



**GULF STATES UTILITIES COMPANY**

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May 13, 1985  
RBG- 20,959  
File Nos. G9.5, G9.8.6.2

Mr. Harold R. Denton, Director  
Office of Nuclear Reactor Regulation  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Dear Mr. Denton:

River Bend Station - Unit 1  
Docket No. 50-458

Enclosed for your review are Final Safety Analysis Report (FSAR) revisions which supplement our previous response to Safety Evaluation Report (NUREG-0989) Confirmatory Issue No. 01. These revisions indicate our intent to maintain a crossing of West Creek upstream of the lined portion; verify that the temporary construction crossing of West Creek has been removed; and verify that sediment that had accumulated during construction in the lined West Creek channel has been removed.

These revisions will be included in a future FSAR amendment.

Sincerely,

J. E. Booker  
Manager-Engineering,  
Nuclear Fuels & Licensing  
River Bend Nuclear Group

JEB/ERG/lp

Attachment

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Insert 1 (Page 2.4-11)

Three West Creek crossings were built to facilitate station construction. One is located upstream of the West Creek drop structure. The other two are located along the Fabriform-lined portion of West Creek at the Warehouse #2 and at the paint shop (upstream from the Warehouse #2 crossing). The paint shop crossing was removed prior to plant operation.

Insert 2 (Page 2.4-25)

Another road crossing upstream of the Fabriform-lined channel will also be left in place during operation. If this crossing is overtopped during the PMF, the floodwaters will be contained in the channel by the high surrounding topography. This contained water will pass through the drop structure and into the Fabriform-lined channel. This crossing does not affect the downstream analysis.

The flood flows for West Creek and Grants Bayou below West Creek were reduced in the upstream direction at each cross section to account for the reduction in contributing drainage area. The flow for Grants Bayou above West Creek was conservatively assumed to exist undiminished upstream.

An analysis of the computed flood hydrographs was conducted to determine the flow and water level in Grants Bayou that would occur simultaneously with the West Creek peak flow. This Grants Bayou level was used as the starting elevation for the West Creek backwater profile. A similar comparison was conducted to determine the flow contribution from West Creek for the times of peak flow in Grants Bayou at the West Creek confluence and in Grants Bayou at the outlet to the river floodplain.

The local streams are spanned by railroad and road bridges with piers located adjacent to and in the stream bed. These streams are subject to debris accumulation. For these reasons, each bridge crossing downstream of the station was assumed to be 50 percent clogged at the occurrence of the PMF and 1/2 PMF + OBE, and 100 percent clogged for the 25-yr flood + SSE.

INSERT →

~~Along the Fabriform-lined portion of West Creek, two crossings with culverts have been located to facilitate the station construction. A construction crossing with culverts has also been located upstream of the West Creek drop structure. Prior to plant operation, all but one of these crossings will be removed. A description of the remaining crossings is provided in Section 2.4.3.5.2. For both the PMF and 25-yr flood + SSE, 100 percent culvert clogging is assumed at ~~these~~ crossings.~~

Flow through bridges or embankment conveyances upstream of the station was conservatively assumed to enter the study area undiminished in magnitude. Backwater calculations were performed on West Creek flows assuming creek conditions as they will exist during plant operation.

Combinations of extreme local flooding and seismic events were also investigated. An operational basis earthquake (OBE) combined with a 1/2 PMF and a safe shutdown earthquake (SSE) combined with a 25-yr flood were assumed to occur. Neither occurrence would produce water levels higher than the PMF.

The SSE was assumed to:

altered topography

Manning's roughness coefficient,  $n$ , has been determined based on observations at the site and experience in Louisiana by a consultant<sup>(25)</sup>. The channel and overbank  $n$  values for the existing topography and subsequent to an SSE are presented with the cross section data in Tables 2.4-24 and 2.4-25. A portion of West Creek in the plant area has been lined with Fabriform to provide channel stability and increase conveyance. While the manufacturer's suggested roughness coefficient is 0.012 to 0.015, the roughness coefficient was conservatively assumed to be 0.03 to account for possible debris accumulation.

One road crossing along the Fabriform-lined portion of West Creek, used during construction, will be left in place during plant operation. The cross section data for the crossing and its location are given in Table 2.4-19. It was conservatively assumed that the culverts at the crossing are 100 percent clogged for the PMF and 25-yr flood + SSE conditions, and flood flow would pass over the road. ← INSERT

Cross section data for the onsite streams were obtained from a consultant survey and United States Geological Survey topographic maps<sup>(21, 25)</sup>.

Flow and water level in Grants Bayou and West Creek are affected by road and railroad bridges, all with bridge piles located adjacent to and in the stream bed. Some moderate debris accumulation has occurred historically at these locations, but there is no record of a debris jam causing higher than anticipated flood levels or bridge washout. However, for the PMF it was conservatively assumed that each bridge was 50 percent clogged. The cross section data for the bridges is presented in Tables 2.4-24 and 2.4-25.

The starting elevation for the Grants Bayou backwater profile for both PMF and 25-yr flood + SSE conditions is conservatively assumed to be the Mississippi River PDF level, 54.5 ft msl<sup>(10)</sup>. It is highly unlikely that the river PDF would coincide with the PMF on the local basins.

Fig. 2.4-21 shows cross section locations for the PMF and 25-yr flood + SSE flooding conditions. Cross section data are presented in Tables 2.4-19, 2.4-24, and 2.4-25. Applicable channel and overbank Manning's n values are also presented in these tables. As noted in the tables, vertical walls were assumed to exist at either end of some sections to limit the spread of water and channel conveyance. Conservative water levels would result from this approach.

As discussed previously, bridges were assumed to be partially or fully clogged with debris, and overflow can be treated as for a broad-crested weir. Applicable weir widths and configurations are presented in Fig. 2.4-22 through 2.4-27.

Normal sediment accumulation in the West Creek Fabriform channel will have no significant impact on the conveyance of flood flow past the plant area. The predicted PMF water level is about 1 ft below the railroad spur bordering the east embankment of West Creek, using a channel roughness coefficient which considers sediment accumulation. Due to the comparatively larger conveyance at the top of the channel cross section, it is estimated that more than 1 ft of sediment could accumulate before the PMF water level would reach the railroad spur. The sediment debris and vegetation located in the Fabriform channel ~~will be~~ removed ~~prior to plant operation.~~ during plant construction has been that accumulated

The computed backwater profiles for Grants Bayou and West Creek are presented in Table 2.4-26. The peak flooding condition occurs during the PMF.

The maximum water level on Grants Bayou near the plant occurs between Sections 10 and 11 (Fig. 2.4-21), where the water level varies from 95.3 to 101.8 ft msl, respectively. The adjacent cooling tower yard is at about 104 ft msl, above the flood level. Additionally, no safety-related equipment is located in this area. The maximum water level on West Creek near the plant occurs at about Section W9 (Fig. 2.4-21), where the peak water level is about 94.3 ft msl. This is below the top of the adjacent railroad spur at 95.0 ft msl, and plant area flooding would not occur.