residents of Harris County proactively. To that end we offer our collective expertise in conservation and nature-based flood mitigation solutions.

The CFMG was formed because we recognized the need for a flood mitigation plan that is objective, regional, science-based, and forward-thinking. It should marry nature-based and natural infrastructure with innovative engineering technologies. Such a plan is vital to creating an effective and durable system for the protection and resilience of the Greater Houston Region at the same time that we maintain the quality of life and desirability of our area. Our organizational knowledge can help to optimize this comprehensive plan.

Many of the organizations involved in this planning effort have been working to successfully conserve land for decades. Some focus on preserving land, either along creeks and bayous or other large-scale conservation activities. Others advocate for protection of our natural assets and work to heighten public and governmental understanding of their importance.

Our work is centered in the Gulf Coast Region from the headwaters of our streams to the bay waters of Galveston Bay. Our conservation activities provide significant benefits to the region, in the context of recreation, wildlife habitat, improvements in air and water quality, economic fairness, and – last but not least – flood mitigation.

The CFMG convened to identify natural infrastructure projects and nature-based solutions appropriate for flood mitigation. The organizations agreed on guiding objectives *before identifying specific projects*,

bearing in mind the potential cost-effectiveness, both long and short term, associated with natural infrastructure and nature-based solutions.

Guiding objectives:

- Maximize buyouts to increase riparian corridor preservation and remove people and property from harm's way to decrease flood losses. This includes:
  - Preserving natural riparian corridors in undeveloped areas,
  - Targeting developed areas, especially where the public needs land for increased flood mitigation,
  - Providing full relocation services to home owners and tenants,
  - Preventing future development of these areas and converting them to public parks or open space.
- Undertake large-scale, landscape-level conservation (large tracts of undeveloped land) for maximum impact,
- Identify innovative approaches to reduce flooding. Engage experts with experience in nature-based solutions and conduct research necessary to optimize these solutions,
- Develop site specific detention requirements. Calculate detention / retention and release rates to reflect pre-development run-off rates, including the study of pre-agriculture simulation to show actual run-off rates for undeveloped land.
- Fix Existing Infrastructure
  - Restore and expand the capacity of existing reservoirs and detention ponds by removing invasive species and sediment and silt, possibly excavating for additional capacity, and other activities that expand flood storage.
  - Restore trails or other existing amenities impacted by bayou flood control activities.
- Improve conveyance by preserving/increasing protection of floodways and floodplains
  - Increased conveyance should not flood downstream or upstream, nor should it overwhelm the drainage system.
  - Increase the use of localized detention to supplement large-scale efforts.
  - Use natural system design for bayous to restore sinuosity, which increases capacity and slows water flow.
  - Maintain/restore native trees and grasses as appropriate to increase water absorption.
- Flood control projects, particularly nature-based infrastructure (NBI), should be designed to support multi-use activities to the greatest extent practicable so as to provide additional community benefits, including recreational and natural open space and improved water quality.

-01

Our recommendations fall into six categories:

1. **Acquisition** - Land acquisition, especially large tracts of land that are either adjacent to already protected lands or which can be acquired at a scale sufficient to provide appreciable flood mitigation benefits. Target areas include projects proposed by nonprofit organizations as part of the working group as well as the overall goal advocated by Houston Wilderness to conserve 24% of the region's land mass by 2024.
2. **Restoration** - Especially woods or prairies which can generally absorb floodwaters better than other types of vegetation.

-02

-03

-04

3. **Preservation** - Riparian corridor preservation in areas that are currently undeveloped or sparsely developed so that entire floodway and floodplain areas can be protected. These areas can contribute to flood management through conservation, restoration, or creation of detention.

-05

4. **Buyouts** - In conjunction with federal and county buyouts expand the footprint of protected lands and avoid a checkerboard approach to buyouts to increase flood mitigation benefits.

-06

5. **Erosion control** – Implement the use of native vegetation along local bayous, creeks, and rivers to reduce erosion and sedimentation. Utilize Best Management Practices (BMPs) for riparian erosion control. Monitor and analyze the results to improve upon BMPs.

-07

6. **Research** – Undertake research projects to make the case for nature-based infrastructure (NBI) as a viable stormwater management alternative. Conduct research needed to optimize NBI solutions.

Specific areas of study for the Buffalo Bayou and Tributaries are as follows:

-08

1. Preserving existing open space in the floodplain along Bear Creek, Langham Creek, South Mayde Creek, Horsepen Creek, Mason Creek, and Buffalo Bayou.

-09

2. Acquiring large tracts of natural areas within the watersheds of the waterways listed above. Especially where adjacent to other large expanses of protected land such as the Katy Prairie.

-10

3. Restoring prairie and forested areas both within the reservoirs and in the affected watersheds to remove invasive plants and improve soil quality to increase water retention.

-11

4. Expanding the capacity of Addicks and Barker Reservoirs through excavation and other appropriate means.

-12

5. Ensuring development detention requirements that meet pre-development run-off rates, or restrict development within the floodplain.

-13

6. Exploring micro-detention strategies such as rainwater collection tanks and gardens with native prairie plants.

-14

7. Consider nature based infrastructure first, whether alone or in conjunction with more traditional man-made efforts.

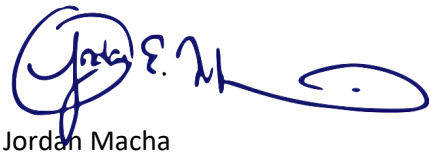
-15

Using riparian corridor protection and NBI techniques wherever possible will be more cost effective in the long run. Such projects are generally less expensive to implement and maintain. Even where natural design techniques alone are not sufficient, they are a valuable and cost-saving supplement to more traditional engineering design solutions. Therefore, we urge you to consider the suggestions put forward by the CFMG for inclusion in a comprehensive flood mitigation strategy.

Furthermore, we are happy to work with you to identify further opportunities for conservation and nature-based flood mitigation projects.

Tackling flood mitigation in the Houston region is a monumental task. We look forward to being an integral part of the efforts to make the region more resilient for generations to come.

Sincerely,



Jordan Macha
Executive Director
Bayou City Waterkeeper

Bob Stokes
President
Galveston Bay Foundation

Jill Boullion
Executive Director
Bayou Land Conservancy

Beth White
President & CEO
Houston Parks Board

Sarah P. Bernhardt, Ph.D.
President & Chief Executive Officer
Bayou Preservation Association

Deborah January-Bevers
President & CEO
Houston Wilderness

Anne Olson
President
Buffalo Bayou Partnership

Mary Anne Piacentini
President & CEO
Katy Prairie Conservancy

Helen E. Drummond
Executive Director
Houston Audubon

Comment #: ES224

From:	Sarah Bernhardt
To:	CESWT-BBTRS
Cc:	razburn@gmail.com; Robert Rayburn (rrayburn@energycorridor.org); Susan Hill; Chris Browne; Linda Shead
Subject:	[Non-DoD Source] USACE - Buffalo Bayou and Tributaries Resiliency Study - Bayou Preservation Association comments
Date:	Friday, May 31, 2019 12:27:13 PM
Attachments:	image001.png 2019_May_BayouPreservation_USACE_BuffaloBayouStudy_Lt.pdf

Good afternoon BBTRS Coordinator,

Please find attached comments on the USACE - Buffalo Bayou and Tributaries Resiliency Study.

Thank you for the opportunity to provide comment.

Regards,

Sarah

--
Sarah P. Bernhardt, Ph.D.
President & CEO

BAYOU PRESERVATION ASSOCIATION

Bayou Preservation Association
7305 Navigation Boulevard, Suite A
Houston, Texas 77011
Office (713) 529-6443
Fax (713) 529-6481
Blockedwww.bayoupreservation.org
sbernhardt@bayoupreservation.org
Mobile (979) 255-8726

BAYOU PRESERVATION ASSOCIATION

celebrate. protect. restore.

May 31, 2019

USACE Galveston District
Attn: BBTRS
P.P. Box 1229
Galveston, TX 77533-1299

RE: USACE Buffalo Bayou and Tributaries Resiliency Study Public comment

Dear BBTRS Coordinator,

The Bayou Preservation Association was established in 1966 and has the mission of celebrating, protecting, and restoring the natural richness of all the Houston area's bayous and creeks, which are a unique characteristic of the region.

As the region considers resiliency and flood damage reduction efforts after Hurricane Harvey, we call on all Houston-area stakeholders, including the United States Army Corps of Engineers to consider the following six principles adopted by the Bayou Preservation Association Board of Directors in April 2018 when evaluating and selecting proposed projects:

Principle 1. Avoidance of Adverse Impacts on the Functions and Values of Riparian Corridors. Projects should recognize the value of functional riparian corridors and seek to protect existing riparian areas and not create adverse impacts to existing riparian corridors. Projects should not preclude future establishment of riparian corridors in areas where they have been reduced or removed due to new development. Where possible, projects should look for opportunities to establish or enhance riparian corridors. -01

Principle 2. Avoidance of Adverse Impacts on Water Quality. New projects should not diminish the water quality of our bayous, streams, lakes, bays and watersheds. Projects should assess impacts both at the site of implementation, as well as potential for impact to downstream areas. Where possible, projects should look for opportunities to improve water quality which is in line with the goal of achieving fishable and swimmable waterbodies throughout our region. -02

Principle 3. Utilization of Best Practices for Improving Stormwater Management. New projects should look to develop and improve stormwater management facilities which complement the natural environment using current research and science. This could include implementation of Natural Stable Channel Design practices and sustainable vegetation management using native species. New projects should be identified as a part of holistic planning efforts and integrated into the existing built and natural environment such that they add benefit to multiple services. -03

Principle 4. Accommodation for Both Current and Future Needs. Studies should seek not only to evaluate current needs, but also to accommodate future needs associated with our rapidly growing urban area. Projects should identify and secure real estate necessary for sustainable, resilient projects which derive benefits from multiple services. -04 -05

Principle 5. Evaluation of ALL Associated Benefits and Impacts. The holistic health and functionality of our watersheds is complex, and is dependent on numerous natural and built components interacting as one comprehensive system. This may include riparian corridors, stormwater conveyance facilities, recreational amenities, aesthetic features, ecosystem services, and natural or built measures which include water quality. New projects should assess benefits and impacts to all the components of a watershed when determining the feasibility of projects and ensuring no adverse impacts to any aspects of a healthy watershed system. -06

Though the USACE Buffalo Bayou and Tributaries Resiliency Study presentation materials acknowledge an "opportunity" to "engineer with nature and implement nature-based features," the absence of these strategies from potential measures, alternatives development, and maps of strategies, is troubling. Since these more detailed descriptions of the study also fail to include nature-based solutions, we are concerned that nature-based solutions will not adequately be considered as real alternatives. We hope that their cursory inclusion does not mean that nature-based solutions are only receiving lip service while privileging traditional engineered solutions. -07

While the Buffalo Bayou watershed continues to become more highly urbanized, opportunities remain today to protect those portions of the watershed which have not already been converted to residential and commercial development and to take action to restore developed portions of the floodplain back to pre-development conditions. -08

We urge the USACE to take additional action to protect the region's floodways and floodplains. No structures should be allowed within floodways or deep within the floodplain – existing structures should be removed and no new structures should be constructed within these areas. This is important because the floodplain worked prior to development. Placing structures in the floodway impedes the ability of the floodplain to operate and perform as effectively and economically efficient as nature designed. -09

We request every project alternative include nature-based approaches. No potential alternative should be composed of traditional engineering solutions alone, but should also incorporate the enhancement and creation of wetland, woodland, and floodplain areas to maximize benefit and resiliency. For example, in developing detention, it is preferable to use natural wetlands instead of engineered wetlands; in enhancing bayous, the use of native plant material for restoration and the long term maintenance of existing lands by removing nonnative invasive plant species should be followed as a "best practice." -10

In all cases, projects must be analyzed not only for the cost-effectiveness of the initial capital costs but also for the long-term operating, maintenance, and replacement costs in addition to the human costs. Nature-based solutions (preferably large-scale land acquisition and maintaining natural landscapes without development) can result in longer project life (often perpetual) with a lower risk of failure during a severe storm event. In addition, nature-based projects provide social, economic, and environmental benefits to the community, including improved water quality, carbon capture, and availability of areas for recreation, wildlife, local agriculture, and improved quality of life. -11

Stormwater management projects, using particularly nature-based solutions and should be designed to restore riparian corridors to their pre-development floodplain size and function. Restoration and protection of the floodplains will result in far superior product and result in less taxpayer money spent in the long term. These visionary type of actions will save taxpayer money and in turn support multi-use activities and provide additional community benefits, such as removing people from harm's way by removing their homes from the floodplain, creation of recreational and natural open space and improved water quality. We strongly support the application of these landscape level transformations of our floodplains as a 100-year vision for our region's long term resiliency. It is wiser fiscally to pursue full restoration of the natural floodplain than to keep applying small solutions. We strongly support environmentally focused solutions, but even more importantly support full restoration of the floodplain to its full extent, removing structures from the floodplain. -12

Sincerely,

Sarah P. Bernhardt
President & Chief Executive Officer
sbernhardt@bayoupreservation.org
Cc: Bayou Preservation Association Board of Directors

From: Ryan Bernard
To: CESWT-BBTRS
Subject: [Non-DoD Source] Public Feedback on BBTRS
Date: Friday, May 31, 2019 12:45:34 PM

My feedback on improvements to Buffalo Bayou watershed:

- I am in favor of buying out floodprone property, buying undeveloped land for preservation, more trees and greenspace, more detention, including basins and rain gardens

-- I am opposed to tunnels, dams, or "improving" the bayous (deepening, widening, straightening, bypasses, etc.)

-01 In short, I am in favor of working with nature rather against it. I am for solutions that are friendlier to ordinary humans, plants, and animals, and less friendly to developers and powerful interests. Yes we need flood control but let's shy away from "slash and destroy" and lean over backwards to avoid marring the few patches of natural beauty we have left in this otherwise barren landscape.

There is a balance here, but let's err on the side of conservation and conservatism.

Ryan Bernard
2226 Welch Street
Houston, TX 77019

Report referenced was accessed through the website provided and attached to the comment.
-- M. Fisher. 03 June 19

Comment #: ES226

From: Robert Hoff
To: CESWT-BBTRS
Cc: bbaugh@radoil.com; bbaugh@baughengrs.com
Subject: [Non-DoD Source] Buffalo Bayou flow volume improvement
Date: Friday, May 31, 2019 1:20:50 PM

TO USACE:

I read an engineered report from Dr. Benton Baugh with a simple, cost effective means of enhancing Buffalo Bayou to improve the drainage and flow volume.

A brief on this system:
Blockedhttp://baughconsultingengineers.com/wp-content/uploads/2017/08/TFC-MAIN-2.pdf

This system simply allows Buffalo Bayou to move more water by increasing the flow rate all the way to the sea.

-01

He also has a design for a thruster system that can telescope into and retract from the bayou.
Furthermore, his engineered approach has designed spillways, large retention areas on public land, some straightening of the bayou, and other improvements.

It is a lower cost solution that can be implemented quickly, and will provide an easily managed and effective flood control system.

Please review this and consider it.

I lost over $250,000 from the flooding, and I worry as there is not much movement to improve the SE Texas flood drainage system to date.

Thanks.

Regards,
Robert Hoff

HOUSTON THRUSTER FLOOD CONTROL PROJECT

UNIVERSITY OF HOUSTON
Cullen College of Engineering

Beta SUBSEA SYSTEMS
A DIV. OF BAUGH CONSULTING ENGINEERS, INC.

HOUSTON THRUSTER FLOOD CONTROL PROJECT

DOWNTOWN HOUSTON - ALLISON
JUNE 9, 2001
NOTE THAT THE FLOOD WATER IS MOVING SO SLOWLY THAT IT APPEARS TO BE STATIONARY.

DOWNTOWN HOUSTON - HARVEY
AUGUST 27, 2017 - STILL NO BETTER

HOUSTON THRUSTER FLOOD CONTROL PROJECT

AN ECONOMICAL WAY TO SOLVE HOUSTON'S FLOODING PROBLEMS

THE CONCEPT IS THAT IF WE MAKE THE WATER FLOW TWICE AS FAST IN THE BAYOUS, WATER WILL BE GONE AND FLOODING WILL NOT OCCUR!

THIS PRESENTATION WAS PREPARED IN 2001 AFTER ALLISON, BUT THE SITUATION IS STILL THE SAME!

HOUSTON THRUSTER FLOOD CONTROL PROJECT

WHEN BUFFALO BAYOU EAST BACKS UP, IT SENDS BUFFALO BAYOU WEST AND WHITE OAK BAYOU WATERS INTO DOWNTOWN.

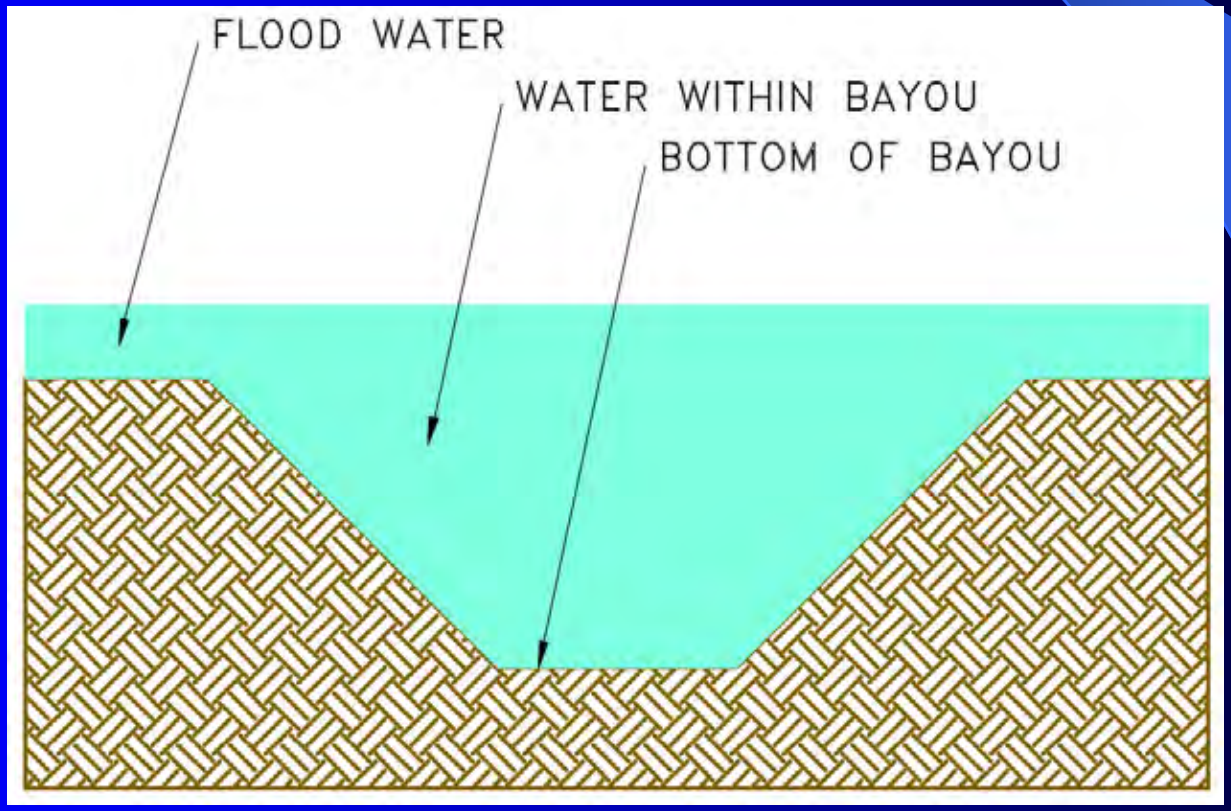
WHEN BRAYS BAYOU FLOODED, HARRIS GULLEY BACKED UP THRU THE MEDICAL CENTER, SENDING WATER UP INTO THE HOSPITALS

HOUSTON THRUSTER FLOOD CONTROL PROJECT

BAYOU WATER NORMALLY FLOWS DOWNSTREAM ASSISTED BY GRAVITY AND RESTRICTED BY BAYOU SIZE AND WALL FRICTION.

DOWNTOWN HOUSTON IS 20 MILES FROM THE BAY SYSTEM, AND THE ELEVATION IS 20' ABOVE SEA LEVEL. THIS MEANS WE HAVE AN AVERAGE SLOPE OF ONE FOOT PER MILE – ALMOST FLAT.

THIS IS WHY DURING A LARGE STORM SUCH AS ALLISON OR HARVEY WATER SIMPLY FLOWS OUT OF THE BANKS - A FLOOD.

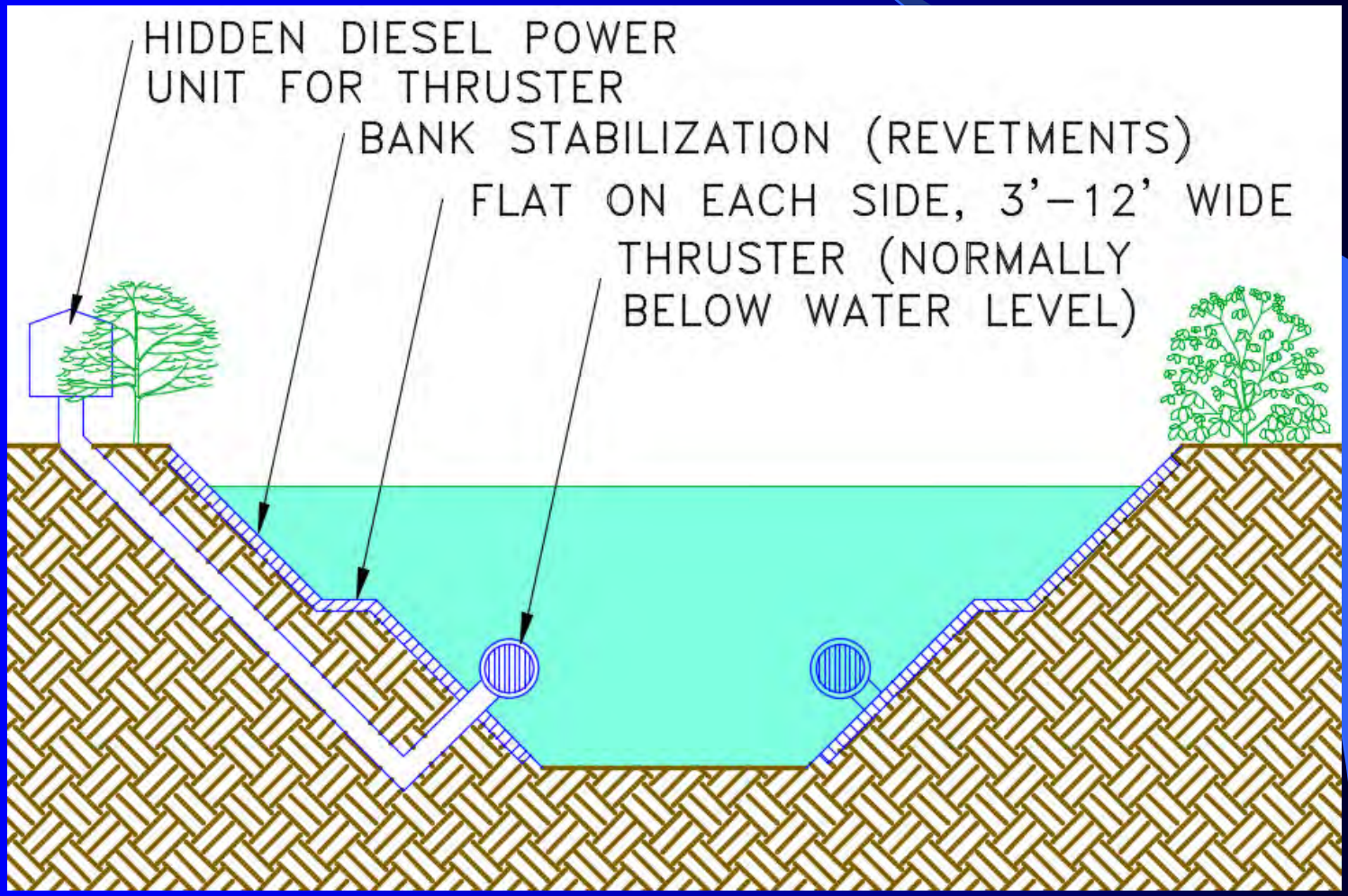


HOUSTON THRUSTER FLOOD CONTROL PROJECT

THIS IS COMPLICATED DOWNTOWN BECAUSE WHITE OAK BAYOU INTERSECTS BUFFALO BAYOU AT 90º, SO HAS NO DOWNSTREAM VELOCITY. THIS PROMOTES GOING INTO DOWNTOWN.

HOUSTON THRUSTER FLOOD CONTROL PROJECT

THIS IS BUFFALO BAYOU WITH THE BANKS STABILIZED AND THE SAME AMOUNT OF WATER MOVING FASTER BECAUSE WE ADDED EXTRA ENERGY TO THE WATER WITH OFFSHORE THRUSTERS TO MAKE IT MOVE FASTER. THE FLOODING DOES NOT OCCUR.



HOUSTON THRUSTER FLOOD CONTROL PROJECT

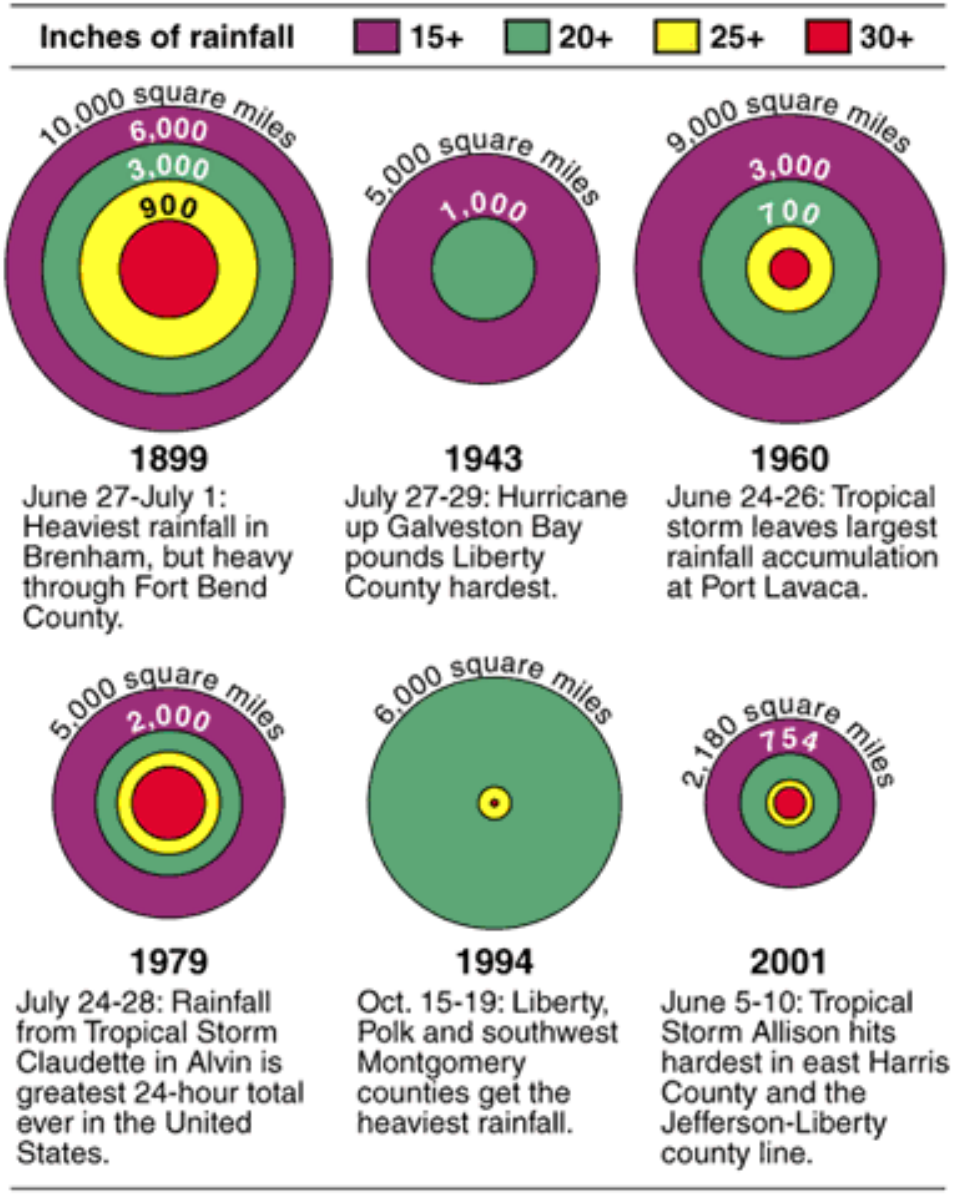
EACH OF THE 5 STORMS ILLUSTRATED WERE WORSE THAN ALLISON. IF CLAUDETTE HAD HIT 25 MILES DUE NORTH, IT WOULD HAVE BEEN SEVERAL TIMES WORSE THAN ALLISON!

IT CAN AND WILL HAPPEN AGAIN! (IT DID, AND HARVEY WAS WORSE!)

OTHER MAJOR FACTORS ARE URBANIZATION AND SUBSIDIENCE – IT WILL ONLY GET WORSE IN THE FUTURE!

Allison: A historical perspective

A study of 300 storms in the 13-county Texas upper Gulf Coast found six that had the broadest, deepest rainfall. These rainfall schematics represent the area, in square miles, that was affected by each storm:



HOUSTON THRUSTER FLOOD CONTROL PROJECT

TECHNOLOGY IS READILY AVAILABLE FOR THIS METHOD

REMOTELY OPERATED VEHICLE (ROV) WITH SEVERAL THRUSTERS

2000 HP OFFSHORE VESSEL THRUSTER

HOUSTON THRUSTER FLOOD CONTROL PROJECT

PHASE 1

IN THE FALL OF 2001, A TEAM OF UNIVERSITY OF HOUSTON SENIOR ENGINEERS WORKED ON A PROJECT TO DO PRELIMINARY STUDIES ON THE FEASIBILITY OF THIS PROJECT. A FIRST PROTOTYPE OF THE THRUSTER SYSTEM WAS BUILT TO DEMONSTRATE THE POWER OF THRUSTERS. UH PROFESSOR DR. CHARLES DALTON IS SEEN ABOVE WORKING WITH A THRUSTER UNIT IN THE RECIRCULATING CHANNEL MODEL.

HOUSTON THRUSTER FLOOD CONTROL PROJECT

SEE KHOU MOVIE FOR MORE DETAILS

OPERATIONAL MODEL SHOWING FROM DOWNTOWN TO TURNING THE SHIP CHANNEL. ALLOWED DOWNTOWN TO BE FLOODED AND THEN UNFLOODED WITH THRUSTERS.

HOUSTON THRUSTER FLOOD CONTROL PROJECT

IN THIS PROJECT WE MEASURE THE POPULAR SOLUTION, DETENTION PONDS, IN THE SECONDS OF FLOW DOWN BUFFALO BAYOU IT WOULD TAKE TO FILL THEM.

AFTER A FEW SECONDS WHEN THEY ARE FILLED, THEY ARE OF NO MORE HELP. MANY DETENTION PONDS ARE LOST BELOW THE FLOOD WATERS.

THRUSTERS WILL KEEP ON DOUBLING THE AMOUNT OF WATER OUR BAYOUS WILL REMOVE FOR AS LONG AS THE WEATHER EVENT CONTINUES!

IF BAYOUS ARE NOT KEPT LOW, EVERYTHING FLOODS! THE FIRST STEP IN ANY NEIGHBORHOOD PLAN HAS TO BE TO KNOW WHERE THE WATER WILL BE ABLE TO GO.

HOUSTON THRUSTER FLOOD CONTROL PROJECT WILL STOP HOUSTON'S FLOODING

THE THRUSTER SYSTEM DOES NOT REQUIRE LAND ACQUISITION.

THE THRUSTER SYSTEM DOES NOT INCREASE CHANNEL SIZE.

THE THRUSTER SYSTEM CAN BE IMPLEMENTED QUICKLY.

THE THRUSTER SYSTEM WILL WORK IN CEMENTED BAYOUS.

AND…

THE THRUSTER SYSTEM CAN BE FULLY INSTALLED FASTER THAN ANY OTHER KNOWN SOLUTION!

THE THRUSTER SYSTEM COSTS A FRACTION OF WHAT OTHER KNOWN OPTIONS WILL COST!

THE THRUSTER SYSTEM WILL COST A FRACTION OF THE DAMAGE COST OF A SINGLE EVENT LIKE ALLISON OR HARVEY!

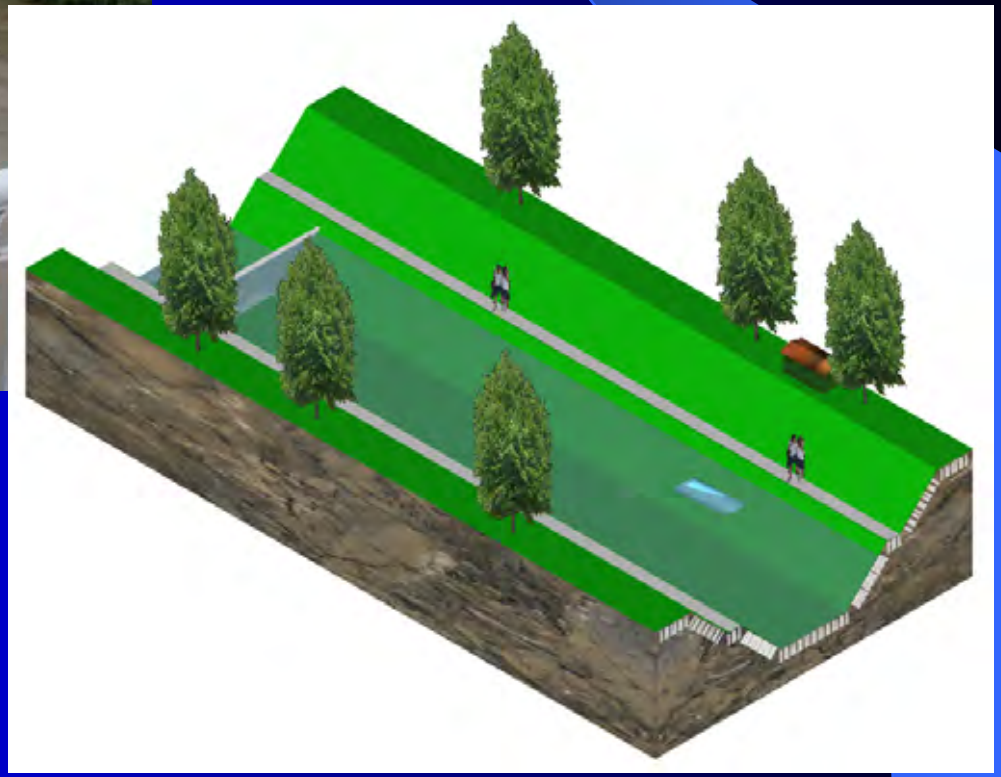
THE THRUSTER SYSTEM WILL REJUVENATE THE DOWNTOWN BAYOU SYSTEM!

HOUSTON THRUSTER FLOOD CONTROL PROJECT

TRANSFORM THIS

(MCKEE STREET DOWNSTREAM)

TO THIS



HOUSTON THRUSTER FLOOD CONTROL PROJECT

THIS PROJECT WILL PREVENT OR MINIMIZE FLOODING, SAVE LIVES, SAVE BILLIONS IN DOLLARS OF DAMAGE, PROTECT THE UPSTEAM BAYOUS, REDUCE THE UPSTREAM FLOOD PLAIN LEVEL, INCREASE PROPERTY VALUES, AND REJUVENATE PARTS OF HOUSTON

IT IS AN APPROPRIATE INVESTMENT IN THE FUTURE OF HOUSTON

CONTACT US AT bfbaugh@uh.edu for more information

HOUSTON THRUSTER FLOOD CONTROL PROJECT

UNIVERSITY OF HOUSTON
Cullen College of Engineering

Beta SUBSEA SYSTEMS
A DIV. OF BAUGH CONSULTING ENGINEERS, INC.

From: Crystal D
To: CESWT-BBTRS
Subject: [Non-DoD Source] Public comment
Date: Friday, May 31, 2019 1:45:33 PM
Attachments: BBTRS Comment Form_1.pdf

Hi!

I have attached my public comment for the BBTRS.

Thanks,
Crystal

US Army Corps of Engineers®

Comment Form Instructions

Buffalo Bayou and Tributaries Resiliency Study
Public Information Meeting

Comment Period: April 29, 2019 through May 31, 2019

The U.S. Army Corps of Engineers is in the process of developing the Buffalo Bayou and Tributaries Resiliency Study which includes both Flood Risk Management and a Dam Safety Modification Study (DSMS). The flood risk management will identify and evaluate alternatives to reduce flooding upstream of the Addicks and Barker Dams as well as below in the Buffalo Bayou watershed. The DSMS will identify and evaluate alternatives to address Phase II measures of the Dam Safety Modifications on Addicks and Barker. Public input is especially needed regarding alternatives to consider.

USACE Galveston District
ATTN: BBTRS
P.O. Box 1229
Galveston, TX 77553-1229

Place Stamp Here

USACE Galveston District
ATTN: BBTRS
P.O. Box 1229
Galveston, TX 77553-1229

Public Information Meeting

US Army Corps of Engineers®

Comment Form (Formulario do Comentarios Escritos)

Buffalo Bayou and Tributaries Resiliency Study

Comment Period: April 29, 2019 through May 31, 2019

We need your thoughts and comments on the effort to develop the Buffalo Bayou and Tributaries Resiliency Study. Your participation is a key element in producing a meaningful and useful feasibility report. The information presented at the public information meetings can be viewed at the website listed below. Please write your questions, comments, or suggestions in the space provided below. Feel free to use additional pages if needed. Forms may be submitted at the public information meeting, mailing to the address on the back of this form, or emailed to BBTRS@usace.army.mil. Comments should be postmarked by May 31, 2019. Thank you for your participation!

-01 Thank you for accepting public comments! I think the overall plan and strategy is great. However, I would like the Corps to consider buyouts in flood-prone areas both upstream and downstream of the dams. Some homeowners have flooded multiple times and HCFCD doesn't generally buy out homes in this part of the county as it is not in one of their designated areas. I would like to see levies around neighborhoods be considered as well.

-02 Regardless of whether tunnels or diversion channels are used, it seems obvious that the dams need a higher dischrage capacity than 16,000 cfs given testimony in upstream trial that many upstream properties would still have flooded even with gates open the entire time. I hope that the Corps

-03 does NOT excavate the entire reservoir. There are a lot of community resources- dog parks, playing fields, war memorials, and trails- that would be disrupted at a minimum. I think selective excavation or an additional

-04 upstream reservoir(s) would be a better idea. I also think that extending the dams would be extremely disruptive as well and should only be considered as a last resort.

Name Nombre: Crystal Dunbar

Affiliation Afiliación:

Address Dirección de Envío:

City Ciudad: Houston

State Estado: TX

Zip Code Código Postal: 77084

E-mail Correo Electrónico: CrissyRose21@yahoo.com

Additional information can be found at:
https://www.swg.usace.army.mil/Missions/Projects/Buffalo-Bayou-and-Tributaries-Resiliency-Study/

From: Beet Field
To: CESWT-BBTRS
Cc: Beet Field
Subject: [Non-DoD Source] Suggestions for evaluation
Date: Friday, May 31, 2019 1:53:04 PM

-01 1. Change Barker and Addicks reservoirs from “retention” to “flood” management”. No consideration should be given to Buffalo Bayou paths, benches, etc.The bayou should NOT be protected recreational areas. It is to move water. Period. The rate of water from the reservoirs should always be at maximum rates, with downstream flooding of current (no future) houses and businesses the only constraint. Change current operating manuals written years ago to better protect actual houses instead of bayou recreational features. Outflows should always be at maximum rates just short of flooding any houses.

-02 2. Instead of pumping water to the ocean, send it to areas of drought (hill country, west Texas). Do in concert with hill country reservoirs management. State wide grid of large diversion channels/pipes/pumps. Think 100-200 years water management plan. Don’t waste non-salt water.

-03 3. Dredge reservoirs to double their capacity, even if you have to eventually pump it out to get it to the bayou.

-04 4. Moratorium on any new single home construction in Harris County. Counties beyond?

-05 5. More culverts under Clay road. Used to have more. Don’t just count on bridge widening.

-06 6. Massive program to increase water retention throughout the county. Recreation use; irrigation use; financial incentives (grants); partnership with USACE to get use of heavy equipment on private property to create retention ponds.

-07 7. If you pipe water to the shore, have several destination options in case of offshore storm “pushback”.

-08 8. Routine dredging of all creeks and bayous. All to be dredged every 20(?) years. Make channels wider if possible.

9. New reservoirs upstream.

-09 10. Review of historical rain forecasts versus actual as it pertains to making decisions about reservoir release rates. My belief is that forecasts have OVERSTATED rain thus overly constrained reservoir outflow targets. Insert this bias so reservoir rate targets can be increased.

Glad to discuss in person if desired.
281-630-0653

Thanks to David Mackintosh for alerting me to this forum for comments (today, May 30). It’s sad that this forum and its deadline wasn’t better advertised.

Regards,

Howard Sears
4759 Hidden Springs Drive
Houston, Texas

Sent from my iPhones

No Substantive Comments Identified

Comment #: ES229

From: elizabeth@jdmetals.com
To: CESWT-BBTRS
Subject: [Non-DoD Source] Buffalo Bayou and Tributaries Resiliency Study
Date: Friday, May 31, 2019 2:02:26 PM

Property Acquisition- is the property you wish to acquire The Villages of Bear Creek? If not when FEMA is done revising the flood maps will that area be listed that it is in the flood pool? If so when homeowners purchase Flood insurance will the Floods be considered an "Act of God" or "Man Made Flood"? If it is considered a man made flood will the insurance pay the claims? or will there be special "Flood Pool Insurance"?

Increase Reservoir Storage - How do you plan to do this? Property Acquisition? Stop allowing structures to be built in the Reservoir? Dredge out the Reservoir? if that is the plan what level is the water table and then will it become a Lake?

New Reservoir Dam - Where would this be located and how would it impact the community Upstream and Down Stream?

Tunnels - interesting... will these tunnels have pumps to keep the water from backing up? will they be in addition to Buffalo Bayou? as in not a part of?

Modify Existing Discharge Capacity - Since during Harvey the people who flooded would probably say lessen the discharge, While the Martyrs in the Flood Pool wold say increase the Discharge. You can not win that coin toss. Who is more important? The Haves or the Have Nots?

Signage - Yes PLEASE MORE SIGNS that accurately show the location of the Reservoir. Show SIGNS that say Addicks Dam Barker Dam PLEASE USE COMMONSENSE.

Believe be I have more comments I was just made aware of this while Congressman Dan Crenshaw spoke today and Mr. Long said the dead line was today.

Thank you,
Elizabeth Burnham

From: Lee Gunner
To: CESWT-BBTRS
Subject: [Non-DoD Source] Buffalo Bayou & Tributaries Resiliency Study
Date: Friday, May 31, 2019 2:03:07 PM

-01 The proposed option to divert Buffalo Bayou waters to Brays Bayou is ill conceived. Brays Bayou has many instances of its own flooding problems which have damaged many homes. Moving Buffalo Bayou flooding to Brays Bayou is ridiculous.

Lee Gunner

From: Nat Uresti
To: CESWT-BBTRS
Subject: [Non-DoD Source]
Date: Friday, May 31, 2019 2:09:32 PM

Dear Army Corps of Engineers:

I live in Westbury Subdivision

The Westbury neighborhood is part of the Brays Bayou Watershed that lies just upstream of the Texas Medical Center. We experienced significant flooding during Harvey. In addition, significant flooding of Westbury also occurred during Memorial Day weekend 2015 and again on Tax Day 2016. If water from Buffalo Bayou were to be released into Brays Bayou during the next Harvey event our exposure to flooding here in Westbury would be even worse than Harvey. There is no reason to solve Buffalo Bayou's problem by making it Brays Bayou's problem.

-01

As such, I do not think that the proposed diversion of water from Buffalo Bayou would be a good solution for Westbury and the Brays Bayour Watershed.

Nat Uresti
5807 Ludington Dr
Houston, TX 77035

Comment #: ES232

From: Martha Johnson
To: CESWT-BBTRS
Subject: [Non-DoD Source] Comment on Buffalo Bayou and Trib. Study by USACE
Date: Friday, May 31, 2019 2:22:48 PM
Attachments: USACE-Buffalo-Study-comment-20190531.pdf

Hello USACE--
Attached please find my comments on the recent study of Buffalo Bayou and Tributaries for Houston/Harris County flood management.

Many thanks,

Martha Johnson

Public Information Meeting

US Army Corps of Engineers

Comment Form (Formulario do Comentarios Escritos)

Buffalo Bayou and Tributaries Resiliency Study

Comment Period: April 29, 2019 through May 31, 2019

We need your thoughts and comments on the effort to develop the Buffalo Bayou and Tributaries Resiliency Study. Your participation is a key element in producing a meaningful and useful feasibility report. The information presented at the public information meetings can be viewed at the website listed below. Please write your questions, comments, or suggestions in the space provided below. Feel free to use additional pages if needed. Forms may be submitted at the public information meeting, mailing to the address on the back of this form, or emailed to BBTRS@usace.army.mil. Comments should be postmarked by May 31, 2019. Thank you for your participation!

First, thank you for your work on this preliminary study of flood water management in the Harris County Flood Control District and beyond. It's a shame that all the land west of Houston--formerly farms and wetlands--were allowed to be sold and paved over with new development without any thought to future management of storm water and the consequences of flooding a high-density urban area.

My comments about the USACE study are:

(1) The emphasis on Buffalo Bayou minimizes the historical flooding in the Brays Bayou watershed dating back to Tropical Story Allison in 2001. While Project Brays is underway and certainly welcome, I am not confident it will be enough. I wish the study had looked at both Bayous as part of an integrated flood management study.

(2) In particular, the slide (18) depicting possible projects was alarming due to the little arrow pointing down to Brays Bayou. Any effort to offload Buffalo Bayou by re-directing to Brays Bayou is not good. According to the Harris County Flood Control District, Buffalo Bayou Watershed has a population of 444,602 while Brays Bayou Watershed has pop. 717,198. Any extra pressure on Brays Bayou endangers that many more people.

-01

(3) Yes to new reservoirs!

Name Nombre: Martha Johnson

Affiliation Afiliación: Homeowner

Address Dirección de Envío: 4600 Holt St.

City Ciudad: Bellaire

State Estado: TX

Zip Code Código Postal: 77401

E-mail Correo Electrónico: martha7796@gmail.com

Additional information can be found at:
https://www.swg.usace.army.mil/Missions/Projects/Buffalo-Bayou-and-Tributaries-Resiliency-Study/

From: Stephen Polnaszek
To: CESWT-BBTRS
Subject: [Non-DoD Source] Flood Mitigation in the Brays Bayou Watershed
Date: Friday, May 31, 2019 2:32:37 PM

Dear Sirs:

I was very appreciative of the enlightening USACE presentation on the resiliency study made to the Brays Bayou Association on May 20, 2019.

Briefly, the two actions going forward that I believe would most benefit the area by reducing the number of homes and businesses affected by flooding from extraordinary rain/storm events would be:

-01

1. Short term: Redevelop the Ruffino Hills Landfill site into a storm water detention basin/park with trails. It is the largest tract of land that could be repurposed for storm water detention in the whole Brays Bayou watershed.

-02

2. Long term: A tunnel running from near the intersection of South Post Oak Road and Brays Bayou. Despite the huge cost, this makes sense since its construction would take place over, perhaps, decades where the unit cost per year would be a bit easier to fund in the overall fiscal scheme.

If you wish to have more extensive follow-up conversations on these topics, please get back to me with how you may wish to proceed with the extended dialog.

Stephen C. Polnaszek
President, Willow Meadows Civic Club (WMCC)
Vice-President, Neighborhoods to Trails Southwest (NTTSW)
Delegate from the WMCC to Super Neighborhood Council #38, Near Southwest
Stakeholder from NTTSW in Super Neighborhood Council #36, Brays Oaks
Stakeholder from NTTSW in Super Neighborhood Council #37, Westbury
Harris County Election Judge, Precinct 255

Comment #: ES234

From:	John Davis
To:	CESWT-BBTRS
Cc:	Josh Kahn; Maria Parker (mparker@sklaw.us); Jerry Strickland; James Williams
Subject:	[Non-DoD Source] Buffalo Bayou and Tributaries Resiliency Study
Date:	Friday, May 31, 2019 3:21:56 PM

JOHN K. DAVIS

LANGFORD ENGINEERING
1080 WEST SAM HOUSTON PARKWAY NORTH, #200
HOUSTON, TEXAS 77043

May 31, 2019

To whom it may concern,

As a Harris County resident dating back to pre-Hurricane Carla and a practicing registered civil engineer in the Texas Gulf Coast area since 1974, much of my work since 1979 has been in the Cypress Creek and Buffalo Bayou watersheds. I am writing for two express purposes:

1). To express my gratitude to the USACOE and Harris County Flood Control for undertaking the ***Buffalo Bayou and Cypress Creek Resiliency Study***. This study is very significant and will dramatically affect today's generation and many generations to come.

2). To ask you to consider increasing the scope of said study to factor in this perspective and supporting subsidence data:

-01 The US Geological studies indicate changes in the Chico and Evangeline aquifers. This has caused ever-increasing land subsidence in Harris County. The conversion to surface water, begun in 1985, has greatly decreased or stopped the subsidence in south and east Harris County. My concern, however, is the 4-to-5 feet of subsidence that has continued in the west and north areas of Harris County which: a). activates geological faults; and b). reduces the hydraulic grade for Buffalo Bayou and Cypress Creek in their lower reaches.

- In the case of Cypress Creek, the subsidence was approximately 2.1 feet between 1978 and 2001 according to Harris County Flood Watch

System data for their I-45 and Cypress Creek Flood gauge. The subsidence farther upstream on Cypress Creek at Katy Hockley is 0.4 feet. This has resulted in a general overall increase in the hydraulic grade from Waller to I-45, thus increasing the carrying capacity of the channel.

- Downstream of I-45 on Cypress Creek at Cypresswood Drive, the subsidence in the same period of time has been 0.5 feet resulting in a decrease of historical hydraulic capacity between I-45 and Cypresswood. The increased capacity upstream and decreased capacity downstream result in a significant relative water surface elevation increase at I-45 and Cypress Creek.

- This same scenario has occurred in the Buffalo Bayou watershed with the watershed hydraulic grade upstream of the South Piney Point bridge gauging station increasing between the 1980's and 2001. Buffalo Bayou downstream of the South Piney Point Bridge has seen a decrease in the hydraulic grade over the same period of time.

In my opinion the ***Buffalo Bayou Resiliency Study*** will have maximum accuracy, efficacy and impact if it includes consideration of subsidence on Cypress Creek downstream of I-45. It is necessary to determine the Cypress Creek conveyance capacity based on a reduced flowline slope, and, thus, a reduced hydraulic grade line. This would include the consideration of having TXDOT raise the I-45 paving at Cypress Creek. I-45 is too critical of an evacuation route to have it impassable during a major disaster. This also would reduce the hydraulic restriction the bridge structure experienced during previous high precipitation events.

-02

As currently proposed, the ***Buffalo Bayou Resiliency Study*** includes a berm or levee on the south side of upper Cypress Creek to reduce watershed spill-over into Addicks Reservoir. This will have a significant consequence not only on upper Cypress Creek but also lower Cypress Creek all the way to Lake Houston. The study scope should be expanded to include lower Cypress Creek.

-03
-04

Sincerely,

John K. Davis, P.E.
John.d@langfordeng.com
713-906-8238 c

Sent from Mail for Windows 10

From: Sesha Duvvuri
To: CESWT-BBTRS
Subject: [Non-DoD Source] Bray"s bayou
Date: Friday, May 31, 2019 3:35:11 PM

-01 | No more water into Bray's bayou please! Diverting water into Bray's bayou to prevent flooding elsewhere is a poor solution to the problem. We live near the bayou and have flooded three times in the last three years. This does nothing to alleviate our fears.
Sesha Duvvuri

From: Neelima Godugu
To: CESWT-BBTRS
Subject: [Non-DoD Source] Commenting on proposal to route more water thru BB
Date: Friday, May 31, 2019 3:36:48 PM

-01 As a 3 time floodee that lives along the BB on S Braeswood and chimney rock, I am highly concerned about the plan that routes more of the water through BB. The current widening of the bayou won't definitely be able to handle an event like Harvey let alone additional water.
You will be essentially flooding more of our neighborhood to save properties west of us.

We will fight this proposal tooth and nail as it sounds ridiculous to flood our homes and businesses even more than what is happening currently.
Sincerely
Neelima Godugu
8324574562

From: Bill C
To: CESWT-BBTRS
Subject: [Non-DoD Source] Buffalo Bayou and Tributary Resiliency Study
Date: Friday, May 31, 2019 3:39:08 PM

> U.S. Army Corps of Engineers Galveston District
> Attn: BBTRS
> P.O. Box 1229
> Galveston, TX 77553-1229
>
> Dear United States Army Corps of Engineers Representative:

> Thank you for the opportunity to provide community input based upon the Buffalo Bayou and Tributaries Resiliency Study. As Richard Long pointed out this morning during a community meeting alongside the sandbar in Horsepen Creek, today is the deadline for residents to submit comments and feedback.

Form Letter #1

I concur with many of the recommendations being made by the Barker Reservoir Flood Prevention Advocacy Group. I would like to add my support to the following:

> 1. Limit both the Barker and Addicks Reservoir flood pool to the current government owned land.
> 2. Increase conveyance out of the Barker and Addicks Reservoirs. Solutions we support include flood tunnel(s), diversion channels, channel improvements and/or bypass.
> 3. Improve and restore channel conveyance and capacity upstream and downstream of Barker and Addicks Reservoir and within the reservoir, including dredging, desilting and de-snagging.
> 4. Add capacity within Barker and Addicks Reservoirs through select excavation in the reservoirs. (Ex. 737-acre project that has been presented to the Corps located due east of Canyon Gate in the Cinco Ranch Area.)
> 5. Add intermediate detention/retention capacity upstream and downstream of Barker and Addicks Reservoirs.
> 6. Build infrastructure through a combination of viable solutions to manage Cypress Creek overflow to prevent Cypress Creek runoff from adversely impacting the Barker and Addicks watersheds.
> 7. Do not increase the Barker or Addicks Reservoir flood pool by extending spillways.
> 8. Carefully consider the destruction to existing neighborhoods, schools and businesses via large scale buyouts.
>

As the United States Government awaits the ruling on the upstream Addicks and Barker reservoir litigation, I believe it is critical than ahead of any type of final determination from the judicial branch that the ACOE accept a reality that the current “protect downstream” at all costs is a financial folly for the entire United States Government.

I may be one of the few outside the ACOE and current litigation process who has read that legislation, and subsequent appropriate requests. There are no limits I could find in that legislation which are imposed upon what the ACOE could be doing upstream while still maintaining the safety of downstream.

While FEMA and other agencies are separate branches of the government from the ACOE, as a taxpayer, I assure you that the distinction between agencies is not made each year when I file my tax return. It is all one big United States Treasury Department that is collecting taxes on behalf of the entire United States Government through the IRS.

The costs to FEMA for flood insurance payouts, disaster grants, administrative management and wasted of taxpayer dollars when a flawed system of contract disaster specialists is repeatedly activated over and over again makes no sense when real cooperation between county and federal agencies, along with selected infrastructure improvements could prevent many homes from flooding.

Frankly, this blame shifting back and forth between the ACOE and Harris County Flood Control District about who has the responsibility for clearing out the waterways fools no one who lives in an area repeatedly threatened by

major weather events. Social media is way ahead of any carefully prepared responses to questions regarding the waterway maintenance.

-01 I encourage the ACOE to “walk the talk" and grant Harris County sufficient access to environmentally restricted areas in order the clear those waterways within the reservoirs. From what I am told on the other side of this issue, HCFCD does not apply for a permit knowing it will not be approved.

ACOE telling residents, as occurred again this morning during a one-on-one between ACOE personnel and concerned homeowners, that HCFCD has not applied for an access permit is a reality, but not a problem solver.

This morning I listened as one of the retired engineers from the Addicks Reservoir area explained to me in a one-on-one that the upstream detention ponds were not an answer.

While he recited reservoir capacity numbers in connection with the limited storage available in detention ponds, I could not help but wonder why he thought smaller immediate steps for helping resolve a larger problem would not be viable.

I finally asked him if more than ten, twenty or thirty detention ponds were created upstream of Addicks and Barker, and they saved even 20% of the homes from flooding during a Harvey type event, could he support that decision? His answer was that we need the ACOE and HCFCD to address the entire problem so homes do not flood.

I then asked him what if the weather event turned out to be comparable to the Memorial Day Flood of 2015, and upwards to 50% of the homes flooded four years ago were dry as a result of numerous detention ponds, would that be worth it???

He was quite correct in his response as he walked off. He is an engineer and I am not.

Regardless, I will continue to support the drainage tunnels and creation of additional detention ponds on both private and public land.

For what it is worth in your considerations, we have lived in this house one month shy of 40 years. Our address is 4735 Blueberry Hill Drive, in the Bear Creek subdivision. We are not a part of any litigation.

According to media accounts of the recent upstream hearing, the ACOE is already well aware that our home elevation is at 108.3. The flood waters from Harvey were the first to reach our sidewalk, driveway or into our home in almost four decades.

We have looked over the various scenarios from Harvey regarding why our home flooded.

Had we known on September 1, 2017 what we know today about house flooding, various land elevation statistics, and most importantly the time involved with resolving issues that could save our home from flooding again, we would have been among the many selling out an empty shell to an investor.

Our home has been renovated. We have paid out a considerable amount from savings in order that our home once again has the same level of livability that it had before Harvey. However, money does not purchase confidence in the safety of our home. There is no Amazon department that will deliver that product to us in 48 hours or less.

Every home that flooded during Harvey, the Tax Day Flood or Memorial Flood a year before that has a story. Few of those chapters have a real life positive outcome.

The ancient definition defines government as an entity with a purpose to protect and keep order. We live upstream and nevertheless are looking for the Army Corps of Engineers to make sound decisions which will reasonably protect all of us in both the short term and longer term. Thank you for your time.

Respectfully,

William P. and Karen J. Cook

From: Lisa Graiff
To: CESWT-BBTRS
Cc: Beth White; Place, Charles
Subject: [Non-DoD Source] HPB Comments - Buffalo Bayou and Tributaries Resiliency Study
Date: Friday, May 31, 2019 3:57:37 PM
Attachments: 190531-HPB-USACE-BBTRS Comments-Final.pdf

Dear BBTRS Coordinator,

Please find attached the Houston Parks Board's comments on the Buffalo Bayou and Tributaries Resiliency Study (BBTRS).

We are commenting as an organization that has worked on parks throughout the Houston Region since 1976. Our Beyond the Bayous 2020 project to create a 150-mile network of connected parks and trails along Houston's major waterways has been ongoing since 2012. Through this project we have accumulated in-depth knowledge about working along and with our bayous.

We would like to offer our expertise to help with your ongoing studies in the area, including the BBTRS and your broader watershed study, and would like to be included in the stakeholder committees for both. Please let us know the process for joining those committees.

If you have any questions or would like any additional information please let us know.

Best Regards,

Lisa Graiff

Beyond the Bayous Project Manager

Houston Parks Board

On behalf of

Beth White

President & CEO

Houston Parks Board

lisag@houstonparksboard.org <mailto:lisag@houstonparksboard.org>

300 North Post Oak Lane

Houston, TX 77024

O: 713-942-8500 x44

M: 832-335-0078

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The Houston Parks Board is a 501 (c) (3) non-profit organization dedicated to creating, improving, protecting and advocating for parks for everyone.

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PARKS BY YOU

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300 North Post Oak Lane
Houston, Texas 77024
713.942.8500
Fax 713.942.7664
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May 31, 2019

USACE Galveston District
Attn: BBTRS
P.P. Box 1229
Galveston, TX 77533-1299

RE: Buffalo Bayou and Tributaries Resiliency Study (BBTRS) Public Comments

Dear BBTRS Coordinator:

The Houston Parks Board is a nonprofit 501(c)(3) dedicated to providing access to quality parks and greenspace for all people. Houston Parks Board creates, improves, protects and advocates for parks for everyone. We offer the following comments regarding the Buffalo Bayou and Tributaries Resilience Study (BBTRS) after attending public meetings on the subject. Thank you for the opportunity to comment.

We are encouraged that USACE intends to explore nature-based solutions to flood control, including land conservation and restoration measures, in the BBRTS. Nature-based solutions are typically less expensive to implement and maintain. The National Wildlife Federation noted in its "Harnessing in Nature" report © 2016 National Wildlife Habitat, every $1 spent in preventive measures saves $4 in disaster recovery costs. That same report notes that protecting open space and existing natural habitats are among the most cost-effective ways of reducing risks to communities, by noting the following: -01

> *"Deploying natural defenses is good not only for the environment but also for the economy. Natural or nature-based approaches can be as, or more, cost effective as traditional man-made structures and by avoiding or reducing community risks, can decrease taxpayer liabilities for disaster response and recovery and result in lower insurance costs to property owners."*

We have the following questions and comments resulting from your presentations and our past discussions:

1. Previously USACE reached out to the Houston Parks Board as a potential partner in integrating recreation and ecological restoration as a component to the future plans for the Reservoirs. We believe we are in the position to help on these fronts and would like to take part in the BBTRS stakeholder committee. -02
2. Please provide clarity on what "tributaries" means in the BBTRS? White Oak and Brays Bayous were mentioned in the presentation, but it wasn't clear as to whether these tributaries will be included in the study.
3. We are also interested in learning more about the watershed analysis/assessment study that was mentioned at your meetings, and how we might participate in that process.
4. Although non-structural methods of flood control are mentioned, restoration is not listed as a non-structural option. Enhancement and restoration of prairies and wetlands can increase soil storage capacity and should be considered.
5. We request that the non-structural option mention incorporate nature-based solutions, including the following: -03
   - Protection of existing and potential conservation lands
   - Restoration of prairies and woodlands to increase storage capacity
   - Protection and enhancement of wetlands
   - Acquisition, protection, and restoration of additional prairies, forests, wetlands, and floodplain/floodway lands for conservation purposes, especially within the Cypress Creek, Addicks, and Barker watersheds
   - Preservation of lands along the various tributaries to Addicks and Barker Reservoirs

-03

- Acquisition of properties where appropriate to increase the width of the protective riparian corridor which would keep people from harm's way, decrease flood losses, and increase access to open space and recreational facilities

-04

6. Future development along riparian corridors have the potential to exacerbate/compound problems downstream. Solutions should include measures that would ensure pre-development rates of run-off and no significant change in water flow patterns for future developments.

-05

7. Every project alternative include nature-based approaches. No potential alternative should be composed of traditional engineering solutions alone, but should also incorporate the enhancement and creation of wetland, woodland, and floodplain areas to maximize benefit and resiliency.

-06

8. The prioritized solutions should include social, economic, and environmental benefits to the community, including improved water quality, carbon capture, and availability of areas for recreation, wildlife, local agriculture, and improved quality of life as well as flood reduction benefits. How will the cost-benefit analysis include these additional benefits to provide a more complete picture of the efficacy of the alternates analyzed and chosen?

Thanks for your consideration and we look forward to working with USACE towards a more resilient Greater Houston region.

Sincerely,

Beth White
President and CEO
Houston Parks Board

Houston Parks Board is a nonprofit 501(c)(3) dedicated to providing access to quality parks and greenspace for all people. Houston Parks Board creates, improves, protects and advocates for parkland in the Greater Houston region. Since 1976, the organization has utilized public-private partnerships and its extensive philanthropic, government and community relationships to improve parks large and small.

Houston Parks Board is currently leading the transformational Bayou Greenways 2020 project to create a 150-mile network of connected parks and trails along Houston's major waterways.

From: Sherry Hibbert
To: CESWT-BBTRS
Subject: [Non-DoD Source] Brays Bayou
Date: Friday, May 31, 2019 4:06:07 PM

I have lived in homes within 1/2 - 1 mile of Brays Bayou in the Meyerland area for more than 60 years so I know it never flooded until 2001. Fortunately, the flood caused by Hurricane Harvey was the first to impact me. I hope it will also be the last. I've reviewed the USACE presentation. Please focus on efforts to alleviate Brays' flooding and do not for any reason undertake any action whatsoever that could potentially divert more water into it.

-01

Thank you.
Sherry Hibbert

From: Luis A. Gonzalez
To: CESWT-BBTRS
Subject: [Non-DoD Source] Comments on the Buffalo Bayou and Tributaries Resiliency Study
Date: Friday, May 31, 2019 4:08:56 PM
Attachments: image002.png
image003.png
ASCE Houston Branch-Coms-BBTRS-R1.pdf

To Whom It May Concern:

The Houston Branch of the Texas Section of the American Society of Civil Engineers appreciates the opportunity to comment on the above referenced resiliency study. Our comments are provided in the attached letter.

Sincerely,

Luis A. González, PE
President
ASCE Houston Branch
713-968-9378
president@ascehouston.org
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LUIS A. GONZALEZ PE
Senior Associate

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Houston Infrastructure.
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May 31, 2019

United States Army Corps of Engineers
P.O. Box 1229
Galveston, TX 77553-1229
Via Email: bbtrs@usace.army.mil

RE: Comments on the Buffalo Bayou and Tributaries Resiliency Study

To Whom It May Concern:

The Houston Branch of the Texas Section of the American Society of Civil Engineers appreciates the opportunity to comment on the above referenced resiliency study. Our comments are provided below.

1. **Sustainable Infrastructure:** Alternatives should be evaluated using the Institute for Sustainable Infrastructure's ENVISION rating system. Alternatives with the highest score in the rating system should be considered further for implementation. See sustainableinfrastructure.org for additional information about the rating system. -01

2. **Non-Stationary Climate:** Alternatives should be developed to handle rainfall amounts that have a 1% annual chance (or greater) occurring in the year 2100. Rainfall depths appear to be trending upwards and the 1% annual chance event will likely be larger at that time. -02

3. **Nature-Based Alternatives:** Alternatives should be developed and evaluated that include nature-based approaches, such as land acquisition and preservation, wetland creation, natural stable channel design approaches, and similar concepts. -03

4. **Two-Dimensional Modeling of Non-Riverine Areas:** Alternatives should be evaluated using 2-D modeling approaches, especially in areas not adjacent or near bayous or channels. -04

5. **Triple-Bottom-Line Net Cost/Benefit Estimations:** Alternatives should be evaluated using a more comprehensive assessment of net benefits and costs. Net costs should be estimated for traditional engineering economics inputs, such as construction costs, operations costs, maintenance costs, land acquisition costs, and labor cost. But environmental costs should be estimated as well. These should include the value of any diminished ecosystem services, lost habitat, lost carbon sequestration, lost oxygen production, lost heat island mitigation, lost recreational opportunities, and similar well studied metrics. Social costs should also be estimated for each alternative. These should include displaced cultural or historical features, lost recreational opportunities, lost or diminished quality of life, diminished views and character, light pollution impacts, mobility, and similar aspects. Net -05

economic, social, and environmental benefits should also be estimated for each alternative. These would include the value of avoided property damage (times the likelihood of loss), the number of people benefiting from a reduced risk of inundation, the value of any increase in social values or benefits (recreation, views, safety, mobility, etc.), the value of any increase in environmental values or benefits (habitat, ecosystem services, etc.). The net present value of all economic, social, and environmental BENEFITS minus the net present value of all economic, social, and environmental COSTS should be calculated for all alternatives and the alternative with the highest net present value of total triple bottom line NET BENEFITS should be recommended for implementation. -05

Again, we appreciate the opportunity to comment on the scope of the study. If there are any questions about our comments, please don't hesitate to contact us.

Very truly yours,

AMERICAN SOCIETY OF CIVIL ENGINEERS – HOUSTON BRANCH

Luis A. Gonzalez, P.E.
2018-2019 President

American Society of Civil Engineers
Houston Branch
P.O. Box 420472
Houston, TX 77242

From:	Auggie Campbell
To:	CESWT-BBTRS
Cc:	Weber, Andrew R CIV USARMY CESWG (USA); Russo, Edmond J Jr CIV USARMY CESWG (USA)
Subject:	[Non-DoD Source] West Houston Association Comments
Date:	Friday, May 31, 2019 4:10:27 PM
Attachments:	USACE Letter 5.31.19.pdf

Good afternoon,

Please see the attached letter from the West Houston Association. Thanks you for your work—we appreciate the constructive approach that your office has developed and look forward to working with you in the future.

Have a great weekend!

Auggie
281-222-4484

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Westhouston.org

May 30, 2019

USACE Galveston District
ATTN: BBTRS
P.O. Box 1229
Galveston, Texas 77553-1229

COL Zetterstrom and Mr. Weber,

The West Houston Association and its members appreciate your efforts and the efforts of your colleagues in support of the Buffalo Bayou and Tributaries (BBT) Resiliency Study. This study is critically important to our region, and it is critical for our region that resources and efforts arrive as soon as possible.

We respectfully request that your office submit documentation supporting an interim chief's report as soon as possible. As recently as September 6, 2018, LTG Semonite submitted an interim Chief's Report to Congress for the Brownsville Resacas Study. We believe a similar action is warranted to expedite the restoration and modernization of the BBT project, especially within the Addicks and Barker Reservoirs. -01

Potential non-federal sponsors include the Harris County Flood Control District, Willowfork Drainage District, the City of Houston, and several other entities affected by flooding during Hurricane Harvey. The West Houston Association is committed to helping find solutions to reduce flooding and increase resilience across the region.

Please let us know if we can be of assistance in this matter and aid your office with its mission and our shared goals.

Respectfully,

Heath Melton
West Houston Association
Chairman

Augustus "Auggie" Campbell
West Houston Association
President & CEO

Comment #: ES242

From:	Scott Jones
To:	CESWT-BBTRS
Cc:	Stokes, Bob
Subject:	[Non-DoD Source] GBF Comments on BBTRS
Date:	Friday, May 31, 2019 4:57:55 PM
Attachments:	image002.png image003.png image004.png Galveston Bay Foundation_BBTRS_scoping comments.pdf

Dear BBTRS Coordinator-

Please find attached the scoping comments of the Galveston Bay Foundation on the Buffalo Bayou and Tributaries Resiliency Study.

Thank you for the opportunity to comment.

Sincerely-
Scott

Scott A. Jones
Director of Advocacy

sjones@galvbay.org
Phone: 281-332-3381 x 209 | Fax: 832-284-4982
Blockedwww.galvbay.org
1100 Hercules Avenue, Suite 200, Houston, TX, 77058

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GALVESTON BAY FOUNDATION

May 31, 2019

USACE Galveston District
Attn: BBTRS
P.O. Box 1229
Galveston, TX 77533-1299

Re: USACE Buffalo Bayou and Tributaries Resiliency Study Scoping Public Comments

Dear BBTRS Coordinator,

The Galveston Bay Foundation (GBF), a 501(c)(3) non-profit organization established in 1987, provides the following comments on the scoping of the BBTRS. These comments supplement those submitted today, May 31, 2019, on our behalf as a member of the Conservation Flood Mitigation Group (CFMG). We helped develop the CFMG letter and signed on to it because it
-01 reflects our desire to see nature-based solutions for flooding used to the maximum extent possible before turning to traditional engineering designs. Those nature-based solutions can avoid the unintended environmental consequences of more traditional methods.

As related to the physical, chemical and biological health of Galveston Bay, we have concerns
-02 about the unintended impacts of some of the conveyance measures being considered in BBTRS. Most concerning to us are the tunnels being proposed to drain water from the west side of the Houston Metroplex to the Houston Ship Channel and Galveston Bay.

-03 As the CFMG letter states, there should be no flooding impacts transferred to communities downstream of implemented BBTRS measures. Likewise, negative impacts to the water quality and flow regimes of the downstream tributaries of Galveston Bay by floodwaters being unnaturally
-04 accelerated through these tunnels should be minimized. Therefore, impacts to water quality and water quantity on the ecology of these estuarine nursery tributaries and Galveston Bay must be properly studied and addressed in the environmental impact statement.

Similarly, other conveyance measures being considered which will speed up flows of pollutant-laden flood waters, such as channel improvements and bypasses, must be properly studied for their impacts to downstream portions of the tributaries and Galveston Bay.

We note that our Bay is one of the most productive estuaries in the country, providing for a robust economy and thousands of jobs dependent upon its ecological health. The Bay is also the place
-05 where various forms of contact recreation takes place, therefore the health of the recreating public enjoying wade fishing, kayaking, windsurfing, and swimming is critical. Rapidly accelerated flows may contain higher concentrations of bacteria, viruses and other human pathogens that may

1100 Hercules Avenue, Suite 200, Houston, TX 77058 • Phone 281-332-3381 • Fax 832-284-4982

-05 otherwise be reduced if they were able to be retained upstream for longer periods of time. We urge the USACE to exhaust the use of nature-based solutions that retain water on the land and can mimic more natural flow regimes, thus better protecting Galveston Bay, before resorting to measures which speed flows downstream.

We appreciate your efforts on this study and look forward to working with you to find solutions to our flooding issues that best protect people and the environment. Thank you for the opportunity to comment.

Sincerely,

Scott A. Jones
Director of Advocacy
The Galveston Bay Foundation

Comment #: ES243

From:	MaryAnne Piacentini
To:	CESWT-BBTRS
Cc:	Russo, Edmond J Jr CIV USARMY CESWG (USA); Weber, Andrew R CIV USARMY CESWG (USA); Mark Klein; Michael Huffmaster; Elisa Donovan; Wesley Newman
Subject:	[Non-DoD Source] Re: Buffalo Bayou and Tributaries Resiliency Study - Public Comments
Date:	Friday, May 31, 2019 4:58:25 PM
Attachments:	BBTRS KPC Comments 05.31.2019 Final V2.pdf

Please use this version instead. I apologize but there was a typo in the address.

Mary Anne

Mary Anne Piacentini
President & Chief Executive Officer
Katy Prairie Conservancy
5615 Kirby Drive, Suite 867
Houston, Texas 77005-2458
Phone: 713.523.6135, ext. 4003
Fax: 713.583-0683
Cell: 281.851.8762
maryanne@katyprairie.org
katyprairie.org

Give today and help save the flat out wonderful Katy Prairie!

The Katy Prairie Conservancy is a nonprofit land trust dedicated to preserving an ecologically vital tallgrass prairie and associated wetlands on Houston's far west side for the enjoyment and benefit of all.

On Fri, May 31, 2019 at 4:18 PM MaryAnne Piacentini <maryanne@katyprairie.org> wrote:

> Dear BBTRS Coordinator,
>
> Attached please find comments on the Buffalo Bayou and Tributaries Resiliency Study from the Katy Prairie Conservancy.
>
> Thank you for the opportunity to comment.
>
> Mary Anne
>
> Mary Anne Piacentini
> President & Chief Executive Officer
> Katy Prairie Conservancy
> 5615 Kirby Drive, Suite 867
> Houston, Texas 77005-2458

Phone: 713.523.6135, ext. 4003
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Katy Prairie Conservancy

May 31, 2019

USACE Galveston District
Attn: BBTRS
P.P. Box 1229
Galveston, TX 77553-1229

Dear BBTRS Coordinator:

The Katy Prairie Conservancy, a nonprofit land trust working to protect land on the Katy Prairie, has attended a number of public meetings regarding the Buffalo Bayou and Tributaries Resiliency Study and serves on the stakeholder committee of the study. We offer the following comments on the materials presented at the public meetings held on April 30, May 2, May 7, May 8, and May 9, 2019. Thank you for the opportunity to comment.

Edmond Russo, Jr., Deputy District Engineer for Programs and Project Management, U. S. Army Corps of Engineers, Galveston District, made the following comments to the Medill on the Hill news service and which was published March 24, 2019:

[Engineers] would try to control nature, but we know we can't. . . . In the case we only had engineered solutions, the system is more brittle and prone to failure. There's always a bigger disaster than what you design for.

We couldn't agree more with Dr. Russo's comments. For that reason, we were surprised and disappointed to find such a thoughtful incorporation of natural solutions missing from the framing and potential solutions of the Buffalo Bayou and Tributaries Resiliency Study.

-01

Though the USACE presentation materials acknowledge an "opportunity" to "engineer with nature and implement nature-based features," the absence of these strategies from potential measures, alternatives development, and maps of strategies, is troubling. Since these more detailed descriptions of the study also fail to include nature-based solutions, we are concerned that nature-based solutions will not adequately be considered as real alternatives. We hope that real nature-based solutions will be given serious consideration and their cursory inclusion does not mean that nature-based solutions are only receiving lip service while privileging traditional engineered solutions.

-02 Among USACE projects there are good examples of successful contributions of less costly nature-based solutions with additional offering of ecological co-benefits. When the USACE engaged in a project to improve the function of Southern California's Prado Dam – another high-hazard structure impounding a flood control reservoir upstream of a heavily urbanized watershed similar to the area in which the Addicks and Barker Dams are located – the Corps took a thoughtful, multi-pronged approach. Key among these strategies was the widespread and intensive establishment of wetlands to provide flood control services. In conjunction with these efforts, the State of California established the Santa Ana River Conservancy to coordinate projects across many stakeholders to enhance the watershed, provide numerous co-benefits, and ensure resiliency.

-03 Similarly, the preservation of wetlands in the watershed of the Charles River in Massachusetts successfully reduced flooding in Boston and Cambridge at a significantly lower price compared to traditional engineered solutions – about 1/10th the cost of a engineered dam solution and a solution that did not require operational or replacement costs.

The National Wildlife Federation noted in its 2016 *Harnessing in Nature* report, that *every $1 spent in preventive measures saves $4 in disaster recovery costs.* That same report stated that protecting open space and existing natural habitats are among the most cost-effective ways of reducing risks to communities,

> *Deploying natural defenses is good not only for the environment but also for the economy. Natural or nature-based approaches can be as, or more, cost effective as traditional man-made structures and by avoiding or reducing community risks, can decrease taxpayer liabilities for disaster response and recovery and result in lower insurance costs to property towners.*

We must not let the West Coast or the East Coast be the only areas with creative approaches to watershed success. Indeed, the Buffalo Bayou watershed has two key advantages over those areas: 1) significant portions of the watershed remain available for long-term preservation, and 2) a long-established conservancy partner already exists in this area.

-04 While the Buffalo Bayou watershed continues to become more highly urbanized, opportunities remain today to protect those portions of the watershed which have not already been converted to residential and commercial development. Additionally, the Katy Prairie Conservancy has the capacity and experience developed in the course of nearly three decades of conserving coastal prairie to provide flood mitigation, ensure healthy communities, and deliver multiple ecological co-benefits. The existence of available land and a leading land conservation partner are two key local assets that can be leveraged to improve the region's resiliency.

-05 Some of the alternatives suggested by USACE would lead to the outright removal of natural flood mitigation solutions from the toolbox of options to improve resiliency. Currently, the study recommends determining if a third reservoir northwest of Addicks Reservoir should be constructed, that, in itself, presupposes the primacy of engineering approaches and the

-05 consolidation of risk which has characterized the strategy that led to the development of the first two reservoirs as a means, among other things, of enabling further development in inherently flood-prone areas. It is imperative that should a third reservoir be constructed at all, it not be

-06 built on or negatively impact lands protected by the Katy Prairie Conservancy, as these lands already provide benefits to the region which would be lost if subsumed in a reservoir. Any new projects should provide cumulative benefits rather than replace benefits already in place.

-07 There is also no clear reason why only a potential reservoir is identified for the tributaries of Addicks Reservoir while potential solutions for Barker Reservoir also include detention basins.

-08 Expanded protection of Katy Prairie lands, including restoration to improve the infiltration and natural detention of such lands, is much preferable to a new reservoir. Both Addicks and Barker watersheds would benefit from more aggressive and focused conservation and restoration of lands upstream.

As the USACE public materials and USGS data so clearly demonstrate, the five highest water levels in each Buffalo Bayou, Addicks Reservoir, and Barker Reservoir have all occurred since 1992. In many cases these events have all come about in just the last decade. Very clearly, conditions and processes have changed in these watersheds.

During that same time the capacity of Addicks and Barker Reservoirs has diminished. Years of sedimentation and growth of invasive species have decreased the holding capacity of these reservoirs. We applaud the USACE's efforts to improve Addicks and Barker Reservoirs to recover

-09 this eroded capacity. The removal of such materials, combined with a return of the landscape to a wet prairie or tallgrass prairie, will increase the volume of water that can be held during a heavy rainfall event through both infiltration and storage. In addition, it would be advantageous to consider the advisability of further excavating the reservoirs to increase storage capacity.

Another major issue is the change in upstream land use. As the USACE itself acknowledges in its Overview – Flood Risk Management storyboard, "historic urban expansion has modified the way water moves throughout the watersheds. Less surface runoff can be absorbed than historic

-09 conditions resulting in more water entering the bayous and reservoirs." With this truth in mind, the protection of existing conservation lands absolutely must constitute a key alternative in this analysis. Yet much more than that, the acquisition of additional lands for conservation is vital.

<u>We have been given a tremendous opportunity in the Buffalo Bayou watershed. Let's take advantage and not make a mistake that will last generations.</u>

-10 In addition to the huge local opportunity for conservation of available lands, the *Engineering With Nature Atlas* itself provides several strategies for thoughtfully addressing riparian systems and flooding. Many components of different projects, both in terms of projects and processes, are entirely applicable to Buffalo Bayou and should be thoroughly analyzed here. Overall, the current approach as described entirely misses out on two of the central tenets of Engineering with Nature: 1) using natural processes and 2) broadening benefits.

Therefore, we request a thorough and thoughtful incorporation of nature-based solutions to the study framework, including an entire project alternative built around and including the following:

- Protection of existing (as well as potential) conservation lands, especially on the Katy Prairie
- Use of the natural capacity of the Katy Prairie as well as native vegetation to hold water
- Restoration of prairies to increase storage capacity
- Acquisition, protection, and restoration of additional prairies, forests, wetlands, and floodplain/floodway lands for conservation purposes, especially within the Cypress Creek, Addicks, and Barker watersheds
- Preservation of lands along the various tributaries to Addicks and Barker Reservoirs -11
- Acquisition of properties where appropriate to increase the width of the protective riparian corridor which would keep people from harm's way, decrease flood losses, and increase access to open space and recreational facilities
- Protection and enhancement of wetlands
- Landscape-scale restoration of wet prairie
- Landscape-scale restoration of tallgrass prairie
- Promotion of land uses such as rice fields to improve storage during flood events
- Contracting with local farmers for maintenance of nature-based infrastructure
- Establishment of riparian woodlands to slow flood flows
- Detention in the upper reaches of tributaries, along natural water courses, should be identified.

We urge the USACE to take additional action to protect the region's floodways and floodplains. -12 No structures should be allowed within floodways or deep within the floodplain. Existing -13 structures should be removed and no new structures should be constructed within these areas. -14 The USACE may also consider requiring properties within the floodplain to be floodproofed, but only if this does not negatively impact neighboring properties. Levees that constrict floodways -15 must be prohibited, as this results in more water and increased flooding downstream.

-16 Weirs and mini-reservoirs along waterways, especially in the upper reaches of the watershed, should be considered to slow and hold back water in a more natural manner. In the Addicks watershed, this would involve the acquisition of land along Bear Creek, Langham Creek, and South Mayde Creek. Without action, development along these corridors will exacerbate/compound problems downstream. Priority should also be given to saving existing -17 wetlands and creating or enhancing historic wetlands, and preserving or re-establishing riparian habitats, all of which provide wildlife habitat, improve water quality by filtering pollutants, desynchronize floodwaters, and facilitate groundwater recharge.

-18 We request every project alternative include nature-based approaches. No potential alternative should be composed of traditional engineering solutions alone but should also incorporate the enhancement and creation of wetland, woodland, and floodplain areas to maximize benefit and resiliency. For example, in developing detention, it is preferable to use natural wetlands instead

-18 of engineered wetlands; in enhancing bayous, the use of native plant material should be followed as a "best practice," etc. In all cases, projects must be analyzed not only for the cost-effectiveness of the initial capital costs but also for the long-term operating, maintenance, and replacement costs in addition to the human costs. Nature-based solutions can result in longer
-19 project life (often perpetual) with a lower risk of failure during a severe storm event. In addition, nature-based projects provide social, economic, and environmental benefits to the community, including improved water quality, carbon capture, and availability of areas for recreation, wildlife, local agriculture, and improved quality of life.

As it stands, there seems to be little tangible planning underway to legitimately incorporate and analyze nature-based solutions. In identifying the array of alternatives, the USACE notes that nonstructural elements should be considered. However, the National Fish and Wildlife Foundation it its 2016 *Natural Defenses in Action Report*, notes that the USACE defines
-20 "nonstructural means" to include such things as "modifications in public policy, management practices, regulatory policy, and pricing policy." We request that this section be renamed as Natural Infrastructure, Nature-Based Solutions, and Non-structural Measures and expanded substantively to encompass the full range of nonstructural approaches.

Let's give these natural approaches a fair shake as alternatives of the first resort.

James Dalton, Director of Civil Works, USACE, says it best: "When we leverage natural systems and processes through integrated water resources management, we can develop more sustainable solutions and systems. By broadening our view of potential outcomes, we can find ways to deliver a broader array of services, benefits, and value from investment made in infrastructure systems."

Let's take Director Dalton at his word. We must aim for a resilient, effective approach to watershed management. One key USACE Engineering with Nature partner, Cees Brandsen, Managing Director of Rijkwaterstaat in the Netherlands, put it this way: "Engineering with Nature approaches are essential to improve our flood safety in an adaptive manner, while also achieving other societal goals such [as] ecosystem services...or recreation."

That's a vision and future we can all work for and achieve, but only if we lean heavily on nature-based solutions.

Sincerely,

Mary Anne Piacentini
President and CEO

cc: KPC Board of Directors
KPC Advisory Board of Directors

From: Cynthia Neely
To: CESWT-BBTRS
Cc: cynthia.neely7@gmail.com; zach.despart@chron.com; Lisa Gray
Subject: [Non-DoD Source] Comments on USACE"s Buffalo Bayou and Tributaries Resiliency Study
Date: Friday, May 31, 2019 5:01:40 PM

To the U.S. Army Corps of Engineers:

I'm the wife of an Army veteran and attended one of your Public Information Meetings in behalf of our family of four people and four pets - all who had to be rescued when our home was flooded from the reservoir release after Hurricane Harvey. Our home is not in a flood plain or flood way. It would not have flooded in Harvey had the reservoir water not been released. If the City of Houston and Harris County officials had done their jobs to protect citizens (adding more detention, updating aging infrastructure, creating more stringent building rules for developers, etc.) then perhaps the dams would not have been placed in such jeopardy as to require such a release.

Storm water runoff must be stopped and slowed BEFORE it floods our streams and bayous and over-taxes our dams. PREVENTION must become common practice. Storms can't be stopped, so how they are managed is critically important or else one day Houston will be hit so hard it could easily be wiped off the map. USACE knows this well.

-01 It will take more than just improving the dams themselves to protect us. It will take detention/drainage projects and improvements throughout the region, addressing storm water before it ever reaches the dams.

-02 USACE must stop looking the other way when they see City/County permitting developments in harm's way. At your Public Meeting, an engineer said it wasn't the job of USACE to police where the City/County permits construction. My veteran husband, however says it IS the Army's job to protect us. The USACE should have blown the whistle years and years ago on the City and County's horrible practice of allowing construction in dangerous areas near these dams.

The U.S. government should not stand by and watch the City of Houston/Harris County continue to put citizens in jeopardy and then inevitably go back to Uncle Sam with a hand out for rescue and recovery. The Army and yes, the President should hold these administrations accountable and make them do their job to keep us safe. We know prevention is far less expensive than recovery yet the City of Houston and Harris County are being allowed to continually pick the pockets of Americans everywhere by not being PROACTIVE.

Thank you for rescinding the permit for a new development in a floodplain near Katy - this is the kind of guts we need in order for Houston to survive.

-03 It will take a multitude of approaches and an official partnership of USACE, state, city, and county governments to manage storms in Houston. It will take a regional approach and regional cooperation. USACE should consult with flood prevention groups like Residents Against Flooding and those in Kingwood, Meyerland, and Cypress Creek. These folks know first hand what has been happening for years in their neighborhoods. Tap into their combined knowledge. Groups like Saving Buffalo Bayou, Rice University's SSPEED Center, the Houston Flood Mitigation Consortium, and others should be brought into your office to brainstorm TOGETHER and find projects/comprises that will work. Some flood "prevention" projects are actually making flooding worse! Potential projects should be vetted by a variety of stakeholders. THIS IS NOT HAPPENING. We have professional engineers, hydrologists, flood experts in our civilian ranks, too.

Someone has to take control of this mess which has now been allowed to reach critical mass. The City of Houston and Harris County governments have failed and will continue to fail until a higher authority steps in. Just this week, Houston City Council approved a new development in a 100-year flood plain. This is a cycle that simply must be stopped! Obviously the City and County Flood Control are not up to the task. In

fact, they are the problem.

Engineers have confided that they sometimes must provide misleading flood map modeling in order to get a developer's business. I've seen evidence first hand of such manipulation that is currently allowing 900 homes to be built on the old Pinecrest Golf Club property. Water simply cannot do what the maps "prove" it can. But so it goes.

Now is the time for a sit-down with stakeholders, environmentalists, flood survivors and experts like Jim Blackburn and Sam Brody, and not just City and County officials.

Until prevention is paramount, all the dam improvements and giant tunnels in the world won't save us. The Army should take emergency, preventative action.

Thank you,
Cynthia Hand Neely
Advisory Board, Residents Against Flooding
Community Leader, Higher Ground (largest flood survivor non-profit in the U.S.)
Memorial Super Neighborhood 16 Delegate
403 Hollow Drive
Houston, TX 77024
713-562-1483

From: jhrver@aol.com
To: CESWT-BBTRS
Cc: jhrver@aol.com
Subject: [Non-DoD Source] Comments on the Buffalo Bayou and Tributaries Resiliency Study
Date: Friday, May 31, 2019 5:01:57 PM

Dear Sir or Madam,

Having attended USACE organized meetings and presentations about this study I offer the following comments.

-01 1) I have a concern that by not including the impact on the Cypress Creek watershed in the study the study is not taking a "system approach' which is the desired approach. In July, 2017 I participated in a meeting with Col. Zetterstrom in which he said that flooding effects to downstream residents of Cypress Creek would be included in the proposed 216 study. Recently I have heard that Mr. Weber of the USACE has suggested that a separate 216 study should be initiated to address downstream flooding issues in the Cypress Creek watershed. The approach proposed by Col. Zetterstrom was welcomed as a system approach to issues which not only impact the Addicks and Barker watersheds but also affect downstream along Cypress Creek. Now two years later a suggestion is made that an additional study be initiated for Cypress Creek. This will not only result in a significant delay to addressing the long recognized flooding issues in Cypress Creek but will negate the benefit of a system wide approach to addressing the flooding issues related to the upper Cypress Creek watershed, the overflow into Addicks, and the downstream portions of Cypress Creek. I believe this approach is contrary to the approach which was shared by those of us who voiced wide support for the 216 study with our Federal legislators, and whose understanding was that the 216 study would incorporate Cypress Creek.

-02 -03 2) I have a serious concern that while a study is underway to look for solutions provided by a "third reservoir" (perhaps better phrased as a "Cypress Creek solution") the land needed to implement a solution will no longer be available. For example, within the last year, a 521 acre development was announced north of US 290 between Waller and Prairie View. The acreage straddles an upper portion of the Mound Creek tributary to Cypress Creek. The purchase was closed on 6/30/18. Improvements on US 290 and the presence of the 99 tollway are only accelerating development. We will be facing a situation similar to Brays Bayou or lower Cypress Creek where land needed for detention is no longer available. There must be urgency in identifying the acreage needed to implement any possible solution or we will be looking at a solution that is too late to implement. Innovative approaches to land acquisition such as up front purchase of at least the 100 and 500 year floodplains or options on acreage should b considered. If some of the the land is not needed in the future for implementation, it could be sold.

-04 3) I have a concern about the development regulations in place not being adequate. If our regulations stating that development will have no adverse impact were in fact adequate, we would have no concerns about future development. The fact that we are concerned about the impact of future development on flooding tells us that we do not believe the current regulations are achieving their desired goal. This must be taken into account in any study the USACE undertakes.

Thank you for the opportunity to provide comments. I would welcome the opportunity to discuss these issues further.

Jim Robertson
12422 Normont Drive
Houston, TX 77070
281-370-8243

Comment #: ES246

From: Naomi McElroy
To: CESWT-BBTRS
Subject: [Non-DoD Source] Comment on the Buffalo Bayou and Tributaries Resiliency Study
Date: Friday, May 31, 2019 5:06:30 PM
Attachments: Cypress Creek Flooding Comments.pdf

Please see my comments attached.

Sincerely,
Naomi E. McElroy

US Army Corps of Engineers®

Comment Form Instructions

Buffalo Bayou and Tributaries Resiliency Study
Public Information Meeting

Comment Period: April 29, 2019 through May 31, 2019

The U.S. Army Corps of Engineers is in the process of developing the Buffalo Bayou and Tributaries Resiliency Study which includes both Flood Risk Management and a Dam Safety Modification Study (DSMS). The flood risk management will identify and evaluate alternatives to reduce flooding upstream of the Addicks and Barker Dams as well as below in the Buffalo Bayou watershed. The DSMS will identify and evaluate alternatives to address Phase II measures of the Dam Safety Modifications on Addicks and Barker. Public input is especially needed regarding alternatives to consider.

USACE Galveston District
ATTN: BBTRS
P.O. Box 1229
Galveston, TX 77553-1229

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Public Information Meeting

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Comment Form (Formulario do Comentarios Escritos)

Buffalo Bayou and Tributaries Resiliency Study

Comment Period: April 29, 2019 through May 31, 2019

We need your thoughts and comments on the effort to develop the Buffalo Bayou and Tributaries Resiliency Study. Your participation is a key element in producing a meaningful and useful feasibility report. The information presented at the public information meetings can be viewed at the website listed below. Please write your questions, comments, or suggestions in the space provided below. Feel free to use additional pages if needed. Forms may be submitted at the public information meeting, mailing to the address on the back of this form, or emailed to BBTRS@usace.army.mil. Comments should be postmarked by May 31, 2019. Thank you for your participation!

-01 Thank you for providing the opportunity to provide comments on the Buffalo Bayou and Tributaries Resiliency Study. I reside in the Cypress Creek Watershed and am keenly aware of the need to address the current flooding risk along Buffalo Bayou and the surrounding areas. In the presentation provided online (https://www.swg.usace.army.mil/Portals/26/5-Weber%20190327%20SPF%20BBTRS%20UPDATE%20-%20v2.pdf), the entire Cypress Creek water shed is highlighted on the "Project Location" slide. However, the storyboards presented during the public scoping meetings (https://www.swg.usace.army.mil/Portals/26/BBT_FINAL%20Scoping%20Mtg%20Storyboards_2x3.pdf) seem to indicate only Upper Cypress Creek is included. Also, the Potential Storm Water Conveyance Measures appear to indicate levees/floodwalls between Upper Cypress Creek and the Addicks Reservoir Watershed. While I can appreciate the desire to minimize eventual flow to Buffalo Bayou, I am concerned that any activity taken to reduce discharge options for the Cypress Creek Watershed without concurrent relief measures will only serve to move the flooding risks, not remove them. The entire Cypress Creek watershed has experienced several significant flooding events in the past 5 years, including during Hurricane Harvey (2017) and the Tax Day (2016) and Memorial Day (2016) Floods. While we were fortunate enough to have escaped any structural flooding during any of the events, our yard flooded during Harvey (within 3 feet elevation of our house) and we know several friends and neighbors who flooded during one, two, or even all three of these events, despite their houses sitting outside the 100-year flood plain. Were the Cypress Creek Watershed prevented from draining towards the Addicks Reservoir Watershed, I fear our house and many others would also be at risk. What steps are the Army Core of Engineers taking to ensure that the mediation plans for Buffalo Bayou do not result in worse flooding for people elsewhere?

Name Nombre Naomi McElroy

Affiliation Afiliación

Address Dirección de Envío 2710 Barclay Lake Lane

City Ciudad Spring

State Estado TX

Zip Code Código Postal 77388

E-mail Correo Electrónico jobswingaldy@gamil.com

Additional information can be found at:
https://www.swg.usace.army.mil/Missions/Projects/Buffalo-Bayou-and-Tributaries-Resiliency-Study/

From: CMC
To: CESWT-BBTRS
Subject: [Non-DoD Source] Comments
Date: Friday, May 31, 2019 5:23:53 PM

-01 I do not want to see a levee above Addicks Reservoir that would restrict run off from Cypress Creek as Cypress Creek is already heavily burdened & flooding in several places.

As well, it would seem that Cypress Creek should be considered/studied in the overall view of flooding in Harris County.

Kind regards,
Claudette McCamley

Comment #: ES248

From: J S Gee
To: CESWT-BBTRS
Subject: [Non-DoD Source] Public comment submitted: The Future of Brays Bayou Flooding
Date: Friday, May 31, 2019 5:33:39 PM
Attachments: Buffalocomment JSG 5-31-19.pdf

Please accept by comments as a resident of Houston, Texas whose family has two homes near Brays Bayou and flooded for the Very First Time during Hurricane Harvey.

Thank you,
J S Gee

US Army Corps of Engineers

Public Information Meeting

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-01

Per page 18 of the USACE presentation,
Tunnels sound great, what is the cost and time frame?
Two Diversion Points >> places storm water into Brays Bayou that had previously flowed into Buffalo Bayou.
Who makes the Decision of When and Quantity of water release into Brays ?
How can Brays support additional water flow?

My family has two homes in the Brays Bayou area. Moved to Meyerland in 1967 and NEVER had any floods.
Thank you for accepting the public comments.
JSGEE1@gmail.com 5/31/2019

Name
Nombre _____

Affiliation
Afiliación _____

Address
Dirección de Envío _____

City
Ciudad _____

State
Estado _____

Zip Code
Código Postal _____

E-mail
Correo Electrónico _____

Additional information can be found at:
https://www.swg.usace.army.mil/Missions/Projects/Buffalo-Bayou-and-Tributaries-Resiliency-Study/

US Army Corps of Engineers

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P.O. Box 1229
Galveston, TX 77553-1229

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P.O. Box 1229
Galveston, TX 77553-1229

Comment #: ES249

From: Rick Turrentine
To: CESWT-BBTRS
Subject: [Non-DoD Source] Comments Form - Buffalo Bayou Study - Public Information Meeting
Date: Friday, May 31, 2019 5:46:19 PM
Attachments: 2019-05-31 Addicks-Barker Comments form (filled-out).pdf

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Dear Army Corps of Engineers:

Please find attached my Comments Form for the captioned from the earlier Public Information Meetings.

Please contact me if I may provide additional information.

Regards,

Rick Turrentine

mobile 713-854-3881

14902 Carolcrest Dr.

Houston, Texas 77079

email: rickturrentine@comcast.net

Public Information Meeting

US Army Corps of Engineers

Comment Form (Formulario do Comentarios Escritos)

Buffalo Bayou and Tributaries Resiliency Study

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Addicks Reservoir AND Barker Reservoir BOTH need the following work:

1) REMOVE all trees and undergrowth vegetation within the confines of the reservoirs

2) DREDGE each reservoir to remove 70+ years of silt and sediment and lower the ground elevation of each reservoir to where they were in 1942.

-01

Resistance to the above work on the grounds that the reservoir areas are "wetlands" is unacceptable because both Addicks Reservoir and Barker Reservoir are dedicated flood control facilitres and were designated for flood control long before any "wetlands" legislation was enacted.

Name Nombre: Rick Turrentine

Affiliation Afiliación: area homeowner

Address Dirección de Envío: 14902 Carolcrest Dr.

City Ciudad: Houston

State Estado: TX

Zip Code Código Postal: 77079

E-mail Correo Electrónico: rickturrentine@comcast.net

Additional information can be found at:
https://www.swg.usace.army.mil/Missions/Projects/Buffalo-Bayou-and-Tributaries-Resiliency-Study/

No Substantive Comments Identified

Comment #: ES250

From: Beverly
To: CESWT-BBTRS
Subject: [Non-DoD Source] Brays Bayou
Date: Friday, May 31, 2019 6:19:41 PM

Hello,
As a Harvey victim in Meyerland, I am not in favor of any reservoir release that will affect Brays Bayou.
Thank you for taking the time to read this email.
Beverly Schorre

Sent from my iPhone

From: John Polisini
To: CESWT-BBTRS; Goforth@vonniecobbrealtors.com
Subject: [Non-DoD Source] USACE - Brays Bayou Flooding Issues
Date: Friday, May 31, 2019 6:19:43 PM

I am writing to comment on the proposed expenditures, and proposed projects, on various flood control options regarding the greater Harris County area and specifically Brays Bayou.

I suffered a $250,000 loss due to Hurricane Harvey Flooding and the inability of the current flood control programs to handle, or evacuate, flood waters that came over the Brays Bayou as currently constructed, and also as it is being currently modified by the USACE and the HCFCD, among other local entities.

I am in favor of any project that efficiently and quickly drains Brays Bayou. I am adamantly opposed, and will be actively involved against, any project or proposal that redirects water from any other drainage basin from another source or drainage into Brays Bayou.

Each drainage basin should be treated independently and it's flooding issues addressed individually. It is not rational to redirect water from other drainage basins into independent drainage basins. This makes a complex problem even harder to address, plan for, and solve. One drainage basin should not be the solution for another. -01

Stated otherwise, I oppose any project, plan, proposal, whether short term or long term,
that redirects water from any other drainage basin into the Brays Bayou drainage basin. We already can't handle the water that is naturally deposited into our basin. To redirect water from another basin is not the solution to flooding in the Greater Houston area.

Thank you for the opportunity to comment.

Best,

John Polisini
5446 Valkeith Drive
Houston, TX 77096

No Substantive Comments Identified

Comment #: ES252

From: Howard Sacks
To: CESWT-BBTRS
Subject: [Non-DoD Source]
Date: Friday, May 31, 2019 6:32:38 PM
Attachments: BuffaloComment.pdf

Public Information Meeting

US Army Corps of Engineers

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Buffalo Bayou and Tributaries Resiliency Study

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I oppose any plan that would place or has the potential to place stormwater into Brays Bayou that previously flowed into Buffalo Bayou.

The two proposed diversion points at the west end of the watershed would do just that.

Name Nombre: Howard Sacks

Affiliation Afiliación:

Address Dirección de Envío: 9407 Brown Leaf Circle

City Ciudad: Houston **State** Estado: TX, **Zip Code** Código Postal: 77096

E-mail Correo Electrónico: Sackshow e aol. com

Additional information can be found at:
https://www.swg.usace.army.mil/Missions/Projects/Buffalo-Bayou-and-Tributaries-Resiliency-Study/

From: Jordan Macha
To: CESWT-BBTRS
Subject: [Non-DoD Source] USACE - Buffalo Bayou and Tributaries Resiliency Study - BCWK Comments
Date: Friday, May 31, 2019 6:36:02 PM
Attachments: Bayou City Waterkeeper BBTRS Comments 05.30.2019.pdf

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Dear BBTRS Coordinator,

Attached are Bayou City Waterkeeper's comments on the Buffalo Bayou and Tributaries Resiliency Study. Please let us know if you have any comments or would like any additional information. Thank you for your work on this study.

Best Regards,

Jordan Macha

--
Jordan Macha
Waterkeeper & Executive Director
Bayou City Waterkeeper
jordan@bayoucitywaterkeeper.org
713.299.4300