

A photograph of the Houston skyline, featuring several prominent skyscrapers, viewed from an elevated position behind a dense forest of trees with autumn foliage. The sky is overcast with grey clouds.

Urban Watershed Assessment Needs for Metropolitan Houston, Texas

August 2017



Stephen C. Costello
Chief Resilience Officer

Federal Funding

- Historically reactive vs proactive
- Need funding to protect the coastal spine now, before disasters like Sandy and Katrina
- Seek FEMA grant funding for infrastructure projects – untapped resource



Be more aggressive in obtaining funding

Statewide Funding

- Prioritize drainage infrastructure statewide
- Statewide funding for water (SWIFT) and transportation, but not for drainage
- No existing 2030 master plan
- Explore funding sources – no new taxes
- Different needs and rainfall across state



Advocate in Austin

Local Efforts to Build Public Trust

WORK TOGETHER TO SOLVE FLOODING ISSUES

Seek regional flooding solutions

Be prepared and mitigate for disasters

Invest in infrastructure

Provide relief as quickly as possible

Apply rules consistently and
ensure responsible development

Encourage green solutions
& citizen participation



“Just keep water out of our homes!”

Work Together to Solve Flooding Issues



- **\$43 million loan from Texas Water Development Board**
- **City to advance funding to Harris County for flood protection measures on Brays**
- **Harris County to reimburse city with federal funds**
- **City hopes to advance total of \$130 million for flood damage reduction projects on Brays, Hunting and White Oak Bayous**
- **Unprecedented coordination between city, county, state and federal agencies**



Common Taxpayer, Common Problem, Common Solution

Brays Bayou Bridge Work

BRAYS BAYOU Eight Bridges in COH TWDB Application Service Area - Entire Watershed

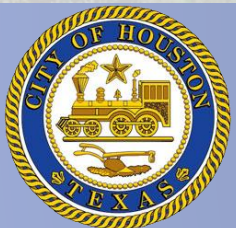


SEQUENCE 1	SEQUENCE 2	LEGEND
Forest Hill 2018	Buffalo Speedway 2018	Under construction or completed bridge replacement/extension/modification
South 75th 2019	Stella Link (bridge extension only) 2019	Proposed bridge replacement/extension/modification
Lawndale 2020	Greenbriar 2020	Proposed bridge replacement/extension COH TWDB Application
Telephone 2021	Almeda 2021	



Disaster Relief

- Texas General Land Office
- CDBG Disaster Recovery 2015 (\$60 million) and 2016 (\$12 million) for infrastructure
- Emphasis on infrastructure projects to benefit more people
- Collaboration - Housing and Public Works
- SWAT and CIP projects
- Buyouts



Build Public Trust

Work together to solve flooding issues

SEEK REGIONAL FLOODING SOLUTIONS

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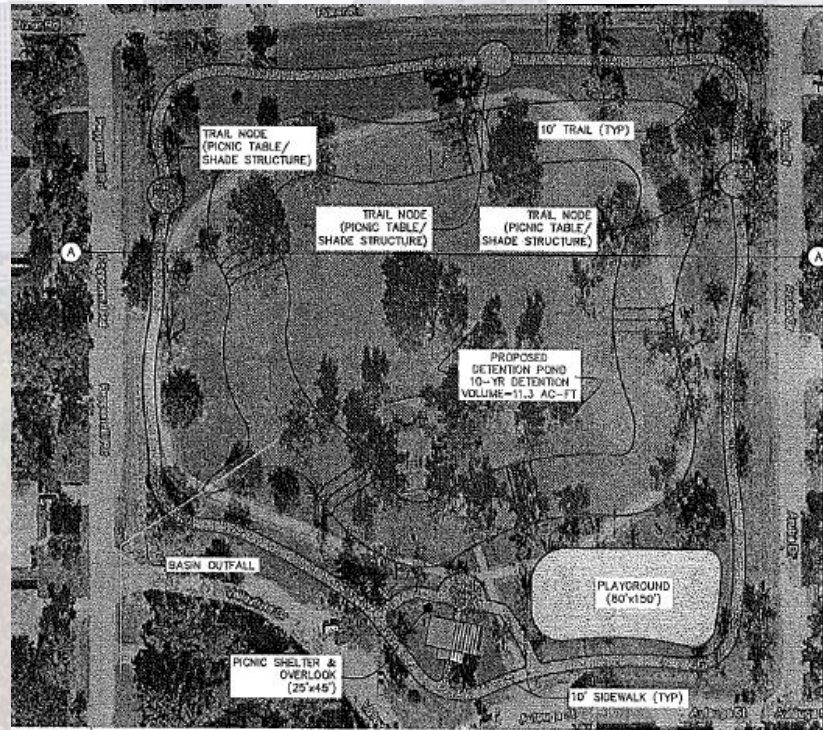
Seek Regional Flooding Solutions

PWE consultant looking for regional detention sites

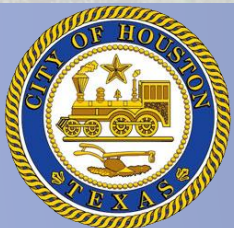
Exploring use of golf courses, landfills, and parks for detention



Inwood



James Lee Park



Build Public Trust

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Seek regional flooding solutions

BE PREPARED AND MITIGATE FOR DISASTERS

Invest in infrastructure

Provide relief as quickly as possible

Apply rules consistently and
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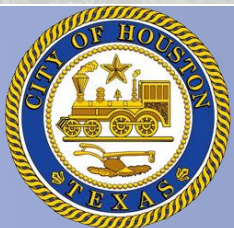
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Be Prepared and Mitigate for Disasters

City of Houston **HAZARD MITIGATION ACTION PLAN**



Build Public Trust

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INVEST IN INFRASTRUCTURE

Provide relief as quickly as possible

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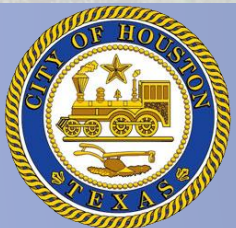
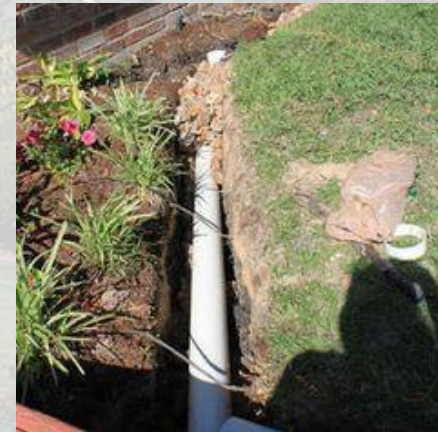


“Just keep water out of our homes!”

Invest in Infrastructure



- **ReBuild Houston Program**
- **5-year Capital Improvement Plan projects**
- **Ongoing maintenance**
- **Storm Water Action Teams (SWAT) for rehabilitation and upgrade to standards**



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PROVIDE RELIEF AS QUICKLY AS POSSIBLE

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Provide Relief as Quickly as Possible - SWAT

Improvements

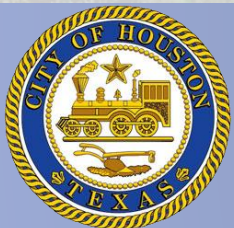
- Ditch Widening
- Driveway Culvert Replacement
- Inlet Replacement
- Side Lot Swales
- Sewer Line Replacements

Funding

- \$10 million approved by City Council on January 11, 2017
- Start with 22 projects/2 in each council district

Issues

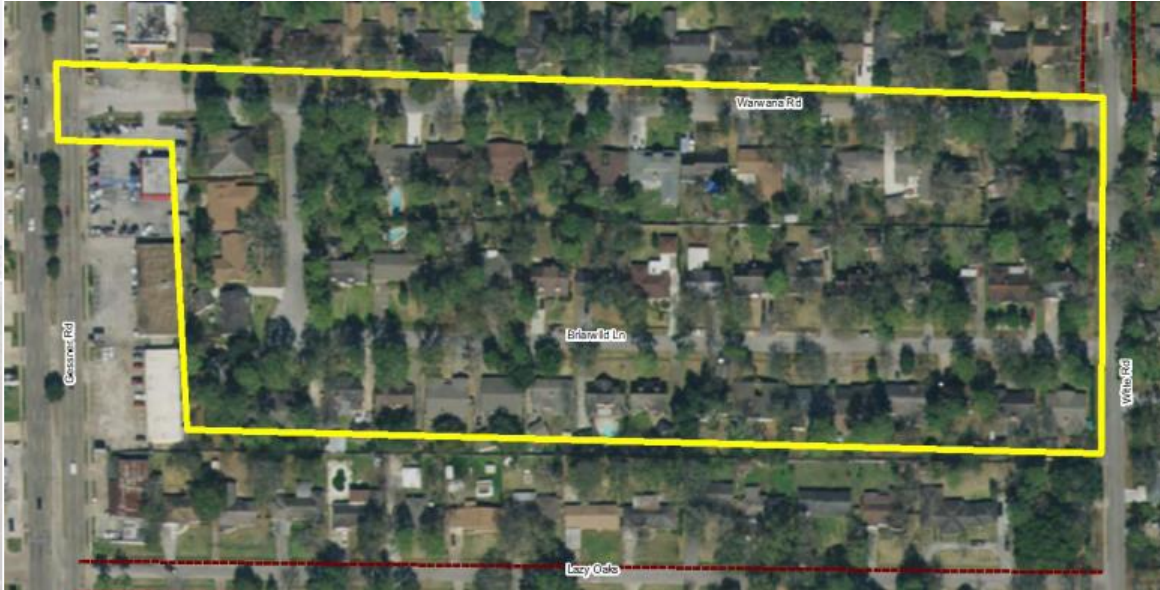
- Department Resources
- Policy Changes
 - De minimus Storage
 - Roadside Ditch Driveways
 - Roadside Ditch Obstructions



**Pothole Program for Drainage
Between Normal Maintenance and CIP**

Roadside Ditch Repair

In Design



10058 Briarwild Ln.
(N - Warwana Rd.; S - Briarwild Ln.;
E - Gessner Rd.; W - Witte Rd.)

Drainage Issues:
Culverts undersized, collapsed or
not set to proper flow line
Silted ditch flow lines and culverts

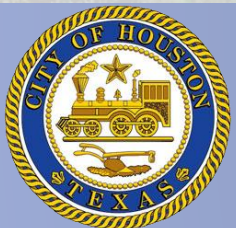
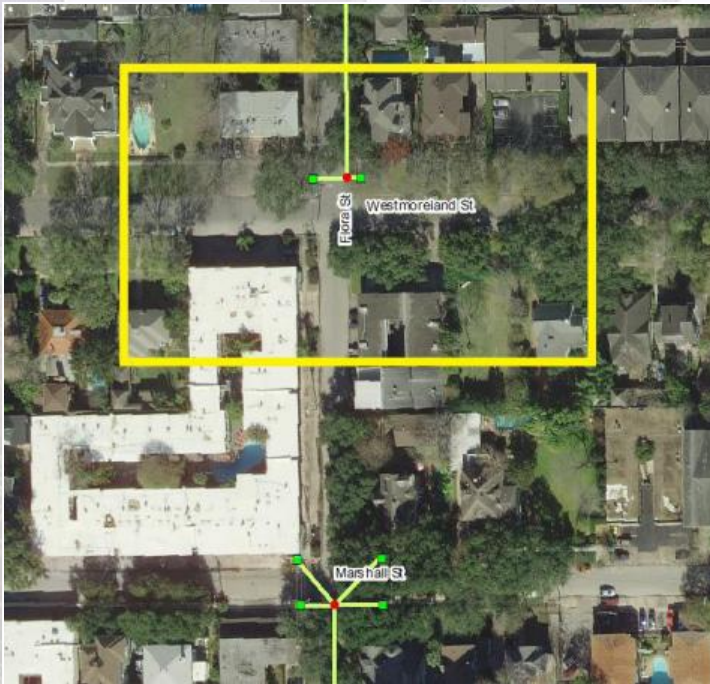


Storm Sewer Repair

COMPLETED

3600 Flora St.

Drainage Issues: Existing culvert/ grate failure blocking proper drainage



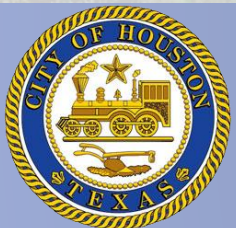
Outfall Repair



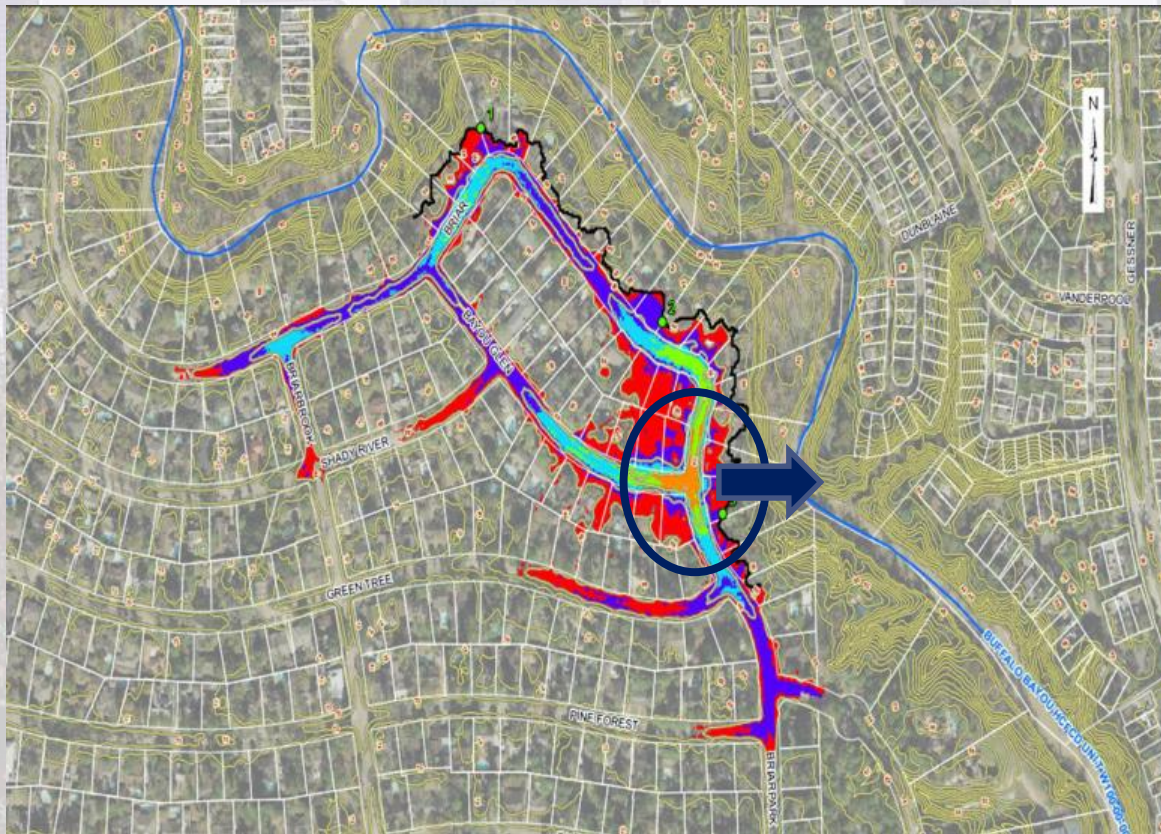
COMPLETED

**11507 Bowlan Ln.
(Westbury Pkg. 2)**

**Drainage Issues:
24-inch outfall collapse**



SWAT Side Lot Swale Pilot Projects



Legend

- Low Point
 - Drainage Area Divide
 - 2 ft Contours
- Ponding Elevation (ft)**
- 60.31 - 60.5 (13.5 hrs)
 - 60.5 - 61.5 (13 hrs)
 - 61.5 - 62.5 (11.5 hrs)
 - 62.5 - 63.5 (9.5 hrs)
 - 63.5 - 65 (7 hrs)
 - 65 - 66



Build Public Trust

Work together to solve flooding issues

Seek regional flooding solutions

Be prepared and mitigate for disasters

Invest in infrastructure

Provide relief as quickly as possible

**APPLY RULES CONSISTENTLY AND
ENSURE RESPONSIBLE DEVELOPMENT**

Encourage green solutions
& citizen participation



“Just keep water out of our homes!”

Apply Rules Consistently and Ensure Responsible Development



Re-examine city criteria as it relates to detention and fill requirements



Step up enforcement of rules in place to protect homeowners



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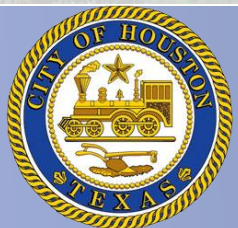
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**ENCOURAGE GREEN SOLUTIONS
& CITIZEN PARTICIPATION**



“Just keep water out of our homes!”

Encourage Green Solutions and Citizen Participation



Grey to Green Concept

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