WATER REPLENISHMENT DISTRICT OF SOUTHERN CALIFORNIA

Technical Bulletin

Volume 20 ~ Summer 2009

Winter's Rains Recharged in Summer - Bringing Much Needed Replenishment Water to the Central and West Coast Basins

By: Ted Johnson, Chief Hydrogeologist
tjohnson@wrd.org

The last four years have been very dry in the Los Angeles region. Rainfall since October 2005 is only 67% of normal, averaging 9.7 inches a year versus a long term average of 14.4 inches a year (Reference 1). These dry conditions, along with the lack of imported replenishment water since May 2007, have caused recharge activities to be significantly curtailed at the Rio Hondo and San Gabriel River spreading grounds in the Montebello Forebay - the headwaters for replenishment to the Central and West Coast Basins.

Over this four-year time frame, the shortfall of imported water and storm water for replenishment has reached nearly 70,000 acre feet. That deficit, plus low recycled water recharge and increased pumping, have caused groundwater levels in the Montebello Forebay to fall 44 feet as reflected in Key Monitoring Well #1601T, bringing water levels to their lowest elevation in 32 years (**Figure 1**).

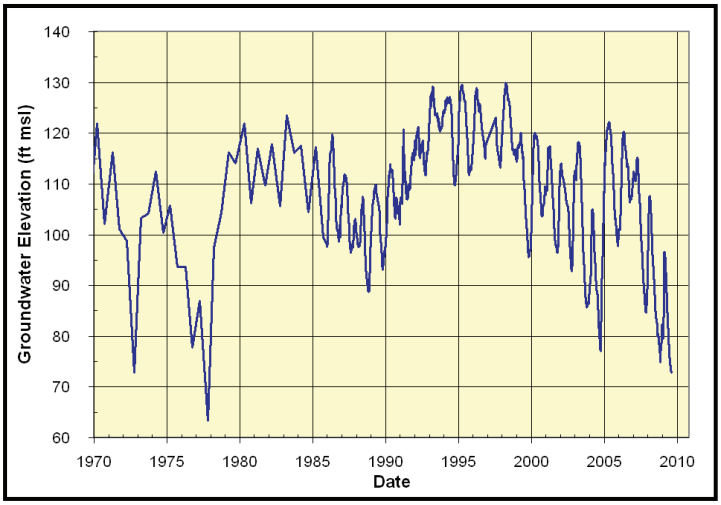

Figure 1: Water level hydrograph of Montebello Forebay Key Well 1601T. Current levels are at a 32-year low.

Fortunately, the groundwater basins were in good shape at the start of the drought and were able to handle this large drawdown. But, the region cannot rely upon major storms or imported water in the future to make up this shortage. Alternative sources of replenishment water such as increased storm water capture and increased recycled water usage are needed to sustain the pumping in the basins.

One beneficial action that recently occurred brought last winter's rains into the WRD service area for summertime groundwater replenishment. About 4,000 acre feet of last winter's precipitation stored in the San Gabriel Mountains was just released to help replenish the Central and West Coast Basin aquifers. This action was made possible through cooperative, multi-agency agreements between WRD, the San Gabriel Valley Protective Association (SGVPA), the Los Angeles County Department of Public Works (DPW), and the Committee of Nine (Co9).

The DPW operates three reservoirs and dams in the San Gabriel Mountains including (from highest elevation to lowest) Cogswell, San Gabriel, and Morris. These facilities capture, store, and release precipitation that falls in their drainage areas. Water that leaves the lowest reservoir, Morris, flows into the San Gabriel River (**Figure 2**).

Figure 2: SGVPA water being released from Morris Reservoir into the San Gabriel River, July 29, 2009.

The Co9 is a group of water agencies formed in 1889 that holds rights to the first 135 cubic feet per second of flow in the San Gabriel River. The SGVPA holds the rights to the rest of the water in the river as granted by the State Water Resources Control Board (Reference 2). The SGVPA is a 25-member board of

water agencies that has interests in the San Gabriel River from its headwaters in the mountains to its final discharge to the ocean. The Distribution Committee of the SGVPA meets at least annually to decide on the distribution of the water that is held by the DPW's reservoirs. The Distribution Committee currently consists of six members, including California Domestic Water Company, City of Azusa, City of Lakewood, San Gabriel County Water District, Suburban Water Systems, and WRD.

After being released from Morris Reservoir, the water flows into the otherwise dry San Gabriel River channel where it quickly soaks into the permeable river bottom deposits and replenishes the Main San Gabriel Basin, rarely reaching 20 miles downstream to the Central Basin unless exceedingly high flow volumes are achieved, and only then a very small percent reaches Central Basin. However, due to the drought and declining water levels in both the Main San Gabriel Basin and the Central Basin, and in the spirit of cooperation and recognition that the SGVPA water represents the interests of all users along the entire length of the river, the Distribution Committee over the past two years has agreed to split the released water 50/50 between the two groundwater basins.

The DPW is the agency that carries out the decisions of the Distribution Committee. In 2008, the DPW attempted to deliver half of the reservoir water to the Central Basin, but most of it soaked into the dry and permeable San Gabriel River channel before reaching it. For 2009, the DPW re-routed the water through the concrete-lined Rio Hondo instead of the San Gabriel River in an effort to minimize losses and was able to deliver 4,000 acre feet (or 47% of the total 8,500 acre feet released) to the Rio Hondo Spreading Grounds for Central Basin replenishment (**Figures 3 and 4**). This water caused groundwater levels in a shallow monitoring well near the spreading grounds to rise nearly 11 feet and caused a temporary leveling-out of the declining water levels in Key Well 1601T.

Lessons learned will now allow future SGVPA water distributions to be more equitably split between the two groundwater basins, benefiting all users along the full pathway of the San Gabriel River. This is a success story of how multiple agencies worked together to cooperatively distribute water belonging to a vast population. In this critical time of drought and greater reliance on local water supplies, every drop counts. WRD greatly appreciates the cooperation and efforts of the DPW, SGVPA, and Co9 to make this summertime delivery of winter's replenishment water.

Figure 3: SGVPA water arriving at the Rio Hondo Spreading Grounds, August 2009.

Figure 4: SGVPA water in the Rio Hondo Spreading Grounds, August 2009.

References used for this Publication:

1. California Dept. of Water Resources Data Exchange Center for Los Angeles Civic Center (LCC) Station. http://cdec.water.ca.gov/cgi-progs/profile?s=LCC&type=precip

2. Green, Dorothy, *Managing Water: Avoiding Crisis in California*; 2007, Regents of the University of California, University of California Press (www.ucpres.edu), 336 pages.

All photographs taken by the author for WRD.

WATER REPLENISHMENT DISTRICT OF SOUTHERN CALIFORNIA

4040 Paramount Blvd., Lakewood, CA 90712
Phone: (562) 921-5521

Copies of this and previous Technical Bulletins can be found on our web site www.wrd.org