

**DEPARTMENT OF WATER RESOURCES**

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Senate Bill X7 6 (SBX7 6) (Chapter 1, Statutes of 2009) added provisions for Groundwater Monitoring to Division 6 of the Water Code (Water Code §10920 et seq.) and authorizes the Department of Water Resources (DWR) to establish permanent, locally managed, groundwater-elevation monitoring and reporting in all of California's 515 alluvial groundwater basins. To implement SBX7 6, DWR developed the California Statewide Groundwater Elevation Monitoring (CASGEM) program. SBX7 6 requires DWR to report to the Governor and the Legislature by January 1, 2012 and thereafter in years ending in "5" or "0" regarding program findings. The accompanying status report describes the progress of the CASGEM program implementation during calendar years 2010 and 2011.

If you have any questions, please contact me at (916) 653-7007, or your staff may contact Paula Landis, Chief of the Division of Integrated Regional Water Management, at (559) 230-3310 or [plandis@water.ca.gov](mailto:plandis@water.ca.gov).

Sincerely,

A handwritten signature in black ink, appearing to read "Mark W. Cowin".

Mark W. Cowin  
Director

Attachments

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**Executive Summary**  
**Report to the Legislature**  
**Senate Bill X7 6, (Chapter 1, Statutes of 2009)**  
**California Statewide Groundwater Elevation Monitoring (CASGEM) Status Report**

Senate Bill X7 6 (SBX7 6) (Chapter 1, Statutes 2009) added provisions for Groundwater Monitoring to Division 6 of the Water Code (Water Code § 10920 et seq.), and authorizes the Department of Water Resources (DWR) to establish permanent, locally managed, groundwater-elevation monitoring and reporting in all of California's 515 alluvial groundwater basins. To implement SBX7 6, DWR developed the California Statewide Groundwater Elevation Monitoring (CASGEM) program. SBX7 6 requires DWR to report to the Governor and the Legislature by January 1, 2012, and thereafter in years ending in "5" or "0" regarding the findings of this program.

The purpose of CASGEM is to establish a program of regular and systematic monitoring of groundwater elevations and to track seasonal and long-term trends in groundwater elevations statewide. The law directs DWR to rely and build upon the many established, local, long-term groundwater monitoring and management programs conducted by local entities throughout the state. DWR's role is to coordinate the CASGEM program, to work cooperatively with local entities, and to maintain the submitted groundwater elevation data in a manner that is readily and widely available to the public. Collection and evaluation of groundwater elevation data throughout the state is an important fundamental step toward improving management of California's groundwater resources.

Within the first two years of program development, DWR has met the requirements specified in SBX7 6 to establish a statewide groundwater elevation monitoring and reporting program by January 1, 2012. The following list summarizes the accomplishments and milestones of the CASGEM program for 2010 and 2011:

- DWR successfully conducted outreach to develop local support throughout the state;
- DWR developed the CASGEM website and documents to provide easily accessible, up-to-date program information, and technical support;
- Local agencies, counties, and associations volunteered to become CASGEM Monitoring Entities and notified DWR;
- DWR reviewed the submitted notifications and designated Monitoring Entities for groundwater basins and subbasins throughout the state;
- DWR worked cooperatively with local Monitoring Entities to develop groundwater elevation monitoring programs;
- DWR developed an online system for groundwater elevation data submittal and to provide public access to the CASGEM data in both tabular and map formats;

- Monitoring Entities began groundwater elevation monitoring and submitting groundwater elevation data to the CASGEM Online System in Fall 2011;
- DWR released the CASGEM Online System to the public in mid-November 2011.

The collection of groundwater elevation data and the identification of seasonal and long-term trends are fundamental to assessing and sustaining California's groundwater resources, and the establishment of the CASGEM program is a significant step forward. To maximize CASGEM's effectiveness, it is essential that the program be maintained on a permanent basis and that all aspects of the program specified in the Water Code be accomplished to obtain information necessary to fulfill the intent of SBX7 6. The greatest obstacle to continued program success is the lack of dedicated funding for program activities carried out by DWR and the local agencies participating as Monitoring Entities and cooperating agencies. Legislation enacting the program did not include funding. To date, program implementation by DWR has been accomplished using Proposition 50 Water Supply Reliability bond funds; however, this funding is insufficient to implement all statutory requirements, let alone sustain this important program in future years. Funding will be exhausted by June 2014. Local agencies are also struggling to comply with CASGEM requirements due to budget constraints and cutbacks. Program success is dependent on securing long-term funding at both state and local levels.

A copy of the full CASGEM Program Status Report is to be posted on DWR's website at: <http://www.water.ca.gov/groundwater/casgem/>.

# California Statewide Groundwater Elevation Monitoring (CASGEM) Status Report Presented to the California State Legislature January 1, 2012

## Introduction

The California Statewide Groundwater Elevation Monitoring (CASGEM) program was developed to implement Senate Bill 6 (7th Extraordinary Session) (SBX7 6) 2009, which added provisions for groundwater monitoring to Division 6 of the Water Code (Water Code § 10920 et seq.). The purpose of the CASGEM Program is to establish permanent, locally managed regular and systematic monitoring to track seasonal and long-term trends in groundwater elevations in all of California's 515 alluvial groundwater basins. The CASGEM Program relies and builds upon the many established, local, long-term groundwater monitoring and management programs conducted by local entities throughout the State. DWR's role is to coordinate groundwater elevation monitoring, work cooperatively with local entities, and maintain submitted groundwater elevation data in a readily- and widely available public Web portal. Collection of groundwater elevation data on a statewide scale is an important fundamental step toward improving management of California's groundwater resources.

This status report outlines the background of the CASGEM Program and describes the first two years of implementation. It is the first in a series of periodic reports on the CASGEM Program that DWR will provide to the Governor and the Legislature. Subsequent reports will be provided every five years beginning in 2015.

This report is organized into three major sections: (1) legislation that established CASGEM [Background], (2) program accomplishments and implementation [Program Implementation], and (3) outline of future short-term and long-term plans for the program [Ongoing Work]. CASGEM is in a stage of rapid development and will be progressively updated with seasonal data on an ongoing basis. The most current program information can be found on the CASGEM Program website:  
<http://www.water.ca.gov/groundwater/casgem/>.

## Background

In November 2009, SBX7 6, which defines the CASGEM program, was enacted to establish a coordinated, statewide groundwater elevation monitoring program with the data to be made widely and readily available to the public. Water Code § 10920 et seq. specifies the following:

- Local agencies, counties, and associations interested in volunteering to become Monitoring Entities shall notify DWR by January 1, 2011.
- DWR shall review prospective Monitoring Entity notifications and determine designated Monitoring Entities for each basin and subbasin.
- DWR shall work cooperatively with local Monitoring Entities to achieve monitoring programs that demonstrate seasonal and long-term trends in groundwater elevations.

- Monitoring Entities shall begin groundwater elevation monitoring in Fall 2011 and report elevations to DWR by January 1, 2012.
- DWR shall make these groundwater elevation data widely and readily available to the public.
- DWR shall report its findings to the Governor and the Legislature by January 1, 2012.

In addition, Assembly Bill 1152 2011, (Chesbro and Cook) makes Water Code requirements for groundwater monitoring more flexible, effective January 1, 2012. The revisions add a new Monitoring Entity category and allow alternative monitoring of groundwater basins with specified conditions, including basins with inaccessible terrain, unavailable data, or unusable groundwater.

### **Program Implementation**

DWR initiated CASGEM Program planning and implementation in 2009, following passage of SBX7 6. The following table summarizes milestones and accomplishments of the program's first two years of implementation.

CASGEM Schedule		DWR Activities	Local Entity Activities
2009	November-December	Planning Initiated	
2010	January-June	<ul style="list-style-type: none"> <li>• Developed program design, initiated outreach, identified project resources, and defined database requirements</li> <li>• Provided information to prospective monitoring entities and interested parties</li> <li>• Began collaborative planning for CASGEM presentations with ACWA</li> </ul>	<ul style="list-style-type: none"> <li>• Local entities attended CASGEM Workshops</li> <li>• Local entities collaborated to identify prospective Monitoring Entities</li> </ul>
		<ul style="list-style-type: none"> <li>• Developed CASGEM Online System</li> <li>• Created CASGEM Website</li> <li>• Designed Brochures</li> <li>• Prepared Workshops</li> </ul>	
	July-September	<ul style="list-style-type: none"> <li>• Conducted ACWA/DWR Workshops</li> </ul>	
	October-December	<ul style="list-style-type: none"> <li>• Released draft reporting requirements and draft guidelines</li> <li>• Solicited Public Comments</li> <li>• Finalized guidelines and reporting requirements</li> <li>• Developed Phase 1 of CASGEM Online System</li> </ul>	
		<ul style="list-style-type: none"> <li>• Released Phase 1 of CASGEM Online System for notifications</li> </ul>	
2011	January-June	<ul style="list-style-type: none"> <li>• Continued development of CASGEM Online System</li> <li>• Released Phase 2 in May for submitting well information, monitoring plans, and shapefiles</li> <li>• Continued to work with local agencies to develop CASGEM monitoring programs</li> <li>• Reviewed monitoring plans and provided recommendations</li> </ul>	<ul style="list-style-type: none"> <li>• Prospective Monitoring Entities submitted notifications online to DWR on or before 1/1/2011</li> </ul>
		<ul style="list-style-type: none"> <li>• Reviewed notifications and designated Monitoring Entities</li> </ul>	<ul style="list-style-type: none"> <li>• Monitoring Entities developed and submitted monitoring network plans to DWR</li> </ul>
	July-September		
	October-December	<ul style="list-style-type: none"> <li>• Released final Phase 3 of CASGEM Online System that includes submittal of groundwater elevation data and public access to the system</li> <li>• Prepared first CASGEM status report</li> </ul>	<ul style="list-style-type: none"> <li>• Monitoring Entities conducted groundwater elevation monitoring</li> </ul>
2012	January 1, 2012	<ul style="list-style-type: none"> <li>• Submitted first CASGEM status report to Governor and Legislature</li> </ul>	<ul style="list-style-type: none"> <li>• Monitoring Entities submitted first CASGEM groundwater elevation data online to DWR on or before 1/1/2012</li> </ul>

DWR began receiving online notifications from prospective Monitoring Entities in December 2010 and began reviewing notifications in Spring 2011. Monitoring Entities began to submit their CASGEM monitoring plans for review in May 2011. By September 2011, DWR had received 407 basin monitoring notifications. DWR has continued to work with Monitoring Entities to finalize monitoring plans and submit related well information. Monitoring Entities conducted the first round of groundwater elevation monitoring in Fall 2011, and resulting data must be submitted to DWR by January 1, 2012. Designated Monitoring Entities and the respective groundwater basins are posted and updated on the CASGEM *Designated Monitoring Entities* webpage: [http://www.water.ca.gov/groundwater/casgem/designated\\_entities.cfm](http://www.water.ca.gov/groundwater/casgem/designated_entities.cfm).

Three activities have been key to successful implementation of the CASGEM Program: (1) collaboration with local agencies; (2) creation of an online system for data submittal, viewing, and retrieval; and (3) development of a CASGEM public website and informational program documents. Additional detail on these key activities follows below.

#### *Collaboration with Local Agencies*

DWR conducted outreach to local water agencies to gain support for CASGEM, which is a voluntary, unfunded program. The intent of SBX7 6 was to develop a statewide groundwater monitoring program that relies and builds on the many established, local, long-term groundwater monitoring and management programs. Accordingly, DWR has sought input from local agencies in developing the program.

To introduce the program and engage local agencies in the process, DWR presented a series of 10 informational workshops, co-sponsored by Association of California Water Agencies (ACWA), throughout California during August and September 2010. DWR and ACWA conducted workshops in Redding, Santa Rosa, Sacramento, Byron, Watsonville, Fresno, Bakersfield, Riverside, Los Angeles, and San Diego. More than 400 people, representing local agencies, counties, well owners, and other stakeholders participated in these workshops.

Since these initial workshops, DWR has continued to work cooperatively with local agencies to promote statewide participation in the program.

Building on the list of interested participants from the workshops, DWR established an email distribution list for project status communications. To provide up-to-date information and access to CASGEM-related documents, DWR developed the CASGEM public website, where interested parties can also subscribe to receive email notifications of program developments.

#### *CASGEM Online System*

The goal of the CASGEM Program is to collect groundwater elevations for all of California's 515 basins, which will entail submittal and compilation of data from potentially hundreds of Monitoring Entities. To manage this data and make it widely and

readily available to the public in an efficient and effective manner, DWR developed an online system (Online System) for data submittal and retrieval. Beginning in spring 2010, DWR identified system requirements and, for one year beginning in fall 2010, worked collaboratively with the selected Information Technology contractor to design, build, test, and release the Online System. The system was constructed and launched in three phases to support statutory deadlines as follows:

Phase 1 enabled potential Monitoring Entities to notify DWR of their intent to participate in the program and to submit their qualifications by the January 1, 2011 deadline. Prospective Monitoring Entities were required to submit electronically the following information to the Online System:

- Contact information for the Monitoring Entity and cooperating agencies
- Geographic Information System (GIS) maps of the area(s) to be monitored
- Authority in Water Code to become the Monitoring Entity
- Statement of intent to comply with program provisions
- Groundwater Management Plans (if applicable)

Phase 2 enabled potential Monitoring Entities to submit their CASGEM monitoring plans and included a GIS map interface. Potential Monitoring Entities could add the following information to the CASGEM database:

- Groundwater elevation monitoring plans
- CASGEM well construction details
- CASGEM well location information

Phase 3 enabled Monitoring Entities to submit groundwater elevation data by the January 1, 2012 deadline and provided public access to the CASGEM system. Phase 3 included the following capabilities:

- Allow Monitoring Entities to submit groundwater elevation data
- Allow Monitoring Entities and public users to search for data and view CASGEM information on the map interface
- Allow access to monitoring plans, groundwater management plans, and data summary reports
- Provide access to submitted data to monitor and evaluate regional groundwater conditions

Following the release of Phase 3 in November 2011, DWR conducted a training Webinar to support Monitoring Entity submittal of fall groundwater elevation data and to demonstrate other new capabilities of the Online System.

#### CASGEM Program Information

To encourage local agencies to participate as Monitoring Entities and to provide information about the CASGEM program, DWR developed a number of program documents. Program guidance and reporting documents for potential Monitoring

Entities were developed with input from local agencies. An overview of the CASGEM program, program announcements, and links to program documents are located on the CASGEM homepage. The following is a partial list of web pages that provide detailed program information:

- CASGEM Home Page -- <http://www.water.ca.gov/groundwater/casgem/>
- List of Designated Monitoring Entities -- [http://www.water.ca.gov/groundwater/casgem/designated\\_entities.cfm](http://www.water.ca.gov/groundwater/casgem/designated_entities.cfm)
- CASGEM News -- <http://www.water.ca.gov/groundwater/casgem/news.cfm>
- Program Outreach Brochures and Procedures for Monitoring Entity Reporting -- <http://www.water.ca.gov/groundwater/casgem/documents.cfm>
- Monitoring Entities information -- <http://www.water.ca.gov/groundwater/casgem/entities.cfm>
- CASGEM Online System [http://www.water.ca.gov/groundwater/casgem/online\\_system.cfm](http://www.water.ca.gov/groundwater/casgem/online_system.cfm)
- Public Users' Manual for Online System -- <http://www.water.ca.gov/groundwater/casgem/help/OnlineSystemPublic.pdf>
- Frequently Asked Questions (FAQs) -- <http://www.water.ca.gov/groundwater/casgem/pdfs/CASGEM%20-%20FAQ%20Update%20Final%20121510.pdf>

### **Ongoing Work**

Enactment of SBX7 6 established a permanent groundwater-monitoring program for California. As the CASGEM program moves forward, dedicated funding will be needed to sustain the program and to fulfill all requirements defined in the Water Code. During the first two years of CASGEM program implementation, DWR developed the program framework and met initial program goals and deadlines. However, significant work remains to be done to monitor, report, and analyze seasonal and long-term trends in groundwater elevations statewide. The Water Code specifies that DWR perform additional activities. The following activities are still in progress and will be carried out if funding is provided:

- DWR has commenced to identify the extent of groundwater elevation monitoring within each basin and subbasin by January 1, 2012.
- DWR shall conduct a statewide prioritization of basins based on water supply, water demand, and other factors identified in the Water Code.
- DWR shall perform groundwater elevation monitoring in basins where no local party has agreed to perform the monitoring functions.
- If local parties that are qualified to become Monitoring Entities do not volunteer to perform groundwater monitoring functions, and DWR assumes those functions, then those parties become ineligible for water grants or loans from the State.
- DWR shall conduct groundwater basin assessments statewide.
- DWR shall investigate existing general patterns of groundwater pumping and groundwater recharge within certain basins to identify those that are subject to critical conditions of overdraft.

Achieving and maintaining statewide monitoring coverage for California's 515 alluvial basins and subbasins is a major effort and will be an ongoing process. The intention of the legislation is to build on the many established, long-term groundwater monitoring and management programs conducted by local entities. DWR will continue to conduct outreach to encourage new participation in areas not yet monitored.

As DWR identifies gaps in statewide monitoring, the Water Code directs DWR to take several steps prior to the department assuming groundwater monitoring responsibility for unmonitored basins. As one of these steps, DWR will continue to work cooperatively with interested parties, including local agencies that need to adopt groundwater management plans and new voluntary associations. The Water Code provides these parties up to two years to meet the requirements to become Monitoring Entities.

DWR should continue to maintain and also enhance the Online System. Designated Monitoring Entities, all new users of the Online System, will continue to need technical support during start-up. In addition, the system will require improvement and enhancement to better connect CASGEM data with other existing groundwater data and to address any new statutory requirements that may arise in the future. Such improvements to the Online System will support future Monitoring Entity participation, increase availability of CASGEM data to all users, and ultimately support improved groundwater management throughout the State. These efforts will require resources, especially dedicated funding, to maintain, enhance, and expand the Online System.

The purpose of developing a long-term groundwater monitoring program for California is to enable the identification of seasonal and long-term trends in groundwater elevations. Years or even decades of data are needed to identify groundwater trends. In some basins, there is an extensive historical record, but in other areas, groundwater monitoring is just beginning with the implementation of the CASGEM program.

The Water Code calls for analyses and evaluation of data, including the prioritization of basins, statewide assessment of groundwater conditions, and identification of basins subject to critical conditions of overdraft. The data collected for the CASGEM program provides an important foundation for these analyses; however, obtaining data is only a first step, and more than groundwater elevation data are needed for some of the prescribed analyses specified in the Water Code. Such analyses will require a significant additional commitment of resources, collaboration with local agencies, and likely collection of additional data well beyond groundwater elevations. The CASGEM program is an unfunded mandate for DWR and the Monitoring Entities. Further implementation of the program will be hampered significantly due to the lack of dedicated funding for the program.

## **Conclusion**

DWR has developed the CASGEM program in accordance with SBX7 6 to establish a permanent, locally-managed system to monitor groundwater elevations in California's alluvial groundwater basins and subbasins. This report summarizes the status of the

program and the milestones and accomplishments by DWR and California's local agencies during the program's first two years. The following work has been completed:

- DWR successfully conducted outreach to develop local support for the program statewide;
- DWR developed the CASGEM website and documents to provide easily accessible, up-to-date program information and technical support;
- Local agencies, counties, and associations volunteered to become CASGEM Monitoring Entities and notified DWR;
- DWR reviewed the submitted notifications and designated Monitoring Entities for groundwater basins and subbasins throughout the State;
- DWR worked cooperatively with local Monitoring Entities to develop groundwater elevation monitoring programs;
- DWR developed an Online System for data submittal and to provide public access to the CASGEM data in both tabular and map formats;
- Monitoring Entities began monitoring groundwater elevations and submitting data to the CASGEM Online System in Fall 2011; and
- DWR released the CASGEM Online System to the public in mid-November 2011, allowing access to submitted groundwater elevations.

The collection of groundwater elevation data and the identification of seasonal and long-term trends are fundamental to assessing California's groundwater resources. The establishment of the CASGEM program is a significant step forward in this process. To ensure the CASGEM program is effective, it is essential that the program be maintained on a permanent basis and that the elements of the program specified in the Water Code be accomplished to obtain the information necessary to manage and sustain California's vital groundwater resources.

The greatest obstacle to program continuation and success is the lack of dedicated funding for program execution by DWR and the local agencies participating as Monitoring Entities and cooperating agencies. The legislation enacting the program did not include funding for this purpose. To date, program implementation has been accomplished using Proposition 50 Water Supply Reliability bond funds, but the funding is insufficient to implement all of the requirements, let alone maintain and sustain this important program into the future. Local agencies also struggle to comply with CASGEM requirements due to budget constraints and cutbacks. Success of this program is dependent on securing long-term funding at the State and local levels.