

TECHNICAL MEMORANDUM

To: Kent Norton, AICP, REPA, MS
From: Chelsi Remme, P.E.
Date: August 14, 2019
Subject: Colton Community Soccer Park

INTRODUCTION

The purpose of this memo is to document the results of the hydrologic and hydraulic analysis and any impacts to the FEMA floodplain from the proposed the Colton Community Soccer Park Project. The project is located northwest bank of the Santa Ana River in the City of Colton, San Bernardino County, California.

Colton Community Soccer Park Project involves the construction of a community-level soccer park on multiple City-owned parcels totaling approximately 58 acres. The proposed project includes development of synthetic turf soccer fields, parking, rest room facilities, a concession building, children's play areas and multipurpose trails on approximately 55 acres of the site, with 3 acres of the site allocated to habitat.

A portion of the project site, approximately four- to six-acres, is proposed for the main surface parking lot located at the southern end of South Florez Street and South Fernando Street, which is located on a former waste disposal site known as Guyaux Landfill. The existing drainage is located in the southwest portion of the site. Detention basins are proposed on the eastern edge of the project site adjacent to the Santa Ana River and the southwest portion of the site located below South Florez Street.

Access to the project site would include two vehicular driveways and pedestrian access available from East Congress Street and a vehicular and pedestrian access at the south end of South Florez Street. Pedestrian only access would be located at the south end of South Fernando Street. The project site is generally bounded by single-family residences to the north, residential and industrial uses to the northwest, the Burlington Northern Santa Fe Railway and industrial uses to the west, and vacant land and the Santa Ana River and Santa Ana River Trail to the east and south.

The project site abuts the Santa Ana River and is located within several FEMA designated flood zones. Approximately 37.2 acres is within the 100-year floodplain Zone AE, including 13.7 acres planned for park development and 28.2 acres of river wash land which will remain as undisturbed open space. The northeast and southwest portions of the proposed project site, approximately 3.7 acres, is within the 500-year floodplain (Zone X) which is defined as "*Areas of Minimal Flood Hazard.*" The project proposes to regrade the site and elevate approximately 3.2 acres in the northern portion of the site above the 100-year floodplain while 7.5 acres in the southern portion of the site will remain within the 100-year floodplain. Per FEMA requirements, no occupied structures are proposed within the 100-year floodplain. The southern concession/restroom building will be located within the 100-year flood zone but will be portable and moved when flooding is anticipated.

METHOD

The Colton Soccer Park project proposes to raise a portion of the site, which encroaches into the existing 100-yr floodplain. To analyze possible impacts to the Santa Ana River floodplain and water surface elevations, three hydraulic models were created with the Army Corps of Engineer's Hydrologic Engineering Center River Analysis System (HEC-RAS v.5.0.4) Software; an effective model, corrected effective model and proposed conditions model. HEC-RAS utilizes the methodologies found in the Federal Highway Administration's (FHWA) Hydraulic Design Series 5 (HDS-5) publication.

The original HEC-2 data was acquired from Michael Baker and Associates, on behalf of FEMA. The effective model was generated by importing the HEC-2 model into HEC-RAS. Data imported from the HEC-2 model included cross sections, flow rates, various hydrologic parameters, and locations of bridges. While the physical locations of the structures imported into HEC-RAS correctly, the detailed information for the bridges did not transfer. Further as-built information is required to correctly model the abandoned BNSF railroad bridge downstream effect of the project. Once the as-built records have been received, the bridge pier locations and elevation will be adjusted accordingly.

The corrected effective model used the same information as the effective model, but cross sections were recut utilizing LiDAR points from data collected in 2013. The cross sections were updated to match the 2013 conditions rather than the original HEC-2 cross section data.

The proposed model was created to reflect the encroachment into the existing floodplain and to determine the impacts by updating the effective model with cross sections cut from the proposed surface using Autodesk Civil3D. Due to the long distance between the FEMA cross sections, portions of the proposed fill areas were not reflected in the model. In order to accurately assess the impacts to the floodplain, additional cross sections were cut between the FEMA lettered cross sections.

All improvements within FEMA regulated floodplains will be designed to prevent any increases of 100-year water elevations which would require CLOMR/LOMR submittals.

RESULTS

A portion of the project is located within an area currently designated as Zone AE and a portion of the project is located within the 500-yr floodplain. Preliminary results based on the best available data show the proposed project site does not significantly impact the existing 100-year floodplain; however, the model is incomplete and will need more information before accurate results can be determined. An effective model was created in HEC-RAS to model the existing conditions as recorded by FEMA based on known water surface elevations from the FEMA Flood Insurance Study (FIS). The corrected effective model utilized cross sections cut from 2013 LiDAR data received from San Bernardino County to replace the outdated cross sections from the HEC-2 model. A Proposed Model was created to reflect the encroachment into the existing floodplain. Lettered cross sections from the Effective FIS for this area were identified and cross sections were cut using Civil3D at the same locations as the lettered FIS cross sections and in additional locations to include the proposed fill for the project. The preliminary results showed a slight change in water surface elevation (less than 0.1'); however, more detailed results will be determined with additional information, at which time it will be determined if a CLOMR/LOMR is necessary.