Statewide Groundwater Monitoring – SB 6 Implementation Update

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Presented at the Assembly Water, Parks and Wildlife Committee
Oversight Hearing on Management of California's Groundwater Resources
February 1, 2011

California's standing as the 8th largest economy in the world has largely been made possible by our available water resources. Despite the fact that groundwater accounts for only 30 percent of the State's water use during an average year (up to 40% or more in a drought year), California uses more groundwater than any other state in the Nation. Some areas within the State approach total dependence on groundwater for their water supply. As California's population is expected to increase to over 46 million by the year 2020, our reliance on groundwater will likely increase significantly. The anticipated future effects of climate change on our surface water resources will only heighten the importance of available groundwater and underground storage. To protect and sustain California's precious groundwater supply, proper management of this limited resource, include monitoring of groundwater elevations, is imperative.

Most of California's groundwater is stored in 515 alluvial basins and sub-basins, as described in DWR's Bulletin 118, "California's Groundwater", last published in 2003. Groundwater management on an institutional basis was sporadic until 1992 when California's legislature recognized the need for better Statewide groundwater management and passed legislation called the Groundwater Management Act (AB 3030), which has been legislatively refined periodically since then. Largely voluntary, but recently incentivized through increased grant fund availability, the Groundwater Management Act has resulted in improved groundwater management in many groundwater basins throughout the state, by requiring public engagement in groundwater management discussions and actions, establishing groundwater basin management objectives, and implementing regular groundwater basin monitoring and reporting programs.

Despite earlier groundwater management efforts, a need still existed to not only enhance groundwater management in basins where little was occurring, but also to make groundwater data from existing programs widely and readily available so that decision-makers can make the best use of existing data. The lack of data, coupled with the fact that adequate groundwater elevation networks are not established for all of California's groundwater basins, limits the ability to accurately monitor conditions in the groundwater basins, and limits DWR's ability to adequately plan for future water supply demands. In 2009, the Legislature recognized this and, as part of a larger package of water-related bills, passed Senate Bill 7x 6 (Steinberg), requiring that groundwater elevation data be collected in a systematic manner on a Statewide basis and be made readily and widely available to the public. DWR was charged with administering the program, which was later named the "California Statewide Groundwater Elevation Monitoring" or "CASGEM" Program. The program is voluntary, although future eligibility of

State grant funding for associated agencies could be affected if they choose not to participate. Monitoring outside of the State's 515 groundwater basins and sub-basins is not required.

The legislation requires significant collaboration between DWR and the numerous groundwater management agencies throughout the State to implement the program. Since the passage of the legislation, DWR has been working under an ambitious timeline set forth in the Legislation to initiate the CASGEM program. The following progress has been realized in the 13 months since the legislation became law:

- DWR developed outreach materials, including fact sheets, brochures, a CASGEM informational web site, and an e-mail distribution list for affected agencies and the general public.

- In August and September, 2010, DWR staff, in conjunction with the Association of California Water Agencies (ACWA), held 10 public workshops throughout the State, to describe the goals of the program, the required objectives, and intended timeline for implementation, and to solicit public comment and answer questions. The workshops were extremely well received and the feedback gained from them was used by DWR staff in drafting reporting requirements and program documents that were released for public review and comment in early November, 2010. The documents were finalized in mid-December and posted on the CASGEM website.

- In December, 2010, DWR completed an initial phase of its online reporting system, allowing prospective groundwater monitoring entities for each basin, or a discrete portion of a basin, to submit an online notification to DWR of their intent. These "notifications" consisted of submittal of the name and contact information for the prospective monitoring entity, the legal authority under which they qualify to be a monitoring entity, the name and number of the basin or sub-basin they are representing, a geographic data file containing the boundary of their basin/sub-basin, and a statement that the entity will comply with the requirements of the program described in the Water Code.

- Over the next 11 months, the following CASGEM Program activities are planned:

    - From January to late Summer of 2011, DWR will evaluate monitoring entity submittals and work with them to develop monitoring plans for their respective groundwater basins.
    - During this same period of time, DWR will continue development of the online submittal system, to include the ability to submit monitoring plans, groundwater data, and to view the locations of wells being monitored for a particular basin.
    - During the Fall of 2011, Monitoring Entities will begin monitoring their groundwater basins, to record the typical seasonal low groundwater elevations, and submit the first round of groundwater elevation data electronically to DWR by January 1, 2012.
    - In late 2011, DWR will make data available to the public through development of an online data portal. Any interested agency or individual will be able to look at

groundwater elevation data generated under CASGEM for any monitored basin and, with time, have the ability to identify seasonal and long-term trends.

- On January 1, 2012, DWR will report on the CASGEM Program status to the Governor and Legislature. Ongoing status reporting is required every 5 years. DWR is also required to prioritize the State's groundwater basins using specific criteria, and to identify basins subject to critical conditions of overdraft. Prioritization of the basins will begin after completion and release of the online submittal system, initial review of the monitoring plans, and designation of the monitoring entities.

As of mid-January, 2011, DWR has had a positive response to the CASGEM Program and received Monitoring Entity notifications for over 240 groundwater basins or portions of basins, from over 100 different agencies, representing at least one basin in 56 of California's 58 counties. DWR continues to accept notifications from agencies volunteering to be designated as monitoring entities. Potential monitoring agencies for groundwater basins that have not submitted a notification may not be eligible for future State water grants or loans. The legislation states that DWR will assume the monitoring function in those groundwater basins without monitoring entities. However, at this point in the program, DWR is focusing on basins with agencies that have volunteered to be the Monitoring Entity rather than trying to identify areas that are not being monitored. As funding permits, DWR does intend to continue monitoring wells within its established network, some of which data may be utilized by Monitoring Entities, at no cost to them, to help them meet the CASGEM requirements for their basin.

The groundwater elevation data generated through the CASGEM Program are a first step in deriving a more accurate understanding of the ability of California's groundwater basins to support varying water use amounts, and will be useful in planning for future water supply demands. These data and the trends that we see in them can be used with other existing information to help groundwater managers take steps to ensure that groundwater resources are sustainable. This information can advise managers as to the capacity for additional groundwater development, or alert them to the situation where the water level in the groundwater basin is dropping, indicating possible overdraft, or the danger of other associated potential negative consequences such as saline intrusion, land subsidence, and dewatered wells. The benefit of being able to see how groundwater elevations are spatially distributed through a basin and fluctuate over time may help managers identify causative influences and take proactive steps to mitigate potential damage. While initially the data will be more suited to qualitative analysis, over time, the body of information to facilitate more quantitative analysis should accumulate and be enhanced by the additional information produced in local groundwater management efforts.

Another benefit of the knowledge gained from the CASGEM data is that groundwater managers will get a better idea of which groundwater basins within the State may have capacity for additional groundwater storage. In determining which basins are amenable to conjunctive water management, excess surface water can be diverted to recharge these basins, effectively storing it for times we may need it, such as times of forcasted reduced surface water run-off due to the anticipated effects of climate change, provided the infrastructure is in place.

Despite all the positive implications of groundwater elevation monitoring supporting local groundwater management and regional planning efforts, collecting and compiling comprehensive data on a statewide basis is not without challenges. It will be difficult and possibly cost prohibitive to monitor some basins that do not have sufficient existing monitoring well networks. Some groundwater basins are very remote and in areas not extensively developed posing access problems. Other basins pose issues such as very deep groundwater levels and naturally occurring poor water quality such as very high total dissolved solids. Water managers are faced with trying to address these difficult to monitor basins and still meet the requirements of the Water Code. DWR is aware of the situation, but as written, the Water Code does not allow DWR to reduce the monitoring requirements or exclude groundwater basins for such situations. The cost benefit of monitoring such areas may be questionable, especially under the current fiscal constraints at DWR and many local agencies. In these cases, perhaps a cooperative solution could be implemented, such as allowing qualitative evaluations of these basins, with periodic updates until future events change such as additional development, installation of monitoring wells, or transfer of ownership. More flexibility in the current law would allow local agencies other options to be in compliance with the law and still meet the intent of monitoring groundwater to manage and protect this important resource.

Hand Outs

"Why is CASGEM Important?", DWR pamphlet

Map of Groundwater Basins in California

Map of Groundwater Use by Hydrologic Region

California Statewide Groundwater Elevation Monitoring (CASGEM) Program Schedule