

## PRODUCED WATER FAQ



# INITIAL TESTING SHOWS... CAWELO'S PRODUCED WATER SAFE FOR AGRICULTURAL USE



### What is Cawelo Water District?

- ▶ Cawelo Water District (Cawelo) is a public water agency that has been serving the Kern County community for more than 50 years, providing irrigation water to approximately 34,000 acres of orchards, vineyards and other important California crops.

### Where does Cawelo get water?

- ▶ Since California's historic drought and environmental restrictions has limited water deliveries from the State Water Project, Cawelo relies on other sources of water, such as blended produced water from oil production, to augment limited surface and groundwater supplies, in order to continue providing local farmers with the water they need to continue operations.

### What is produced water?

- ▶ Kern County has a rich history in oil production, responsible for generating nearly three-quarters of California's oil reserves and supports tens of thousands of local jobs. Oil producers operate in our county under some of the nation's most stringent environmental standards.

Every barrel of oil extracted also naturally generates approximately 15 barrels of water, called produced water.

- ▶ Cawelo's produced water is filtered, treated and blended prior to being distributed for irrigation of crops and is subject to water quality standards and testing/monitoring protocols established by the Central Valley Regional Water Quality Control Board (Regional Board). The district obtains approximately 32,000 acre-feet of produced water per year from local oil producers.

### How is produced water different from water used from hydraulic fracturing?

- ▶ It's important to note and clarify, water generated during hydraulic fracturing (also known as "fracking") is not used for agricultural purposes – a point that has been incorrectly reported in certain publications and promoted by opponents of oil production. Cawelo does not accept, use, or deliver water generated from hydraulic fracturing.
- ▶ Steam injection wells are a more common method used to recover

oil across the state. Oil, water and natural gas are commingled naturally in underground rock foundations. Companies inject water or steam to aid in the recovery of oil from these formations and then separate the produced water from the oil and natural gas. A majority of this water is typically recycled back into oil operations, and a small portion known as "produced water" is treated and used for agricultural purposes. This water must meet specific water quality standards and permit requirements set by state and local regulators.

### Why use produced water for agriculture?

- ▶ California provides over a third of the nation's vegetables and two-thirds of the nation's fruits and nuts. Kern County is considered one of the leading agricultural regions in the state, ranking third for top agricultural production.
- ▶ Using produced water to irrigate crops is a growing practice amongst California farmers, as the state is looking to conserve every drop of water during California's unprecedented drought.

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For more information on produced water for agricultural use & Cawelo's commitment to quality, visit [www.cawelofd.org](http://www.cawelofd.org).

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The benefits of using produced water are twofold – recycled produced water is providing farmers a much-needed additional source of good quality irrigation water and helping protect already depleted groundwater basins. By extending limited water supplies for agricultural use through blended produced water, Cawelo is able to responsibly manage a precious natural resource.

## How is produced water regulated?

- ▶ In Kern County, the Regional board regulates the use of produced water for the irrigation of crops. Cawelo works diligently with the Regional Board to test all produced water for agricultural purposes.

## When and how does Cawelo test its water?

- ▶ Cawelo is relentless in its mission to provide clean, safe irrigation water to help California farmers grow healthy, world-class produce, and the district has been doing so for over 50 years. All produced water is tested by an independent, state-certified

laboratory on a monthly basis at two different locations, and the results are provided to the Regional Board for careful review and oversight. What's more, Cawelo has a long history of complying with water quality standards for produced water, and is subject to rigorous standards, testing, and monitoring protocols established by the Regional Board.

## Why did Cawelo conduct additional testing of its water supply?

- ▶ First and foremost, Cawelo is committed to working with the Regional Board to ensure produced water is governed within a strict regulatory framework and is a safe, reliable supply for California agricultural interests. As demand for produced water increases, the Regional Board established an expert food safety panel to evaluate the use of produced water. The Regional Board requested more

detailed water quality reporting from Cawelo – initially requiring testing for nearly 70 constituents

- ▶ In August 2016, Cawelo submitted expanded water quality data, as the Regional Board now requires the district to test for more than 160 constituents. Cawelo is systematically moving through the review process of the expanded testing data, but notes the vast majority of the 160 chemicals constituents have been non-detectable and below drinking water quality standards – an even higher standard than what is required of irrigation water.

## Who conducted the preliminary analysis for the water quality study?

- ▶ Cawelo proactively engaged a third-party environmental toxicologist to analyze the preliminary data submitted to the Regional Board – specifically studying levels of organic



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compounds in the irrigation water. Dr. Heriberto Robles, an environmental expert with more than 30 years of experience in environmental toxicology and human health and environmental risk assessment, analyzed the testing results and completed the water quality study.

## What were the findings of Cawelo's initial water quality study released in April 2016?

- ▶ The third-party environmental toxicologist found that detected organic compounds were within safe drinking water standards and made an initial determination that Cawelo's blended produced water supply is safe for agricultural use. Water quality laboratory analysis reported the levels of naturally occurring acetone in Cawelo's blended produced water were 280 times below the maximum concentration considered safe for drinking water; and the level of petroleum hydrocarbons in Cawelo's blended produced water were 750 times below the maximum concentration considered safe for drinking water.

## Were foods irrigated with produced water included in the April 2016 study?

- ▶ Yes, Cawelo also conducted preliminary crop testing comparing almonds, grapes, and pistachios, and the third-party environmental toxicologist found that crops irrigated with Cawelo's blended produced water had similar chemical composition levels as crops irrigated with other water supplies.

## What citrus crops were tested in the October 2016 study?

- ▶ In October 2016, Cawelo released testing results of mandarins, oranges and lemons, in which the toxicologist initially concluded that citrus crops irrigated with Cawelo's blended produced water supply are safe for consumption. Specifically, the citrus study looked for the key organic compounds that were identified in the initial water quality study. After careful analysis, the toxicologist concluded that key organic compounds in Cawelo's blended produced water supply are not being absorbed in edible fruit, yet recommended ongoing testing to verify results.

## The citrus testing showed that two samples tested positive for phenanthrene, what does that mean?

- ▶ As noted in the report, two of the nine test sample crops irrigated with produced water showed extremely low concentrations of phenanthrene. Additional samples were collected from the same locations for follow-up testing and did not show the presence of phenanthrene, leading the toxicologist to speculate that the first two samples were likely false positives as a result of external contamination (most likely airborne).
- ▶ Phenanthrene is a common, everyday air contaminant that's known to be easily absorbed by plants and fruits, making it difficult at this time to determine the exact source of this constituent. The majority of the original samples did not show the presence of phenanthrene, nor did the follow-up samples. However, out of an abundance of caution, the toxicologist suggested ongoing testing to verify the false positive result.



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