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## MEMORANDUM

DATE: 10/17/02

TO: Chris Malan, FONR

Cc: Julie Haas

FROM: Phil Williams

RE: Initial Thoughts on the St Helena Flood Plan

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As I will be gone on vacation next week –returning on the 30<sup>th</sup>, I thought it would be useful to give you my initial observations based on my review of the CDM report and my field trip last month.

1. *The City's interest in Flood Control presents a significant opportunity – or threat, to protecting and restoring the Napa River corridor.* I imagine your challenge is to lever the City's interest and resources into planning and implementing a multi-objective river corridor plan that fully integrates flood hazard reduction with environmental and community values.
2. *The Flood Plan is not a multi-objective River Corridor Plan.* It is essentially a flood control plan that attempts to be 'consistent with the Living River Principles'. These principles are not articulated as specific ecologic, aesthetic or public use objectives that are integrated into the design.
3. *The emphasis of the plan is on constructing flood control measures rather than the stated goal of flood damage reduction.* A flood damage, or better termed a flood hazard reduction plan would give appropriate weight to all measures that reduce flood hazards including flood proofing, zoning, warning and response systems. It would examine the resilience of the plan to extreme events and failures in the system like trees plugging bridges. It would examine bank erosion as a hazard. It would also address the opportunities to use FEMA floodway and floodplain regulations and incentives to reduce flood damages.
4. *The plan does not address the long-term management of the river.* Instead it focuses on structural fixes without adequately addressing their sustainability or real long-term maintenance costs.

Some maintenance activities inherent in the plan appear to conflict with restoring healthy riparian habitat.

5. *The plan does not integrate an understanding of the geomorphic response of the river into the plan.* It assumes the river is frozen in time or is in equilibrium rather than responding to long-term changes in the watershed. It relies on fixed bed profiles, channel conveyance and bank stability that may be unsustainable or incompatible with ecologic objectives. It does not address the most important dilemma: Channel incision allows greater conveyance of floodwaters but disconnects the floodplain. Properly recognizing the importance of channel incision creates an imperative for a wider river corridor unless there is extensive permanent hardening of the riverbanks.
6. *The rationale for action has not been established.* The problem the plan is addressing is the attempt to lower 100year flood elevations, without identifying critical elevations where flood damages occur or the major influences on flood stages. Even with this narrow focus it is not clear what are acceptable or unacceptable criteria. Because there is no articulation of measurable objectives it is not clear what the flood damage and ecologic costs of the no-action alternative are.

In an ideal world the problem facing St. Helena would be seen as the need to develop an integrated sustainable river corridor management plan that minimizes flood hazards while improving and maintaining ecologic and community values of the river. To do this would require the following steps:

1. Establish measurable objectives for achieving this goal.
2. Understand the physical and ecologic context of the river-, which means recognizing the river we see now is a snapshot of an evolving system still responding to major human interventions that continue to alter the landscape. With no-action, continuing with present ad hoc management practices, the river is on a trajectory to a different state. It is possible to articulate this state and its associated habitat values and flood hazards over a planning horizon of say 50 years.
3. Develop alternative approaches to both restore the river corridor while reducing flood hazards.
4. Assess these alternatives based on how they would perform over the next 50 years, measuring this performance based on predictions of indicators of achievement of objectives.
5. Select and design a management plan in which maintenance planning is fully integrated in any structural modification.
6. Set up a management system to make sure the plan is implemented for succeeding generations.

It appears that we are in the middle of an imperfect planning process. How it can be used to incorporate this broader perspective of river management is what we need to discuss on my return. In the meantime, the City is sending us the hydrodynamic model . If we are to develop an idea of what an integrated plan would look like we will need this model. We can also use it to check the adequacy of the proposed plan on its own terms, for flood control. However, I am concerned that if that is all we do, we will just be tinkering and arguing; without questioning the underlying premises.