

LandSmart Plan

Veronda-Falletti Ranch

175 West Sierra Avenue

Cotati, CA

2021



Plan Preparer: Keith Abeles

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Introduction, Goals, and Priorities:

The Veronda-Falletti Ranch property is located 2 blocks to the west of downtown Cotati, California. The City of Cotati owns the property and leases it to the director-president of the Farmster organization, Dustin DeMatteo. Mr. DeMatteo entered into a lease agreement with the City and began managing the property in 2018, providing a home base for Farmster activity. The organization was started by Mr. DeMatteo and other Sonoma State University (SSU) students in 2015. Their mission is to empower future leaders to promote community supported agriculture. This includes growing food, farm skills, and sharing resources locally. With this broader goal guiding activities at the ranch, Mr. DeMatteo engaged with the Sonoma Resource Conservation District to develop a Landsmart Farm Plan, to lay out general goals and priorities, and identify many of the specific ranch plan activities to be implemented over time at the site. Categories of activities and prioritized practices within the plan include: Grazing, food and row crop production, non-crop beneficial plantings, water management, on site-solar energy production, education, and community interaction. Natural resource conservation is a high priority for the ranch operation, and opportunities to protect and enhance resources onsite are included within the plans for each category addressed. As Farmster and the ranch manager embark on a multi-year process of implementing agricultural operations and engaging the community at the site, these plans will provide a guide for steps taken to meet its goals and serve its mission.

Property Description

The Veronda-Falletti Ranch is a 4.37 acre property located in central Cotati, directly across from city hall. 3.6 acres of it are managed by Dustin DeMatteo and the Farmster organization. The land was purchased and protected as public open space in a partnership between the City of Cotati and the Sonoma County Agricultural Preservation and Open Space District. An affirmative easement was established in 2008, to ensure the land stays in agriculture in perpetuity, and provides opportunities for community access and education. No further development or change of allowed land use activities is permitted under the conditions of the easement. Mr. DeMatteo and Farmster provided an ideal candidate to lease the land and meet the goals and conditions set up in the easement. The current lease runs through 2021, at which point Mr. DeMatteo plans to renew for a minimum of 5 years, with a longer period being desirable.

The property is located adjacent to city hall, residential housing, and West Sierra Avenue, one of Cotati's main transit corridors. This location provides easy access and excellent visibility to the community. The site is on level ground. Most of the property is undeveloped, dominated by grass, and a handful of mature trees. There is a small, refurbished farmhouse and water tower on the southeast side of the property by West Sierra Avenue. Two small wooden barns are located near these buildings, with plans in place to design and rebuild new structures in the same footprints. Existing fencing provides around 2 acres of grazing area for sheep, pygmy goats, a cow, and a calf. Large oaks and walnut trees are growing in the middle and edges of the grazing area. A few fruit trees and landscape plants grow near the buildings and driveway. A portion of the undeveloped, grassy area toward the southwest corner mildly ponds during rainy periods, but there are no streams, wetlands or waterways on the property.

The ranch taps into the Cotati municipal water system, providing a good quality source of potable and irrigation water. There are a few existing spigots to access water, and more are planned for installation. Currently there is no cost for the water. Electricity is provided to the buildings on site through PGE, and is sufficient to meet the needs of the ranch. It is a prime location for community interaction and involvement. Aside from city hall and a church across the street, it is surrounded by residential housing on all sides. A small public sitting area with a drinking fountain borders the ranch on the south west

corner, which is frequently visited by nearby residents. Visibility of the ranch is enhanced by the thousands of cars traveling past each day on West Sierra Avenue.

The property is located within the Laguna de Santa Rosa watershed, just to the southeast of nearby Cotati Creek. Most water that lands on the flat property infiltrates directly into the soil onsite. Any water that does flow off the property enters a drainage system on the northwest or south boundary, where it feeds into Cotati Creek or directly into a channel feeding the Laguna de Santa Rosa. All of the drained water makes its way to the main Laguna de Santa Rosa channel, which ultimately flows to the Russian River and then the Pacific Ocean.

Laguna de Santa Rosa Watershed Description:

The Laguna de Santa Rosa (Laguna) watershed is an ecologically and economically important area of Northern California. (See map 1 in Appendix A) In addition to having the largest freshwater wetlands complex on the Northern California coast, the Laguna is also the home to a diverse assemblage of over 200 species, including several state and federally endangered plants and animals, and has recently been recognized as a Wetland of International Importance by the Ramsar Convention on Wetlands. The Laguna is the largest tributary of the Russian River, draining approximately 254 square miles through approximately 435 stream miles. The watershed contains a diversity of habitat including creeks, open water, perennial marshes, seasonal wetlands, riparian forests, oak woodlands, and grasslands.

The Laguna is home to the City of Santa Rosa, the largest city in California's North Coast Region, and the 12th largest metropolitan area in California. Though the watershed makes up only 16% of Sonoma County's land mass, it is home to over half the county's population, containing all or part of the cities of Windsor, Santa Rosa, Rohnert Park, Cotati, Sebastopol, and the community of Forestville. In addition to these urban areas, the Laguna watershed contains over 70 square miles (over one quarter of the watershed's area) of important farmland, as designated by the California Department of Conservation.

Due to its long history of settlement, particularly in the last two hundred fifty years, the Laguna has undergone disruptions to ecological structure and function that have resulted in significant changes to its hydrology, geomorphology, flora, and fauna, especially in areas of intensive land use.

Grazing Plan

Raising animals and providing education on livestock stewardship for smaller properties (1-7 acres) is a primary ranch goal and priority. Roughly 2.4 acres on the northeast portion of the property is available for grazing (see map 2 in Appendix A). Some of this acreage will be permanently dedicated to grazing, while a portion to the southwest will allow for seasonal grazing, and temporary placement of animals in the area. A permanent fence surrounds the designated grazing area on 3 sides now. A permanent fence running along the line of the existing large trees in the middle of the pasture is considered the strongest option to fully enclose the dedicated grazing area (see map 2 in Appendix A). A portable electric fence is being considered as a second option. Electric fencing will be set up within the permanent and seasonally dedicated grazing areas to create smaller paddocks that can be managed for rotational grazing and optimal forage production. Paddock size and fencing plans will be determined as animal types, varieties, forage production, and specific needs are identified. The goal is to provide for livestock needs through grazing the onsite pastures. Some supplemental feed may be necessary, depending on the types of

animals, stocking density, general forage productivity of the site, and yearly variations in forage fluctuating with the weather.

Animals planned for the ranch include:

Animal	Variety	Number	Notes
Cow and Calf	Mini/midsize Jersey	1	
Sheep	Dorset, Shetland	5	
Goats	Pygmy Nigerian	3	
Chickens	Buff Orpingtons, Wellsummers, Australorp, others TBD	30	A mobile chicken tractor is planned for placement in the annual production beds

Other types of animals may be periodically brought in by contractors or others for educational purposes, and to feature animals that can interact with children in the kids’ zone.

A dryland pasture mix was planted in the pasture area in fall 2019, but did not establish well, due to the late then light rains, and possibly because of the foraging of animals onsite. Farmster will work with the local UCCE livestock farm advisor and/or a local purveyor of seeds to determine the best pasture seed mix to use, planting rate per acre, and management approach to develop an optimal stand of forage for the livestock. Fortunately, there are no major invasive weed issues in the pasture at the point of this writing, though there is some foxtail in sunny areas, and thistles under the trees. A successful establishment of forage grasses and rotational grasses will help minimize invasive species.

Stephanie Larson, UCCE-Sonoma Executive Director and livestock Farm Advisor for Sonoma County, visited the property in summer of 2020, and has provided a grazing and agroecology plan with more general and specific information included. See Appendix 2.

Planting Plans

Farmster has plans for several types of plantings in different areas of the ranch. These include:

- Annual production beds
- Fruit tree establishment
- California Native Plant Hedgerow
- Ornamental and landscape plants
- Beneficial/pollinator plants
- Silvopasture
- Hugelkultur
- Greenhouse

Annual production beds

A large area in the southwest portion of the property has been identified for annual crop production (see map 2 in Appendix A). At least 3 long beds are planned for row crop production including vegetables, flowers, pumpkins, and other annual plants. Berms are planned alongside each annual bed where other perennials and annuals can be planted. Berry bushes and plants that attract beneficial insects, which serve as pollinators and predators of insect pests, will be included in berm plantings. The

annual beds will be hand dug and maintained without gas-powered mechanical tillage. A mobile chicken “tractor” will be periodically rotated throughout the production beds. This will provide increased soil fertility from the chicken manure. Chickens will provide additional benefits by scratching and manipulating the soil, consuming insect pests in the soil, and laying eggs. A cereal-legume cover crop will be planted in beds that are not in production over the winter.

Produce and eggs from the chickens will be sold at an onsite farmstand, which will be set up along West Sierra Avenue, near the driveway. Surplus available beyond what is sold at the farmstand will be sold or donated locally. See Appendix D for a list of plants that will potentially be cultivated in the annual production beds.

Fruit tree establishment

There are 4 bearing fruit trees on the property now, in the planned kids’ zone area. This includes a Santa Rosa plum, 2 Bosc pears, and a crabapple. At least 6 more trees are planned, including at the fence corners of School Street to the west, by the existing bench, where community members will be able to access the fruit on one side. Apples, pears, plums, and a fig forest are planned for planting. Other types are being considered. See list Appendix D. Fruit will be sold at the onsite stand and some may be processed to create fruit-based products.

California Native Hedgerow

A native plant hedgerow is planned for the corner on the fence line of El Rancho Drive, and the residential units that head east off El Rancho (see map 2 in Appendix A). It will feature small and large native shrubs, including some that might grow as high as 15-20 feet. Smaller shrubs, forbs and groundcover plants will also be included. The hedgerow will be a source of beauty, while also providing valuable habitat for birds, beneficial insects and small animals. It will ideally feature plants that allow for year-round flowering, which keeps beneficial insects onsite. It will provide an ideal buffer with the neighbors, providing beauty and a partial visual block that benefits both sides. The hedgerow will sequester carbon, providing a beneficial above-ground and below-ground carbon sink. It will be an excellent demonstration opportunity for people visiting the ranch, offering an opportunity to learn about resource benefits of native plant hedgerows, low water use landscaping options, and drip irrigation setup. See potential list of plants in Appendix C.

Ornamental and Landscape Plants

The property is currently sparsely planted with ornamental landscape plants including yarrow, butterfly bush, lavender, and a few others. There are multiple additional opportunities around the property to install plants that can help provide a variety of benefits, such as aesthetics, wildlife habitat, and carbon sequestration. These potential planting locations are primarily along the fence lines along West Sierra Avenue and School Street. Additional areas near the farmhouse, water tower, and greenhouse may provide good locations for ornamentals. Plants should be chosen with low water needs that are suited to grow in our area. A poly hose drip line should be installed along the fence line to supply new plants. There may be plants of medicinal, fiber, and other values that you wish to feature for educational or practical use purposes as well in these areas. While these will add to the beauty of the property, they should be planted at sites and spacings that allow gaps and views into the property for the community members walking, biking or driving by.

Beneficial/pollinator plants

Along with berms planned for the annual production bed area, a separate berm for installing plants that attract beneficial insects is planned along the corner of the property on School Street and El Rancho Drive (see map 2 in Appendix A) . This planned berm follows the fence line from the southwest corner of the public bench area to the start of the hedgerow along El Rancho Drive. While providing similar benefits to the hedgerow, it can include a wider variety of plants beyond just California natives, including more annual plants. Its main function is to provide habitat and food for insects and birds that can help the farm by pollinating plants and consuming insect pests. This berm is an opportunity to provide habitat for migrating monarch butterflies, an important pollinator whose populations are struggling to survive on the west coast. Appendix F includes a list of beneficial plants considered for planting.

Silvopasture

Plans call for two oak trees to be planted in the pasture/grazing area in the northeast part of the parcel. This will be very important for providing a source of shade and shelter for grazing animals. It will benefit their health and productivity. Additionally, these oaks will provide a source of carbon sequestration, wildlife habitat, beauty, and an opportunity to teach about silvopasture. Care should be taken to choose appropriate types of trees and plant them in areas that do not diminish too much sunlight, and limit forage production in the grazing area.

Hugelkultur

Though not practiced on a large scale, this German practice is gaining popularity in our area and the United States. It is popular with permaculture practitioners. Hugelkultur is a horticultural technique where decaying wood is mounded with other compostable plant debris and materials, and surrounding soil, to form a small mound or windrow, akin to a raised bed. It helps to improve soil fertility and water retention in the long run, while sequestering carbon in the soil. Farmster has started a hugelkultur bed below the large shade trees in the pasture, and plans call for continuing it towards the fence line along El Rancho Drive, as indicated on Map 2. It may be mounded higher as a natural fence to help confine the livestock animals' movement.

Greenhouses

While not a planting, the greenhouses will be a vital cog in the plant production systems of the ranch. Two greenhouses will be constructed in the winter of 2020-21. A 20' x 41' greenhouse will be assembled just to the west of the water tower and a 14'x 21' greenhouse will be installed by the driveway and kids' zone. Seedlings will be produced for plants to be grown onsite in the annual production beds, and in other areas. Additionally, vegetable start seedlings, ornamentals, and native plants will be grown for sale to the community via the farm stand and special events. This will provide an important source of income to the ranch and it will also distribute plants of interest to the community.

Education Plan

Providing education to the community is a primary goal and activity for Farmster at the ranch. It was a driving reason for the Open Space District to help secure the land and establish an easement, and it motivated the City of Cotati to offer the lease to Mr. DeMatteo. Farmster has outlined several different educational opportunities and experiences for the community to interact with the ranch.

The primary educational categories include:

- Developing a community-accessible kids' zone
- Hosting pre-school through grade 8 school visits/field trips
- Providing internship opportunities to high school and college students to work onsite
- Partnering with local organizations on events and projects
- Workshops, Tours, and Field Days
- Home for Farmster Activities
- Create a model grazing demonstration site for small properties

Kids Zone

A zone near the driveway, accessible to interested members of the community, will be dedicated to hosting kids. It will feature a small garden and livestock animals. Kids will be able to pet and interact with the animals. Other kids' activities and events will take place in this area. The goal will be to educate children about agriculture, the unique agricultural history of our area, and inspire interest in farming and ranching. It will be a fun and engaging place to visit and learn.

School Visits

Farmster aims to establish a partnership with approximately 5 schools in the area, serving kids in grades preK-8. These schools can integrate ranch activities into their curriculum, and the ranch will provide a site for field trips, regular visits, and a model for discussing topics related to farming, ranching, natural resources, and science. These schools will be partners or members, not just one-time visitors, where schools can help share with the costs and assist with tasks needed to support the shared goals of the school and ranch. Schools will be able to customize activities at the ranch to their specific curriculum. Farmster aims to host 30-40 school visits each school year.

Farmster is considering partnering with the following schools with whom they have initiated discussions:

- Cotati-Rohnert Park Co-Op Nursery
- Cypress School (ages 5-22) - Petaluma

Internships

Experience is the best teacher. Local high school and SSU students will have opportunities to work at the farm. A variety of tasks will lend themselves to this, including: caring for the animals, setting up mobile fencing, managing the annual bed production, propagating plants in the greenhouses, assisting with community events and tours, and more. Internships will be a win-win scenario, where students can gain new skills and experience and the ranch can get assistance with the many tasks needed to operate it. The ranch will serve as a steppingstone experience for many young students, equipping them to lead future careers in agriculture, or at least teaching them life-long skills that will benefit them down the road.

Partnering with Local Organizations

Farmster plans to partner with around 5 local organizations to provide learning opportunities, field days, and tours for people of all ages. This will provide the community with learning experiences that may not be easily found elsewhere. The ranch would like to offer many types of field days, some of which may be tailored to fit in with the aims of the partnering organizations. Examples of field days/workshops that can be offered include greenhouse propagation, working in the annual beds, hedgerow planting, livestock care and maintenance, hugelkultur demonstration, rainwater catchment, irrigation management, and more. The possibilities for workshop topics are expansive.

Organizations identified as good fits to partner with include:

- Boys & Girls Club
- Daily Acts
- LandPaths
- Oaks of Hebron
- Redwood Country Kids Club
- Redwood Empire Foodbank
- Sonoma Resource Conservation District

Workshops, Tours and Field Days

As mentioned above, the site provides an excellent location for hosting tours, workshops and field days. The ranch will be able to host these activities on their own, or in conjunction with the City, Open Space, and other groups, to provide fun and educational experiences of all types. The central location is ideal, since it is in the middle of Cotati, close to downtown, but also easily accessed by Highway 101 and major roads, with ample nearby street parking. It is a slice of rural, agricultural country in the middle of town, which is unique in this day and age, and this ranch really is well situated to provide a great opportunity for education and community interaction.

Home of Farmster

After moving around for several years, Farmster now has a long-term home base. This gives them a chance to truly achieve their mission. They can produce food, flowers, and fiber, manage livestock, and offer extensive education and community gathering opportunities. Once they establish their next 5-year lease, ideally in 2021, they have a site where they can securely plan, execute, and steward an agricultural piece of land, implementing the multiple specific activities mentioned in this plan. Having a home base provides a greater incentive to invest money, resources and labor into the site. Having secured a productive piece of land for several years allows their ideas and plans to flourish into reality, providing numerous benefits to the community, and everyone who comes through and participates.

Small Property Grazing Demonstration Site

With only a couple acres of grazing on site, the ranch will provide a strong model for grazing on a small scale. This will be invaluable to the community and surrounding region, where many landowners own animals and manage them on small pieces of land. Cotati, near Penngrove and Petaluma, are home to many small properties where the owners or renters manage animals or market gardens. Farmster has a clear goal of providing a demonstration site to people managing animals on 1-7-acre properties. Because many people who manage animals on these types of smaller rural residential properties may not come from an agricultural background, or might be just searching for new ideas, this site will provide an excellent educational demonstration site.

Water Infrastructure Plan

Having adequate amounts of good quality water will be essential for providing for the needs of livestock, annual and perennial production, and other landscape plants. The property has access to Cotati municipal water. Four water spigots are currently located throughout the property, most of them close to the farmhouse and barns. More spigots are planned to reach all areas where water is needed throughout the property. They will supply the multiple troughs planned for when the grazing area is divided into smaller paddocks. More trenching and pipe installation underground will be necessary to reach new areas. There should be sufficient supply and pressure to reach all areas of the ranch.

Drip irrigation systems will have to be installed for the annual production and the multiple plantings planned. Manifolds can be set up off both existing and new spigots to hook into the drip irrigation. Any irrigation needs should be fairly straightforward and easy to set up using standard irrigation fittings and equipment that can be sourced from local irrigation suppliers. Because the property is small, hoses can be attached to spigots to access any areas that only need water temporarily.

Farmster is looking to set up a rainwater catchment system on one or both barns. They look to design a system with the assistance of the Sonoma Resource Conservation District that would allow rainwater to be caught from the roof via gutters, and stored in nearby tanks, where it can be pumped when and where needed. When tanks fill, overflow water could be channeled from the tanks to a nearby swale that runs parallel to the annual production beds. Increased amounts of water can infiltrate into the ground via the swale and ideally diminish the need for irrigation in that area. A rain garden can be established on the berms or basins associated with the swale. Municipal water would likely be pumped into the tanks when they are empty in summer, so that all irrigation infrastructure can be hooked into one central point, regardless of the source of water. Rain catchment will supplement municipal supplies, and diminish the need to rely on city water, thus reducing the potential costs and energy use associated with it. Catchment will also diminish the flow of water into Cotati Creek and the Laguna de Santa Rosa watershed channel during high peak flow events. This decreased stormwater output from the property will benefit those waterways by reducing the potentially destructive pressure on them, and this will in turn provide a streamflow enhancement. The water catchment system made up of the rain tank, rain garden, and swale will provide an outstanding educational demonstration opportunity.

Solar Energy Production Plan

Solar energy production is planned for the site. Installing solar panels will allow Farmster to generate all the energy needed for operations, and potentially more. This reduces fossil fuel use, reliance on PG&E energy production, greenhouse gas emissions, and other environmentally destructive impacts associated with energy generation and distribution. In association with other positive management practices, the ranch can become carbon neutral or positive. For these reasons, establishing solar energy production is yet another component of the ranch that can provide a significant educational opportunity to visitors.

Solar panel installation is planned for the medium to long term on the farmhouse roof (1200 sf), and if possible, on the barn roofs (1620 and 1323 sf). These roof areas should provide ample space to generate the amount of energy required to run operations at the ranch. Generally, 80% of roof space facing a favorable direction can be utilized for panel installation. Farmster will need to estimate its potential peak future energy needs to determine the right size for the

system design. This can be done in collaboration with the solar panel company they choose to work with, or an energy consultant. It will be important to integrate the opportunity for solar panel installation into the planned barn rebuild designs.

Community Participation Plan

Serving as a substantial community resource, the site will provide many opportunities for the neighboring, local, and regional residents to interact and participate. Along with those already mentioned, several other activities and events are planned at the site to foster community interaction and education. Volunteers, like the interns, will be integrated into the ranch operations and special projects. Neighbors will be able to collect fruit from trees on the bordering sidewalk, which will hopefully entice many of them to look further into the site and get involved.

Office space will be available for rent in the farmhouse. This will help bring in regular income to support the ranch activities and can potentially provide a home to other community minded organizations in need of office space. The farmhouse has a kitchen and large room which might be available for community meetings, discussions, or small group events.

A seasonal sales stand is planned near the driveway and kids' zone, where food, flowers, veggies, native plants produced in the greenhouses, and products produced onsite can be sold. Eventually, a limited amount of food service featuring onsite production may be established. These activities provide value to the neighborhood, and an opportunity to generate income for the ranch.

Supplying surplus food produced onsite to the Redwood Empire Food Bank, and potentially other organizations, the ranch can help provide food to the community and support and strengthen our local food systems.

The kids' zone will create a focal meeting point for the community, where fun, socializing, discussion, and education can all happen. It will certainly draw in new members of the community who may or may not have an interest in agriculture, and foster increased participation in ranch activity and education

Given its location, the resources already on site, and the mission of Farmster, an expansive set of activities is possible which can strengthen the community in a very fun and positive way.

Conclusion

Dustin DeMatteo and Farmster serve a positive, much needed mission. The Veronda-Falletti Ranch provides an outstanding opportunity to produce food and plants, and provide an educational/community hub in the middle of one of Sonoma Counties' urban areas. It is a rare and fortunate confluence of events for a city, county wide Open Space District, and some young farmers with agricultural and educational aspirations to come together and create something truly unique and valuable. Sonoma RCD thanks Mr. DeMatteo for the opportunity to work with him on this plan, and in future endeavors at the site.

Appendix A

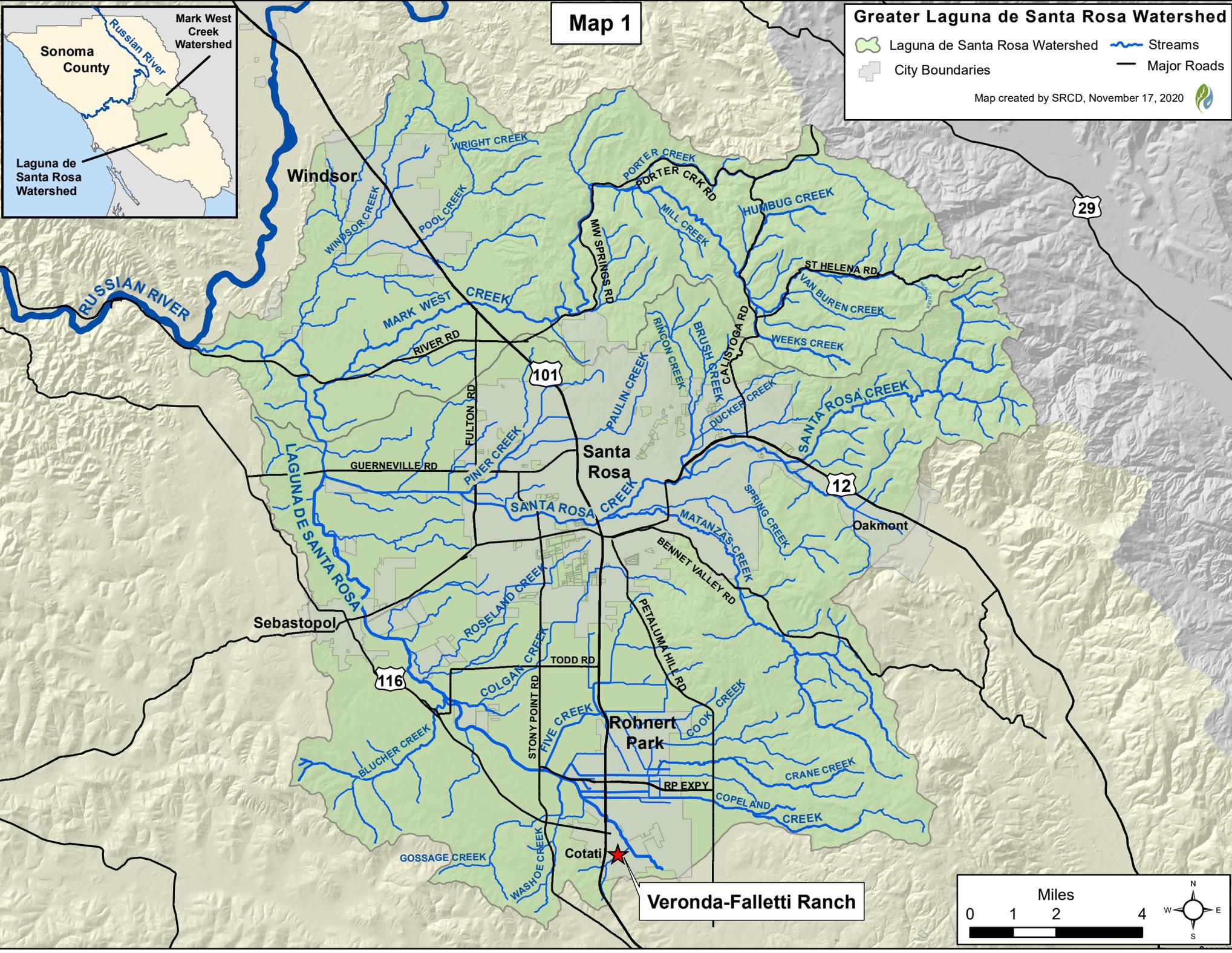
Veronda-Falletti Ranch Maps

Map 1

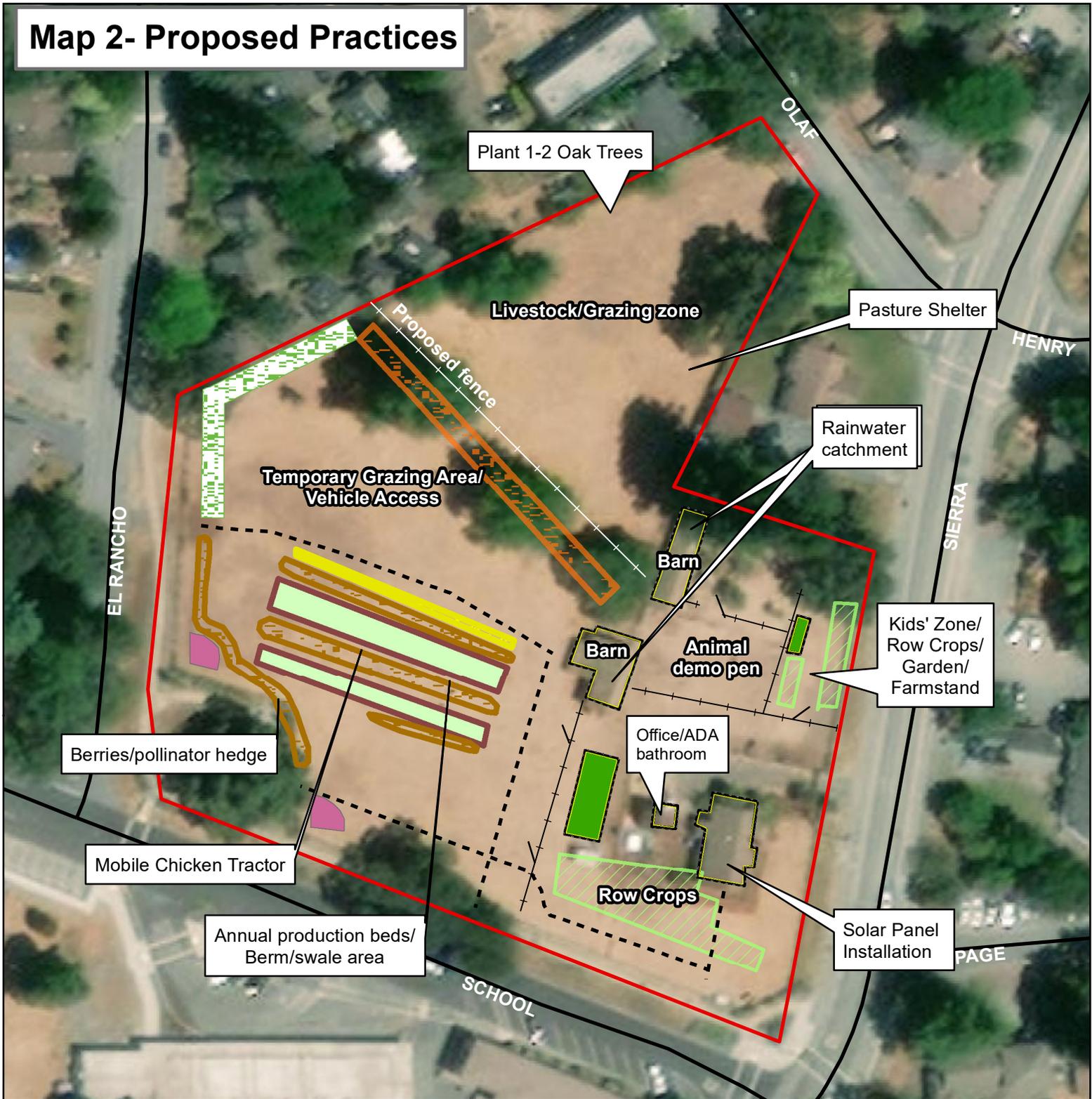
Greater Laguna de Santa Rosa Watershed

- Laguna de Santa Rosa Watershed
- Streams
- City Boundaries
- Major Roads

Map created by SRCD, November 17, 2020



Map 2- Proposed Practices



Veronda-Falletti Ranch

APN: 144-250-008
175 W. Sierra Ave., Cotati, CA 94931

Legend

- | | | |
|-----------------|--------------------|-------------|
| Property | Buildings | Swale |
| Fences | Greenhouses | Berms |
| Streets | Row Crops | Fruit Trees |
| Irrigation Line | No-Dig Annual Beds | Hedgerow |
| Hugelkultur | | |

1 inch = 104 feet

0 30 60 120
Feet



Map created by
Sonoma RCD
October 2020

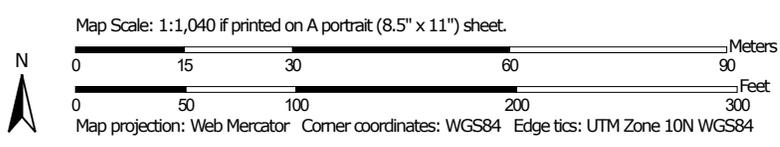


Map 3: Veronda-Falletti Ranch Soil Map

Soil Map—Sonoma County, California
(Verona-Falletti Ranch Soil Map)



Soil Map may not be valid at this scale.



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

Background



Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Sonoma County, California
Survey Area Data: Version 14, May 29, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 1, 2020—Jun 5, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
HaB	Haire fine sandy loam, hummocky, 0 to 5 percent slopes	3.6	100.0%
Totals for Area of Interest		3.6	100.0%

Appendix B

Veronda-Falletti Ranch Grazing Plan

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Introduction

The Veronda-Falletti Ranch is owned by the City of Cotati in Sonoma County. The Farmster organization manages the property, which includes roughly 2.4 acres of flat grazing land on its 3.6 acre footprint. Farmster provides agricultural education to the community through food and crop production at the site. Stephanie Larson, PhD, and County Director and Livestock Range Management Advisor for the University of California Cooperative Extension, was invited to develop a grazing plan for the property in 2020. This document provides a plan that optimizes utilization of the land to protect and enhance resources, promote animal health, and provide valuable educational opportunities on-site.

Goals and Objectives

Setting goals and objectives is the most important step in developing a grazing and agroecology plan for the Veronda Falletti Farm. Goals are the foundation upon which specific prescriptions should be made within regulatory parameters. Identifying goals will assist the rancher in achieving the desired outcomes; in this case, increased carbon storage.

Veronda Falletti Farm strives to achieve maximum carbon capture, increase food production and provide an experience for the community by the use of the Farm in a variety of methods. Improved grazing management, combined with crop rotation, will assist in reaching the following goals:

- Maximize forage production
- increased soil carbon and increased water holding capacity
- Extend the green/grazing season
- Oak regeneration
- Protection of water quality, improve pasture nutrition

Grazing and Carbon

The Veronda Falletti grazing plan, strives to increase carbon sequestration in the soil through overall grazing management with ecological site potentials and limitations to manage for optimum carbon capture - as forage production and soil carbon - within site-specific management constraints. In general, increasing forage production from permanent pastures will tend to result in an increase in soil carbon, assuming good or excellent pasture management. Practices that reduce or repair soil erosion, reduce total area of bare soils, reduce trailing, and provide grazed vegetation sufficient rest for adequate regrowth between grazing periods, will tend to result in both more overall forage production and more carbon sequestered in vegetation and soils over time.

Grazing Program

The principle function of the grazing program is to use animal to achieve the goals and objectives of the land owner. Lands that are properly grazed can assist in increasing perennial forages, sequester carbon and provide habitat for several species. Increasing perennial species can also extend the grazing season and provide additional forage for grazing animals.

Terms

The following terms are defined to allow readers of this GVMP to understand the grazing program description:

Animal Unit (AU). An adult cow or an adult cow and her calf, referred to as a “cow-calf pair”, or simply a “pair” or the equivalent.

Animal Unit Month (AUM). The amount of forage that is needed to support one AU for one month. One AUM is equal to 1,000 lbs. of forage¹.

Available Forage. Total forage minus RDM.

Browser. An animal that feeds primarily on woody vegetation.

Forage. Vegetation eaten by browsing or grazing animals.

Grazer. An animal that feeds primarily on herbaceous vegetation.

Grazing Capacity. The maximum number of livestock that can graze on a given site without adversely affecting range productivity, causing a decline in range condition, or resulting in other adverse impacts. Grazing capacity is expressed in pounds or tons of forage produced, often described in AUMs.

Intermediate Feeder. An animal that feeds by browsing and grazing.

Residual Dry Matter (RDM). The amount of herbaceous biomass that should be left at the end of the grazing season to provide suitable conditions for germination of the following year’s forage crop and for soil protection. RDM should be subtracted from forage production estimates to determine available forage. Professional opinions as to appropriate RDM levels vary to some degree and are dependent on site objectives. An economic objective aimed at producing the maximum amount of high-quality forage might differ from one aimed at providing specific habitat conditions.

Stocking Rate. The number of AUs present on a given area over a designated time period.

Livestock Species

Factors that determine the livestock species best suited to the Veronda Falletti Grazing include management goals and objectives, local livestock availability, predation potential, and infrastructure needs. Management goals and objectives are most important in selecting animal species because different grazing animals prefer, and select for, different types of vegetation (Table 1).

Cattle. Cattle are the most appropriate species for grazing at the Alton Sites because they selectively consume grasses rather than forbs.

¹ Forage weights used for this definition are variable. Some range managers use 1,000 pounds of forage for one AUM, which accounts for wasted forage. Others use a lower rate based on actual consumption (26 pounds per day per AU) and apply a “grazing efficiency rate” to account for wasted forage.

Llama/Alpacas. Llamas and/or alpacas are an acceptable substitute for cattle if it is difficult to find a cattle lessee for such a small site. However, these animals are typically raised more like pets than livestock, and many are fed supplemental hay on a regular basis.

Sheep. Sheep tend to target forbs, and are more likely to graze forbs than grasses.

Goats. Goats are primarily browsers, like sheep, they target brush, then forbs.

Table 1 Generalized dietary preferences by domestic livestock species

Species	Dietary Preferences
Cattle	Grazer: mostly grasses, minor forbs and browse
Horses	Grazer: mostly grasses, minor forbs and browse
Sheep	Intermediate feeder: high use of forbs, but also use high volumes of grass and browse
Goats	Browser to intermediate feeder: high forb use, but can utilize large amounts of browse and grass; highly versatile

Determining Carrying Capacity

The forage is the basis of determining the carrying capacity of a given landscape and the subsequent stocking rate. The amount of forage grown on the land is a result determine the plant community composition or ecological site, annual variability occurs due to precipitation timing and amount throughout the growing season.

Grazing capacity can be estimated and stocking rates can be set based on site data and simple mathematical formulas. However, annual fluctuations in forage production mean that setting and adjusting stocking rates should be viewed as a process; adaptive management allows for the carrying capacity to increase or decrease based on the grazing season.

Balancing Grazing & Food Production

Access and insecurity has never been greater since the COVID-10 health crisis. Now is the time to take action to maintain food access and security in the midst of this public health crisis. Veronda Falleti Farm has the opportunity to establish and strength social protection mechanism and emergency food assistance programs that protect the most vulnerable, especially the homeless population. Using the science of Agroecology and its unique capacity to reconcile the economic, environmental and social dimensions of sustainability has been recognized by the FAO (IPES FOOD). Agroecology builds resilience by combining different plants and animals, using natural synergies – not synthetic chemicals – to regenerate soils, fertilize crops and fight pests. Agroecology is based on ‘land sharing’.

1. Applying agroecology practices to grow food at Veronda Falleti Farm could:

- Learn basic life skills required for employment
- Learn a variety of other marketable skills
- Give to the community by growing food
- Educate students and other groups who use the garden, experiencing grazing, etc.
- Create value-added products from farm grown materials
- Create a vibrant social and natural ecosystems

Assess capacity to participate in this project, to understand how this project fits with their strategic priorities, and to assess potential costs, benefits, risks, and along with opportunities for public education.

Guiding Principles

Proposed projects could be reviewed and prioritized based on their degree of alignment with many or all of these principles.

1. **Build community:** A community garden can provide opportunities for residents to come together and participate in transforming public land into a community resource that reflects the strengths, needs, and desires of the local community. This is an opportunity to create shared community spaces where people can be outside, enjoy nature, and enjoy each other's company.
2. **Increase local production of food:** Veronda Falleti Farm has potential to meet more of its food needs with local produce and livestock. Sonoma County can expand opportunities for food production by providing available land, information, and resources.
3. **Support economic viability of local agriculture:** The sustainability of agriculture depends on the development of economically viable businesses. Veronda Falleti Farm land to help develop programs, infrastructure, or other services that support sustainable farming and ranching jobs and businesses.
4. **Assure stewardship of natural resources:** Assure careful stewardship of the land through ecologically sound techniques that enhance habitats and actively conserve water, soil and native vegetation.

Prescribed Grazing

Prescribed grazing practices are designed to improve livestock production by improving grassland condition and productivity, which increases soil carbon stocks over time. This process generally involves planning both pasture grazing periods and rest periods to meet long-term management objectives, as pasture conditions and infrastructure allow. Successful grazing prescriptions often involve dividing pastures, thus reducing pasture size while increasing pasture numbers. Decreasing the number of herds on the ranch, by combining herds where possible, can also facilitate this process, again by increasing the number of pastures that are rested from livestock use at any one time, and by increasing the length of the rest period between grazing periods.

Changing the length of grazing periods and rest periods with season is a key strategy to optimize forage production and utilization. As rapid forage growth begins in spring, grazing periods (time animals stay in each pasture) can be shortened. This accelerates the rotation, which leads in turn to fewer days of rest between grazing periods. Rest periods during the rapid growth period can be as short as 3 or 4 weeks, while grazing periods can be shortened to as few as 3 days, depending upon rate of forage growth, which is a function of soil moisture and soil temperature, and days of rest, which again depends on number and size of pastures, number of herds and herd size.

Ideally, livestock are moved rapidly enough to prevent grazing of plant regrowth within the same grazing period, which allows more rapid plant recovery from grazing impact and, ultimately, more total forage production. This approach also tends to favor perennial grasses, if adequate time for carbohydrate storage and foliage regrowth is allowed between grazing periods. Rapid early season rotation may allow complete deferment of grazing in some pastures, which not all may need to be included in the rotation at this time of year. This in turn enables “banking” of forage for later in the year, whether as standing forage in the field, or as conserved forage (hay, haylage, silage).

As forage growth begins to slow in late spring or summer, pasture rotations should also slow, and the time animals remain within a given pasture can increase, depending upon forage availability. Rest periods necessarily increase accordingly, so that by summer, periods of rest may be 90-120 days or more, assuming sufficient forage is available.

Maximize forage production:

- Develop a grazing system that promotes graze and rest periods, will encourage root growth and increase perennial grass growth
- Monitor RDM closely. Areas with too little or too much RDM can increase annual grass encroachment; resulting in less carbon sequestration
- Water provided in all grazing paddocks; if not available should be established
- Create fencing to allow grazing small paddocks, easy of rotation between paddocks; giving pastures adequate rest before animals return to graze
- Temporary fencing use to reduce pasture size, increased grazing pressures (as long as water is available) for better utilization

-

Increase shade for animals:

- More regeneration of oaks

Increased soil carbon and increased water-holding capacity:

- Pastures would benefit from an application of compost, fertilization or increased animal pressure for manure loading
- Extend the green season, move to a more perennial system
- Plant hedgerows.

Protection of water quality, improve pasture nutrition:

- Maintain adequate RDM to provide soil protection, reducing erosion potential
- Rotational grazing for forage to rest and regrow, putting root systems down further into the soil
- Fence any riparian areas that may be impacted by cattle grazing, provided off site water
- Erosion control practices to reduce soil movement off step sloped areas

Increased length of grazing season:

- Managing livestock forage utilization in relation to forage availability, will include destocking under low production conditions, in order to insure RDM targets are met
- “Bank” soil carbon—and future forage production—by increasing RDM in favorable years and using concentrated herd impacts to facilitate the transfer of that accumulated “surplus” above-ground biomass to the soil carbon pool via manuring and trampling
- Follow with sufficient rest to allow adequate regrowth prior to the next grazing period and/or plant establishment in the following season, forage production, and overall carbon capture, can gradually increase over time

Natural Resource Conservation Service Practices

Below are the recommended NRCS practices to implement on Veronda Falleti Farm to achieve the overall goal of increased forage production, water capture and carbon storage (Table 2). Increase utilization of all pastures can occur through fencing, water development and compost application.

Table 2 Natural Resource Conservation Practices:

Goal	NRCS Practice Number	Description
Maximize forage production	528	Prescribe Grazing: Controlled harvest of vegetation with grazing or browsing animals, managed with the intent to achieve a specified objective. Improve or maintain animal health and productivity. Maintains or improves water quality and quantity. Reduces accelerated soil erosion and maintains or improves soil condition for sustainability of the resource.

	382	Practice facilitates the accomplishment of conservation objectives by providing a means to control movement of animals and people, including vehicles.
	516	Practice applies where conservation objectives require the addition of energy to pressurize and transfer water to maintain critical water levels in soils, wetlands, or reservoirs; transfer wastewater; or remove surface runoff or groundwater.
Increased soil carbon and increased water holding capacity	612	<p>Establishing woody plants by planting seedlings or cuttings, by direct seeding, and/or through natural regeneration.</p> <ul style="list-style-type: none"> • Maintain or improve desirable plant diversity, productivity, and health by establishing woody plants. • Create or improve habitat for desired wildlife species compatible with ecological characteristics of the site. • Control erosion. • Improve water quality. Reduce excess nutrients and other pollutants in runoff and groundwater. • Sequester and store carbon. • Restore or maintain native plant communities. • Develop renewable energy systems. • Conserve energy. • Provide for beneficial organisms and pollinators.
Protection of water quality, improve pasture nutrition	528	Prescribe Grazing: Controlled harvest of vegetation with grazing or browsing animals, managed with the intent to achieve a specified objective. Improves or maintains animal health and productivity. Maintains or improves water quality and quantity. Reduce accelerated soil erosion and maintain or

		improve soil condition for sustainability of the resource.
	382	Practice facilitates the accomplishment of conservation objectives by providing a means to control movement of animals and people, including vehicles.
	516	Practice applies where conservation objectives require the addition of energy to pressurize and transfer water to maintain critical water levels in soils, wetlands, or reservoirs; transfer wastewater; or remove surface runoff or groundwater.
Increased length of grazing season	528	Prescribe Grazing: Controlled harvest of vegetation with grazing or browsing animals, managed with the intent to achieve a specified objective. Improves or maintains animal health and productivity. Maintains or improves water quality and quantity. Reduces accelerated soil erosion and maintain or improves soil condition for sustainability of the resource.
	382	Practice facilitates the accomplishment of conservation objectives by providing a means to control movement of animals and people, including vehicles.
	516	Practice applies where conservation objectives require the addition of energy to pressurize and transfer water to maintain critical water levels in soils, wetlands, or reservoirs; transfer wastewater; or remove surface runoff or groundwater.

General Weed Management Protocols

Successful weed management requires following a strategy that integrates appropriate management methods with the life cycle and ecology of target species. General weed management protocols that should be applied at Windrush Farms include:

Ongoing Monitoring. Ongoing monitoring can simply consist of observations made and recorded by owners and operators of the farm.

Weed Identification. Weed identification should be confirmed, the threat posed by a new species should be evaluated, and appropriate weed management methods should be selected as described below.

Evaluation of Threat. The level of threat that each species poses should be evaluated. Highest priority species should be treated first.

Selection of Appropriate Treatment. The life cycle and biology of weed species and native and desired naturalized species should be considered in selecting the appropriate treatment.

Immediate Treatment. Isolated plants and small outlying populations should be immediately removed or otherwise treated to prevent establishment of new stands.

Control Before Flowering. Control measures should be implemented before flower maturity and seed set, or mature flowering or seed heads should be removed and disposed of.

Repetition of Management Measures. Management measures should be repeated as needed each season for plants with staggered maturities.

Most importantly, removal of newly introduced weeds should be aggressive, before they are allowed to spread and become well established. Single specimens or small patches of weed species that appear should be immediately removed and properly disposed of. Treatment success should be evaluated and prescribed treatments changed if necessary.

Non-grazing Weed Management Recommendations

Weed management methods other than grazing include the following:

Hand Removal. While hand removal of weeds can be labor intensive, it is the preferred methods for managing small patches of newly introduced weed species. Hand removal should be appropriate to the target species, and may consist of simple hand pulling of annual plants or hoeing small patches; digging up roots may be required for biennial or perennial plants such as bull thistle, and small stands of Himalayan blackberry.

Weeds removed by hand that are in a vegetative state can be left on site, while plants that are in flower, or that have ripe or unripe fruits should be buried or delivered to the landfill, to avoid spreading seed.

Some plants, including thistles, which are pulled or cut when in flower can develop viable seeds after being removed.

Mowing. Properly timed mowing can be used to reduce seed output, especially with annual grasses, although mowing requires soil to be dry enough that a tractor can navigate through fields without getting stuck; this weed management method is typically only practical in very late spring and summer.

Flail mowers, which can cut as low as one inch, are the preferred type of equipment for removing the grassland canopy. Small areas can be cut using string trimmers, which are not limited by soil moisture conditions. However, weeds cut during the growing season often resprout, requiring repeat treatments.

Mowing may also be used as an interim method for grassland canopy management if implementation of grazing is delayed. Although mowing does not provide the same type of disturbance as grazing, cut herbaceous biomass may degrade at a faster rate than if it is left standing.

Chemical Treatment. When other methods are not effective chemical treatment should be used.

Herbicide treatment of serious weed problems may be warranted in cases where weeds that pose a significant threat to habitat values cannot be controlled by other methods.

Weed Burners. Use of weed burners or “flamers” is not recommended, due to low rates of success on plants beyond the very early seedling stage and fire hazard concerns during dry conditions. Weed burners are most effective in agricultural setting where seedlings that germinate within cultivated fields are flamed before seeded crops emerge.

Non-grazing Weed Management Prioritization

- Conduct ongoing monitoring for weed infestations, identify problem species, and evaluate threat of newly observed species.
- Select appropriate treatment based on the life cycle and other characteristics of weeds.
- Obtain Marin County permits and approval prior to application of any chemical treatment/pesticide/herbicide.
- Apply management methods to highest priority weeds first, including thistles.

Monitoring Recommendations

Soil sampling for total organic carbon, forage production and RDM can be collected at Veronda Falleti Farm to better calibrate stocking rates for the farm. Monitor plant species changes over time.

These include:

- Conduct Invasive species assessment
 - Vegetation monitoring including RDM sampling
 - Photo monitoring
- **Invasive Species Assessment.** Invasive species should be assessed and monitored to ensure that encroachment is not occurring. Ongoing monitoring for weed infestations, identification of problem species, and threat evaluation of newly observed species will be performed. Weed treatment methods will also be evaluated during these monitoring visits.
 - **Vegetation Monitoring.** Vegetation monitoring will consist of RDM sampling to ensure that the grazing program is resulting in the desired level of biomass removal. RDM monitoring should be conducted annually in the fall, before the rainy season begins as described in Bartolome et al. (2002). The minimum target RDM level should be 500 to 750 pounds per acre, which may be adjusted if factors at Veronda Falleti Farm.
 - **Photo Monitoring.** While photographs cannot tell the entire story about a situation, project, or practice, much information can be gathered by comparing photographs taken of the same scene over a number of years. There are several kinds of photographs that you can take to document condition in a watershed or on a farm or ranch, including:
 - landscape photos
 - plot or close-up photos
 - photos of riparian, stream wetland, or other special habitats
 - event photos
 - practice photos

These should give a representative view of the area and feature a distinctive landmark in the background (e.g., a peak, rock out crop, or ridgeline) to aid in taking follow up photos in the future. Be sure to include enough horizon in the picture to allow a future photographer to find the same photo point again. You can record large areas of bare soil, erosion, weed and shrub invasions and burns using landscape photos or they can be used to document ground cover, residual dry matter, erosion, endangered species, and weeds (McDougald et al., 2003).

Adaptive Monitoring

Adaptive management is the process whereby management is initiated, evaluated, and refined (Holling, 1978). The formal adaptive management process, as shown in Figure 1, consists of a six-step cycle that is a useful framework for vegetation management.

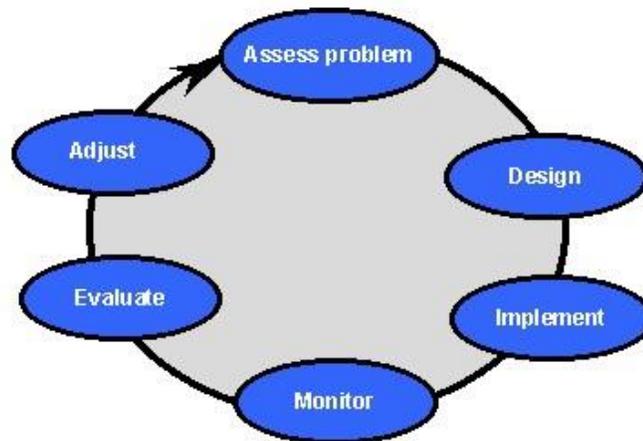


Figure 1. Adaptive Management Cycle

Figure 1 illustrates the six steps of adaptive management. These steps should be applied to this GVMP as follows:

Figure 4 illustrates the six steps of adaptive management. These steps should be applied to this Grazing Plan as follows:

- 1. Assess Problem.** Landowners want a rotational grazing plan to reduce soil erosions and improve habitat.
- 2. Design.** This step was accomplished in preparing this Grazing Plan as outlined in the goals and objectives identified.
- 3. Implement.** The implementation of the grazing program and additional weed management methods described herein will accomplish this phase.
- 4. Monitor.** The on-going monitoring will follow the program outlined by the Carbon and Grazing Plan, with the addition of compliance monitoring to ensure that the grazing lessee complies with requirements; monitoring is described herein.
- 5. Evaluate.** Information gathered through monitoring will be used by the appointed entity to determine if the prescribed methods are effectively meeting goals and objectives.

6. **Adjust.** Information gained in steps 4 and 5 will be used to evaluate and update, as necessary, this Grazing Plan to improve its results and management methods.

References

Bartolome, James W., W. E. Frost, N. K. McDougald and M. Conner. 2002. California Guidelines for Residual Dry Matter (RDM) Management on Coastal and Foothill Rangelands University of California Rangeland Monitoring Series Publication 8092.

Holling, C. S. 1978. Adaptive Environmental Assessment and Management. John Wiley and Sons, New York.

McDougald, Neil, Bill Frost, Dennis Dudley. 2003. Photo-Monitoring for Better Land Use Planning and Assessment. UC ANR. Publication 8067.

Appendix C

Hedgerow Plants and Information

Appendix C

Native Plants for Veronda Falletti Ranch Hedgerow

Recommended by Keith Abeles
Soil and Water Specialist, Sonoma RCD
December 2020



Common Name	Scientific Name	Suggested Spacing (ft)	Weedmat recommended
Aster 'Purple Haze'	<i>Aster chilensis</i>	3	
Sage 'Bees Bliss'	<i>Salvia</i> x 'Bee's Bliss'	6	*
Black Sage	<i>Salvia mellifera</i>	6	*
Blue Elderberry	<i>Sambucus mexicana</i>	6 to 8	*
California buckwheat	<i>Eriogonum fasciculatum</i>	3	*
California Goldenrod	<i>Solidago velutina</i> ssp. <i>californica</i>	3	
California Fuchsia	<i>Epilobium canum</i>	3	
California Wild Rose	<i>Rosa californica</i>	3	
Ceanothus-Thrysofolius	<i>Ceanothus</i> spp.	10	*
Cleveland Sage	<i>Salvia clevelandii</i>	3	*
Coffeeberry-fullsize	<i>Frangula californica</i>	8 to 10	*
Coyote Brush--Prostrate 'Twin Peaks'	<i>Baccharis pilularis</i> -- prostrate	6	*
Coyote Brush-full size	<i>Baccharis pilularis</i>	8 to 10	*
Coyote Mint	<i>Monardella villosa</i>	3	
Deergrass	<i>Muhlenbergia rigens</i>	3	
Flannelbush	<i>Fremontodendron californicum</i>	8 to 10	*
Hollyleaf Cherry	<i>Prunus illicifolia</i>	10	*
Narrowleaf milkweed	<i>Asclepias fascicularis</i>	1	
Sticky Monkeyflower	<i>Mimulus aurantiacus</i>	3	*
Toyon	<i>Heteromeles arbutifolia</i>	8 to 10	*
Western Redbud	<i>Cercis occidentalis</i>	10	*
Yarrow	<i>Achillea millefolium</i>	3	

Weedmat Considerations:

Weedmat is recommended for the plants with an asterisk in the far right column

Consider a weedmat for deergrass, as long as it doesn't restrict its growth over time.

Avoid using weedmats for plants without an asterisk, as they will restrict its desired spreading.



Establishing and Maintaining Hedgerows

Obtaining Plants: Plan ahead to get the native plants you need for your hedgerow. Native plants can be hard to find at typical commercial nurseries and some types of plants can only be obtained from nurseries that specialize in producing native plants. Fortunately, there are local and regional sources for native plants. Contact nurseries six months or more in advance of planting to make sure they can propagate and provide the plants you want for your project in a timely way. Farmster may wish to propagate its own native plants for its planned hedgerow. Planting with material taken onsite or nearby should be done to the extent that it is feasible. See the attached list of nurseries specializing in native plants, to purchase plants that cannot be propagated onsite.

Preparing the Area for Planting: Depending on how much vegetation is in the area for planting, clearing of brush and vegetation will be necessary before you plant. Clearing the area for new plants will be necessary to ensure their survival and success.

Plant Spacing: Spacing between plants varies from hedgerow to hedgerow and by plant type. In general, full sized shrubs are planted at 10 foot centers, and smaller groundcovers and shrubs at 3 or 6 feet. You may also wish to clump plants closer together, leaving gaps in areas. Both approaches have advantages and disadvantages, and ultimately you should plant in a manner that is most desirable to you.

Planting: October through April is the best time for planting native plants. It is preferable to plant earlier, as long as there is sufficient moisture in the ground. Conversely, once the soil is wet and saturated, it is best to wait until the soil moisture has decreased to plant. Soil should be clearly moist but not so much that water would drip from it when a ball of soil is firmly squeezed with your hand. Prepare the hole for planting each plant as you might a typical garden plant. Natives are hardy and do not need special treatment or finely tilled soil to thrive. Digging a hole that extends a couple inches deeper than the bottom of the roots will generally suffice. Make sure roots are in full contact with soil, and there are no air gaps. Adding a shovel full of compost to each hole, and mixing it with the native soil will benefit the plant's growth and establishment. Natives do best when the base of the plant above the roots is planted slightly above grade, as opposed to down in a basin. Place a sturdy weed mat or undyed cardboard (brown) around the plant to inhibit weed growth and maintain soil moisture. Place 4-6 inches of mulch over it for maximum weed control, water retention, and overall soil and plant health. Avoid direct contact of mulch and soil against the plants above the ground.

Weeding: Regular weeding of the plants maximizes their chances of success and overall health. Make sure to allocate time for weed whacking and hand weeding in the spring, when grass is growing rapidly. Many good plantings are lost during this time when they don't receive proper attention. Applying a thicker depth of mulch, around 6", can greatly reduce weeding needs, as long as the mulch is relatively free of seeds. Hand weed close to the plants throughout the year as needed. Once plants establish, they will ultimately shade out the weeds and minimize, then eliminate the need for weeding. This may take 3-5 years, depending on plant choices and how quickly they grow.

Irrigation: Connect to your main water source with an adequately sized filter, a pressure regulator, and ideally a pressure gauge to monitor system pressure. Make sure there is at least 10 psi supplied to the emitters throughout the lines. Avoid high pressures, as leaks and blowouts become more likely and are less likely to be noticed in your hedgerows. A timer or controller is recommended to turn the system on and off, and deliver precise amounts of water without over watering. Use one half inch poly hose for drip irrigation, laid on the ground near the plants to deliver water. Poly hose is flexible and can be curved to match your desired hedgerow shape, or laid down in a relatively straight line. Mild curves in the hoseline are best, allowing you to move and adjust the hoseline over time, or fix damaged hoselines with a minimum of fittings. You can plant first and then place the poly hose on the ground near the plants or lay the hose down first and then plant, to make sure the line reaches all plants. Ideally, you can plant in fall or winter, then lay down the polyline and attach emitters in spring, before irrigation is necessary. Use 6" jute stakes every ten feet to hold the hose in place. Without staking, hoses can migrate over time.

Placing a 0.5 gph pressure compensating emitter on each side of the plant is the best approach. One 1.0 gph PC emitter per plant can work as well. Position emitters sideways, roughly 6" from the main stem of the plant. It is recommended that you lay out the poly hose and let it sit for a few days in the sun before attaching emitters, to avoid line twisting and emitters migrating away from their intended target. Make sure to adjust the hose once or twice during the irrigation season, particularly the first year, so that the emitters are positioned roughly 6" from the plant. The hoses can migrate over time, and need to be checked for this and damage from animals. As plants grow, hoses may need to be moved to maintain the 6" distance from the plants, until irrigation is no longer necessary. Avoid the plant growing into and around the hose, to the point you cannot access or move the hose.

How much to water is very site specific. You should observe your system and plants to determine the best amount. Young plants will likely need at least a gallon every week, depending on the weather and site conditions, and the size of the plant. Watering once a week is fine for transplants from gallon or larger d-pot containers. Smaller plants might require more frequent irrigation the first year. In years 2 and 3, plants need water less frequently but will still want water every 2-3 weeks, supplying 2-3 gallons each time. Years 3 and 4, plants may still need monthly water. A general rule of thumb is to provide a gallon per plant per week, even if your interval of applying water is only monthly. By year 5, irrigation can be greatly reduced or eliminated. It may be possible to stop irrigation sooner, and many of the plants in your hedgerow may require less or no water after 2-3 years.

Fencing: Your hedgerow will likely need protection from grazing animals, install a 6-7 foot tall fence around the perimeter of the hedgerow to keep animals out. Place far away enough from the plants to allow several years of growth, and access to enter the fenced area to weed whack and hand weed. Use sturdy 7-8 foot tee stakes to hold your fencing. Anchor posts/H-Braces and wire may need to be used at the ends if using a heavier gauge fence. Thicker plastic mesh fencing can be attached with zip ties for a quicker, cheaper alternative. 14 gauge, 2x4 mesh, 6' tall wire can be attached to the tee stakes for a more durable option. If you have a cow grazing in the area of the hedgerow, you will need to install a more durable fencing

protection option. Once plants are well established, fencing can be removed, unless it will be negatively impacted by grazing animals.

If gophers are a significant issue in your area, consider installing gopher or speed baskets to help young plants survive predation.

Timely weeding and watering for 3 years is the key to success of any native plant hedgerow. The first year is the most critical.

Additional Resources:

These websites provide excellent plant descriptions and additional information on the proposed plants as well as others that might be of interest.

- Cal Flora: <https://www.calflora.org>
- California Native Plant Society: <https://calscape.org>

Appendix D

Carbon Sequestration Potential

COMET-Planner Carbon Sequestration and Greenhouse Gas Estimation Report

Project Name: Veronda-Falletti

State: California

County: Sonoma

Date Created: 12/01/2021 17:30:49

Approximate Carbon Sequestration and Greenhouse Gas Emission Reductions* (tonnes CO₂ equivalent per year)

NRCS Conservation Practices	Acres	Carbon Dioxide	Nitrous Oxide	Methane	Total CO ₂ -Equivalent
Hedgerow Planting (CPS 422) - Replace a Strip of Grassland with 1 Row of Woody Plants	0.08	1	N.E.**	N.E.**	1
Tree/Shrub Establishment (CPS 612) - Conversion of Grasslands to a Farm Woodlot	0.11	2	N.E.**	N.E.**	2
Range Planting (CPS 550) - Seeding Forages to Improve Rangeland Condition	2.4	1	0	N.E.**	1
Totals:	2.59	4	0	0	4

NOTE: Implementing prescribed grazing over 2.4 acres of land will lead to the sequestration of 0.43 tonnes of CO₂ equivalent each year. COMET Planner will not calculate carbon sequestration values for prescribed grazing at 2.4 acres because it is too small of an area. Using the COMET Planner Handbook 2017 Edition, the carbon sequestration value was manually calculated. For all proposed practices, including prescribed grazing, an estimated 4.43 tonnes of CO₂e will be sequestered yearly.

*Negative values indicate a loss of carbon or increased emissions of greenhouse gases

**Values were not estimated due to limited data on reductions of greenhouse gas emissions from this practice

Appendix E

Timeline for Practice Implementation

Practice <i>(NRCS Practice Standard included, if applicable)</i>	Location	Potential Funding Source	Associated Co-Benefits*
High Priority (<3 years to implement)			
Annual row crop, fruit tree, ornamental, landscaping, beneficial insect and pollinator habitat plantings	Around building, along south and west fences, in western portion of ranch	N/A	<i>Food, flower and fiber production and sales, beneficial insect pest control and plant pollination</i>
Prescribed Grazing (528)	All pastures	Future CDFA Healthy Soils, EQIP	<i>Improved forage, Soil Health, Water Quality, Wildlife Enhancement, Plant Community</i>
Hedgerow and Tree/Shrub Planting (422/612)	Multiple locations	Future CDFA Healthy Soils, EQIP, Restore CA	<i>Increase habitat and diversity, Water Quality, Wildlife Enhancement, Plant Community,</i>
Education/Workshops/Community Events	Where applicable		<i>Multiple Opportunities depending on topic/activity</i>
Water Infrastructure Development (516, 614)	Near buildings and greenhouses, in fields	SWEEP, EQIP	
Medium Priority (3-10 years to implement)			
Range Planting (550), as needed	Pastures	Future CDFA Healthy Soils, EQIP	<i>Water Quality, Wildlife Enhancement, Plant Community</i>
Solar Panel Installation	Near office	SWEEP	<i>GHG Reductions</i>