

# Water Facts

State of California  
The Resources Agency  
**Department of  
Water Resources**



## 7-Steps for Managing Groundwater Supplies

**M**any communities in California use groundwater as the main source for their public water supply system, and many individual residences are totally dependent on groundwater for their supply. In addition, many agricultural operations are partly or entirely dependent on groundwater for their water supply—especially in times of drought. The amount of groundwater in storage in each basin is dependent on the precipitation, recharge and the total extraction of all the wells. A groundwater management plan that is designed for the political, institutional, legal and technical specifics of the basin can help everyone maintain the quality and quantity of the groundwater supply.

The following 7-step groundwater management program will help local groundwater managers, individuals, residents, and public water supply system operators determine how far groundwater levels will decline if a certain amount of groundwater is extracted. With this information, they will be able to make informed decisions in managing the available groundwater to assure an available supply in the future.

Begin your plan now by evaluating the data that are available, even though you think you need more data. This initial evaluation will help you

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plan additional programs that will lead to more efficient management.

Find out what statutory authority your agency operates under and whether the Water Code provides authority to manage groundwater. Many local agencies are now taking advantage of AB 3030 (California Water Code § 10750, et seq) to develop groundwater management plans for their agency.

### 7 Steps

#### **1 Locate and identify water wells, and collect groundwater level and ground water quality data.**

The location of each water well in the area should be recorded, and each well should be assigned a "State Well Number" by DWR. Collect drillers' logs, and compile water level measurements and water-quality analyses that are available from each of the wells. Plot this information on maps and graphs for use in steps 2, 3, 4, and 5. This is the start of a monitoring program.

#### **2 Determine the amount of groundwater that is extracted by each well or otherwise removed from the groundwater basin.**

Total the amount of groundwater extracted by all wells and add whatever other water is removed from the basin (evapotranspiration, exports, consumptive use, and surface water outflow). Compare this total with the total amount of water that comes into the basin (see Step 4).

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The amount of water extracted can be measured by water flow or electric consumption meters, or estimated by using the estimated evapotranspiration of each of the crops. (For details, call the DWR telephone numbers listed at the bottom of the next column.)

### **3 Prepare maps and graphs that show:**

- Past groundwater levels and groundwater quality;
- Present or recent groundwater levels, groundwater quality, and rates of ground water extraction;
- Recent precipitation;
- Surface water imports;
- Changes in groundwater levels and groundwater quality; and
- Water exported from the basin.

### **4 Determine the total amount of water that flows into the basin through precipitation and surface water imports and the total amount of water that flows out of the basin.**

This is called a water budget. The difference between the inflow and the outflow will result in a change in groundwater level during the water year. If there is more inflow than outflow, groundwater levels will rise. Conversely, if there is more outflow than inflow, as there is during drought years, groundwater levels will fall.

$$\textit{Inflow} - \textit{Outflow} = \textit{Change in Storage}$$

### **5 Use drillers' logs and other data to estimate specific yield.**

Specific yield is an estimate of the amount of water that is available from an unconfined aquifer. The specific yield can be used to calculate the amount of groundwater in storage, and the decline in groundwater level that will take place when a specified amount of groundwater is extracted by wells (see Step 4).

### **6 Project future rates of extraction and estimate the rate of decline of ground water levels and possible changes in groundwater quality.**

Use the specific yield values obtained in Step 5 to calculate the estimated change in groundwater level that will occur when an estimated amount of groundwater is extracted. Groundwater quality data can be used to estimate the effect of such extractions on the movement of chemical constituents, either natural or man-caused. Determine whether groundwater extraction is likely to cause subsidence. If yes, prepare a subsidence monitoring program.

### **7 Develop a plan for managing ground water supplies. Such a plan may require reductions in extractions so the long-term change in storage does not cause water quantity or water quality problems.**

Such a management plan could include a reduction in the amount of groundwater extracted by specific wells either through a reduced rate of pumping or by restricting the length of time the pump can be turned on. Such reductions would have to be voluntary unless a groundwater management plan is formed implemented by a local agency. Many districts already have some authority to deal with groundwater.

For information on how to develop an AB 3030 groundwater management plan or how to form a groundwater management agency, call DWR.

**For more information, call one of the following DWR Division of Local Assistance offices:**

<b>Headquarters, Sacramento</b>	<b>916/327-8861</b>
<b>Northern District, Red Bluff</b>	<b>916/529-7387</b>
<b>Central District, Sacramento</b>	<b>916/227-7590</b>
<b>San Joaquin District, Fresno</b>	<b>209/445-5320</b>
<b>Southern District, Glendale</b>	<b>818/543-4640</b>

