

Tuesday
December 5, 2017

Flood Hazard Mitigation Task Force



Draft Hazard/Risk Assessment Matrix

Flood Mitigation Plan and CRS

	Assessment/History	Risk/Issues	Mitigation Options/Goal	Action/Implementation Plan
Hazard (Categories & Specifics)				

	Risk/Issues	Mitigation Options/Goal
Public Communication	Residents Utilizing Non-City of Bellaire Outlets to Obtain Information	<ul style="list-style-type: none"> • Outlets should be marketed to stakeholders throughout the year • Non-City of Bellaire Outlets Should be Utilized to Distribute Information
	Communication Efforts Not Reaching Audience	<ul style="list-style-type: none"> • All outlets available should be utilized by the City.
	Lack of Pre-Event Communication	<ul style="list-style-type: none"> • Provide regular up-to-date information through each of the City's communication outlets to residents, employees, and community stakeholders.
	Lack of Communication During an Event	<ul style="list-style-type: none"> • Up-to-date information should continuously be distributed during an event utilizing all outlets available to the City.
	Lack of Post-Event Communication	<ul style="list-style-type: none"> • Provide regular up-to-date information through each of the City's communication outlets to residents, employees, and community stakeholders.

	Risk/Issues	Mitigation Options/Goal
Mobility	Reduced mobility can increase emergency response times.	<ul style="list-style-type: none"> It is unlikely that this condition will ever be fully mitigated. Information dissemination would benefit the public to inform them of impassible roads and unsafe conditions.
	Bellaire's Public Safety Components will not be able to respond with "normal" first response equipment	<ul style="list-style-type: none"> Develop plan, based on predicted weather, to use non-conventional vehicles for response
	Inability to rescue persons trapped in home, where flood inundation makes continued occupation life threatening. More persons calling for rescue than Bellaire has ability to respond	<ul style="list-style-type: none"> Develop a multi departmental approach to rescue by investigating, training and equipping to help solve issue. Develop a plan that seeks citizen asset owners, develops relationships and trains with Citizen Responders (boat owners & high water vehicles), and mobilizes this group as a force multiplier in flood emergencies. Update the list quarterly.
	Inability to rescue persons trapped in home, where flood inundation makes continued occupation life threatening	<ul style="list-style-type: none"> Investigate flood warning / mass notification system that will reach all residents with relevant hazard warning and evacuation advice.
	Specialized response vehicles will not be able to reach all residents (water too high for truck, water too low for boat) and move to safe haven.	<ul style="list-style-type: none"> Develop plan to move recued persons from deep water inundation, to shallow water vehicle access area, to area of relative safety, to eventual shelter.

	Risk/Issues	Mitigation Options/Goal
Infrastructure	Storm water that has backflowed into the City's system results in less capacity for local rainfall events resulting in flooding.	<ul style="list-style-type: none"> • Include backflow prevention systems in the upcoming Bonds for Better Bellaire 2016 Projects. Coordinate with neighboring agencies (i.e. TxDOT, City of Houston and HCFCD) to prevent backflow stormwater from entering the City's underground drainage systems.
	Overland sheet flow causes flooding in low lying areas.	<ul style="list-style-type: none"> • Lower the height of the floodwaters during a localized 100-year storm event in areas where overland flow problems exist.
	Brays Bayou is undersized for extreme rain events and flood stages prevent local Bellaire drainage systems from adequately serving the area.	<ul style="list-style-type: none"> • Determine if additional improvements to Brays Bayou are possible beyond Project Brays to further increase capacity. • Provide more flood-hardened rain and flood stage gages for better flood forecasting
	It flooded many houses South of Bellaire Blvd. Majority of these houses were flooded first time.	<ul style="list-style-type: none"> • Beside the Project Brays, local detention facilities are needed. Goals 1) move remaining areas (Post Oak Terrace and Southdale) out of 100 year floor plain even after the completion of the project Brays 2) reduce or prevent wide spread damage in the events that are as significant as Harvey (beyond 100 year events)
	Inability to convey storm water adequately to Brays Bayou, therefore creating additional flooding risks.	<ul style="list-style-type: none"> • Increase capacity of the North/South drainage systems and the Cypress ditch.

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Infrastructure	Street Flooding	<ul style="list-style-type: none"> • Increase street storm water storage in order to reduce structural flooding. Assess the advantages and disadvantages of street flooding vs. structural flooding.
	Existing topography, soils and roadway patterns contribute to flooding. These conditions and barriers trap sheet flow generated by extreme rain events and make flooding worse.	<ul style="list-style-type: none"> • Reduce barriers to flow of flood waters. Educate residents on the local topography and why it exacerbates flooding.
	Outfall of Kilmarnock Ditch is undersized.	<ul style="list-style-type: none"> • Investigate the possibility of increasing the size of the outfall of Kilmarnock Ditch.
	Blockage of inlets and drainage systems by debris make flooding more severe.	<ul style="list-style-type: none"> • Maintain the storm sewer system so that it is free from blockages and operates at its peak efficiency. • Ensure adequate staffing to maintain storm sewer system
	Drainage from outside the City.	<ul style="list-style-type: none"> • Work with surrounding municipalities and with agencies that own the external storm sewers to reduce peak flows of storm water into the City. • Eliminate the water Net surplus in Bellaire
	Attempting to mitigate flooding from a 100-year storm without consulting neighboring agencies and constructing improvements outside the City limits will have limited benefit within the City.	<ul style="list-style-type: none"> • The City must work with, and lead if necessary, TxDOT, Harris County Flood Control, City of Houston, City of West University, Union Pacific Railroad and others towards a workable and reasonable overall floodwater mitigation plan.

	Risk/Issues	Mitigation Options/Goal
Preparedness	Residents will not be adequately prepared for natural and man made disasters	<ul style="list-style-type: none">• Community outreach to increase preparedness awareness.

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Facilities & Equipment	Repetitive loss of equipment and or loss of wastewater services to the community.	<ul style="list-style-type: none">• Sell or close the WWTP and contract with Houston for service. Relocate PW facility.

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Health & Safety	Danger to people walking, playing, or riding bicycles in floodwaters.	<ul style="list-style-type: none"> Prevent injuries to residents due to walking, playing, or riding bicycles in floodwaters. Prevent infiltration into the sanitary sewer so that overflows and contamination of floodwaters will be reduced.
	Persons, including rescuers, will come in contact with pests and chemicals that may create health hazard	<ul style="list-style-type: none"> Keep citizens out of flood waters and keep rescuers in Personal Protective Equipment specific to the hazards.

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Economic Impact	Negative public perception of housing stock	<ul style="list-style-type: none"> • Explore necessary effort to reduce improvement on repetitive flood structures • Disclosure of Flooding/Flood Variance History • Reduce Number of Unsafe Structures in the City • Seek community input on development in the floodplain
	Uncertain Base Flood elevations in AE and non-AE zones (100 yr. zones).	<ul style="list-style-type: none"> • Provide clear guidelines for development and redevelopment for non-compliant structures
	A drop in demand for Bellaire homes, compared to the surrounding area, will lead to lower home values, lower tax revenues, and an overall deteriorated community	<ul style="list-style-type: none"> • Adjust the Community Rating System (CRS) to a non-cumulative approach to the 50% rule • A vocal adherence to a stance consistent with the rest of the metro area will eliminate market value deterioration
	Elevation of new and existing structures improperly meeting future COB codes	<ul style="list-style-type: none"> • Ensure compliance with BFE's are sufficient for known flooding risk.

Schedule

Work Plan:	Date:
• Kick Off Meeting (1)	Monday, Oct 30, 17
• Present Risk Assessment & Mitigation Strategy with Task Force (2)	Tuesday, Nov 14, 17
• Address Task Force Comments on Risk Assessment & Mitigation Strategy (3)	Tuesday, Dec 5, 17
• Review Action Plan with Task Force (4)	Tuesday, Dec 19, 17
• 2 nd Review of Action Plan with Task Force (5)	Tuesday, Jan 9, 18
• Action Plan Public Hearing	Monday, Jan 29, 18
• Task Force Review of Public Hearing Comments (6)	Tuesday, Feb 6, 18
• Finalize Action Plan (7)	Tuesday, March 6, 18
• Adopt and Implement Action Plan	Monday, March 19, 18

Before
December 19

