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Re: St. Helena Flood Control Project EMP – Mod-A 2006 addendum

I have carefully reviewed the City of St. Helena documents on their web site (<http://city.ci.st-helena.ca.us/>) regarding the 2006 addendum to their flood control plan for the Napa River. I cannot resolve the fundamental differences between the text of that addendum and its appendices, and the engineering calculations presented to support the proposed findings. Specifically, the addendum purports that there will be minimal changes in flood height for the design flood (an actual event in the spring of 1995 that is believed to represent a 100-year event) and the proposed 2006 changes in the floodwall position and configuration.

The 2006 plan proposes to move the floodwall over 100 feet closer to the river at the critical narrow constriction in the vicinity of river cross-sections 14833 downstream to RS 13143. The 2006 addendum refinement 3 states that "*The floodwall will be slightly closer to the Napa River within the VVMHP adjacent to Terrace B*". In fact, it is significantly closer, and reduces the cross-section carrying flood waters by about 15%. The unsteady Napa and Sulphur Creek HEC-RAS calculations and plots for maximum water surface elevations included by the City of St. Helena in their addendum do not model or show the floodwall in a different position than that agreed upon in 2005, and the date of the HEC-RAS plots is still shown as 5/27/2005. When I model the proposed changes in the floodwall, I find increases in flood height on the order of 0.5 feet or more, yet the City addendum states that no significant changes in flood height and hence extent will occur. Half a foot is significant because it significantly reduces the factor of safety for the floodwall, floods a larger area upstream, and increases gradients and hence velocities of water passing the mobile home park that is protected by the floodwall. The increased water velocity passing the mobile home park will contribute significantly to bank erosion. This has not been evaluated in prior documents or the addendum. The addendum acknowledges observed bank erosion in 2005 with a smaller flood, and acknowledges need for adaptive management for future floods. This most likely means that in the future the streambanks will need to be reinforced adjacent to the mobile home park.

Misstatement of the effects of the proposed floodwall changes and/or incomplete presentation of the changes that may reasonably occur with the proposed changed design render it impossible for the public to evaluate the 2006 plan. Bank stability,

and stream bed stability, as well as riparian vegetation conditions are all dependant on flood flow stream velocities. The proposed restoration and stabilization of the channel through St. Helena is dependent on accurate prediction of channel stability. Stability is a function of duration and velocity of flood flows as well as riparian vegetation. An adaptive management strategy is proposed, which is sound, but the degree to which such a strategy is possible rests on estimates of feasibility.

To properly evaluate the proposed project modifications, we minimally need the following:

1. Map or aerial photo with locations of each of the Napa River cross-sections used to develop the Supplemental 2006 Hydraulic Analysis by MBK Engineers. If they are the same cross-sections as were used in prior analyses, please show us those locations on a map or aerial photo. Longitudinal plots as presented by MBK do not allow evaluation of present and future bank vegetation conditions.
2. Longitudinal profile of the gradient of the bed of the present and proposed future course of the Napa River through the project reach if different from that postulated for the original 2005 settlement agreement
3. Range of dates for proposed spoils disposal handling and intended methods of placement of those spoils and their planting. Here the concern is vulnerability to erosion in the event of high rainfall or runoff. This concern is directed toward evaluating stormwater protection for the spoils disposal sites.
4. Locations of mobile home sites that are to be removed or retired from future use at the time of construction of the proposed project and presently unoccupied pads that may become occupied as a result of the project. Here the concern is only erosion potential.
5. We also need the design profile and map view of the project for the calculated 100-year and 200-year water surface profiles. We note the mention of 200-year flood limits in the 2006 documents. Because we cannot resolve the proposed *adopted refinement No. 6/change of design profile*, that require an increase in the levee and floodwall heights by about 0.5 feet, we need some documentation to explain why this is needed.
6. Element C roughness calculations and erosion potential calculations. The City checklist adopted refinement #1 suggests that sediment and vegetation management is contingent on assessment of roughness and erodibility calculations. What are the parameters of those calculations? What velocities are anticipated?

Respectfully Submitted

A handwritten signature in black ink, appearing to read "Robert R. Curry", with a stylized flourish underneath.

Robert R. Curry
Registered Geologist and Hydrologist