

## MEMORANDUM

TO: Kathy Oesterreich  
Edenbridge Homes

DATE: August 18, 2015

FROM: Sarah Rahimi, PE  
Caitlin Gilmore, PE

JOB#: EDEN.01.2015

SUBJECT: 100-Year Hydraulic Impact Analysis for Copperleaf Subdivision in San Juan Bautista

### Introduction

Schaaf & Wheeler is working with Edenbridge Homes and RJA to analyze the 100-year hydraulic impacts at the Copperleaf Subdivision Development at San Juan Hollister Road (Site) in San Juan Bautista, California. The Site is bounded by an existing development to the West and East, San Juan Hollister Road to the South, and HWY 156 to the North (see Figure 1). Currently, the Site is mostly undeveloped land with an existing barn and a pump structure. The Copperleaf Subdivision project proposes to develop the approximately 13.3 acre Site into single family residential land use with approximately 45 residential homes located at the Site. This memorandum presents results on the NGVD29 vertical datum. Where necessary, the following conversion factor was used: NGVD29 = NAVD88 – 2.81 feet.

Figure 1. Vicinity Map



### Model Basis

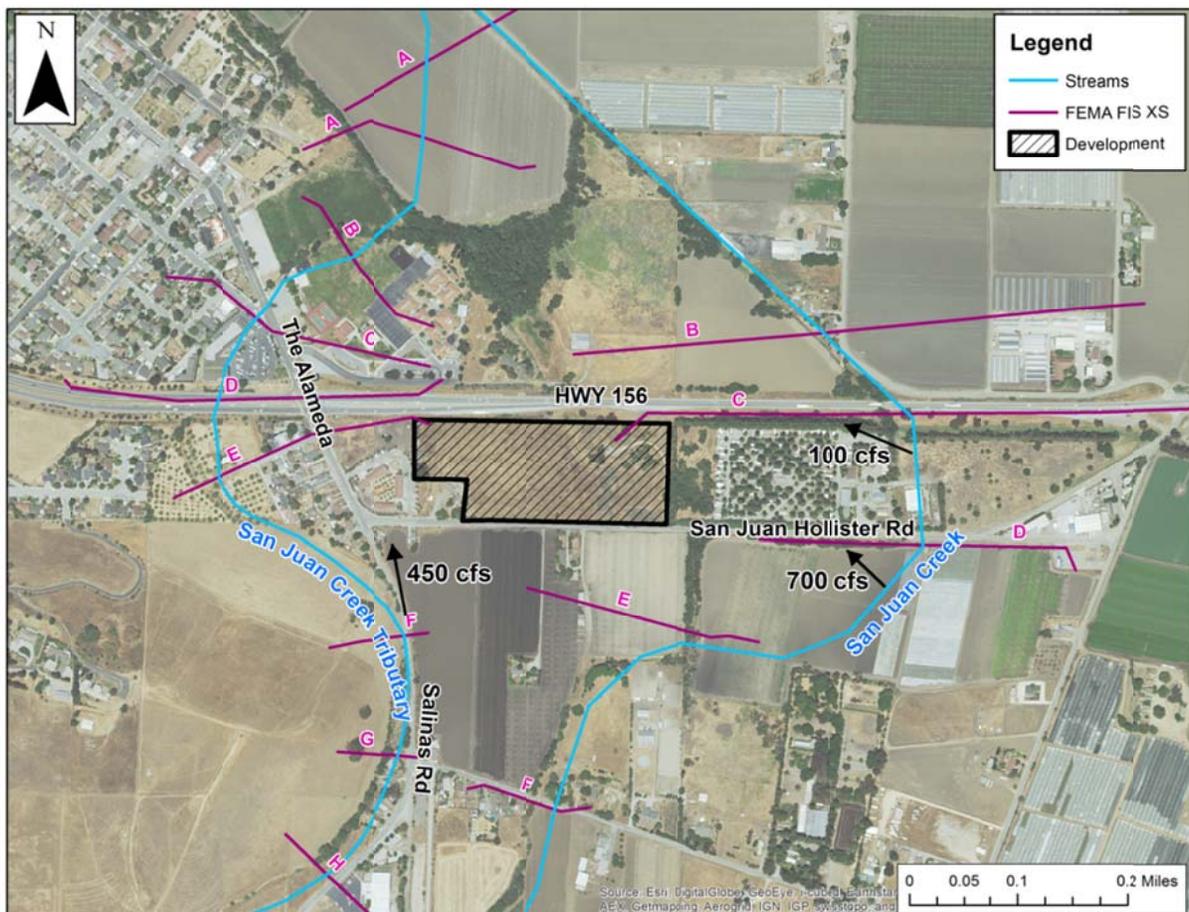
The Project Site is located in between San Juan Creek (to the west) and San Juan Creek Tributary (to the east); with a portion of the Site within the Federal Emergency Management Agency (FEMA) Special Flood Hazard Area (i.e. 100-year floodplain). The effective HEC-2 models for both creeks were obtained from FEMA and recreated in HEC-RAS to match the published effective water surface elevations. The effective models were originally developed by Schaaf & Wheeler in January 1989 for San Juan Creek and in October 1988 for San Juan Creek Tributary. The detailed site topography and proposed grading were provided to Schaaf & Wheeler by RJA. The site plans were received July 2, 2015. Based on requirements by FEMA and the City of San Juan Bautista, the floodplain conditions were analyzed to determine the impact from the project site.

### Detailed Study

#### Existing Conditions Hydraulic Analysis

During the 100-year storm event, water approaches the Site from both creeks as a result of spills (Figure 2). From the San Juan Creek Tributary, 450 cfs spills from the creek at Salinas Road and moves towards San Juan Hollister Road and the Site. Based the topography of the area, the majority of the water continues past the Site to the west along the Alameda and HWY 156. Only a small portion of the flow, approximately 50 cfs, is contained and conveyed via the San Juan Hollister Road to the Site. Spills from San Juan Creek approach the Site from the east. Approximately, 700 cfs spills upstream of San Juan Hollister Road and another 100 cfs spills upstream of HWY 156. Some of this flow is conveyed to the easterly portion of the project Site. Topographically, the eastern portion of the Site is lower than the western portion.

Figure 2. Existing Conditions with Spills from Creeks Shown



### Post Project Conditions Hydraulic Analysis

In the post project condition, the site is covered in 45 single family residential homes and access streets; along with open space and a relocated municipal well/water treatment basin located on the northeast corner of the property. To determine the impact from the Site on San Juan Creek, the cross sections in the existing effective model were extended to encompass the proposed development. The Site was modeled as a blocked obstruction at the area of interest. Based on this analysis, it was found that the proposed development does not increase the upstream or downstream water surface elevation in San Juan Creek by more than 1 foot, as shown in Table 1. Furthermore, the Site is expected to have no impact on the San Juan Creek Tributary since the majority of the spills from the tributary is not conveyed through the Site. All the water that does potentially make it to the Site from San Juan Creek Tributary will be contained and conveyed within San Juan Hollister Road.

**Table 1. Modified HEC-2 Model for San Juan Creek**

HEC-2 Cross Section (FEMA XS Letter)	Existing WSEL (NGVD, ft)	Proposed WSEL (NGVD, ft)	Impact (ft)
12460	214.09	214.09	0.00
12245	210.1	210.15	0.05
11965	207.59	207.34	-0.25
11345	198.96	199.19	0.23
11192	198.87	199.20	0.33
11172 (E)	198.85	199.16	0.31
10845	198.81	199.13	0.32
10472	198.81	199.13	0.32
10471 (D)	198.81	199.13	0.32
10451	198.81	199.13	0.32
10146	198.52	199.13	0.61
10126	198.28	198.28	0.00
9845 (C)	196.10	196.10	0.00
9795	194.81	194.81	0.00
9330 (B)	190.91	190.91	0.00

### FEMA Base Flood Elevations

According to Flood Insurance Rate Map (FIRM panel 06069C0158D and 06069C0159D) a portion of the Site is located in a FEMA special flood hazard area AO (1FT) indicating an average flood depth of 1 foot throughout the flood hazard zone as shown in Figure 4. Specifically, for an area that is inundated by the Zone AO Special Flood Hazard Area, FEMA methodology dictates that the average existing ground elevation be added to the flood depth to establish the FEMA Base Flood Elevation. This is the methodology that will be utilized for the Conditional Letter of Map Revision (CLOMR) application for the property.

The southeasterly portion area of the Project is currently a designated Zone AO (depth 1 ft). As shown in Figure 3, 12 structures are located in Zone AO. Due to the necessary passage of flow through the Site, the CLOMR application should propose removal of the proposed structures, or areas defined by structures, only. Portions of the Site unoccupied by structures will remain in the floodplain. The results of the FEMA BFE analysis are presented in Table 2, with structure location shown in Figure 3.

**Table 2. Proposed FEMA Base Flood Elevations (NGVD)**

Building Lot Number in AO Zone	Average Ground Elevation (NGVD)	FEMA Base Flood Elevation (NGVD)
1	212.0	213.0
24	199.0	200.0
25	200.5	201.5
26	201.5	202.5
27	202.5	203.5
28	206.0	207.0
29	204.5	205.5
30	203.5	204.5
35	206.0	207.0
36	207.0	208.0
37	208.5	209.5
45	210.0	211.0

**Figure 3. Special Flood Hazard Zone with Development Layout**

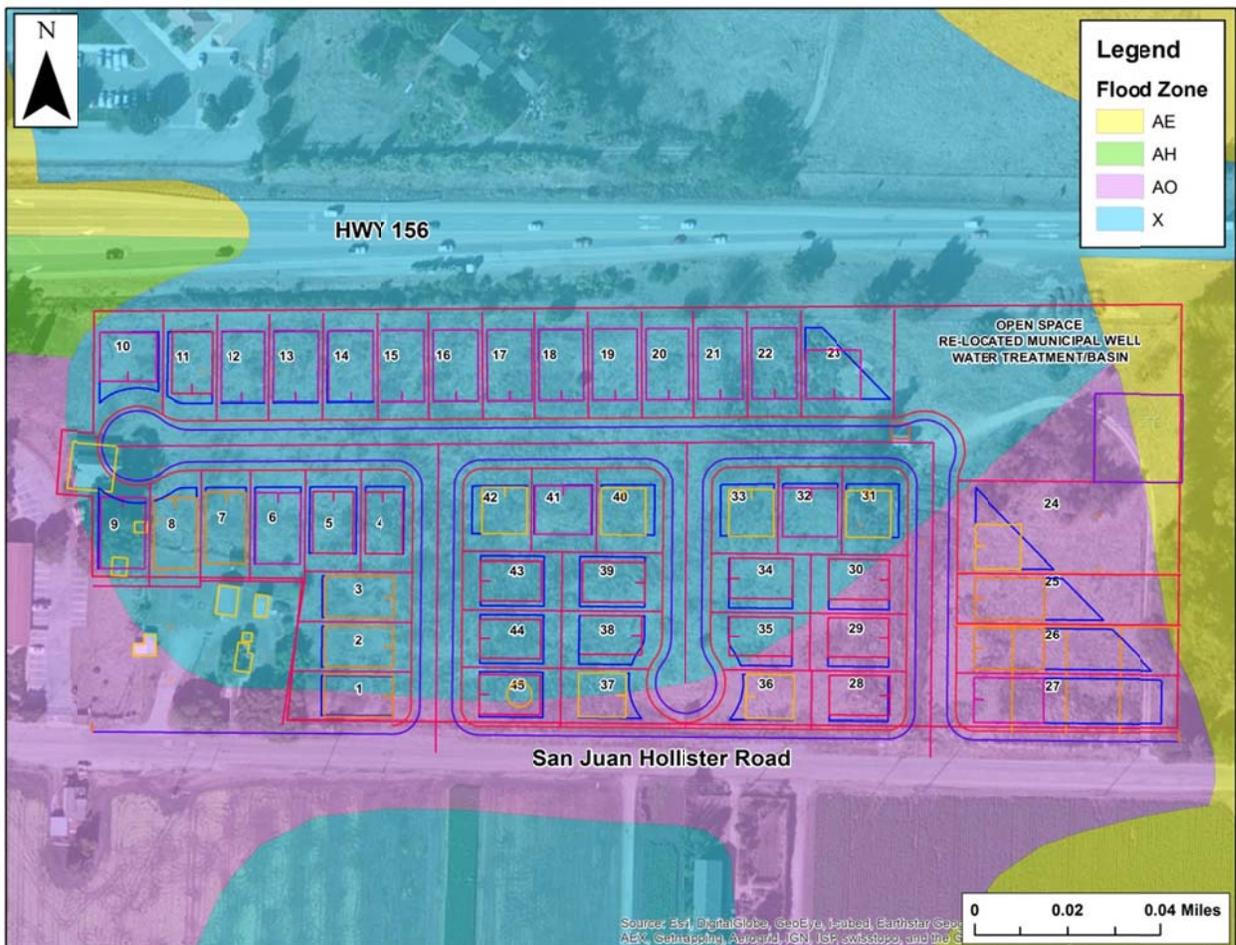
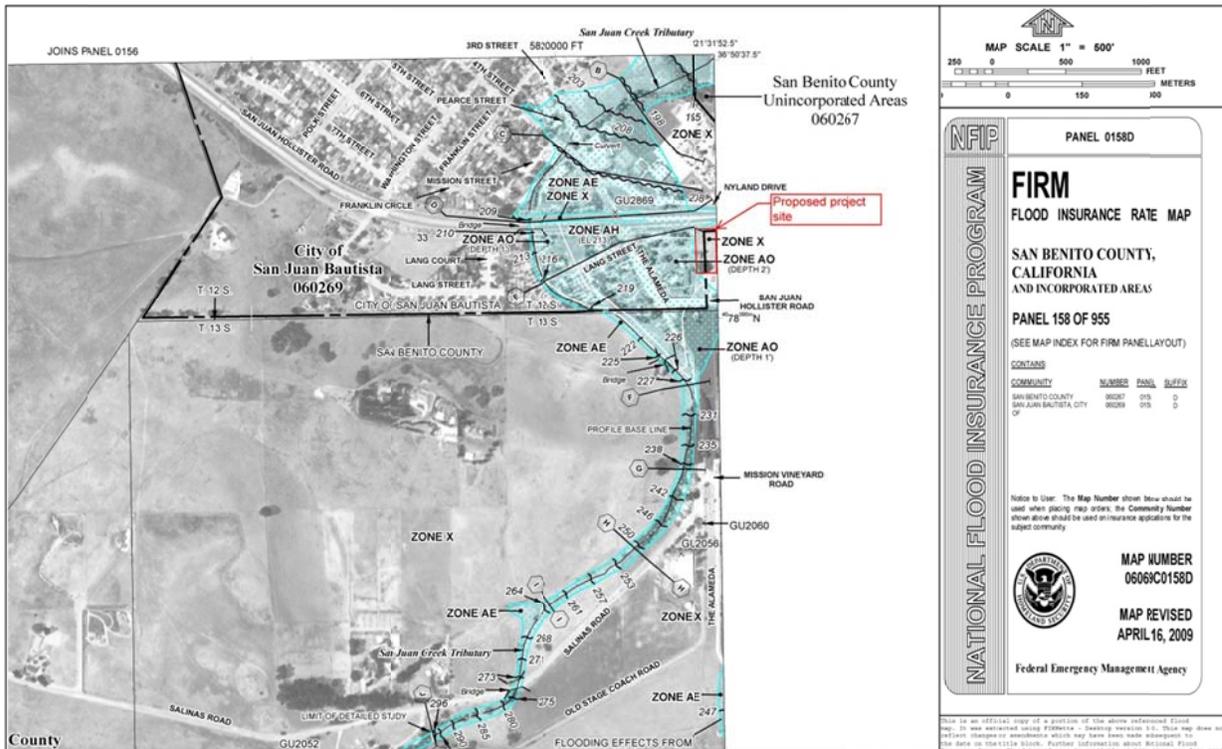
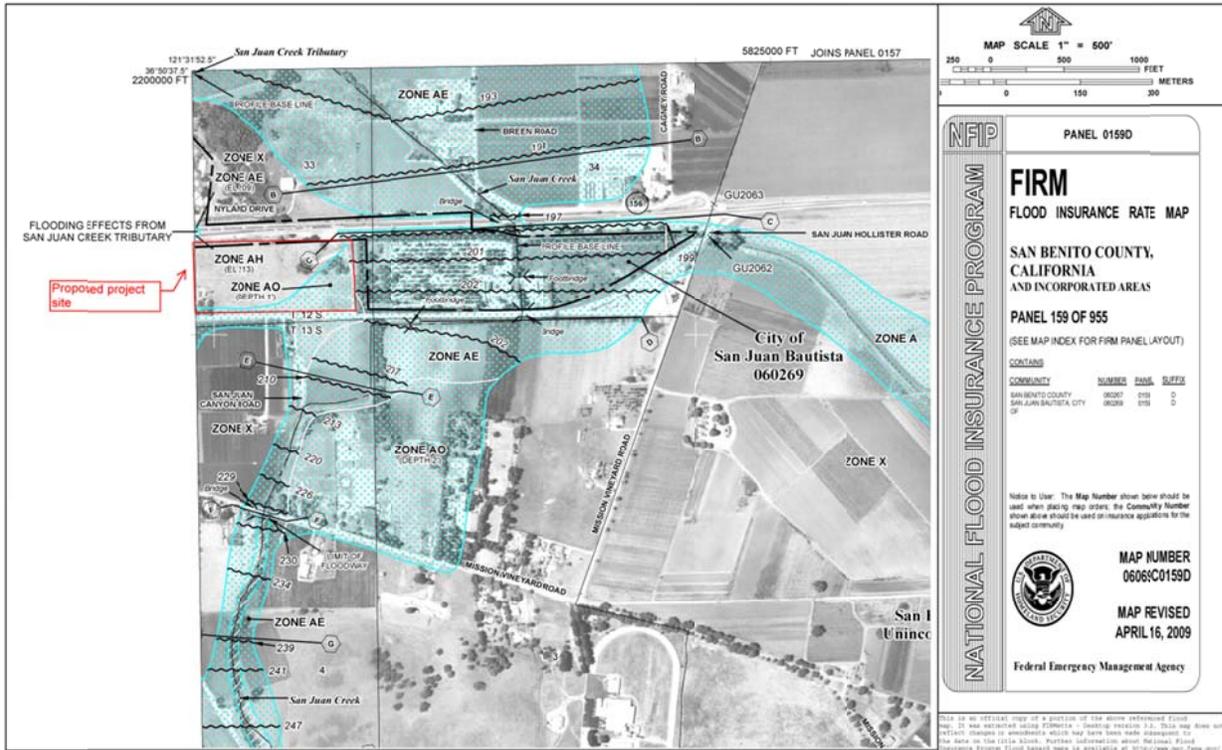


Figure 4. FIRM Panels with Project Site Shown



## **Conclusion**

For the project to comply with San Juan Bautista Municipal Code (section 12-1-400), the lowest floor elevation of each structure in the Zone AO should be 1 foot above the highest adjacent grade. The final grading of each building in the special flood hazard area should be at least at the base flood elevation as indicated in Table 2. Furthermore, per section 12-1-310 of the municipal code, it was determined that the effect of the proposed development will not increase the water surface elevation of the base flood more than one foot (1') at any point in the San Juan Creek or San Juan Creek Tributary.