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Mr. J. William Yeates
3400 Cottage Way, Suite K
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Re: Rebuttals to Amador Transmission Project FEIR

Dear Bill,

I have reviewed the Amador Transmission Project FEIR and, based on the new information presented in the FEIR that was previously unavailable to us, simple calculations clearly show the Canal project would significantly impact the stream hydrology. I strongly disagree with their conclusion that such impacts are insignificant.

As you are aware, Alex Fremier and I presented work with on Revised Section 4.1. In addition I evaluated the Agency's evaluation of hydrology in the DEIR (4.1). In the current letter, I first focus on comments by Read included in the FEIR concerning the statistical evaluation by Larsen and Fremier, and, secondly, will make it clear using analyses and data presented by EIP in the FEIR that the canal project significantly impacts stream hydrology.

Rebuttal of Read

In essence, Read adds nothing new, and, in fact, restates the findings of Larsen and Fremier (2004) from a slightly different point of view. The main issue that was statistically proven by Larsen and Fremier (2004) – that Jackson Creek is fed in part by the Amador Canal – has subsequently been verified and quantified in the new information presented in the FEIR (Figures MR 1-2, MR 1-3, and MR 1-4).

The review by Read (2005) of the statistical hydraulic analysis by Larsen and Fremier (2004) is ineffective in adding to our understanding because it focuses on the low proportion of variance explained, rather than actual amount of water running down the canal and creek. Read's (2005) review of Larsen and Fremier (2004) points out the small amount of overall variance in Jackson Creek explained by the flows in the Amador Canal, but the review does not acknowledge the highly significant ($p < 0.001$) statistical relation between flows in the Amador Canal and in Jackson Creek. Read (2005) restated our findings by stating that 80-90% of the variance in Jackson Creek flows is probably due to other contributing factors that effected water flows between the canal and the creek gauge. Likewise, Read (2005) stated that "because the flow data for Jackson Creek are limited to one gauge far down in the watershed west of the City of Jackson, it is not surprising to find that the authors' regression graphs of Jackson Creek vs. Amador Canal flow gauges…show that variability in Amador

Canal flows accounts for only 10 to 20 percent of the variability in Jackson Creek flows." This is because there are many contributing effects acting on the water flows between the Amador Canal and the Jackson Creek gauge including variation in water loss to external factors, variation in seepage rate, and time-delays in water making it from the canal to the creek flow gauge station, in addition to other unknown contributing factors. In essence, Read is restating our findings. Our results were further confirmed by analyses by EIP of the relationship between canal flows and flow in Jackson Creek as cited above.

Regardless of the amount of variance, the fact that a highly significant ($p < 0.001$) relation was found between the Amador Canal flows and the Jackson Creek flows shows that there is an influence of the Amador Canal flows on Jackson Creek. A key question is what the magnitude of this influence is. In other words, how much water does Amador Canal flow contribute to Jackson Creek flow?

Impacts to stream hydrology

Larsen and Fremier (2004) showed that there is a statistically significant ($p < 0.001$) relationship between the canal flows and Jackson Creek flows for 2001 and 2003 (June 1 – Sept. 30). Almost the identical relationship is presented in the new information in the FEIR. Combining equations 1 and 2 (p. 4-5, Fig. MR 1-2 FEIR) gives a formula for creek flow as a function of canal flows:

$$[\text{Creek cfs}] = 0.1481 * [\text{canal cfs}] + 0.3765 \qquad \text{Eq. [1]}$$

Thus, based on the relationship that is presented in the FEIR, when there is no water in the canal (i.e. canal cfs = 0), the creek would be expected to have a flow of 0.38 cfs running through it. Given that the average creek flows for June – Sept. were only 3.4 cfs, this means that the canal is contributing 89% of the water to the creek during those months. (3.4 – 0.38 = 3.02 cfs contributed from the canal; 3.02/3.4 = 0.89). This shows that if there were no water in the canal, the creek would experience an 89% reduction in flows, which would have significant ecological impacts on the creek. Our own regression relations yield an almost identical result, confirming this important finding.

The results of the analyses show that *most (89%) of the water inputs into Jackson Creek from June to September are due to seepage from the Amador Canal*. By any reasonable standard, that is a significant amount of water.

Total water currently leaked from canal

How much water is the canal contributing to the surrounding landscape? Two simple ways to calculate this give similar answers. Using the relationship presented in the FEIR on p. 4-5:

Mean Monthly Amador Canal Loss in cfs = 0.2925 + 0.3256 x (Mean Monthly Amador Canal Adjusted Inflow in cfs)

and the mean monthly Amador Canal Adjusted inflow (Table MR 1-1), the total mean yearly flow comes to 3371 acre feet. An average of the losses reported in Table MR 1-1 comes to 3418 acre feet per year.

To visualize this, it is the volume of a building whose footprint is one acre and whose height is 3400 ft (more than 5/8 of a mile high.) This amount of water currently feeds to the

landscape surrounding the Amador Canal, *each year*. Removing this yearly contribution will have a significant impact on the watershed surface water and subsurface water drainage pattern.

Other issues
The FEIR includes other findings (for example Response J-4) that lack verifiable evidence to justify their claims. In the case of the response to J-4, I have examined recent data (Evitt, 2005) that clearly contradicts their claims, and I conclude that this response is not valid.

If you have any questions about my remarks, please contact me. Thank you for the opportunity to comment on this important issue.

Sincerely,

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