

Ripple Effect Consulting

<u>Team Member Name</u>	<u>Year</u>	<u>Major</u>
Lily Fairbank-Bermejo	2027	Accounting
Jay Stone	2027	Finance
Elissa Delgado	2027	Marketing
Cooper Zee	2027	Hospitality Management
Lucy Ploof	2027	International Business

Advisor(s): Dr. Susan Stryker

Topic Title: To the Roots: Bringing AI Irrigation to San Joaquin Agriculture

Audience: California Farmland Trust Board of Trustees

Sustainable Development Goals

SDG #6: Ensure availability and sustainable management of water and sanitation for all

SDG #12 Ensure sustainable consumption and production patterns

Executive Summary

The San Joaquin Valley is responsible for more than half of California’s agricultural output. However, while crops flourish in the fields, a threat lurks belowground. The reserves of groundwater that are essential for irrigation are being overdrafted and are on the verge of going dry. If water continues to be extracted at the current rate, 40% of the valley’s public supply wells will go dry—or partially dry—by 2040, and 900,000 acres of farmland could be fallowed. The situation is clear. San Joaquin Valley farmers must enact more sustainable irrigation practices.

To combat this economic and humanitarian threat, we propose that the California Farmland Trust implement new smart irrigation systems on their farms, combining drip irrigation with AI monitoring and scheduling. Drip irrigation involves running thin tubing across an agricultural area, delivering water directly to the roots of the crops. Drip irrigation has been shown to use 20-50% less water than conventional sprinkler systems, as the water does not have the chance to evaporate before it reaches the soil. By combining this with smart irrigation technology—using AI to monitor soil saturation, water flow, and weather patterns, and adjusting irrigation accordingly— we can even further reduce the amount of water farms in the San Joaquin Valley use. In some cases, smart irrigation has reduced water usage by 44%, compared to a drip irrigation system without the technology. By implementing AI monitored drip irrigation, the farms of the California Farmland Trust can mitigate the groundwater crisis, doing what is best for their land, their communities, and their bottom line.