MEMORANDUM

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TO: Bruce Wales, General Manager, Santa Ynez River Water Conservation District **DATE:** November 10, 2003

FROM: Ali Shahroody **JOB NO.:** 1126-24

SUBJECT: Downstream Water Rights Releases

This memorandum is prepared in light of the written testimony submitted by Mr. Thomas Keegan on behalf of CalTrout, commenting on downstream water rights releases which result in temporary turbid water conditions. In this memorandum, I will provide my observations of water rights releases in terms of the frontal movement, flow velocity, and turbidity.

Water rights releases for users downstream of Cachuma Reservoir are made through the outlet works at Bradbury Dam including the Hilton Creek watering facility. The current capacity of outlet works is limited to about 150 cfs. Because the purpose of releases is to replenish the ground-water basins in the above and below Narrows areas, releases are usually made when the released water can be fully percolated through the Santa Ynez River bed. When water is released, it is possible to track the progression of the front as it moves downstream.

Water rights releases are usually started with a flow of 100 to 150 cfs to allow the water to reach the targeted recharge area. Then releases are scaled back to deliver water to the targeted area. Water rights releases are usually made at an initial rate of about 100 cfs to the above Narrows area for about 2-5 days, then the releases are ramped down to flow rates of about 20-50 cfs for several weeks. Water deliveries to the below Narrows area (Lompoc Plain) require releases at relatively higher flow rates (130-150 cfs) for a period of 10-12 days in order to convey the water to the Lompoc Narrows. Once the flow is established to the Lompoc area, water rights releases are reduced but maintained, typically at about 50-70 cfs, for a significant period to provide recharge to the Lompoc Plain. During this period, releases are varied in response to recharge rates and climatic conditions. These releases typically extend to the end of October and they are generally interrupted by precipitation (local runoff) in the fall.

SYRWCD Exhibit 6e

During the water rights releases, the progression of the water front as it moves downstream varies depending upon the river bed and hydrologic conditions. Generally, the water front moves at slow rates, ranging from less than one mile per day to eight miles per day. This is about 1,760 feet per hour and about 30 feet per minute for the flow rate of eight miles per day. In contrast, a person walking at 2.5 miles per hour would cover about 220 feet per minute. That means a person can easily walk faster than the movement of the water front.

The very nature of the flow movement, as described above, does not move sediments or create turbidity. Turbidity may be caused by a wide variety of suspended materials, such as clay, silt, and fine organic matter. Since the water is moving at such a slow rate, the releases are not likely to cause turbidity. On the other hand, one may see pieces of organic matter floating or suspended in the streamflow during downstream water rights releases.