1. Administrative Details


by Agency: Houston "Residents Against Flooding"

Locations: TX

Date Submitted: 06/28/2018

Confirmation Number: f199e9be-c9bf-40cd-906d-f5f2ce314426

Supporting Documents

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2. Provide the name of the primary sponsor and all non-Federal interests that have contributed or are expected to contribute toward the non-Federal share of the proposed feasibility study or modification.

<table>
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<tr>
<th>Sponsor</th>
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<tr>
<td>Houston “Residents Against Flooding” (Primary)</td>
<td>Residents Against Flooding supports that US Congress shall assign USACE to do a Greater Houston Area urban watershed Drainage Improvement Study, appoint USACE as the 1 government Entity in charge of all related engineering construction Projects, &amp; award USACE with 100% Funding in all Congressional Flood-Relief Bills for Houston, including H.R. 8-Water Resources Development Act of 2018, w_Corresponding Senate Bill same # as HR 8; H.R. 5895-Energy &amp; Water Development Appropriations Act of 2019, w_Corresponding Senate Bills S2975,S3024,S3071; &amp; HR 1892 for “Disaster Funding”, w_Corresponding Senate Bills S870,S963,S1108,S1268,S1914,S2050, S2209,S2256,S2597. The proposed Study_Projects shall include USACE assessing all flooding causes in all Cities &amp; 6 Counties in Greater Houston Area;(City of Houston alone encompasses 1300 Square Miles of Jurisdiction, including City of Houston Extra-Territorial Jurisdictions); to evaluate all of Greater Houston Area’s Building &amp; Drainage Laws; to amend any such Laws, if faulty, to prevent_correct flooding; to make recommendations, &amp; implement and/or construct all drainage-relief projects, &amp; thus correct Greater Houston Area’s flooding problems. This Program, into the long term, will reduce flood risks for residents, businesses, &amp; major corporations in Houston, as well as the Port of Houston &amp; Petrochemical Industries in the Region, which is of national economic &amp; safety interest, in that 25% of our Nation’s gasoline &amp; 40% of our jet fuel are produced here. Thus it is tantamount that Greater Houston’s flood problems be surmounted for the sake of our National Security. The Program is truly a bipartisan interest that has broad support across the Constituents &amp; Officials of this entire Region.</td>
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3. State if this proposal is for a feasibility study, a modification to an authorized USACE feasibility study or a modification to an authorized USACE project. If it is a proposal for a modification, provide the authorized water resources development feasibility study or project name.

[x] Feasibility Study
Residents Against Flooding supports a Greater Houston Area urban watershed drainage improvement Study & associated engineering_construction Projects by USACE, who should be appointed as the 1 governing Entity in charge of all Congressional flood-relief Bills for Houston, including H.R. 8-Water Resources Development Act of 2018, with corresponding Senate Bill same # as H.R. 8; H.R. 5895-Energy & Water Development Appropriations Act of 2019, with corresponding Senate Bills S2975, S3024, S3071; & H.R. 1892 for “Disaster Funding”, with corresponding Senate Bills S870, S963, S1108, S1268, S1914, S2050, S2209, S2256, S2597. The proposed Study_Projects shall include USACE assessing all flooding causes in all Cities & 6 Counties in the Greater Houston Area;(City of Houston alone encompasses 1300 Square Miles of Jurisdiction, including City of Houston Extra-Territorial Jurisdictions); to re-evaluate all of Greater Houston Area’s Building & Drainage Laws; to amend any such Laws, if faulty, to prevent_correct flooding; to make recommendations, & implement and_or construct all drainage-relief projects, & thus correct Greater Houston Area’s flooding problems. This Program, into the long term, will reduce flood risks for residents, businesses, & major corporations in Houston, as well as Port of Houston & Petrochemical Industries in the region, which is of national economic & security interest, in that 25% of our Nation’s gasoline & 40% of our Nation’s jet fuel are produced here. Thus it is tantamount Greater Houston’s flood problems be corrected for our Nation’s safety. The Program is a truly bipartisan interest that has broad support across the Constituents & Officials of this entire Region.
5. To the extent practicable, provide an estimate of the total cost, and the Federal and non-Federal share of those costs, of the proposed study and, separately, an estimate of the cost of construction or modification.

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<th>Federal</th>
<th>Non-Federal</th>
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<tr>
<td>Study</td>
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<td>Construction</td>
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Explanation (if necessary)

This Proposal is for a Feasibility Study & newly-authorized USACE Water Resources Development Projects, once Study is completed. This Proposal will work in synergy with existing authorized Buffalo Bayou & Tributaries Flood Risk Management Project, which includes Addicks & Barker Reservoir Dams & Metropolitan Houston Flood Risk Management Bayou Network. The specific Proposal(s) of Proposed Study & Modification would be Flood Risk Management. This includes but not limited to appropriations in US Congress Bills: H.R. 8, 5895, 1892 & Sen.Bills 2975, 3024, 3071. 1. Water Resources Development Act Proposal: Sec.XXX Metropolitan Houston: a. Flood Risk Reduction & Resilience- The Secretary shall determine the feasibility of & proceed with engineering, design, & construction of projects to provide for flood risk management & resilience improvements to rainfall drainage systems in Harris, Montgomery, Waller, Fort Bend, Galveston, & Brazoria Counties, TX. b. Funding- There is authorized to be appropriated $10,000,000,000 for initiation & partial accomplishment of projects described in reports referred to in above subsection "a". c. Obligations- No funds may be obligated in excess of amount authorized by subsection "b" for the projects for flood risk reduction & resilience improvements to rainfall drainage systems authorized by subsection "a" until USACE determines the feasibility of the work to be carried out with such funds is technically sound, environmentally acceptable, & economical. 2. Energy & Water Development Appropriations Act Proposal: SEC.YYY- Using $20,000,000 of the funds appropriated herein, the Secretary of USACE, is authorized and directed to proceed with a feasibility Study, engineering, design, and construction of projects to provide for flood risk management & resilience improvements in the above 6 Counties per Sec XXX above. $1Billion is authorized for appropriation for the initiation & partial accomplishment of projects in this Report.
6. To the extent practicable, describe the anticipated monetary and nonmonetary benefits of the proposal including benefits to the protection of human life and property; improvement to transportation; the national economy; the environment; or the national security interests of the United States.

Once these Projects are completed by USACE, there will be an estimated $1,000,000,000,000 of benefits provided to the Greater Houston Area over a 50-year project life cycle. The protection of human life is inestimable, but there will also be enormous gain with improvement to quality of life & the environment, as well as vast increase of real estate property values; exponential economic growth in all business sectors, including the Port of Houston, especially with recent Panama Canal expansion, combining East-West worldwide trade; the huge megaplex of all Area Petrochemical Refineries, with Houston being the Energy (oil_gas) Capital in the U.S.; Transportation Industries (shipping, trucking, railway, & airway); Houston Medical Center, NASA, and countless satellite adjunct-businesses in the Greater Houston Area. Most of all, as Houston produces 25% of all the Nation’s gasoline and 40% of all the Nation’s jet fuel, it is imperative from a National Security standpoint that Houston’s flood problems be addressed & fixed ASAP. USACE is widely known as The Flood Experts, & should therefore be placed in charge of assessing and repairing, via their engineering & construction expertise, all the flooding problems in the Greater Houston Area, & should be awarded 100% federal funding with all Bills legislated in US Congress for Houston’s Flood Relief, quickly as possible. The flood problems in Houston have reached epic proportions due to many different local jurisdictions whose laws for building_drainage often conflict & contain discrepancies, & allow flawed engineering studies, causing costly construction errors. For these reasons, besides that many watersheds overlap in 6 various Counties in the Region, it is essential, therefore, that only 1 governing entity, USACE, Galveston, be placed in charge to coordinate, evaluate, oversee, and manage all the engineering & construction Studies_Projects for proper & adequate repairation of all flooding problems in Greater Houston Area.
7. Does local support exist? If 'Yes', describe the local support for the proposal.

[ ] Yes

Local Support Description

Houston "Residents Against Flooding" fully supports & is advocating for USACE to be placed in charge of all feasibility studies, and engineering & construction reparations needed to fix all Greater Houston Area’s flood problems, which have caused loss of human life, as well astronomical destruction to homes, businesses, & economy in the Region. We the People, Residents Against Flooding (RAF), believe that USACE, widely-recognized as The Flood Experts, should be appointed as the 1 governing entity to correct all the flooding problems in Houston, & be awarded as the recipient of all US Congressional Bills with appropriations for Houston’s flooding, & that such be allocated with 100% federal funding for all Flood Relief projects in the Greater Houston Area. Residents Against Flooding, being only a 501c3 Non-Profit, unfortunately does not have the Resources to contribute financially to Programs with the scope of such magnitude. Our grassroots organization was formed in YR 2009, primarily by homeowners who suddenly became flood-victims due to man-made flooding, and has since advocated strongly for flood-prevention, receiving great publicity for our endeavors. RAF has closely followed all flooding problems in the Houston area & been actively engaged in attempting to fight against all causes of flooding here. We have continuously reached out to all levels of government, as well as numerous area civic and neighborhood organizations, pushing for real Flood Remediation, but to no avail. Our only hope is that USACE will be placed quickly in charge of surmounting all the flooding problems in the Greater Houston Area by overseeing & managing all federal funding appropriated & allocated for Houston’s Flood Relief, as Flooding in this Greater Area has now reached top-level priority as being a matter of utmost urgent concern for our Country’s economic well-being & National Security.

8. Does the primary sponsor named in (2.) above have the financial ability to provide for the required cost share?

[ ] No
Letter to U.S. Army Corps of Engineers, to US Army Corps of Engineers- Galveston District Office, and to the Assistant Secretary of the U.S. Army of Civil Works Office:

Please find enclosed Residents Against Flooding Basic Proposal for Section 4 of USACE FORM 7001:

"Residents Against Flooding" supports authorization of and appropriations to USACE, Galveston District, for their Metropolitan Houston urban watershed drainage improvement Study, as well as Proposal for its associated Engineering and Construction Projects. We look forward to working with the USACE, Galveston District, on this Program to solve the flooding problems in the Greater Houston Area.

Realization of this Program will make the City more resilient against flooding, which will make residents, businesses, major corporations located in Houston, as well as the Port and Petrochemical Industries in the Region, more sustainable into the long term. Beyond the Region, this is a national economic and security interest, in that 25% of the Nation’s gasoline and 40% of its jet fuel are produced in the Houston area. Thus, it is tantamount & urgent that Greater Houston’s flood problems be corrected quickly for our Nation’s safety. Reducing flood risks and providing associated resiliency through this Program, if authorized and appropriated, is a truly bipartisan interest that has broad support across the Constituents and Officials of the Region. We look forward to the actions necessary to make this happen by appointing USACE, Galveston, as the 1 governing Entity in charge of all Flood Relief Bills for Houston:

To wit, these above-mentioned Bills, and any other Bills pertaining to Greater Houston’s Flood Relief, shall include H.R. 8 -- the Water Resources Development Act of 2018, H.R. 5895 -- Energy and Water Development Appropriations Act of 2019, & HR 1892 which is for “Disaster Funding”, and Senate Bill 2975, S3024, and S 3071.

For HR 5895- corresponding Senate Bills are S2975, S3024, S3071.
For HR 8, there is no corresponding Senate Bill #. Senate may pass HR Bill 8 thru, unchanged,
For HR 1892, corresponding Senate Bills are S870, S963, S1108, S1268, S1914, S2050, S2209, S2256, S2597.

The Project purpose of the proposed Study is to assess the causes of flooding in all the Cities & in all 6 Counties in the Greater Houston area; (City of Houston alone encompasses approximately 1300 Square Miles of Jurisdiction, including City of Houston Extra-Territorial Jurisdictions-ETJ’s); to re-evaluate all of Greater Houston Area’s Building & Drainage Laws; to amend any such Laws, if faulty, to correct/prevent flooding; to make recommendations, & implement and/or construct all drainage-relief projects, & thus correct Greater Houston Area’s flooding problems.

USACE can provide the best expertise in overseeing such projects, given its historic longevity of correcting flood problems in the past and of constructing necessary fortifications that alleviate or stop flooding in areas where people live and work. The City of Houston has especially been plagued recently by repeat man-made flooding in the past decade, often due to City of Houston’s faulty engineering & building requirements. USACE should be appointed as the 1 Government Entity to take charge, as soon as possible, over Greater Houston Area’s flooding problems which have reached epic proportions, due to rampant building with massive amounts of cement, but without proper drainage, particularly since March 2013 when Houston City Planning & Development Dept rewrote, as lobbied for by private developers & builders, and passed by City Council Vote, a big change into the City’s Building Code Chapter 42, to increase by four (4) times the amount of building (cement) allowed on each (1) Acre of ground, while Houston’s Public Works & Engineering Dept, which arbitrarily governs City drainage/ detention pond laws, (politically-driven by & favoring private developers who do not want to detain their own Rain Run-Off, i.e., pay for detention ponds on their own Sites), did nothing to increase the commensurate amount of drainage & detention pond requirements, concomitantly. But with so much cement now replacing groundswell, and without enough mitigation being provided through proper or adequate drainage & detention ponds, as a result, excessive flooding has occurred in homes, businesses, and streets during heavy rain storms in the Houston Area. Neither underground drain pipes, creeks, ditches, bayous, dams, nor reservoirs, now overflowing beyond capacity, can handle this tremendous increase of cement replacing ground, displacing Rain Run-Off which has no place to go or empty into, & Harris County (which covers most of City of Houston) does not have jurisdiction or authority to override City of Houston Building & Drainage Laws; Harris County dictates only what City is allowed to dump into their (County’s) waterways; hence, confusion exists as no one is in charge, so that engineering & construction are at loggerheads** hence, flooding abounds. Other Cities & Counties in Greater Houston Area also have their own building & drainage laws, which also are not in sync. Moreover, the several watersheds in Greater Houston Area overlap in these Counties. TX DOT is yet another jurisdiction with its own set of drainage rules. These are additional reasons as to why 1 government Entity, USACE, which is unbiased, non-partisan, & scientifically-driven, should be appointed and placed in charge, & should be awarded all federal funding in all Congressional Bills, which should be appropriated with 100% federal expense, to fix all flood problems in the Greater Houston Area, which encompasses 6 surrounding Counties. Further, appointing USACE as the 1 Government Entity in charge of fixing the Greater Houston Area’s flooding will also resolve the most critical matter of utmost urgency: sustaining our Nation’s defense and economic security.

* Section 10 has 3 PDF Uploads for further explanation & Appendices with Engineering Studies/Documentation supporting this Basic Proposal.

Further, in Cover Letter for Section 10 PDF Uploads, please click these hyperlinks that correspond to same links merely typed on this Letter:

Below Paragraph 5 of Cover Letter (just above Appendix A), please see the NOTE contained therein: “NOTE: IF further engineering studies, and explanation thereof, are needed to support the basic thesis, ideas, or statements in this Letter, please call Cell 713-775-2443 or email loisdmyers@gmail.com. See 4 minute Video where Lois Myers speaks at City of Houston City Council 6/18/2018: http://houstontx.swagit.com/play/06182018-1776. Move bottom cursor of TV Screen to 44 Min, 50 Sec (ends 48 Min, 32 Sec) to witness in live-action the discrepancy of City & County flood rules & authority~ hence the need for 1 independent, unbiased government entity, USACE, to be placed in charge of overseeing/managing Greater Houston Area’s flood problems. Thank you.”

In APPENDIX B of Cover Letter, please see Heading: “Briar Branch Detention Basin or Pond Study, causing Flooding:” http://www.houstontirz17.org/files/8113/9965/1788/Feb20201220Board20Meeting20RDS20and20W14020Basin20Final.pdf. This Pond is otherwise known on the Houston TIRZ 17 Website as the “W140 Detention Basin”.

In APPENDIX E of Cover Letter, please see Heading: “Questionable Study: Memorial Drive Project @ Q Beltway 8; No Detention Pond here: “A few pps of Preliminary Engineering Report(See for all pps 70-90) re. underground pipe connection: WBeltway8 to Memorial Dr (but Detailed Eng.Drawings not available to Public).”
Map Document

(This is as uploaded, a blank page will show if nothing was submitted)
Map of 6 Texas Counties in the Greater Houston Area.pdf
Additional Proposal Information

(This is as uploaded, a blank page will show if nothing was submitted)
Cover Letter for Section 10 on USACE Form 7001- & Appendix A (PART 1).pdf
Greater Houston’s Flooding Problem has reached epic & epidemic proportions, due to engineering & construction drainage errors, as well as inconsistencies and discrepancies in the various local governments’ faulty drainage/detention pond & building laws, often politically-driven, such as those governed by the City of Houston whose jurisdiction encompasses approximately 1300 Square Miles, including its several ETJ’s (Extra-Territorial Jurisdictions), besides other jurisdictions in Greater Houston Area. Not only are many of City of Houston laws not in sync with Harris County Flood Control District standards and neither of these authorities has control over the other, so that many drainage problems are not resolved but multiple other Counties in the Greater Houston Area have their own sets of regulations for drainage, whereas, unfortunately hundreds of watersheds in widespread Greater Houston overlap these Counties, making control over flood prevention even more difficult here.

Therefore, all the above factors collectively make it imperative that ONLY 1 independent Government entity be placed in charge to evaluate, manage, and oversee the Greater Houston Area, with regard to all Congressional Bills awarded to fix the flooding problems in this entire region.

Moreover, many engineering studies conducted for new redevelopment in various places in this vast region have not been done accurately; yet these flawed studies have been used as the basis for commercial development and construction. Another problem is massive cement building, replacing groundswell, but without detention ponds or if any are of inadequate size/configuration, thus causing man-made flooding in the Area.

To wit, City of Houston’s (COH) City Planning & Development Department proposed a huge building change to the City Building Code, Chapter 42 which was lobbied for by private commercial developers & builders, and passed through City Council by a Vote in March 2013 to increase by FOUR (4) Times the amount of cement building allowed on each (1) Acre of Ground, and YET at the same time, COH Public Works & Engineering Department (which arbitrarily decides the City’s Drainage & Detention Pond Laws Voting by We the People is not allowed) sat silent and did NOT increase any drainage requirements, concomitantly & commensurately, to handle the Rain Run-Off that would result from such a massive increase of cement on the ground. This was a Recipe for Disaster. After this new Ordinance was passed, Developers & Builders went hog-wild, building on every inch of ground they could find in the 1300 Square Miles of COH’s Building & Drainage Jurisdiction alone. As an example, instead of 7 homes on 1 Acre, now 28 homes could be built on the Acre and yet PWE said nothing about the resulting Rain Run-off created by such massive increase of cement poured on the sprawling, flat terrain in the Greater Houston Area such water has no place to go except into homes & streets and dams, built in the 1940’s, were never designed to detrain or hold this much
displaced rainwater, allowed by local authorities. Consequently, in less than 2 years after March 2013, Houston started having historic floods every year.

Because local governance in building & drainage has gotten out of control by allowing such recklessness & negligence, causing homes, which never experienced flooding before new commercial development encroached~ yet are now repeatedly being flooded in heavy rainstorms due to faulty building/drainage laws allowing massive new cement on the ground, and flawed engineering studies~ and because Houston’s flooding encompasses 6 Area Counties where multiple watersheds overlap in these Counties, each of which has its own building/drainage laws that are not in sync with each other, yet no one is in charge ("too many Chiefs, not enough Indians"), I and many other flood-victim residents, believe, and thus request, that US Army Corps of Engineers, Galveston District~ which is scientifically-driven without political bias~ be placed in charge of all federal and Congressional funding to study, evaluate, oversee, and manage all engineering & reconstruction, to fix the flooding problems in the Greater Houston Area. USACE, Galveston, should be awarded 100% all federal funding for engineering studies, infrastructure design, flood reparations, and construction, to include authorization & appropriations for a Metropolitan Greater Houston urban watershed drainage improvement Study & all associated engineering/construction Projects.

USACE is widely-recognized as being THE Flood Expert; when disasters occur in the world, USACE is deployed to design & construct, to make things whole again. There is no place in more dire need of USACE, to fix flooding problems, than in the Greater Houston area which is the Energy Capital of our Nation. Ensuring Houston’s safety & stability is of vital significance from both an economic as well as “national security” standpoint, as 25% of gasoline and 40% of jet fuel in the US is produced in Houston. What would U.S. do if Houston flooded when/if we were at war? Therefore, it is critical that USACE, Galveston, be appointed as the Number 1 Entity to be in charge of fixing Houston’s flood problems.

Realization of such Program will make the Greater Houston Area more resilient against flooding, which will make residents, businesses, major corporations located in Houston, as well as the Port of Houston & Petrochemical Industries in the Region, more sustainable into the long term.

Reducing flood risks and providing associated resiliency through these Programs, if authorized and appropriated, is a bipartisan interest that has broad support across Constituents and Officials of the region. We look forward to the actions necessary to make this happen.

If any questions, please call 713-775-2443 to contact Lois Dickson Myers, a Houston resident who, like 1000+ others in her neighborhood suddenly experiencing Greater Houston’s flood
problems, became a 3-Time Houston Flood-Victim in past 10 years in a home owned 40 years not in any floodplain & never flooded prior to local government jurisdictions' permitting of poor engineering & reconstruction in the area.

Below is a list of flawed engineering studies & faulty construction projects in the City/TIRZ 17, as exemplary of such errors in many other areas in Houston, evincing the need for USACE to be appointed as the 1 Entity in charge of correcting all the flood problems in Greater Houston Area:

1. **Brickhouse Gully Project**- Houston Residents believe a flawed engineering study was done for Metro National, a Developer who wants to build 800-900 new homes + 35 Acres of future commercial buildings on its former Pine Crest Golf Course, 3080 Gessner; Houston, TX 77080. This Project, adjacent to & flowing into Brickhouse Gully, the 8th lowest gully in all of Texas, with a very fast flow-rate, creating even greater flooding, will flow into White Oak Bayou. Thousands of older homes along this Gully & Bayou have already flooded. Please see Report below, showing flaws in this recent Brickhouse Eng. Study which allowed such new construction to be permitted, without Developer providing enough and/or proper mitigation to prevent additional flooding in surrounding areas. Hopefully, USACE, Galveston, will review this Engineering Study as residents believe it contains gross errors especially since the Study claims, but does not explain how, 70% of the water in Brickhouse Gully located north of Pine Crest Golf Course, miraculously jumps out of its bed, @ Clay & Gessner Rds, then travels south on Gessner a few hundred feet, then suddenly makes a 90-degree turn to east, veering across the Golf Course, in a make-believe channel that does not exist in real life, but only in the hypothetical engineering model simulating this. The Eng. Study purports this, so as to lower the base-flood-elevation here, putting the channel in the Floodway, thus manipulating facts & figures, construing that the remainder of the Land is in a 500 Yr Floodplain, so that it can be built upon. It will require a highly-skilled Engineer, such as USACE, to decipher that the math equations and numbers just don’t add up here & something is amiss which will create massive flooding in an already-flooded area, which will only cause extra expense & heartache with even more homes being flooded. Please see **Appendix A** below that contains several pages of documentation, pointing out the flaws of the Developer’s Engineering Study that permitted this Project, which has already commenced with City/County approval, unfortunately. Thus, USACE, the Flood Experts, should be placed in charge as the 1 Governing Entity to assess, evaluate, manage, & oversee all flooding problems in Greater Houston Area.
2. City of Houston/TIRZ 17, a quasi-local government entity established in 1999 to improve Drainage & Mobility in the area (but it has only gotten worse), due to its new commercial reconstruction, poorly built the too-small **Briar Branch Detention Basin** for its Rain Run-Off in 2012, as a City/Private-Developer Project, with Harris County Flood Control District having some jurisdiction over it, in that County has historically controlled Briar Branch Creek, into which ½ the entire Hammerly Watershed empties, which then empties into this Basin, located just east of Bunker Hill Rd & just north of Interstate-10W in Houston, TX 77055. The County recently relinquished its authority over this Creek to the City of Houston, yet the County still regulates how much water may be put into the Creek when it continues east just beyond this Basin, so that the matter of enlarging this Basin is at loggerheads~ it is a “no-man’s land” situation where neither the City nor the County is in control~ hence, proper mitigation is not being provided to the surrounding residential neighborhoods which have already been flooded by TIRZ 17’s commercial development begun here in 2009. When residents recently requested TIRZ 17 to enlarge the Basin, they were given a variety of excuses as to why this could not be done, such as Harris Co did not have a mower to cut the grass in it, if deepened; then attempted to say the Water Table was beneath it, so could not deepen to enlarge, which turned out not to be so; the last excuse being that mechanical pumps would have to be installed~ for which City/Developers do not want to pay, but such would provide more capacity in the Basin. Developers fight having to pay for detention ponds or basins, per se, to make more profit for themselves. Please see **Appendix B** below for the Engineering Study on the too-small Briar Branch Detention Basin, with no mechanical pumps, besides other flaws. Also refer to [http://www.houstontirzl7.org/files/4713/9965/2113/W14020Impact20Analysis.pdf](http://www.houstontirzl7.org/files/4713/9965/2113/W14020Impact20Analysis.pdf) for detailed engineering study, and [http://www.houstontirzl7.org/files/8113/9965/1788/Feb20201220Board20Meeting20RDS20and20W14020Basin20Final.pdf](http://www.houstontirzl7.org/files/8113/9965/1788/Feb20201220Board20Meeting20RDS20and20W14020Basin20Final.pdf).

But the Basin is woefully inadequate & too small to detain the tremendous about of Rain Run-Off displaced by City’s poor redesign of Bunker Hill Road (just to the West), whose Rain Run-Off flows into this Basin, plus Rain Run-Off from Metro National’s new redevelopment in NW Quadrant of IH-10W & Gessner Road (2 short blocks to the West), in addition to half the amount of City of Houston’s major drainpipe W-151 flowing from the northward Hammerly Watershed, flowing into this Basin. Moreover, a pipe on south side of Briar Branch Basin first brings in Rain Run-Off displaced by commercial buildings on N. Feeder of IH-10W. The point is, thus Pond is poorly designed & constructed, besides being too-small, as proven by its subsequent flooding of homes just north of the Basin after it was built: Floods of May 2015, April 2016, Hurricane Harvey 2017~ & many close calls in between.
FURTHER, Harris County Flood Control District has not approved of City’s Plans North of I-10 for this vicinity, so that City & County are at loggerhead, meanwhile residents wait on tenterhooks, fearing they will be deluged again in the next big rainstorm! Hence, 1 Government Entity, as USACE, should be appointed in charge of resolving all flooding problems in the Greater Houston Area.

3. **Also,** flawed engineering/reconstruction was done by City/TIRZ 17 Developers, 2009, on **Bridge on Bunker Hill Rd** (N of I-10 W) going over Briar Branch Creek, slightly West of Briar Branch Detention Basin thus causing flooding in surrounding neighborhoods that never occurred before. Please see below **Appendix C (or request PDF for enlargement)** for this flawed Engineering Study, by Aecon Engineering, subcontracted by TIRZ 17 Engineer, LAN (Lockwood, Andrews, Newnam), with City of Houston & Harris County approval. It undersized by 3 Times amount of water actually flowing beneath the Bridge hence, due to flawed study & reconstruction, it now acts as a dam on west side, causing severe flooding in heavy storms. TIRZ 17 admits to errors in this Study & agrees to making amends, but after almost 10 years, no reparation has occurred; moreover, such a gross engineering mistake should never have occurred in the first place. The original design cut corners on drainage to save City/Developer from having to pay enough money to construct the Bridge properly. This Bridge used to be high up on piers, allowing free-flow of rainwater to gush to Sea, but City mashed it down with 2 small cement openings, restricting the flow, so it acts now as a dam, flooding houses.

4. **Also,** City/TIRZ 17 has massively increased recent amount of cement building on ground, one block to the west of Bunker Hill Rd, on Gessner Rd @ Interstate 10W, & having just widened Gessner from 4 lanes to 6 lanes; much of this Run-Off will be routed into Briar Branch Creek. Despite Harris Co Flood Control not approving any City/TIRZ 17 projects N. of I-10W in this vicinity, Developer Metro National continues building with massive cement in NW Quadrant of Interstate 10W/Gessner, based on an Engineering Study done on the too-small **Conrad Sauer Pond** in this Quadrant, purporting Developer would enlarge it, (which is dubious), thus will create even more Rain Run-Off, which is also to be funneled into Br.Branch Creek, & hence into Briar Branch Detention Basin, which also allows for commercial buildings next it to dump 2 to 3 Acre-Feet of their Rain Run-Off into it, but Residents believe an even greater amount from these buildings is actually being pumped into it. Hence, with the Briar Branch Detention Basin also being woefully inadequate, due to recent massive increase of cement building on ground in this area, and with a faulty Study done by Aecon Engineering (subcontracted by LAN Engineering for City/TIRZ 17) to reconstruct
the Bunker Hill Bridge in 2009, this whole area is now being flooded by improper City/County engineering & hence reconstruction, i.e., poor flood management. Unless We Residents had investigated these matters & found out why we are suddenly being flooded, these faulty Projects would never have gotten attention. But THIS is the type of negligent engineering & construction likely causing flooding all over Houston, creating “pockets of localized flooding”. This is only one example of hundreds showing exactly why USACE needs to be awarded by US Congress as the overseer of all Congressional flood-funding & put in charge as the 1 governmental Entity to manage & correct all Greater Houston Area’s flooding problems. Please see Appendix D below for Engineering Study on too-small Conrad Sauer Detention Pond, which was originally built 19 years ago for Rain Runoff of only a small subdivision North of it. But in 2015 Developer Metro National seized control of the Pond for its own Rain Run-Off coming from its commercial building in NW Quadrant I-10W/Gessner Rd, with City approval. But while County Flood Control has no jurisdiction over City Conrad Sauer Detention Pond, yet does not approve of any City/TIRZ 17 Projects N. of I-10W/Gessner, saying they are displacing too much Rain Run-Off, at too fast a Flow-Rate, which City later discharges further downstream into their (County’s) waterways over which has control, nothing is resolved, so it is a standoff & Residents are left at peril of flooding. This is exemplary of City/County being at loggerheads with no one in control, hence why USACE should be put in charge of managing/correcting Greater Houston Flooding.

5. City/TIRZ 17 Memorial Drive Project at West Beltway 8 in Houston, TX 77024, just north of Buffalo Bayou. The Engineering Study (See Appendix E below), done by LAN for this Project, is questionable for a number of reasons. This area encompasses TIRZ 17’s Developer of Town & Country and City Centre Malls, part of which are located in the “Attingham Basin” area, in SE Quadrant of I-10W & W. Beltway 8, which has recently added a massive amount of cement on the ground, but with no detention ponds or of adequate size to detain their commercial buildings’ Rain Runoff. So TIRZ 17 Developer’s engineer, LAN, has devised a plan to circumvent the Developer’s requirement to put in a detention pond for its own Rain Runoff. They plan to construct a large pipe with a large box culvert for temporary storage, under a road in T & C Mall, for their Rain Runoff to then be routed northward & dumped into the I-10 system of TX DOT’s Feeder Road drainpipe, which goes west for a short distance, then turns south into the east side of W Beltway 8 drainpipe, i.e., HCTRA’s (Harris Toll Rd Authority) or TX DOT’s drainpipe traveling southward, to tie into City/TIRZ 17’s new drainpipes soon to be installed under either Memorial Drive or will go straight into Buffalo Bayou, which is already maxed out and County will not allow any more water to be dumped into it. But there is public suspicion, due to LAN’s letter to TIRZ 17...
stating such (also in Appendix E), that LAN intends to re-direct the huge HCTRA (Harris County Toll Rd Authority) underground pipe and/or TX DOT pipe, which also goes from I-10W under the E Feeder of W Beltway 8 to Buffalo Bayou, to re-route them underneath Memorial Drive, to go all the way eastward to W-153 Watershed & possibly further to Gessner Rd, thus will flood out hundreds of even more homes in the Memorial Area of Houston! (See another City letter in Appendix E, stating this Project may affect possible flooding in the “outfall” or downstream, but that such was beyond the scope of this Study, implying City/TIRZ 17 developers are not responsible if this happens!) We Residents cannot obtain true detailed engineering studies for the underground pipes to be put under Memorial Drive @ W Beltway 8, slightly north of Buffalo Bayou, where homes in this area were massively flooded during Hurricane Harvey, but are shown only vague engineering sketches/drawings (in Appendix E). Some of these homes had already flooded prior to Harvey, due to improper Drainage caused by City/TIRZ 17 developers of Town & Country & City Centre who were/are commercially redeveloping the area, but without building any or adequate Detention Ponds, which were advised to be put in by Walter P. Moore Engineering Study in 2002/03, which stated City Drainage Standards were “out of date”. Thus a Contract was signed in 2003 by City & TIRZ 17 to put in 4 Ponds in TIRZ 17’s entire area (N & S of I-10W), based on Moore’s Study; however, in hindsight, the Contract was just a political ploy, to appease Public distrust of TIRZ 17, as Contract became buried in paperwork, but was later discovered via Open Records Request in 2009 by a Resident in the area. Yet, to-date, City/TIRZ 17 has not put in even 1 Pond in the locations specified per this Contract, one of which was to be in Attingham Basin~ See Appendix E below for this Contract. There was also an Engineering Study done on this area by Aecom Engineering Study in 2012, as requested by Harris County Flood Control; this Study recommended 2 additional Detention Ponds in 2 other specific locations in Memorial Drive/W Beltway 8 Area~ neither of which was put in, because City of Houston instead allowed 2 private Developers to build commercially in these 2 locations: “Ascension on the Bayou” & “Memorial Green”-- probably because City wanted Tax-Revenue more than flood-control. ~ Therefore, City of Houston & Harris County goals often conflict and are at odds~ See Appendix E below for this Study. (NOTE: MOREOVER, Harris Co. approved City/TIRZ 17’s “Memorial Drive Project” Eng. Study which included a Detention Pond that would supposedly be built in Attingham Basin under the land owned by Spring Branch Independent School District, where Spring Branch Memorial Sports Authority has a Memorandum Agreement with SBISD, to allow private baseball games to be played here. However, SBISD has not received engineering paperwork from City/TIRZ 17 regarding this Pond, so as to even make a decision on whether to allow SBISD land to be used for such detention~ which will
take them at least a year and a half to consider, and then a VOTE by the School Board allowing such is questionable also. Therefore, it is inconceivable the County approved this Project based on an Eng.Study which included a Detention Pond that may never exist.

NOTE: Residents are also concerned that City/County approved such Memorial Drive Project merely based on the fact that they slowed the flow-rate in newly-proposed larger-size drainpipes (10 by 10’ box culverts), yet City/County are not taking into consideration the increased capacity or volume of water routed into these pipes as a determining factor on whether they should approve this Project should or not. Residents suspect that City/TIRZ 17 is re-routing HCTRA and/or TX DOT pipes under W Beltway 8, eastward under Memorial Drive to W-153 Watershed, already known to be stretched way beyond drainage limits; they fear hundreds of more homes will be awash in heavy rain storms if such Project proceeds as planned, unchecked.)

Again, all of these Studies & documents contained herein provide supporting evidence as to the discrepancy, engineering-inadequacy, and negligence in many varying building/drainage/detention pond laws, rules, practices, no doubt in each of the 6 Counties of the Area’s local City/County jurisdictions~ and hence prove the utmost need for USACE, Galveston, to be appointed overseer 100% of all Congressional funding allocated to fix Greater Houston Area’s Flood Problems, immediately. USACE is widely-recognized as a bipartisan, politically-independent, purely scientifically-driven, and unbiased governmental entity with superior capability, training, and impeccable track-record in engineering and construction for flood-assessment, prevention, and management. Getting Houston’s flooding under control ASAP is tantamount and too serious a matter to be left any longer to the discretion of multiple local governing authorities often at political and drainage-standard odds; it has now become a matter of gargantuan import from both a national economic & security defense standpoint, as Houston is the Energy/Oil-Gas Capital of our Nation, and can no longer be left subjected to risky flood management. USACE is the 1 government entity with proper credentials to be placed in charge of all federal Bills to fix Greater Houston’s Area flooding.

NOTE: IF further engineering studies, and explanation thereof, are needed to support the basic thesis, ideas, or statements in this Letter, please call Cell 713-775-2443 or email loisdmyers@gmail.com. See 4 minute Video where Lois Myers speaks at City of Houston City Council 6/18/2018: http://houstontx.swagit.com/play/06182018-1776. Move bottom cursor of TV Screen to 44 Min, 50 Sec (ends 48 Min, 32 Sec) to witness in live-action the discrepancy of City & County flood rules & authority~ hence the need for 1 independent,
unbiased government entity, USACE, to be placed in charge of overseeing/managing Greater Houston Area’s flood problems. Thank you.

APPENDIX A- Analysis of Flawed Brickhouse Gully Engineering Study, causing flooding

APPENDIX B- Briar Branch Detention Basin or Pond Study, causing flooding:

A. Sketch #1- difficult to determine where Water Table is” Pond needs to be deepened/enlarged, but City/Developers do not want to spend money on this; Pond also is in incorrect location: Contract of 2003 said City/TIRZ 17 Developers were to build two Ponds (1 above ground & 1 below ground) on Witte Rd” 2 blocks to the West” but political real estate reasons intervened, so this Pond was built in wrong place instead, to the East of Witte & Bunker Hill Rds” Further, this incorrect Pond’s location & configuration benefit commercial developers, NOT surrounding residential homeowners.

B. http://www.houstontirz17.org/files/8113/9965/1788/Feb20201220Board20Meeting2ORDS20and20W14020Basin20Final.pdf-
This Pond is otherwise known on the Houston TIRZ 17 Website as the “W140 Detention Basin”. Residents have witnessed excess water pouring out of this Basin, going Northward, against the natural flow of rainwater, because it is too small, & commercial Rain Run-Off from North I-10 Feeder Rd (on South side of the Basin) and commercial buildings next to Basin fill it to capacity, before Hammerly Watershed flowing southward thru residential neighborhoods (N. of Basin) has a chance to get into the Basin.

APPENDIX C- Flawed Study of Bridge on Bunker Hill Rd (North of Interstate 10W) going over Briar Branch Creek, carrying out ½ entire Hammerly Watershed from the North, causing flooding. (Aecon Engineering, subcontracted by TIRZ 17 engineer LAN, lowered & undersized 3 TIMES the actual amount of water flowing under this Bridge, to cut corners, financially benefitting City/TIRZ 17 Developers” hence, with faulty construction, Bridge now acts as a Dam on west side, causing massive flooding in surrounding residential Subdivisions.

APPENDIX D- Conrad Sauer Eng. Study (Detention Pond too small) for TIRZ 17 Developer’s Massive New Cement Building in NW Quadrant of Interstate 10W/Gessner Rd., as well as widened expansion from 4-6 lanes of cement on Gessner Rd here. Residents fear even greater man-made flooding will occur than City/TIRZ 17 has already created in the area.

APPENDIX E- Questionable Study: Memorial Drive Project @ W Beltway8; No Detention Pond here. A few pps of Preliminary Engineering Report(See for all pps 70-90) re. underground
pipe connection: WBeltway8 to Memorial Dr (but Detailed Eng.Drawings not available to Public).

A. LAN Engineer Letter to TIRZ 17, stating intention to route new Memorial Drive drainpipes eastward to Watershed W-153. Residents fear this will causing even more man-made flooding, caused by Commercial developers not putting in Detention Ponds.

B. City of Houston PWE Letter stating W-153 is insufficient to handle additional Rain Run-off, yet City/TIRZ 17 Memorial Drive Project intends to route more rainwater into W-153, and also states Project will not improve the Drainage Problem in the area (See p. 3 of City Letter). On p. 5, Letter also states more regional study is required for Project, but said such is outside its scope, thus denying responsibility for causing downstream flooding.

**APPENDIX F-** Contract of 2003, signed by City of Houston & TIRZ 17 Developers, to build 4 Detention Ponds in specific places in TIRZ 17’s territory, N & S of I-10, bounded by W Beltway 8 & Bunker Hill Rd~ as recommended by Walter P. Moore Eng. Study done for City/TIRZ 17, to prevent flooding, as Study stated City of Houston Drainage Standards are “antiquated”; Yet, to-date, not 1 of these Ponds has been built.

**APPENDIX G-** Engineering Study done by Aecom Engineering for Harris Co. Flood Control in 2012, recommending 2 Sites for Detention Ponds in TIRZ 17 area to prevent flooding, near Memorial Drive & W Beltway 8~ BUT INSTEAD, City of Houston allowed 2 Commercial Developments to be constructed on these Sites (for City tax-revenue), which have caused great man-made flooding. (NOTE: See 2 large X’s on the 2 dark round spots on this Drawing, indicating where these 2 Detention Ponds were advised to be built; but instead two commercial developers put in 2 huge commercial enterprises with massive building of cement on the ground replacing groundswell & displacing massive amounts of Rain Run-Off into drainage system & into Buffalo Bayou, which is already maxed out. County Judge had told City 2 years ago not to dump any more water into Buffalo Bayou, in straight-shot manner, but City did not heed the warning~ hence, no one is in control to prevent flooding. This is another instance that is exemplary of the confusion, discrepancy of local drainage/building laws, and shows that US Congress needs to step in and appropriate all federal Bills with 100% funding for Houston’s Flood-Relief Bills, and appoint USACE, the Flood Experts, to be the 1 governing entity in charge of assessing, overseeing, managing, & fixing all Greater Houston’s flooding problems.
PLEASE NOTE: BECAUSE THE LINKS ENCLOSED IN THIS COVER LETTER ARE NOT HYPERLINKED (i.e., “Clickable”), Please See PDF Upload in Paragraph 2 herewith on this Form: “Basic Letter for Basic Proposal on USACE Form 7001”, which provides the Hyperlinks that correspond to the same links that are merely typewritten on this Cover Letter:

“Further, in Cover Letter for Section 10 PDF Upload, please click these hyperlinks that correspond to same links merely typed on this Letter:

In Paragraph 2 of Cover Letter, please see the sentence contained therein: “Please see Appendix B below for the Engineering Study on the too-small Briar Branch Detention Basin, with no mechanical pumps, besides other flaws. Also refer to
http://www.houstontirz17.org/files/4713/9965/2113/W14020Impact20Analysis.pdf for detailed engineering study, and

Below Paragraph 5 of Cover Letter (just above Appendix A), please see the NOTE contained therein: “NOTE: IF further engineering studies, and explanation thereof, are needed to support the basic thesis, ideas, or statements in this Letter, please call Cell 713-775-2443 or email loisdmyers@gmail.com. See 4 minute Video where Lois Myers speaks at City of Houston City Council 6/18/2018: http://houstontx.swagit.com/play/06182018-1776. Move bottom cursor of TV Screen to 44 Min, 50 Sec (ends 48 Min, 32 Sec) to witness in live-action the discrepancy of City & County flood rules & authority~ hence the need for 1 independent, unbiased government entity, USACE, to be placed in charge of overseeing/managing Greater Houston Area’s flood problems. Thank you.”

In APPENDIX B of Cover Letter, please see Heading: “Briar Branch Detention Basin or Pond Study, causing Flooding:”
http://www.houstontirz17.org/files/8113/9965/1788/Feb20201220Board20Meeting20RDS20and20W14020Basin20Final.pdf. This Pond is otherwise known on the Houston TIRZ 17 Website as the “W140 Detention Basin”.

In APPENDIX E of Cover Letter, please see Heading: “Questionable Study: Memorial Drive Project @ Q Beltway 8; No Detention Pond here: “A few pps of Preliminary Engineering Report(See for all pps 70-90) re. underground pipe connection: WBeltway8 to Memorial Dr (but Detailed Eng.Drawings not available to Public).”
Concerns About Changes To FEMA Flood Insurance Rate Map, FIRM, 48201C0635
For Brickhouse Gully And Golf Course Property

Brickhouse Gully and the golf course property have been in a mapped floodplain since 1985; the golf course was built between 1990 and 1992. The area was modeled and analyzed as part of the Tropical Storm Allison Recovery Project. That 2007 revision increased the zone AO depth from 1 foot to 2 feet.

Letter of Map Revision (LOMR) 15-06-0275P diverts 70 percent of the flow from Brickhouse Gully and claims it travels through the golf course creating a split floodway. Base Flood Elevations for Brickhouse Gully, directly north of the golf course, were lowered, by up to 2 feet, due to the drop in flow in the gully. This LOMR officially revised the Flood Insurance Rate Map for the area in 2015.

Why would the developer want to map a floodway on the property? Is this LOMR, using the lowered BFES, just an interim step to getting the property removed from the floodplain?

Conditional Letter of Map Revision (CLOMR) 17-06-0297R was submitted 8 months after LOMR 15-06-0275P became effective. The CLOMR, using the lowered Base Flood Elevations from the LOMR, proposes a new channel to handle the overflow from Brickhouse Gully and results in all, excluding the new channel, of the golf course acreage being removed from the 100yr or 1 percent floodplain; no mitigation for fill required. Capacity of the new channel is estimated to be around 88 acre feet.

For what was previously mapped as 151 acres with a 2 ft. depth, lost detention may not be as simple as 151x2 but must be significantly more than 88 acre ft.

These changes can only adversely impact adjacent and downstream neighbors due to the loss of detention, no requirement to mitigate for fill, and new streets/storm sewers for the new development surely convey the water much faster than the old golf course.

NOTE: Both the LOMR and CLOMR were submitted by Jones&Carter on behalf of Metro National (the owner/developer).
Previous Flood Insurance Rate Map 48201C0635M 2014 - Brickhouse Gully and the golf course property have been in a mapped floodplain since 1985; the golf course was built between 1990 and 1992. The area was modeled and analyzed as part of the Tropical Storm Allison Recovery Project. That 2007 revision increased the zone AO depth from 1 foot to 2 feet.
Letter of Map Revision 15-06-0275P - Jones & Carter submitted, on behalf of MetroNational, the request for a map revision. The LOMR diverts 70 percent of the flow from Brickhouse Gully and claims it travels through the golf course creating a split floodway. Base Flood Elevations for Brickhouse Gully, directly north of the golf course, were lowered, by up to 2 feet, due to the drop in flow in the gully. This LOMR officially revised the Flood Insurance Rate Map for the area in 2015.
CLOMR 17-06-297R - The CLOMR was submitted 8 months after LOMR 15-06-0275P became effective. The CLOMR, using the lowered Base Flood Elevations from the LOMR, proposes a new channel to handle the overflow from Brickhouse Gully and results in all, excluding the new channel, of the golf course acreage being removed from the 100yr or 1 percent floodplain; no mitigation for fill required.
Attachment 2
Brickhouse Gully LOMR
Response to Local Review Comments
Revised Steady Flow Data for Split Model

Flow through Golf Course
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LOMR Table showing drop in flow in Brickhouse Gully
## Attachment 2

Brickhouse Gully LOMR

Response to Local Review Comments

Revised Steady Flow Data for Split Model

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LOMR Table showing constant flow across Golf Course
## Attachment 2

Brickhouse Gully LOMR
Response to Local Review Comments
Revised Steady Flow Data for Split Model

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LOMR Table showing constant flow across Golf Course
### LOMR Table showing drops in Water Surface Elevations along Brickhouse Gully

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Table showing additional drops in Water Surface Elevations along Brickhouse Gully from CLOMR.
March 12, 2014

Mr. Hannan, P.E., CFM

Page 2

2. Comment: Please provide documentation of how the flow is entering and exiting the channel in the golf course.

Response: The channel overflows at Gessner Drive and enters the golf course on the western boundary of the golf course and Gessner Drive. The flow re-enters Brickhouse Gully through a concrete overflow structure approximately 175 feet south of where Brickhouse Gully crosses Clay Road.

3. Comment: Please provide documentation that there is a defined flow path through the new channel in the golf course.

Response: Attached is an exhibit from the City of Houston Geographic Information Systems (GIMS) website showing sheetflow patterns in the LOMR revision area. The exhibit shows there are well-defined sheetflow paths down Gessner and through the golf course lake system. As discussed in the response to comment 2 above, flow enters the golf course channel on the western boundary of the golf course with Gessner Drive.

4. Comment: The corrected effective model shows flow in the El15-09-00 channel adjacent to the golf course but the area has not been mapped in the floodplain. Please end your cross section at the high berm dividing the golf course and El15-09-00 or show the mapped flood area for El15-09-00.

Response: Agree. The high berm of the golf course separates the floodplain from El15-09-00 further downstream. We have adjusted our cross-sections accordingly.

5. Comment: Please provide a topographic workmap certified by a registered professional engineer that shows boundary delineations of the post-project floodplains and floodway, boundary delineations of the effective floodplains and floodway, cross sections, flow line, contours, scale, and north arrow.

Response: We will revise our LOMR workmap to include boundary delineations of the effective floodplain and floodway and cross-sections. The other elements were included in previously submitted LOMR Work Map.

6. Comment: Our review revealed that changes were made to the manning's n in the left overbank on El15-09-00 near the golf course. Please justify.

Response: Manning's n values have been reverted back to the effective values for the left overbanks in the revised model. Some of the differences in Manning's n were addressed based on actual conditions. Some of the changes may have been in error. The majority of the left overbank areas are ineffective, however, and do not have a significant effect on the model output.

7. Comment: Please revise the following GIS shapefiles:

   a. S_BFE
      1. FIDs 11 and 15 should be extended to span Zone AE
      2. Field BFE_LND_ID should be left blank

Response: The previously created 1D/2D analysis XPSTORM model was used to show the general direction of overland flow leaving Brickhouse Gully. Peak flows in this model were not calibrated to peak flows in the steady HEC-RAS model due to the complexity of running the XPSTORM model with bridges.

A simplified 1D/2D XPSTORM model was made in response to this comment to verify the magnitude of flows leaving Brickhouse Gully and overflowing down Gessner Drive. The following data and parameters were used to develop the XPSTORM model:

- HEC-RAS cross sections from immediately upstream of Gessner Drive (HEC-RAS cross section 31967.0) to immediately upstream of Talina Way Drive (HEC-RAS cross section 31529.8) were input into the XPSTORM model.
- An SCS Typ II distribution hydrograph was used in the XPSTORM model. Rainfall depths were adjusted in the hydrologic parameters of the XPSTORM model in order to generate peak flows that were representative of the peak flows in HEC-RAS for the 10-year, 50-year, 100-year, and 500-year storm events. XPSTORM models for each rainfall event are attached.
- A stage-discharge relationship was developed in HEC-RAS based on running a series of flows in the Brickhouse Gully hydraulic model and checking the water surface elevation upstream of Talina Way Drive. This relationship was used as the tail water condition in the simplified XPSTORM model which terminates at Talina Way Drive.

Narratives of flow going down Gessner
All annotation on image is as received from HCFCD. This is the only image found with overflow entering from Gessner as narrative states. Image was supplied as support to 2nd review response.
Signed topographic work map showing impossible flow path.
Impossible flow path shown on the LOMR
The impossible flow path shown on topographic work maps and the LOMR.
The LOMR arguments seem to conflict with City of Houston GIMS layers of Overland Drainage Areas and Sheet Flow. How does water enter the property from the west off Gessner? All of the Gessner sheet flow is shown going to the E115-09-00 tributary.
Golf Course Floodway profile - where is the model that connects the golf course to the alleged overflow from Brickhouse Gully?
The proposed floodway.
Inundation at 90 feet. The proposed channel and ridge would not hold water.
Inundation at 91 feet. The proposed channel and ridge would not hold water.
Inundation at 92 feet. The proposed channel and ridge would not hold water.
Pine Crest Golf Course – Dynamic Flood Depths at Base Flood Event
(100 Year Flood)

Pine Crest Golf Course: Flood Mitigation Potential

<table>
<thead>
<tr>
<th>Area (sq ft)</th>
<th>Acres</th>
<th>Acre ft</th>
<th>Average depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>5,420,745</td>
<td>124</td>
<td>-229</td>
<td>-1.8</td>
</tr>
</tbody>
</table>

* Volume Calculation based on the difference between the dynamic BFE flood water surface from LOMAR 0275 and LIDAR elevations from the HGAC08 survey.

Synopsis:
This highly-sculpted, golf course property accommodated approximately 229 acre feet of floodwater volume during a 100 year flood event. The developers are bringing in fill dirt, elevating the property and saving approximately 86 acre feet of detention volume. That leaves 143 acre feet of flood water volume which cannot be detained on the property. The surrounding properties will be forced to accommodate this extra flood water during the next 100 year flood event.

In addition, the new housing development will cover a high percentage of the area with impervious surface. This surface is not offset with any detention volume (as required in Fort Bend County), further increasing the flood risk to local residents.
Mr. Hannan, P.E., CFM
February 5, 2014

Gully. The flow through the golf course split reach was estimated based on calibrating the water
surface elevations at the upstream end of the reach where the flow from Brickhouse Gully would enter the reach (i.e. river station 4319.499 in the split reach and river
station 31683.4 in the Golf Course reach).

For all flood profiles in the model, the revisions in this request tie back to effective model flood
profile elevations downstream of Clay Road to the downstream end of the model. The flood
profiles in the revised Corrected Effective model are reduced from Clay Road to the upstream
limits of the model based on the flow across the golf course that is being accounted for in the
revised model.

The following attachments related to the paragraphs above are included with this letter:
- Attachment 1 - Water Surface Elevation Comparison Tables (100-year)
- Attachment 2 - Revised Steady Flow Data for Split Reach Model
- Attachment 3 - Comparison Tables between Split Reach and Brickhouse Gully Main
- Revised Annotated LOMR
- Revised LOMR Work Map

Floodway Model
For the floodway plan run, the floodway plan flows were adjusted based on the flow through Pine
Crest Golf Course as described above. Encroachment stations were defined across the split reach
to define the floodway for the split reach representing the significant overflows through the Pine
Crest Golf Course. The encroachment stations for Brickhouse Gully were not modified from the
effective model. Floodway comparison tables (Attachment 4) for the Effective and Corrected
Effective models are included with this letter.

2. Comment: Please provide justification for the changes in Manning’s n and explain based on
your XP model.

Response: The Manning’s n values were modified in the right overbank areas of the Brickhouse
Gully model from river stations 32382.3 to 26768.1 to reflect the existing land use in these areas.
The commercial and residential areas between Brickhouse Gully and Gessner Road were given a
Manning’s n of 0.99 based on how the commercial and residential structures will restrict
conveyance in these areas. Gessner Road right-of-way was given a Manning’s n of 0.012. The
Pine Crest golf course area was given a Manning’s n value of 0.05 as the golf course grasses are
cut relatively short in regular golf course maintenance and allow for less obstructed flow than in
typical overbank areas.

3. Comment: During our review of the submitted model, we found that the flow is not contained
within the cross section for cross sections 32382.3 through 25717.2, 25693.2, 25168.3, and
24912.8 through 23506.6. Please extend the cross sections to contain the flow or map that area
as overflow.

Response: Cross sections within the LOMR revision area have been extended or cut to points
with elevations containing the 100-year WSE within the cross sections. The LOMR revision area
is from river station 32382.3 to 26768.1. Ineffective areas were extended for the extended cross
sections where applicable. Cross sections outside the revision area have not been revised. A
revised 100-year WSE comparison and Corrected Effective HEC-RAS output is included in the
Response to Comments. The revised S NS shapefile is included with this submittal.

4. Comment: Please provide the GIS shapefiles as mentioned in the HCFCG GIS Standards
document that can be found at: http://www.hcfcd.org/MS/Default.asp

Response: We have carefully reviewed the Harris County Flood Control District Engineering
and Construction Division Development Services guide, GIS Standards Document, and have
revised and provided shapefiles accordingly.

We look forward to your approval of our submittal. For your convenience, we have included an .mxd file
with the shapefile included to help expedite your review. Upon your approval, we will send hard copies
of the submittal with the Community Acknowledgement forms.

Sincerely,

Eric Lisenbe, P.E., CFM

EDL/

APPENDIX A - p. 23
Dear Mr. Hannan:

Below are our responses to the second HCFCD courtesy review comments for the LOMR for Brickhouse Gully dated March 4, 2014.

1. **Comment:** Please provide us documentation of how you calculated the flow of the new defined channel through the golf course.

   **Response:** The original effective flows in the effective Brickhouse Gully model were balanced between Brickhouse Gully and the newly defined split reach through the golf course. The flows in the channel through the golf course were calculated based on a calibration of water surface elevations. The calibration location was where the flow leaves Brickhouse Gully at Gessner Drive and overflows to the golf course reach.

   For example, for the 100-year event, HEC-RAS calculates a water surface elevation of 94.47 at the upstream end of the golf course reach. Flows in Brickhouse Gully were reduced by 850 cfs from river station 31836 (where the overflow occurs at Gessner) to river station 31836, which is mapped as a backwater from E115-00-00 further downstream. We have adjusted our cross-sections accordingly.

   A slight revision to the steady flow data was made to the models in this response from the previous submittal. The river station where flows began to be reduced in the main stem is now river station 31836 (immediately downstream of Gessner) instead of river station 31967 (upstream of Gessner) based on where the overflow occurs. Updated comparison tables and models are included with this letter.

2. **Comment:** Please provide documentation of how the flow is entering and exiting the channel in the golf course.

   **Response:** The channel overflows at Gessner Drive and enters the golf course on the western boundary of the golf course and Gessner Drive. The flow re-enters Brickhouse Gully through a concrete overflow structure approximately 175 feet south of where Brickhouse Gully crosses Clay Road.

3. **Comment:** Please provide documentation that there is a defined flow path through the new channel in the golf course.

   **Response:** Attached is an exhibit from the City of Houston Geographic Information Systems (GIMS) website showing sheetflow patterns in the LOMR revision area. The exhibit shows there are well-defined sheetflow paths downslope Gessner and through the golf course ditches. As discussed in the response to comment 2 above, flow enter the golf course channel on the western boundary of the golf course with Gessner Drive.

4. **Comment:** The corrected effective model shows flow in the E115-09-00 channel adjacent to the golf course but the area has not been mapped in the floodplain. Please extend your cross section at the high berm dividing the golf course and E115-09-00 or show the mapped flood area for E115-09-00.

   **Response:** Agree. The high berm of the golf course separates the floodplain from E115-00-00 from the floodplain of E115-09-00 which is mapped as a backwater from E115-00-00 further downstream. We have adjusted our cross-sections accordingly.

5. **Comment:** Please provide a topographic workmap certified by a registered professional engineer that shows boundary delineations of the post-project floodplains and floodway, boundary delineations of the effective floodplains and floodway, cross sections, flow line, contours, scale, and north arrow.

   **Response:** We will revise our LOMR work map to include boundary delineations of the effective floodplain and floodway and cross-sections. The other elements were included in previously submitted LOMR Work Map.

6. **Comment:** Our review revealed that changes were made to the manning's n in the left overbank on E115-00-00 near the golf course. Please justify.

   **Response:** Manning's n values have been reverted back to the effective values for the left overbanks in the revised model. Some of the differences in manning's n were adjustments based on actual conditions. Some of the changes may have been in error. The majority of the left overbank areas are ineffective, however, and do not have a significant effect on the model output.

7. **Comment:** Please revise the following GIS shapefiles:

   a. S_BFE
   i. FIDs 11 and 15 should be extended to span Zone AE
   ii. Field BFE_LN_ID should be left blank
May 22, 2014

Mr. Ataul Hannan, P.E., CFM
Harris County Flood Control District
Engineering and Construction Division
9900 Northwest Fwy.,
Houston, Texas 77092

Re: Response to Comments for LOMR for Brickhouse Gully;
City of Houston
Brickhouse Gully (E115-00-00)

Dear Mr. Hannan:

Below are our responses to the third HCFCID courtesy review comments to the LOMR for Brickhouse Gully dated April 4, 2014.

1. Comment: Previous coordination reveals that you have created a 1D/2D analysis to model this area. Please provide information from the analysis showing that flow is reasonable similar to the flow used in the HEC-RAS model for the split at the golf course.

Response: The previously created 1D/2D analysis XPSTORM model was used to show the general direction of overland flow leaving Brickhouse Gully. Peak flows in this model were not calibrated to peak flows in the steady HEC-RAS model due to the complexity of running the XPSTORM model with bridges.

A simplified 1D/2D XPSTORM model was made in response to this comment in order to verify the magnitude of flows leaving Brickhouse Gully and overflowing down Gessner Drive. The following data and parameters were used to develop the XPSTORM model:

- HEC-RAS cross sections from immediately upstream of Gessner Drive (HEC-RAS cross section 31967.0) to immediately upstream of Talina Way Drive (HEC-RAS cross section 31559.8) were input into the XPSTORM model.
- An SCS Type II distribution hydrograph was used in the XPSTORM model. Rainfall depths were adjusted in the hydrologic parameters of the XPSTORM model in order to generate peak flows that were representative of the peak flows in HEC-RAS for the 10-year, 50-year, 100-year, and 500-year storm events. XPSTORM models for each rainfall event are attached.
- A stage-discharge relationship was developed in HEC-RAS based on running a series of flows in the Brickhouse Gully hydraulic model and checking the water surface elevation upstream of Talina Way Drive. This relationship was used as the tail water condition in the simplified XPSTORM model which terminates at Talina Way Drive.

- A typical section for a two-lane divided median curb and gutter representing the overflow along Gessner Drive was added to a link in the XPSTORM model at the node 31836.0. The link represents allows flow above elevation 34.0' to overflow into the link representing Gessner Drive. The elevation of 34.0' is the approximate elevation of Gessner Drive at Brickhouse Gully and the elevation at which water is able to leave Brickhouse Gully and overflow down Gessner Drive.

The results of the XPSTORM evaluation show the flows used in HEC-RAS for the golf course split are reasonably similar to the results found using the dynamic 1D/2D modeling approach. The table below compares the results of the XPSTORM evaluation with the golf course split HEC-RAS model.

<table>
<thead>
<tr>
<th>Storm Event</th>
<th>Effective Model Peak HEC-RAS Flow at River Station 31967.0 (cfs)</th>
<th>Effective Model Peak HEC-RAS Flow at River Station 31559.8 (cfs)</th>
<th>Peak Flow in XPSTORM Model (cfs)</th>
<th>Flow added to Golf Course Split in HEC-RAS (Flow Leaking Brickhouse Gully) (cfs)</th>
<th>XPSTORM Modeled Flow Leaving Brickhouse Gully (cfs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-Year</td>
<td>1080</td>
<td>1200</td>
<td>1121</td>
<td>680</td>
<td>498</td>
</tr>
<tr>
<td>50-Year</td>
<td>1200</td>
<td>1350</td>
<td>1220</td>
<td>850</td>
<td>682</td>
</tr>
<tr>
<td>100-Year</td>
<td>1280</td>
<td>1500</td>
<td>1518</td>
<td>1100</td>
<td>866</td>
</tr>
</tbody>
</table>

2. Comment: From your analysis, flow is not going to E115-09-00, so please adjust the most upstream cross sections accordingly.

Response: Upstream cross-sections have been trimmed accordingly.

3. Comment: Please provide a topographic workmap certified by a registered professional engineer that shows boundary delineations of the revised floodplains and floodway, boundary delineations of the effective floodplains and floodway, cross sections, flow line, contours, scale, and north arrow.

Response: A topographic map is included showing the above information.

4. Comment: Please provide a topographic map clearly showing the high ridge on the right overbank in the golf course.

Response: High ridge has been labeled on the topographic workmap.

5. Comment: Please revise the following GIS shapefiles:
   a. S_BFE
      i. Field BFE_LN_ID should be left blank
   b. S_FLD_HAZ_AR

Appendix A
DRAINAGE AND DETENTION ANALYSIS FOR
PINECREST
HOUSTON, TEXAS

EXECUTIVE SUMMARY

This report describes the conceptual design for detention and floodplain mitigation for a 116-acre tract located within the City of Houston City Limits. The tract is located in the White Oak Bayou Watershed and detention outflow drains into Brickhouse Gully (HCFCD Unit No. E115-00-00). The tract consists of an existing golf course with a man-made lake system. Based on the proposed CLOMR (FEMA Case No. 17-06-0297R), a channel is proposed to convey the overflow from Gessner Road through the project tract. Detention for the tract will be located within an expanded portion of the channel. This study utilizes a combination of Site Runoff Curves, Small Watershed Method, Manning's Equation, and XPSTORM to evaluate the existing and proposed conditions of the development to show no adverse impact in the 1% and 10% exceedance storm events. The report will be submitted to the Harris County Flood Control District (HCFCD) and City of Houston (COH) for review and approval.

Table 1 – Detention Summary Table

<table>
<thead>
<tr>
<th>Project Name: Pinecrest</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Project Area</td>
<td>116 Acres</td>
</tr>
<tr>
<td>Min. Detention Storage Rate Required (HCFCD)</td>
<td>0.55 acre-feet per acre</td>
</tr>
<tr>
<td>Min. Detention Storage Required (HCFCD)</td>
<td>63.8 acre-feet</td>
</tr>
<tr>
<td>Min. Detention Storage Rate Required (Small Watershed)</td>
<td>0.62 acre-feet per acre</td>
</tr>
<tr>
<td>Min. Detention Storage Rate Required (Small Watershed)</td>
<td>71.60 acre-feet</td>
</tr>
<tr>
<td>Detention Storage Provided (XPSTORM)</td>
<td>87.74 acre-feet</td>
</tr>
<tr>
<td>Detention Storage Rate Provided (XPSTORM)</td>
<td>0.76 acre-feet per acre</td>
</tr>
<tr>
<td>1% Allowable Release Rate</td>
<td>1020.03 cfs</td>
</tr>
<tr>
<td>1% Release Rate Provided</td>
<td>1008.80 cfs</td>
</tr>
<tr>
<td>10% Allowable Release Rate</td>
<td>595.02 cfs</td>
</tr>
<tr>
<td>10% Release Rate Provided</td>
<td>442.59 cfs</td>
</tr>
</tbody>
</table>
Approximate locations of Manning' n of .99 used along Brickhouse Gully.
Revised Steady Flow Data for Brickhouse Gully after flow is diverted to the golf course
<table>
<thead>
<tr>
<th>RIVER STATION</th>
<th>10 Yr</th>
<th>50 Yr</th>
<th>100 Yr</th>
<th>500 Yr</th>
</tr>
</thead>
<tbody>
<tr>
<td>32382.3</td>
<td>840</td>
<td>1000</td>
<td>1100</td>
<td>1150</td>
</tr>
<tr>
<td>31967.0</td>
<td>900</td>
<td>1080</td>
<td>1200</td>
<td>1280</td>
</tr>
<tr>
<td>31836.0</td>
<td>410</td>
<td>400</td>
<td>350</td>
<td>180</td>
</tr>
<tr>
<td>31683.4</td>
<td>410</td>
<td>400</td>
<td>350</td>
<td>180</td>
</tr>
<tr>
<td>31559.8</td>
<td>490</td>
<td>520</td>
<td>500</td>
<td>400</td>
</tr>
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<td>31210.3</td>
<td>510</td>
<td>540</td>
<td>520</td>
<td>440</td>
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<td>30772.2</td>
<td>580</td>
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<td>600</td>
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<td>29360.2</td>
<td>620</td>
<td>640</td>
<td>650</td>
<td>690</td>
</tr>
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<td>28586.7</td>
<td>650</td>
<td>670</td>
<td>680</td>
<td>760</td>
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<td>28025.6</td>
<td>710</td>
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<td>27466.2</td>
<td>710</td>
<td>720</td>
<td>750</td>
<td>900</td>
</tr>
<tr>
<td>26924.0</td>
<td>1240</td>
<td>1420</td>
<td>1660</td>
<td>2050</td>
</tr>
<tr>
<td>26206.4</td>
<td>1260</td>
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<td>1700</td>
<td>2080</td>
</tr>
<tr>
<td>25072.7</td>
<td>1320</td>
<td>1480</td>
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<td>2160</td>
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<tr>
<td>24695.0</td>
<td>1350</td>
<td>1500</td>
<td>1850</td>
<td>2200</td>
</tr>
</tbody>
</table>

CFS Flow through the Golf Course

<table>
<thead>
<tr>
<th></th>
<th>10 Yr</th>
<th>50 Yr</th>
<th>100 Yr</th>
<th>500 Yr</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>490</td>
<td>680</td>
<td>.850</td>
<td>1100</td>
</tr>
</tbody>
</table>
Additional Proposal Information

(This is as uploaded, a blank page will show if nothing was submitted)
Cover Letter for Section 10 on USACE Form 7001 (Continuation) - Appendix B & Appendix C (PART 2).pdf
* This Basin Needs to be 2 x's Larger, to Detain Rain Run-off of City TIRZ 17 Redevelopment.
City & County Approved. This now in houses/streets.

This massive flooding across out to sea, now too small.

Flowed under it & went amount that prevented under it by 3 times the preventing water to flow. Plots now as a dam,

with this study in 2009. Study of 2007 is rebuilt.

Re-engineered Flowed Engineering.

Houston.

Road, just N of IH 10-W in

Recent striped on Bunker Hill.

Recent striped at City side at City Bridge.

PHOTO

Appendix
APPENDIX C - P.2

NOTE:
The project area is outside of the limits. It is located 300 feet beyond the limits shown. This map shows the project area and the limits beyond which it is located. The area within the limits is shown in blue on the FHA FPA panel. The area outside the limits is shown in red. The limits are defined on the plans and profiles.

Bidding Purposes Only
Not for Construction
NOTES ON THIS SHEET:
1. REFER TO CONC. DRAWINGS FOR ADDITIONAL DESIGN PARAMETERS FOR LOW FLOW CHANNEL.
2. REFER TO HCPC CO. CONCRETE CHANNEL DISCHARGE FOR DRESS PARAMETERS FOR LOW FLOW CHANNEL.
3. REFER TO HCFCD UTILITIES LINES SHOWN.
4. CONCRETE POSTS SHALL BE PLACED ADJACENT TO STREET SIDE EDGE OF NEW CHANNEL.

Bidding Purposes Only
Not for Construction

TCB AECOM

CITY OF HOUSTON
DEPARTMENT OF BUILDING INSPECTION & ENGINEERING

DRAWING INFORMATION

HCFCD UNIT
W-140-01-00
PROPOSED LOW FLOW CHANNEL

DRAWN BY: [Name]
CHECKED BY: [Name]

SCALE: [Scale]

P.O. BOX 5953
HOUSTON, TX 77251-5953

(713) 868-5000

COPYRIGHT 20XX

APPENDIX C - p. 17
Bidding Purposes Only
Not for Construction

**Tree Protection Fencing Details**

**Detail A**
- Use plastic sheathing over exposed tree roots and soil per specification (forbid use of polyethylene).'
- Provide plastic protection at exposed tree roots and soil per specification (forbid use of polyethylene).

**Detail B**
- Use plastic sheathing over exposed tree roots and soil per specification (forbid use of polyethylene).
- Provide plastic protection at exposed tree roots and soil per specification (forbid use of polyethylene).
Additional Proposal Information

(This is as uploaded, a blank page will show if nothing was submitted)
Cover Letter for Section 10 on USACE Form 7001 (Continuation)- Appendix D, E, F, & G (PART 3).pdf
From: "Lois D. Myers" <loisdmyers@gmail.com>
Date: Saturday, June 23, 2018 9:38 AM
To: <loisdmyers@gmail.com>
Subject: TIRZ 17 Budget/Project

ATTACH: MetroNationalArt2A.PNG; MetroNationalArtB.PNG; MetroNationalArtwork.pdf; 01 - Conrad Sauer Drainage Report 012716.pdf; Scanned Drawings.pdf

From: Zeve, Matthew (Flood Control)
Sent: Tuesday, November 28, 2017 10:31 AM
To: Lois D. Myers
Subject: TIRZ 17 Budget/Project

Per your request, we completed the research of the Conrad Sauer Basin. As we discussed last week, HCFCD does not have jurisdiction of this basin or development in the area for the project outfall is to a City of Houston storm sewer. This project does not drain directly to a HCFCD facility so HCFCD has no jurisdiction. My staff and I completed an exhaustive search of HCFCD records but did not find anything on the project for HCFCD-did not review the project for it was not in our jurisdiction.

I have spoken to the following offices to obtain information on the Conrad Sauer basin.

- HCFCD Watershed Management
- City of Houston Floodplain Manager
- City of Houston Permit Office
- LAN (TIRZ 17 engineering consultant)
- RPS Klotz (TIRZ 17 engineering consultant)

HARRIS COUNTY FLOOD CONTROL DISTRICT
CONRADSAYER

HAS NO CONTROL OR JURISDICTION OVER POND

 BUT HAS NOT APPROVED ANY CITY/TIRZ 17 PROJECTS HERE, NORTH OF E10W & GESSNER RD!

So this Stand-off, putting Residents at Risk of Flooding, is Example of Why USACE, GALVESTON, SHOULD BE AWARDED 100% Federal Funding as the 1 Governing Entity to be in CHARGE of ALL Houston Flood Problems.
THE CONRAD SAUER POND- LACK OF PROPER DETENTION - IN DEVELOPER’S NW QUADRANT OF INTERSTATE 10 & GESSNER ROAD IN WEST HOUSTON:

1. The old Conrad Sauer (CS) Pond, built 19 YRS ago by Royal Oaks Subdivision for THEIR OWN Rain Run-Off (just to the North of Pond) originally held 62 Acre Feet of water built by City.

2. Developer Metro National seized it in 2015 by hiring an engineer to purport the Pond was not working properly & thus convinced City that it would add more Acre Feet, so that Developer could avoid having to put in its own Pond for its own Rain Run-Off displaced by its massive new cement building. Developer, MN, added planters of cement filled with dirt inside the Pond to make it look pretty with trees/flowers. MN also added concrete pillars to support a new bridge to extend Mathewson Road from the pond to adjacent major Gessner Road on east side. All this took away 5 Ac Ft., but MN compensated for it with a shallow 5 Ac Ft pond to the North of the original pond.

3. Developer then extended 12 more Ac Ft capacity by adding 2- 10x10’ box culverts under Mathewson Lane on both east and west sides. BUT, Inlets at ends of these culverts are large, particularly on Conrad-Sauer Road, a perpendicularly intersecting road to the west. Stormwater will pour into these boxes, rapidly filling the CS Detention Pond, thus requiring more frequent emptying by its three powerful pumps, which will not be able to handle a lot of Rain Run-Off displaced by this cement.

4. CS pumps push water east into a TxDOT pipe under the I-10 feeder road where it joins other pipes trying to enter the restrictive opening of pipes under Memorial City Mall, which is catty-corner to NW Quadrant of I-10/Gessner Rd. Water necessarily backs up and exits the feeder road inlets, flooding feeder roads north and south of the Interstate. Subsequently, this water pushes water back into surrounding neighborhoods, causing massive area flooding.

5. Another reason why the CS Pond isn’t large enough is that MN raised the elevation of its 18 Acres by 1.5 feet -- 27 acre-feet of unmitigated fill dirt displaces any water normally on the land rapidly into the pond. Some areas of this 18 Acre Tract are in the 100 Yr Floodplain, per the LAN Regional Drainage Study of 2012 paid for by TIRZ 17. The Developer, MN, is not providing enough mitigation in the Pond to compensate for this.

6. Per City of Houston (COH) Floodplain Management Office, the old 500 Yr Floodplain is now the new 100 Yr Floodplain; thus, COH came up with brand-new building/drainage Standards, and this Pond does not even meet the old standards for mitigation, as they brought in dirt-fill ~ not allowed, So Developer should be providing a lot more Acre Feet in the Pond than it is.

7. COH allows “Grandfathering” of existing concrete, which had covered some of the NW Quadrant, meaning that only a paltry amount of detention is required for redevelopment. Much of this new detention is for MN’s redevelopment in its NW Quadrant, and some is to ensure that the newly-designed Mathewson Road meets a 2-year conveyance standard, so there is virtually no added Pond-capacity. Instead, taxpayers paid $23 million to a Developer for its beautification project, enjoyed by its tenants who office in its buildings, and have also provided a back-exit for its business tenants.

WHAT A SHAM-DEAL! (posing as a Detention/Drainage Project)

(This is another example of why USACE should be put in charge of correcting all flooding problems in the Greater Houston Area.)
LIPEX PROPERTIES C/O
METRO NATIONAL CORPORATION

MetroNational

Improvements to Conrad Sauer Detention Basin and Mathewson Lane Expansion
Drainage Impact Analysis Report

RPS klotz associates
1160 Dairy Ashford, Suite 500
Houston, Texas 77079
Texas PE Firm Registration No. F-929

Project No. 0324.011.000
January 2016
100 YR WSE = 83.5

Mitigation Required = ~5.5 Acre-Ft Each Side

Additional Gain = ~7 Acre-Ft

30 Ft. East
10 Ft. West

*Additional Gain = ~3 Acre-Pond to the North

Existing Piers

Appendix D P.4
NOTE:
1. ELEVATIONS SHOWN ON PLAN ARE TOP OF SLAB ELEVATIONS.

OVER 3" SEAL SLAB (SEE NOTE) FOR REINFORCEMENT AND TOP OF SLAB ELEVATIONS.
SEE PLANS, SHEETS S-15 TO S-20
NOTE:
- SELECT SOIL UNDER SEAL SLAB TO 95% DENSITY AT OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D-698.
- DO NOT PLACE SEAL SLAB OVER DRILLED SHAFTS AND/OR DROPS.

SEE SHEET S-1BA FOR REINF.
NOTES:
1. ALL BOX ARE CLASS III UNLESS OTHERWISE NOTED
2. SEE STORM SEWER LATERALS SHEETS FOR MORE INFORMATION.
3. SEE WATER & SWR SHEETS FOR MORE INFORMATION.
4. PROPOSED HLR CALCULATED FOR POST-PROJECT CONDITIONS USING MEMORIAL DO.
5. SEE ROADWAY HORIZONTAL GEOMETRY SHEETS FOR MORE INFORMATION.
6. SEE SWR HORIZONTAL GEOMETRY SHEETS FOR MORE INFORMATION.
7. ALL EXISTING STORM CERES TO BE REMOVED UNLESS SHOWN OTHERWISE: MAINTAIN GRAINAGE DURING CONSTRUCTION.
8. SEE DRIVERWAY TABULATION & DETAILS SHEET.
August 12, 2014

Ann Givens, Chair of the Board
Memorial City Redevelopment Authority / TIRZ 17
8955 Katy Freeway, Suite 215
Houston, Texas 77024

Attention: Mrs. Ann Givens

Re: Memorial Drive Drainage and Mobility Improvements TIRZ 17 CIP No. T-1731B
Proposal for Phase I Preliminary Engineering Report

Dear Mrs. Givens,

Lockwood, Andrews and Newnam, Inc. (LAN) is pleased to submit this proposal for engineering services consisting of the preparation of a Preliminary Engineering Report (PER) for drainage, roadway, pedestrian, public utilities and traffic improvements along Memorial Drive between Beltway 8 frontage road and Tallowood Road.

The report will be prepared in accordance with the current City of Houston Infrastructure Design Manual and will focus on evaluation of existing storm sewers and overland flow patterns, roadway geometrics, pedestrian facilities, traffic operations, access management, right of way encroachments and assessment, utility coordination and assessment, environmental assessment, geotechnical investigation, tree impacts, detailed survey, pavement condition, and 30% plan and profile drawings.

The proposed project is identified in the current TIRZ 17 five-year Capital Improvement Plan. The PER is Phase I of the overall project development and will identify the impacts associated with the implementation of the drainage, roadway, pedestrian, public utilities, and traffic recommendations. The PER will be presented to the City of Houston Technical Review Committee for review and comment.

We propose to perform PER services for an amount of $428,600.00. A detailed Scope of Services can be found in Exhibit “A”. Exhibit “B” provides a detailed breakdown estimate of the fees for the basic engineering services and additional services respectively. We are prepared to begin this work immediately.

Please feel free to contact me at (713)266-6900 if you have any questions or need additional information.

Sincerely,

Muhammad Ali, P.E.
Project Manager

Accepted For
Memorial City Redevelopment Authority

Signature Date

Print
4. Drainage Impact Analysis

Drainage impacts associated with the proposed roadway improvement will be evaluated and mitigation measures necessary to ensure no adverse impacts will be proposed. Potential drainage impacts associated with the proposed improvements including effects of additional increased impervious cover, a reduction in storm water storage, and modifications to overland sheetflow patterns. The proposed roadway will discharge the Beltway 8 drainage system and directly to W153-00-00 or Buffalo Bayou. These systems are regulated by TxDOT. Zero increase in peak runoff, water surface elevations, and flow volume will be allowed.

a. **Increased Impervious Cover** – An evaluation of the existing and proposed impervious cover will be performed to identify the changes associated with the proposed roadway improvements.

b. **Changes in Storage** – The proposed roadway, anticipated to be a curb and gutter cross section, will be evaluated to account for any changes in storage.

c. **Overland Sheetflow** – The proposed roadway improvements will be evaluated to identify and quantify overland sheetflow impacts.

d. **Mitigation Options** – Mitigation option concepts will be developed to determine the most effective means (both cost and function) of eliminating potential impacts. Potential mitigation options include: (1) storage beneath the roadway in the form of oversized or additional storm sewer, (2) above ground offsite storage, and (3) subsurface offsite storage.

5. **Proposed System Analysis**

Multiple improvement options will be evaluated and presented to the TIRZ board for review and selection. A recommended alternative will be identified that meets the City’s criteria and cost effectively maximizes benefit for the region. Necessary sizing, location, elevation, and cover requirements of the proposed trunkline will be determined for each alternative. The inlets and laterals will be refined as necessary to ensure sufficient intake & conduit capacity and to maintain a hydraulic grade line (HGL) below or at the gutter elevation of the roadway for the length of the project for the 2-year event. The proposed storm sewer system will be evaluated and improved in order to meet overland flow and Maximum Ponding Elevation criteria for the 100-year event. A 2 dimensional model of the proposed storm sewer system(s) will be constructed and analyzed for the 2-year and 100-year frequencies.

a. **Minimum City of Houston Criteria System** – The systems will be designed to meet the minimum City of Houston Criteria. The proposed improvement will be self-mitigating, meaning the systems will not increase discharge to the receiving channel or drainage system.

b. **Regional Improvement System** – The regional improvements identified in the RDS update will be evaluated in detail with the incorporated project survey. Restricted outfall and non-restricted outfall improvement scenarios will be evaluated. Two alternative solutions will be evaluated for the W153-00-00 watershed.

c. **Ultimate System** – The maximum constructible box size will be determined for the each of the storm sewer sections. A simulation will be performed to evaluate the benefit of the maximum storm sewer.

6. **Improvement Option Cost Estimates**

Planning level cost estimates will be prepared to assist in determining the value of each improvement option.
SUMMARY OF
TECHNICAL REVIEW COMMITTEE MEETING
AND RECORD OF DECISIONS AND ACTION ITEMS

DATE PREPARED: January 7, 2015
PROJECT TITLE: Memorial Drive West Mobility and Drainage Improvements Project
WBS NO.: WBS No. T-17000-00318-7
DESIGN CONSULTANT: Lockwood, Andrews & Newnam, Inc.
SUPERVISING ENGINEER: Thomas Artz, PE
TRC DATE: December 1, 2015

Attendees:

City of Houston:
- Tommy Artz
- T. Rebagay
- Mitchell Ramon

Lockwood, Andrews & Newnam, Inc.:
- Joaquin Lopez
- JoAnne Kamman
- Gary Hill
- Mazen Abdulrazzak
- Kent Wu
- Mohd Warrad
- Muhammad Ali
- Derek St. John
- Ricky Gonzalez

I. Purpose

To review and discuss the recommendations provided by the engineering consultant, make decisions and provide directives. The recommendations are detailed in the Preliminary Engineering Report (PER) titled, "Memorial Drive Mobility and Drainage Improvements Project Preliminary Engineering Report", dated October 2015, prepared by Lockwood, Andrews & Newnam, Inc.

The purpose of the Memorial Drive Project is to Improve Mobility, Safety, Drainage Deficiencies, and Quality of Life.

The project proposes to improve the Mobility and Safety by converting the existing 4-lane asphalt open ditch roadway to a 4-lane concrete curb and gutter section with a raised median. The project will require full roadway reconstruction of Memorial Drive, from the northbound Beltway 8 frontage road to Tallowood Rd. As part of the roadway reconstruction, the aging or deficient public utilities shall be replaced and private utilities shall be evaluated and relocated or replaced as necessary.

The project proposes to improve Drainage Deficiencies with the installation of reinforced concrete storm sewer boxes; ranging from 10'x5' to 10'x10', which will result in increased conveyance and storage, an increase in storm level protection, reduction in overland flow leaving the project area, reduction in roadway ponding and reduction in surrounding area residential flooding.
The project proposes to improve Quality of Life by installing 8-foot wide shared use paths along both sides of the Memorial Drive project corridor, replacing existing traffic signals, providing ADA compliant sidewalks and wheelchair ramps, and installing hardscape and softscape features along the project.

II. Project Background

A. Introduction
Lockwood, Andrews & Newnam, Inc. (LAN) was retained by the Tax Increment Reinvestment Zone No. 17 (TIRZ 17) to perform a Preliminary Engineering Study for Memorial Drive Mobility and Drainage Improvements Project. In addition to the general mobility improvement, another important objective is to address documented drainage issues in the immediate area. The Memorial Drive Mobility and Drainage project was identified in the City of Houston (City) approved TIRZ17 Project Plan and Capital Improvement Plan (CIP No. T-1717).

B. October 2015 PER Findings & Recommendations

Three main roadway improvement alternatives were considered and analyzed. The impacts of each alternative to existing right-of-way, access management, pedestrian amenities, tree inventories, and underground utilities were considered. The alternative selected is the most optimal solution based on benefit, cost and constructability. It will involve complete reconstruction of Memorial Drive, within the existing ROW, with the addition of sub-surface, in-line detention. The recommended proposed improvement will improve overall mobility and safety, drainage deficiencies, and quality of life.

The following recommendations are based on the results from the preliminary geometric evaluation and condition assessment, and drainage analysis:

Roadway:

Existing:
Centered within an existing 100’ right-of-way, Memorial Drive is an existing, undivided 44-foot asphalt roadway with a combination of shallow open ditches and curb and gutter sections; with two 11-foot lanes in each direction, from the northbound Beltway 8 intersection, east to Tallwood Rd. Memorial Drive is currently classified as a major thoroughfare per the 2014 City Major Thoroughfare and Freeway Plan (MTFP). The posted speed limit along Memorial Drive is 35 mph within the project limits. Existing sidewalks are 4-feet wide and discontinuous along the project alignment.

There are two (2) existing signalized intersections along the project limits; Beltway 8 frontage road and W. Bough/Broken Bough intersections. There are also eight (8) unsignalized intersection along the project limits. The City Pavement Condition Rating (PCR) scores along the project alignment vary from the mid 60’s to the mid 70’s.

Proposed:
The Recommended Alternate I proposes a 4-11-foot wide lanes, two way concrete curb and gutter roadway divided by a 24-foot wide raised median with left turn lanes at each median opening. Per the 2015 COH IDM the pavement will be 11-inches thick concrete. The median opening locations were based on an access management study and feedback from the public.

Proposed 8-foot wide Shared Use Paths will be constructed along both sides of Memorial Drive. The proposed Shared Use Path, along the south side of Memorial Drive, is intended to tie into the future TxDOT shared use path project from Terry Hershey Park to the southeast corner of the Beltway 8 northbound frontage road and Memorial Drive. There will be minimum 4-foot buffer space separating the roadway from the shared use paths. ADA compliant wheel chair ramps will also be constructed at both signalized intersections.

Both signalized intersections will up replaced to meet current City of Houston criteria.

No additional ROW is required for the proposed Memorial Drive project with the exception of a 25’x25’ corner clip at the northeast corner of Memorial Drive and Beltway 8 northbound frontage road, and a 20’x20’ corner clip at the northwest corner of Memorial Drive and W. Bough Lane. These corner clips are required for proposed sidewalk continuity, ADA compliant pedestrian ramps, and proposed traffic signal improvements.
****

**APPENDIX E - p.12**

**Drainage:**

**Existing:**
The entire study area is part of the W153-00-00 watershed and is generally drained by roadside ditches and storm sewers existing along the project alignment, ultimately out-falling to W153-00-00. The western limits of the project from W. Bough Lane/Broken Bough Drive to Beltway 8 drain to the Beltway 8 storm sewer trunkline before continuing downstream to Buffalo Bayou. A Regional Drainage Study performed in 2012, then updated in 2014, documented significant deficiencies within the watershed. Significant structural flood damage was reported in the April 2009 rain event as well as the more recent May 2015 rain event. The existing Memorial Drive Drainage System does not currently meet the City's 2-yr or 100-yr drainage criteria. Flooding is partially due to the limited capacity of the Memorial Drive drainage infrastructure and overflow from W153 itself. At the peak of a major rain event, W153 becomes overwhelmed and overland flows into Memorial Drive ROW from W153 via adjacent properties, thus putting adjacent properties at risk of structural flooding. The capacity of the Memorial Drive crossing at W153 is further reduced by the significant tailwater in Buffalo Bayou. Additionally, the area south of Memorial Drive is inundated due to the Buffalo Bayou 100yr floodplain. Neither of these issues can be resolved by the local drainage improvements proposed as part of the roadway project.

**Proposed:**
Five (5) drainage improvements options were evaluated for the project. The recommended Option I is designed to meet the City's 2-year criteria and maximize the benefit of the drainage improvements, while minimizing impacts to W153 and adjacent properties. The proposed drainage option does not change the existing drainage patterns of the current Memorial Drive system. A proposed single 10''x10'' RCB will be installed from W. Bough/Broken Bough to Beltway 8. Dual 10''x5'' RCB's will be installed from W. Bough/Broken Bough to Boheme. A smaller 10''x5'' box is required at the Boheme intersection, so as to not impact an existing 48-inch sanitary sewer crossing. Dual 10''x10'' RCB's will continue from east of Boheme to W153. Restrictors are proposed at the Beltway 8 and W153 outfalls to maintain or reduce existing flow rates and water surface elevations. Throughout the dual RCB's, equalizers will be installed to properly convey flows.

Option I results in a net sub-surface detention volume of approximately 12(+) acre-feet. The project will match or lower flow rates to the receiving storm sewer. This option will also provide a 10-year level of protection.

**Public Utilities**

**A. Water lines:**
The project area is serviced by a 16-inch ductile iron waterline that runs primarily along the southern ROW of Memorial Drive, from east of Beltway 8, for the extent of the project. This line was installed in 1995 and is not recommended to be replaced.

A 12-inch asbestos concrete (AC) water line located at Beltway 8 and continues east to tie into the 16-inch ductile iron water line was installed in 1969 and is recommend to be replaced due to its age and material.

There are seven (7) water line crossings that run perpendicular to Memorial Drive, ranging in size from 8-inch, 12-inch and 16-inch. All water line crossings are recommended to be replaced due to pipe material, conflicts with proposed improvements, and to eliminate any future water line projects that may impact the proposed future roadway.

New fire hydrants will be installed per City spacing requirements. The existing fire hydrants will be removed and salvaged, whenever possible, to reduce costs.

**B. Sanitary Sewer:**
There are four (4) sanitary sewer lines that run parallel to Memorial Drive: A 48-inch gravity line, a 15-inch gravity line, a 12-inch gravity line and a 10-inch gravity line. The existing 48-inch line, installed in 1997 crosses Memorial Drive at Boheme and traverses east along the northern side of Memorial Drive to W153. It is not recommended to replace this line. The 15-inch polyethylene line is located in back lot sanitary sewer easements between Beltway 8 and Boheme. It is not recommended this line be replaced. The 12-inch line runs along the northeast ROW from approximately Old Oaks Drive and Boheme Drive. For the first 290 feet, the pipe was replaced in 1999 using polyethylene pipe. The remaining 285 feet is made of unreinforced concrete that was
installed in 1960. It is recommended that only the older 285 feet of the sanitary sewer line be replaced. The 10-inch line runs along the northeast ROW between Huntingwick Drive and Boheme Drive. This extra strength concrete line runs parallel to the 12-inch line and was installed in 1966. It is recommended that this line be replaced due to its age and pipe material. During detailed design, LAN will study the option of combining the 12-inch and 10-inch lines into one single line.

There are ten (10) sanitary sewer line crossings that run perpendicular to Memorial Drive. They range in size from 8-inch to 24-inch. Seven (7) lines were installed in the 1950's and 1960's and CCTV footage depicted irregularities in the lines. Therefore, it is recommended that these seven (7) sanitary sewer crossings be replaced. The remaining three (3) lines are 1-6-inch ductile iron force main; 1-6-inch cast iron force main, and 1-10-inch ductile iron force main, installed in the 1970's and 1980's. The 6-inch cast iron line is in conflict with proposed improvements and is recommended to be replaced. The 6-inch ductile iron line is also recommended to be replaced due to its age and pipe material.

Traffic Signals
The two existing traffic signals at Beltway 8 and West Bough/Broken Bough will be replaced to meet current City standards.

Private Utilities
CenterPoint Energy has underground gas lines, underground conduits and overhead electric lines. Southwestern Bell Company (SBC or AT&T) has underground cables fiber optic cables, and duct banks, and PVC conduits in the project limits. Coordination with private utility entities will be conducted early in the design process as needed.

Existing Trees:
Approximately 293 existing trees are located within the construction area of the project. 75 trees will be impacted by the project resulting in 393 replacement inches. Landscaping plans and tree protection plans will be necessary in Phase II to comply with City Tree Ordinance.

Geotechnical Study:
The geotechnical report by Aviles Engineering recommends a rigid concrete pavement thickness of 11-inches with an 8-inch lime stabilized subgrade, consistent with the latest City IDM requirements for a 50-year life span pavement.

Environmental Site Assessment:
The Phase I ESA conducted by Aviles Engineering identified seven (7) Recognized Environmental Concerns (REC). Research found a fault line along the project limits, but Aviles' site reconnaissance found no evidence of a fault line. A detailed Phase II ESA is recommended during detailed design along with a fault study to confirm if a fault line exists.

Right-of-way/Easement Acquisition:
No additional ROW is required for the proposed Memorial Drive project with the exception of a 25'x25' corner clip at the northeast corner of Memorial Drive and Beltway 8 northbound frontage road, and a 20'x20' corner clip at the northwest corner of Memorial Drive and W. Bough Lane. These corner clips are required for proposed sidewalk continuity, ADA compliant wheel chair ramps and proposed traffic signal improvements.

Project Coordination:
Project coordination will continue throughout the final design with the City of Houston, TIRZ 17, TxDOT, METRO, Harris County Toll Road Authority, Harris County Flood Control District, adjacent property owners, and several private utility entities. Coordination meetings will be scheduled with the City of Houston as needed throughout the design phase to coordinate design. Upon completion of 60% and 90% design, drawings will be submitted to the City Engineer's Office for review and approval. Early coordination with private utility entities will also be conducted in design.

Traffic Control:
The traffic control plan and construction sequencing will require two main phases to minimize disruption to the traveling public, pedestrians, and adjacent properties. During the first construction phase, the south half of the project will be constructed including storm sewer boxes, and concrete pavement. Temporary pavement along the north side of Memorial Drive will need to be installed to accommodate one lane in each direction, along with a continuous two way left turn lane. The
second phase of construction will move traffic to the newly constructed pavement and maintain the same three lane configuration, then complete the construction of the remaining items along the north side of the project.

Lighting/Landscaping:
Standard City Street lighting will be installed along the project. A detailed landscaping and pedestrian lighting plan will also be developed during construction. These improvements are meant to promote a pedestrian friendly environment along the proposed project corridor.

C. TRC Decisions and Directives

1. LAN will provide 11-foot lanes during construction to accommodate bus traffic.
2. LAN to revise design to reflect 8-foot wide shared-use paths on both sides of Memorial Drive due to the long distances between legal street crossing locations. This will provide the north and south side neighborhoods an equal opportunity to utilize these amenities.
3. Use High Early strength concrete at all intersections.
4. The 100-year storm event City Criteria cannot be met due to W153’s limited capacity and back water from Buffalo Bayou. A regional solution is needed for the area but this is beyond the project’s scope.
5. TIRZ 17 will handle the ROW acquisition for corner clips.
6. LAN will work with planning department to determine if there is a need for utility stub-outs for the Rebuild Houston project at Memorial Bend subdivision.
7. LAN will do a sight distance analysis at each intersection to evaluate if there are sign distance issues.

Based on the above directives and conclusions, the engineering consultant on behalf of TIRZ 17, will proceed with final design of the Memorial Drive Mobility and Drainage Improvements Project. Please contact Muhammad Ali at 713-266-6900, should this summary be inconsistent with the TRC findings and decisions.

Ravi Kaleyatodi, P.E., CPM
Senior Assistant Director
City of Houston/PWE
Engineering Branch

Distribution:

CITY OF HOUSTON:
Tommy Artz
Patricia Campbell
Russell Vunam
Daniel Menendez

TIRZ 17:
Scott Bean, Executive Director

Lockwood, Andrews & Newnam, Inc.:
Muhammad Ali
Derek St. John

Ricky Gonzalez
Brian Whitney
January 21, 2003

Trey Lary, Esq.
Vinson & Elkins
2300 First City Tower
1001 Fannin
Houston, Texas 77002

RE: Memorial City TIRZ Public Improvement Development Contract ("Contract")

Dear Mr. Lary:

Enclosed is one fully signed original Public Improvement Development Contract regarding the above referenced subject for your file.

Should you have any questions, please call me at 713-247-1302.

Sincerely,

Kathryn J. Farley
Sr. Assistant City Attorney

Enclosure
WHEREAS, the Authority wishes to proceed with the design, construction and acquisition of right of way for those improvements identified in Exhibit "A" attached hereto and made a part hereof for all purposes (the "Projects"); and

WHEREAS, the City has authority and jurisdiction over the public streets located within the City; and

WHEREAS, the City finds it is in the public interest to enter into an agreement with the Authority to implement the Projects in order to reduce traffic congestion, improve pedestrian safety, aid drainage, and attract new business development within the Zone; and

WHEREAS, the City finds it is in the public interest to authorize the design and construction of the Projects by the Authority and to cooperate in facilitating the acquisition and construction of the Project by the Authority; and

NOW THEREFORE, and in consideration of the mutual promises, covenants, benefits and obligations herein described, the City and the Authority hereby agree to the terms and conditions of this Contract.

ARTICLE I
DEFINITIONS

1.01. Certain Terms

As used in this Contract, the following words and phrases have the meanings set-out below unless a different meaning clearly appears from the context in which the term appears:

"Acquisition Fund" is defined in Section 3.02 hereof.

"Authority" is defined in the preamble hereof.

"Board of Directors" means and refers to the Board of Directors of the Authority.

"Bonds" means the bonds of the Authority.

"City" is defined in the preamble hereof.

"City Council" means and refers to the City Council of the City of Houston, Texas.

"Contract" is defined as this document, as amended from time-to-time in accordance with the provisions hereof.

"Date of Countersignature" means the date of the countersignature by the City's Controller.

"Notes" means the promissory notes issued by the Authority from time to time.

"Planning Director" means the Director of the City's Department of Planning and Development, his designee, or any other person who may be designated in writing by the Mayor
### TIRZ No. 17 - City of Houston

**Transportation and Related Utility Improvements**

#### Mobility Projects Description

<table>
<thead>
<tr>
<th>Project Description</th>
</tr>
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<tbody>
<tr>
<td>Old Katy Lane, Beltway 8 to Bunker Hill</td>
</tr>
<tr>
<td>Town and Country Way, Attingham to Gessner</td>
</tr>
<tr>
<td>Town and Country Way, Town &amp; Country to Beltway 8</td>
</tr>
<tr>
<td>Westview, Lumpkin to Shadowdale</td>
</tr>
<tr>
<td>Bunker Hill, Interstate 10 to North TIRZ Boundary</td>
</tr>
<tr>
<td>Gessner, Interstate 10 to Barryknoll*</td>
</tr>
<tr>
<td>Gessner, Interstate 10 to Old Katy Lane</td>
</tr>
<tr>
<td>Gessner/Interstate 10 Interchange</td>
</tr>
<tr>
<td>Frostwood Widening, Kingsride to IH 10</td>
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<tr>
<td>Kingsride Widening, Gessner to Frostwood</td>
</tr>
<tr>
<td>Kingsride/Barryknoll Relignment, Gessner to Plantation</td>
</tr>
<tr>
<td>Conrad Sauer Road Widening, Interstate 10 to north TIRZ boundary</td>
</tr>
<tr>
<td>Lumpkin, IH 10 to Westview</td>
</tr>
<tr>
<td>Shadowdale, IH 10 to Old Katy Lane</td>
</tr>
<tr>
<td>West Bough, Kimbrelty to Memorial</td>
</tr>
<tr>
<td>Wisterwood, IH 10 to North TIRZ Boundary</td>
</tr>
<tr>
<td>White Road Widening, IH 10 to North TIRZ Boundary</td>
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<tr>
<td>Barryknoll Repaving, Plantation to Memorial City Way</td>
</tr>
</tbody>
</table>

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### TIRZ No. 17 - City of Houston

**Drainage Improvements**

#### Improvement Projects Description

<table>
<thead>
<tr>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detention Pond adjacent to W151 Box Culverts, North of Interstate 10</td>
</tr>
<tr>
<td>Detention Pond adjacent to W151 Box Culverts with Enclosed Top for Landscaping or Other Improvements, North of Interstate 10</td>
</tr>
<tr>
<td>W151 Channel Improvements for Detention with Enclosed Top for Landscaping or Other Improvements South of Interstate 10</td>
</tr>
<tr>
<td>Attingham Drainage Basin Detention Pond With Enclosed top for Landscaping or Other Improvements, South of Interstate 10</td>
</tr>
<tr>
<td>Oversize Storm Sewers with Proposed TIRZ Mobility Projects</td>
</tr>
</tbody>
</table>

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**EXHIBIT A**

Page 1 of 1
IN WITNESS WHEREOF, the City, the Authority and the Zone have made and executed this Contract in multiple counterparts, each of which shall be deemed an original and all of which shall constitute one and the same instrument.

ATTEST:

MEMORIAL CITY REDEVELOPMENT AUTHORITY

By: __________________________

Name: __________________________

Title: __________________________

ATTEST:

THE CITY OF HOUSTON, TEXAS

By: __________________________

Name: __________________________

Title: __________________________

Anna Russell, City Secretary

ATTEST:

COUNTERSIGNED:

Countersignature Date: __/__/____

REINVESTMENT ZONE NUMBER SEVENTEEN

By: __________________________

Name: __________________________

Title: __________________________
APPENDIX G- p. 1

Community Enhancement Opportunities Map

BUFFALO BAYOU

A wet bottom detention basin along Belknap St could be part of a natural area that provides wildlife habitat, helps treat stormwater runoff, and provides recreation opportunities via trails and interpretive signage. A proposed trail along the south side of the bayou would continue the idea of improving connectivity. Because of the right-of-way is part of an easement, coordination will be required in order to add a trail while maintaining existing uses. It may be difficult to build a trail in this area.

Another potential detention basin at the intersection of Tributary W155-00-00 and Memorial Drive could be used as a small neighborhood park. The park could include trails, picnic facilities, a trailhead with interpretive signs and a pavilion for small gatherings. If the basin was graded to have a flat bottom, it could be used for informational activities such as soccer, softball, or frisbee.

The use of native plantings along the edges of the detention basins could improve the visual quality of sites, provide opportunities for wildlife habitat, and reduce maintenance requirements. Water-quality treatment wetlands could help filter stormwater runoff from nearby residential areas.

City allowed Commercial Developers to build here instead of putting in the 17b Detention Ponds.

NOTE: See 2 X’s on map showing where Aecom Engineering recommended 2 Detention Ponds.
RE: Harris Co Flood Control District paid Aecom Engineering in YR 2012 to do an Engineering Study on the Memorial Area of Houston near W Beltway 8 (on previous page).

The previous page shows an aerial Map of this Area, with dark X’s indicating where Aecom Engineering recommended that 2 Detention Ponds be built, to prevent flooding. But the City of Houston, which has jurisdiction over building & drainage laws, instead of following through with this, chose to allow these 2 Sites to be used for large commercial complexes that have recently been built here: “Memorial Green”, a mixed use project with office buildings, retail stores, & large Free-Standing patio homes, and “Ascension on the Bayou,” a high-rise condominium which was constructed on the N. Bank of Buffalo Bayou & W. Beltway 8. Apparently, City of Houston favored increasing tax-revenue over flood control~ a mistake in hind-sight, for massive flooding destroys property values, & hence erodes the tax-base.

One of the Hurricane Harvey flood-victims, who had to be air-boated out of her home close to the Bayou just east of this new condominium, believes that her home & others in the vicinity would not have flooded had not “Ascension on the Bayou” been built on Buffalo Bayou, as City & other engineering entities had issued reports about the flooding problems in this area, involving the W-153 Watershed which flows into the Bayou here.

After she was out of harm’s way & brought to safety~ but sold her home to an investor for half-price, wanting simply to vacate, as she distrusts the City & County to ever fix their flood problems & get things right there~ she decided to call FEMA in DC to speak with the Professional Engineer, Luis Rodriguez, who had put his Official Stamp of Approval on the Engineering Study done for ”Ascension on the Bayou“. The lady answering the phone at FEMA told the flood-victim that Mr. Rodriguez was unavailable, but that he probably never saw the Study because all of the people in that department “work together as a group”, and that they all just use his FEMA Stamp, collectively. NOTE: It is illegal for anyone else to use a Professional Engineer’s Stamp~ besides being highly unethical.

So FEMA is part of the problem, too.

Therefore, the only 1 governing entity with the proper credentials & long-standing history of being “The Flood Experts”~ US Army Corps of Engineers~ should be put in charge of assessing, managing, & overseeing all of Houston’s flood problems, to fix them & set things aright~ and should be awarded the recipient of all Congressional Bills authorized, appropriated, & allocated for Greater Houston Flood Relief which should be 100% federally-funded. Houston’s flood problems have reached astronomical proportions causing massive destruction of property, loss of human lives, not to mention the quality of life being diminished, in addition to vast loss of economic profitability. Most of all, Houston produces 25% of the Nation’s gasoline and 40% of our jet fuel, so that correcting Houston’s flooding and getting it under control is of tantamount importance for our Country’s Economic & National Security.