



Legislation Text

File #: 20-0270, Version: 1

Consider and take action on a resolution authorizing an amendment to the professional services agreement with Lockwood, Andrews & Newnam, Inc. for added Drainage Modeling work related to the Bensons Bayou Detention Project, Phase 1 (DR2006) in an amount not to exceed \$64,440 (Director of Engineering)

Approval of this resolution will authorize the City Manager to execute an amendment with Lockwood, Andrews & Newnam, Inc. (LAN) to further analyze Benson Bayou to determine the volume of detention necessary along Benson Bayou for flood risk reduction while accounting for Atlas 14 based rainfalls in an amount not to exceed \$64,440.

In November 2019, Council approved a Professional Services Agreement with LAN to provide preliminary engineering services for drainage improvements along Benson's Bayou. The PSA was for an amount not to exceed \$379,250. These fees were split between an H&H study for a segment of Benson Bayou and related additional services that may have been needed. The crux of the initial PSA was based on an H&H study of the portion of Benson Bayou primarily between SH 96 and FM 646. This area had originally been identified in the City's 2014 Master Drainage Plan, Phase 2, so the first step in this current project was going to update that study area using the new Atlas 14 rainfall intensity rates. Also, as part of this agreement, LAN was to provide 2 options for staff to consider related to drainage improvement projects. The goal of these options was to reduce the potential for flooding in affected neighborhoods while increasing the capacity and conveyance in Benson's Bayou.

The initial H&H study was completed in late February 2020 and confirmed that Benson Bayou is inadequate for major rainfall events which results in widespread street flooding and in extreme cases, structural inundations.

The first option the study evaluated as a potential solution was for new detention storage to be constructed in the open area adjacent to Benson Bayou located east of the Victory Lakes 7B Mitigation Pond. The study found that this 29-acre tract of land would allow for the creations of a 135 acre-feet detention pond. When looking at the 1% (100-yr), 10% (10-yr), and 50% (2-yr) storms, this detention pond only provided a minimal reduction in the water surface elevation (WSE) along Benson Bayou. At the HL&P power line culvert, which is directly downstream of this site, the WSE reduction was 1.12 ft for the 50% storm event, 0.31 ft for the 10% storm event, and 0.08 ft for the 1% storm event. While providing only minimal WSE reduction and no adverse elevation impacts within the watershed or Dickinson Bayou, but it did increase the peak flow approximately 0.3%. The estimated cost for this option was \$7 million.

The second option was working with the owners of the Beacon Lakes Golf Club to incorporate additional detention within the golf courses. The total area of the golf club is 125 acres. The owners of the Golf Club had previously expressed interest in working with the City on this project under the assumption that they would be able to keep the golf courses open. With that caveat, the WSE only had a minimal reduction (0.01 ft) during 1% storms. This option also caused an increase in peak flow of 0.1%. The estimated cost for this option was \$1.2 million.

Likewise, when looking at both of these options as 1 big project, it did not show any significant WSE reduction along Benson Bayou but did result in a peak flow increase.

After assessing this report and further discussions with LAN on potential solutions for the Benson Bayou Watershed, Staff feels that the H&H model should be expanded to include the upper reaches of Benson Bayou. The revised study will identify additional stormwater detention basins. These locations will be evaluated for potential impacts to downstream receiving channels, such as Dickinson Bayou, and upstream contributing channels for 1%, 10%, and 50% storm frequencies. This evaluation will include the analysis of pre-project and post-project conditions for flow discharge and water surface elevations at the model boundaries for Benson Bayou as well as critical locations along the improvement

area.

This expansion of the study will allow for a better understanding of the limitations of the existing drainage system and identify suitable detention areas that reduce the WSE along Benson Bayou without adversely impacting downstream neighbors.

The total anticipated cost for this change order is \$64,440 and the added H&H study can be completed within 120 calendar days of a notice to proceed being issued. Staff recommends executing this change order as presented.

Attachments:

1. Data Sheet
2. Proposed Resolution
3. Exhibit A - Amendment to the PSA for Benson's Bayou Detention Project, Phase 1
4. Executed PSA
5. CIP Project Sheet
6. Aerial Map

CONTRACT ORIGINATION: The amendment has been reviewed and approved by the City Attorney's office.

FUNDING

{X} Funding in the amount of \$64,400 is available from fund 5250, 2019 Proposition A, with expenses charged to project expense string DR2006-PLAN DESIGN-DESIGN- 19PROPA

STRATEGIC PLANNING

{X} NOT APPLICABLE