



## Comments on the Notice of Preparation, Yuba River Flood Protection Program

August 23, 2001

Friends of the River is a member of the Yuba-Feather Work Group, an advisory group that has and will continue to provide a forum for project decision-makers developing flood damage reduction projects in the watershed. We feel confident that Yuba-Feather Flood Protection Program will meet with considerable success in achieving its goals and look forward to continued fruitful discussions. While the Notice of Preparation captures much of the expected aspects of projects that we believe will emerge from the upcoming analysis, it does fail to capture some elements of the project that we believe will emerge as the Yuba-Feather Flood Protection Program (Y-FFPP) is put together.

1.) Role of the (Y-FFPP) with recently constructed, authorized but unconstructed, and other foreseeable projects that affect floodway capacity and river flood stages.

In 1990 and 1993, the Corps of Engineers revised the flood channel design flows (or reliable capacity estimates) for the Yuba and Feather Rivers. For example, the design flow of the Feather River between the confluence of the Yuba and Bear Rivers was revised from 300,000 cfs to 268,000 cfs.<sup>1</sup> Since that time, PL 84-99 and the Corps Phase II projects have been completed over most of the river area and the Yuba River Basin Investigation has been authorized, although construction has not started. The Corps of Engineers/DWR System Evaluation may some day result in changes to the floodway or dam operations in the Sacramento Valley. All of these projects since 1993 have had (or will have) some additive effect on floodway capacity.

Presumably, previous downgrades and recent and authorized improvements to floodway capacity and reliability could have an effect on target flood flows in these floodways. Presumably, this may ultimately have an impact on flood release operations at Oroville and New Bullards Bar Dams.

The Y-FFPP will have to decide if or how it intends to utilize improved floodway capacity (and how it would adjust dam operations to respond to future changes in system floodway capacity). If it intends to use added floodway capacity, this may be an additional element of the Y-FFPP.

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<sup>1</sup> *Sacramento River Flood Control System Evaluation, Phase II Marysville/Yuba City Area, Phase II — Marysville/Yuba City Area, Environmental Assessment/Initial Study, April 1993.*

The Y-FFPP will have to make decisions about the format of any such changes in dam flood control operations. Does the Y-FFPP contemplate revising the Reclamation Board's Flood Channel Design Flow numbers? Does the Y-FFPP contemplate changing Water Control Manuals for Oroville and New Bullards Bar Dams? Does the Y-FFPP contemplate incorporating such changes in amendments to the FERC licenses for Oroville and New Bullards Bar Dams? Are the contemplated changes at Oroville Dam expected to be issues in the relicensing of Oroville Dam. Does the Y-FFPP contemplate that other projects will make these changes?

## 2.) Coordination of Dam Flood Control Operations

Once floodway capacity targets (or a range of targets) have been established, it seems obvious that the Y-FFPP will find it advantageous to establish a system to coordinate operations between Oroville Dam, New Bullards Bar Dam, unregulated tributaries of the Feather & Yuba Rivers, and flows in the rest of the Sacramento River System. Such a system would involve two components — a meaningful and reliable flood flow intelligence network, and a system to respond appropriately to flow conditions revealed by that network.

The intelligence network would need reliable real-time data on regulated and unregulated flood flows entering or affecting Feather and Yuba River floodways. Although elements of such a network already exists, an enhanced, reliable reporting network is almost certainly going to emerge as a component of the Y-FFPP.

Coordination of dam flood control operations is also likely to emerge from the work of the Corps/DWR System Evaluation — but may emerge well after the expected Y-FFPP time schedule. If so, the Y-FFPP should ensure that some mechanism(s) to institutionalize the operational protocols needed to take advantage of the enhanced flood flow regulation projects that are likely to be constructed in the Y-FFPP is found.

Again, coordination of dam flood control operations is likely to emerge as a major element of the Y-FFPP.

## 3.) Changes to the flood control reservation at New Bullards Bar Dam

The small dedicated flood control space (coupled with limited outlet capacity) reduce the capability of the Dam to regulate flood flows on the Lower Yuba River. We feel confident that a sophisticated reassessment of flood control space options will result in a recommendation for a *major* increase in the amount of flood control space actually available during major flood control operations. Forecast based operations (including forecast based releases and conditional storage) and variable storage operations with upstream hydroelectric reservoirs will permit these major increases in flood control space during major flood events to occur with little or no impact to water and power operations.

The competence of the Dam's release capabilities through the full range of desired flood control space levels is essential to take full advantage of recommended changes in the desired flood

control space during flood control operations. Because of the synergistic nature of increased outlet work capacity and operational improvements, the foundational improvements to the capacity of the Dam's outlet works are likely to emerge as the highest priority flood control improvement in the Y-FFPP in the Yuba River basin.

#### 4.) Project Separation from Future Flood Control Projects

According to the Notice of Preparation,

“[t]he purpose of the Agency's Yuba-Feather flood Protection Program is to define and implement, as soon as possible, a cost-effective, practicable program of measures within the budget of the Water Act of 2000 to provide the greatest possible increment of protection against flooding from the Yuba and Feather Rivers. In achieving this purpose, the Agency will seek to minimize environmental impacts, social impacts, institutional and operational constraints, technical concerns, and overall project costs and to maximize social benefits.”

The projects most likely to emerge under the financial constraints of this project purpose are the relatively inexpensive project elements that increase the effective flood control storage of dams in the watershed. The other widely identified constraint to more reliable and more capable flood control performance in the Yuba and Feather River Basins — the necessity of setting back some reaches of Feather River levees that constrain flows and increase stages from the confluence of the Yuba to the Bear River confluence — is expected to be too expensive to be undertaken with exclusively with Proposition 13 (Water Act 2000), Article 8 funds.

However, the Y-FFPP should recognize that increased effective flood storage in area dams also provide a measure of hydraulic mitigation for capacity improvements that might result from desired levee setbacks. Because of timeline and performance uncertainties surrounding the Corps/DWR Comprehensive Study, the Y-FFPP may find it advantageous to broaden its project definition so that desirable levee setback alignments can be identified and included in the project description, even if funding is unavailable from Article 8. Other funding sources may also be available or may materialize in the foreseeable future. This advanced planning approach would be helpful to local governments discharging their land use planning responsibilities, affected landowners, as well as local, regional, state, and federal flood control agencies.

#### **Miscellaneous Observations**

##### Design Flood

We recognize that the Y-FFPP purpose statement establishes project performance goals by identified financial constraints rather than a target design flood. Nevertheless, a number of observers have called for the identification of a target design flood that would reduce the

vulnerability of population centers and critical infrastructure from reasonably foreseeable floods.<sup>2</sup> An assessment of the paleoflood experience in the basins (and to a lesser degree, the modeled standard project floods) would be helpful in identifying or putting in context the target design flood that emerges from the Y-FFPP — and particularly its identified desirable levee setbacks.

### Modeled Flood Frequency

The Y-FFPP should take note of the rather wide degree of separation between the flood discharge frequency estimates of never-before-experienced storms modeled from the Corps' HEC Flood Frequency Analysis program and paleoflood limit or frequency estimates generated for Bureau of Reclamation watersheds.<sup>3</sup> Since the usual justifications for exclusive descriptions of project performance in terms of the Corps Frequency Analysis program and "Risk and Uncertainty" methodologies are not present in the Y-FFPP (NFIP X zone status and necessity for annualized damage analysis), the Y-FFPP should be wary about characterizing project or target project performance with these Corps methods.<sup>4</sup> We recommend a design flood (in cfs) type of project

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<sup>2</sup> *Sharing the Challenge: Floodplain Management into the 21<sup>st</sup> Century*, Report of the Interagency Floodplain Management Review Committee to the Administration Floodplain Management Task Force, June 1994, p.71, (*Galloway Report*). "Comments to the [National Research Council's] Committee on American River Flood Frequencies, July 13, 1998 in Sacramento, California," by Maurice Roos, [Dept. of Water Resources].

<sup>3</sup> "Area May Have Seen River's Worst Already," *The Sacramento Bee*, July 14, 1998. "Folsom Dam Paleoflood Study," U.S. Bureau of Reclamation, July, 1998, presented to the National Research Council's Committee on American River Flood Frequencies.

<sup>4</sup> We are not unique in expressing this concern. Concerning the Corps of Engineers' "Risk and Uncertainty Reliability Indices," the National Research Council's Committee on Flood Risk Management in the American River Basin stated:

The "reliability of the system for a given inflow" is both simpler and more meaningful than the "reliability of the system for a given exceedance probability including our inability to determine the flow actually associated with the exceedance probability."

This makes it hard to anchor the [Corps] analysis mentally or to know for certain to what it is applied. ...Use of critical historic flood events with known flood flow peaks would help to resolve this conceptual vagueness.

*Flood Risk Management and the American River Basin, An Evaluation*, National Academy Press, 1995, pp. 153-156.

For smaller exceedance probabilities [than 1/200], the committee believes there is compelling evidence that the true probability distribution flattens.

*Improving American River Flood Frequency Analysis*, National Research Council, National Academy Press, 1999, p. 101.

performance description. Size comparisons with the largest historic and Holocene paleoflood (and perhaps standard project floods) should be developed and utilized as well. During the last half-century, the storm type responsible for generating this type of storm hits the state about every decade or so.

### Oroville Raise

One element of the proposed project in the Notice of Preparation is in clear violation of Federal law. The Notice of Preparation proposes the installation of Obermeyer (inflatable) gates on top of the ungated, “emergency” spillway. These gates would provide the physical facilities to impound water at Oroville Reservoir into the Bald Rock Canyon Wild River Zone of the Feather River wild and scenic river corridor.<sup>5</sup> The installation of such gates would require permission from the Federal Energy Regulatory Commission and the Army Corps of Engineers. According to Section 7 of the Federal Wild and Scenic Rivers Act:

The Federal Power Commission shall not license the construction of any *dam*, water conduit, *reservoir*, powerhouse, transmission line, or *other project works* under the Federal Power Act...., *on or directly affecting any river...*designated in Section 3 of this Act as a component of the national wild and scenic river system....and no Department or agency of the United States shall assist by loan, grant, license, or otherwise in the construction of any water resources project that would have a direct and adverse effect on the values for which the river was designated. (*Emphasis added*)

Thus, the Commission (and we believe, the Corps of Engineers) has no authority to permit this kind of facility modification.<sup>6</sup> The installation of Obermeyer gates on top of the now ungated emergency spillway (which currently defines the terminus of the wild & scenic river upstream of the high point of the reservoir impoundment level), coupled with the existing operational gates, would permit Dam operators to impound a reservoir on the existing upstream wild and scenic river corridor.

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<sup>5</sup> “*The Bald Rock Canyon Wild River Zone*, extends from Lake Oroville (900 foot elevation) upstream for a distance of about 5.4 miles through Bald Rock Canyon to the junction with an unnamed drainage on the east side of the river approximately 0.7 miles south of Milsap Bar Campground.” *Classification Analysis, River Plan, Middle Fork of the Feather, Plumas National Forest, California*, June 8, 1978.

<sup>6</sup> The prohibition on FERC licensing dams, features of dams, or reservoirs on wild & scenic rivers does not apply to FERC project boundaries. In each of the three FERC licensed reservoirs (Oroville, Don Pedro, & Exchequer) in California that terminate Federal wild and scenic rivers, FERC project boundaries extend well into (~900', ~1,500', & ~3,000') the statutorily or management plan described wild and scenic river boundaries.

Law and policy on this matter is clear. Federal agencies with responsibility for administering the National Wild and Scenic River system have defined the “terminus of a [wild & scenic river] corridor at the contour which coincides with the High Water Mark at the normal maximum pool of the reservoir as the boundary point.”<sup>7</sup> The normal maximum pool is the point at which the dam is no longer physically capable of impounding water. This an important characterization, since dams that lack the physical facilities to impound water above this point may continue to operate spillways that *flow* over the top of the dam (i.e., its ungated spillways) without violating wild and scenic river law.<sup>8</sup>

Fortunately, for your project objectives, improvements that permit the type of enhanced surcharge operations authorized (but never implemented) in the existing Lake Oroville [Reservoir] Water Control Manual (including the operational use of the emergency spillway) are consistent with Federal statutes. The authorized surcharge operations (or common sense variations that may be proposed in the Y-FFPP or Oroville relicensing proceedings) provide a large increment of flood control space beyond the “nameplate” 750,000 acre feet at Oroville Dam<sup>9</sup> — similar in scope to any improvements to be gained by raising the ungated spillway. Improvements (such as a full spillway for the emergency spillway) that provide an important level of comfort that the emergency spillway can also be used in operational circumstances without causing expensive damages downstream of the dam may be important to the ability of and willingness of operators to implement the Water Control Manual. Thus, these spillway improvements (and operational “tweaks” to the Water Control Manual that may be recommended) may emerge as a project element of the Y-FFPP or the Oroville Dam relicensing proceeding.

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<sup>7</sup> Memo from Wallace McCray, Sierra National Forest Wild and Scenic River Project Manager, to Beth Norcross, staff of the Senate Energy and Natural Resources Committee, June 5, 1987.

<sup>8</sup> There are four dams (Oroville, Don Pedro, Exchequer, and O’Shaughnessy) in California which create reservoirs that provide the terminus for protected Federal Wild and Scenic Rivers and/or wilderness areas. In each circumstance, surcharge operations may invade the protected area with *flowing* water, but the dams are not capable of *impounding* reservoirs above their ungated spillways. The agencies responsible for administering these protected lands and waters have taken the position that these facilities (and operations) do not violate the Wild & Scenic Rivers Act. (Statement of Friends of the River, Hearing on HR 2431, Before the Subcommittee on National Parks and Public Lands, Committee on Interior and Insular Affairs of the House of Representatives, October, 29, 1991. Above mentioned Wallace McCray Memo and attachments.)

<sup>9</sup> Even with the record inflows experienced at Oroville Dam in 1997, at peak reservoir level the Dam still had a 200,000 acre foot cushion in the 750,000 acre foot flood control space defined by the Water Control Manual based on not using the ungated “emergency” spillway. Utilizing the ungated spillway as well for flood control releases (taking advantage of the ability of the gated spillway to squeeze down releases from the operational spillway to regulate the combined release) should add an additional and similarly sized “cushion” or performance capability to Oroville Dam flood control space.

## Floodplain Management

Levee breaks in the 1986 and 1997 storms caused extensive and deep flooding over wide areas of the Yuba and Feather River floodplains. A common reaction to these floods from area residents was one of surprise, “how could we be flooded, we are not in a floodplain.”

While the Yuba and Feather River floodplains have experienced repeated examples that one levee break is the only thing between the historic floodplain and floodbasins and an actual flood, the principal local/federal floodplain management program is not structured to reinforce this common sense conclusion. Since the formation of the National Flood Insurance Program (NFIP), these floodplains (judged to have an annual risk of flooding of less than 1/100) have been mapped as if they were on high ground. No information is provided owners and residents by the government that their land is subject to flooding, no flood insurance is required, no floodproofing is required, and no information is provided to builders and residents on the potential depth of flooding at their property so they can voluntarily design buildings and infrastructure in these areas to minimize or eliminate the damage caused by foreseeable floods.

This is a widely recognized flaw in the NFIP and the local implementation of the NFIP by local governments.<sup>10</sup>

According to the scoping document, Proposition 13 makes available funds for floodproofing and zoning — classic features of NFIP floodplain management activities. We strongly believe that communities that are subject to serious flooding have the moral obligation to undertake floodplain management activities — at minimum publicizing the fact that even “protected” floodplains remain at risk to flooding, strongly recommending flood insurance, creating emergency evacuation and other contingency plans, and mapping and making information available information about the expected depth and nature of foreseeable flood events.

More comprehensive, rigorous, and useful floodplain management activities can easily be devised — even for communities that want to continue to occupy floodplains of considerable depth. A thorough assessment of these opportunities and implementation of at least a minimum floodplain management program should be an element of the Y-FFPP.

## Environmental Projects

There is a large group of proceedings, studies, and investigations that are examining opportunities to protect and/or improve important natural resources in the Feather and Yuba River basins. Many of these projects deal with fish passage issues. We expect that Y-FFPP planners will find a rich set of opportunities from these other efforts that can be a guide in the formulation of this important aspect of the Y-FFPP.

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<sup>10</sup> See discussions of this issue in the 1982 National Research Council report, *A Levee Policy for the National Flood Insurance Program*, and *The Galloway Report*, Action 9.6, 1994.

Sincerely yours,

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