

**PRACTICAL GUIDANCE FOR CENTRAL VALLEY WELL OWNERS:  
MAKING DECISIONS ABOUT WELL DRILLING, EQUIPMENT  
INSTALLATION AND OPERATION FOR WATER WELLS**

**To drill or not to drill? To pump or not to pump? To grow or not to grow?**

# Workshop Program

**Dec 14<sup>th</sup>, 2015**



**Southern California Edison  
Energy Education Center  
4175 South Laspina Street  
Tulare, CA 93274**



An American Ground Water Trust program organized in partnership with the Tulare Irrigation District

## **OBJECTIVE:**

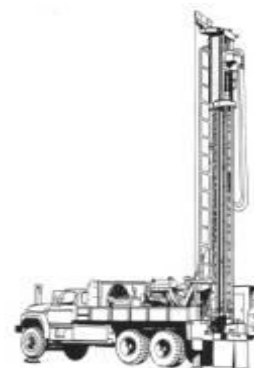
Provide farmers, growers and other California Central Valley groundwater end-users with practical technical information to assist them with decisions about developing new groundwater supply, optimizing yield from existing water wells and managing pumping sustainability.

## **FORMAT:**

A one-day information-exchange workshop presented by recognized water industry and irrigation industry experts involving presentations, panel discussions, audience Q & A and exhibits and displays by companies offering water well/groundwater products and services.

## **PARTICIPATION:**

It is anticipated that the workshop audience will be drawn from landowners, commercial farmers and growers, water utility managers, groundwater end-users and their scientific, technical and legal advisors in the Tulare Irrigation District and surrounding areas.



## **BACKGROUND:**

The AGWT's mission is to maximize the sustainable use of groundwater. The motivation for this workshop is the AGWT's recognition of the importance for the nation of the Central Valley's agricultural productivity and the reality of declining volumes of groundwater in storage. Although there are still considerable amounts of groundwater throughout the Valley, with very uncertain surface water delivery there is more competition for stored groundwater and less potential for aquifer recharge.

However, a water shortage "emergency" is no reason to rush to a low-bid contractor or skimp on well design, quality of well construction or the selection of pumps and pump control systems. The workshop will help landowners follow steps of due-diligence to assess the prospect of success before making drilling and pumping decisions.

The team of experts has been asked to provide advice, guidance and insight in an inclusive and non-commercial information-exchange format. In recognition of the importance of water supply security the Tulare Irrigation District is making this program available at no charge.



## SPONSORS



## SCHEDULE

7:00 – 8:00 REGISTRATION (Coffee & donuts)

8:00 **INTRODUCTION – WHO'S DEFINITION OF SUSTAINABILITY DO YOU WANT TO USE?**

Andrew Stone, Executive Director, American Ground Water trust, Concord, NH

- Current groundwater depletion: drought or decades of water policy?
- Review of sustainability definitions
- Can you manage it if you can't measure it?

8:20 **SUSTAINABLE GROUNDWATER MANAGEMENT ACT**

Paul Hendrix, General Manager, Tulare Irrigation District, Tulare, CA

- The Perfect Storm, Hence SGMA
- Mid-Kaweah GSA – Strange Bedfellows?
- SGMA Rules – Supply-Side v. Demand-Side Management

9:00 **FAILURES AND PROBLEMS THAT CAN RESULT FROM WELLS DRILLED IN A HURRY**

Chris Johnson, President, Aegis Groundwater Consulting, Fresno, CA

- Inadequate well development- a prime suspect in poor well performance
- If wells are drilled too fast - important information can be lost
- Screen selection and position is important to maximize yield potential
- Well integrity: The value of down-hole camera information

9:40 **CRITERIA FOR SELECTING THE TYPE OF STEEL FOR WELL CASING AND WELL SCREENS**

Kevin McGillicuddy, Hydrogeologist, Roscoe Moss Company, Los Angeles, CA:

- Corrosion resistance, tensile strength and collapse resistance
- Life cycle costs of different grades of steel in deep high-yield wells
- Telescoping options for casing to reduce damage risk from subsidence
- Robustness of screen selection for well maintenance & rehabilitation

10:20 BREAK – View Exhibits

10:40 **BOREHOLE GEOPHYSICS AND WATER WELL DECISIONS**

Dewey Shanholtzer, President, Dewey Data, Stockton, CA

Bill Pedler, President, RAS, Inc. Integrated Subsurface Evaluation, Denver, CO

- Types of geophysical logs, costs and cost benefits of down-hole measurements for agricultural applications
- Benefits of borehole geophysics to predict production, water quality and optimize well design

- Borehole geophysical measurements for integrity evaluation of existing wells (annular seal, cement bond logs and deviation)
- Flow and salinity profiling to evaluate vertical variations in water quality, design of remedial action and prediction of resulting water quality and production

**11:20 AIRBORNE GEOPHYSICS AND HYDROGEOLOGIC FRAMEWORK DEVELOPMENT FOR GROUNDWATER MANAGEMENT DECISIONS**

James Cannia PG, Aqua Geo Frameworks LLC, Mitchel, NE

- Data collection
- How frameworks are made
- Integration of data into the framework (geology, hydrology, aquifer characteristics & water quality)
- How to make the framework most usable for every day decisions

**12:00 LUNCH – (Provided) Table discussions and view exhibits**

**1:10 WATER WELL DRILLING TECHNOLOGY**

Timothy Oman, District Manager, Layne Christensen Company, Santa Paula, CA

- Typical responsibilities, expectations and deliverables in a water well drilling contract
- Criteria for selecting a drilling contractor (comparing apples with apples for bids)
- Items that make up the overall drilling costs of a typical Central Valley well
- Success stories from California water well drilling sites

**1:50 SELECTING THE RIGHT PUMP FOR THE JOB – ELECTRICAL ENERGY CONSIDERATIONS FOR WATER WELL OPERATION**

Bill Green, Education Manager, Center for Irrigation Technology, Fresno, CA:

Steve Villegas, Pump Specialist, Southern California Edison, Tulare, CA

- Pump selection criteria for deep wells (submersible or line-shaft) (horse-power and capacity)
- Basis for making decisions about pump repair or buy new
- Benefits of intelligent controls for matching pumping to aquifer conditions
- Planning & Timelines: availability of electrical hook-up and power requirement for new drill sites
- Testing of existing well pumps to ensure maximum efficiency
- Electric rates: Energy conservation by combining deep well pumps and surface storage boosters

**3:00 FINANCING FOR NEW WELLS: HOW LENDERS AND BANKS ASSESS “RISK”**

Ryan Dooley, Farm Credit West, Hanford, CA

**3:15 BREAK**

**3:30 EXPERTS PANEL - Chairman/ Moderator - Aaron Fukuda, Engineer, Tulare Irrigation District**  
(All presenters available for discussion and audience Q & A)

**4:30 PROGRAM ENDS**

At the end of the workshop:

1. Hand in the pink evaluation form
2. For the presentation download – hand in the golden rod color form
3. Don't forget to sign out on AGWT table if you need a certificate of attendance
4. To assist with the AGWT water resources education mission, complete the gray form or take it with you and have your company respond later



**AMERICAN GROUND WATER TRUST**  
(Non-profit 501(c)(3) education organization)  
**Ground Water Information, Awareness & Education since 1986.**



The AGWT was formed in 1986 as a non-profit education organization with the mission of promoting interest and awareness in ground water issues. Specifically, the AGWT's conference and workshop programs and educational materials:

- ~ **Communicate the environmental and economic value of groundwater**
- ~ **Promote efficient and effective groundwater management**
- ~ **Showcase groundwater science and technology solutions**
- ~ **Increase citizen, community and decision-maker awareness**
- ~ **Facilitate stakeholder participation in water resource decisions**

### **American Ground Water Trust Programs in California**

July 2013 Agoura Hills	Hydraulic Fracturing Conference (Monterey Shale Issues)
Nov 2013 Riverside	Ground Water Institute for Teachers (hosted by Western Municipal Water District)
Nov 2013 Tulare	San Joaquin Valley Groundwater Overdraft Conference
Nov 2013 Lakewood	Well & Pump Workshop (techniques for cost saving and optimizing performance)
Feb 2014 Ontario	Annual Aquifer Conference in partnership with Association of Ground Water Agencies
May 2014 Fresno	Water Technology Conference (partner with International Center for Water Technology)
May 2014 Los Angeles	Groundwater Law
Nov 2014 Modesto	Well & Pump Workshop (Program for utility managers and well-field operators)
Nov 2014 Lakewood	Well & Pump Workshop (Program for utility managers and well-field operators)
Feb 2015 Ontario	Annual Aquifer Conference in partnership with Association of Ground Water Agencies
May 2015 San Francisco	Groundwater Law
Oct 2015 Stockton	Well Operation in Times of Drought
Oct 2015 Ontario	Well Operation in Times of Drought
Dec 2015 Tulare	Practical Guidance for Well Owners
Feb 2016 Ontario	Annual Aquifer Conference in partnership with Association of Ground Water Agencies