



City of League City, TX

300 West Walker
League City TX 77573

Meeting Minutes City Council

Tuesday, June 22, 2021

5:00 PM

Johnnie Arolfo Civic Center
400 West Walker Street

Council Work Session

The City Council of the City of League City, Texas, met in a work session in Johnnie Arolfo Civic Center at 400 West Walker Street on the above date at 5:00 p.m.

Mayor:

Pat Hallisey

City Council Members:

Andy Mann
Hank Dugie
Larry Millican
John Bowen
Justin Hicks
Chad Tressler
Nick Long

City Manager:

John Baumgartner

Assistant City Manager

Bo Bass

Assistant City Manager

Michael Kramm

City Attorney:

Nghiem Doan

City Secretary:

Diana M. Stapp

Chief of Police:

Gary Ratliff

Executive Director of Development Services

David Hoover

Director of Budget/Project Management

Angie Steelman

Director of Engineering:

Christopher Sims

Director of Finance:

Kristine Polian

Director of Human Resources/Civil Service:

James Brumm

Director of Parks & Cultural Services:

Chien Wei

Director of Public Works:

Jody Hooks

1. CALL TO ORDER AND ROLL CALL OF MEMBERS

Mayor Hallisey called the meeting to order at 5:00 p.m. and called the roll. All members of Council were present. Andy Mann arrived at 5:49 p.m.

Present 8 - Mayor Pat Hallisey, Mr. Andy Mann, Mr. Hank Dugie, Mr. Larry Millican, Mr. John Bowen, Mr. Justin Hicks, Mr. Chad Tressler and Mr. Nick Long

2. **PRESENTATION OF THE CLEAR CREEK & DICKINSON BAYOU DRAINAGE STUDY UPDATE**

Chuck Wolf, Freese and Nichols

Overview – Lower Clear Creek Dickinson Bayou (LCCDB)

Part 1

- **Project Purpose & Background**
- **Existing Flood Risk**
- **Discussion**

Part 2

- **Mitigation Alternatives**
- **Discussion**

Part 3

- **Study Recommendations and Path Forward**
- **Discussion**

The Planning Partners – City of League City, Harris County Flood Control District, Galveston County, US Army Corps of Engineers (Galveston District), Brazoria Drainage District, City of Dickinson, City of Friendswood, City of Webster, City of Nassau Bay, City of Pearland.

Other Studies and Projects in the Region – The LCCDB study is one of several ongoing, flood damage reduction studies and projects in the region. The project team is coordinating with the various entities leading these studies and projects. These ongoing studies and projects include: The US Army Corps of Engineers (USACE) & Harris County Flood Control District (HCFCD), Clear Creek Federal Project (upstream of Dixie Farm Road), The Texas General Land Office (GLO) /Galveston County Mainland Flood Study.

PART 1

Project Purpose & Background – Develop a comprehensive flood mitigation plan for the Lower Clear Creek and Dickinson Bayou Watersheds, including identification of vulnerabilities in the watersheds and development and refinement of concepts to reduce flooding. Project Focus – This is a riverine study of regional magnitude. Storm analysis based on 24-hour duration, Atlas 14 intensity.

Comparing NOAA Atlas 14 to Harvey (slide)

Harvey = High Intensity and Long Duration. Atlas 14 = Slightly Higher Intensity for Shorter Duration

The flood risk analysis shows inundation directly caused along the creeks, but not by localized storm drain capacity constraints. Damages and flooding instances are likely higher than what is presented. The benefits provided by riverine alternatives will also be higher than what is presented as all storm drainage systems eventually outfall to the creeks, so lowering the flood elevation on the creeks will benefit local drainage system performance.

Project area – slide

Clear Creek Land Use – current (slide)

Clear Creek Land Use – future (slide)

Dickinson Bayou Land Use – current (slide)

Dickinson Bayou Land Use – future (slide)

Existing Flooding Risk

Reach 1 – CC1, Dixie Farm Road to Bay Area Boulevard. Reach 2 – CC2, Bay Area Boulevard to FM 270. Reach 3 – CC3, FM 270 to outlet at Galveston Bay (slide)

CC Damage Centers – High Flooding Instances (slide)

Transportation System Impacts – Public Safety, Disruptions to Emergency Response and Mobility (slide)

Critical Infrastructure Impacts – Water Supply, Emergency & Medical Services, Schools (slide)

Clear Creek Finished Floor Elevations (slide)

Clear Creek – Future flooding instances and Future value of flooded structures \$M (slide)

Sea Level Rise Poses a Major Risk – Net downstream water surface elevation for the analysis is 6.05 ft NAVD88 for all events greater than 10-year. Accounts for 5-year storm surge stage and mid sea level change both computed with input from USACE. Any structure less than elevation 6 ft is at risk of frequent inundation (225 structures worth \$89M at risk). Limits the ability to reduce the water surface elevation substantially downstream of FM 270.

Reach 1 – DB-1, North of FM 517. Reach 2 – DB-2 FM 517 to I-45. Reach 3 – DB-3, I-45 to Dickinson Bay at SH 146 (slide)

DB Damage Centers – High Flooding Instances (slide)

Transportation System Impacts – Public Safety, Disruption to Emergency Response and Mobility (slide)

Critical Infrastructure Impacts - Water Supply, Emergency & Medical Services, Schools (slide)

Dickinson Bayou Finished Floor Elevations (slide)

Dickinson Bayou - Future flooding instances and Future value of flooded structures \$M (slide)

PART 2 – Mitigation Alternatives

Historic Project Recommendations – USACE 1982 Preconstruction Authorization Planning Report (slide)

Channelization / Diversion Alternatives (slide)

Individual Concepts Evaluated: 3 Channel Improvement Concepts – clearing & de-snagging, channel benching above HWM, full widening & Benching. 9 Detention Locations – 3 in Clear Creek and 6 in Dickinson Bayou. 6 Channel Section Bypass Options – 4 in Clear Creek and 2 in Dickinson Bayou. 5 Clear Creek Flow Diversion Options – FM 1959 to Clear Lake, FM 2351 to Clear Lake, FM 528 to Clear Lake, Bay Area Blvd to Clear Lake, I-45 to Galveston Bay. Clear Creek Bridge Options – replace all local bridges, SH-3 & UPRR. Other – property buy-out/elevation, Dickinson bowl flood wall.

Clear Creek Flow Diversion Alternatives – FM 2351 and I-45 tunnel alignments performed best and advances into the alternative analysis (slide)

Clear Creek Individual Mitigation Effectiveness (slide)

Conclusions: Detention improvement only provide localized benefits, have limited value over multi-day storm events, and cannot themselves offset conveyance improvements downstream impact. Conveyance improvements cannot be made upstream of Clear Lake without additional outlet capacity into Galveston Bay. Environmental challenges between Bay Area Blvd and FM 270 limit the options to provide additional conveyance or mitigating storage. Diversion tunnels can significantly improve conveyance, provide protection against very large events and lower water surface elevation but are very expensive.

Dickinson Bayou Detention Options (slide)

Dickinson Bayou Individual Mitigation Effectiveness (slide)

***Bowl Bypass Channel 11000cfs; *Bowl Bypass Channel 7500 cfs; *Bowl Bypass Channel 8500 cfs; *Magnolia Bayou & Benson Bayou Detention; *McFarland Detention; *Golf Course Detention Basin (Hilton); * West Cemetery Road Detention Basin; *East Cemetery Road Detention Basin**

Conclusions: Planning for Development – large regional detention along the Bayou needs to be planned and built ahead of development. The “Bowl” – individual detention improvements only provide localized benefits, have limited value over multi-day storm events, and provide little benefit in the Bowl. A large diversion channel can reduce, but not eliminate flood risk. This area is likely to need extensive elevation of structures or buy outs.

Overall Individual Mitigation Conclusions – there is not a “single solution” that will adequately address flood risk. Combination Solution are necessary to maximize impact.

Clear Creek Combination Mitigation Options:

***Detention/Conveyance Improvements – Friendswood Basin, Timber Creek Basin, Clearing & De-snagging FM 1959 to Bay Area Blvd, Replace SH-3 and UPRR, FM 270 Bypass, Clear Lake Outlet Expansion, Voluntary Buyouts.**

***FM 2351 Diversion (Tunnel) - Conveyance Improvements Plus FM 2351 Tunnel (40 ft diameter to Clear Lake).**

***I-45 Diversion (Tunnel) - Conveyance Improvements Plus Above OHWM benching FM 1959 to Bay Area Blvd, I-45 tunnel (40ft diameter to Galveston Bay). No Clear Lake outlet expansion required.**

Conveyance Improvements - Depth Changes (slide)

Conveyance Improvement Concept take-aways – clearing significantly increases conveyance through Friendswood. Downstream impacts from clearing FM 1959 to Bay Area are partially offset by Friendswood and Timber Creek Basins. SH-3/UPRR bridge improvements provide greater benefit than I-45. Clear Lake Outlet Expansion needed to increase conveyance at SH-3/UPRR and FM 270. Storm surge and predicted sea level rise limits the improvement around Clear Lake. Significant residual risk exists even with the improvement.

Clear Lake + FM 2351 Tunnel – Depth Changes (slide)

FM 2351 Tunnel Concept take-aways – less than 5 ft water surface elevation reduction at FM 2351 in combination with clearing along channel. Tunnel discharge to Clear Lake requires outlet expansion to Galveston Bay. FM 2351 Tunnel conveyance could be supplements with a pump station, increasing benefit and reducing cost. FM 2351 Tunnel presents opportunity for local drainage connections in Friendswood and Webster due to route.

Clear Lake + I-45 Tunnel – Depth Changes (slide)

I-45 Tunnel Concept take-aways – OHWM benching north of FM 2351 provided excess WSEL reduction, recommend only clearing north of FM 2351. OHWM benching benefit begins to cannibalize itself upstream of Bay Area Blvd. Bay Area Boulevard bridge may need to be replaced if benching is being done upstream. I-45 Tunnel does not require a Clear Lake Outlet Expansion. I-45 Tunnel conveyance could be supplemented with a pump station, increasing benefit and reduction cost. I-45 Tunnel presents major opportunity for local drainage connections in League City due to FM 518 route.

Clear Creek Combination Mitigation WSEL Profile (slide)

Dickinson Bayou Combination Mitigation Option:

***Detention – McFarland Rd Detention, Cemetery Rd West Detention, Golf Course (Hilton Ln) Detention, Magnolia & Borden Detention, Voluntary Buyouts.**

***Detention + Diversion Channel – “Bowl” 11,000 cfs Diversion Channel.**

Detention + Channel – Depth Changes (slide)

Dickinson Bayou Combination Option Take-Aways – very large number of structures removed from flooding risk. Open land is available now and set asides should be made for regional detention. Downstream impacts will need to be mitigated for solution to be actionable. Storage alone has minimal benefit in “Bowl”. Diversion provides major WSEL reduction (greater than 2 feet) in the “Bowl, but many structures are still flooding (over 1,800 in 10-year event). \$30,000 per instance efficiency is the best analyzed in LCCDB study.

Dickinson Bayou Combination Mitigation WSEL Profile (slide)

Combination Mitigation Conclusions – all conveyance improvements require some mitigation of downstream impacts. Significant residual risk exists east of I-45 in both watersheds due to low lying structures, rising sea levels and storm surge. Diversion solutions provide greater protection for large storms (100-yr and 500-yr). Tunnels are possibly the only diversion option for Clear Creek. Open channel diversion is an option for Dickinson Bayou. Benefits indicated do not fully account for local drainage benefits which could be significant. Due to cost, non-diversion options are the most cost efficient, but provide limited flood risk reduction benefit. 50-year planning window focuses benefits on high recurrence events and minimizes mitigation benefits for large events.

PART 3 – Recommendations and Path Forward

Conveyance improvements upstream cannot be constructed without additional improvements downstream to Galveston Bay. Feasibility phase should include understanding of the impact of Galveston Bay surge improvements on final riverine solutions. Local drainage system benefits have the potential to increase total project benefits, will require additional feasibility review to determine those benefits. Regardless of the improvements, residual risk will remain. Elevating structures and buy outs will need to be considered as a part of all solutions. All viable solutions are expensive. Local partners have shown a willingness to participate financially in the ultimate solution but will need state and federal level support to implement a long-term solution.

Path Forward – Conduct a deeper review of highest impact alternatives to refine cost and impact.

Assess impact of riverine water surface reduction on local drainage systems. Assess impact of coastal barrier improvements on riverine solutions. Refine size and cost of

measures. Assess environmental requirements and develop potential implementation schedule. Identify funding options for additional study and potential project implementation. Begin advocacy for state and federal support.

3. **PUBLIC COMMENTS**

4. **ADJOURNMENT**

At 5:58 p.m. Mayor Hallisey said, there being no further business this meeting is adjourned.

PAT HALLISEY
MAYOR

DIANA M. STAPP
CITY SECRETARY

(SEAL)

MINUTES APPROVED: