

Narrative for Conditional Letter of Map Revision for Smith Canal Closure Device

Prepared for: San Joaquin Area Flood Control Agency

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1. GENERAL

This Technical Memorandum (TM) provides a brief overview narrative of the Conditional Letter of Map Revision (CLOMR) submittal for the Smith Canal Closure Device. The purpose of narrative is to aid FEMA staff and contractors in their review of the CLOMR submittal.

The Smith Canal is a backwater slough of the San Joaquin River on the Sacramento-San Joaquin Delta (Delta) and is located in the city of Stockton, just north of the Deep Water Ship Channel. Smith Canal is leveed to prevent back-flooding from the Delta rather than to confine upland riverine flows. The Smith Canal levees are not accredited by FEMA, therefore to provide flood protection at the Base Flood Elevation (BFE) a closure device for Smith Canal is being proposed. The concept is for the Smith Canal Closure Device (SCCD) to be operated at the mouth of Smith Canal between November 1st and April 30th, during tide events forecasted to approach or exceed the BFE. The closure device would remain open at all other times to allow for navigation. The Base Flood Elevation (BFE) for this segment of the San Joaquin River is 9.9 feet (NAVD 88) as indicated in the Flood Insurance Rate Study No. 06077CV001A. For the purposes of this CLOMR application, the BFE has been rounded up to 10.0 for ease of use.

2. CLOSURE DEVICE

2.1 Closure Structure

The proposed closure would consist of a dual sheet pile wall filled with granular material for the fixed segment of the structure. The structure would extend from the tip of Dad's Point Levee, an existing land bar separating the Louis Park boat launch area from the San Joaquin River, northerly across open water to connect with the San Joaquin River

right bank levee known as Levee Segment P359. The opening portion of the closure device would be an “Obermeyer” type gate structure, consisting of a stainless steel gate which would be raised and lowered by inflating and deflating a rubber bladder (see Section 3 of the CLOMR submittal binder).

At the south end, the new closure structure will tie into Dad’s Point Levee. This levee ‘as is’ can be certified to meet FEMA’s geotechnical standards (see Section 6 of the submittal binder), but lacks freeboard at the southern end near the Louis Park Boat Ramp. In order to main the functionality of the boat ramp, it is proposed that a sheet pile floodwall be installed to eliminate this freeboard deficiency (see Section 3)

2.2 Closure Operations

At Smith Canal, the BFE in the San Joaquin River is determined by Delta water surface elevations which are elevated when high tides combine with high flows on the Sacramento and San Joaquin Rivers. These conditions typically occur between November 1st and April 30th. The Smith Canal Closure Device would be operated as needed during these times to prevent BFE events from entering into Smith Canal. Section 2.6 of the Operations & Maintenance Manual (see Section 6 of the CLOMR submittal binder) describes how the closure device would be operated during BFE events. In summary, the closure gate will be activated when tide forecasts provided by the California Department of Water Resources, predict high tides that could approach or exceed the BFE. The gate would be raised at the lowest tide prior to the high tide, and remain closed until the high tide begins to recede. The gate would then be opened to allow any interior drainage that accumulated in Smith Canal during the closure period, to flow out.

3. Interior Drainage Analysis

Smith Canal receives interior drainage from the surrounding drainage sheds via pumped and gravity flow. The interior drainage analysis for these areas can be found in Section 4 of the CLOMR submittal binder. The interior drainage analysis determined that the pump stations pumping into Smith Canal are adequately sized to evacuate a 100-Year rainfall event at a sufficient rate to prevent ponding of greater than 1-foot depth.

In addition, a recent interior drainage analysis performed for the Lower Calaveras River LOMR just to the north of Smith Canal, concluded that the Wisconsin Avenue pump station is undersized and cannot evacuate a 100-Year rainfall event at a sufficient rate to prevent ponding of greater than 1-foot depth. The area served by the Wisconsin Avenue pump station is already designated by FEMA as being within a 100-Year floodplain due to flooding from Smith Canal (see FEMA FIRM 06077C0455F). The Wisconsin Avenue pump station will be upgraded from 9,750 GPM to 26,800 GPM capacity in conjunction with construction of the closure device. A revised interior

drainage analysis reflecting the upgraded Wisconsin Avenue pump station will be submitted with the final Smith Canal LOMR after the closure device has been constructed.

After the interior drainage runoff from the adjacent drainage sheds flows into Smith Canal, it must flow out of Smith Canal to the San Joaquin River through the closure device. In normal circumstances, the closure devices will be open and interior drainage inflow will be able to flow out of Smith Canal unimpeded. During rare events when forecasts predict high tides that could approach or exceed the BFE, the closure device will be closed on lowest tide prior to the high tide, and any interior drainage runoff will be held temporarily in Smith Canal, behind the closure device. On the receding tide, the closure device will be opened, allowing any accumulated interior drainage runoff to flow out.

The interior drainage memorandum dated March 24, 2010, contained in Section 4 of the CLOMR binder submittal, demonstrates that raising the closure gate at low tide creates temporary interior drainage storage capacity within Smith Canal. This temporary storage in Smith Canal will be combined with temporary street storage within the watersheds to accommodate runoff from local storm events which occur concurrently with a 100-Year tide event. Closing the closure device at elevation 3.0 would create enough combined temporary storage to accommodate runoff from a 50-Year local storm, while closing the closure device at elevation 4.0 would create enough combined temporary storage to accommodate runoff from a 25-Year local storm.