

## Winter 2016

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### KDWCD Vision Statement

Kaweah Delta Water Conservation District's vision is to protect, conserve, and maintain the Kaweah Basin's water resources through actively pursuing a comprehensive understanding of the region's water resources and through the management of those resources to their fullest potential. The District strives to achieve its vision by engaging in the following core directives:

- Monitoring water resources and demands
- Conserving and enhancing available water resources, both local and regional,
- Investigating and evaluating the Region's water resources,
- Conserving and protecting Kaweah Basin water rights,
- Preventing the interference with/or diminutions of natural flow, and
- Protecting lands from flood or overflow

### Inside this Issue

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WRI Confirms Overdraft

California Drought Continues

Brother Replaces Brother



## Sustainable Groundwater Management Act (SGMA)

Recognizing that the best resource management happens at the local level, five resource agencies have joined together and submitted their Notice of Intent to form the Greater Kaweah Groundwater Sustainability Agency, or GSA, to develop a groundwater sustainability program.

The five agencies are Kaweah Delta Water Conservation District, Kings County Water District, Lakeside Irrigation Water District, and the St. Johns Water District. And Tulare County.

With the passage of the Sustainable Groundwater Management Act (SGMA), local public agencies that have water supplies, water management or land use responsibilities within a groundwater basin, such as the Kaweah Sub-Basin can form a GSA, but they must form a GSA by June 30, 2017.

"Groundwater is best managed at the local level," said Mark Larsen, general manager of Kaweah Delta Water Conservation

District. "With the formation of the GSA, we can pool our resources to ensure that our groundwater is sustainably managed."

The Greater Kaweah GSA's primary responsibility is achieving groundwater sustainability within its basin. The GSA develops and implements a groundwater sustainability program (GSP) that includes measurable objectives for the groundwater basin to achieve sustainability in the 20-year time frame provided by the law. The GSP also includes the basin's physical description, including groundwater levels, water quality, subsidence, and groundwater-surface water interaction.

Because the Kaweah Sub-Basin is considered "critically over-drafted," a GSP must be adopted by 2020. This overdraft condition exists because more groundwater is extracted from the basin annually than there is surface

water to replenish it. The imbalance creates the overdraft which, if allowed to continue, could result in significant adverse environmental, economic or social impacts.

SGMA provides the option of numerous new tools and authorities to GSAs, including conducting investigations, determining the sustainable yield of a groundwater basin, measuring and limiting extractions, imposing fees for groundwater management, and enforcing the terms of the GSP.

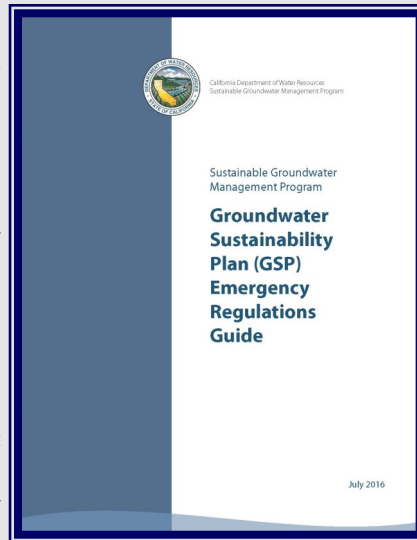
Groundwater sustainability is not a new concept for Kaweah Delta. For more than 80 years, Kaweah Delta has worked to conserve and preserve the underground waters of the Kaweah River Basin. Additionally, the District works to conserve and store waters of the Kaweah River for beneficial uses, and maintains channels for flood control.

Every five years the District prepares a Groundwater Management Plan. And while the overdraft condition is known, the District already has many projects and practices in place.

"Managing the groundwater basin is not new for us. It's what we've been doing since our formation," said Larsen. "What is new is the groundwater law and the formation of the GSAs. The Greater Kaweah GSAs' members have worked together for many years and, collectively, will put together a sustainability program that works for everyone."

### Did You Know?

Groundwater supplies 40% of the water Californians use in normal years. But in dry years, groundwater supplies over 60%.



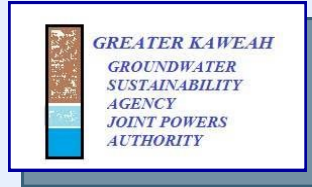
**Sustainable Groundwater Management Act (SGMA) cont'**

**Did You Know?**

*California's groundwater basins are the state's largest reservoirs – more than 10 times the size of all the state's surface reservoirs combined.*

**Greater Kaweah GSA (Noticed)**

- Kaweah Delta Water Conservation District
- Kings County Water District
- Lakeside Irrigation Water District
- St. Johns River Water District
- County of Tulare



**Mid-Kaweah GSA (Exclusive)**

- Tulare Irrigation District
- City of Visalia
- City of Tulare

**East Kaweah GSA (Proposed)**

- Lindmore Irrigation District
- Lindsay-Strathmore Irrigation District
- Exeter Irrigation District
- Ivanhoe Irrigation District
- Stone Corral Irrigation District
- City of Lindsay
- County of Tulare

**Report Confirms Severe Overdraft for 30-Year Period**

A recent Water Resources Investigation examining 31 years of hydrologic data confirms that the land served by Kaweah Delta Water Conservation District (KDWCD) is significantly over-drafted.

The magnitude of the overdraft ranges from 60,900 to 75,100 acre-feet per year as calculated by the specific yield method. The overdraft also occurs predominantly in the west side of the District.

"The WRI, on the one hand, tells us what we already know about our groundwater basin – we are in overdraft," said Mark Larsen, General Manager of KDWCD. "On the other hand, the information it provides about groundwater quantity, movement, sources and volumes of natural recharge, gives us much needed information. This report is a valuable tool for us to use as we continue our resource management efforts."

The WRI results, which were compiled by Fugro Consultants, Inc., was not a surprise to the District; rather, the report validated what has been suspected and known based on land and water use throughout the district's boundaries, as well data from previous investigations. The report covered a study period from 1981 to 2012.

While the District's overdraft was confirmed, so, too, was its safe yield – the average seasonal amount of groundwater that can be pumped over a long-term period under a particular set of physical conditions without affecting a long-term net change in the amount of groundwater in storage. Given this definition, the safe yield of the District is approximately 570,000 acre-feet per year, and is roughly equal to the average annual pumpage throughout the District.

The District relies on both surface water supplies and groundwater to meet its needs. Surface water comes from several sources, including precipitation, local surface water and imported surface water. Surface supplies have benefited from the construction of Terminus Dam. The use of the reservoir allows for better management and conveyance of surface water supplies. Additionally, the District is synonymous with recharge efforts. Through the use of about 40 recharge basins with a combined area of about 2,100 acres, the District is able to supplement the natural replacement of groundwater to the underground reservoir.

Of KDWCD's total area of 340,000 acres, 240,000 acres (in 2012) are planted in a variety of irrigated crops, and approximately 40,000 acres – located primarily in the cities of Tulare and Visalia – is considered urban. As of 2012, (the last year the investigation covers),

about 918,500 acre-feet is delivered annually for irrigation, municipal and industrial, and related water uses. Irrigated agriculture uses 93% of the total, or 852,100 acre-feet per year. This supply comes from both surface and groundwater sources. The Urban supply is obtained solely from groundwater.

Groundwater is found in aquifer systems that run throughout the District, and vary from east to west. The conditions of these aquifers vary, both in terms of how they are structured geologically and in their ability to produce water.

In the District's eastern area, aquifer systems are largely unconfined or semi-confined. In an unconfined aquifer, groundwater is easily recharged because there is no material blocking percolating water from reaching the water table. Semi-confined aquifers have some layer of material but it still is permeable, but percolation of water take longer and often from further away. Because of these characteristics, aquifers on the east side have an estimated storage capacity of 1.8 million acre-feet of groundwater, which is a critical part of the District's overall water supply.

In the western part of the District, the aquifer systems are confined, which means that an impermeable layer of dirt and/or rock makes groundwater recharge very difficult or impossible. In the District, the impermeable layer is often the subsurface Corcoran Clay, although usable groundwater is found both above and below this layer. Wells often are drilled very deep into the underground in order to get past the Corcoran Clay level. Because of the depth of these wells, the electricity costs to run them are high.

Because of these conditions on the District's west side, larger amounts of overdraft occur there. The average decline in water levels in the western portion have been about four feet per year during the dry years between 2002 and 2012.

District Water Supplies Include:

- ⇒ Precipitation – measured at different elevations throughout the District
- ⇒ Local Surface Water – Kaweah River, Dry Creek, Cottonwood Creek, Mehrten Creek, Yokohl Creek, and Lewis Creek
- ⇒ Imported Surface Water – Kings River, Central Valley Project, State Water Project
- ⇒ Artificial Recharge – more than 40 basins operated throughout the service area

**Tulare County Water Groups Receive \$3.4 Million for Disadvantaged Community Input**

To ensure that economically distressed or disadvantaged communities have a voice in resource management, seven Integrated Regional Water Management (IRWM) groups will begin an outreach program to include the region’s diverse opinions regarding regional water planning.

The collective IRWMs representing Tulare, Kern, Fresno and Kings Counties received a \$3.4 million grant from the State Department of Water Resources to conduct the outreach program and to develop projects to benefit the region. The grant was authorized by Proposition 1, the Water Quality, Supply, and Infrastructure Improvement Act. The monies will ensure that Disadvantaged Communities (DACs), underrepresented communities, or economically distressed areas are involved in the planning efforts.

Using objectives established by the DWR, the IRWM groups and Counties will begin outreach to DACs and distressed areas to achieve the following:

- ⇒ Work collaboratively to involved DACs, community-based organizations and stakeholders in IRWM planning efforts;
- ⇒ Increase understanding and identify water management needs of the DACs in the region; and
- ⇒ Develop strategies and long-term solutions to address DAC water management needs.

In addition to the Kaweah River Basin IRWM (KIRWM), the other grant participants include Kern County IRWM, Kings Basin Water Authority, Poso Creek IRWM, Southern Sierra Regional Water Management Group, Tule River Basin IRWM, and Westside-San Joaquin IRWM.

The KIRWM formed in 2007 and is a collaborative effort to

**California Drought Expected to Continue; Precipitation for Nor-Cal Merely 'Normal'**

Predictions already are underway concerning the outlook for this year’s winter and what drought relief – if any – it will bring for California’s ongoing drought.

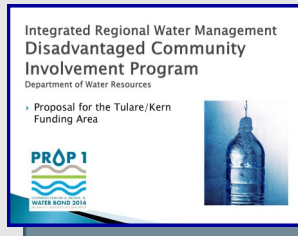
Initially, the Winter Outlook (December through February) suggests that California’s historic drought will persist, with warmer temperatures in the central and southern part of the state. Some



drought improvement is anticipated in Northern California, although precipitation for this area isn’t expected to be in the “wetter than normal” category.

Forecasters with the National Oceanic and Atmospheric Administration (NOAA) issued the U.S.

Winter Outlook last month, saying that La Niña is expected to influence winter conditions this year. The Climate Prediction Center said that La Niña likely will develop in late fall or early winter. This climate phenomenon favors drier, warmer winters in the southern U.S. and wetter, cooler conditions in the northern U.S.



manage all aspects of water resources in the Kaweah River Basin Region. Many agencies and stakeholders are involved, including Kaweah Delta Water Conservation District, County of Tulare, Exeter Irrigation District, Lakeside Irrigation Water District, Tulare Irrigation District, Corcoran Irrigation District and the cities of Visalia, Tulare, Lindsay and Farmersville. The group meets monthly evaluating how best to manage water in the region, as well as to discuss future projects the group may pursue concerning groundwater management, water supply, water quality, flood control and ecosystem restoration.

The collective group plans to promote the state’s objectives by conducting a needs assessment of DACs in the region; supporting project development; and promoting ongoing DAC participation in IRWM groups.

One of the first items that will be pursued is the formation of a Project Advisory Committee (PAC). The PAC will provide a key role in program guidance and decision-making. The PAC will be composed of:

- ⇒ 1 member selected by each IRWM (7 positions)
- ⇒ One Tribe member
- ⇒ Alternatives for each PAC member

Once the PAC is formed at the beginning of 2017, the group will be able to put together plans for the needs assessments, which will lead to project development. Engagement and education programs will follow.

**Brother Replaces Mark Watte on KDWCD Board**

Irrigated agriculture lost one of its most amiable advocates this summer when Mark Watte, 64, passed away from cancer in June. Mr. Watte was a diversified farmer and a leading spokesman about agriculture and irrigated farming.

Mr. Watte served on the Kaweah Delta Water Conservation District Board of Directors from 9/17/96 when he was appointed to 6/17/16 when he passed. His experience as a grower and irrigator gave him unique insight into the District’s mission and his input was invaluable.



“Mark believed in agriculture and believed that its use of water was a benefit for not only America but the world,” said Mark Larsen, General Manager of Kaweah Delta Water Conservation District. “His contributions were invaluable and we, as an organization, will miss him greatly.”

Mr. Watte and his brother, Brian, managed George D. Watte & Sons farming. (George was their father.) The family farmed more than 4,000 acres of pistachios, cotton, alfalfa and black-eyed peas. The family also managed a dairy in Tulare.

Mr. Watte was Tulare County Farm Bureau’s Agriculturist of the Year in 2014. He was World Ag Expo Chairman in 1992, Tulare Farmers of the Year in 2000 along with his brother, and Tulare Chamber of Commerce Man of the Year in 2013. He served for 20 years on the board of directors for Cotton Inc. and was its chairman at the time of his death. Mr. Watte’s brother, Brian, replaces him on the Kaweah Delta Water Conservation District Board.



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VISIT OUR WEBSITE AT [WWW.KDWCD.COM](http://WWW.KDWCD.COM) FOR MORE INFORMATION!

***Kaweah Delta Water Conservation District hopes that you have found the information in this issue of the KDWCD Water Report helpful. It is our goal to provide water resource information that is relevant and useful to those who live, work and farm in the District. As our District strives to protect and enhance the groundwater resources of the Kaweah River Basin, we also would like the landowners, water users and the general public to be informed and knowledgeable about our water resources, so that together we can make the best use of our water now and into the future.***

#### **Water/Weather Related Web Links**

California Irrigation Management Information System (CIMIS) - [www.cimis.water.ca.gov](http://www.cimis.water.ca.gov)      Friant Water Authority (FWA) - [www.friantwater.org](http://www.friantwater.org)  
National Oceanic Atmospheric Administration (NOAA) - [www.noaa.gov](http://www.noaa.gov)      United States Bureau of Reclamation (USBR) - [www.usbr.gov](http://www.usbr.gov)  
United States Army Corps of Engineers (USACE) - [www.usace.army.mil](http://www.usace.army.mil)      Association of California Water Agencies (ACWA) - [www.acwa.com](http://www.acwa.com)  
California Department of Water Resources (DWR) - [www.water.ca.gov](http://www.water.ca.gov)      Water Education Foundation (WEF) - [www.watereducation.org](http://www.watereducation.org)  
Regional Water Quality Control Board (RWQCB) - [www.waterboards.ca.gov](http://www.waterboards.ca.gov)      Water Education Foundation—Aquapedia—[www.aquapedia.com](http://www.aquapedia.com)

#### **Agricultural Water Management Resources**

**CA Agricultural Technology Institute** - A non-profit, educational institution dedicated to improving California agriculture  
**Irrigation and Training Research Center** - An irrigation teaching program through outside activities specializing in training, research, and technical support  
**National Weather Service** - Provides forecasts and warnings for the central U.S.  
**CA Water Institute** - Offers seminars and classes dealing with Regional Water Issues, Irrigation Technology, and Research  
**UC Ag Extension** - Includes farm, nutrition, family and consumer science advisors based in more than 50 county offices, reaching millions of farmers, businesses and residents every year  
**Center for Irrigation Technology (CIT)** - As an independent research and testing facility, CIT assists designers, manufacturers and users of irrigation equipment to make the technological advances required for our growing and ever changing world. Provides pump efficiency testing  
**USDA Farm Service Agency** - Provides contact information as well as a listing of the programs and offices that make up the Farm Service Agency  
**USDA/ARS Water Management Research Laboratory** - The development of water and weed management technologies and practices for irrigated agriculture in water deficit areas that use water efficiently, improve agricultural productivity, sustainability and reduce negative environmental impacts  
**Farm Advisors Office, Agricultural Commissioners' Offices, Tulare and Kings Counties**