

Project Charter

Project Title: Food Safety – Oil Field Wastewater Reuse Expert Panel

Food Safety/Oil Field Produced Water Project Team:

Project Supervisor: Clay Rodgers, Central Valley Water Board

Project Manager: Stephen Klein, Central Valley Water Board

Expert Panel Members:

- Dr. Stephen Beam - California Department of Food and Agriculture
- Dr. Andrew Gordus-California Department of Fish and Wildlife
- Mr. Mark Jones - Environmental Resources Management (ERM)
- Mr. Patrick Kennelly - California Department of Public Health
- Dr. Gabriele Ludwig - Almond Board of California
- Dr. Barbara Petersen – Exponent
- Dr. Seth Shonkoff - PSE Health Energy
- Dr. William Stringfellow- Lawrence Berkeley National Laboratory

Other Agencies and Representatives:

- Mr. John Borkovich - State Water Resources Control Board
- Mr. Robert Habel - Division of Oil Gas and Geothermal Resources
- Ms. Denise Kadara – Vice-Chair Central Valley Water Board
- Dr. Karl Longley – Chair Central Valley Water Board

Project Background:

California’s San Joaquin Valley is a major oil producing area. In 2013, approximately 150 million barrels of oil (42 gallons/barrel) were produced along with nearly 2 billion barrels of water (about 250,000 acre feet). Much of this “produced water” is recycled for use in the oil fields during enhanced recovery efforts (steam injection and water flood). The remaining produced water is typically disposed in permitted underground injection wells or surface disposal (ponds). A portion of the produced water is recycled for irrigation of crops for human consumption.

Produced water is often saline because the oil-producing rocks are of marine origin. Occasionally, such as along the east side of the southern San Joaquin Valley, oil has migrated from its native marine formation to non-marine formations. In these circumstances, the produced water is relatively low in salinity and can be recycled for irrigation without significant treatment to remove salts and boron.

Produced water from the areas east and north of Bakersfield has been recycled for irrigation for about 30 years. There is significant interest in expanding this water reuse practice due in part to the ongoing drought. Produced water is treated to remove

contaminants so that the water delivered to irrigation districts has low concentrations of petroleum hydrocarbons and other chemicals used during oil production activities.

There has been a rise in scrutiny of oil production activities and increasing public concern regarding the human health and environmental impacts of oil and gas production. Much of this scrutiny has been directed toward activities associated with hydraulic fracturing (commonly called fracking). While the most serious concerns have been reserved for human health from the exposure of well stimulation chemicals, oil production activities not traditionally associated with well stimulation have also become a concern to the public.

A recent series of media articles has drawn attention to the use of oil field produced water for irrigation of crops in Kern County. These articles indicate that current testing requirements of produced water are too limited and should screen for the full set of chemicals used in today's oil production. Scott Smith of the environmental group Water Defense has sampled produced water, reported detection of various organic compounds, and expressed deep reservations about the safety of the water on crops grown for human consumption.

Cawelo Water District, North Kern Water District, Jasmin Mutual Water District, and Kern-Tulare Water District (herein after Districts) are located within the Tulare Lake Basin and receive oil field produced water. These Districts' use produced water to supplement imported surface water and pumped groundwater to meet irrigation needs of the crops grown within the Districts. The Districts combined receive up to 50,000 acre feet per year of produced water. This water is one of the significant water sources to 95,000 acres of cropland. These discharges of produced water to the Districts are regulated by Waste Discharge Requirements (WDRs) which conditionally allow the water to be used for irrigation and require monitoring.

Recycling of water is encouraged by State policy as a means to supplement California's limited water supply, provided the water is suitable for the intended use. The *Water Quality Control Plan for the Tulare Lake Basin, Second Edition*, revised January 2004 (the "Basin Plan") provides that "blending of wastewater with surface or groundwater to promote beneficial reuse of wastewater in water short areas may be allowed where the Regional Water Board determines such reuse is consistent with other regulatory policies set forth or referenced herein." The Basin Plan designates beneficial uses, establishes water quality objectives, contains implementation plans and policies for protecting waters of the basin, and incorporates by reference plans and policies adopted by the State Water Board.

The Central Valley Water Board encourages the recycling of produced water for irrigation, if suitable for reuse, based on the history of the use and ongoing discussions with our sister State Agencies. Food safety is outside the expertise of the Central Valley Water Board staff and there is limited published information on this subject. However, the Central Valley Water Board is taking a proactive approach by reaching out

to experts in food safety in order to ascertain the possible risks associated with using produced water on crops.

Project Purpose

The objective of this project is to seek input from experts in the area of human health and safety of crops irrigated with oil field produced water. The panel's recommendations will be in the form of guidance and opinions provided in written documents that the Board will consider when developing and implementing their oil fields' regulatory program and orders that address the use and application of produced oil wastewater to irrigate crops for human consumption. The project will also identify data gaps so that future research can focus on achieving specific goals, and procuring practical outcomes.

Project Outcome

It is anticipated that Central Valley Water Board staff will produce a "White Paper" or series of "White Papers" that represent the written documents described under the Project Purpose. The document(s) will be subject to review and editing by the expert panel members and will be discussed during a public meeting where interested persons can present their concerns to the expert panel, Central Valley Water Board staff, and representatives of other State agencies. The public meeting will be noticed and may be attended by members of the Central Valley Water Board.