

# RESOURCE CONSERVATION DISTRICT VENTURA COUNTY



## 2013 – 2014 ANNUAL REPORT



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The following information is deemed truthful and accurate to the best of our knowledge. This document is not to be used during an audit. For audit records please contact the District.



## INTRODUCTION

The Ventura County Resource Conservation District (RCD) serves as liaison for natural resource conservation between local landowners, regulatory agencies, and municipalities.

We have the authority to carry out our goals and objectives as a Special District organized under the California Public Resources Code Division 9.

Priority issues include preservation of Agriculture, open space advocacy, outreach and education on water resources, watershed protection, watershed restoration, control and/or eradication of invasive species, evaluating the potential impacts of loss of wildlife habitat, and maintaining air quality.

The Mission of the RCD is to collaborate with landowners, government agencies, and other willing partners to facilitate the conservation, sustainability and restoration of Ventura County's natural resources.

Our function is:

To make available technical, financial, and educational resources, whatever their source, and focus or coordinate them so that they meet the needs of the local land managers for the conservation of soil, water and related natural resources.

The District Board, comprised of local landowner volunteers, dedicates their personal time to represent the community on natural resource concerns.

The District is funded by grants, fee for service programs, and contributions.

## **STRATEGIC PROGRAM PREFERENCES**

Agriculture preservation and conservation  
Water quality and efficiency  
Watershed Planning and Management  
Monitoring and evaluation of conservation projects  
Conservation planning  
Programmatic permit coordination and development  
Coordination of urban/rural interface  
Education and Outreach

## **PRIORITY AREAS**

Ventura County Agricultural Land  
Ventura River Watershed  
Santa Clara River Watershed  
Calleguas Creek Watershed  
Coastal Watersheds  
Malibu Creek

## **PRIORITY CONSERVATION CONCERNS**

Agricultural resources  
Grazing resources  
Livestock Management  
Water Resources: conservation and quality  
Soil Resources: conservation and erosion control  
Habitat Resources: conservation and restoration  
Flooding Hazards: stream bank conservation and invasive plant removal  
Wildfire Hazards: fuel loading  
Urban and Rural interface

## **BOARD OF DIRECTORS**

Mike Mobley, President  
Doug Nelson, Vice President  
Kevin Cannon, Treasurer  
Bud Sloan  
Chris DeVan  
Mike Richardson  
Steve Murata  
Mark Mooring

## **RCD STAFF**

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Doug Nelson, Vice President  
Kevin Cannon, Secretary-Treasurer  
Bud Sloan, Director  
Chris DeVan, Director  
Mike Richardson, Director  
Mark Mooring, Director  
Steve Murata, Director  
Marty Melvin, Executive Officer

## **RCD PROGRAMS AND OUTCOMES**

Mobile Irrigation Laboratory for AG Irrigation efficiency

Storm Water Quality Program

AG Education

Programmatic Permit Program for Regulatory application streamlining

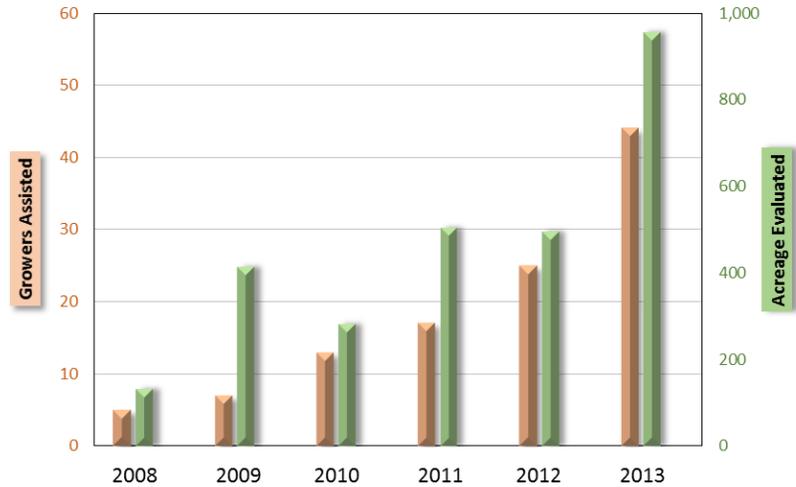
Hillside Erosion Control Program

## Overview

The purpose of the Mobile Irrigation Lab (MIL) is to evaluate the irrigation efficiency of agricultural operations and recommend improvements that will correct inefficiencies. The goal of the MIL program is to protect environmental quality by offering growers practical water management options. To accomplish this, MIL staff tailor comprehensive irrigation reports for growers incorporating both irrigation system measurements and field observations. Since the first evaluation in 2008, MIL staff have performed approximately 200 irrigation evaluations covering nearly 3,000 acres in Ventura County (Figure 1).

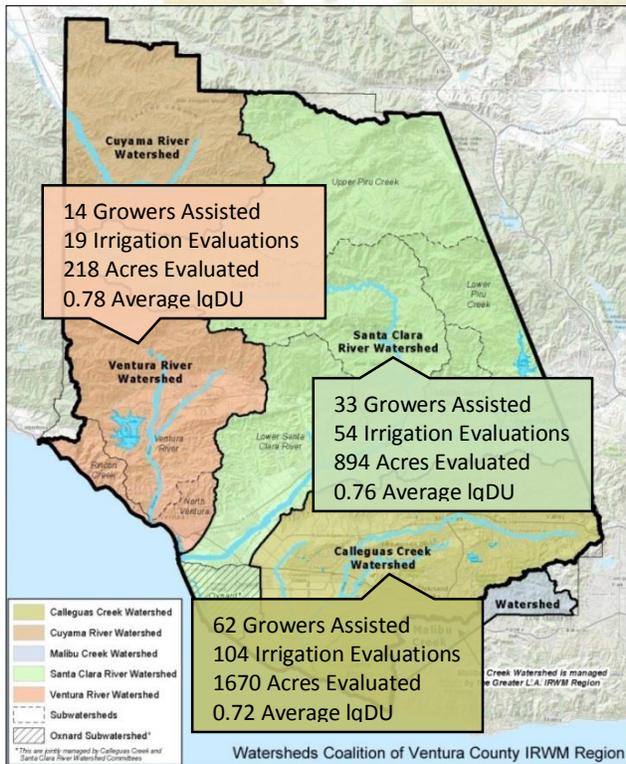
## Mobile Irrigation Lab

Growers Assisted and Acreage Evaluated from 2008 - 2013



**Figure 1:** Graph illustrating the steady growth of the MIL program as measured by growers assisted and acreage evaluated.

**Figure 2:** Ventura County watershed map illustrating the distribution of MIL evaluations and system analysis data.



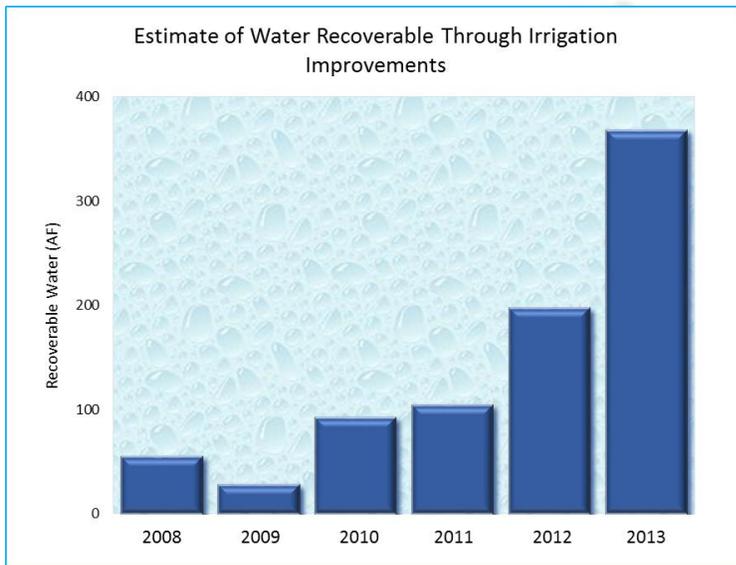
## Results

The MIL program has grown steadily since its start in 2008, both in terms of growers assisted, numbers of irrigation evaluations, and acreage evaluated. As of 2013, the majority of analyzes have occurred within the Calleguas Creek Watershed, reflecting the large degree of environmental impacts within this area (Figure 2).

Using the Low-Quarter Distribution Uniformity (IqDU) protocol developed by Irrigation Training and Research Center (ITRC) faculty at Cal Poly SLO, MIL staff have determined that the average IqDU of irrigation systems within Ventura County watersheds range from 0.72 - 0.76, reflecting inefficiencies of 28% - 24%.

A comparison of the average Ventura County watershed IqDU value (0.76) to the industry standard (0.85) indicates that if growers were to follow MIL staff recommendations, they could reduce their water consumption by 4 inches per acre, or a cumulative sum of about 800 acre-feet (AF) (Figure 3). Extrapolating this value throughout the county indicates that over 26,000 AF of irrigation water is recoverable.





**Figure 3:** An estimate of the amount of water that could have been recovered each year had irrigation system improvements been implemented by irrigators.

A review of projects where MIL recommendations were implemented indicate this estimate of recoverable water is conservative. Following improvements, the average IqDU for these systems exceeded industry standards (0.90 versus 0.85), reducing water consumption an average of 6 inches per acre (versus 4 inches per acre).

**Discussion**

Inefficient irrigation practices have numerous environmental impacts (Table 1). Because of this, irrigation evaluations are often required by local, regional, and state-wide environmental agencies. These numerous impacts imply that quantifying the benefits of the MIL program by water savings alone underestimates the program’s value.

To address these larger impacts, MIL staff also survey and review crop, soil, nutrient, and pesticide Best Management Practices (BMP’s) with growers. A partial list of BMPs recommended for water conservation and nutrient management is provided in Table 2.

Interestingly, the average IqDU values of evaluated irrigation systems has fallen in the later two years of the program implying that growers with deficiency’s are actively seeking help through the MIL program. It is very likely this is due to the development of a MIL cost-share component which provides financial assistance to growers who implement improvements.

Inefficient irrigation practices and overwatering ...
... leach nutrients and degrade water quality.
... increase fossil fuel use and greenhouse gas emissions.
... degrade soil quality and enhance soil erosion.
... degrade aquatic habitat and reduce water reserves.

**Table 1:** A short list of the environmental impacts associated with inefficient water-use practices and overwatering.

**Conclusion**

The MIL program has achieved success because of the relationship the Resource Conservation District (RCD) has cultivated with both growers and regulators.

For Ventura County to remedy its recurring water issues, continued support of the MIL program and further investments in irrigation efficiencies through grower incentives should be a component of any broader water management plan.

NRCS Code	Best Management Practice
311	Alley Cropping
340	Cover crop
441	Irrigation system, micro irrigation
442	Sprinkler system
443	Irrigation System, Surface and subsurface
449	Irrigation water management
590	Nutrient Management

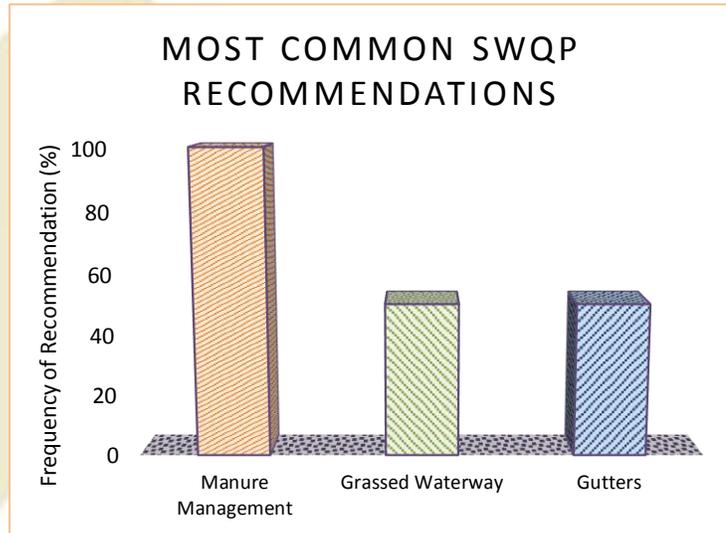
**Table 2:** A compilation of relevant BMP’s reviewed and discussed with growers as part of the MIL program irrigation analysis procedure.



## Overview

The Storm Water Quality Program (SWQP) was created in 2012 to assist land and livestock owners with improving the environmental quality of storm-generated runoff emanating from their property.

Assistance begins with a property visit to evaluate site-specific parameters including: soil type and health, topography and relief, facilities and design, and land and livestock management practices. This assessment yields an assortment of biological, structural, and managerial recommendations (Table 1) which are then reported to the owner.



**Figure 1:** The three most common recommendations made to landowners are shown above. All sites surveyed lacked measures to adequately address manure runoff during storm events.

## Results

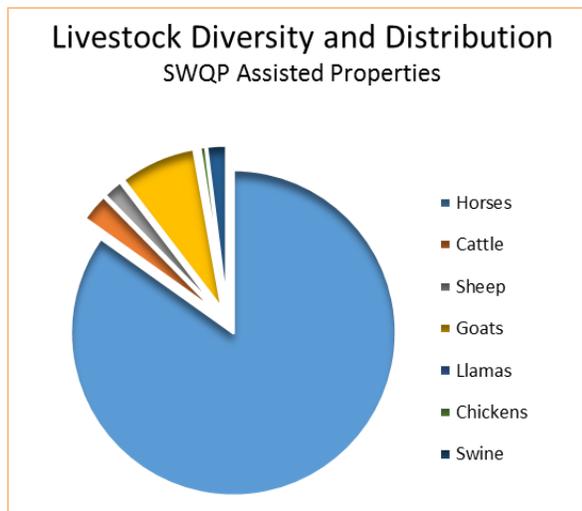
Over the past two years, the Storm Water Quality Program has assisted about a dozen landowners and/or facility managers representing over 700 acres of property and more than 300 livestock animals. A general lack of manure management practices was common among all sites, resulting in a disproportionately high number of recommendations designed to address manure-related impacts to storm water quality (Figure 1).

In addition to these specific landowners, the SWQP has worked with the larger community to help create the Horse & Livestock Watershed Alliance. This community-led organization was instrumental in working with the Water Board to develop a practical implementation plan to meet the Ventura River Watershed’s Algae Total Maximum Daily Load (TMDL) Goal for Horses and Livestock.

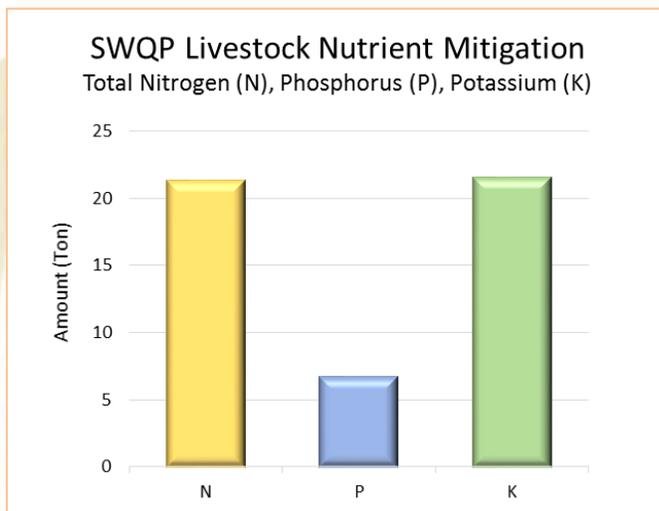
**Table 1:** Examples of Best Management Practices (BMPs) and/or Livestock & Land Practices offered as recommendations following SWQP site visits. BMP’s are from either the Natural Resources Conservation Service (NRCS) or Northern California’s Livestock and Land Program.

<b>BMP</b>	<b>NRCS Practice</b>	<b>Livestock &amp; Land Practice</b>
194	Vegetative Buffer Strip	Manure Management
327	Conservation Cover	Manure Bunker
342	Critical Area Planting	Impermeable surface below
362	Diversion	Cover Manure prior to rain events
382	Fence	Compost
393	Filter Strip	Divert water from manure
412	Grassed Waterway	Fence off waterways
484	Straw Mulch	Gutters & downspouts
528	Proper Grazing Use	Rotational Grazing
558	Runoff Roof Structure	Dryland Pasture
570	Storm Water Runoff Control	Pasture Management
Drawing	Waterbar	Nitrate Test Strips to check runoff





**Chart 1:** Graphic demonstrating the diversity of livestock observed on properties seeking guidance concerning storm water runoff mitigation through the SWQP.



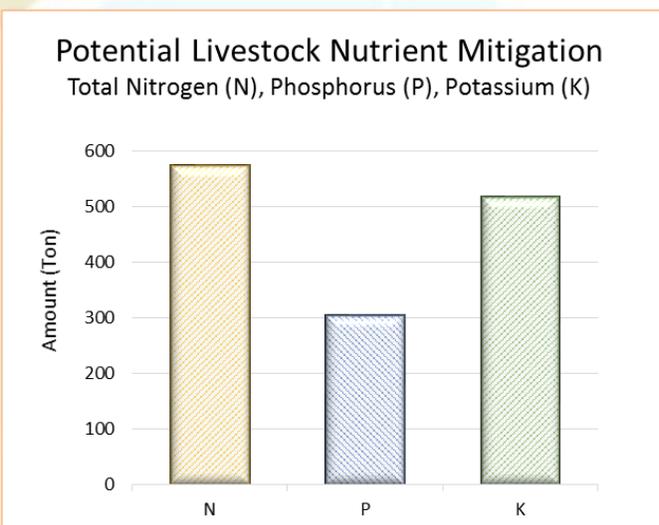
**Graph 1:** Projected annual reductions in total nitrogen, phosphorus (as P<sub>2</sub>O<sub>5</sub>), and potassium (as K<sub>2</sub>O) in storm water if SWQP recommendations to control the runoff of manure during storm events were implemented.

Ventura County has close to 200,000 acres of grazing land and over 2,400 farms, many of which house a variety of livestock (Chart 1). To date, SWQP site visits have resulted in the potential mitigation of nearly 3,000 tons of manure from the Ventura River. This is equivalent to almost 230 tons of respirable carbon and 50 tons of macronutrient pollutants (Graph 1).

## Discussion

While the SWQP has provided guidelines to help mitigate many properties in Ventura County, a comparison of current load mitigations achieved by the SWQP to the potential load reductions county wide (Graph 2) indicate significant reductions remain.

It is noteworthy that agriculturally related practices such as grassed waterways were absent on many properties. This indicates that quantifying nutrient reductions alone underestimates the environmental benefits of the SWQP as it does not capture loadings of soil borne agrochemical pollutants.



**Graph 2:** Projected annual reductions in total nitrogen, phosphorus (as P<sub>2</sub>O<sub>5</sub>), and potassium (as K<sub>2</sub>O) in storm water if manure management practices were implemented county wide.

## Conclusions

The SWQP has raised awareness concerning manure management throughout Ventura County and helped landowners implement best management practices to improve the quality of runoff generated on their property.

Projections indicate that the SWQP could provide substantial additional water quality benefits. It is likely that expanding this program to include incentives would expedite adoption of SWQP recommended best management practices and hasten the attainment of water quality objectives throughout the county.



## Overview

The goal of the Resource Conservation District's (RCD) outreach and education program is to provide guidance to the agricultural community concerning resource concerns and to communicate the benefits of a healthy agricultural sector to the larger community.

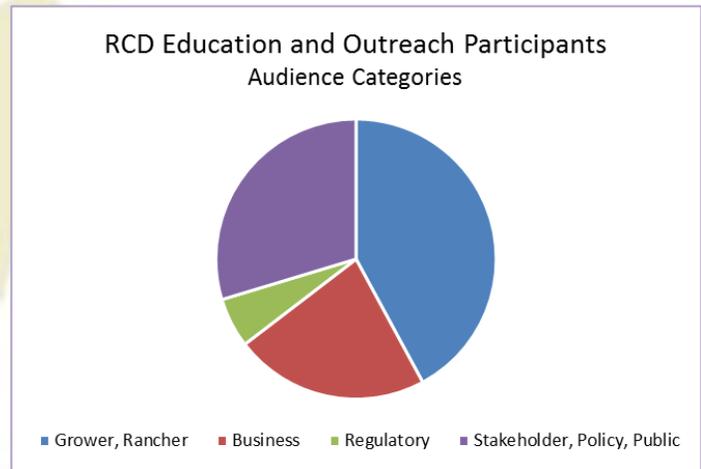
To achieve this, RCD staff participate in and/or host multiple outreach and education events annually. These events allow the RCD to reach thousands of people representing a diverse spectrum of agriculturally related interests (Graph 1).

## Results

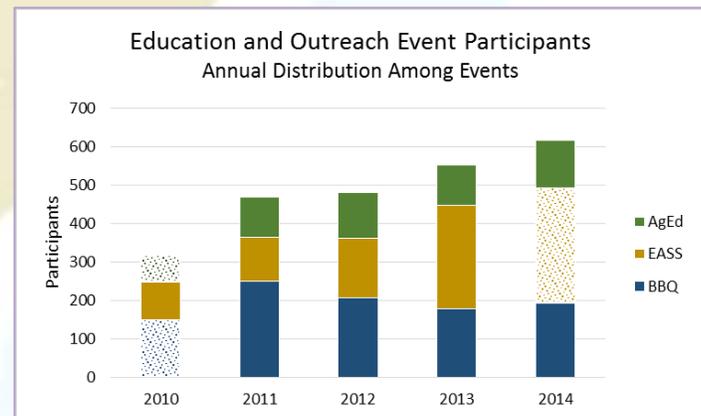
In 2013, RCD staff reached over 3400 individuals through outreach and education events. This number is projected to increase substantially in 2014 since first quarter comparisons show a 140% increase over the number of people reached in the first quarter of 2013.

RCD hosted events such as the Agricultural Education seminar (Ag Ed), the Excellence in Agricultural Stewardship and Sustainability awards banquet (EASS), and the Agricultural Appreciation Barbeque (BBQ), reached over 550 people. Projections indicate the numbers reached will continue to rise for 2014 and beyond (Graph 2).

The RCD routinely participates with partners during outreach and education events, increasing both the efficacy of resources utilized and the diversity of the audience reached. The RCD has successfully partnered with multiple agencies to address a wide assortment of topics (Tables 1 & 2).



**Graph 1:** Chart illustrating the diversity of the RCD audience and the relative proportion of individuals within each audience category.



**Graph 2:** Numbers of participants in each of the RCD's three highest profile education and outreach events from 2010 to 2014. Stippled regions have been added for visual continuity to indicate projections based on attendance trends.

Outreach and Education Partners
University of California Cooperative Extension
Santa Paula Rotary Club
Farm Bureau of Ventura County
Natural Resources Conservation Service
Metropolitan Water District

**Table 1:** Brief list of the organizations with whom the RCD has partnered with to conduct education and outreach events.

Outreach and Education Topics
Irrigation Management and Water Use Efficiency
Nutrient Management and Water Quality
Agricultural Best Management Practices
Soil Health and Conservation Practices
Agricultural and Stormwater Engineering Practices

**Table 2:** Brief list of the topics the RCD covers during the course of conducting education and outreach events over the year.



The RCD demonstrates a reasonably equitable distribution of impact (as measured by numbers of individuals reached) among the outreach and education venues commonly used by RCD staff (Graph 3).

## **Discussion**

By category, the largest audience reached through RCD events are agricultural producers such as growers and ranchers. This indicates that the RCD has been successful in communicating its value to the agricultural community.

It is important to note that while agricultural producers are the largest single group reached by the RCD, combined, the larger community (business, policy, and community members) make up over half of the individuals attending RCD events. This implies that the RCD is very effective at bringing members of agricultural and non-agricultural communities together.

While RCD-hosted events such as the education seminar and awards banquet bring together a substantial number of people of all categories, the smaller and more numerous partner events reach the largest total number of people. This indicates that maintaining a constant presence within the community and developing more partnerships is a particularly effective way of reaching more people.

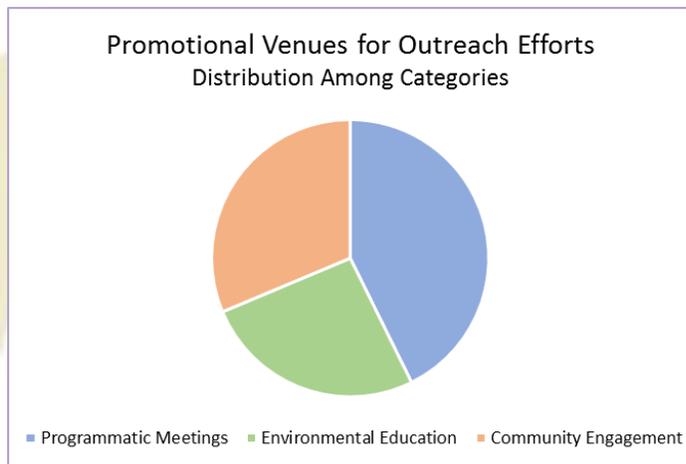
While the RCD utilizes various mechanisms to achieve its outreach and education targets and is able to achieve equitable efficacies across these categories, it is noteworthy that venues best categorized as “programmatic meetings” constitute the largest outreach and education audience block. This reflects the fact that the RCD has to promote many of its programs multiple times; for example, once to funding agencies to secure funding resources and then again to the agricultural community to disburse those resources.

While the RCD has been able to quantify numerous metrics delineating community impact, it is important to note that many other measures are not included. In particular, the impact of mailings, newspaper articles, publications, and other similarly diffuse mechanisms have not been quantified, thereby underestimating RCD’s impact.

## **Conclusions**

The RCD is unique in its ability to bring the agricultural and non-agricultural communities together to discuss issues. This unique relationship has a cost, however, in that the RCD must continually partner and participate with both the agricultural and non-agricultural community, stretching the RCD’s budget resources.

The RCD utilizes a variety of mechanisms to promote its programs and the programs of its partners. While many funding sources will provide resources for outreach and education, it is usually specific for that program. Less restrictive funding sources which allow the RCD to promote multiple programs, develop more partnerships, and utilize new venues that are needed if the RCD is to keep up with projected demand.



**Graph 3:** Graph illustrating the relative proportion of venues (organized by category according to audience) where the RCD delivers outreach and educational material.



## Overview

The programmatic permit program is designed to reduce the cost and implementation time of projects seeking to remove invasive plants from the Calleguas Creek and Upper Santa Clara River watersheds.

Resource Conservation District (RCD) staff liaison with landowners and regulatory agencies (Table 1), securing work permits and supervising projects, thereby shortening the total time needed for project completion.

While a wide assortment of invasive plants are found throughout both watersheds, the program targets arundo (*Arundo donax*) and tamarisk (*Tamarix* spp) for removal because of the immense threat they pose to the riparian ecosystem (Table 2).

## Results

The Calleguas Creek Arundo/Tamarisk Removal Program (CCARP) has facilitated the removal of over 6.5 acres of arundo and tamarisk, representing about 57 tons of biomass.

Surveys of the watershed indicate that several subwatersheds within the larger Calleguas Creek Watershed area contain stands of arundo and/or tamarisk at different levels of abundance (Figure 1). While the Calleguas Creek subwatershed contains the highest acreage of arundo and tamarisk, the relative percent of non-natives to natives within each subwatershed is similar (Graph 1).

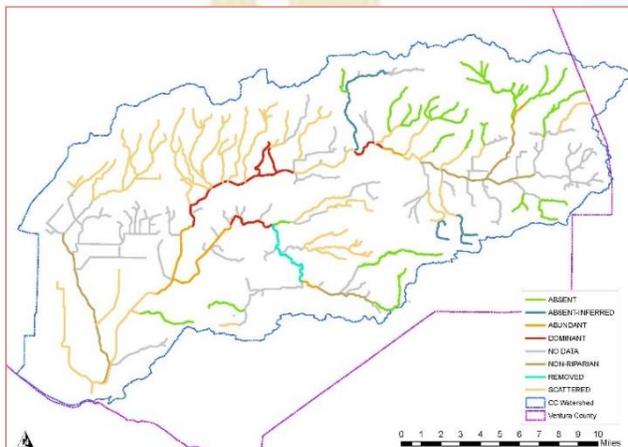
The Santa Clara Arundo/Tamarisk Removal Program (SCARP) focuses on removing non-natives from the upper reaches and tributaries of the Santa Clara River within Los Angeles County (Figure 2). This is meant to ease removal of these invasives from the lower watershed by eliminating repopulation due to stand relocation during storms.

Regulatory Permitting Agencies
Ventura County Public Works Department
Los Angeles Regional Water Quality Control Board
California Department of Fish and Wildlife
US Army Corps of Engineers
US Fish and Wildlife Service

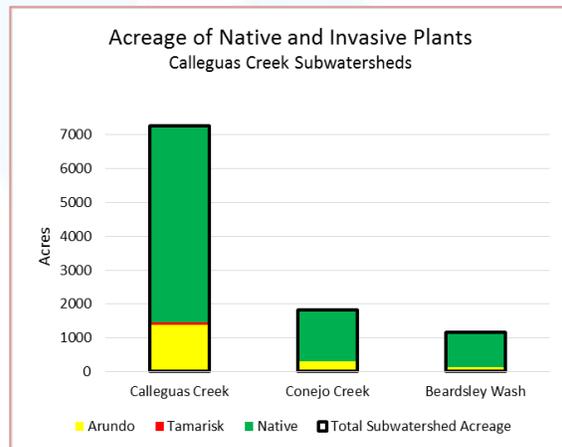
**Table 1:** Agencies with whom the RCD coordinates permitting and project requirements via the programmatic permit program.

Invasive Plant Riparian Impacts include...
... degraded water quality
... diminished water supply
... increased flooding risk
... increased streambank erosion
... increased fire hazards
... reduced native habitats
... decreased native wildlife abundance
... risks to threatened and endangered species

**Table 2:** Partial list of environmental impacts that non-native plants have upon the riparian community.

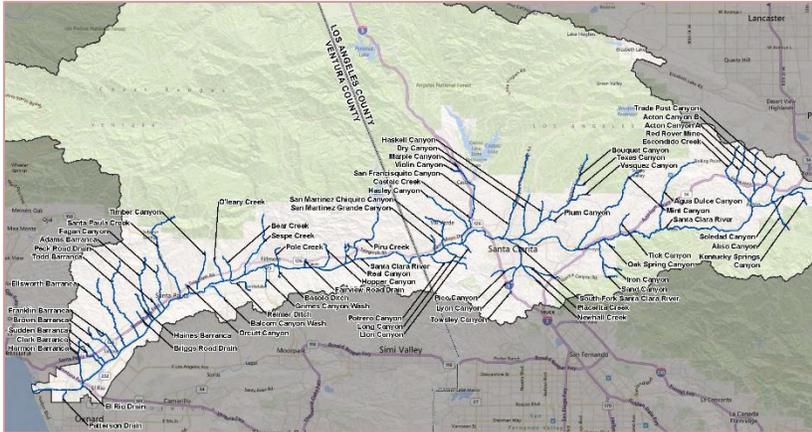


**Figure 1:** Abundance of arundo and tamarisk within the reaches and tributaries of the Calleguas Creek watershed.



**Graph 1:** Acreage of arundo and tamarisk within individual subwatersheds of the Calleguas Creek watershed.





**Figure 2:** Map of the Santa Clara River and its watershed showing its separation into its upper (Los Angeles County) and lower (Ventura County) reaches.

Although work on non-native plant removal has focused on the upper section of the Santa Clara River, the entire river is at risk since 44% of the 400 plant species within the Santa Clara River are not native (Figure 3).

With respect to arundo and tamarisk, over 38 acres, or about 340 tons, of these plants have been removed from the upper Santa Clara River watershed. Most of this removal has occurred within Reach 6, the most heavily inundated reach within the watershed (Graph 2).

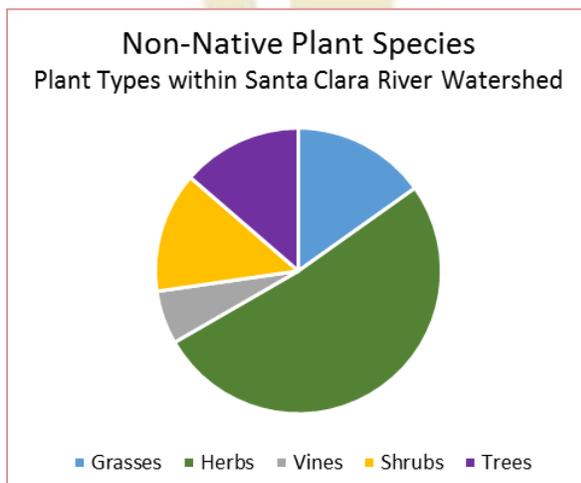
## Discussion

Both CCARP and SCARP has led to the removal of arundo and tamarisk from watersheds within Ventura County. While significant tonnage of both have been removed, their exceptional fecundity predicts a return to similar densities if complete eradication is not achieved.

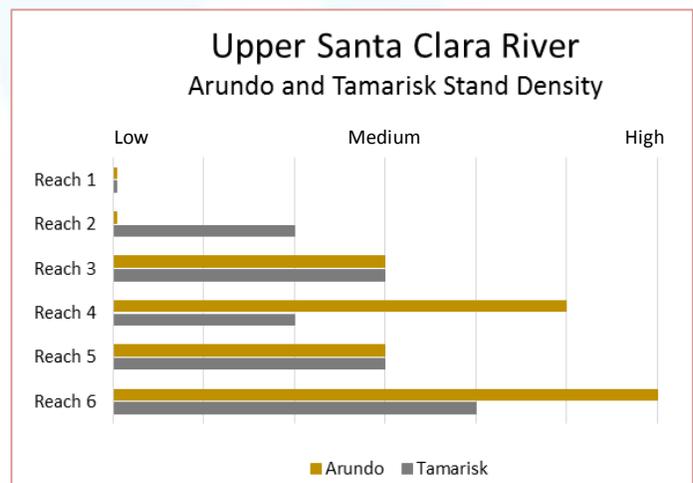
While the cost of the permitting process is substantial, the threat arundo and tamarisk pose to both the riparian communities and the larger watershed ecosystem must be considered when quantifying the beneficial impacts of the programmatic permit program.

## Conclusion

The Resource conservation District has successfully applied the programmatic permit program towards invasive plant removal within both the Calleguas Creek and the Santa Clara River watersheds. The programmatic permit program provides landowners a streamlined mechanism to expedite removal of non-native plants from riparian communities in an environmental sensitive way, thereby protecting the health of not only the reaches and tributaries, but that of the greater watershed too.



**Figure 3:** Diversity and relative distribution of non-native plant types within the Santa Clara River watershed.



**Graph 2:** Relative arundo and tamarisk densities within the upper reaches and tributaries of the Santa Clara River.



## Overview

The Hillside Erosion Control Ordinance (HECO) was enacted in 1981 to address development on severely erosive lands. The goal of the ordinance was to provide landowners assistance in developing these erosive lands responsibly.

Ordinance deliverables focused on the development of a HECO plan which required an onsite soil assessment and topographic survey, an assessment of current and projected soil, biological, and irrigation resources, and a review of available vegetative and engineering practices (Table 1).

## Results

A majority of all HECO projects resulted in the development of a HECO control plan (Figure 1). In certain instances, site visits revealed that development was on non-erosive land or of limited extent, resulting in a HECO exemption.

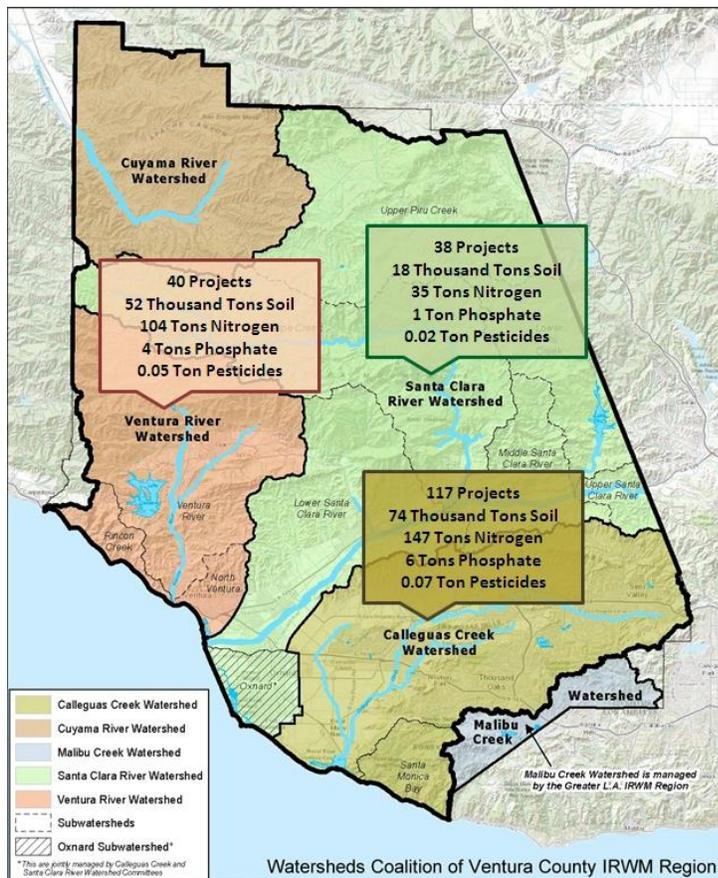


**Figure 1:** Status of HECO projects and the deliverable produced as a percent of total projects. To date, HECO has an 83% success rate for deliverables (HECO plans or exempt status determinations). This rate will increase as open projects finish.

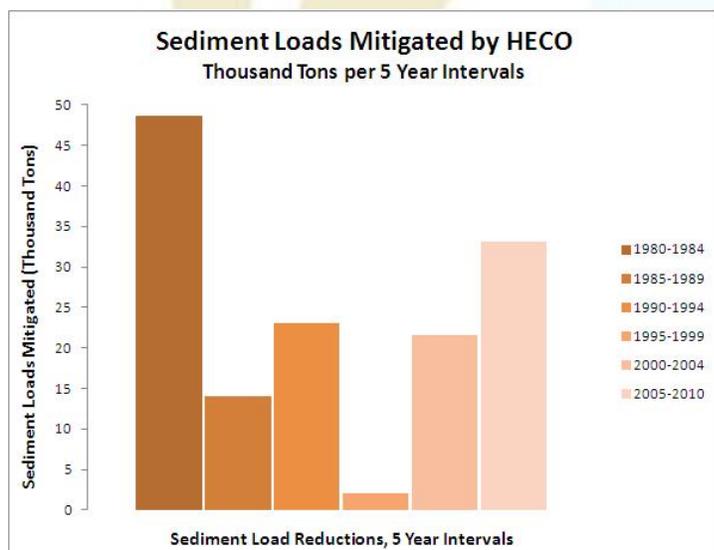
**Table 1:** Typical selection of Best Management Practices (BMPs) provided to assist HECO landowners reduce soil erosion to tolerable levels. BMP numbers indicate the corresponding Natural Resources Conservation Service (NRCS) annotation.

<u>BMP</u>	<u>Vegetative Practice</u>	<u>BMP</u>	<u>Engineering Practice</u>
194	Vegetative Buffer Strip	362	Diversion
327	Conservation Cover	394	Firebreak
328	Conservation Cropping	442	Irrigation System-Sprinkler
329B	Residue Management	462	Precise Land Forming
340B	Cover Crop	466	Land Smoothing
342B	Hydromulch	560	Access Road
342E	Erosion Control Blanket	587	Structure for Water Control
412	Grassed Waterway	607	Field Ditch
441	Irrigation System	614	Livestock Watering Facility
449	Irrigation Water Management	620	Underground Outlet
484	Mulching	638	Water & Sediment Basin
528	Proper Grazing Use	744	Land Grading
590	Nutrient Management	903	Earthfill
595	Pest Management	905	Geotextile Fabric
742	Cut Bank Stabilization	908	Grouted Rock Rip Rap





**Figure 2:** Watershed map illustrating the positive impacts of HECO on surface water quality through reductions in soil erosion and corresponding reductions in nutrient and chemical transport.



**Figure 3:** Fluctuations in topsoil saved throughout the lifetime of HECO. The upward trajectory in sediment retention from 1995 onward is reflective of increased landowner interest in the program.

To date, there are landowners with open HECO projects, as indicated by the small percent of open and cancelled projects.

A review of HECO files indicate that 195 applications have been received since the program began. An assessment of HECO control plans and site visit documents indicate HECO plan Best Management Practices (BMP's) mitigated approximately 144,000 tons of erosive topsoil, 286 tons of total Nitrogen, 11 tons of plant available Phosphorus, and 0.1 tons of pesticides and polychlorinated biphenyls (PCB's).

### Discussion

Topsoil is a valuable agricultural resource because of its high nutrient content, its permeability, and its biological diversity. The HECO program mitigated losses of this valuable commodity throughout Ventura County (Figure 2).

The HECO program also reduced nonpoint pollution impacts on watersheds throughout Ventura County by reducing sediment-associated nutrient and anthropogenic chemical loadings to surface and ground water bodies.

### Conclusions

The HECO program helped a substantial number of landowners retain valuable topsoil and mitigate impacts on watersheds throughout Ventura County.

While these impacts have varied as a function of project implementation rates, it is noteworthy that HECO projects have recently illustrated an upward trajectory, indicating a heightened interest in this program (Figure 3).

Were this program to be continued, it is likely that substantial positive benefits would result.

