Plan to Minimize Impacts to Adjacent Landowners
City of St. Helena Flood Protection and Flood Corridor Restoration Project

Program Background

The Safe Drinking Water, Clean Water, Watershed Protection, and Flood Protection Act of March 2000 (Proposition 13) created the Flood Protection Corridor Program. The Program is authorized to fund projects providing nonstructural approaches to flood management, including the acquisition and restoration of wildlife habitat and agricultural land preservation. Proposition 13 requires the Department of Water Resources to ensure prior to acquiring any interest in land for the Flood Protection Corridor Program (Section 79041) a plan to minimize the impacts on adjacent landowners is prepared and approved. The plan must include an evaluation of the impact on floodwaters, the structural integrity of affected levees, diversion facilities, customary agricultural husbandry practices and timber extraction operations, and an evaluation with regard to the maintenance required for any facilities that are proposed to be constructed or altered.

The Water Code Section states:

> "Water Code Section 79041: Prior to acquiring an easement or other interest in land pursuant to this article, the project shall include a plan to minimize the impacts on adjacent landowners. The plan shall include but not be limited to, an evaluation of the impact on floodwaters, the structural integrity of affected levees, diversion facilities, customary agricultural husbandry practices and timber extraction *operations, and an evaluation with regard to the maintenance required for any facilities that are proposed to be constructed or altered."*

Project Background

Severe flooding occurred within St. Helena in 1986 and 1995, primarily on the Napa River with the greatest costs at the Vineyard Valley Mobile Home Park (VVMHP). Flooding is due to creek and river overflows, with some flooding due to sheet flow of water across agricultural land. The VVMHP is subject to flooding at life-threatening levels. The park is located on an approximate forty-one (41) acre parcel of land in the Zone AE one hundred year floodplain adjacent to the west bank of the Napa River. Sulphur Creek traverses along the south side of VVMHP. The park sustained extensive damage during the floods of February1986 and March 1995 -- approximately two hundred modular homes were declared a total loss after the 1995 flood. Estimates of damage to Vineyard Valley totaled thirty ($30) million dollars [1995 values] and included damage to residential structures, non-residential community facilities, personal property and site improvements surrounding the individual units.

Flooding in 1986 and 1995 displaced residents for a period of six to nine months. The 1995 flood is the storm of record. The nature of flooding risk is primarily the residential

areas directly adjacent to the Napa River. This includes VVMHP Hunt's Grove Apartments, and several single family homes in outlying areas between Pratt Avenue and Pope Street.

The design flood calculated at a 100-year event flow of 21,000 cubic feet per second (CFS) is an exceedingly high flow. For example, it is equivalent to the design flow in downtown Reno, Nevada. It is almost three times as high as San Anselmo Creek's peak discharge of 7,500 cfs in Ross Valley (Marin County). The Project area includes the convergence of the Napa River with Sulphur Creek, a major tributary of the Napa River, which drains the western mountains above the City of St. Helena. Velocities can be swift and dangerous.

Specific objectives of the Project include:

- Floodplain Terrace of more than 8 acres. This terrace will provide a wider area for passage of floodwaters and also provide new and enhanced riparian habitat.
- Approximately 600 feet of existing bank protection riprap and wire gabions at the VVMHP will be removed, the shoreline will be restored to create and improve habitat for steelhead, California freshwater shrimp, and critical habitat for the California red-legged frog, as well as for common species.
- New setback levee and floodwall will be constructed to protect residential units.
- A detention basin and pumping facility will be placed inboard of the new levee. Two existing storm drains will be diverted into this basin and the two existing storm drain outfalls into the Napa River will be abandoned. A drainage swale will run along the outboard edge of the new levee to filter area stormwater before entering the Napa River.
- At the southeastern end of the Project area, riparian vegetation will be managed to protect critical environmental habitat and improve flood storage capacity upstream of the Pope Street Bridge.
- Meeting and maintaining conditions consistent with the Project flood protection and habitat goals and performance objectives will require long-term monitoring, some maintenance (although it is a stated objective to minimize maintenance) and structural modifications to respond to changing conditions. An Adaptive Management Plan has been adopted and approved by the SF Regional Water Quality Control Board as part of the Project's Water Quality permitting.

<u>Evaluation of Impact of Development of Project on Floodwaters</u>

The Napa River flows along the north boundary of the city of St. Helena in northern Napa County. Runoff produced from periodic large storms in the 80-square mile watershed above St. Helena has caused flooding in several developed areas along on the river's floodplain, most notably at the VVMHP, the City's wastewater Treatment Plant, Fulton Lane and the Hunt's Grove Apartments.

A primary component of the Project is the City's acquisition of land for floodplain transitory storage, storm water management and public access. Zoned medium density residential in the current General Plan, this area will be rezoned as flood corridor and open space.

The Project will reduce the water surface elevations in the proposed 100-year floodplain, when compared with the No Project alternative. Water surface elevations in larger (500 year) events will also be lower than under present conditions, because of the transitory flood storage and levee elements of the Project.

Improving flood protection of this particular area is very important to prevent repetitive flood damages, loss of homes, and displacement of senior population of residents. Three hundred residents in 223 mobile homes at VVMHP and an additional 139 residents in 56 housing units at Hunts Grove Apartments would benefit from improved flood protection, representing 8% of the total population of the City of St. Helena. An additional 200 to 500 residents in the surrounding area would also benefit from improved reduced water surface elevations, during the largest flooding events.

A floodplain terrace will be excavated along the right (western) edge of the Napa River. A cluster of existing mobile homes within the VVMHP have been removed to provide an area for the new terrace. Approximately 68,000 cubic yards of soil will be excavated. Creating the floodplain terrace is expected to reduce flood water surface elevations by 1.5 feet during 100-year flows. The creation of the terrace will require excavation, grading, and revegetation of riparian and upland areas. The constructed terrace will be planted with perennial native riparian species.

Construction of the Project will reduce water surface elevations in the project reach by 1.5 feet for the 100-year flow and will not increase water surface elevations upstream or downstream of the project reach. The Project will provide 100-year protection with 3-feet of freeboard, which meets FEMA NFIP requirements and 500-year protection with 1-foot of freeboard.

The Project flood damage reduction benefits have been calculated using two methods.

Method 1: In 2003, David Ford Consulting conducted a Project Inundation Benefits Study of the Project and concluded that the Project reduces the expected average annual flood damages by $1.75 million per year. The Project does so both by reducing the water surface elevations in the project reach and by protecting the structures with a constructed setback levee. As a result, the Project reduces both the frequency of flood damage and the depth of flooding. Due to reduced water surface elevations and levee, the expected average annual flood damages are reduced by $1,750,000.

Method 2: In 2007, Mead & Hunt conducted a benefit analysis using the FEMA Benefit–to-Cost (BCR) Toolkit, which measures the total benefits by individual flood protected property over the life of the Project. This benefit analysis calculated Total Project

Benefits of $305,000 per residential unit, on average. Thus, when taking into account all of the units this project benefits, this provides a total benefit of $63,440,000.

When compared with the No-Project condition, the Project causes no significant increase in velocities within the Napa River under 100-year flood conditions and therefore results in no increase in the potential for property damage and/or loss of life. A major benefit of the proposed Project is the reduction in velocity that will occur as a result of removing the hydraulic constriction at VVMHP through expansion of the flow area at Terrace B. This change results in a net increase in flood capacity and a corresponding reduction in water surface elevations, thereby reducing the potential for property damage and/or loss of life.

Conditional Letter of Map Revision

FEMA issued a Conditional Letter of Map Revision (CLOMR) on Nov. 30, 2007. As part of the CLOMR process, FEMA evaluated the effects of the proposed project on the effective Flood Insurance Rate Map (FIRM) and Flood Insurance Study report for the City of St. Helena in accordance with National Flood Insurance Program (NFIP) regulations, which included review of detailed hydraulic analysis and updated topographical information along the Napa River. An except from FEMA's letter:

> "We reviewed the submitted data and the data used to prepare the effective FIRM for your community and determined that the proposed project meets the minimum floodplain management criteria of the NFIP. The submitted existing conditions HEC-RAS hydraulic computer model, dated October 30, 2007, based on updated topographic information, was used as the base conditions model in our review of the proposed conditions model for this CLOMR request. We believe that, if the proposed project is constructed as shown on the certified submitted plan entitled, 'City of St. Helena Comprehensive Flood Protection Project, Napa River and Sulphur Creek, St. Helena, Napa County, California,' dated February 3, 2006. . . and the data listed below are received, the floodplain boundaries of the base (1-percent-annual-chance) flood and the 0.2-percent-annual-chance flood will be delineated as shown on the topographic work map entitled 'St. Helena Comprehensive Flood Protection Project Application for conditional Letter of Map Revision, 1% and 0.2% Annual Chance Floodplain Cross-Sections Locations,' dated December 2006, prepared by Mead & Hunt Inc., and a revision to the FIRM would be warranted."

FEMA's review also states, "our review of the existing conditions revealed that the Base Flood Elevations (BFE's) decreased compared to the effective BFE's throughout the revised reach of the Napa River," and, "…as a result of the updated topographical information and the proposed project, the BFE's will decrease compared to the effective BFE's throughout the revised reach of the Napa River…"

The CLOMR does note that as a result of the updated topographic information, the width of the Special Flood Hazard Area (SFHA) will increase in some areas and decrease in others compared to the current effective SFHA width throughout the revised reach of the Napa River. It is important to put this in context – the current effective Flood Insurance Rate Map is based on mid 1970's topography utilizing 20 foot vertical contour intervals as opposed to the much more accurate topographical survey tools available in the 21st century and hydraulic analysis utilized as part of this Project and proposed map revision. The important conclusion is that the base flood elevation will remain the same or decrease; the Project will not increase base flood elevations on any surrounding properties.

Evaluation of Impacts on Structural Integrity of Affected Levees

The Project will construct a new levee/floodwall along the right bank of the Napa River within each of the reaches affected by stream restoration activities. These levees/floodwalls have been designed in accordance with all applicable U.S. Army Corps of Engineers (Corps) Engineering Manuals and been reviewed by FEMA as part of the CLOMR application. Geotechnical investigations and hydraulic analysis were performed to provide a basis for the design. The flood control facility design has been prepared by the City's engineering team and stamped by the primary designer Mead & Hunt. Design considerations included the post-project channel hydraulics and stability. Appropriate inspection and testing will be performed in accordance with Corps standards. The flood control facilities will be operated and maintained by the manual approved by FEMA which includes requirements for annual inspections and patrols during flood events. As previously described, the Project will lower flood levels and velocities within the Project reach. The Project will also have no substantial impact upon peak flow and velocities upstream and downstream of the project area and therefore will not have any adverse effect upon any other flood control features.

Evaluation of Impacts on Diversion Facilities

There are no water diversion facilities within the project area. The Project will reroute some local storm drainage pipes outlets to the NAPA River. As part of the Project modifications these local drainage facilities will be modified to reroute water through a combination of detention basin and grass lined drainage swales with the objective of improving water quality. The outlet to the Napa River for the drainage swales will be at the same location as the existing pipe outfalls. The detention and drainage swales are expected to moderate the rate of discharge into the NAPA River.

Evaluation of Impacts on Customary Agricultural Husbandry Practices

There are no agricultural operations occurring in the vicinity of the Project, and thus the Project will not impact customary agricultural husbandry practices.

Evaluation of Impacts on Timber Extraction Operations

There are no timber extraction operations in the vicinity of the Project, and thus the Project will not impact any timber extraction operations.

Evaluation of Impacts on Maintenance of Any Facilities Proposed to be Altered or Constructed

The City has committed to guarantee funding through the placement of a special purpose certificate of deposit (CD) in the amount of $104,000. The City also committed to record a deed of restriction on the property acquired to construct the Project to prevent future development.

Measure A, the local ½ cent flood protection sales tax, has established a fund dedicated to funding future maintenance.

Conclusion

During construction of the Project all construction activities will be in conformance with the mitigation measures adopted during the Project's CEQA review and certification process. All regulatory agency permits have been issued and construction will adhere to all conditions imposed. This multi-objective project will provide flood damage reduction through restoration and re-establishment of the natural floodplain along the Project reach; set back levees; and the re-creation and restoration of a natural floodway corridor. It will create more than 8 acres of high-value riparian forest and shoreline restoration for terrestrial and fish habitat on the Napa River, which is listed by the EPA as an impaired waterway and by National Marine Fisheries Service as an important steelhead and salmon recovery tributary of the San Francisco Bay Estuary.

In conclusion, it is not anticipated that the development of Flood Protection and Flood Corridor Restoration Project and/or its subsequent maintenance will have any adverse impact upon the adjoining property owners.