PUTAH CREEK FLOODPLAIN & RIVER RESTORATION



CONTOURS | EXISTING CONDITIONS



RESEARCH QUESTION:

How can a new channel and floodplain be designed in the devastated section of the UC Davis Putah Creek Riparian Reserve, bordered by Country Road 98 / Pedrick Road and Interstate-80 to create a healthy stream with meanders that erode, transport and deposit sediment in equilibrium and foster a fertile floodplain with riparian vegetation and habitat diversity?

SUB-QUESTIONS:

- What sinuosity should the new channel have?
- What width should the new channel have?
- What depth should the new channel have?
- Which native riparian plants should be planted in various parts of the floodplain and why?
- How much fill will be needed to bring bank full level with the floodplain?

COUNTOURS | PROPOSED DESIGN



- Average depth of the existing channel is 4'-7'. Probably deeper but over the years 'muck' has filled in
- The width ranges from 40'-100'
- The river flows west to east with an elevation change from 33.6 feet to 32.2 feet
- The overall change in elevation is 1.4'
- The slope in the most devastated area is 0.00029 ft/ft.
- Because of the excessive width, there is very little floodplain

- Average depth of the channel is 5.5'

- The width of the channel ranges from 18-27. The meander length ranged from 100'-300'

- I sculpted continuous contour lines from 33'-29' around the channel

-In some of the wider areas, deeper pools were inserted and shown from the 29'-27' contour lines

- Using the original terrestrial contour and with the aid of GIS, I in a sense stretched out the narrow contour lines that represent the steep banks, creating a relatively flat recruitment box area where species can thrive better than on steep banks. - The recruitment box is the wide flat area of the floodplain close to the bank. After a three to five foot rise from bankfull level, the recruitment box is an area with little or no elevation change for five to ten feet. Then the floodplain returns to normal terrain

HEIGHT ABOVE RIVER | EXISTING CONDITIONS



HEIGHT ABOVE RIVER | PROPOSED DESIGN



The existing channel is very wide without a floodplain, indicated in green. It is 4,802.93 feet long. Furthermore the channel has no meander.

When compared to the original HAR map, notice the increased area of the recruitment box shown in green. The new floodplain now has three additional acres on the north and 2 1/2 on the south.

FILL CALCULATION

The amount of fill needed is 1,203,399 cubic feet or 44,570 cubic yards

VEGETATION

Plants thrive at different levels of the floodplain depending on their root structure and their distance from the water table.

Species will be planted by natural means at low (recruitment box), intermediate and high floodplain levels. Over the years the species will become more populated.

Looking at the new HAR map, the different colored areas of the flooodplain coordinate to different elevations. Species that thrive at each level should be chosen and planted at that particular elevation (See Graph).





