Arroyo Santa Rosa

Please note that the Ventura County Watershed Protection District (then Ventura County Flood Control District) submitted a request for a Letter of Map Revision (LOMR) in a letter to FEMA dated January 29, 1998 (see attachment 1, 1998 LOMR). The LOMR covers portions of the Arroyo Santa Rosa main channel, Arroyo Santa Rosa overflow, and Arroyo Santa Rosa Tributary, in the unincorporated area of Ventura County, California. FEMA approved the LOMR in a letter dated November 30, 1998 (Case No. 98-09-414P). The conclusions on flooding are different than those arrived by Nolte. A reason can be attributed to data used in hydraulic models does not correspond to field conditions. The following presents our case in further detail.

From Santa Rosa Road to Honey Hill Road (Approximately 3,000 Feet Long)
Arroyo Santa Rosa main channel from Santa Rosa Road to Honey Hill Road is a section of improved channel composed of rectangular RC open channel and trapezoidal rock riprap channel (see attachment 2, as-built drawings). For this section of channel, the 1998 LOMR concluded that the 100-year flood was contained in channel. The Nolte 2005 FIS, nevertheless, shows a floodplain as well as a floodway outside the improved concrete rectangular channel.

After reviewing the Nolte FIS hydraulic calculations in the HEC-RAS models (ArroyoSantaRosa.prj; ArroyoSantaRosa_Floodway.prj), it is evident that the following errors may have to the incorrect floodplain/floodway designation:

1. Incorrect coding of channel geometry:
   From Freeborn Way to Honey Hill Road, the channel is a 20 feet wide 12 feet high rectangular concrete channel. However, the model shows a trapezoidal channel with incorrect invert elevations. The inverts of the trapezoidal channel from Santa Rosa Road to Freeborn Way also do not match the as-built drawings (see attachment 2). A comparison of HEC-RAS profiles based on Nolte 2005 FIS and as-built drawings is shown in Figure 1.

2. Incorrect selection of channel roughness coefficients:
   For the concrete rectangular channel, the model uses a roughness coefficient of 0.035 instead of a commonly used value of 0.015. This greatly underestimated the channel capacity.

From Honey Hill Road to Approximately 2,750 Feet Downstream
This section of channel is an improved trapezoidal earth channel (see attachment 2). For this graded regular earth channel with grass and weeds, it is more appropriate to use a roughness coefficient of 0.035 to 0.05. By using a value of 0.06 to 0.07, Nolte FIS greatly underestimated the channel capacity, and as a result, a wider floodplain was generated.

A print-out of Nolte FIS HEC-RAS cross sections is attached in Attachment 4. Parameters in question are highlighted.

Duplicate Effective Models

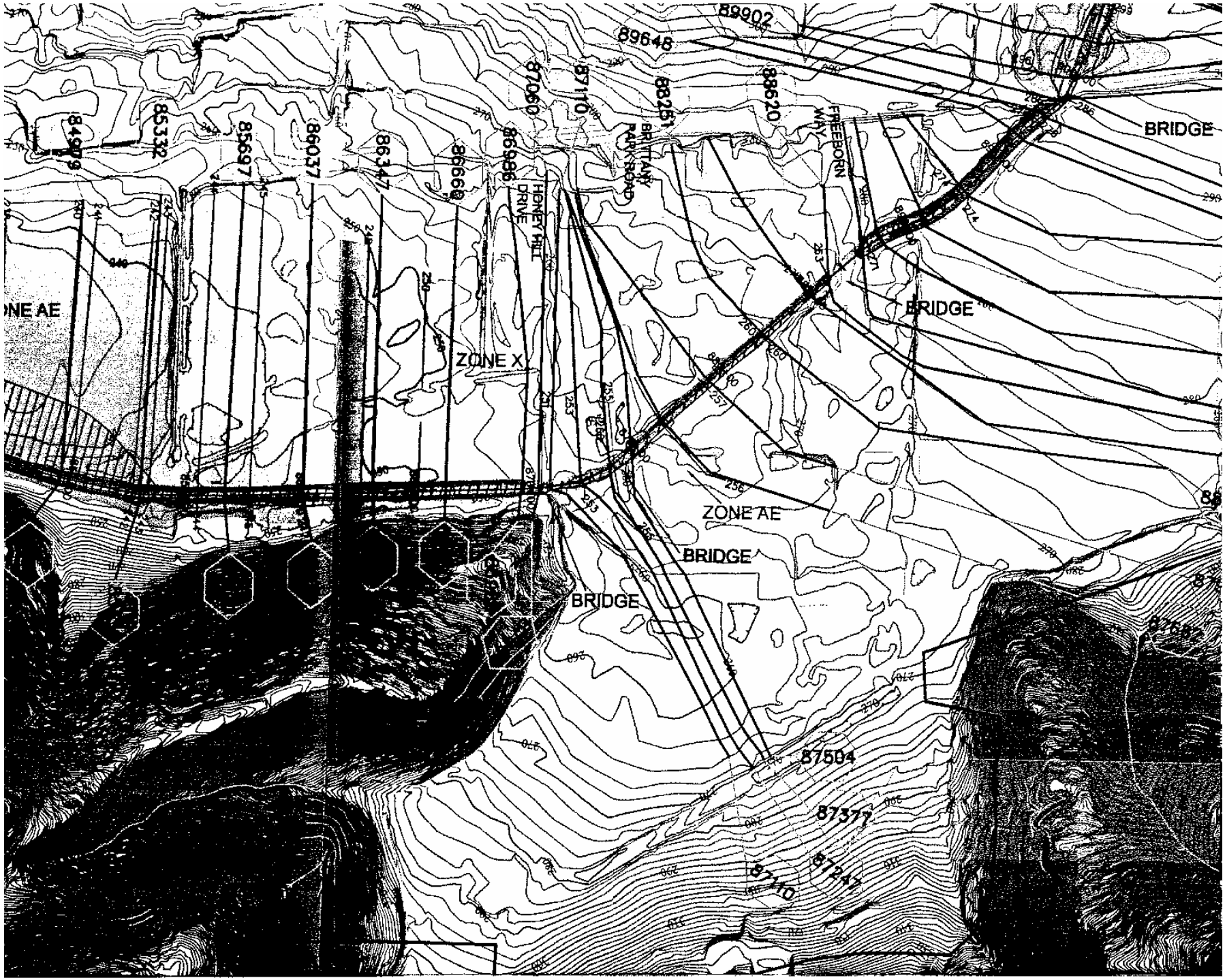
A duplicate effective model is included which better represents actual physical conditions of the study reach. The duplicate effective models have been created based on Nolte HEC-RAS models with corrections on channel geometry and roughness coefficients. A print-out of the duplicate effective models is attached in Attachment 5.

Arroyo Santa Rosa floodway data table 6 in FEMA 2005 flood insurance study report has been modified as shown in Table 1.

Flood profiles for Arroyo Santa Rosa (page 02P and 03P in FEMA 2005 FIS) have been modified as shown in Figure 2.

Revised floodplain/floodway maps are shown in Attachment 6.

Digital files of the duplicate effective models (ASR_Revised.prj; ASR_Floodway_Revised.prj) are attached in Attachment 7 for your review and acceptance.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