

Water Management in California



**Presented to the California Drought Forum
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May 15, 2014

Chevron's Environmental Framework



The Chevron Way Value

Protecting People and the Environment

Operational Excellence Vision

Be recognized and admired by industry and the communities in which we operate as world-class in environment

OE Objectives

- Achieve an incident- and injury-free workplace
- Promote a healthy workforce and mitigate significant workplace health risks
- Identify and mitigate environmental and process safety risks
- Operate with industry-leading asset integrity and reliability
- Use natural resources and assets efficiently

Environmental Principles

- Include the environment in decision making
- Reduce our environmental footprint
- Operate responsibly
- Steward our sites

Element 7: Environmental Stewardship

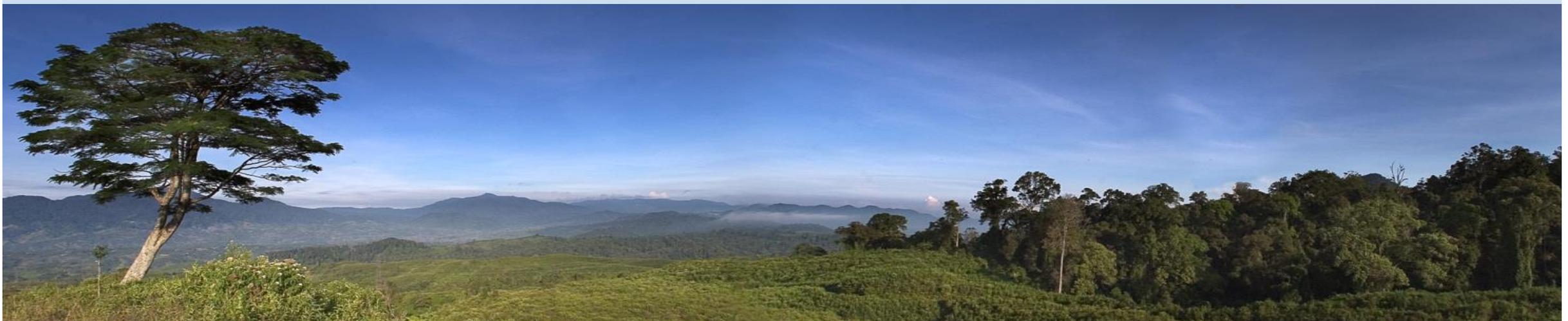
Strive to continually improve environmental performance and reduce impacts from our operations

Chevron and Fresh Water Management

Freshwater Position Statement

With respect to fresh water, Chevron strives to:

- Continually improve environmental performance and reduce impacts from our operations.
- Integrate fresh water conservation and efficiency drivers into our business decision-making processes and operational management.
- Conserve our use of fresh water in fresh water-constrained areas by reusing, reducing, and/or recycling water.
- Account for the use of fresh water in our operations with appropriate metrics.
- Engage with governments, partners, local communities and other stakeholders on significant fresh water resource issues in areas where we operate.
- Build partnerships and participate in industry initiatives to share and promote best practices, assist with the development of industry standards, and shape and influence relevant fresh water resource policy.



Richmond Refinery – Richmond Advanced Recycled Expansion Water Project (RARE)



Background

- Refining typically uses one gallon of water for every gallon of production, a significant amount of which is used to produce steam
- As water demands increased, refinery needed to identify additional water resources

Actions Taken

- Partnered with East Bay Municipal Utility District
 - Diverted water from local treatment facility for use at Chevron's refinery
 - Chevron built treatment facility on-site to produce 3.5 million gallons/day of high-quality recycled water



Results and Business Impact

- Chevron's Richmond Refinery is now the largest user of recycled water in the Bay area
- 75% of water used in refinery is recycled water
- High quality recycled water improved the efficiency and the reliability of the refinery
- 3.5 Million gallons of freshwater now available for public use

San Ardo Field Unit - Beneficial Reuse of Produced Water for Irrigation



Background

- Production from San Ardo Field began in 1947
- San Ardo uses enhanced oil recovery via steam flood to free the heavy oil from the formation; produces brackish water
- Historically, produced water has been re-injected; however, space within the formation was becoming limited and alternatives for disposal were needed

Actions Taken

- A team of experts evaluated several disposal and treatment options
- In close consultation with state regulators, county officials, and local landowner the team selected aquifer recharge and water reuse for steam

Results and Business Impact

- First Chevron treatment system to employ the combination of RO and treatment wetlands
- The treatment system provides water for steam flood operations, which increases domestic oil production
- 50,000 barrels of brackish produced water converted to fresh water that beneficially recharges a shallow irrigation water aquifer and irrigates ~ 800 acres

