



"Beverly Bell"
<BBell@pcwa.net>
03/09/2009 10:30 AM

To <MPreuss@entrinx.com>, "Ed Bianchi"
<ebianchi@entrinx.com>, <CAddley@entrinx.com>
cc "Andy Fecko" <afecko@pcwa.net>
bcc

Subject FW: Comments on Geomorphology Report

I'm not sure if has Andy forwarded you John's comments on Draft AQ 9 yet, but please see below.

Thanks,
Bev

-----Original Message-----

From: John Donovan [mailto:jmdonovan05@sbcglobal.net]
Sent: Sunday, March 08, 2009 6:24 PM
To: Beverly Bell; Mal Toy; Andy Fecko
Subject: Comments on Geomorphology Report

Middle Fork American Project Relicensing
Comments for AQ 9 - Geomorphology Technical Study Report - 2008
John Donovan, as a Member of the Public
3/8/2009

Overall, I found the report to be very impressive. Thank you for the work you've done on it. It is an important compilation of information that will be referenced for a long time to come.

My suggestions for improving the report center on how geomorphology would affect recreation safety and usability. I apologize for not providing these comments during the study planning phase, but I was not aware of that phase at the time it was ongoing. Now that I am participating, I would like to point out a couple of topics that may need to be referenced during future negotiations for recreational needs. If information on these topics is required during discussions, it will be useful to have as much authoritative, relevant, and unbiased information as possible in order to reach a consensus that satisfies stakeholders.

Briefly, my concern about geomorphology and recreational safety is that sediment loss would leave gaps and crevices exposed for foot entrapment. It may also expose rougher bedrock that could cause a higher degree of injury to swimmers. My usability concern is that removal or transport of sediment may degrade the quality of beaches or rapids. The mechanism for these effects would be either sediment trapping or modification of flows that redistribute sediment.

Recreation is not mentioned as a reason for the pilot sediment replacement program at Indian Bar. In future negotiations, it may be requested that recreation be written in as an additional reason for the program's continuation and for the way it is implemented. The report should address how modified sediment distributions affect the quality of beaches and rapids. I don't expect the licensee to be required to push the boundaries of scientific knowledge on any of these subjects. In some cases, it may suffice to state what we don't know. On the subject of beaches below dams, however, there should be at least a few publications available to use as a starting point. To my knowledge, there is no scientific literature examining how the net loss of fine to medium sized sediment in the main channel below dams affects the safety of swimmers; however, it is plausible that the effect is significant. I will try to gather more information on this topic, and I have outlined what I do know in the paragraphs below. For now, it would be useful to provide whatever information is available for reference during future negotiations.

I would like the geomorphology report to characterize how modifications to the natural sediment distribution may affect recreational safety, even if it were to say it is mostly unknown. It may be a good idea to interview certain whitewater observers, such as those who have responded to past incidents, or those who keep statistics for the American Whitewater accident database. I would also like the report to include a literature survey of the topic, even if it is to say nothing was found. This information would be useful to stakeholders with recreational interests, as well as to the licensee. Some runs are considered to be inherently more prone to entrapment incidents, based on their history. The incidents are tragic for the victim's friends and family, but also damage the safety reputation of the area's whitewater industry. Some potential customers may forego whitewater trips after hearing of past safety incidents, without knowing how statistically rare they are or learning about the strict safety protocols observed by the outfitters. Clearly, the best course for all involved, is to reduce the likelihood of such incidents.

Entrapment of feet or limbs is one of the leading causes of fatalities for river recreationalists, including whitewater boaters and anglers. Anyone who is wading or swimming in moving water runs some risk of entrapment, and the risk increases dramatically with the velocity of the water, due to the increased force it exerts. The fast moving areas of the river are also the most likely to cause an unintentional swim by a boater or wader, since fast current is more likely to tip a boat or pull someone's feet out from under them.

Depth also changes the risk of entrapment, with depths of two to ten feet creating the most risk potential. Risk falls off as depth increases or decreases due to the higher water velocities required to push the individual against the entrapment point and hold them there.

The other variable that affects the risk of entrapment is the composition of the channel bed. A rough, uneven surface with gaps and crevices provides many opportunities for limbs or gear to become wedged or snagged. If the gaps are large enough for current to flow through, they may create a sieve that traps the individual's entire body, instead of just a limb. In places where gaps and crevices are filled in with fine to medium size sediment, the risk of entrapment would be lower.

Entrapment points exist in all rivers due to the natural variation in sediment distribution. Small to medium size sediment is continually washed downstream as normal and small flood flows transport material from high velocity sections to low velocity sections. However, when a dam traps sediment and prevents it from replenishing the downstream reach, there is potential for the number of gaps and crevices in the stream bed, and hence the danger of entrapment, to increase. This effect would be most pronounced immediately below the dam. Modified flows may also come into play. MFP operations have lead to an increase in the portion of time the river runs at flows between 150 cfs and 1500 cfs, thereby taking a common flow range and making it dominant. When the Middle Fork American is compared to the unregulated North Fork American, there are many days each year when the NFA has greatly reduced sediment transport or is flooding at over 10,000 cfs and redistributing sediment according to a completely different velocity distribution. High flow events not only increase the overall magnitudes in the velocity distribution, but may also relocate high and low velocity areas such that sediment is deposited exactly where it would be scoured at lower flows.

It is recognized that both natural and modified flows will distribute sediment in a non-uniform manner, both spatially and temporally. However, it would be valuable to characterize the manner and degree to which modified flow patterns impact recreational safety and enjoyment. It would be convenient for everyone involved if we can reduce the amount of speculation on this subject and replace it with scientific findings.

The reaches that should be considered would be those that receive or are likely to draw recreational use. The primary reach would be Oxbow Powerhouse

to Folsom Lake for quality of beaches and rapids, and Oxbow Powerhouse to probably around Tunnel Chute for small sediment removal. A secondary location would be below Hell Hole dam.



May 20, 2009
File No. 01030A

John Donovan
741 Commons Drive
Sacramento, CA 95825

SUBJECT: Response to Your Email, Dated March 8, 2009, Entitled "Comments for AQ 9 – Geomorphology Technical Study Report"

Dear Mr. Donovan:

PCWA received your March 8, 2009 email with comments on the AQ 9 – Geomorphology Technical Study Report – 2008 (AQ 9 - TSR). We appreciate your positive comments on the report. We also appreciate your general comments on potential sediment issues in rivers related to recreation safety (foot entrapment) and usability (e.g., beach quality) and acknowledge your specific requests for additions to the geomorphology report.

Study Plan Background

The AQ 9 – TSR was conducted according to the AQ 9 – Geomorphology Technical Study Plan (TSP). The Federal Energy Regulatory Commission (FERC) outlines a process for study plan development and formal FERC approval (study plan determination), which was followed for the Middle Fork American River Project (MFP or Project). Specifically, all the MFP TSPs were developed in collaboration with the stakeholders, who were involved from the beginning of the study plan development process. Stakeholders participated in the identification of issues, and requested analyses and studies during numerous technical working group and focus group meetings. General issues related to sediment capture in the reservoirs and sediment transport in the bypass and peaking streams and rivers were identified during this consultation, and were included in the AQ 9 – TSP. Issues related to beaches, rapids or foot entrapment, which were mentioned in your comment letter, were not identified during study plan developments by any stakeholder. Further, these issues have not been identified in subsequent stakeholder consultation, recreation user surveys, or analysis of safety related incidents completed during implementation of the technical studies for the MFP.

The stakeholder-approved TSPs were included in PCWA's Pre-Application Document (PAD), which was filed with the FERC on December 13, 2007. Comments or proposed study plan modifications on the TSPs were due on April 11, 2008. Final study plan determination was completed by the FERC in July 2008. In addition, two progress reports with updates on implementation of the TSPs were filed with the FERC (in January 2008 and January 2009) and approved. These reports summarized PCWA's overall TSP progress, any variances from the TSPs and schedule in implementing the study plans, and any modification to ongoing studies or

new studies proposed by PCWA. Meetings were held with stakeholders to discuss the progress report content and receive additional comments on the TSPs.

Your Comments

Our understanding of your main comments on the AQ 9 – TSR is:

- Potential sediment resource issues may potentially affect recreation, safety, and usability in specific reaches in the Middle Fork American River Project (MFP), including:
 - The MFP may degrade the quality of beaches or rapids by trapping sediment behind project facilities and modifying the flow regime.
 - Fine to medium-sized sediment loss may lead to the exposure of gaps and crevices causing foot entrapment, and rougher bedrock that may cause a higher degree of injury to swimmers.
 - Limited information exists in the literature regarding these topics.
- Additional studies should be included in the AQ 9 – TSR to address these concerns, including:
 - Address how modified sediment distributions affect the quality of beaches and rapids, even if it is to state what is not known.
 - Characterize how modification to the natural sediment distribution may affect recreational safety, even if it were to say it is mostly unknown (e.g., interview whitewater observers/responders to past incidents, complete a literature survey).
 - Characterize the manner and degree to which modified flow patterns impact recreational safety and enjoyment related to sediment and sediment distribution.

Applicability of the AQ 9 – TSP to Your Comments

The AQ 9 – TSP provides study components to address the fundamental information necessary to quantify sediment capture in the MFP reservoirs (quantity and size classes) and sediment transport, particularly initiation of motion, in the MFP bypass and peaking reaches. The 2008 AQ 9 – TSR that you reviewed includes sediment capture data for most, but not all, of the reservoirs and diversion pools in the MFP. Sediment capture in all the reservoirs and diversion pools (by particle size) and sediment transport (initiation of motion) in MFP reaches (by particle size) will be reported in the 2010 AQ 9 – TSR (refer to Figure AQ 9-1 in AQ 9 – TSR). This information, when completed, will provide the basis to infer potential geomorphology resource issues related to availability of various particle sizes and changes in river sediment transport in the MFP reaches (e.g., spawning gravels, materials for beaches, potential for channel change).

The AQ 9 – TSP, however, does not identify study components related to your requests: 1) developing characterizations or literature reviews of how modifications in sediment supply or transport may affect the quality of beaches and rapids, or foot entrapment (recreation safety) and 2) specific analyses to address each of these potential issues at a localized scale (e.g., particular location in the river).

We have not seen evidence or been presented with evidence of any resource issues related to the quality of the beaches or rapids or issues related to foot entrapment in the MFP (e.g. through a review of past incident reports or consultation with stakeholders). All reported safety incidents that have been reported in the MFP bypass and peaking reaches will be summarized

in the LAND 3 – TSR that will be distributed in early summer. Recreational user satisfaction with beaches in the peaking reach will be summarized in the REC 4 - TSR that will be distributed in early summer. The consultation and studies completed to date do not reveal any safety incidents related to foot entrapment or decreased user satisfaction related to the quality of beaches in the peaking reach.

PCWA's Response

PCWA does not support a new study component on the issues that you have raised because: (1) we have not seen evidence or been presented with evidence of any resource issues related to the quality of the beaches or rapids or issues related to foot entrapment in the MFP; and (2) your study request does not satisfy the criteria set forth in the Federal Power Act, Section 5.9 (b). PCWA will complete the AQ 9 – TSP as approved by FERC in 2008 without the addition of any new study components.

Thank you very much for your interest in the MFP Relicensing. If you have any additional questions or would like to discuss these matters further, please don't hesitate to call me at (530) 823-4889.

Sincerely,
PLACER COUNTY WATER AGENCY



Mal Toy for
MFP Relicensing Manager

MT:bb