



**NOTICE OF WORK SESSION MEETING**  
**(In compliance with Sec. 551.041, Et. Seq., Tex. Gov't. Code)**

NOTICE is hereby given that the City of Jersey Village City Council of the City of Jersey Village, Texas will conduct a work session meeting at 5:30 p.m. on December 18, 2017, in the Civic Center Meeting Room, 16327 Lakeview, Jersey Village, Texas.

ITEM(S) to be discussed and acted upon at this meeting is/are listed on the attached agenda.

**AGENDA**

- A. Call to Order and Announcement of Quorum. *Justin Ray, Mayor*
- B. Discuss and take appropriate action concerning the scope of services and selection of an engineering service provider for the implementation of the following Long-Term Flood Recovery Plan projects: 1) the Jersey Meadow Golf Course Mitigation Analysis & Design Project; and 2) the Castlebridge Wastewater Treatment Plant Tertiary Treatment Facility Project. *Austin Bleess, City Manager*
- C. Adjourn

**CERTIFICATION**

I, the undersigned authority, do hereby certify in accordance with the Texas Open Meeting Act, the Agenda is posted for public information, at all times, for at least 72 hours preceding the scheduled time of the meeting on the bulletin board located at City Hall, 16327 Lakeview, Jersey Village, TX 77040, a place convenient and readily accessible to the general public at all times, and said Notice was posted on the following date and time: December 12, 2017 at 11:15 a.m. and remained so posted until said meeting was convened.

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Lorri Coody, City Secretary

In compliance with the Americans with Disabilities Act, the City of Jersey Village will provide for reasonable accommodations for persons attending public meetings. Request for accommodations must be made to the City Secretary by calling 713 466-2102 forty-eight (48) hours prior to the meetings. Agendas are posted on the Internet Website at [www.jerseyvillage.info](http://www.jerseyvillage.info).

## CITY COUNCIL - CITY OF JERSEY VILLAGE, TEXAS - AGENDA REQUEST

**AGENDA DATE:** December 18, 2017

**AGENDA ITEM:** Work Session

**AGENDA SUBJECT:** Golf Course Berm and Gray Water Projects

**Department/Prepared By:** Austin Bleess

**Date Submitted:** December 13, 2017

<b>BUDGETARY IMPACT:</b>	Required Expenditure:	\$0
	Amount Budgeted:	\$0
	Appropriation Required:	\$0

**ATTACHMENTS:** [Berm Project Information](#) from Long Term Flood Recovery Plan

### **BACKGROUND INFORMATION:**

Tonight we are here to discuss the Golf Course Berm Project and the Gray Water Project. These are two separate projects that have been somewhat tied together, but by no means have to be completed at the same time.

#### **Berm Project**

The Berm project was recommended in the Long Term Flood Recovery Plan. The berm, at an elevation of 107.3, and an average elevation of 103.8, would provide for 6,641,390 cubic feet of space. (The berm was proposed at 108 feet to allow for the necessary freeboard, the water would be at 107.3 feet). That equates to approximately 49.7 million gallons of water. The berm project would lower the water surface elevation (WSE) of the bayou at Lakeview Drive by 0.05 inches in a 100-year storm. In a 100 year storm it would prevent 7 homes from being flooded.

The full flow summary, WSE comparisons, Structural Inventory Damages Summary, and flooded homes summary, as presented in the study, is attached here for easy reference.

The 2003 study from Brooks and Sparks recommended a berm with a top elevation of approximately 111.5 ft. It also recommended a minimum slope of 4:1 on the exterior side, and a 5:1 slope on the interior side.

The first thing that would need to be done before the berm project could begin would be to have a survey of the golf course done to ensure we know all of the elevations. That is necessary to know how high the berm would have to be at any given spot and how much water would be retained on the golf course.

The Golf Course Berm Project is necessary in order to accommodate the increased flow into the bayou system that would occur because of the increased drainage in the Wall Street Neighborhood. We cannot put more water into the bayou without retaining water somewhere else.

We should also ask the question of whether or not building to the 100-year storm is enough protection. The Houston area has seen a 500-year flood event each of the past three years. NOAA is considering adding up to 5 inches of rain to the typical 100-year storm classification. They will issue their final report in May.

The berm project was proposed to retain water to allow the water to be discharged from the Wall Street Neighborhood into the bayou system faster. One potential alternative would be to increase drainage in the Wall Street Neighborhood, but limit the flow from the drainage to the bayou. It would mean the storm water pipes would essentially be acting like an underground retention basin. Another possible thing to look at would be increasing storm water pipes along Rio Grand on the golf course side. If we put the pipes in the grassy area between the street and the golf course fence it would be cheaper than putting them under the street itself.

A berm doesn't necessarily have to be an earthen berm. It could be a concrete wall or levy. Or it could be a combination of the two.

Any berm should be built to protect the maintenance shop that is on the golf course. We do not want to build a berm that would increase damages to the maintenance shop. There is no design yet for the berm. The map that was in the Long Term Flood Recovery Plan is largely based on the one from the Brooks and Sparks report.

Right now we simply do not have enough information to give a firm design of what the berm should look like and what exact path it should take. Having a survey done is the first step in that process. Once we know the exact topographical conditions of the golf course we could move to the design stage. A survey is something that we could get done on our own, or we could have it done as part of the engineering of the project. But without the survey we do not know where the berm really needs to go, how high it needs to be, or how much water it would retain.

### **Gray Water Project**

This project seems to be over engineered. It also appears this project has been increased from what we had originally thought it would be.

One point of discussion that we may want some council clarification on is if we want to build the project to handle the gray water load that we have today, or to build this for the gray water that would be expected to be put out at the capacity levels of the plant which would be reached when the other side of 290 is fully built out.

### **RECOMMENDED ACTION:**

Staff recommends Council allowing us to work with the City Engineer, Brooks and Sparks, to get a cost estimate and engineering proposal for the berm project that protects the maintenance barn at the Golf Course. It would also have an alternative of a concrete wall instead of an earthen berm along Rio Grand Street, and an alternative for increased storm water pipes along Rio Grand.

Staff recommends Council authorize us to work with the City Engineer, Brooks and Sparks, to get a cost estimate and engineering proposal for the gray water project.

**Table 7.1B – Revised Existing vs Golf Course Detention Flow Summary**

Location	10-yr		50-yr		100-yr		500-yr	
	Rev. Existing	Golf Course w/Berm	Rev. Existing	Golf Course w/Berm	Rev. Existing	Golf Course w/Berm	Rev. Existing	Golf Course w/Berm
Golf Course Sub-basin	172	172	243	243	279	279	378	378
DS of Golf Course	812	654	1,115	922	1,277	1,062	1,799	1,492
Mouth of E127-00-00	1,191	1,026	1,654	1,464	1,904	1,689	2,660	2,365
Confluence with E100-00-00	4,310	4,176	5,975	5,840	6,985	6,865	10,435	10,300

**Table 7.1C – Revised Existing vs Golf Course with Berm WSE Comparison**

Location	10-yr WSE (ft)		50-yr WSE (ft)		100-yr WSE (ft)		500-yr WSE (ft)	
	Rev. Existing	Golf Course Detention	Rev. Existing	Golf Course Detention	Rev. Existing	Golf Course Detention	Rev. Existing	Golf Course Detention
Golf Course Outfall	104.43	103.72	105.44	105.10	105.65	105.40	106.04	105.91
Mouth of E127-00-00	100.07	99.88	102.16	102.10	102.62	102.56	103.69	103.66
Confluence with E127-00-00	99.65	99.46	101.77	101.70	102.22	102.15	103.35	103.30
US of Lakeview Drive	98.54	98.34	100.96	100.89	101.33	101.28	102.41	102.37
US of Beltway 8	95.13	94.98	98.05	97.98	98.66	98.65	100.12	100.06
DS of Windern Road	92.46	92.36	94.94	94.90	95.43	95.39	96.23	96.22

DEC ran the Gold Course HEC-RAS results through the SIA Tool to assess the benefits of the Golf Course alternative. Exhibit 7.5 shows a map of the SIA Tool results and more detailed structural inventory results can be found in Appendix 7B. A summary of the results from the Structural Inventory Tool are included in Table 7.1D.

**Table 7.1D – Golf Course Alternative Structural Inventory Damages Summary**

		Single Event Damages by Stream			
		25-yr	50-yr	100-yr	500-yr
Revised Existing Conditions	E100-00-00	\$1,186,953	\$5,888,840	\$10,461,308	\$32,386,281
	E127-00-00	\$9,626	\$97,761	\$523,747	\$7,433,181
	Total Damages	\$1,196,579	\$5,986,601	\$10,985,055	\$39,819,462
Golf Course w/Berm	E100-00-00	\$759,004	\$5,054,685	\$9,717,495	\$30,947,861
	E127-00-00	\$12,702	\$81,335	\$509,980	\$6,468,659
	Total Damages	\$771,706	\$5,136,020	\$10,227,475	\$37,416,228
Reduction in Damages (Revise Ex – GC w/Berm)		\$424,873	\$850,581	\$757,580	\$2,403,633

**Table 7.1E – Golf Course Alternative Structural Inventory: Flooded Homes**

	Number of Homes Flooded During Each Storm Event		Difference in Number of Homes Inundated
	Revised Existing Conditions	Golf Course With Berm	
10-yr	0	0	0
25-yr	26	18	8
50-yr	103	88	15
100-yr	163	156	7
500-yr	429	391	38

Overall, the results from the HEC-HMS and HEC-RAS analysis and the SIA showed a reduction in flooded homes along the E100-00-00 channel, downstream of the E127-00-00 Tributary. The total reduction in damages for the 100-year storm was \$757,580 for a single event. Additionally, constructing a berm around the Golf Course for detention purposes prevented sheet flow from reaching Wall Street and the surrounding neighborhood, thereby reducing localized flooding.

#### B. E127-00-00 Tributary Channel

DEC considered two structural alternatives for tributary E127-00-00:

1. Elwood Weir impact analysis
2. Channel improvements from the confluence with channel E100-00-00 (XS 146.9) to US 290 (XS 6863.3).

##### *i. Elwood Weir Removal*

DEC reviewed the construction plans for the Elwood Weir prior to completing any modeling and determined that the weir was constructed as a drop structure to provide a transition between the higher flowline of E127-00-00 to the much lower flowline of E100-00-00. Additionally, the construction plans revealed that the weir helps to prevent erosion at the confluence of E127-00-00 and E100-00-00.

DEC analyzed the Elwood Weir using two boundary condition methods in order accurately assess its impact on E127-00-00. The first method was to analyze E127-00-00 as though it was not connected to any other streams and was not affected by backwater from E100-00-00, or the normal depth method. The second method was to analyze the Weir in the combined model accounting for backwater from E100-00-00. For both scenarios, the weir was removed completely and the resulting WSE were compared to the WSE in the Revised Existing models. For the normal depth scenario and 1% flow frequency, the results comparison indicated that the removal of the weir reduced the WSE at cross-section 196.3 (just upstream of the weir) by approximately 3.5 ft. However, by cross-section 1024 (approximately 900 ft upstream of the weir) there was no significant effect on the WSE. In fact, the “no weir” scenario produced slightly higher WSE than the Revised Existing scenario upstream of cross-section 1024. Since the 100-year WSE was contained within banks in the Revised Existing conditions, there were no tangible benefits to the homes near the stream. Exhibits 7.6 and 7.7 provide comparisons of a HEC-RAS