



CARBON FARM PLAN

CONTENTS

1. Introduction
2. Site Description
3. Assessment of Potential Carbon Beneficial Practices
4. Monitoring Soil Carbon
5. Carbon Farm Plan Summary & Map
6. Appendix A: List of NRCS practices related to Carbon Farm Planning
7. Appendix B: Quantification of greenhouse gas reductions

1. INTRODUCTION

Background: The carbon cycle is the exchange of carbon among the Earth and its soils, oceans and waterbodies, the atmosphere, and living things. Agriculture uses the carbon cycle to produce plant matter, both above and below ground. Agricultural activities can lead to increases or decreases of carbon dioxide (CO₂) in the atmosphere. For example, practices such as tillage, use of fossil fuel-based agrichemicals, and running fuel-burning agricultural equipment can increase atmospheric CO₂, while the growth of long-lasting plant material above and below the soil can lead to decreases of atmospheric carbon (through “carbon sequestration”). Such increases in plant material can have other benefits as well, such as improved soil health and wildlife habitat.

The implementation of land management practices that reduce greenhouse gas (GHG) emissions and/or increase the amount of carbon sequestered in soils and plant material is often referred to as “Carbon Farming.”

Purpose: Identify practices, currently in use or recommended for implementation, that reduce GHG emissions, improve soil health, and sequester carbon.

2. SITE DESCRIPTION

If you have completed a LandSmart Plan, you can attach this section from this plan rather than filling in the below table.

Vineyard Facility Location

Vineyard Facility Name			
Facility Address			
City, State & Zip Code		County	
Assessor's Parcel Number(s)			
Township		Range	
Latitude		Longitude	
Watershed and Sub-watershed			

Plan Preparer

Name of Plan Preparer		Plan Date:	
Preparer's Affiliation			
Plan Sections Prepared:	<input type="checkbox"/> All <input type="checkbox"/> Some (specify below) List Sections:		
Email		Phone:	Fax:

Owner/Lessee (if different from above)

Name(s)			
Mailing Address			
City, State & Zip Code		Phone (hm)	
Email		Phone (cell)	

Land/Vineyard Manager (if different from above)

Name(s)			
Mailing Address			
City, State & Zip Code		Phone (hm)	
Email		Phone (cell)	

Technical Assistance Advisors (if applicable)

Name(s)			
Mailing Address			
City, State & Zip Code		Phone (hm)	
Email		Phone (cell)	

Operations and Land Use

If you have completed a LandSmart Plan, you can attach this section from this plan rather than filling in the below table.

Land Use Activity	Area/Length		Notes
Vineyard Blocks and Avenues		Acres	
Grazing/Rangeland		Acres	
Grape Processing Facilities		Acres	
Roads (paved)		Feet/ Miles	
Roads (unpaved)		Feet/ Miles	
Other paved areas and buildings		Acres	
Forest/Woodland/Chaparral		Acres	
Open Space/Fallow/Undeveloped		Acres	
Reservoir/Pond (footprint)		Acres	
Stream/River/Creek/Riparian (delineated as blue-line on USGS topographic maps)		Feet/ Miles	
Stream/River/Creek/Riparian (not delineated as blue-line on USGS topographic maps)		Feet/ Miles	
Drainage Ditch/Canal		Feet/ Miles	
Other Vineyard/Farming Facilities		Acres	
Other Land uses		Acres	

Existing Plans, Permits and Certifications

If you have completed a LandSmart Plan, you can attach this section from this plan rather than filling in the below table.

<i>Plan Type</i>	<i>Plan/ Permit Year</i>	<i>Plan/ Permit Area (ac)</i>	<i>Plan/Permit Number(s) and/or Notes (including status, e.g. permit pending/final or certification pending/complete)</i>
Napa County Erosion Control Plan			
Sonoma County Erosion Control Plan (VESCO)			
NRCS Conservation Plan			
Fire Management Plan			
Grazing/Rangeland Management Plan			
Grazing Lands Water Quality Plan			
Organic Certification (indicate if in transition)			
Timber Harvest Management Plan			
Napa Green Land/Fish Friendly Farming Certification			
The Code of Sustainable Winegrowing (note if Self-Assessment or Certified)			
Industrial Stormwater Permit for Wineries			
Sustainability in Practice (SIP)			
Engineered pond including water rights (if applicable)			
Permits for stream-related projects: Department of Fish and Wildlife, Corps of Engineers, etc.			
Other:			
Other:			

Ecological Context

In the box below, provide a description of the property's ecological context, e.g plant communities and other defining features.



Management History

In the box below, provide a description of the property's management history, including past land uses and timeframes.



Description and Map of Soils

Provide a map of and information regarding the property's soils, including type, permeability, rooting depth, available water holding capacity. Soil information can be obtained from the USDA-NRCS Web Soil Survey (<http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>) and attached to this plan.

Maps

Provide maps of the vineyard location and key property features. If you have completed a LandSmart Plan, maps from this plan can be used.

3. ASSESSMENT OF POTENTIAL CARBON BENEFICIAL PRACTICES

Directions for filling out this form:

This assessment includes the following six sections:

- **ENERGY SOURCES AND GENERAL USE**
- **WATER-RELATED ENERGY**
- **VINEYARD VEHICLES**
- **VINEYARD FARMING PRACTICES**
- **VINEYARD MANAGEMENT**
- **VEGETATION IN AND AROUND THE VINEYARD**

For all questions in the sections answer Yes or No, *AND* proceed to the boxes below the question and attempt to identify practices that have the potential to enhance opportunities for carbon sequestration or reduce Greenhouse Gas emissions. All practices may not work for all vineyards. Consider the practices and your vineyard's unique site characteristics to determine what practices might be incorporated into the Plan. If there are no obvious opportunities or applicable practices, then proceed to the next question.

ENERGY SOURCES AND GENERAL USE

C1. Fuel and electricity use at the vineyard is monitored and tracked annually, per unit of production, and efforts to reduce consumption are evaluated on a yearly basis.

Yes

No

If yes, list (or attach) fuel and electricity use data for the previous year(s):

Opportunities for improving tracking and reducing energy use (Consider practices # 1 and 2 listed in Table C1 below)

C2. Alternative fuels / energy sources are used.

Yes (check all that apply)

Biodiesel Propane

Methane Solar

Marin Clean Energy or Sonoma Clean Power Customer

Other: _____

No

Opportunities for increasing use of alternative fuels/energy sources (Consider practices # 3 and 4 listed in Table C1 below)

C3. Energy efficient lighting fixtures and technologies are used at the vineyard (offices, shops, facilities). Check those that are in use and consider those that are not.

Yes (Indicate in Table C1 which efficient fixtures and technologies are in use. Consider those that are not in use.)

No

Not applicable – no offices, shops or facilities that utilize lighting are on-site.

Opportunities for improving energy efficiency of light fixtures and technologies (Consider practices # 4 through 8 listed in Table C1 below)

C4. Steps are taken to ensure that staff and management companies working at the vineyard are aware of and are trained to implement energy and fuel conservation practices and vineyard management practices that minimize GHG emissions.

Yes

No (Consider practice # 9 in Table C1 below)

Opportunities to improve staff and management awareness to implement energy and fuel conservation practices:

Table C1: Conservation Practices to reduce general energy use and utilize alternative energy sources

The following table provides an assortment of management practices that are intended to reduce GHG emissions from vineyard operations. Implementation of all practices is not necessary or required. Selection of practices must be done on a site-specific basis. An assortment of practices to suit your circumstance should be selected. NRCS Practice Titles are provided for your reference and you may contact your local NRCS or RCD field office for technical and/or possible financial assistance.

<i>Conservation Practice</i>	<i>NRCS Practice Title</i>	<i>Current Practice</i>	<i>Planned Implementation Date</i>	<i>Location</i>
1. Conduct an Energy Audit		<input type="checkbox"/>		
2. Monitor and evaluate fuel use, electricity use, acreage and crop yield to calculate energy use per unit of production on an annual basis		<input type="checkbox"/>		
3. Incorporate alternative fuels and energy sources into your operation.	Farmstead Energy Improvement (374)	<input type="checkbox"/>		
4. Become a customer that uses 100% renewable energy from Marin Clean Energy or Sonoma Clean Power.		<input type="checkbox"/>		
5. Utilize compact fluorescent or LED light fixtures.	Lighting System Improvement (670)	<input type="checkbox"/>		
6. Utilize automatic lighting controls.	Lighting System Improvement (670)	<input type="checkbox"/>		
7. Take advantage of natural lighting (windows, sky lights, light tubes).		<input type="checkbox"/>		
8. Turn off lights, computers, and other equipment when not in use.		<input type="checkbox"/>		
9. Document steps taken to ensure that staff and management companies working at the vineyard are aware of and trained to implement energy and fuel conservation practices.		<input type="checkbox"/>		
Other:		<input type="checkbox"/>		

WATER-RELATED ENERGY

C5. Vineyard pumps are tested for efficiency, maintained accordingly, and results and maintenance are documented.

- Yes
- No (Consider practices #1 and 2 in Table C2 below)

Opportunities to improve pump maintenance and record keeping.

C6. Vineyard pumps are equipped with variable frequency drives and are properly sized for the acreage.

- Yes
- No (Consider practice # 3 in Table C2 below)

Opportunities to install VFD pumps that are properly sized

C7. Water use efficiency and irrigation decisions are maximized by conducting weekly vine stress monitoring, soil moisture monitoring, ET, NDVI, and or other precision irrigation management tools and techniques.

- Yes Describe current practice:

-
- No (Consider practice # 4 in Table C2 below)

Opportunities to maximize water use efficiency

C8. An irrigation evaluation has been conducted in the past three years and the system has been managed according to recommendations from the evaluation.

- Yes
- No (Consider practices # 4 and 5, in Table C2 below)

Opportunities to conduct or receive irrigation evaluation

Table C2: Conservation Practices to reduce the use of energy associated with water use

The following table provides an assortment of management practices that are intended to reduce GHG emissions that result from water use. Implementation of all practices is not necessary or required. Selection of practices must be done on a site-specific basis. An assortment of practices to suit your circumstance should be selected. NRCS Practice Titles are provided for your reference and you may contact your local NRCS or RCD field office for technical and/or possible financial assistance.

<i>Conservation Practice</i>	<i>NRCS Practice Title</i>	<i>Current Practice</i>	<i>Planned Implementation Date</i>	<i>Location</i>
1. Conduct an Energy Audit		<input type="checkbox"/>		
2. Monitor and evaluate fuel use, electricity use, acreage and crop yield to calculate energy use per unit of production on an annual basis		<input type="checkbox"/>		
3. Utilize variable speed drives at all pumps	Pumping Plant (533)	<input type="checkbox"/>		
4. Complete LandSmart® Chapter related to irrigation and water use for frost protection.		<input type="checkbox"/>		
5. Conduct a distribution uniformity evaluation (irrigation evaluation) and implement system improvements accordingly (every 3 years recommended)	Irrigation Water Management (449)	<input type="checkbox"/>		
Other:		<input type="checkbox"/>		

VINEYARD VEHICLES

C9. The amount of fuel used for vineyard vehicles (trucks, tractors, quads, etc.) is monitored, and efforts to reduce consumption are evaluated on a yearly basis.

- Yes
- No (Consider practices # 1 and 2 in Table C3 below)

Opportunities to track and reduce fuel use:

C10. Alternative fuel vehicles or more efficient vehicles (e.g. ATV instead of truck) are used.

- Yes
- No (Consider practices #3 listed in Table C3 below)

Opportunities to obtain alt-fuel vehicles or reduce GHG emissions from vehicles used

C11. Vehicle engines are maintained on a regular basis according to manufacturer's recommendations.

- Yes
- No (Consider practices #4 listed in Table C3 below)

Opportunities to improve maintenance of vehicle engines

C12. Vehicles are maintained, operated, and registered consistent with California Air Resources Board Truck and Bus Regulation.

- Yes
- No (Implement practice # 5 listed in Table C3 below, consult a professional if needed)

Opportunities to improve maintenance, operation, and registration of vehicles

C13. Tractor passes in the vineyard are minimized.

Yes --Describe current practice:

No (Consider practice # 6 listed in Table C3 below)

Opportunities to reduce tractor passes in the vineyard:

C14. Equipment is selected or utilized to minimize soil disturbance.

Yes --Describe current practice:

No (Consider practices # 7-8 listed in Table C3 below)

Opportunities to minimize soil disturbance from equipment

Table C3: Conservation Practices to reduce GHG emissions and soil health impacts from vineyard vehicles

The following table provides an assortment of management practices that are intended to reduce GHG emissions and soil health impacts that result from the use of vineyard vehicles. Implementation of all practices is not necessary or required. Selection of practices must be done on a site-specific basis. An assortment of practices to suit your circumstance should be selected. NRCS Practice Titles are provided for your reference and you may contact your local NRCS or RCD field office for technical and/or possible financial assistance.

<i>Conservation Practice</i>	<i>NRCS Practice Title</i>	<i>Current Practice</i>	<i>Planned Implementation Date</i>	<i>Location</i>
1. Conduct an Energy Audit		<input type="checkbox"/>		
2. Monitor and evaluate fuel use, electricity use, acreage and crop yield to calculate energy use per unit of production on an annual basis		<input type="checkbox"/>		
3. Purchase alternative fuel vehicles, convert existing vehicles to alternative fuels, and/or use smaller/more efficient vehicles when possible.		<input type="checkbox"/>		
4. Maintain vehicle according to manufacturer's recommendations and track maintenance activity.		<input type="checkbox"/>		
5. Follow appropriate provisions of California Air Resources Board Truck and Bus Regulation.		<input type="checkbox"/>		
6. Minimize tractor passes in the vineyard.	Residue and Tillage Management (329, 345)	<input type="checkbox"/>		
7. Select or modify equipment to minimize risk of compaction – select light and/or narrow equipment, use track-layers, use larger tires, reduce tire pressure as much as is safe.		<input type="checkbox"/>		
8. Minimize equipment use in the vineyard when soils are saturated.		<input type="checkbox"/>		
Other:		<input type="checkbox"/>		

VINEYARD MANAGEMENT

C15. Soil analysis for organic matter, soil organic carbon, (and bulk density?) is performed periodically (as per the NRCS/RCD recommended protocol?).

- Yes
- No (Consider practice # 1 in Table C4 below)

Opportunities for improving tracking and understanding of soil health parameters

C16. Tillage is minimized or no-tillage is practiced in efforts to promote a healthy soil ecosystem for maximizing soil carbon sequestration potential.

- Yes – Describe current practice:

-
- No (Consider practice # 2 in Table C4 below)

Opportunities and farming practices to reduce tillage:
E.g. use alternative equipment, reduce depth, reduce frequency

C17. Annual or perennial cover crop is established between the vine rows during winter and cover crop mix contains species that improve soil health and soil Carbon

- Yes – Describe current practice:

-
- No (Consider practice # 7 in Table C4 below)

Opportunities to improve cover crop practices to sequester Carbon:
E.g. annual seeding, using better seeding equipment, maintenance/renewel of perennial cover crop

C17. Soil disturbance and herbicide use is minimized under the vines, so that a healthy vegetated cover re-establishes after winter rains. (spray strips and under the vine cultivation are as narrow as feasible).

Yes – Describe current practice:

No (Consider practices # 3 - 6 in Table C4 below)

Opportunities to improve cover in the vine row:

C18. Alternatives to synthetic nitrogen, phosphorus, and potassium are utilized (i.e., cover crop legumes, compost, sea and plant based organic fertilizers).

Yes – Describe current fertilizers and application rates:

No (Consider practice # 7 in Table C4 below)

Opportunities to decrease use of synthetic fertilizers and soil amendments:

C19. Compost application is a primary component of the soil fertility management program.

Yes – Describe application rate and frequency:

No (Consider practice # 7 in Table C4 below)

Opportunities for compost application:

C20. Permanent cover cropping with annuals and perennials are utilized and maintained as a healthy vegetated cover.

Yes – Describe current cover cropping practices:

No (Consider practice # 7 in Table C4 below)

Opportunities for enhancing cover cropping management to increase the carbon sequestration potential of the vineyard floor:

C21. Materials pruned and thinned from the vineyard remain in the vineyard.

Yes

No (Consider practice # 7 in Table C4 below)

Opportunities to keep existing carbon on the property by composting or mulching prunings:

C22. Vine wood and other vegetative material removed from within the vineyard and around the property are chipped and composted, used to produce biochar, or re-used as mulch in another part of the property at a location where the potential to transfer disease to new vines is limited.

Yes

No (Consider practice # 8 in Table C4 below)

Opportunities to keep existing carbon on the property by composting or mulching vegetation and woody material:

Table C4: Conservation Practices to sequester carbon, improve soil health, and reduce GHG emissions related to vineyard management

The following table provides an assortment of management practices that are intended to sequester carbon, improve soil health, and reduce GHG emissions that result from vineyard management. Implementation of all practices is not necessary or required. Selection of practices must be done on a site-specific basis. An assortment of practices to suit your circumstance should be selected. NRCS Practice Titles are provided for your reference and you may contact your local NRCS or RCD field office for technical and/or possible financial assistance.

<i>Conservation Practice</i>	<i>NRCS Practice Title</i>	<i>Current Practice</i>	<i>Planned Implementation Date</i>	<i>Location</i>
1. Conduct soil analysis for organic matter		<input type="checkbox"/>		
2. Reduce tillage (permanent perennial or no-till annual cover crop is ideal for reducing GHG emissions and improving soil health and carbon sequestration).	Residue and Tillage Management (329, 345), Conservation Cover (327), Cover Crop (340)	<input type="checkbox"/>		
3. Incorporate grazing animals into vineyard management to reduce equipment needs, increase nutrient cycling and enhance cover crop performance.	Prescribed Grazing (528)	<input type="checkbox"/>		
4. Utilize organic contact herbicide, hand hoe, mow or graze to control vegetation under the vines.	Integrated Pest Management (595)	<input type="checkbox"/>		
5. Apply ≥ 4 inches of mulch under vine rows to suppress weed growth, conserve water and increase soil organic matter.	Mulching (484)	<input type="checkbox"/>		
6. Apply $\frac{1}{2}$ " – 1" of compost in alleys and 1" - 2" in vine rows to increase soil organic matter, conserve water and improve soil fertility and quality.				
6. Minimize width of spray strip under the vines.	Integrated Pest Management (595)	<input type="checkbox"/>		
7. Minimize use of nitrogen fertilizers; utilize organic fertilizers and/or cover crops as a source of nitrogen when needed.	Cover Crop (340), Nutrient Management (550)	<input type="checkbox"/>		
8. Chip and compost removed vines prior to reuse in the vineyard, use to generate biochar, or use as mulch at a suitable location to avoid potential transfer of disease from uncomposted material.		<input type="checkbox"/>		
Other:		<input type="checkbox"/>		

VEGETATION IN AND AROUND THE VINEYARD

C23. Vegetation management practices are in place to prevent off-site soil loss.

- Yes
- No (Consider practices # 1 - 3 in Table C5 below)

Opportunities to enhance vegetation in tilled areas during winter (when run-off has potential to occur) or other areas with bare soil

C24. Vegetation around waterways has been assessed and there are plans for revegetating areas that are bare and regularly inundated.

- Yes
- No (Consider practice # 4 in Table C5 below)

Opportunities to enhance planning effort or existing plans related to vegetation around waterways

C25. Vegetation around waterways is moderate to dense, primarily native, and diverse (mix of grasses, forbs, shrubs and trees).

- Yes
- No (Consider practice # 5 in Table C5 below)

Opportunities to enhance density and diversity of native vegetation around waterways

C26. Fallowed or uncultivated areas of the property have vegetative soil cover.

- Yes
- No (Consider practice # 6 in Table C5 below)

Opportunities to enhance vegetation in fallow or uncultivated areas

C27. There are areas in or adjacent to the vineyard where windbreaks, hedgerows, riparian plantings or shelterbelts provide visual barriers, enhanced beneficial insect habitat, wind protection and increased biodiversity.

Yes (Consider practice # 7 in Table C5 below)

No

Opportunities to enhance vegetation around the vineyard:

Table C5: Conservation Practices to sequester carbon and improve soil health through enhanced vegetation cover.

The following table provides an assortment of management practices that are intended to sequester carbon, improve soil health, and reduce GHG emissions that result from vineyard management. Implementation of all practices is not necessary or required. Selection of practices must be done on a site-specific basis. An assortment of practices to suit your circumstance should be selected. NRCS Practice Titles are provided for your reference and you may contact your local NRCS or RCD field office for technical and/or possible financial assistance.

<i>Conservation Practice</i>	<i>NRCS Practice Title</i>	<i>Current Practice</i>	<i>Planned Implementation Date</i>	<i>Location</i>
1. Complete LandSmart® Chapter related to Managing Erosion in Vineyard Blocks and Avenues		<input type="checkbox"/>		
2. Plant/maintain a vegetated buffer around tilled areas and adjacent to waterways to filter runoff and increase above- and below-ground biomass	Field Border (386), Filter Strip (393), Vegetated Barrier (601), Contour Buffer Strips (332)	<input type="checkbox"/>		
3. Plant/maintain a vegetated swale to filter runoff and increase above- and below-ground biomass	Grassed Waterway (412)	<input type="checkbox"/>		
4. Complete LandSmart® Chapter related to Managing Natural Waterways, Ditches, and Spillways		<input type="checkbox"/>		
5. Enhance native riparian vegetation	Riparian Forest Buffer (391), Riparian Herbaceous Cover (390); Tree/Shrub Establishment (612)	<input type="checkbox"/>		
6. Establish permanent vegetation on degraded areas	Critical Area Planting (342)	<input type="checkbox"/>		
7. Plant hedgerows, windbreaks or shelterbelts in or adjacent to the vineyard	Hedgerow Planting (422); Windbreak/Shelterbelt Establishment (380); Herbaceous Wind Barriers (603)	<input type="checkbox"/>		
8. Wetland areas on the property are managed for enhancement and/or permanent vegetation cover	657 - Wetland Restoration; 659 - Wetland Enhancement			
Other:		<input type="checkbox"/>		

4. MONITORING SOIL CARBON

Background: Use this table to monitor and track soil health over time.

Date	Sample Location (show on map if possible)	Bulk Density gm/cm ³	Total Organic Carbon		Active Carbon		Notes
			%	Tons per acre	%	Tons per acre	

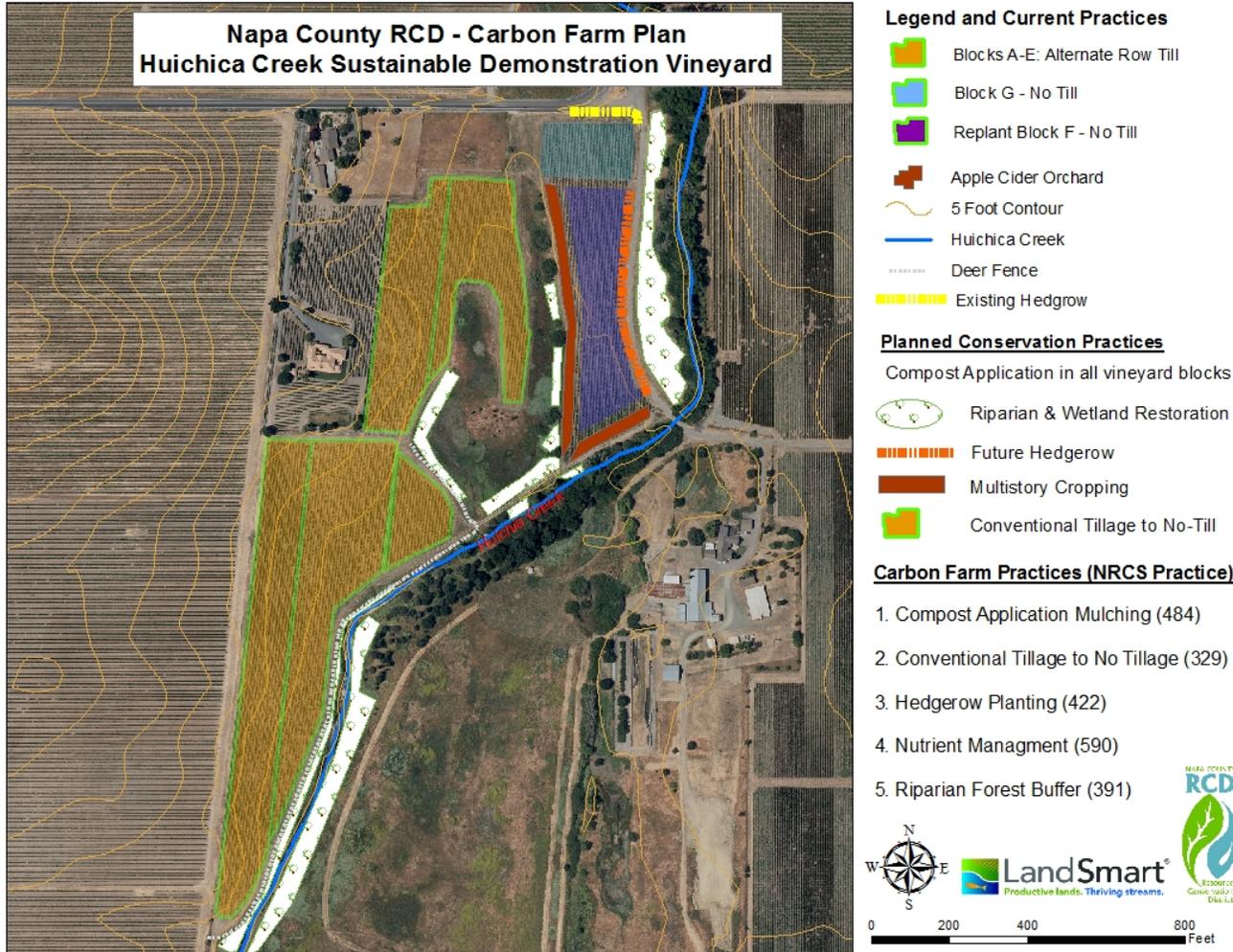
5. CARBON FARM PLAN SUMMARY AND MAP

Example:

Carbon Farm Plan Summary

Ranch/ Property ID		XXXXX						
NRCS CPS	Practice Description	Field Location	Acres	Current Practice	Proposed Practice	Implementation Date	CO2e per acre per year	CO2e Annual Total
329	Coventional Tillage to No Tillage	Blocks A,B,C,D,E	4	Alternate row tillage. Alternate no till & alternate till	Full no tillage. Very minimal tillage may be incorporated from time to time for breaking up tractor compaction and for soil ammendments	2017-2010	0.74	2.96
391	Riparian Forest Buffer Establishment							
379	Multistory Cropping							
422	Hedgerow Plant							
590	Nutrient Management/Compost Application							
340	Cover Crop establishment							
380	Windbreak /Shelterbelt Establishment							
657	Wetland Restoration							
	Monitor and Evaluate fuel and electricity usage							
TOTAL =								

Carbon Farm Plan Map



E.g.

6. APPENDIX A: LIST OF NRCS PRACTICES RELATED TO CARBON FARM PLANNING

A list of conservation practices that may be useful in a carbon plan is included below. The practices in this list are recognized to have quantifiable GHG benefits and align with the USDA’s Climate Mitigation Building Blocks. On some farms, other practices may also enhance carbon sequestration and/or reduce GHG emissions. Planning is location-specific. A list of all NRCS Conservation Practices is located in Section IV for eFOTG at this link: <https://efotg.sc.egov.usda.gov/treemenuFS.aspx>.

NRCS Code	Conservation Practice
327	Conservation Cover
328	Conservation Crop Rotation
329	Residue and Tillage Management, No Till
329A	Strip Till
329B	Mulch Till
330	Contour Farming
332	Contour Buffer Strips
340	Cover Crop
345	Residue and Tillage Management, Reduced Till
386	Field Boarder
393	Filter Strips
412	Grassed Waterways
585	Stripcropping
601	Vegetative Barriers
603	Herbaceous Wind Barriers
590	Nutrient Management
366	Anaerobic Digester
612	Tree and Shrub Establishment
645	Upland Wildlife Habitat
650	Windbreak Renovation
449	Irrigation Water Management
342	Critical Area Planting
390	Riparian Herbaceous Cover
391	Riparian Forest Buffer
366	Anaerobic Digester
590	Nutrient Management
329	Residue and Tillage Management/No-Till system/Strip Till/ Direct Seed
393	Filter Strip
580	Streambank Protection
659	Wetland Enhancement

NRCS Code	Conservation Practice
412	Grassed Waterways
585	Stripcropping
601	Vegetative Barriers
603	Herbaceous Wind Barriers
590	Nutrient Management
366	Anaerobic Digester
512	Forage and Biomass Planting
528	Prescribed Grazing
550	Range Planting
672	Building Envelope Improvement
372	Combustion System Improvement
374	Farmstead Energy Improvement
670	Lighting System Improvement
380	Windbreaks and Shelterbelts
381	Silvopasture Establishment
390	Riparian Herbaceous Buffer
391	Riparian Forest Buffer
512	Forage and Biomass Planting
528	Prescribed Grazing
422/380/601	Hedgerow Planting/ Windbreak/ Shelterbelt Est. / Vegetative Buffer
422/380/601	Buffer
484	Mulching (Compost Application)
550	Range Planting
381/612	Silvopasture: Establish Trees & Native Grasses
327	Conservation Cover
657	Wetland Restoration
386	Field Boarder
412	Grassed Waterway
311	Alley Cropping

7. APPENDIX B: QUANTIFICATION OF GREENHOUSE GAS REDUCTION AND SOIL HEALTH

- For all practices except those listed below, USDA NRCS Comet Planner is used to estimate greenhouse gas reduction associated with farming practices.

COMET-Planner <http://www.comet-planner.com/>

COMET-Farm <http://cometfarm.nrel.colostate.edu/>

- For Compost Application, Ryals et al. (2015)'s method is used.
- For Riparian Vegetation, Lewis et al. (2015)'s method is used.
- EPA GHG Calculator <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>
- NRCS, Sampling Soil for Carbon to Support Carbon Farming Plans, April 2016 [[Attach to template if not available online](#)]
- NRCS, Guidelines for Soil Quality Assessment in Conservation Planning, January 2001. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051259.pdf
- USDA's Web Soil Survey <http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>