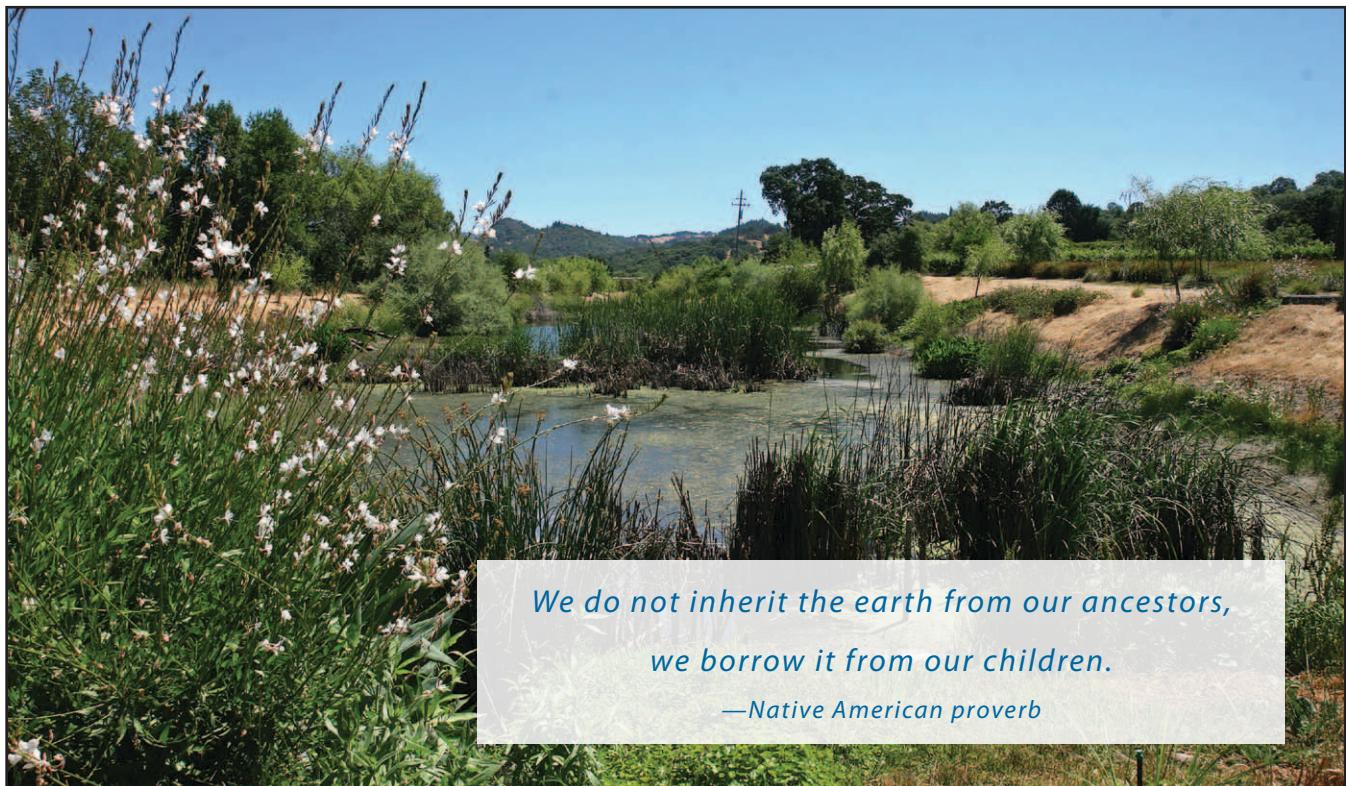


OUR LAND AND WATER



*We do not inherit the earth from our ancestors,
we borrow it from our children.*

—Native American proverb

At Parducci Wine Cellars north of Ukiah, an innovative wetland area reclaims water from the wine-making process, naturally treats it and provides the vineyard with a nutrient-rich, sustainable water source.

As the fundamental building blocks to our food system, the preservation of our soil and water is an indispensable responsibility for everyone connected to the food system. History has shown that mistreating our natural resources can result in long-term, and in some cases, irreparable damage to the land and water that nourishes us.

Whether through lack of knowledge, changing economic priorities or nature's unpredictability, Mendocino County soils and waters are compromised. Fortunately, there are a number of dedicated individuals and organizations that recognize and actively address the critical need to protect our water quality and safeguard our precious topsoil.

It All Starts With The Soil

Soil is akin to the earth's living "skin." It forms in response to a dynamic and often invisible interplay of biology, geology and climate that transforms rock into a viable growing medium, occurring on a time

scale of thousands of years. Yet despite the perception that vast swaths of arable land cover our planet, only ten percent of the earth's land is suitable for growing crops.³¹

The health and persistence of soil is affected by temperature, precipitation, vegetation, animals, microorganisms, drainage and aeration.³² Minerals and organic matter, essential for productive farming, are constantly leached away by rainfall. Responsible soil maintenance and soil building is a necessity for preservation of our farmlands.

Soil erosion is the enemy of every farmer. What takes generations to build can be destroyed in hours—during a single storm event or over the course of many years. The human factor in the delicate interplay of soil creation is now understood to have a profound impact upon soil health, with erosion significantly exacerbating the speed and intensity of soil degradation.

Soils are divided into distinct classes, with the higher numerals indicating a greater number of limitations and fewer options for use for farming.

- » Class I Soils—Few limitations that restrict usage.
- » Class II Soils—Moderate limitations that reduce the choice of crops or that require moderate conservation practices.
- » Class III Soils—Severe limitations that reduce the choice of crops, require special conservation practices, or both.

The classifications continue with increasingly restrictive use potentials, with Class VIII soils having limitations that nearly preclude their use for commercial crop production.

The U.S. Department of Agriculture defines prime farmland as soils best suited to food, feed, forage, fiber, and oilseed crops—soils that favor the economic production of sustained high crop yields. With an adequate moisture supply and a sufficiently long growing season, prime farmland needs little augmentation and is suitable for accepted farming methods resulting in the least environmental damage.³³

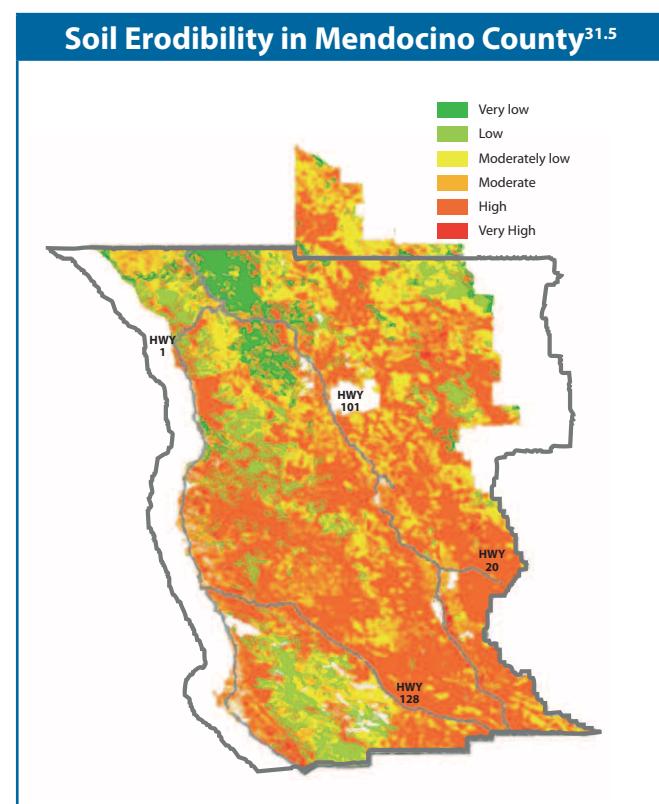
Although its land mass is vast, the amount of prime farmland and high-grade agricultural soil in Mendocino County is relatively small due to steep terrain and the region's geologic makeup. Virtually all of the county's bottomland is currently being farmed, which makes the protection of our prime farmland a critical goal for this Food Action Plan.

Loam on the Range

Rangelands in Mendocino County are utilized by

Mendocino County Land Consumption (acres)					
Year	Farm Land	Grazing Land	Urban & Built-Up Land	Water Area	Other Land
2006	28,823	1,928,253	19,055	2,135	66,464
2008	29,692	1,927,016	19,193	2,135	66,809

California Department of Conservation. Created by: Center for Economic Development, California State University, Chico



ranchers who transport animals in the fall and winter to take advantage of the annual vegetation produced by seasonal rains, particularly in the western sections of the county. Stocker cattle are brought in the late fall or winter. By spring, the nutritional value of available vegetation decreases, and cattle are moved to better pastures or shipped to feedlots for finishing. Coastal grasslands feature perennial plants within forested areas.

Like most of the US, overgrazing and conversion to cropland has permanently changed county native vegetation habitats. Modern ranchers understand that the goal for good range management is to keep the grazing area in a similar state of growth as the neighboring natural plant community. Though better management practices are being employed by today's ranchers, there is still room for improvement, which would translate into increased food for livestock, a higher predominance of native grasses, and cleaner watersheds.

An Erosion Explosion

Many of Mendocino County's soils are highly erodible. Many factors contribute to this condition

including rainfall intensity, steepness and length of slope, vegetative cover, and soil management practices. The management and placement of organic matter into soils is one way for farmers to effectively reduce erosion. No-till or conservation tillage is another tool that some farmers employ to prevent soil loss, as well as limiting soil disturbances, particularly when soil is heavy with water. Cover-cropping and utilizing perennial crops also helps to keep topsoil where it is most needed, with annual cover crops planted in the fall and winter providing significant erosion protection during the rainy season.³⁴

Pastures require other specialized activities to retain soil tilth and extend pasture life. Irrigation water must be managed and a program of rotational grazing, fertilization, harrowing to scatter animal droppings and mowing help to maintain uniform pasture growth.

Storm runoff management and targeted planting

County Water Table Depth	
Year	Average Depth to groundwater (ft)
1999	14.20
2000	14.11
2001	16.50
2002	13.64
2003	14.05
2004	14.86
2005	12.98
2006	7.47
2007	16.38
2008	17.66
2009	20.88

California Department of Water Resources. Created by: Center for Economic Development California State University, Chico

where road cuts, fills, pond embankments and stream corridors are also essential tasks for today's landowners. Terracing, diversions, underground outlets and grassed waterways are necessary in sloping croplands to prevent gullying and erosion.

It takes about 500 years to build just one inch of topsoil.

Tomorrow's farmers must learn from the mishaps of their forbears, who "modernized" their farming methods with mono-cropping and increased usage of pesticides and fertilizers. Today we understand that "old fashioned" crop rotation and the planting of cover crops for soil renewal are essential for optimum soil health. The land is a resource our community cannot afford to squander.

Water, Water Everywhere?

Mendocino County watersheds provide water for drinking, recreation, and agriculture. They are a bountiful source of biological diversity that offers habitat for threatened and endangered species including salmon and trout.

The three most significant hydrologic units in the county are the Eel, Russian, and Coastal River Basins. The Russian River Basin is the most important for agriculture, spanning 1,500 square miles, 500 of which are in Mendocino County.

According to Dennis Slota, Mendocino County Water Agency hydrologist, every watershed in Mendocino County is significantly impaired. "We don't meet water quality standards for temperature and sediment. In some water bodies both are impaired. In others, sediment is the only issue," Slota explains. For the Russian River Basin, our largest watershed, both temperature and sediment pose significant issues.

Our Rivers and Our Fish

The Environmental Protection Agency and the Clean Water Act set the parameters for determining watershed health. The presence of pesticides or fertilizers in our watersheds poses obvious risks. But high water temperatures and the presence of too much sediment in the water are also major polluters and pose deadly threats to what was once a thriving salmonid fish population. "The Navarro River, as late as the 1970's was a world class fishery. Today, the Navarro is closed to fishing," Slota notes.

The Russian River riparian corridor used to be a mile wide. Now, in many places it is one tree wide. Historically, logging and agriculture negatively

affected streams through their practices. "We've lost the microclimates that we once had. You can feel a 15-to-20-degree difference when you enter the shade of a mature riparian corridor," notes Slota.

The disappearance of deep pools in rivers and streams has resulted in tragic losses to the fisheries. Salmonids are very temperature sensitive. Sedimentation has decimated their spawning habitats because they need clean gravel for their eggs to mature and hatch, which is why the Endangered Species Act has regulations regarding the county's watersheds.

"If we have a light rain in January, who has greatest need? Ag or fish?" asks Susan Warner, retired directory of the California North Coast Water Quality Control Board. "Right now, because of the Coho salmon, the fishery controls the situation. This affects all the watersheds in Mendocino County."

Restoring Our Rivers

To bring a watershed back to a healthy state is intensive and expensive. A detailed analysis of the watershed's history and documentation of pollution sources is conducted, resulting in a formula which calculates Total Maximum Daily Load (TMDL). "A water source can only handle a certain percentage of pollutants," says Slota. Currently, the Eel, Russian, Albion and Navarro watersheds are at risk. All need extensive and costly restoration.

The only water body in the county subject to an implementation plan is the Garcia watershed, which was enacted in 1998. "With that TMDL, land owners and the county's Department of Transportation were required to reduce sedimentation. Abandoned roads and insufficient culverts were identified. The Transportation Department, ranchers and farmers were required to take action to reduce erosion and sedimentation," says Slota.

"The University of California Cooperative Extension offered courses on inventorying sediment on your property. They showed how to document restoration, offered ways to reduce sedimentation and recommended pulling cattle out of riparian zones. Our county road system has much better practices now. Culverts are larger and designed to last 100 years. They're less susceptible to failure and designed specifically to support fishery restoration," Slota concludes.

A Watery Divide

The Army Corps of Engineers, the Sonoma County Water Agency and the Russian River Flood Control and Water Improvement District share a portion of the 8,000 acre-feet of water stored in Lake Mendocino. As a result of helping fund construction of the dam, the three agencies are entitled to a portion of the water which is distributed to cities, water utilities and farmers.

Mendocino County Climate, 2010

	Covelo	Fort Bragg	Point Arena	Potter Valley	Ukiah	Willits
Average July maximum temp. (deg. F)	93.7	64.8	65.2	93.7	92.8	85.5
Average January maximum temp. (deg. F)	52.2	55.5	56.4	56.0	56.4	54.9
Average July minimum temp. (deg. F)	51.6	49.4	49.9	53.4	53.5	47.0
Average January minimum temp. (deg. F)	30.5	39.9	40.2	34.0	35.5	32.8
Average July precipitation (in.)	0.1	0.1	0.1	0.1	0.0	0.1
Average January precipitation (in.)	8.3	7.7	7.7	9.1	7.9	9.9
Average annual precipitation (in.)	41.6	40.2	41.3	45.6	37.3	51.6
Average January snowfall (in.)	2.1	n/a	n/a	0.4	0.2	1.5
Average annual snowfall (in.)	4.7	n/a	n/a	0.6	0.4	3.6

Source: Western Regional Climate Center
Compiled by: Center for Economic Development, California State University, Chico

In Mendocino County water from Lake Mendocino supports municipal users in the Greater Ukiah Valley, Redwood Valley and Hopland as well as numerous agricultural operations along the river. These competing uses provide a challenging balancing act between the need for residential, farming and instream flow required to support native fish.

Seniors Rule

California water law dictates that water is distributed first to the holders of the oldest water rights. Sean White, general manager of the Russian River Flood Control and Water Improvement District explains the mechanics of water rights.

"Let's say we're in a draught and our water is akin to a pizza. During the draught, not everyone gets an equal slice of the pie. The oldest kid in the family gets the biggest slice of the pie," White explains.

"Some farmers and cities have rights that are senior to the district. Other farmers and municipalities are junior to the district. In general, that combination of rights is enough to meet the immediate needs of the valley. But just like everything, there are asterisks. When and where water can be used—these stipulations are added to your rights."

Seven is Not a Lucky Number

Currently the Ukiah Valley has seven separate water districts. According to White, this causes unnecessary problems. He likens the issue to a group of neighbors who own one tool each.

"Individually, these tools are not nearly as useful as when they are used conjunctively. I have an amazing butter knife and my neighbor has a hammer. My construction would be terrible, but I can make great toast. If we could exchange, we'd both have great construction and great toast," White smiles.

"Currently we only have a knife or a hammer. Even if one district has surplus water, a drier area can't take advantage of it. It's a classic example of regional squabbling leading to inefficiencies. In the aggregate, we have a good toolbox, but currently we are a series of communities with one tool apiece. We're not

maximizing what we own because we're not working together. There is a relatively decent amount of water here. There's not enough to turn it into a large residential area, but for basic agriculture, we're not in bad shape. Even so, Redwood Valley is water-poor, but we're not allowed to give water to them," White continues.

Many out-of-area water districts started out as separate towns with separate districts, but as they grew, they consolidated, producing numerous community benefits. "Those districts now have the whole toolbox at their disposal," White continues.

"If you have a water right, someone's always trying to steal it. Outside the county, those same forces apply because water doesn't end at the county line. We squabble amongst ourselves, and then become



Many Mendocino County farmers and landowners are taking the lead in creating environmentally sustainable habitats on their property.

vulnerable to state and county agendas. Historically, this problem has been recognized by the Grand Jury. Someday, by heck or high water, we'll get this done," White continues.

"We need to seriously consolidate and combine our resources, so everyone can benefit from the water we have," says White.

Becoming Water Wise

White notes that the city of Ukiah is the largest discharger of waste into the entire Russian River Watershed. "Santa Rosa reuses every drop of water. So do Healdsburg and the Sonoma County Water Agency. We need to look at the smartest way to allocate our water resources for the smartest purposes," he continues.

"The great news is that we have a giant, untapped water supply that we can put to use. The City of Ukiah has an ultra high water treatment plant. We're looking to adopt a water recycling master plan to help secure funds to utilize it." White uses frost protection to make his point. "It is ridiculous to release anything else when we could be using potable water," he notes.

Ukiah's Golf Course uses an astounding 1,000,000 gallons per day. "The golf course, sports field and school parks could be irrigated with recycled water. Communities throughout California have been working on these issues. Instead of taking more from a river or reservoir, let's use resources that we are currently throwing away," White adds.

"I think we have all the components to implement responsible and very sustainable water use. With everyone moving independently, it's harder than it needs to be. But we'll get there," White concludes.

Saving our Groundwater: Another Challenge

Our groundwater is also threatened. Rainfall is the only thing that replaces groundwater, and in some parts of the county water is being used faster than it can be replaced. This could irreparably damage our aquifers and effect our freshwater stores for generations to come.

"As you get into feeder streams and places like the Navarro River Watershed, you tend to have more interactions, more people pumping groundwater hydraulically connected to a stream. The more water

pumped, the drier the streams get in summer. It's a push-pull situation: the needs of farmers and the needs of the stream," notes Susan Warner.

The real world impact of groundwater depletion is not a distant reality. One need look only as far away as Sonoma County to see communities whose wells are drying up and farms are being fallowed because of lack of water. In addition to the immediate impacts of water scarcity, ground water overdraft also reduces the ability of an aquifer to absorb and retain water as soils are compacted due to water displacement. This creates a vicious cycle that reduces the ability of the system to recover, even when pumping is reduced.

Currently, the town of Mendocino is the only area in the County with a groundwater management plan, which monitors the health of the aquifer and the level of individual consumption. While there has been a strong historical bias against regulating wells in California, there is a growing awareness about the need for reasonable and intelligent management of this critical water source.

Dennis Slota is concerned about storm water management.

"We need to keep water on site instead of shipping it off. Our drainage policy has been to get it into the culvert and into the ocean." What used to feed streams was groundwater recharge, when cold water would keep streams alive, providing them with water during the summer. "We pave, pipe and ship water to the ocean, which takes just a few days, rather than allowing it to be stored in the ground for several months."

Tree roots are exposed along stream banks because of the greater volume of water discharged. The stream "reacts" by increasing its capacity, eroding the stream bottom and increasing its velocity and volume. The stream's response is to incise, which lowers the water table and ultimately kills the streams during the summer. This is why we see so many dead streams in urban areas," Slota concludes.

Low Impact development and other storm water management protocols aim to reverse this trend. Through the use of swales, permeable pavement,

and groundwater recharge basins, intelligent land use practices can slow, spread, and sink runoff, rather than diverting it to watercourses. These practices not only reduce runoff, but they also result in increased groundwater recharge and extend the active period of seasonal streams.

Making the Grade?

For decades, Mendocino County citizens have struggled to determine if a grading ordinance was necessary.

"Twenty years ago, it was the sole mitigation in our General Plan. It still has not occurred, and today we are the only county in the State that does not have a grading ordinance," says Susan Warner.

"When you farm, you're going to have land disturbances, no matter how beneficent you are. Simply removing a cover crop and exposing soil to the rain can cause problems. All the watercourses in the county can be impaired because of sediment issues. Sedimentation affects our fishery tremendously. With a grading ordinance, our county determines how steep the land you can drive a tractor on, how much of a buffer zone you need around a watercourse or how close farmers can plant toward a creek," Warner explains.

She has a cautionary word for county residents. "If Mendocino doesn't establish a grading ordinance, the push is coming from Feds to the state to control what happens on Ag land. A grading ordinance is probably one of the more direct legal actions that a county can have. More controls are coming, which will be dictated by Feds if local government chooses not to play a role."

Stay Involved

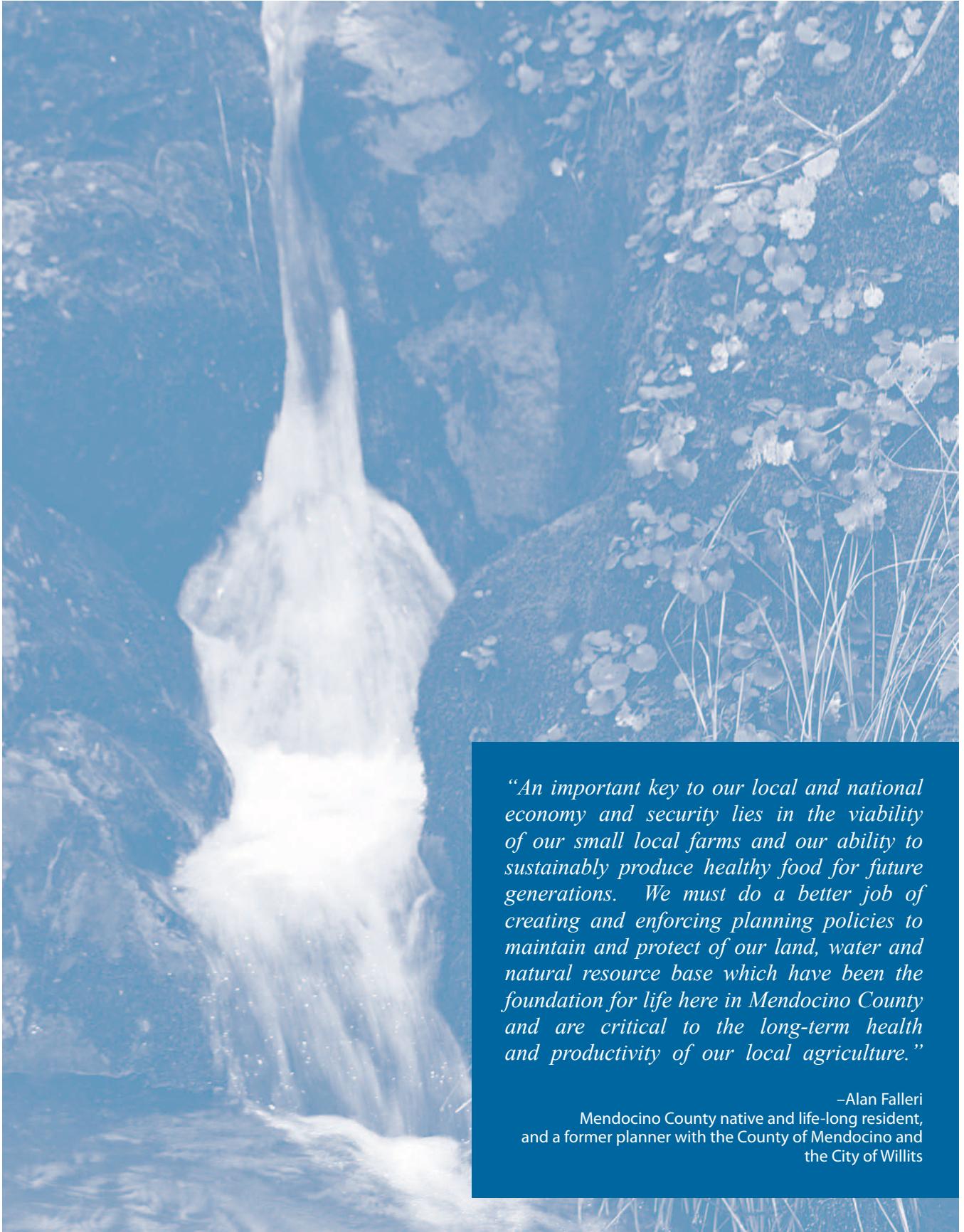
Because of the controversy surrounding a grading ordinance and many other land use and water issues, there is really only one thing for food producers to do: get involved and stay involved. "We can be proactive or we can wait until a regulator comes knocking. Most farmers would rather do that. The further away you get from local oversight, the less flexibility we have to do something different. If a local farmer has a local way

to solve a problem, it becomes harder to implement that solution if you are chained to a federal dictate," Warner notes.

"You can't compartmentalize agriculture. A one-size-fits-all approach is not good. For those who want to see a thriving local food economy, there needs to be an exemption process for small farmers who cannot afford to do what a vineyard owner can," says Warner.

Warner hopes that local leadership will draft a general type of permit which can obtain the blessing of county government while complying with the Federal law. "Regulations will come. Being involved with shaping them is important," she continues.

The soil, water, and all that nature provides form the foundation for a healthy food system. It is imperative to protect the county's biodiversity and natural resources, including the land, water, soil and air- in our farming practices and throughout our food system.



"An important key to our local and national economy and security lies in the viability of our small local farms and our ability to sustainably produce healthy food for future generations. We must do a better job of creating and enforcing planning policies to maintain and protect of our land, water and natural resource base which have been the foundation for life here in Mendocino County and are critical to the long-term health and productivity of our local agriculture."

—Alan Falleri
Mendocino County native and life-long resident,
and a former planner with the County of Mendocino and
the City of Willits

Sharing the Land, Preserving our Resources

Farmers are land stewards, responsible for the maintenance and preservation, not only of crops but also the water running through their property and the species that depend on the land for survival. Protecting land is complex and extremely costly—beyond the means of most farm families.

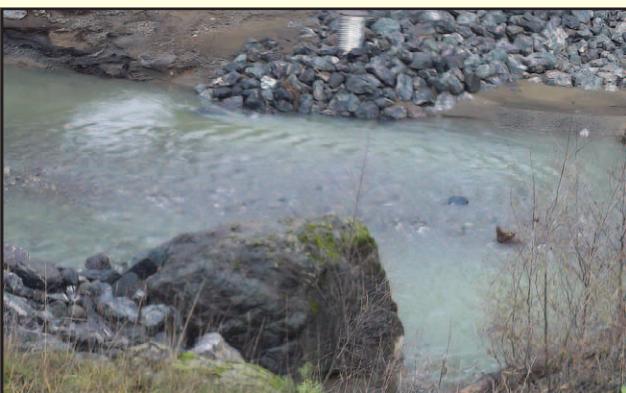
During the Great Depression, the Federal government began to understand the implications of the staggering loss of irreplaceable topsoil. In response, the Soil Conservation Service was created, providing farmers with regional agricultural support staff. Counties quickly formed Soil Conservation Districts, which enabled local landowners to recommend to the Service how to best direct their time, money and energy. This led to the inception of Resource Conservation Districts—designed to assist with the improvement and preservation of farmlands.

“The Mendocino County Resource Conservation District is an arm of the USDA and our partnering sister agency—the Natural Resource Conservation Service,” explains executive director Pam Olave. The all-volunteer board is comprised primarily of landowners and managers, water specialists, small and large farmers, foresters and retired public lands employees. “We’re an unfunded state

agency without a tax base, often serving as the liaison between the regulatory agency and the landowners to help them become compliant. Most of our funds are generated working for landowners.”

The agency works with private and public landowners to help them meet regulatory compliance and improve water quality, quantity and fisheries. Some of the MCRCD’s services include assessing and managing large-scale, integrated watersheds, erosion control, habitat restoration and outreach services as well as road and stream assessment for individual landowners. When suitable projects are identified, the MCRCD works with landowners from start to finish, assisting with fund procurement, permitting and implementation, ensuring that every project meets regulatory approval.

Rural ranch and road subdivisions are a primary focus. Farm roads are often constructed near creeks—the reason riparian areas are seriously impacted. “In every watershed plan, the major source of control sediment is rural ranch roads. Roads get built and upgraded, and oftentimes landowners aren’t thinking about future erosion problems. We help disconnect roads from streams,” Olave explains. The agency has assisted with nearly 200 miles of



The Mendocino County Resource Conservation District helps landowners solve issues related to sedimentation, runoff and erosion.



Mill Creek dam before and after

road improvement in the county, mostly on private lands, focusing on sediment reduction. Additionally, the agency has developed erosion control plans for rural roads on approximately 14,000 acres and implemented road sediment reduction treatments on more than 10,000 acres.

Federal and state funding, including Environmental Quality Incentive Program funds and agency support are available for qualifying projects. “There are many programs—organic programs, salmonid initiatives to restore fisheries, pond building and off-storage incentives which can help landowners. We look for ways to offset the landowner costs. Typically, we can use NRCS federal match moneys to offset costs, and between the two agencies, landowner costs may be significantly mitigated. We develop farm plans, address the overall property condition and make recommendations,” says Olave.

The MCRCS and the NRCS spent a decade

on studies and plans for the Garcia River watershed. “We’ve applied for a fourth grant through the State Water Resources Control Board which would implement erosion control plans for major landowners along the watershed.”

Landowners on Feliz Creek were dealing with a failing dam and contacted the NRCS. “We worked with landowners, procured funding and removed the dam. The landowner is so happy it’s gone, and the fish now have an 11 additional miles of habitat,” says Olave.

A wet crossing on a county creek had become impassable, with neighbors stranded on either side. “We procured grant funding and installed a bridge. The Department of Fish and Game later discovered steelhead above the crossing which had not been there before. The neighbors got a bridge, the fish have more habitat and landowner maintenance is reduced.”

Olave notes that 2014 State agricultural waivers are expected to impact farmers. “We anticipate that farmers will be required to have a farm plan, part of which will address property erosion.” There will be three tiers, and for farmers choosing not to participate, fees will be levied. “We’re working with our Agricultural Commissioner’s Office and a local committee to address the impacts foreseen by the implementation of the waivers. Nothing is cast in stone,” says Olave.

Olave encourages landowners to contact her agency, but cautions no one can make miracles happen. “If landowners have a good project, the stars have to align in order to qualify for project funding. But we always seek an avenue if there is a true need.”

“Many county residents are trying to take care of the land so it takes care of you,” Olave notes. “There is a lot of excellent education available. Nothing happens without the support of the landowners signing on, and they really have.”

OUR LAND & WATER: GOALS & ACTIONS

Goal 11: Protect and Enhance Our Agricultural Resources

- 11.1 Support food-producing lands and community gardens by identifying and enacting relevant city and county codes, zoning policies and land use agreements.
- 11.2 Transform and diversify unintended or underutilized acreage (i.e. vineyards, orchards) into food-producing land.
- 11.3 Develop incentives for food producing lands.
- 11.4 Advocate for the continuation and refunding of the Williamson Act.
- 11.5 Facilitate the development of agricultural land trusts, conservation easements and non-profit land purchases.
- 11.6 Create policies that secure land for small to mid scale diverse agricultural production.
- 11.7 Create educational programs regarding land use policy, BLM leases, conservation easements, and development right transfer.
- 11.8 Develop indigenous foods and medicines.
- 11.9 Support laws prohibiting the cultivation of Genetically Modified Organisms.
- 11.10 Ensure continuing supplies of agricultural water.
- 11.11 Foster an equitable balance between the water needs of residential and agricultural users.
- 11.12 Support programs that encourage efficient use of irrigation water.
- 11.13 Balance the needs of frost protection water deliveries and instream flows necessary for healthy fisheries.
- 11.14 Encourage the increased use of reclaimed water.
- 11.15 Encourage land use practices that reduce erosion, storm water run off and increase groundwater recharge.



"I think we have all the components to implement responsible and very sustainable water use. With everyone moving independently, it's harder than it needs to be. But we'll get there."

—Sean White
General manager of the Russian River Flood Control and Water Improvement District