State of California
The Resources Agency
Department of Water Resources

PROJECT EFFECTS ON GROUNDWATER

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STUDY PLAN W5, TASK 1, DRAFT REPORT

Oroville Facilities Relicensing
FERC Project No. 2100

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Dissolved chloride from the Thermalito Forebay and Afterbay was generally at the lab minimum detection level of 1 mg/L or less, while all groundwater results were greater than 2 mg/L (Figure 5.2.2-5). Upgradient wells had chloride levels of 7 to 9 mg/L, which were higher than many downgradient wells and the project waters. Deeper wells ranged from 2 to 7 mg/L, and were generally slightly lower than upgradient wells and higher than project waters. Shallow wells ranged from 2 to 29 mg/L, with several wells having chloride concentrations lower than upgradient wells, but higher than project waters. Other shallow wells had chloride concentrations much higher than upgradient wells. Results from groundwater sampling did not exceed any criteria for chloride.

Dissolved sulfate from groundwater ranged from below laboratory detection levels to 195 mg/L, while sulfate from the Thermalito Forebay and Afterbay was 2 mg/L on each sampling occasion (Figure 5.2.2-6). All groundwater wells had concentrations of dissolved sulfate that were higher than project waters, with the exception of deep well L13 (less than 1 to 1 mg/L) and shallow well A11 (1 to 6 mg/L). Upgradient wells ranged from 2 to 9 mg/L, with one well similar to project waters and the other with higher concentrations of dissolved sulfate. Downgradient wells ranged from less than 1 to 195 mg/L. Deeper downgradient wells ranged from less than 1 to 21 mg/L, while shallow downgradient wells ranged from 1 to 195 mg/L. Results from groundwater sampling did not exceed any criteria for sulfate.

Total alkalinity (a measurement of primarily carbonate, bicarbonate, and hydroxide) from groundwater was higher than project water averages from all wells (Figure 5.2.2-7). Total alkalinity concentrations from the Thermalito Forebay and Afterbay ranged from 34 to 53 mg/L, while groundwaters ranged from 44 to 437 mg/L. Upgradient wells had higher alkalinity than project water results but much lower than most downgradient wells, with the exceptions of L13, D19, and R02 which fell between the upgradient well results. Deep wells ranged from 77 to 162 mg/L, with two wells (L13 and D19) having results between upgradient results, and two other deep wells had slightly higher results from one (K08) and much higher at the other (M21). Shallow wells had results generally much higher than upgradient wells or surface waters, with the exceptions of R02 which had similar results to upgradient wells, and A11 which had one result below upgradient well results and similar to project water results, with the fall result from this well greater than project water results. Results from groundwater sampling did not exceed any criteria for alkalinity.

Total dissolved solids (TDS) results obtained from groundwater monitoring ranged from 75 to 801 mg/L, with all results higher than those found in project waters which ranged from 34 to 65 mg/L and averaged 51 to 53 mg/L (Figure 5.2.2-8). Upgradient wells ranged from 101 to 200 mg/L. Deeper wells ranged from 89 to 225 mg/L, with three wells having TDS values from 89 to 133 mg/L, while well M21 was higher (210 to 225 mg/L). Deep well L13 had one TDS value of 89 mg/L, which was lower than both upgradient well values but still higher than project water results. Shallow wells had TDS results from 75 to 801 mg/L, which were much higher then project water results.