HARRIS COUNTY FLOOD CONTROL DISTRICT

Fact Sheet

August 2014

Poor Farm Ditch/ Kilmarnock Ditch

BACKGROUND

Poor Farm Ditch (HCFCD Unit D111-00-00) and Kilmarnock Ditch (HCFCD Unit D113-00-00) are man-made drainage channels that carry stormwater from surrounding neighborhoods in southwest Harris County to Brays Bayou. Collectively, the channels provide drainage to portions of the cities of West University Place, Southside Place, Houston and Bellaire. Prompted by concerns of frequent street and house flooding, as well as failing infrastructure in Poor Farm Ditch, the Harris County Flood Control District, in 2002, initiated a regional drainage study for the two channels to investigate alternative improvements that might be considered. During the execution of the study, a stakeholders group comprised of representatives from the cities of West University Place, Southside Place, Houston and Bellaire, as well as representatives from the Braeswood Place Homeowners Association, was organized to help the Flood Control District formulate alternatives and assess community preferences regarding possible solutions. The study findings were published in 2004 in a report entitled the "Poor Farm & Kilmarnock Regional Study" (2004 Study).

FEASIBILITY STUDY

The study was directed by Flood Control District staff and supported by Claunch & Miller Inc., engineering consultants, and focused on the hydraulic capacity of Poor Farm Ditch and Kilmarnock Ditch and the constraints associated with these two channels. Poor Farm Ditch provides drainage to approximately 1,330 acres of highly developed watershed, and Kilmarnock Ditch provides drainage to 884 acres of highly developed watershed. The analysis considered stormwater flow that would be generated by both 10 percent (10-year) and 1 percent (100-year) rainfall events. Because of the two channels' close interface with Brays Bayou, and the ongoing federal flood damage reduction project ("Project Brays") sponsored by the US Army Corps of Engineers and the Flood Control District, the study had to consider stormwater detention volume needed to mitigate the potential impacts on Brays Bayou resulting from identified improvements on these two tributary channels.

Key findings from the 2004 Study included the following:

- Kilmarnock Ditch has adequate capacity to convey runoff from a 1 percent (100-year) storm event. However, the channel crossings at the Beechnut Street/North Braeswood Boulevard bridge, and at the Brays Bayou outfall, are inadequate and need to be enlarged.
- Poor Farm Ditch upstream of University Boulevard has adequate capacity to convey runoff from a 1 percent (100-year) storm event.
- Poor Farm Ditch downstream of Bellaire Boulevard to the confluence with Brays Bayou has more than 50 percent excess capacity to convey runoff from a 1 percent (100-year) storm event.
- The reach of Poor Farm Ditch between University and Bellaire boulevards is not adequate and would need to be enlarged by as much as 75 percent to convey runoff from a 1 percent (100-year) storm event.
- The Bellaire Boulevard bridge on Poor Farm Ditch needed to be widened because it was a constraint to stormwater conveyance.

The study concluded that, despite making the improvements to the reach of Poor Farm Ditch between University and Bellaire boulevards, the channel downstream of Bellaire Boulevard had more than adequate capacity to contain the increased flow within banks. No additional stormwater mitigation was necessary on Poor Farm Ditch.

However, the 2004 Study also concluded it would be necessary to mitigate the impacts of the proposed Poor Farm Ditch and Kilmarnock Ditch improvements on Brays Bayou by providing stormwater detention along Brays Bayou. It was estimated that 43 acre-feet of mitigation was necessary to mitigate impacts of the proposed Poor Farm Ditch improvements, and another 21 acre-feet for proposed Kilmarnock Ditch improvements.

SUBSEQUENT STUDIES

Following the 2004 Study, the Flood Control District undertook additional, more detailed studies of Poor Farm Ditch. It was determined that proposed improvements on the channel reach between University and Bellaire boulevards would be limited by right-of-way (ROW), and a 1 percent (100-year) channel design would not be possible without obtaining additional ROW. A 2009 study concluded that, if the proposed bridge and channel improvements were limited to fit within the existing ROW on Poor Farm Ditch, the mitigation could be reduced to 13.5 acre-feet. Combined with the 21 acre-feet needed to mitigate proposed Kilmarnock Ditch improvements, the revised volume for both Kilmarnock and Poor Farm Ditch is 34.5 acre-feet to mitigate impacts on Brays Bayou.

In 2010, the Flood Control District participated with the City of Houston in the construction of the Meyer Stormwater Detention Basin (HCFCD Unit D500-08-00), which created a total of 191 acre-feet of stormwater storage: 152 acre-feet for the City of Houston and 39 acre-feet for the District. This storage was eligible to be used for storm drainage mitigation projects between Fondren Road and State Highway 288, which included the proposed improvements on Poor Farm Ditch and Kilmarnock Ditch.

COLLEGE STREET STORM SEWER PROJECT/BELLAIRE BRIDGE AND RESTRICTOR REMOVAL

In 2007, the City of West University Place initiated construction of the College Street storm sewer project to improve local storm drainage. The storm sewer project did increase stormwater flow into Poor Farm Ditch; however, a hydraulic analysis proved that Poor Farm Ditch downstream of Bellaire Boulevard could accommodate the increased flows within the channel banks and without adverse impacts to Poor Farm Ditch. There was, however, an impact on Brays Bayou that required 13.5 acre-feet of storage to mitigate. For that reason, the Flood Control District required the City of West University Place to either restrict its outfall or provide 13.5 acre-feet of detention storage to offset the impacts on Brays Bayou. At that time, the District only had 4.4 acre-feet of storage in the Meyer Basin that was not already programmed and agreed to sell that to the City of West University Place in 2012 to mitigate a portion of the storm sewer project. As a result, a restrictor was installed on the College Street storm sewer outfall to Poor Farm Ditch until additional mitigation storage could be found.

In early 2008, the City of Southside Place launched the Bellaire Boulevard bridge replacement project. This project was identified in the 2004 study and determined to need 10.3 acre-feet of storage to mitigate impacts to Brays Bayou. This storage was secured in the Meyer Detention Basin in 2010.

KILMARNOCK DITCH STUDY

In 2013, the District further evaluated the stormwater detention requirements associated with Kilmarnock Ditch that were identified in the 2004 study. By conducting more detailed analyses that included field survey data and computer modeling, it was determined that under existing conditions the 1 percent (100-year) flows go over and through the existing dual culverts at the Brays Bayou outfall. The 2004 study did not consider the weir flow over the dual culverts which helps convey the existing 1% flows into Brays Bayou. For this reason, it was determined the 21 acre-feet stormwater mitigation requirement identified in the 2004 Study was not needed and could be used for other purposes. As a result of this finding, the District elected to sell an additional 9.1 acre-feet of capacity in the Meyer Basin to the City of West University Place, which along with the previously acquired 4.4 acre-feet, totaled 13.5 acre-feet or the amount needed to mitigate the College Street storm sewer project. In early 2014, the City of West University Place purchased the mitigation and subsequently removed the restrictor located at Bellaire Boulevard and Poor Farm Ditch.

MOVING FORWARD

After securing capacity in the Meyer Basin to mitigate the Bellaire Boulevard bridge replacement, the College Street storm sewer project, and determining that the previously reserved mitigation for Kilmarnock Ditch is no longer needed, the Flood Control District has just over 15 acre-feet of mitigation available at the Meyer Basin to offset future project impacts. Alternatives for improving Poor Farm Ditch from Bellaire Boulevard to University Boulevard have priority and are in the process of being further developed. This District will establish dates for future meetings to keep the stakeholder group informed and engaged as the alternatives are narrowed and the final design is initiated.

ABOUT THE HARRIS COUNTY FLOOD CONTROL DISTRICT

The Harris County Flood Control District provides projects that reduce flooding risks and damages, with appropriate regard for community and natural values. With more than 1,500 bayous and creeks totaling approximately 2,500 miles in length, the Flood Control District accomplishes its mission by devising flood damage reduction plans, implementing the plans and maintaining the infrastructure. To learn more about the Flood Control District, visit www.hcfcd.org

CONTACT US

To ask a question or to comment on the project, please contact the Harris County Flood Control District's Project and Study Information Line at 713-684-4040.