

CACHE CREEK 100-YEAR FLOODPLAIN – YOLO AND VICINITY

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INTRODUCTION

At the request of Mr. Fran Borcalli in an email dated May 31, 2012, Wood Rodgers, Inc. (Wood Rodgers) performed an hydraulic analysis to delineate the existing 100-year Cache Creek floodplain on the north side of Cache Creek.

PURPOSE

The purpose of this analysis is to characterize the extent, depth, and duration of existing conditions flooding from Cache Creek. This analysis is intended to provide Yolo County (County) with information to facilitate administering the National Flood Insurance Program (NFIP) and local building ordinances in and around the community of Yolo, California. This study is not intended to represent a FEMA Flood Insurance Rate Map (FIRM) prepared by the Federal Emergency Management Agency (FEMA).

BASIS FOR ANALYSIS

The basis for performing the hydraulic impact analysis, including the hydrology, hydraulic modeling tools, basic data and assumptions, are described below.

Hydraulic Modeling Tools: As the basis for this analysis, Wood Rodgers utilized a preliminary TUFLOW two-dimensional hydraulic model developed by Wood Rodgers on behalf of the City of Woodland (City) in support of the Lower Cache Creek Feasibility Study (LCCFS). Although the model has not yet been subject to an external Quality Assurance review, Wood Rodgers has performed preliminary internal quality control checks to ensure that the model is suitable for purposes of this analysis.

Hydrology: The hydrology developed by the United States Army Corps of Engineers (USACE), and utilized for the LCCFS conducted in 2000-2003, was used for analyzing the 100-year event. The Cache Creek hydrology update prepared on behalf of the floodSAFE Yolo Pilot Program is currently under review by the USACE at this time.

Terrain and Survey Data: The State of California Department of Water Resources (DWR), through its Central Valley Floodplain Evaluation and Delineation (CVFED) Program, captured and processed high-resolution LiDAR data in 2008. Portions of Cache Creek that were underwater and obscured during the time the LiDAR was flown were later field-surveyed as part of the CVFED Program. The CVFED LiDAR and field survey data is considered the best available data for representing existing conditions in Cache Creek, the Cache Creek Settling Basin (CCSB), and the adjacent floodplains, and DWR has approved the City's use of the data.

Levee Reliability Assumptions: For purposes of this analysis, Wood Rodgers developed a hypothetical model scenario which assumed that the levees on the left bank (north) of Cache Creek would hold unless they were overtopped. At locations where the levees overtopped, a hypothetical levee breach was triggered using methodology consistent with the criteria developed by the CVFED Program. The levees on the right bank (south) were assumed to hold, even if they overtopped. This provided a conservative estimate of flooding on the north side of Cache Creek as it maximized flow delivery to the north side through breaching or overbank spills. FEMA is currently evaluating its methodology for levee fragility assessment as applied to its floodplain mapping methodology. FEMA's adopted methodology could produce floodplains different than those resulting from this analysis; however, the significant aspects of the floodplain should be similar to the results of this analysis in terms of depth, velocity, and extent.

SUMMARY OF RESULTS

The existing conditions model results for the 100-year floodplain base flood elevations and corresponding flood depths are shown on **Map 1**. The effective FIRM hazard zone classifications have been included on **Map 1** to show areas that remain vulnerable to flooding, but where detailed analysis has not yet been performed. Hydrograph time series were developed for seven locations of interest identified during discussion with the County on July 27, 2012 as shown on **Map 1**. The respective time series plots for depth and velocity are shown on **Figures 1** through **7**.

ATTACHMENTS

Map 1 – 100-Year Base Flood Elevations – Cache Creek – Yolo, CA and Vicinity

Figure 1 – Location 1 – Depth and Velocity Plot

Figure 2 – Location 2 – Depth and Velocity Plot

Figure 3 – Location 3 – Depth and Velocity Plot

Figure 4 – Location 4 – Depth and Velocity Plot

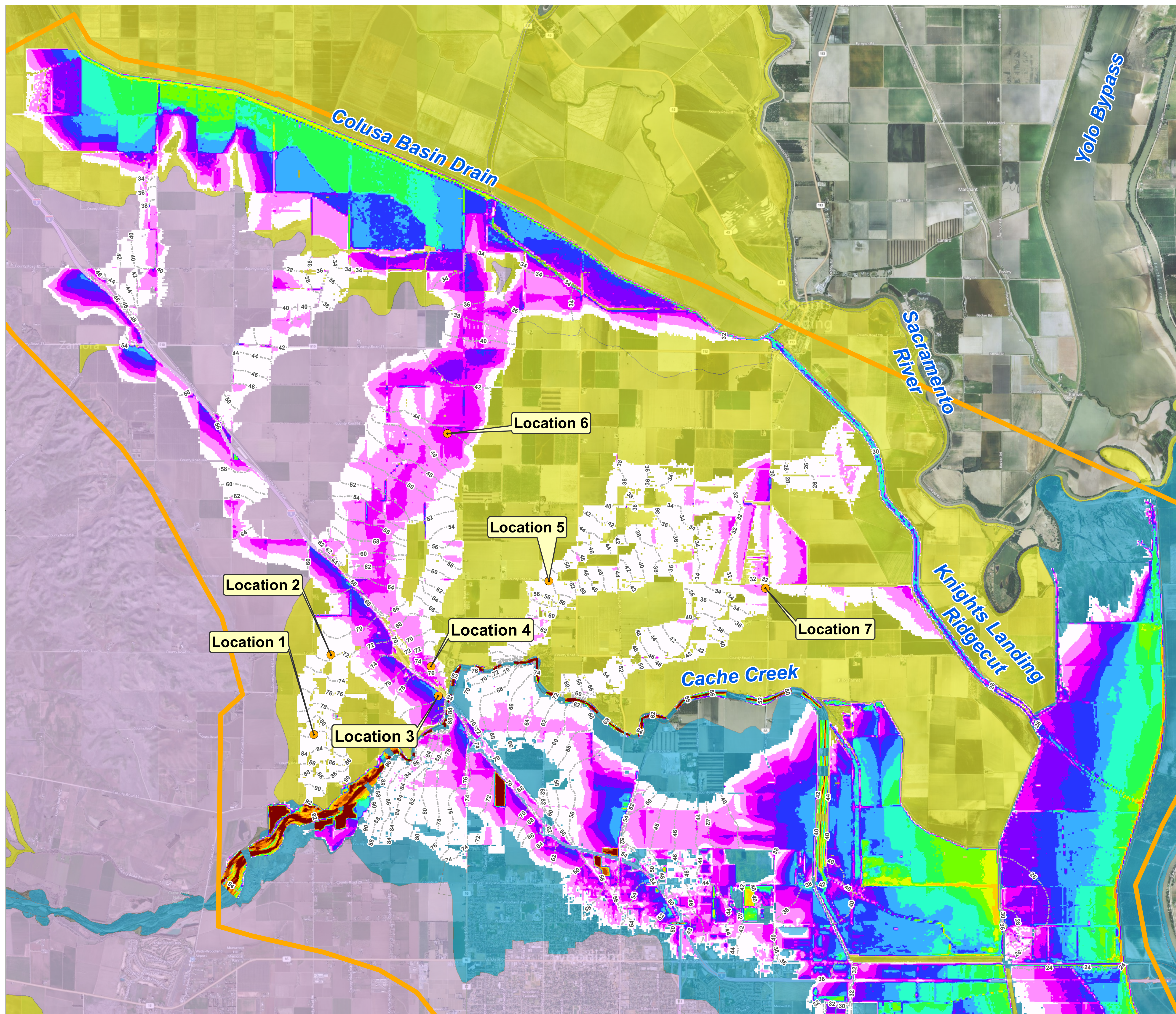
Figure 5 – Location 5 – Depth and Velocity Plot

Figure 6 – Location 6 – Depth and Velocity Plot

Figure 7 – Location 7 – Depth and Velocity Plot

Disc – (1) floodSAFE™ – Cache Creek 100-Year Floodplain – Yolo and Vicinity
(2) Floodplain Animation

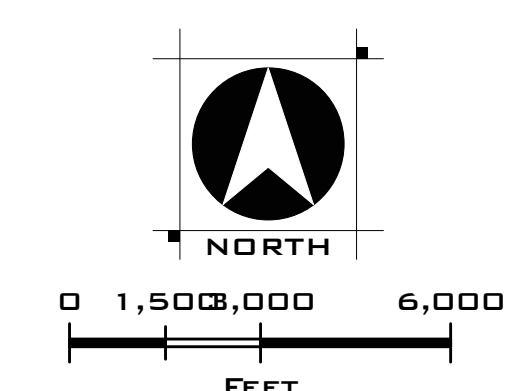
MAP



- Location of Depth and Velocity Plot
- Base Flood Elevation, Ft (NAVD88)
- ▭ Model Domain Boundary
- FEMA Flood Zones**
- ▭ Zone A
- ▭ Zone AE
- ▭ Zone X (Unshaded)
- Floodplain Depth (ft)**
- ▭ 0 - 1
- ▭ 1 - 2
- ▭ 2 - 3
- ▭ 3 - 4
- ▭ 4 - 5
- ▭ 5 - 6
- ▭ 6 - 7
- ▭ 7 - 8
- ▭ 8 - 9
- ▭ 9 - 10
- ▭ 10 - 12
- ▭ 12 - 14
- ▭ 14 - 16
- ▭ > 16

- Sources:
1. Aerial Imagery from Microsoft Virtual Earth, 2012
 2. Federal Emergency Management Agency (FEMA), Preliminary DFIRM Mapping Yolo County, CA

- Notes:
1. FEMA Zone A indicates areas with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage. Because detailed analyses are not performed for such areas; no depths or base flood elevations are shown within these zones.
 2. FEMA Zone AE indicates areas where base flood elevations are provided. AE Zones are now used on new format FIRMs instead of A1-A30 Zones.
 3. FEMA Zone X (Unshaded) indicates areas of minimal flood hazard, usually depicted on FIRMs as above the 500-year flood level.



flood SAFE Yolo
Pilot Program

100-YEAR BASE FLOOD ELEVATIONS
CACHE CREEK - YOLO, CA AND VICINITY
AUGUST 8, 2012

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FIGURES

Figure 1
floodSAFE Yolo
Cache Creek 100-year Floodplain - Yolo and Vicinity
Location 1 - Depth and Velocity Plot

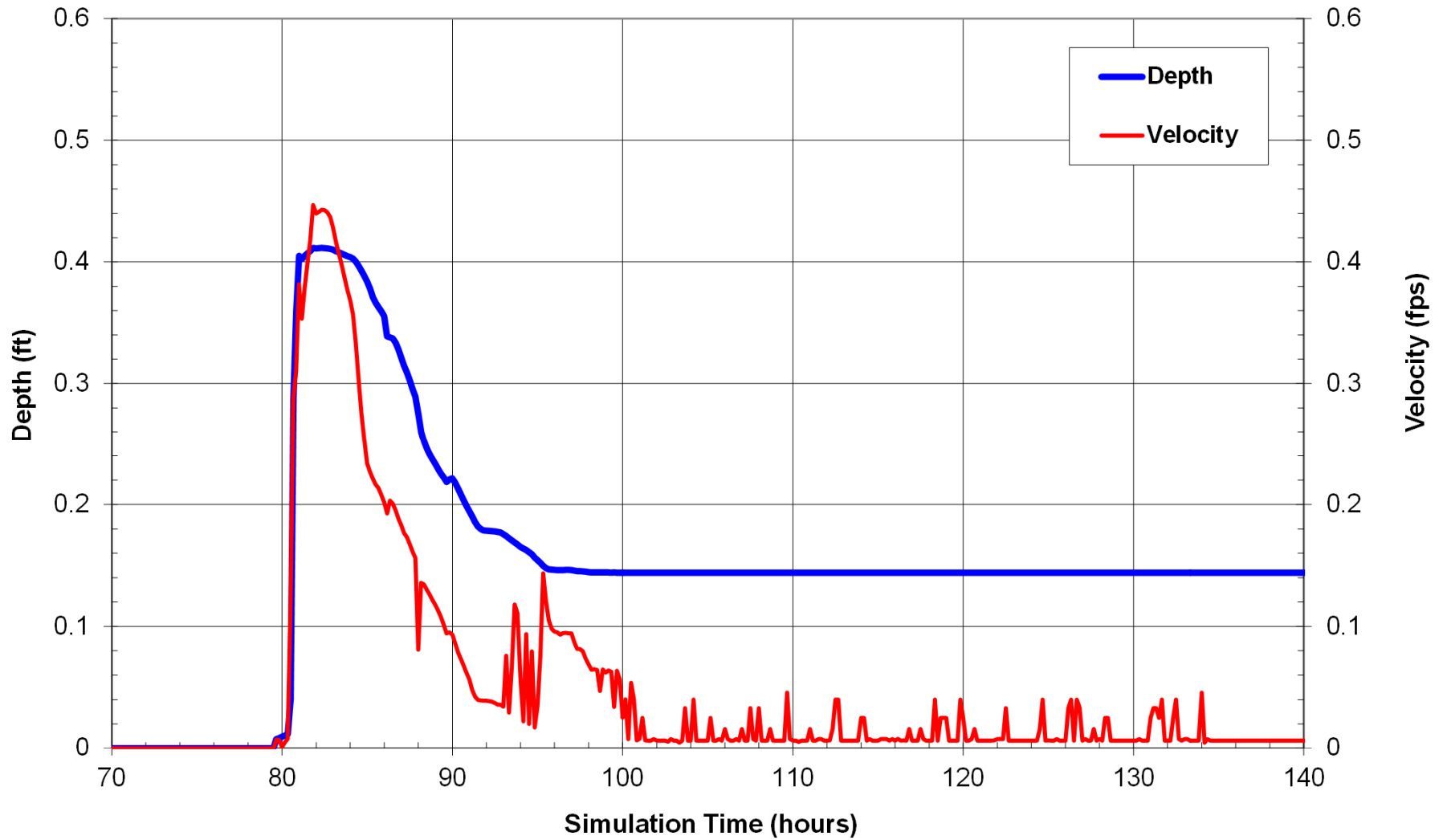


Figure 2
floodSAFE Yolo
Cache Creek 100-year Floodplain - Yolo and Vicinity
Location 2 - Depth and Velocity Plot

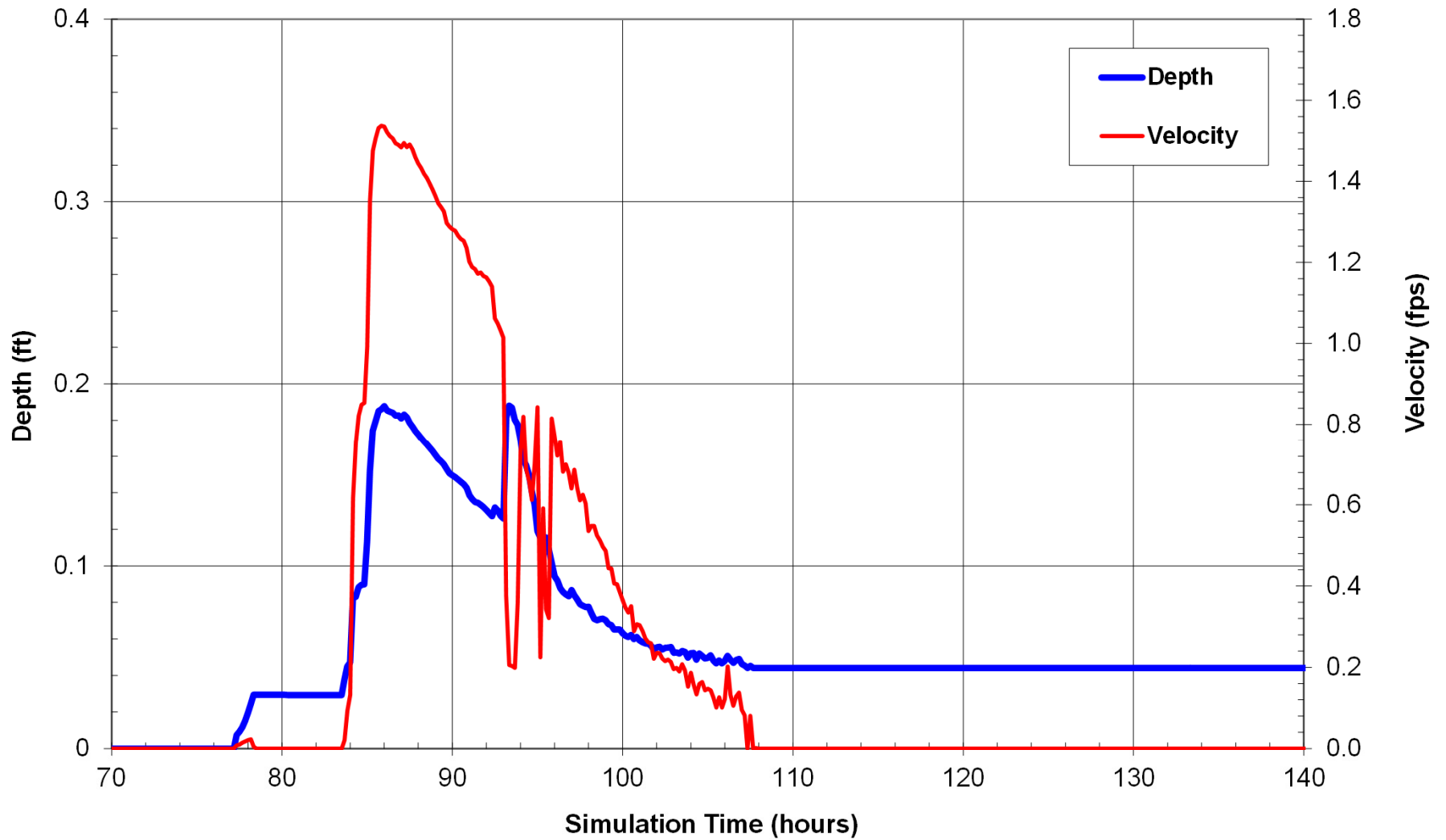


Figure 3
floodSAFE Yolo
Cache Creek 100-year Floodplain - Yolo and Vicinity
Location 3 - Depth and Velocity Plot

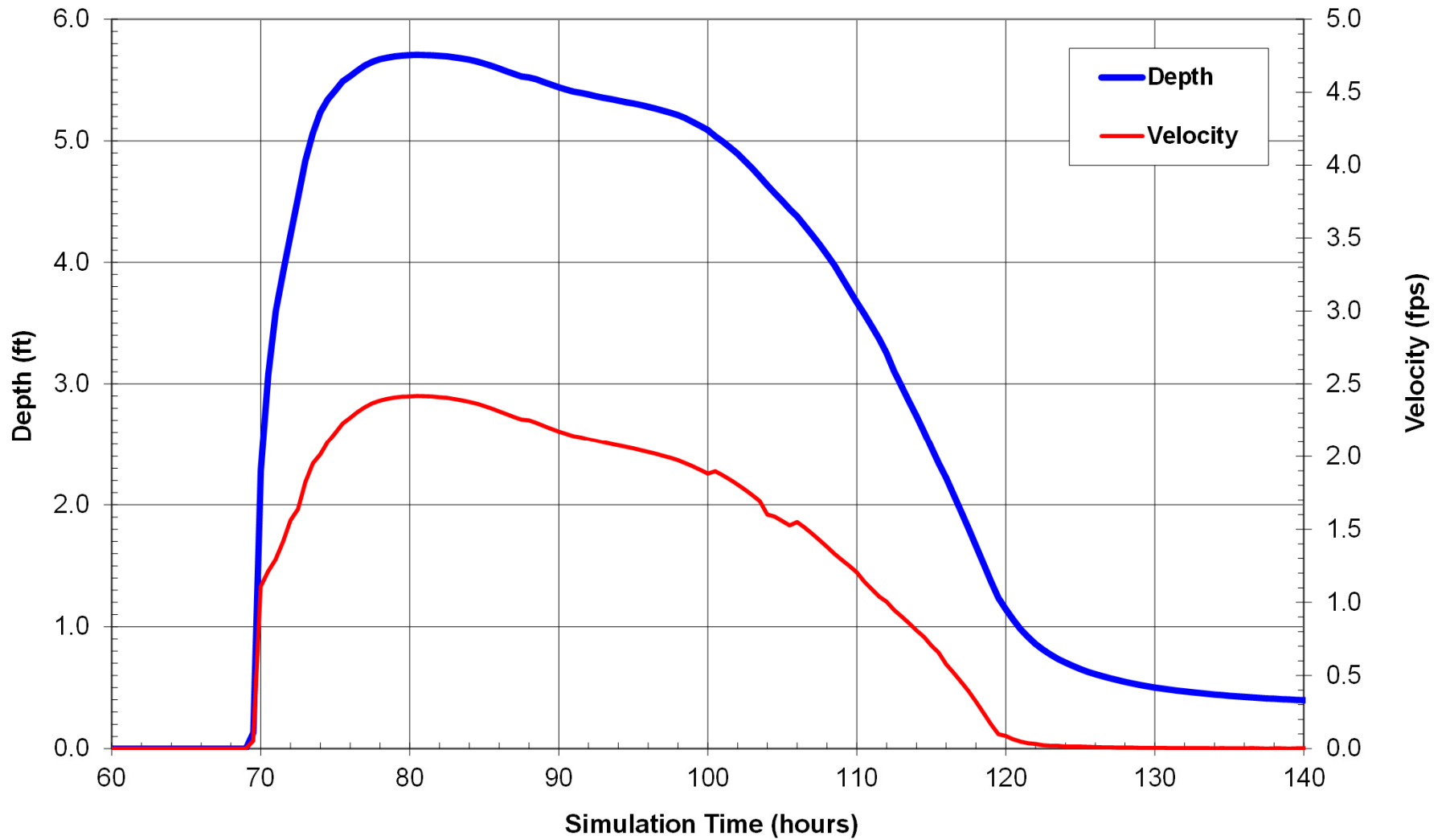


Figure 4
floodSAFE Yolo
Cache Creek 100-year Floodplain - Yolo and Vicinity
Location 4 - Depth and Velocity Plot

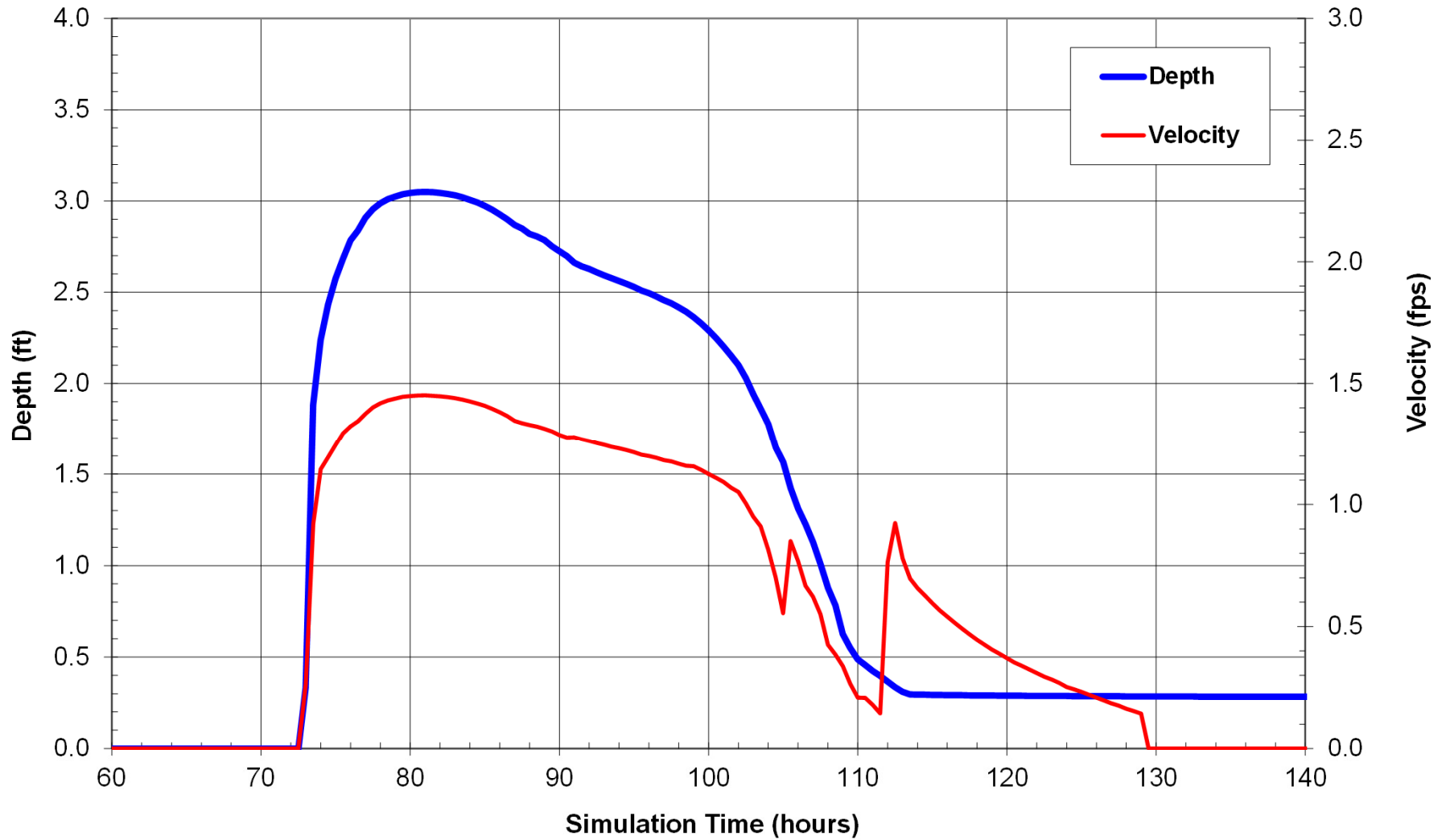


Figure 5
floodSAFE Yolo
Cache Creek 100-year Floodplain - Yolo and Vicinity
Location 5 - Depth and Velocity Plot

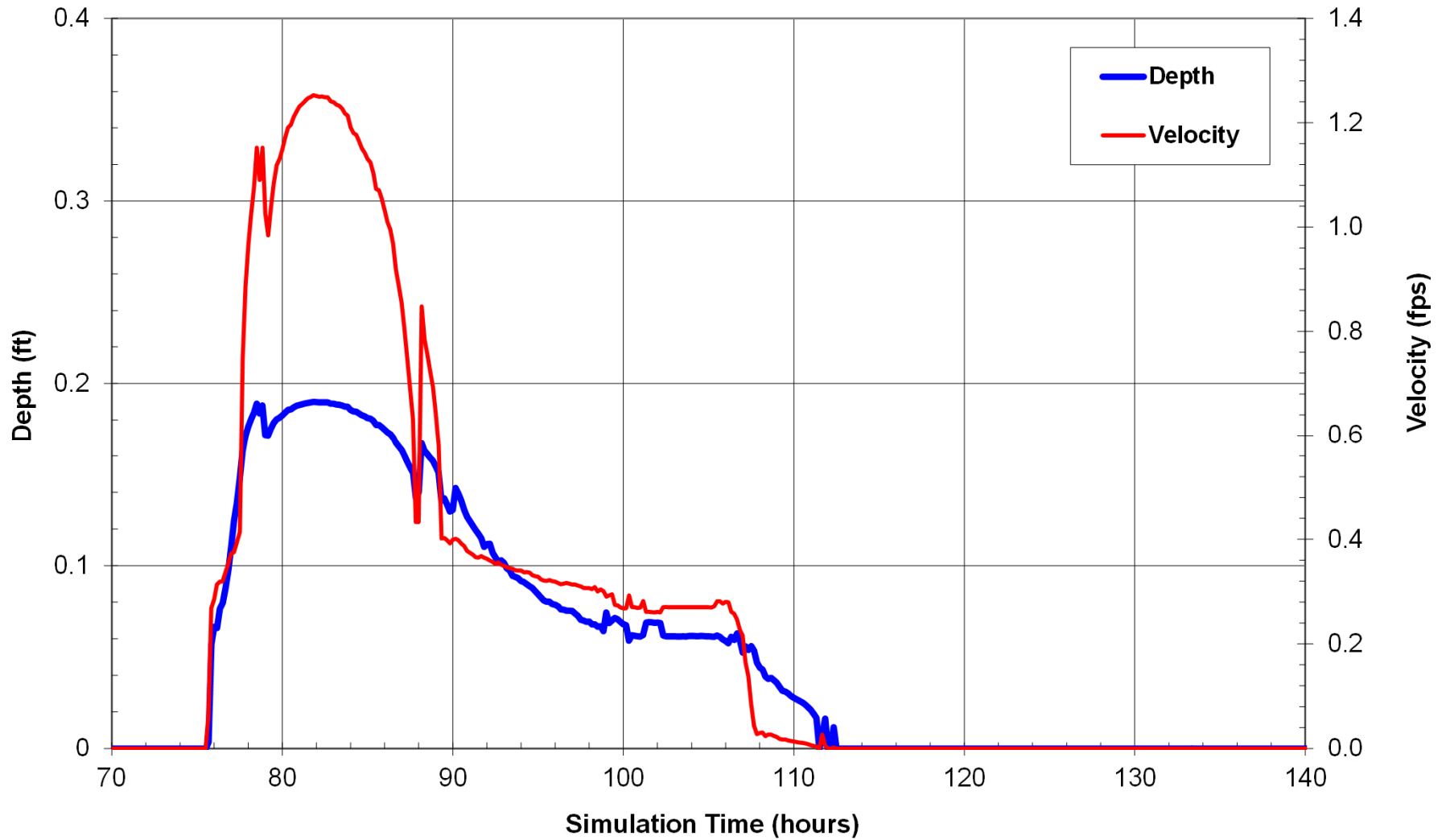


Figure 6
floodSAFE Yolo
Cache Creek 100-year Floodplain - Yolo and Vicinity
Location 6 - Depth and Velocity Plot

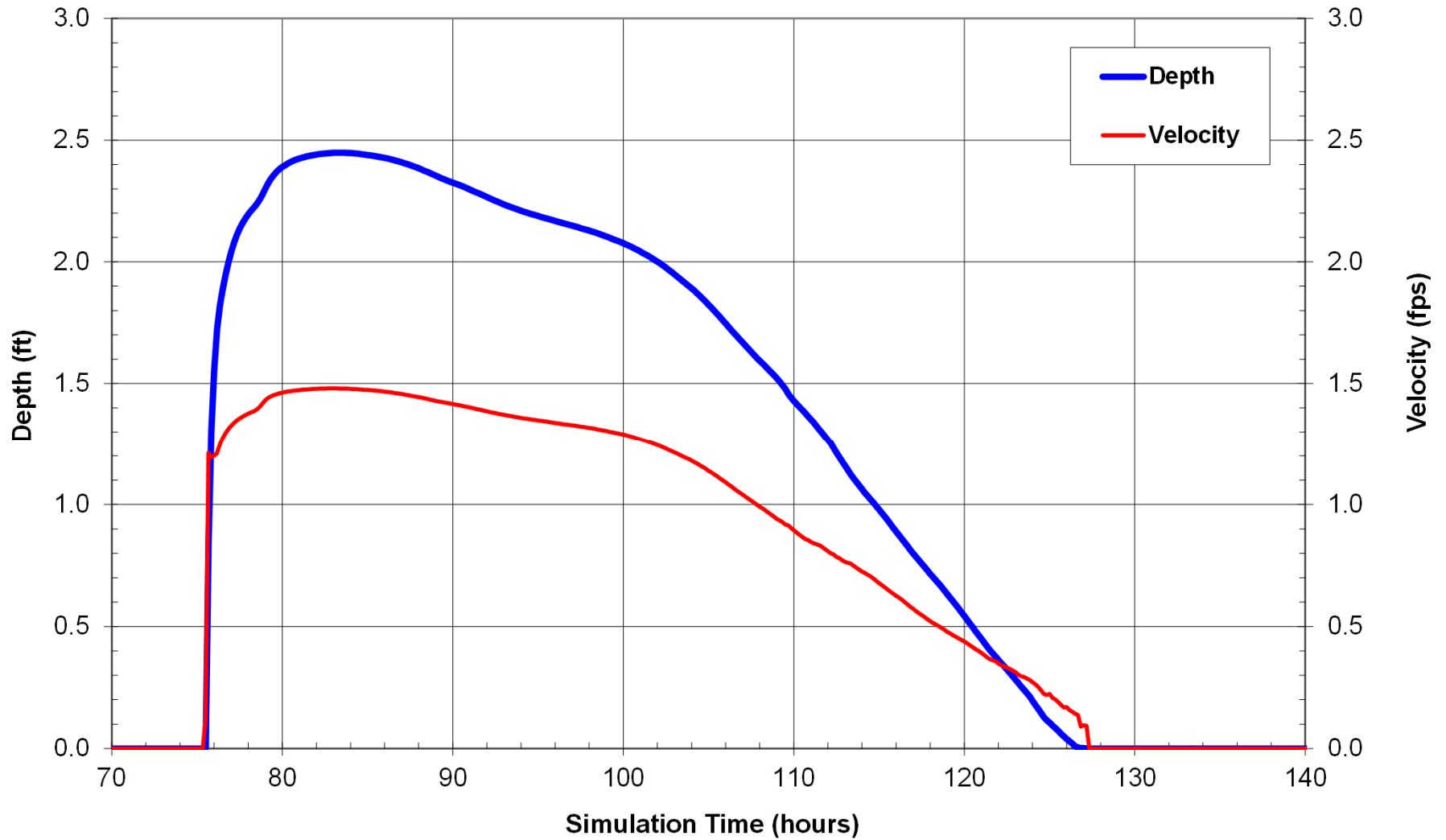
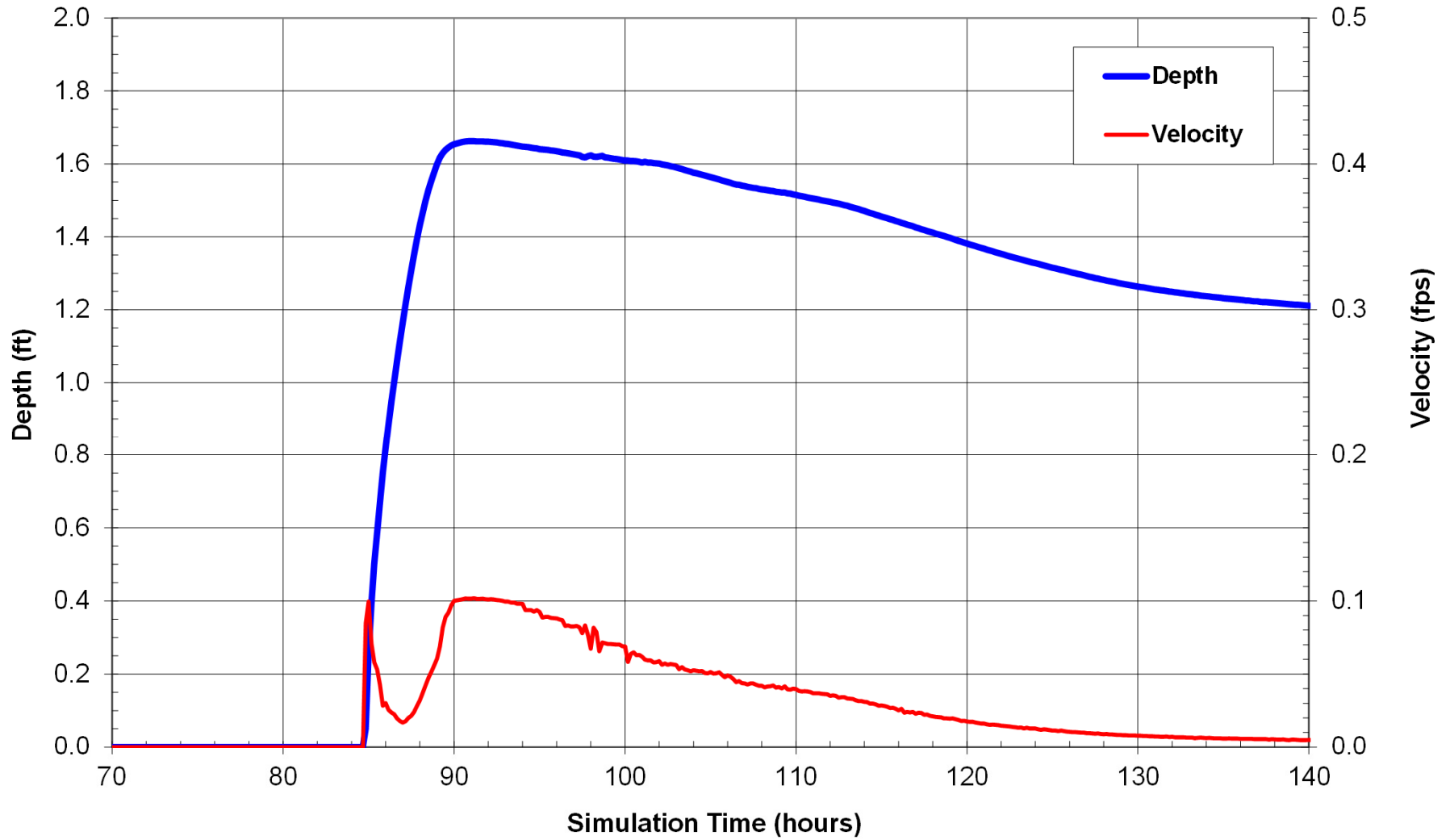


Figure 7
floodSAFE Yolo
Cache Creek 100-year Floodplain - Yolo and Vicinity
Location 7 - Depth and Velocity Plot



**ANIMATION
(DIGITAL FILES)**