

Working to Preserve Groundwater and Agriculture in the Pajaro Valley, CA



Katie Montano, Sustainability Manager

Driscoll's Strawberry Associates



- Strawberries, Raspberries, Blueberries, and Blackberries
- Family owned and run for more than 100 years
- Independent grower model
- Conventional and Organic
- Proprietary varieties
- CEO, Miles Reiter

Our Mission: to continually delight berry consumers through alignment with our growers and customers



Sustainability at Driscoll's



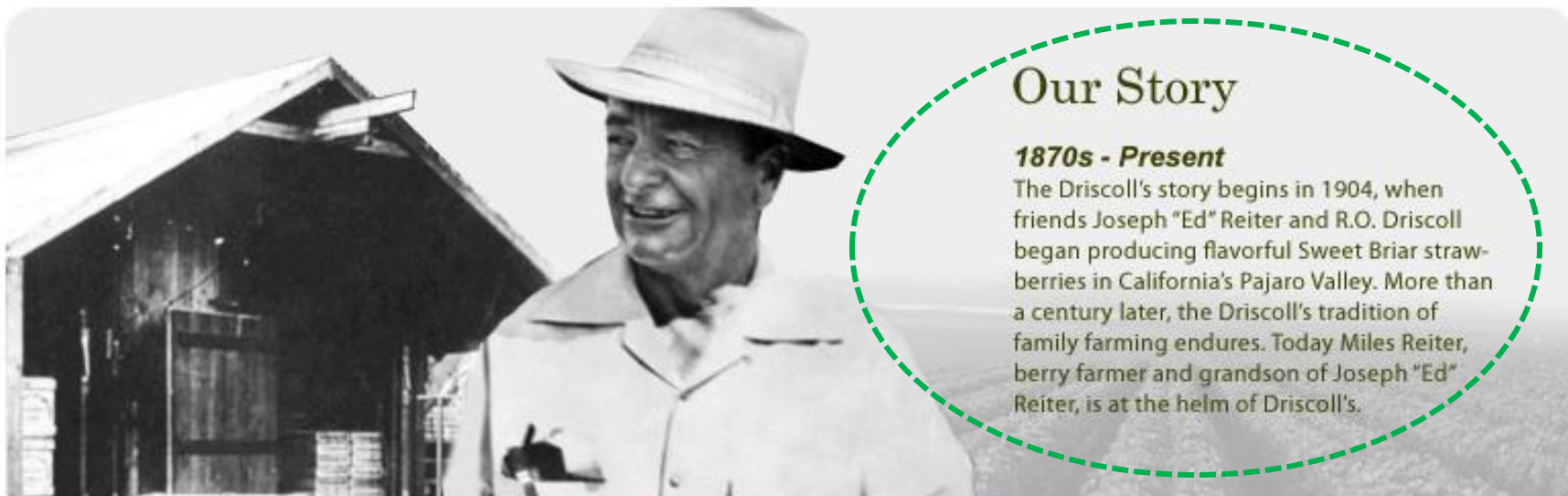
Driscoll's goal is to better manage our resources and waste to ensure that our business and the earth thrive for generations to come. Sustainability is a corporate strategy that is integrated with core business objectives, embedded in our corporate culture and spans the entire supply chain to create financial, social, and environmental returns.





**First Major
Sustainability Project:
WATER in Pajaro Valley**

Driscoll's[®]
SUSTAINABILITY
SUSTENTABILIDAD



Our Story

1870s - Present

The Driscoll's story begins in 1904, when friends Joseph "Ed" Reiter and R.O. Driscoll began producing flavorful Sweet Briar strawberries in California's Pajaro Valley. More than a century later, the Driscoll's tradition of family farming endures. Today Miles Reiter, berry farmer and grandson of Joseph "Ed" Reiter, is at the helm of Driscoll's.

A Short History of Driscoll's

1870s:

Strawberries are first planted in the Pajaro Valley, for sale in local California markets.



1904:

Joseph "Ed" Reiter and Dick Driscoll begin growing patented *Sweet Briar* strawberries in the Pajaro Valley.



Late 1940s:

Farming begins in Santa Maria with brothers Robert and Terry Sheehy – the first Driscoll's independent farmers.



1944:

Ned and Donald Driscoll, Kenneth Sheehy, T.B. Porter, M.W. Johnson and Joe Reiter founded The Strawberry Institute – dedicated to researching and breeding superior varieties of strawberries.



1953:

Driscoll Strawberry Associates, Inc. is founded as an independent California cooperative selling premium, fresh California strawberries.



1966:

The merger of Strawberry Associates, Inc. is de-bred sale



Pajaro Valley Water – Historical Context



- The Pajaro Valley was developed for agriculture in the late 1800's and has since become the driving economic force within the valley.
- Currently, about 85% of the total water used in the valley is used by agriculture, and almost all of that demand is supplied by groundwater
- As a result, groundwater resources declined and the effects of saltwater intrusion began to present themselves as early as the 1950's.
- In 1980, after over a century of pumping, the groundwater basin was designated by the California Department of Water Resources (DWR) as one of eleven California basins with “critical conditions of overdraft”
- Through the years, this has become an increasingly volatile and emotional issue for the community, creating division and unrest.

Water Usage and Rainfall

Calendar Year	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	5-yr Avg	2009
Rainfall (inches) - Recorded at Watsonville Water Works	20.38	26.55	25.72	17.20	18.48	18.98	24.45	28.24	12.52	16.29	20.10	
											2004-08	
Water Usage by Calendar Year (in Acre-Feet) ¹	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	5-yr Avg	2009
Metered - Agricultural Wells	42,762	41,945	43,611	42,432	43,354	46,665	38,255	39,293	45,899	48,713	43,765	
Metered - Industrial Wells	322	423	578	1,465	1,656	1,359	2,922	2,189	1,376	1,302	1,850	
Non-Metered Wells	551	530	568	595	1,666	574	606	490	331	309	462	
Delivered Water	0	0	0	158	138	207	603	981	1,337	1,665	959	
Municipal	7,467	7,466	7,772	7,873	8,020	8,344	7,801	7,343	8,221	8,877	8,117	
Rural Residential	1,883	1,777	1,691	1,695	1,695	1,577	1,492	1,466	1,494	1,495	1,505	
Total Water Usage (AF)	52,985	52,141	54,220	54,217	56,529	58,714	51,679	51,762	60,152	62,362	56,934	
Delivered Water by Calendar Year	2005	2006	2007	2008	2009							
Recycled Water					2,400							
Harkins Slough Project Recovery Wells	124	177	191	212	150							
Watsonville Potable System	0	234	706	813	850							
Blend Well 1	202	286	232	325	300							
Blend Well 2	293	309	219	307	300							
Total	619	1,005	1,348	1,656	4,000							

**Overdraft Target for
the Basin =
12,000 AFY**

Our Charge in Pajaro Valley



**Protect Pajaro
Valley: Work
Towards a
Balanced Aquifer**

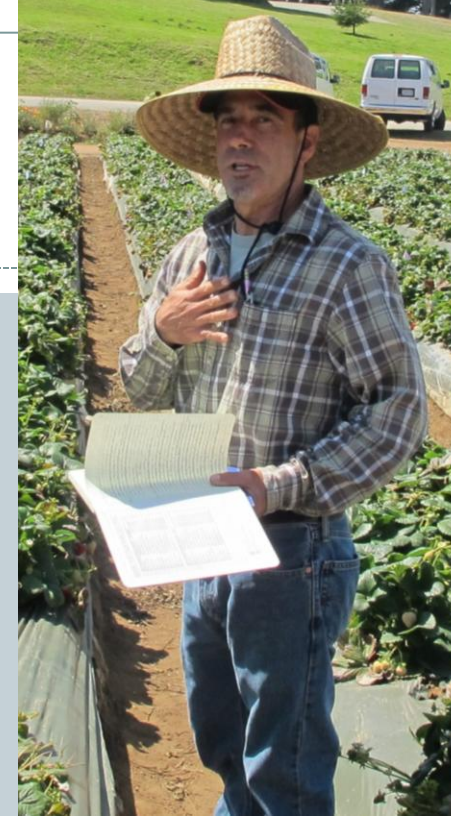
**Protect
Agricultural
Viability**

**Protect Driscoll's
and our Growers
Viability**

Key Projects



- Community Leadership/Community Dialogues
- Water Use Research and Data Collection
- Irrigation Research, Technology, and Efficiency
- Training and Extension
- Managed Aquifer Recharge Pilot
- Performance Based Incentive Pilot Program
- Nutrient Management and Leaching Research – Lysimeters
- Partnering with growers to pilot practices that may reduce use:
 - Establishment without sprinklers
 - Lignin for dust control
 - Fallowing/cover cropping during rotations
 - 2 vs 3 row rubus systems



Community Dialogues



Purpose: ignite a positive, forward-thinking conversation among community stakeholders resulting in collaborative action and individual ownership of solutions. More than 50 members who are committed to:

1. Protect PV as an important agriculture resource
2. Recognize that the solution will not be a pipeline
3. Be willing to pursue diverse strategies which entail costs and sacrifices in order to bring our aquifer into balance

4 Working Groups:

- Irrigation and land management best practices
- Big Projects
- Recharge
- Communications

Community Dialogue - Current Potential AFY Yield



- **Rotational Fallowing =**
750 – 1,250 AFY
- **Increased Irrigation Efficiency Soil Tensiometers**
1,000 - 2,000 AFY
- **Managed Aquifer Recharge**
= 200 – 600 AFY

Basin Target=

12,000 AFY

Potential Yield AFY =

1,985 – 3,850 AFY

16% - 32%



Research & Data Collection: Irrigation & Nutrient Management



- **Goals**

- To understand how much water our growers use, how they irrigate, and how they manage nutrients
- Understand quality and yield effects of water use and N
- Understand how water use varies by commodity, soil type, and microclimate
- Leverage technology to help growers and irrigators become more efficient – use only what the plant needs and uptakes

- **What's been done**

- 2010 -Placed flow meters on 30 strawberry ranches in 2010
- 2011 – Extended data collection to blackberries, raspberries, and blueberries
- The water data was correlated with QA and Production data
- Pilot projects with Horteau, PureSense, CropSense, and lysimeter trials

Extension & Irrigation Trainings

- Created Extension staff team
- Held 2 trainings in 2010: 61 Irrigators/ranch managers, 21 Companies, 10 growers
- Topics: Irrigation design, irrigation practices and technology, fertigation, water & soil chemistry
- Improving these practices can lead to better water and fertilizer use, and overall stewardship of our growers fields

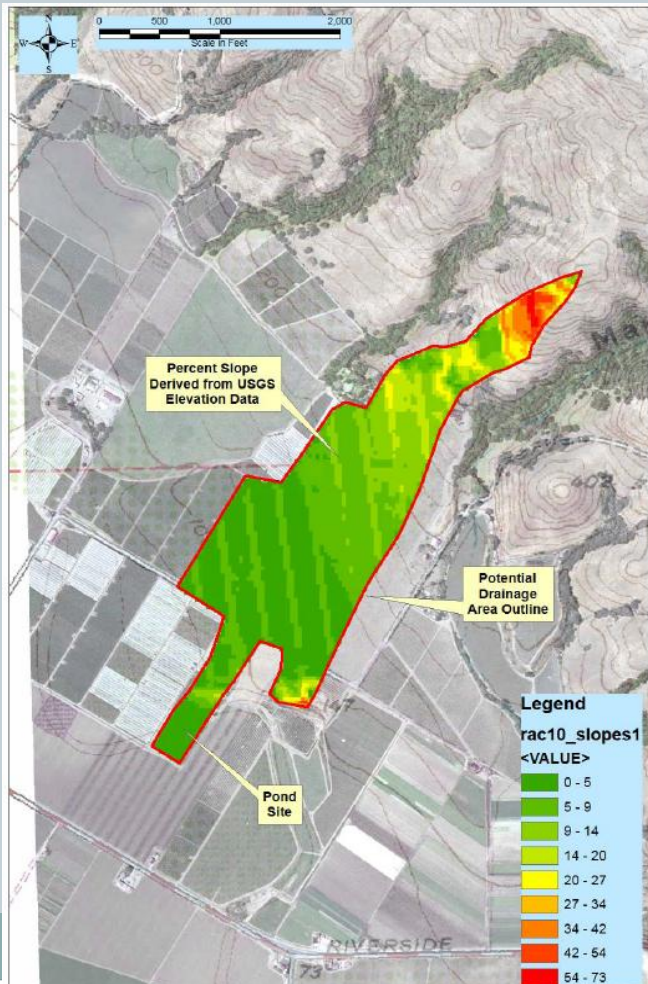


Sam Cooley, Extension Specialist
4th generation Pajaro Valley farmer

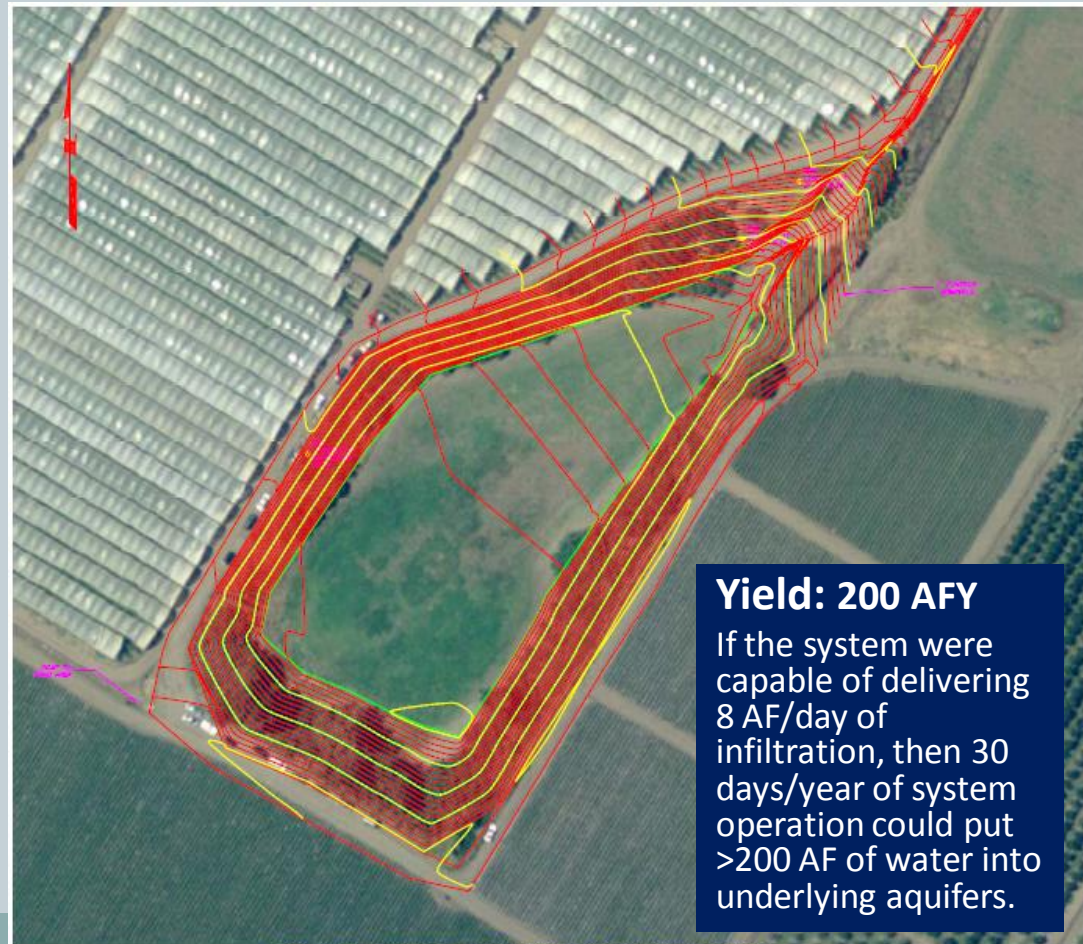
Aquifer Recharge Basin



Drainage area outlined and flow paths estimated



Basin surveyed for higher resolution topography of walls and floor



Yield: 200 AFY

If the system were capable of delivering 8 AF/day of infiltration, then 30 days/year of system operation could put >200 AF of water into underlying aquifers.

RAC 2010 BOKARIZA POND PROJECT: SURVEY RESULTS



Performance Based Incentive Pilot Program



RESOURCE
CONSERVATION DISTRICT



- Partnership with the Resource Conservation District of Santa Cruz County
- Funded by a USDA's Conservation Innovation Program grant + DSA match

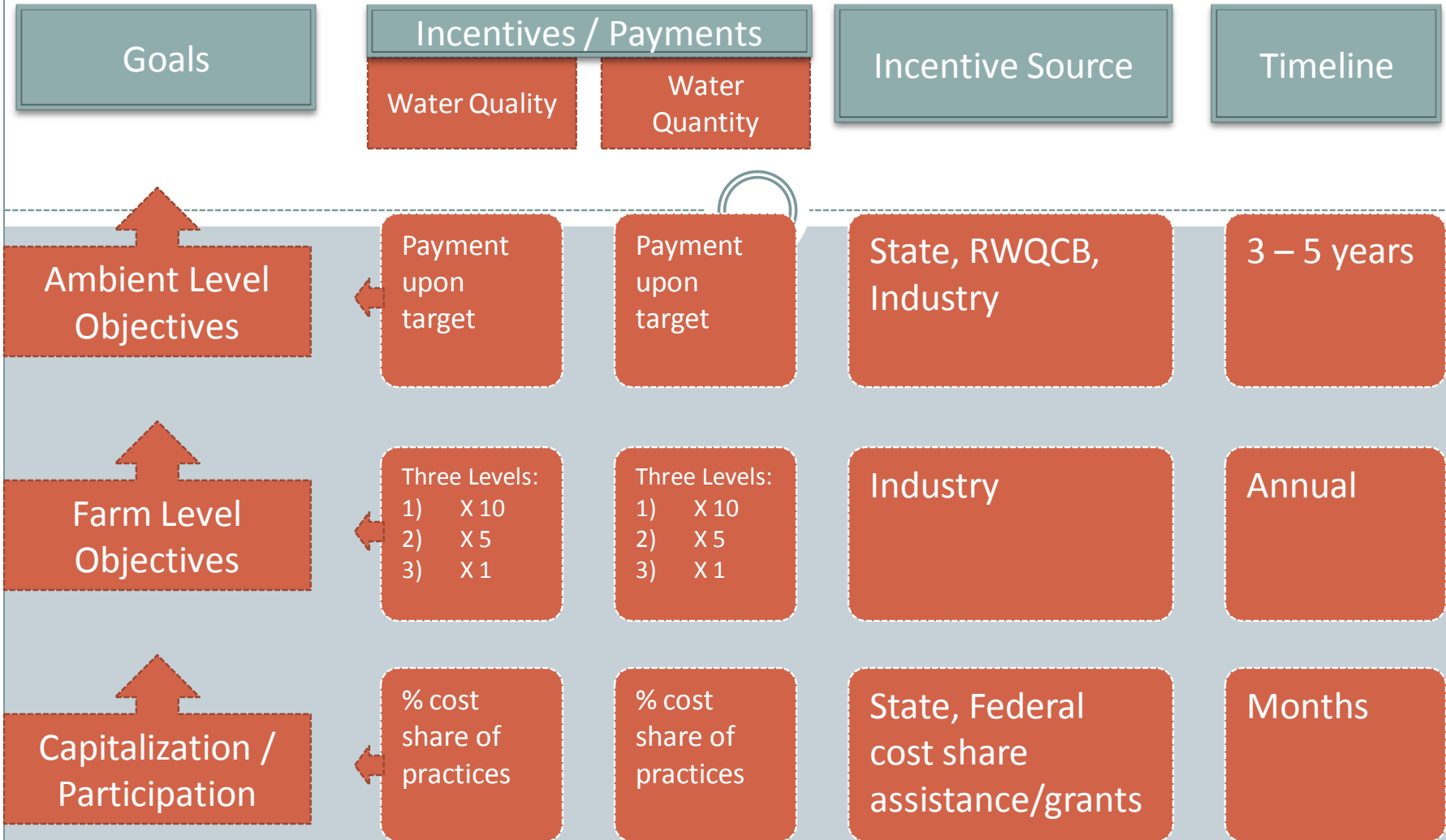
The pilot's goals are to:

- 1) Improve conservation for water quality and quantity in the Pajaro Valley
- 2) Create new economic opportunities for farmers, while allowing them flexibility
- 3) Create a replicable model

Approach:

- Develop performance-based indicators and metrics for setting water conservation and nutrient reduction targets at the farm and ambient level
- Develop a standardized incentive structure for water conservation and water quality with means of verification for incentive payments.

Performance-based Conservation Incentive Structure



Challenges & Advice



Challenges:

- Independent grower model
- Results take time – data and pilot projects
- Variables make meaningful data challenging – trying to understand water use in correlation to soil, climate, variety, etc
- Incentive models at the ambient level are hard!

Advice for others:

- Don't underestimate small efforts – measure them, they add up
- Try new things – share them with others
- Focus on actions, solutions, and change
- Lead the way



Questions?

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