



# City of Woodland

## REPORT TO MAYOR AND CITY COUNCIL

AGENDA ITEM

TO: THE HONORABLE MAYOR  
AND CITY COUNCIL

DATE: December 2, 2008

SUBJECT: Update Regarding floodSAFE Yolo and Floodplain Mapping

### **Report in Brief**

Earlier this year the City Council received an update regarding floodSAFE Yolo Pilot Program. Since that update, additional significant progress has been made to address floodplain management for the City of Woodland and Yolo County. Given the recent developments, staff and the Council members who represent Woodland on the 2x2x2 committee believe it is appropriate to provide the City Council with an update regarding this critical program.

City staff have also made significant progress on floodplain mapping based on new hydrology information and is preparing to engage with federal authorities on mapping issues that could favorably impact Woodland residents and businesses. This information was provided to the City Council Infrastructure Subcommittee on November 18. The Subcommittee's favorably reviewed this information and asked staff to present a progress report to the City Council.

Staff recommends that the City Council receives a presentation and update regarding the floodSAFE Yolo Pilot Program and floodplain mapping and affirm the direction for the activities in addressing floodplain management for Woodland and the Yolo County region.

### **Background**

As the City Council is well aware, the City of Woodland is in a floodplain and needs to address this problem in a way that is best for the residents of the City and the region. In the course of reviewing options for addressing this problem, collaboration with other area local governments and residents of both rural and urban areas is essential. Therefore, working in cooperation with Yolo County and the Yolo County Flood Control and Water Conservation District on the joint flooding issues has a greater chance of success than pursuing a solution alone. In addition to the expertise and resources provided by these agencies, working cooperatively also provides opportunities for the constituencies of each agency to participate in the discussion of potential solutions.

The City of Woodland, with funding from the WRA, completed an initial study on Cache Creek Hydrology that indicates that a significant number of City of Woodland parcels could be removed from the 1% chance FEMA regulatory floodplain. This factor and other data shared between the signers of the MOU are helping to generate new opportunities to address the floodplain management challenge. Flood solutions developed jointly will help gain further support from other sponsors including CalTrans, the Central Valley Flood Protection Board (formerly the State Reclamation Board), DWR, Army Corps of Engineers, the Delta Commission and Sacramento County Flood Control Agency.

It is also important to note that new issues are being identified, including the FEMA requirement for certification of levees and the new mapping associated with a levee decertification. FloodSAFE Yolo will give the City of Woodland and the Yolo County region greater credibility by presenting a united front in dealing with other agencies in order to address these issues. For example, new requirements for mapping the 200-year floodplain will be facilitated by producing a consistent mapping program across jurisdictional boundaries.

On July 15, 2008, the City Council received an update from floodSAFE Yolo program manager Fran Borcalli that was presented as an annual report. The City Council received the annual report favorably and affirmed the City's continued participation as a floodSAFE Yolo program partner.

Since July, the program partners have continued to make progress in floodplain management to the point that a conceptual strategy has been developed that could reduce the flood risk. While it must be emphasized that the strategy is very conceptual and needs further study and review, floodSAFE Yolo partners believe it is significant and presented the strategy to the program's 2x2x2 committee on November 13. The presentation generated a positive reaction from the committee which included Woodland Mayor Davies and Council member Marble, Yolo County Board Chair Chamberlain and Supervisor Rexroad and Flood Control and Water Conservation District Directors Erik Vink and Bruce Rominger. Given the importance of this issue to Woodland and the Yolo County region, the Woodland members of the 2x2x2 encouraged City and District staff to update the entire City Council regarding the conceptual strategy. Staff scheduled this presentation for the December 2 meeting.

In addition to the progress made by the floodSAFE Yolo program, City staff has continued to make progress in floodplain mapping based on updated hydrology information. This information will also be presented during the December 2 meeting.

## **Discussion**

### **FloodSAFE Yolo**

As part of the presentation, the City Council will review four maps illustrating four Cache Creek 100-year flooding scenarios. All four maps portray anticipated maximum flood depths in relation to the location of levee/bank overtopping or breaches dependent on the specific scenario. Map 1 represents the existing floodplain conditions with overbank flooding and levee overtopping and no

levee erosion/failure where overtopping occurred. Map 2 represents the existing floodplain conditions with overbank flooding and levee breaching where levees are overtopped. The floodplains on Maps 1 and 2 represent a range of what could be considered “existing conditions”.

Map 3 represents a scenario where the Cache Creek levees are assumed to be raised and strengthened so that levee overtopping or breaching does not occur however overbank flooding continues. Due to bank erosion along Cache Creek segments of the levees would need to be set-back before raising and strengthening. Map 4 represents the floodplain assuming a floodway is constructed through the Cache Creek Settling Basin to convey floodwater directly to the Yolo Bypass. This map also represents a scenario that appears to be a viable conceptual solution to the Cache Creek flooding. It is important to emphasize that this or any solution must be beneficial to the entire region. While there is no scenario that will remove the threat of flooding altogether, the conceptual solution has the potential to reduce the flood risk to the entire region. The concept of creating a floodway through the Cache Creek Settling Basin was presented to the Central Valley Flood Protection Board on November 21, 2008.

The 2x2x2 committee’s review of this alternative was favorable and the staff of the partner agencies was encouraged to begin further discussions with regional, state and federal water management and environmental agencies.

### **Floodplain Mapping**

The present floodplain map or Flood Insurance Rate Map (FIRM) has been met with skepticism by many of the citizens of Woodland. Many feel that the FIRM overstates the flood risk to the City of Woodland and that it is unfair that they be required to purchase flood insurance if they have a federally insured mortgage. Long time residents have come before Council and complained about this problem and how it impacts them. At present over 3,100 homeowners pay for federally subsidized flood insurance. Insurance costs between \$600 and \$1,800 dollars per year.

The FIRM shows about one-third of the City of Woodland at risk in the 1% chance flood event. The FIRM is based on the hydrology developed by the Army Corps of Engineers for the Cache Creek Feasibility Study and predicts about 63,500 cubic feet per second (cfs) flowing in Cache Creek during a 1% event. Out of bank flows were developed using a model called HEC RAS to calculate how much water left Cache Creek. This out of bank flow was then modeled on the Cache Creek floodplain using a program called Flo2D to describe the depth and direction of the floodwater in each 1,000 foot cell of the model. In addition, the model predicts an out of bank flow volume of over 170,000 acre feet.

Presently many residents in the Sycamore Ranch Area have been able to have their flood insurance reduced or eliminated because the grading plans for the subdivision show that their pad sits above the FIRM Base Flood Elevation (BFE). Some residents have not been able to obtain this relief because their pad is not shown at above the BFE even when a house two doors away is shown as having their pad above the BFE. The residents feel that that is capricious and non sensible. They feel that even if the modeling method is correct in its application the results do not make sense to

them and no amount of explanation will help them understand why they need to pay for insurance when Woodland has never flooded.

There are several questions that may need to be answered before it can be decided to pursue a new flood analysis. These questions include:

1. What is wrong with the present FIRM?
2. If it is wrong, how significant are the errors in the FIRM?
3. How long will the new mapping take?
4. Are there other ways of correcting these mistakes?
5. Will future events change the analysis (climate change)?

Staff believes that the problem with the present FIRM is two fold; the hydrology overstates the 1% flow in Cache Creek by approximately 7,500 cfs at peak and the out of bank volume by about 70,000 acre feet and the hydraulics model using a 1,000 foot grid is too coarse to represent the urban floodplain. It is far easier to correct the hydraulic modeling problem than the hydrology. The hydrology requires a peer review from the Army Corps of Engineers (Corps). While the Corps has indicated that they are willing to review a new hydrologic analysis and that they at least in theory agree that the present hydrology overstates the expected flows in Cache Creek they will need both time and funds to review the new hydrology.

The new hydraulic mapping shows that Sycamore Ranch and other parts of the City of Woodland should be out of the 1% FIRM floodplain and/or should not be paying as much as they are for flood insurance. In addition several large warehouses that may be vacant because they are in the floodplain could become more likely to be utilized based on this information. The new hydraulic mapping uses the same bank overflow as the original floodplain analysis. The change in the map is the result of substituting a 15 meter grid (approximately 50 feet) for the 1,000 foot grid in the original analysis. This analysis does use much more computer processing time (approximately 3 days).

It would be possible to begin the process to develop a new floodplain map based on this mapping however the process would take three months to develop the technical materials for FEMA's review. FEMA would need about three months to review the submitted information and an additional 180 days for the public review process. Because of the length of time required for this process, FEMA will only accept one submittal every two years and only if there are significant changes in the mapping. In addition to this, new State law regarding land use regulation is requiring an analysis of the 0.5% event (200-year) on the floodplain. Last year the City of Woodland and the WRA requested David Ford Inc. to review the Hydrology use for the FIRM. The results of that study indicated that the peak flow for the 1% event should be about 56,000 cfs and that the over bank volume is about 100,000 acre feet. In addition, the peak flow for the 0.5% event would be close to the present FIRM peak.

If the revised floodplain was accepted by FEMA more of the City would be removed from the 1% floodplain and the owners would save on their flood insurance. It will take an additional six to nine months to finalize the new hydrology and prepare the documentation for new mapping required by

FEMA. Staff estimates that an additional six to nine month period will be needed for formal FEMA review. The reason for waiting is that if staff submitted two new maps to FEMA, the City of Woodland would risk rejection of the second map or a delay of one to two years for FEMA to accept the second map for review.

The proposed hydrology agrees with the Corps hydrology developed for the Cache Creek Watershed in the early 1990's. This agreement with the previous hydrology increases the chance that FEMA will accept the new information when submitted by the City of Woodland. It is important to remember that these maps do not change the risk that Woodland will flood at some time in the future. These new maps just better describe the actual risk and ask the insured to pay a fair price to mitigate that risk.

The expected result of the new mapping (using the new surface model and the new hydrology) will be a significant reduction in the number of owners paying flood insurance for the 1% event although they might wish to purchase protection for larger events at very low rates. The new mapping would remove over 4,900 parcels from the requirement for flood insurance and put at least a portion of those funds into the City of Woodland economy. There is at least one and there will probably be more residents in Sycamore Ranch that will want to submit the first map as soon as possible to reduce their rates. It would be more expensive for the City of Woodland to process two requests and it will risk or extend the time for processing the second FEMA review request.

The new hydrology will be finished by the January 2009. If funding can be identified, the Corps review could be finished by the end of March 2009. Assuming that the Corps reviews will not significantly change the hydrology, the FIRM documentation could be prepared during the Corps review process and be submitted to FEMA in April. If not the FEMA documentation would be ready for submittal in late June 2009. It would then take an additional six to nine months for the new FIRM to be accepted and implemented.

The new hydrology will also help develop local consensus on the Cache Creek flood problem and help develop local acceptable solutions for this problem. Please note that all maps show significant impacts to I-5.

### **Fiscal Impact**

The City's annual cost to fund a portion of the floodSAFE Yolo program is \$100,000. This amount has been included in the City's FY 2008-09 budget. Costs associated with the hydrology study and floodplain mapping as described herein are about \$50,000 and have also been included in the FY 2008-09 budget.

### **Public Contact**

Posting of the City Council agenda. In addition, floodSAFE Yolo plans to begin outreach activities to community groups on flooding in Yolo County.

**Council Committee Recommendation**

Status reports on the floodSAFE Yolo program have been periodically provided to the 2x2x2 committee that represents the Woodland City Council, County Board of Supervisors and District Board of Directors. The 2x2x2 committee favorably reviewed the floodSAFE Yolo information described herein on November 13.

The City Council Infrastructure Subcommittee of Council members Marble and Dote favorably reviewed the floodplain management information described herein on November 18.

**Recommendation for Action**

Staff recommends that the City Council receives a presentation and update regarding floodSAFE Yolo Pilot Program and floodplain mapping and affirm the direction for the activities in addressing floodplain management for Woodland and the Yolo County region.

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