(6/16-17/15) Board Meeting- Item 12
Russian River
Deadline: 6/15/15 by 12:00 noon

6/17/15 BOARD MEETING

COMMENTS ON AGENDA ITEM #12 - Consideration of a proposed Resolution to adopt a drought-related emergency regulation requiring enhanced water conservation and additional water user information for the protection of specific fisheries in tributaries to the Russian River.

The relationships between surface water diversions, groundwater pumping and summer streamflow conditions are complex and are often characterized by significant spatial and temporal variability. Numerous factors drive these relationships including the hydraulic characteristics of the stream channels, the hydrogeologic conditions of the streambed sediments and underlying aquifer systems, and the locations, construction details, and pumping rates of wells and diversions. Given these complexities and the objective of ensuring the sustainability of baseflow conditions for endangered salmonids while simultaneously ensuring an adequate water supply for people and agriculture, we believe it is necessary to study the hydro-geologic characteristics of these watersheds in a holistic and comprehensive manner.

The Flow Availability Analysis for Restoration Prioritization Planning project, funded primarily by a California Department of Fish and Wildlife Fisheries Restoration Program Grant to the Gold Ridge Resource Conservation District is being implemented by O'Connor Environmental, Inc. in collaboration with the RCD. The project is nearing completion, and has produced a detailed distributed hydrologic model of Dutch Bill Creek and Green Valley/Atascadero Creek watersheds calibrated to stream flow gaging data from several locations. Stream flow data were obtained from the Coho Partnership and from the National Marine Fisheries service. The objective of this project has been to evaluate spatial and temporal variation in summer base-flow and the effects of water use and climate variability to assist in planning fish habitat restoration in these watersheds.

The model (MIKE SHE, developed by DHI) simulates all major components of the hydrologic cycle using physically-based equations. Model implementation required extensive description and quantification of watershed characteristics including topography, climate, land cover and vegetation, soils, hydrogeology, stream channels, irrigation, and both surface and groundwater use. This model departs from traditional modeling approaches focused primarily on either surface water or groundwater processes. MIKE SHE simulates surface water/groundwater interactions as a function of water-level-gradients between streams and aquifer water tables that vary in time and space.

The hydrologic model of Dutch Bill Creek and Green Valley/Atascadero Creek could be a useful tool in efforts to effectively manage water resources for beneficial uses including fish habitat in these watersheds. We believe that these types of models such as this have a critical role to play in management of water resources for sustainability and in developing successful drought and climate change adaptation plans. These models require streamflow and groundwater monitoring data for calibration and information about the locations and timing of surface water and groundwater use. In the context of the modeling work described above, proposed water use reporting under the Resolution would provide useful information for more detailed model calibration and validation, and would be a significant step towards building a framework for sustainable watershed management.

Matt O'Connor, PhD, CEG and Jeremy Kobor, MS, CFM

O'Connor Environmental, Inc. (707) 431-2810 www.oe-i.com