



City of Morro Bay

Public Services Department

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TECHNICAL MEMORANDUM

Subject: Morro Creek Flood Analysis with Wave Run-up and Sea Level Rise (Addendum to Flood Study dated 8/7/09)

Date: Jan. 10, 2012

By: Barry Rands, PE, Associate Engineer

The flood analysis of Morro Creek prepared for the WWTP EIR and later submitted to and approved by FEMA was based on wave run-up values published in the effective (current) version of the Flood Insurance Study for San Luis Obispo County. It made no assumption regarding sea level rise due to global warming. Furthermore, that analysis did not assume simultaneous occurrence of both the 100-year flood and maximum wave run-up. The anticipation of both sea level rise and wave run-up is not a FEMA requirement when conducting a riverine flood analysis.

Based on request by California Coastal Commission staff, a more conservative analysis has been recently performed per the subject of this technical memo. The assumptions for this analysis were taken from "Alternative Sites Evaluation, Phase 2- Fine Screening Analysis, Appendix B: Shoreline Erosion Study and 100-year Sea Wave Run-up Analysis" conducted by Richard Gorman in October 2011. These assumptions include:

- Wave run-up (11.1 feet).
- Sea level rise (4.6 feet).
- Simultaneous occurrence of sea level rise, maximum wave run-up, and the 100-year flood.

The analysis was performed using FLO-2D, the same FEMA-approved modeling program used in the original analysis. The results illustrated in the attached maps show that the maximum water surface elevations in the vicinity of the existing WWTP are not impacted by this more conservative assumption. The only areas impacted are the beach to the west of the dunes, the creek channel from the ocean to Lila Keiser Park, and the Embarcadero area in front of the power plant.

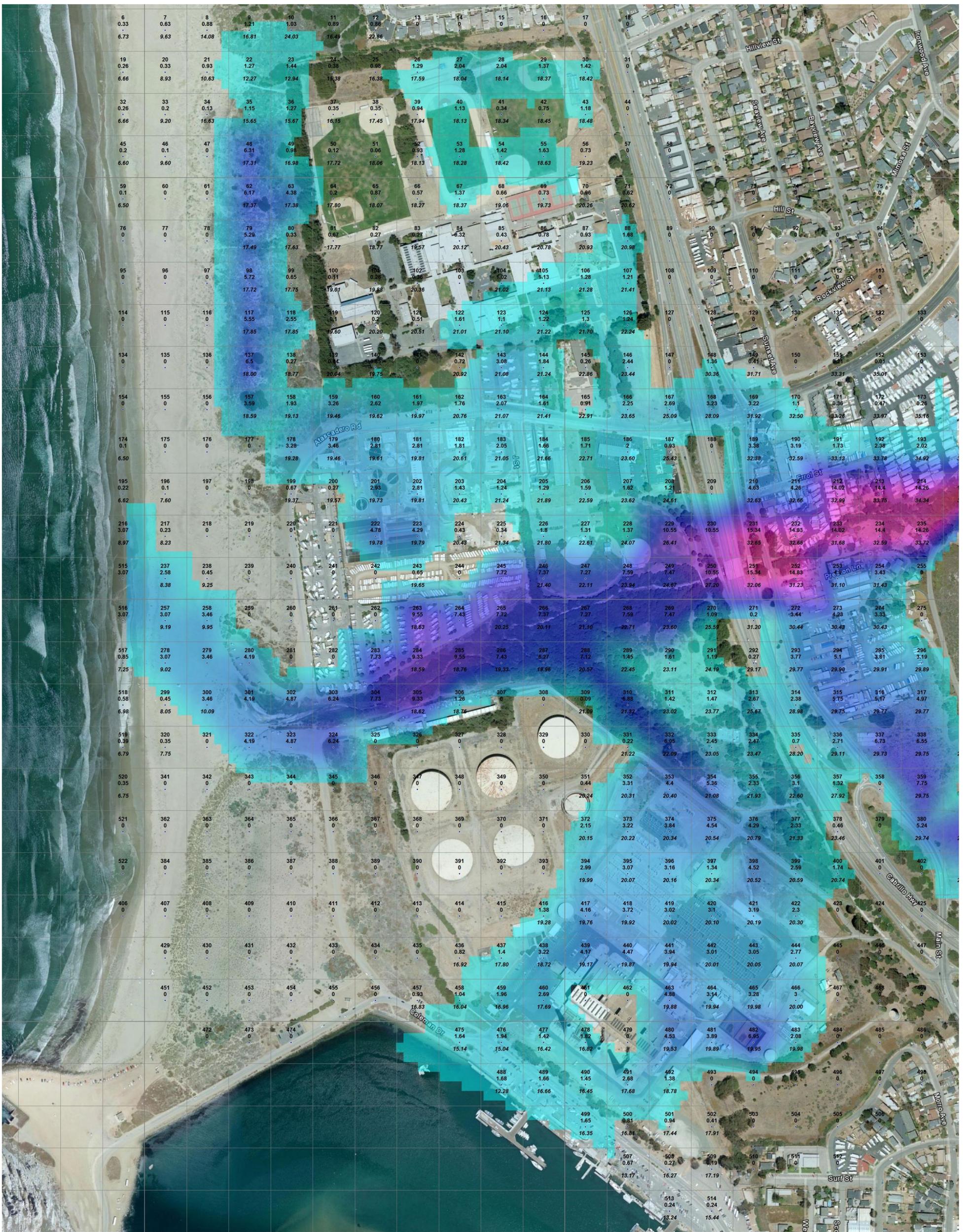
Attachments:

Exhibit 6A: Morro Creek Limits of Floodplain (original)

Exhibit 6B: Morro Creek Limits of Floodplain (revised)

Reviewed by:
Rob Livick, PE/PLS
Director/Floodplain Manager





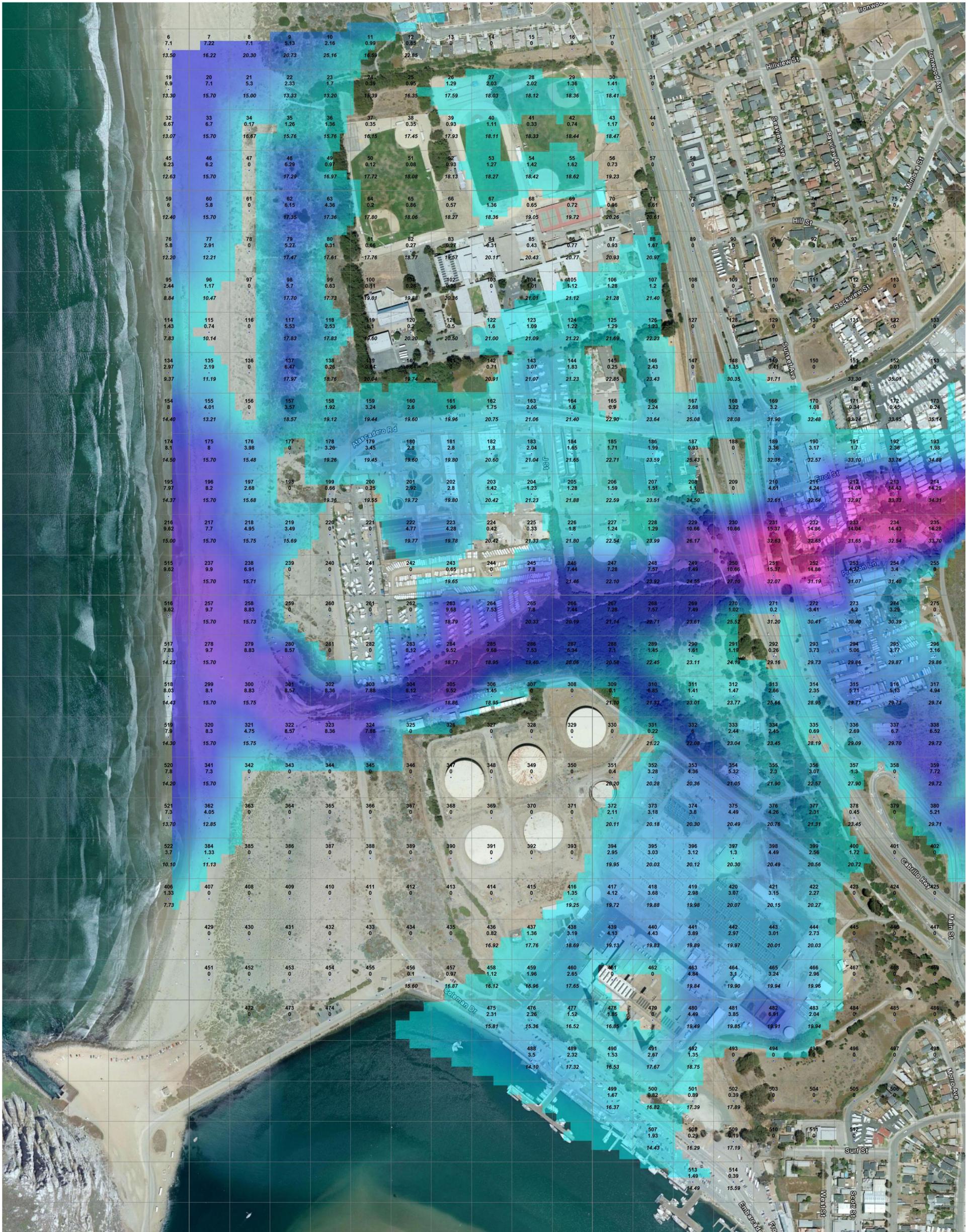
LEGEND

182	GRID #
1.81	DEPTH (FT)
20.61	MAX WSEL (FT)

MORRO CREEK LIMITS OF FLOODPLAIN (WITH NO TIDE ADJUSTMENT)

The results of the FLO-2D model show the boundaries of the revised 1% chance flood with average depths greater than one foot *with no adjustment for tides (sea level = 0.00')*. Unshaded areas include both high ground and areas flooded with an average depth less than one foot. Wave run-up is analyzed separately.

EXHIBIT 6A



LEGEND

182	GRID #
1.81	DEPTH (FT)
20.61	MAX WSEL (FT)

MORRO CREEK LIMITS OF FLOODPLAIN (WITH SURGE AND SEA LEVEL RISE)

The results of the FLO-2D model show the boundaries of the revised 1% chance flood with average depths greater than one foot *with the assumption of 100-yr maximum wave run-up and 55" of sea level rise*. Unshaded areas include both high ground and areas flooded with an average depth less than one foot. Sea level rise, maximum wave run-up and the 100-year flood are assumed to occur simultaneously.

EXHIBIT 6B