

LOWER CACHE CREEK, YOLO COUNTY, CA  
CITY OF WOODLAND AND VICINITY

DRAFT FEASIBILITY REPORT  
FOR POTENTIAL FLOOD DAMAGE  
REDUCTION PROJECT

---

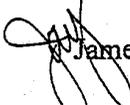
## **APPENDIX L**

### **Evaluation of Potential Flooding from Cache Creek**

MEMORANDUM

DATE: March 24, 1995 Project No: 052-94-02

TO: Bert Bangsberg, PG&E Properties

FROM:  James Yost, West Yost & Associates

SUBJECT: PG&E Properties — Conaway Ranch  
Evaluation of Potential Flooding from Cache Creek

West Yost & Associates (WYA) has performed an investigation of the potential for flooding of the Conaway Ranch area from the 100-year flood flow from Cache Creek. The Corps of Engineers has identified the potential for significant flooding from Cache Creek in their study of Cache Creek contained in the "Draft Reconnaissance Report, Westside Tributaries to Yolo Bypass, California," March 1994. This WYA investigation relies entirely on flow information contained within the Corps Reconnaissance Report, and on topographic information developed by WYA field surveys and from available mapping. The Corps' study identified a peak flood flow of 32,600 cfs breaking out of the banks of Cache Creek and flowing in a southeasterly direction across north Woodland toward the northwest corner of the Conaway Ranch property. The attached Figure A shows the area of resulting flooding determined by the Corps study. The extent of flooding depicted by the Corps is limited by the extent of their study area which stopped just west of the Conaway Ranch.

WYA's assignment was to determine the expected sequence of flooding as the flood wave progressed to the east toward lower elevations on the Conaway Ranch west of the Yolo Bypass Levees. To aid in identifying how the flood wave will progress to the south and east from the eastern end of the Corps study, WYA conducted a limited field survey to identify the extent of existing flood barriers such as the Sacramento Northern Railroad, Cache Creek Settling Basin Levees, Interstate Highway 5 (I-5), City of Woodland's Wastewater Treatment Plant and Ponds, Conaway Ranch's Highline Canal, Road 25, and Willow Slough channel banks. These existing barriers are shown on Plate 1 along with spot elevations at critical locations.

These barriers were identified using the USGS Quad Map for the area and from field investigations. Most of these barriers are earthen berms located on the upper part of Conaway Ranch that create temporary barriers that will slow the southeast advance of the flood flow. It is assumed that, except for the Cache Creek Settling Basin levees, these raised land areas create

temporary barriers that will be inundated and ultimately washed out as the flood wave progresses. The exact reaction of these areas of fill to the advancing flood wave is not known, however it is expected that they all will be overtopped and they will not be able to retain the volume of flood water escaping Cache Creek. To identify the worst flooding potential, a conservatively high estimate was made that all the flood water will reach the lower Conaway Ranch and that its volume will fill low lying areas west of the Yolo Bypass and north of the Willow Slough Bypass Levees.

Since the Corps study was finalized, Mr. Joe Countryman of Murray, Burns and Keinlen has reviewed the study results and has estimated the maximum flow rates reaching Conaway Ranch would be in the range of 20,000 cfs to 28,000 cfs with associated volumes of 25,000 acre-feet to 43,000 acre-feet. The Corps study did not analyze flood volumes and additional studies in this area will probably reduce those maximum estimated values.

WYA has prepared a series of figures that depict the probable progression of flooding from Cache Creek from the vicinity of Road 102 to the ultimate inundation of low lying areas of Conaway Ranch. As described above, Figure A shows the extent of flooding from the flows escaping the banks of Cache Creek during the 100 year flood as defined by the Corps. This figure shows the anticipated flooded area within the Corps study area limit which was just east of Road 102, about one mile west of the Conaway Ranch boundary along Road 103. It is expected that the majority of the flood water will be north of I-5 and the Sacramento Northern Railroad. The railroad forms a barrier to the flood flow at a relatively constant grade at elevation 33 feet.

Figure B shows that the first area to be inundated will be north of the railroad and west of the levee for the Cache Creek Settling Basin. The Settling Basin levees which rise up to elevation 48 feet, will not be overtopped by the flood flows that have escaped upstream from Cache Creek. Therefore, the flood water will be forced to proceed to the south and over the railroad once the area north of the tracks is filled to elevation 33 feet. There will be some water moving to the east along I-5 as shown by the arrow on Figure B.

After the railroad has been overtopped, it is expected that the flood waters will fill the area between the railroad and I-5 before overtopping the Conaway Ranch Highline Canal at elevation 31 feet, as shown in Figure C. It is also expected that some water will overtop I-5 and flow eastward in the roadside ditches along I-5. Note also on Figure C that the flood water is expected to flow east into the area bounded by I-5 and Highway 16 and the western levee of the Yolo Bypass, and then pond and cross I-5, flooding Conaway Ranch south of I-5.

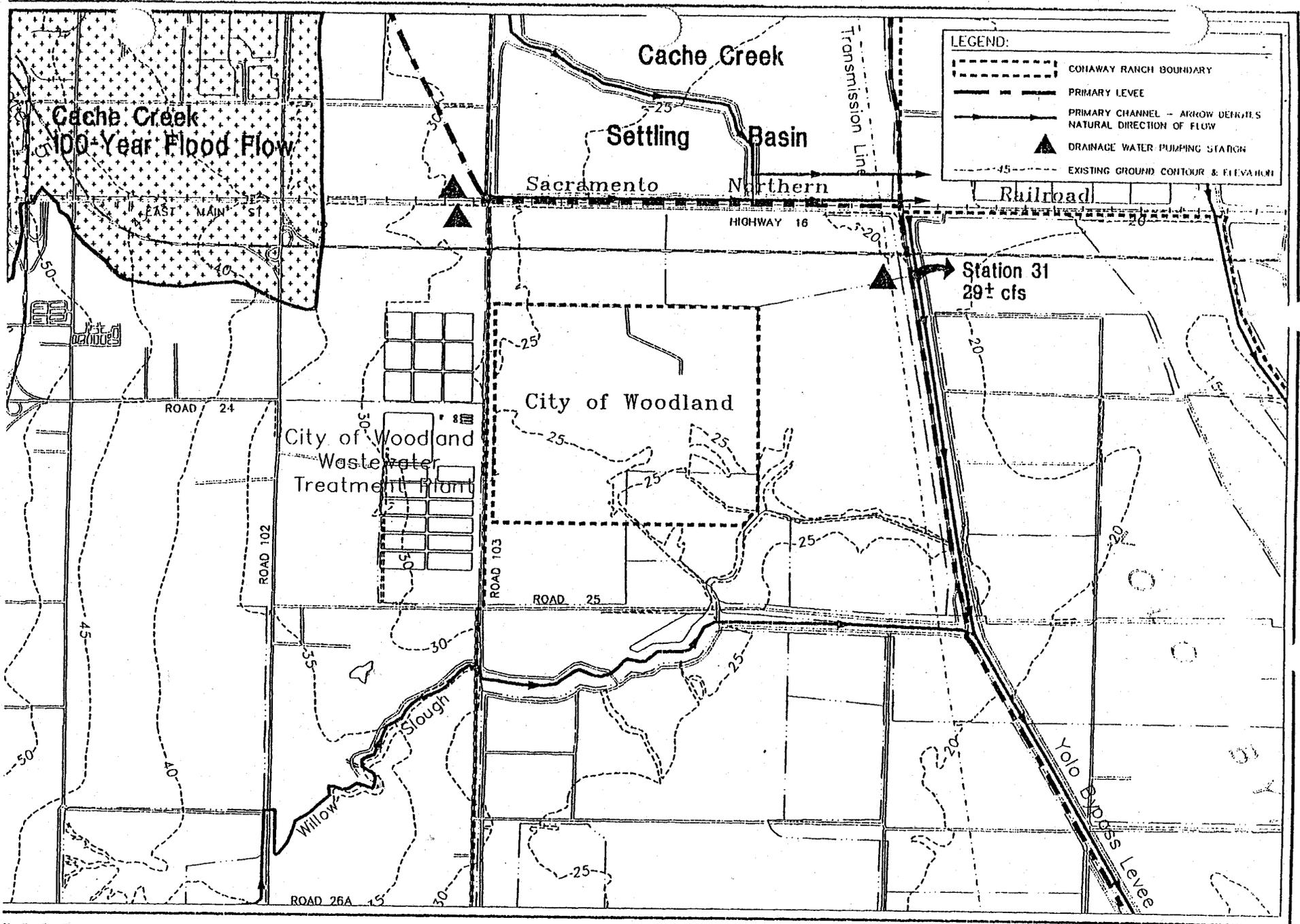
The next areas expected to fill with flood waters are the area between the Railroad and I-5, and the area west of the Highline Canal, south of I-5 and north of the berms along the northern boundary of the City of Woodland's Wastewater Treatment Plant (WWTP) as shown on Figure D. The berm at the WWTP is at elevation 32 feet, while the Highline Canal berm is at elevation 31 feet. It is expected that the flood flow will be directed onto the Conaway Ranch by overtopping the Highline Canal on the west and from flows across I-5 on the north. It is

expected that the Highline Canal berm will fail allowing significant flows onto the Ranch before the northern berms at the WWTP are overtopped and fail.

Willow Slough and the southern reach of the Highline Canal along Willow Slough create another temporary barrier to the advancing floodwater. It is expected that the Ranch area south of Willow Slough will not be flooded until the area north of Willow Slough floods above elevation 32 feet. Figure E shows the inundation up to elevation 32 feet of the northern 2,100 acres of the Conaway Ranch and the City of Woodland's 900 acres of wastewater disposal fields leased to Contadina. It also shows that the area west and south of the wastewater treatment plant is inundated. The water is then expected to overtop the southern reach of the Highline Canal and the Willow Slough berms and flow to the south as shown in Figure F. It is anticipated that the berms will be washed out, creating significant flow areas to allow the flooding of the main portion of the Ranch south of Willow Slough and north of the Willow Slough Bypass Levees.

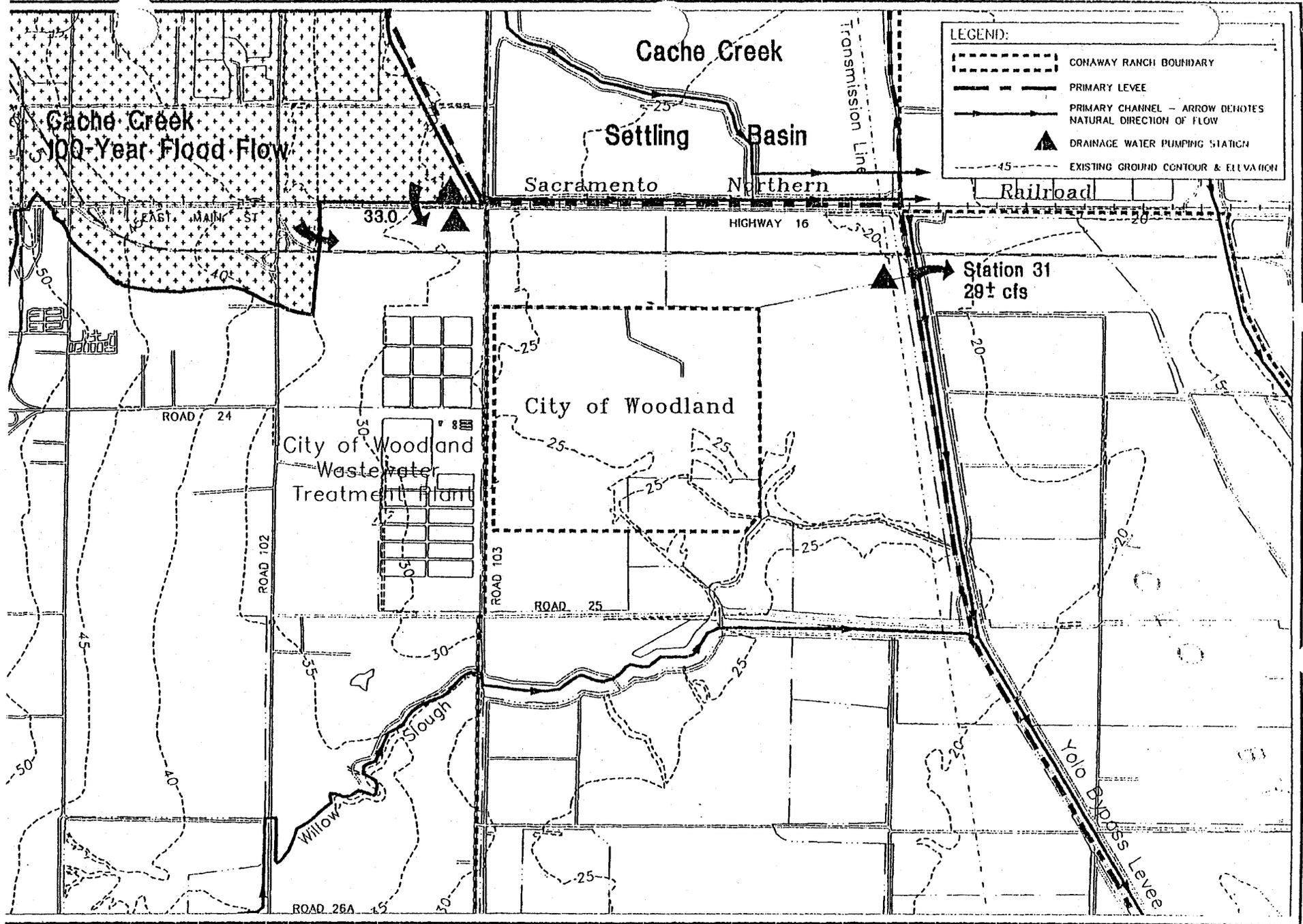
The Willow Slough Bypass Levees at the south end of Conaway Ranch are at elevation 30 feet and are tied into the Yolo Bypass Levees. Based on USGS topographic maps, there is sufficient volume behind the Willow Slough Bypass and Yolo Bypass levees to store the anticipated flood volume of between 25,000 and 43,000 acre-feet. The water is expected to pond behind these levees and rise to a maximum elevation of between 22.5 feet and 25.1 feet. Plate 2 shows the anticipated extent of ponding on the Conaway Ranch property. This will inundate a portion of the Yolo County Landfill, but the City of Davis Wastewater Treatment Plant located just north of the Willow Slough Bypass levee is not expected to be inundated by this ponding.

JAY:mk



Anticipated Sequence of Flooding  
From 100 Year Flow in Cache Creek

Figure A

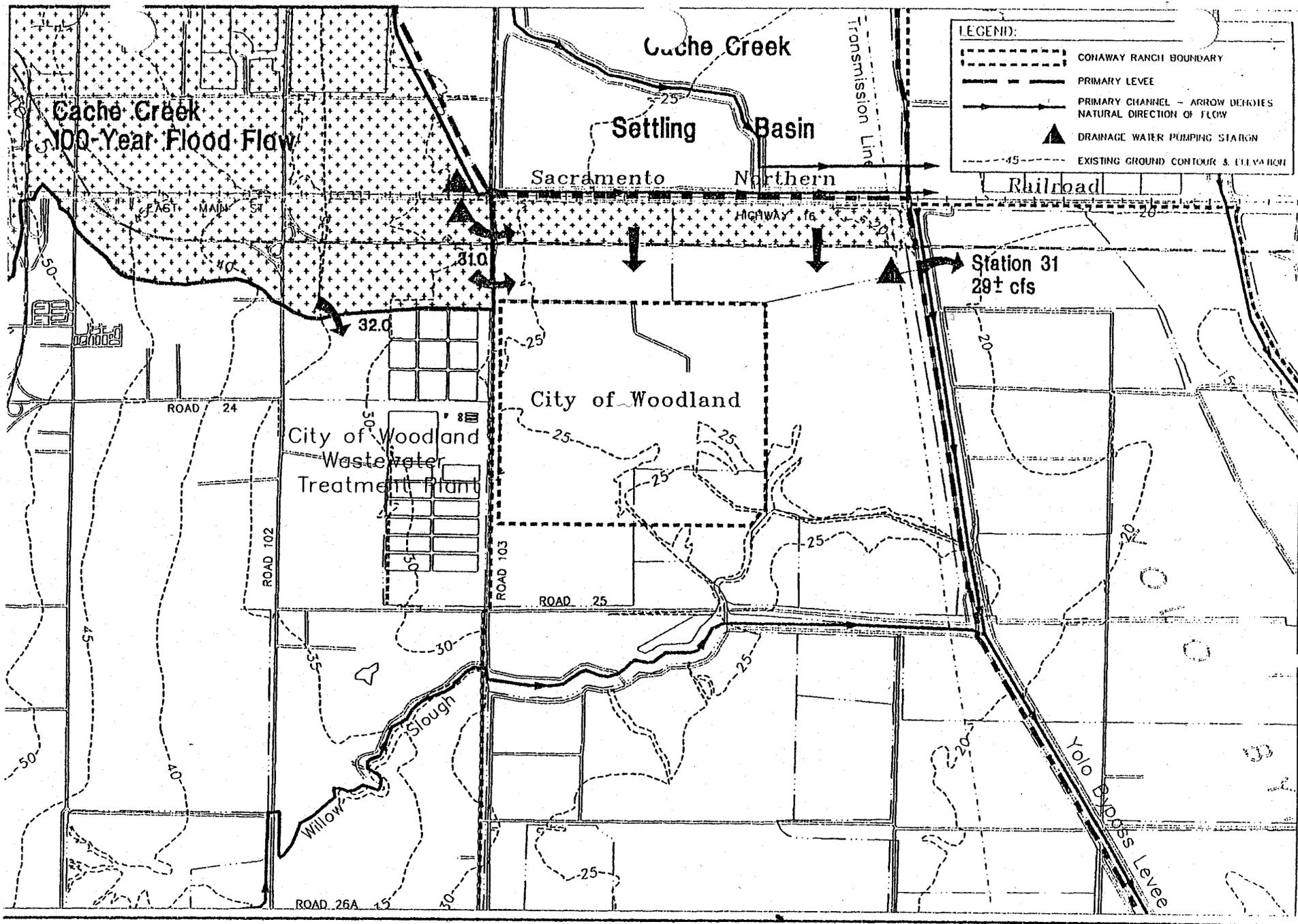


Anticipated Sequence of Flooding From 100 Year Flow in Cache Creek

Figure B

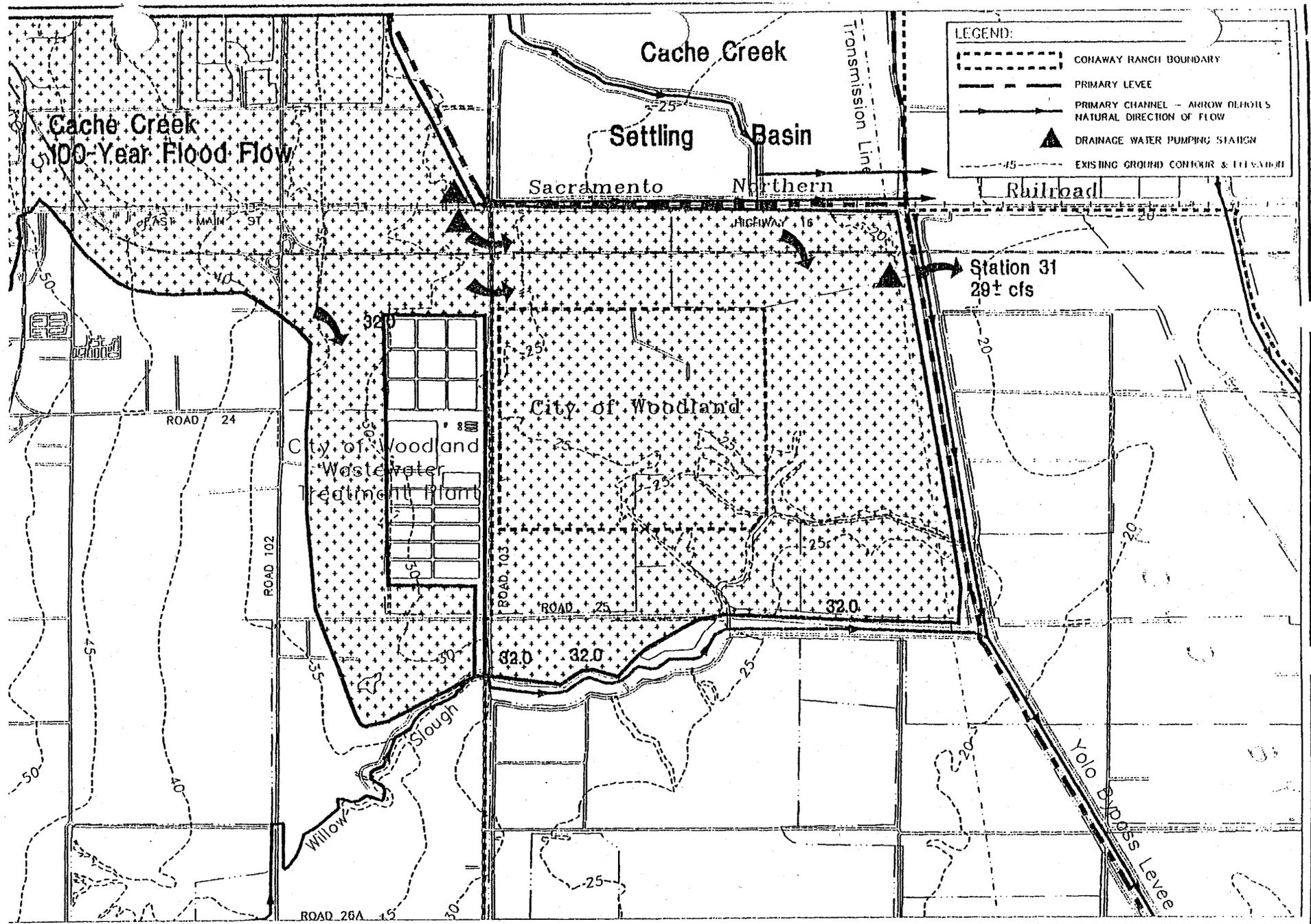






Anticipated Sequence of Flooding  
From 100 Year Flow in Cache Creek

Figure D



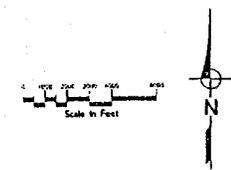
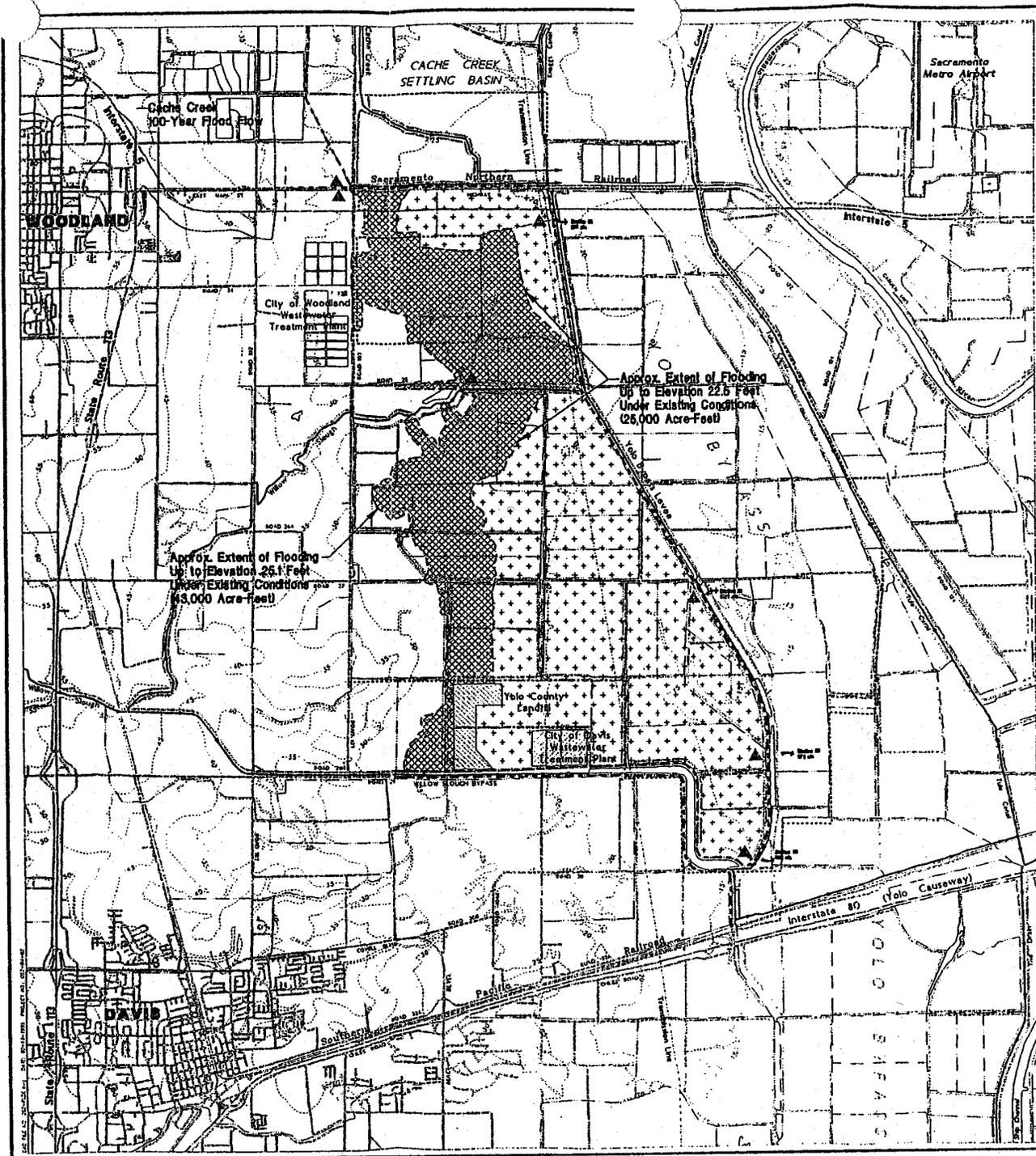
Anticipated Sequence of Flooding  
From 100 Year Flow in Cache Creek

Figure E





**Eastern Yolo County**  
**Estimated Flooded Area**  
**From Cache Creek**  
**100-Year Flood Flow**



- LEGEND:**
- DOUGLASS RANCH BOUNDARY
  - AREA & APPROXIMATE EXTENT OF CACHE CREEK FLOODING STUDY BY THE ARMY CORPS OF ENGINEERS
  - APPROX. EXTENT OF FLOODING UNDER EXISTING CONDITIONS (11,000 AC-FEET @ ELEV. 22.5)
  - APPROX. EXTENT OF FLOODING UNDER EXISTING CONDITIONS (13,000 AC-FEET @ ELEV. 22.5)
  - PRIMARY LEVEE
  - PRIMARY CHANNEL - ARROW INDICATES NATURAL DIRECTION OF FLOW
  - ▲ DRAINAGE PUMPING STATION
  - EXISTING GROUND CONTOUR & ELEVATION

- GENERAL MAPPING NOTES:**
1. SOURCE OF UNDERLYING MAPING SHOWN HEREIN IS DERIVED FROM QUAD MAPS AS SUPPLIED BY AMERICAN DIGITAL CARTOGRAPHY.
  2. BOUNDARIES ARE APPROXIMATE AND HAVE BEEN ADJUSTED TO FIT QUAD MAPS.

