

**UPDATE – 2/17/2017**  
**EFFORTS TO IMPROVE FLOODING/HIGH WATER PROTECTION/WARNING**  
**SYSTEMS**

**HCTRA**

**Flood Gate Locations:**

- EB Westpark Tollway @ Post Oak Exit
- Post Oak Exit @ Richmond

**Sam Houston Tollway Barrel Locations:**

- NB West Sam @ Bellaire Exit (4)
- NB West Sam @ Bellaire Entrance (4)
- SB West Sam to Westpark Tollway East (6)
- NB West Sam @ Westpark Tollway East (8)
- NB West Sam @ Westpark Tollway East/West Exit (6)
- WB South Sam @ W Airport (5)
- WB South Sam @ 90 Exit (5)
- EB South Sam @ 90 Exit (5)
- NB East Sam @ Fairmont Exit (6)
- NB East Sam @ Red Bluff Exit (6)
- NB East Sam @ Spencer Entrance (5)
- SB East Sam @ Spencer Exit (6)
- SB East Sam @ Fairmont Exit (7)

**Hardy Toll Road Barrel Locations:**

- Hardy Toll Road @ Crosstimbers (6)
- Hardy Toll Road @ Beltway 8 (13)

**Westpark Tollway Barrel Locations:**

- EB Westpark @ 59 (6)
- EB Westpark TR @ Post Oak Exit (10)
- WB Westpark TR @ Rice Entrance (8)
- SB Briarpark @ WPTR (5)
- NB Ranchester @ WPTR (5)
- NB 59 @ WPTR (6)
- NB West Loop S SR @ EB SW Frwy SR (10)
- SB SW Frwy SR @ Richmond (10)
- WB Westpark @ SB W Sam Entrance (6)

HCTRA revised its Incident Management and Emergency Procedures Document following the Tax Day Flood. Included in the procedures is the specified process for manning locations where high water is considered to be life-threatening. The procedures specify the coordination efforts with TxDOT to proactively monitor and close any adjacent TxDOT location which may become impassable.

## **Texas Department of Transportation – Houston District**

### **Camera Locations:**

- IH 610 and Richmond underpass
- IH 10 @ North Post Oak Underpass

### **Manually operated Flood Gate Locations:**

- IH 610 and Richmond Underpass in both directions

### **Flood Gauges:**

- TxDOT has ordered and surveyed locations for the installation of 235 flood gauges at locations throughout the District. The goal is to ensure these gauges are visible on the approach to underpasses, so motorists have time to turn around.
- The gauges are yellow and will be deployed at critical locations in the 6 county region.
- Installation of all gauges should be complete by the end of June 2017

### **Automated flood gates:**

- TxDOT studying the feasibility of the technology protocol to deploy automated gates at critical underpasses.
- Issue
  - requirement of favorable geometrics at underpass locations
  - gates must be crash worthy
- TxDOT is in discussion with several automated gate vendors

TxDOT has an agreement with HCTRA that at locations where there are adjacent TxDOT/HCTRA facilities (e.g. IH 610 and Richmond) whoever approaches the location first should manually close the gates and inform the other of the action. Manual monitoring of these locations will be coordinated and conducted by both agencies.

It should be noted that following the Tax Day Floods, TxDOT conducted an analysis the flood event and corresponding response. The study recommended changes in procedures and policies and outlined a more effective system of the warning motorists of high water/dangerous locations. The installation of flood gauges and the analysis of automated flood gates are a result of this study.

## **CITY OF HOUSTON**

### **Resilience Office**

The City of Houston is addressing flooding in Houston on a variety of fronts. Stephen Costello, the Mayor's appointed Resilience Officer, is working on recovery from previous floods and improvements to reduce the threat of future flooding:

- SWAT Program - \$10 Million has been authorized by City Council to use general funds to establish the Storm Water Action Team to reduce localized drainage problems throughout the City not directly related riverine/bayou overbank flooding.
- Texas Water Development Board funding for Project Brays - \$43 Million loan from the TWDB to advance and expedite work by HCFCD on Project Brays.
- Community Development Block Grant – Disaster Recovery Funds - City received \$66 Million in CDBG DR funds to address severe flooding impacts that occurred in 2015. \$40 million will be spent to improve drainage infrastructure and the remaining \$16 million will be spent on buyouts in conjunction with Harris County Flood Control District's existing program. Additional funding may be available to address needs resulting from flooding in 2016.

### **Department of Public Works**

- To date, there are 30 low lying/underpass locations where flashers have been installed that are activated by the accumulation of rising water. Flashers are currently being installed at nine additional locations where high water/flooding tends to occur during heavy rain events.
- The City is updating their flood warning standards and reviewing advanced technology options to improve the warning system. They are considering an automated traffic signal system at high water locations that is activated remotely. They hope to start deploying the new signal system in FY 2018.
- Presently, the City pre-deploys barricades and barrels at key intersections and underpasses prior to predicted heavy rains. Police officers and other key city staff are able to put the barricades in place as needed without waiting for Public Works or HPD to arrive at the problem areas.

Final note: There is a Flash Flood Messaging Working Group (Travis Herzog is a member of the group) that is examining ways to get information out in the most timely and efficient manner regarding high water locations and dangerous underpass locations during a severe weather event. TranStar is also working on an app and map that will identify high water locations on both the local freeways and on major thoroughfares. TTI is developing the app and they plan to test and activate the app this year.

