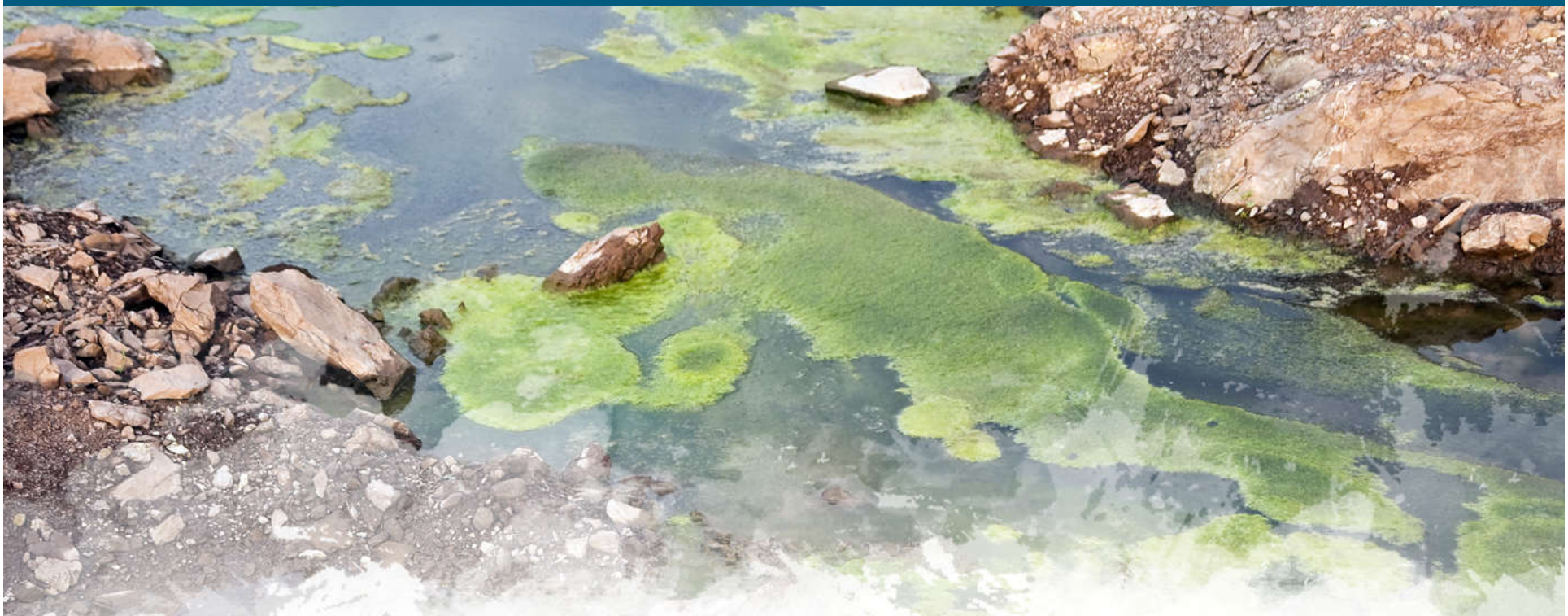
BACWA Discussion 6/19/20
Nutrient Trading in the SF Bay



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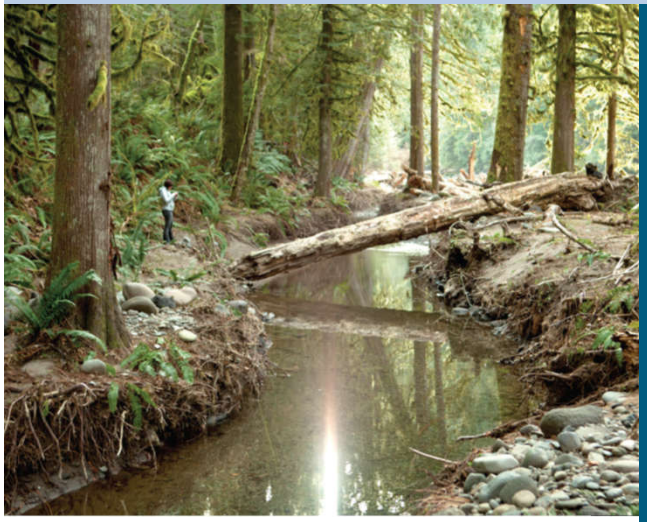
The Freshwater Trust® www.thefreshwatertrust.org

Brief Agenda

- Intro to The Freshwater Trust
- Recap of TFT's 2016 SF Bay Work
- Point to Point trading – basics & thoughts
- Aligned work in Central Valley
- Open discussion

The Freshwater Trust

A 501(c)(3) non-profit organization with a 37-year history of actively working to preserve and restore freshwater ecosystems.



Habitat Restoration

Actively restoring stream, off-channel and riparian habitat to improve functional conditions for fish.

Flow Restoration

Keeping water in streams to support water quality and habitat while supporting working lands.

Water Quality Trading

Applying compliance-driven funding to prioritized restoration/ conservation actions to increase overall watershed health.

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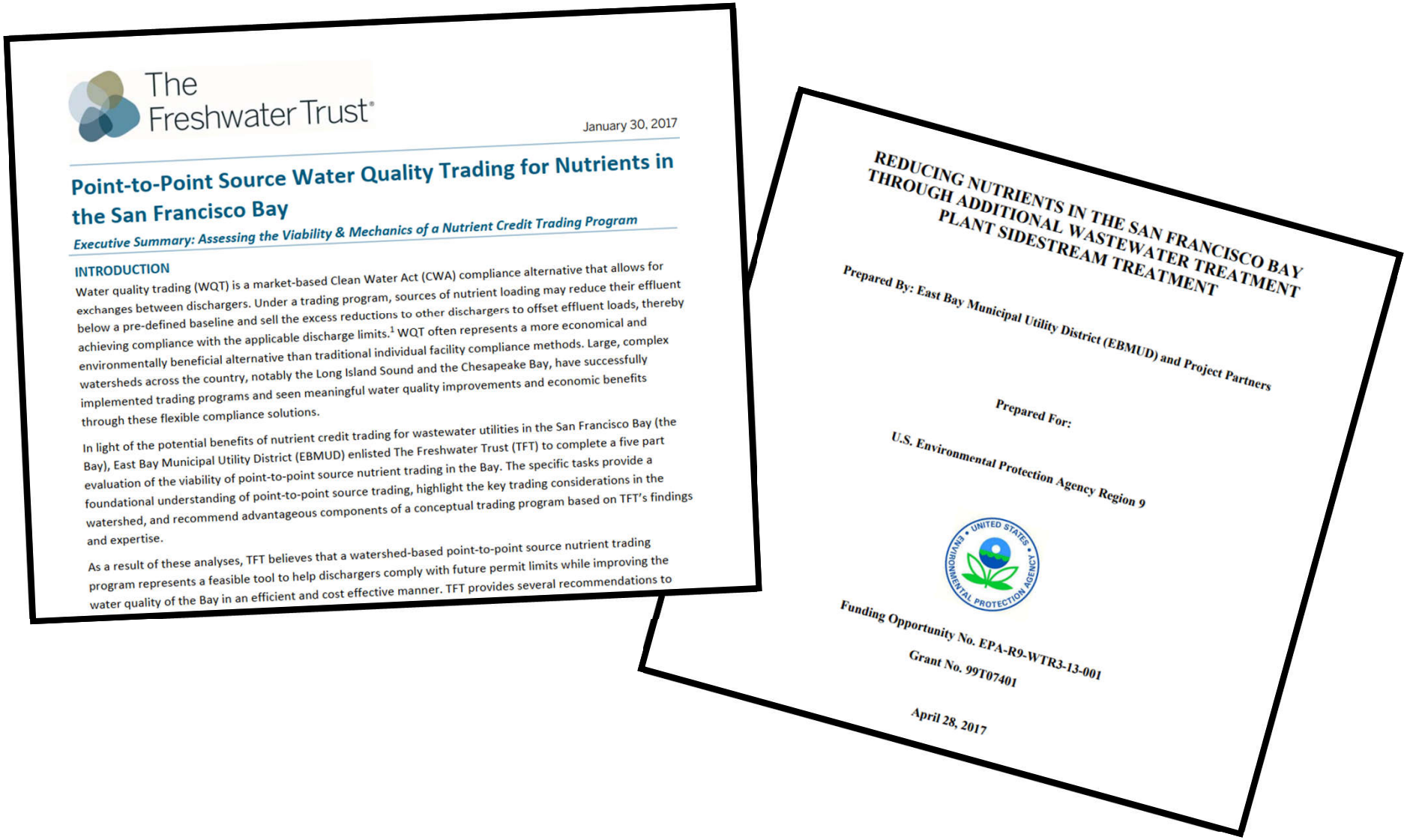
TFT's Past Work in SF Bay



The Freshwater Trust

January 30, 2017

Point-to-Point Source Water Quality Trading for Nutrients in the San Francisco Bay

Executive Summary: Assessing the Viability & Mechanics of a Nutrient Credit Trading Program

INTRODUCTION

Water quality trading (WQT) is a market-based Clean Water Act (CWA) compliance alternative that allows for exchanges between dischargers. Under a trading program, sources of nutrient loading may reduce their effluent below a pre-defined baseline and sell the excess reductions to other dischargers to offset effluent loads, thereby achieving compliance with the applicable discharge limits.[1] WQT often represents a more economical and environmentally beneficial alternative than traditional individual facility compliance methods. Large, complex watersheds across the country, notably the Long Island Sound and the Chesapeake Bay, have successfully implemented trading programs and seen meaningful water quality improvements and economic benefits through these flexible compliance solutions.

In light of the potential benefits of nutrient credit trading for wastewater utilities in the San Francisco Bay (the Bay), East Bay Municipal Utility District (EBMUD) enlisted The Freshwater Trust (TFT) to complete a five part evaluation of the viability of point-to-point source nutrient trading in the Bay. The specific tasks provide a foundational understanding of point-to-point source trading, highlight the key trading considerations in the watershed, and recommend advantageous components of a conceptual trading program based on TFT's findings and expertise.

As a result of these analyses, TFT believes that a watershed-based point-to-point source nutrient trading program represents a feasible tool to help dischargers comply with future permit limits while improving the water quality of the Bay in an efficient and cost effective manner. TFT provides several recommendations to

REDUCING NUTRIENTS IN THE SAN FRANCISCO BAY THROUGH ADDITIONAL WASTEWATER TREATMENT PLANT SIDESTREAM TREATMENT

Prepared By: East Bay Municipal Utility District (EBMUD) and Project Partners

Prepared For:

U.S. Environmental Protection Agency Region 9

Funding Opportunity No. EPA-R9-WTR3-13-001

Grant No. 99T07401

April 28, 2017

Water Quality Trading 101

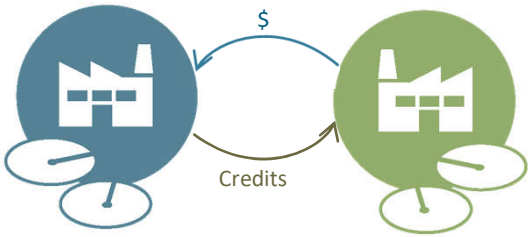
- Point Source to Point Source water quality trading = regulated point sources reduce pollution below permit requirements and sell excess reductions to other regulated point sources
- Trading programs often make more **economical** sense than stand-alone end-of-pipe technology controls and generate more **ecological** benefits
- To be successful, WQT programs must have:
  - → **Standards** for eligibility
  - → Clear **permit terms** that define tradable discharges
  - → **Transparent systems** for reporting and tracking performance and custody of credits

Policy Foundation - Examples

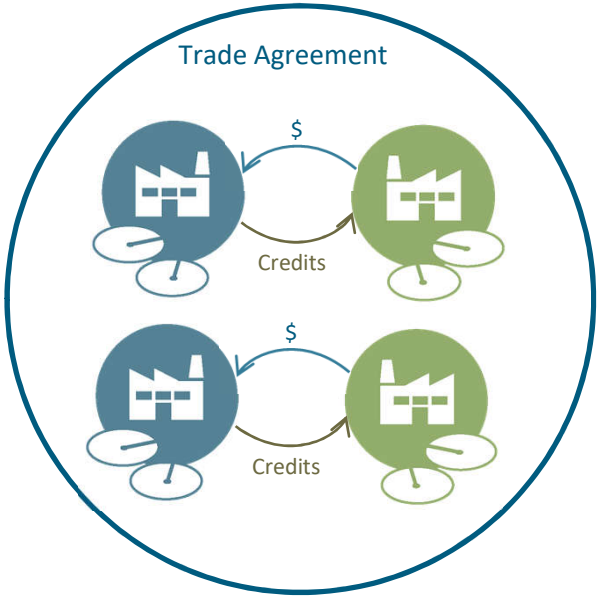
- Regional Recommendations for the Pacific Northwest on Water Quality Trading
- Oregon Water Quality Trading Rules & IMD
- National Network on Water Quality Trading Guidance Documents
- Water Quality Trading Framework for the Laguna de Santa Rosa Watershed

Trading Scenarios

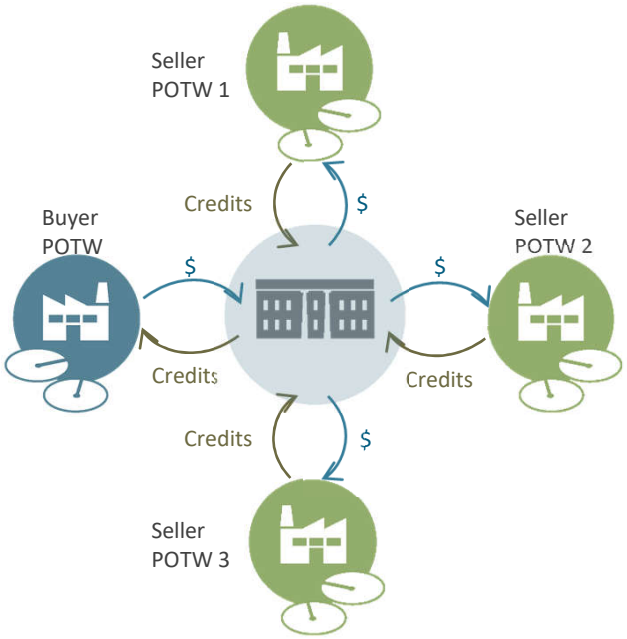
Option 1: Trading between Two Point Sources



Option 2: Multiple Facility Trading without an Exchange



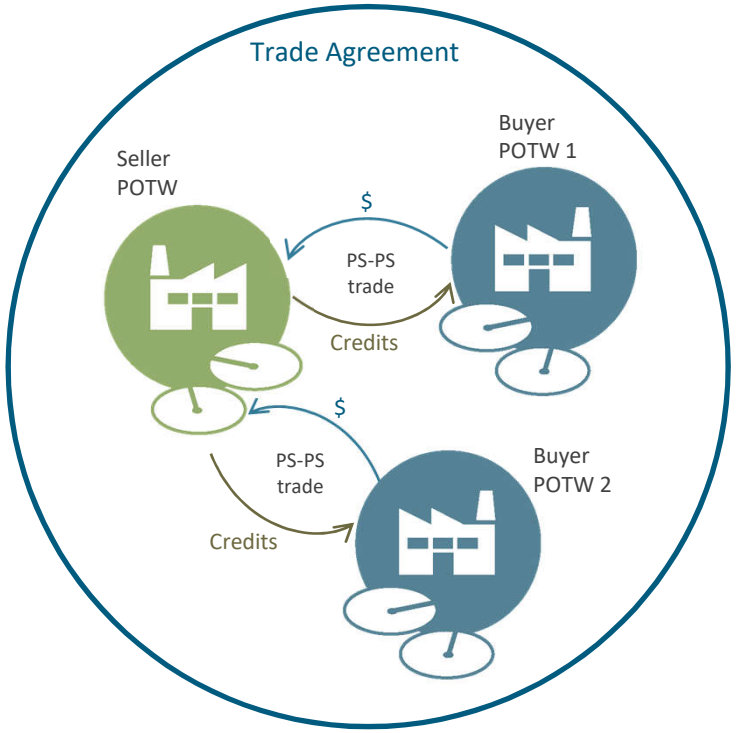
Option 3: Point Source Credit Exchange



Adapted from US EPA

Trading Scenarios

Multiple Point Source Trading



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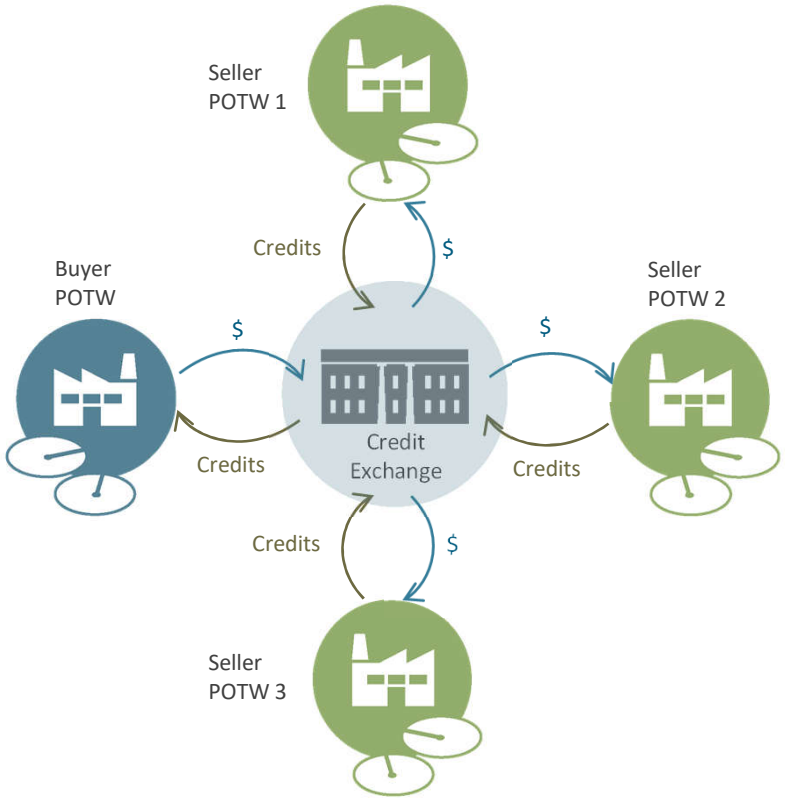
Point Source Credit Exchange



Subembayments

Background Map: NASA Landsat

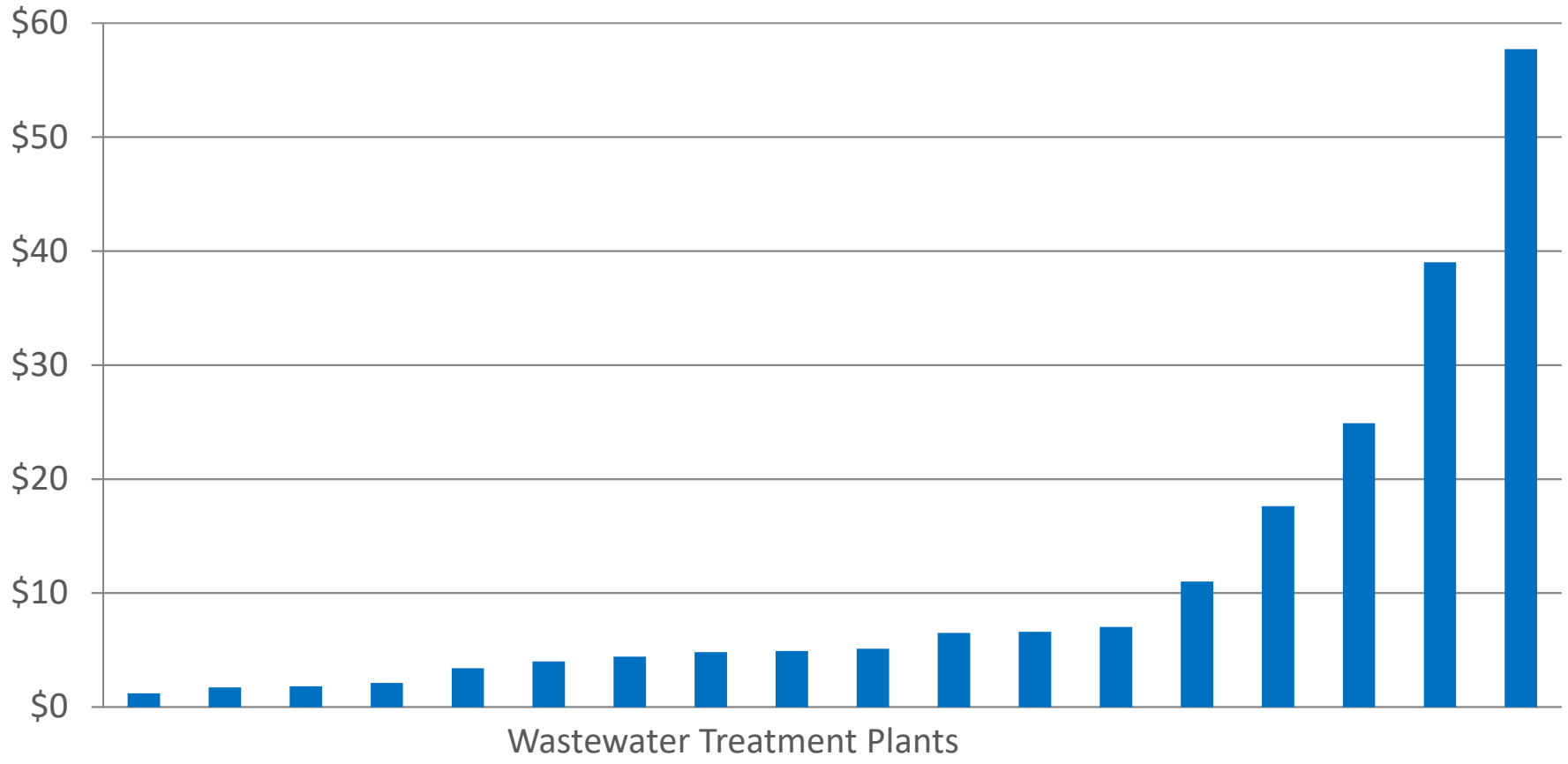
Potential Outcomes in San Francisco Bay

16 Plants Total	Optimization		Level 2		Level 3	
	TN Cost $/gpd	TN Cost $/lb N	TN Cost $/gpd	TN Cost $/lb N	TN Cost $/gpd	TN Cost $/lb N
Maximum	$3.30	$6.60	$26.10	$63.30	$27.60	$57.70
Minimum	$0.06	$0.44	$0.20	$1.30	$1.30	$1.70
Average	$0.60	$1.99	$6.49	$14.25	$7.48	$11.91

- 16 facilities in the San Francisco Bay surveyed
- Anticipated cost per pound of nitrogen removed varies widely
- Often more economically feasible to take advantage of another facility's lower cost upgrades through trading

Potential Outcomes in San Francisco Bay

Cost per Pound of TN Removal for Different POTWs in the Bay



Recommendations

Major Programmatic Recommendations:

- Utilize a watershed overlay permit
- Develop a trade agreement to frame a “Multiple Facility Trading Program”
- Engage a third party to assist with credit forecasting, transaction documentation, reporting, and credit accounting

Recommendations Cont'd

Recommended Program Components:

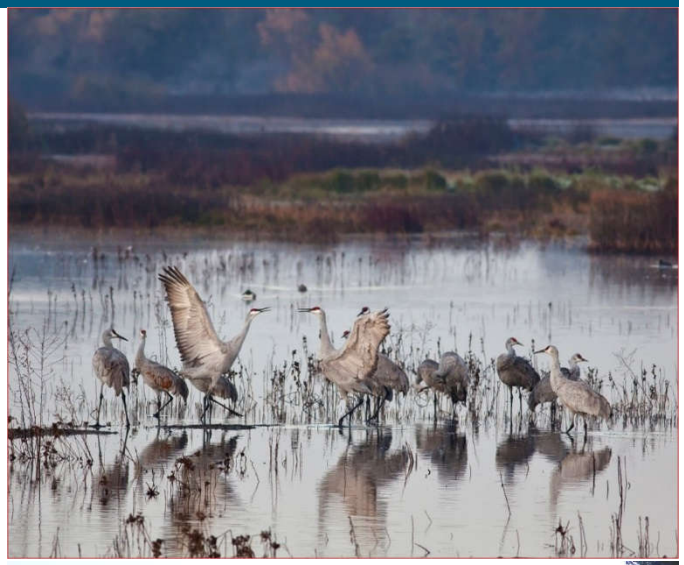
- The Trading Area encompass the entire San Francisco Bay
- Develop Trading Ratios to account for the attenuation of benefits between subembayments
- Use an annual compliance period with a reconciliation period for permit compliance
- Form a Restoration Fund to minimize risk of credit shortages

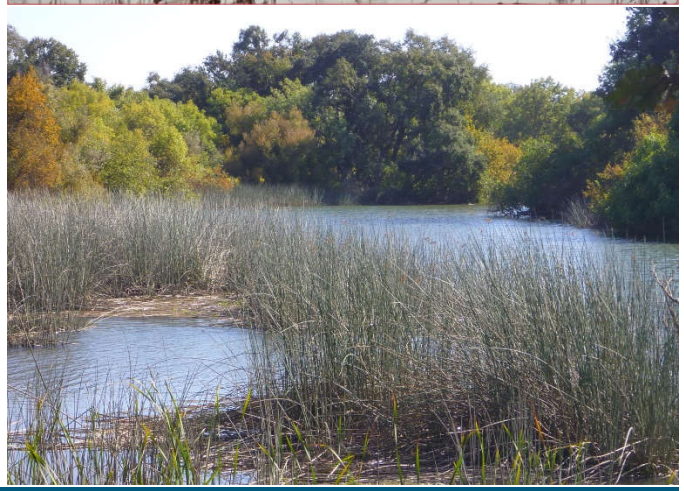
Case Study: Cosumnes River, CA

Project: South County Ag Program
Utility: Sacramento Regional County Sanitation District
Partners: Private irrigators, NGOs
Drivers: California state funding for augmenting water supplies in region, depleted local aquifers and groundwater dependent ecosystems

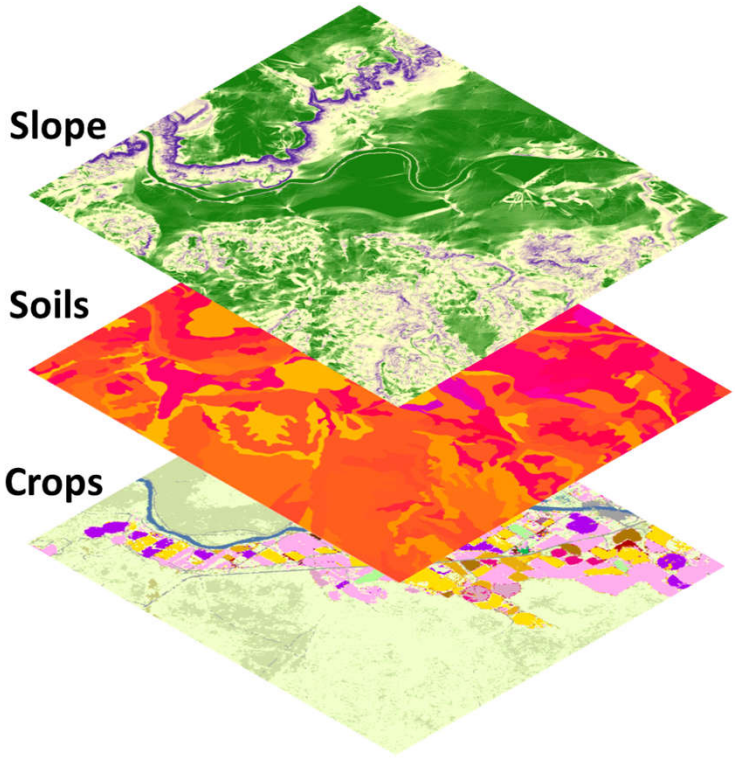
Goals of Project:

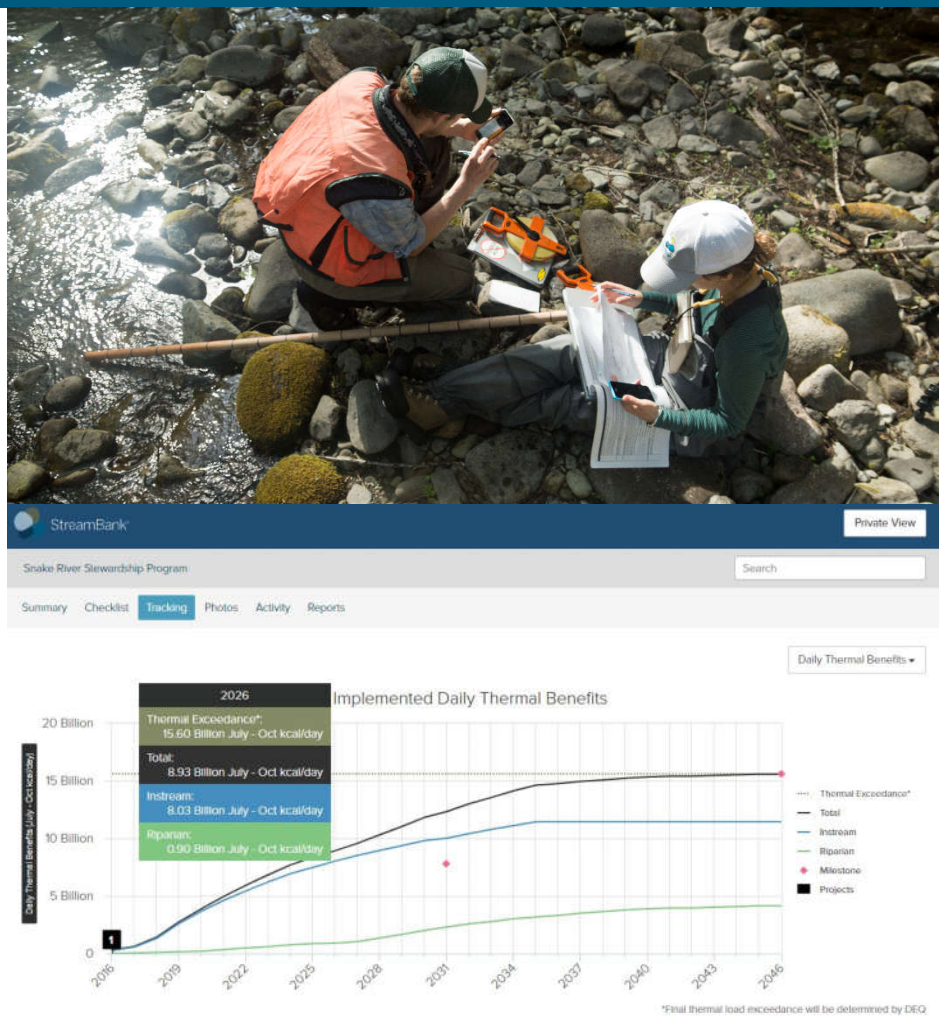
- Piping infrastructure to deliver 50,000 AFY of recycled water 12 miles south of facility
- Irrigation of ~16,000 acres of agricultural and habitat conservation lands that are currently using groundwater
- Recharges depleted groundwater basin
- Quantified ecosystem improvements for sandhill crane habitat, vernal pools, Chinook salmon, wetlands and riparian forests at the confluence of the Cosumnes River and the Sacramento River





New Tools for Watershed Management

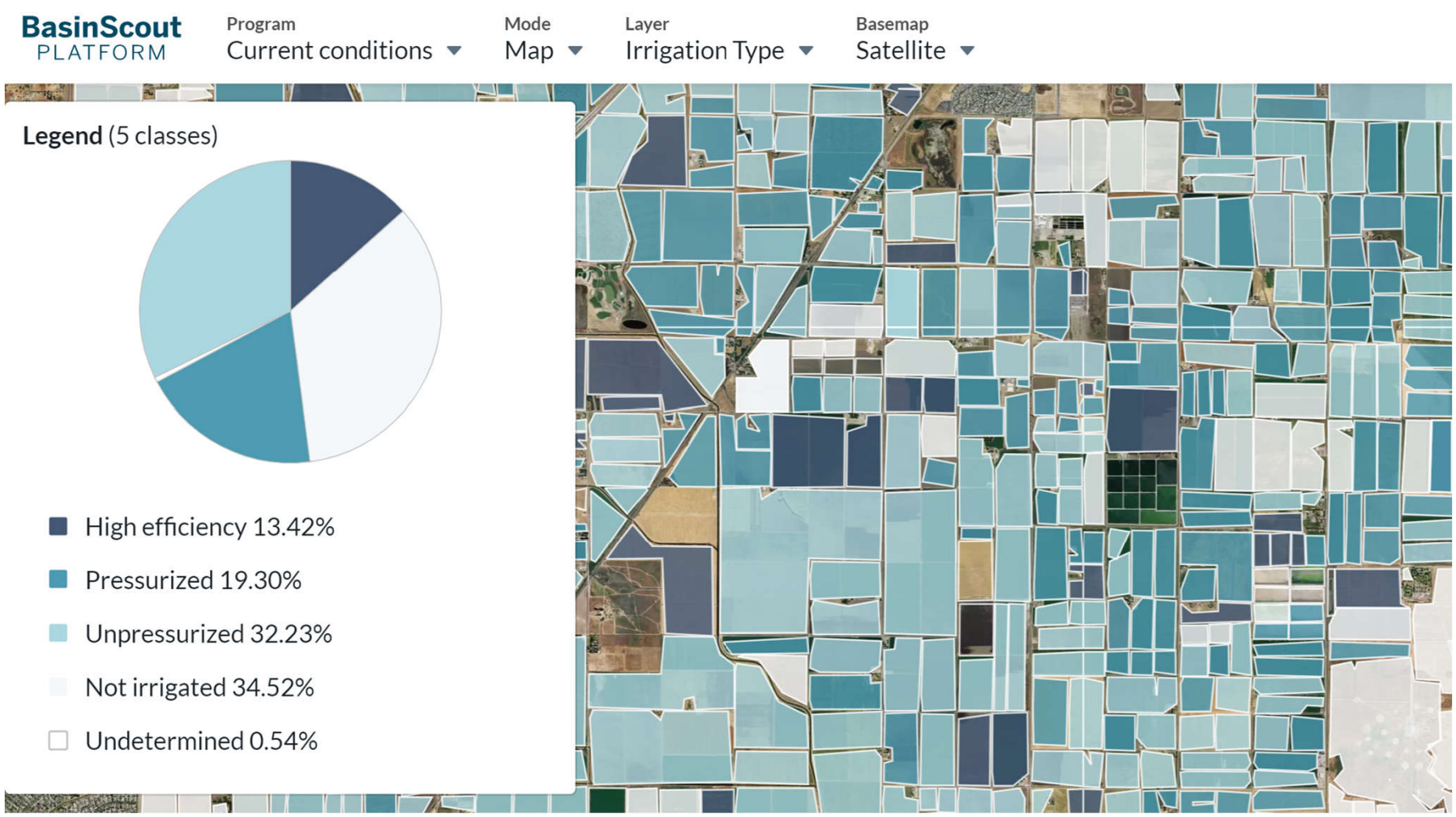




New capabilities + New insight

= New opportunities

Example: BasinScout Platform - Solano Co



Discussion

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