

APR 9 2019

Napa County Planning, Building
& Environmental Services

Trust Vineyard Partners

Vineyard Development Erosion Control Plan

Erosion Control Plan Narrative

1. *The nature and purpose of all/any land clearing, grading or earthmoving activity, the amount of cut & fill, the location of spoils storage and disposal areas, the total number of acres of grading involved including but not limited to roads, vineyards, avenues, trenching for irrigation or pipes, reservoirs, wells, water tanks, septic systems, etc. Indicate the acres of land clearing, grading or earthmoving activity that will occur on 30% or greater slopes. (Note: slopes shall be calculated in whole percent)*

The project site is located west of St. Helena Highway, just north of Yountville in Napa County, California (Napa County APN 027-490-006). Access to the project area is via an existing paved private driveway that provides access to several exiting residential and vineyard properties in the vicinity of the project area. The property is located approximately 0.8 miles southwest of the intersection of the private driveway and St. Helena Highway (State Route 29).

The purpose of the proposed land clearing, grading and earthmoving is to prepare the project area for planting with new vineyard. Following is a list of planned land preparation activities:

- Clearing and grubbing of existing vegetation
- Re-contouring and land smoothing to promote sheet flow
- Ripping and rock breaking as needed to fracture subsoils and rock to a depth of approximately 24 to 48 inches to prepare soil for planting and to incorporate soil amendments
- Mechanical and hand rock raking to remove loose rocks from the ground surface
- Discing and harrowing to prepare seedbed for vegetative erosion control measures
- Installation of erosion control features

Grading within the project area will be the minimum amount needed to smooth out the existing ground surface and create smooth slopes to promote sheet flow and to install the proposed runoff and erosion control measures. Cuts and fills will be moderate and are expected to average from 0 to 4 feet. The estimated quantity of grading is approximately 2,000 cubic yards of cut and 2,000 cubic yards of fill. An earthwork balance will be achieved onsite. Import and/or export of soil material is not planned however, soil amendments will be imported and incorporated into the project area as needed to improve soil tilth and thereby support vine and cover crop growth.

All temporary debris, vegetation, soil and soil amendment stockpiles and storage areas, if needed, will be located within the proposed vineyard project area. No long-term stockpiles of rock or soil are anticipated. Temporary stockpiles will be kept within the vineyard development area. It is planned that all rock will be disposed of within the proposed vineyard

footprint either by being used in the new downslope vineyard avenue areas to create a level bench or being buried.

No new roads are required to access the proposed vineyard development area. Access is via the existing paved driveway that enters the eastern corner of the property.

The total disturbed area for the vineyard development project is $14 \pm$ acres. The total disturbed area includes the area to be planted with vines and the area used for perimeter avenues and connecting avenues that provide access to the vineyard blocks for farming equipment and incidental disturbance for installation of erosion control features. The total area to be planted with vines within the $14 \pm$ acre project area is $11.2 \pm$ acres.

Stream and drainage course setbacks will be provided in accordance with the Napa County Conservation Regulations. Stream setbacks are shown on the erosion control plan.

The proposed vineyard development consists of two adjacent vineyard blocks. The block will have a row spacing of 7 feet and vine spacing along the row of 4 feet for an average vine density of 1,556 vines per acre and a total of approximately 17,400 vines.

The details of the proposed vineyard development are shown on the Trust Vineyard Partners Vineyard Development Erosion Control Plan prepared by Applied Civil Engineering Incorporated.

- 2. Comprehensive description of existing site conditions, including topography, vegetation (including under-story and canopy cover), and soils. Provide extent of tree canopy covered and shrub and brush without a tree canopy covered areas in acres for each parcel. Identify and indicate the project boundaries in watersheds, including municipal watersheds, and in the water deficient area. The plan preparer is required to visit the site and the narrative must include the date, purpose, and persons making each site visit. The description shall verify the source or validity of the topographic map. Wide angle or panoramic photographs documenting existing site conditions shall be provided. A photo location map indicating the date of the site visit and by whom it was made shall accompany such documentation.*

Topography:

The project area is located on a moderately sloping hillside in Napa County northwest of the Town of Yountville (Latitude = 38.41126° N & Longitude = 122.39749° W). Topography on the property varies widely and is characterized by gentle to steep slopes ranging from less than 5% to in excess of 30%.

Average slopes within the proposed vineyard development area are gentle to moderate and range from 9% to 27% with an overall average slope of 18%. Slopes were determined using topographic data obtained from the Napa County Geographic Information System database and the slope transect method in several representative locations in the proposed development area. Isolated areas within the project area, totally less than 1 acre, have slopes slightly in excess of 30%.

Vegetation:

The Calveg designations for the subject parcel were obtained from the Napa County GIS database and are as follows:

- AG – Agriculture
- NX – Mixed Hardwoods

Our visual observation of onsite vegetation in the vicinity of the project area is consistent with the Calveg designations and there are also areas that have no trees and are covered by grasses and weeds (herbaceous). A detailed assessment of vegetation within the parcel and subject project area was prepared by Jane Valerius Environmental Consulting (JVEC). According to the report by JVEC there are no sensitive plant species that will be affected by the proposed project. Please refer to the report prepared by JVEC for additional information.

Using aerial photographs of the subject parcel obtained from the Napa County Geographic Information System database we have estimated the following land use / coverage statistics for the entire property:

Developed Area (graded, paved, vineyard, etc.)	0.3 ± acres
Tree Canopy Cover	36.6 ± acres
Brush / Grass Cover	5.9 ± acres
Total Parcel Size	42.92 ± acres

In total, approximately 9.1 acres of tree canopy and approximately 5.9 acres that was classified as grass/brush cover will be converted to new vineyard. The calculated tree canopy cover and brush / grass cover retention percentages for the entire parcel are as follows:

Tree Canopy Retention	75%
Brush / Grass Retention	25%

Watershed:

The project site is located at the foot of the Mayacamas range along the west side of the Napa Valley. Rainfall runoff from the entire project area flows easterly via sheet flow and thence concentrated flow in onsite and offsite drainages as it moves easterly toward the Napa River.

No changes in runoff patterns are proposed as part of this project. All existing drainage patterns will be maintained.

The subject parcel is not located within a municipal drinking water supply watershed.

The subject parcel is not located within the Milliken-Sarco-Tulocay groundwater deficient area.

Site Visits & Photograph Documentation:

Representatives from Applied Civil Engineering Incorporated have visited the site several times. The purpose of the site visits was to review existing site conditions and to verify the general validity of the topographic mapping for this project that was obtained from the Napa County GIS database. During a site visit on March 18, 2019 several photographs were taken to document existing site conditions. The photographs are presented in the Photographic Documentation of Existing Site Conditions for the Trust Vineyard Partners Vineyard Development Erosion Control Plan.

- 3. All natural and man-made features on-site including but not limited to, streams, watercourses (drainage, channels, etc.), wetlands, riparian habitat, lakes, reservoirs, roads, water tanks, septic systems, reservoirs, ponds, etc. Indicate which ones may be affected by the proposed activity. For blue line and County-definitional streams indicate top, toe, and slope of bank, channel depth, and existing and proposed setback conditions. The entire length of blue line streams & 41 County-named streams on the parcel(s) shall be included in photo documentation (a recent aerial may be included). Provide the name and distance of the nearest blue line and/or County-definitional stream(s) to the project site.*

Existing manmade improvements on the subject parcel include a paved private driveway and various utility lines. None of the existing manmade improvements will be affected by the proposed project.

There is one unnamed blue-line stream located immediately adjacent to the east corner of the property at the location that the existing paved driveway enters the site. While the existing driveway is within the stream setback all new development will be outside of the required setback.

There is also one drainage course located between proposed Blocks 1 & 2. For most of the length near the project area it does not meet the County definition of a stream however it does meet the definition as it leaves the property. A buffer is proposed along the portion that does not require a setback and full setbacks are provided where the drainage meets the County definition of a stream.

A potential wetland has been identified by the project biologist at the existing crossing through the drainage that separates Blocks 1 & 2. This existing crossing will continue to be used while completely avoiding the area of the potential wetland.

- 4. Location and source of water for irrigation or other uses. Provide copies of all necessary permits.*

The primary irrigation source for the proposed vineyard development be from existing groundwater wells located on nearby properties. A secondary source from a reservoir that is filled with water collected in subdrains (percolating groundwater) is also available. No new wells or other water sources are planned at this time.

Please refer to the Water Availability Analysis prepared by Applied Civil Engineering Incorporated for additional information regarding estimated water use and estimated aquifer recharge rates.

5. *Soil types/soil series identified in the Soil Conservation Service (SCS) Napa County Soil Survey, or, if prepared, a site-specific soils report.*

The United States Department of Agriculture Soil Conservation Service Soils Map for Napa County shows several soil types mapped on the subject property including:

- 151 Hambright rock-outcrop complex, 2 to 30 percent slopes
- 152 Hambright rock-outcrop complex, 30 to 50 percent slopes
- 169 Perkins gravelly loam, 5 to 9 percent slopes

A majority of the parcel and all of the project area is mapped as Hambright rock outcrop-complex, 2 to 30 percent slopes and Hambright rock-outcrop complex, 30-50 percent slopes. The approximate soil type boundaries based on data obtained from the Napa County Geographic Information System database are illustrated on Sheet C1 of the Trust Vineyard Partners Vineyard Development Erosion Control Plan.

6. *Critical areas of erosion and slope instability such as gullies, landslides, etc. within or potentially affecting the “development site” (i.e., the area disturbed by the project) or potentially affected by the work to be undertaken within the development site. In the case of landslides a report indicating the probable effects of the planned work on slope stability and erosion levels shall be prepared and submitted by a registered geologist.*

Representatives from Applied Civil Engineering Incorporated have visited the site several times to review the project area and have not observed any signs of gullies, landslides, slope instability or excessive erosion within the project area or in close proximity to the project area that would affect, or be affected by, the proposed project.

7. *Any erosion calculations prepared.*

The Universal Soil Loss Equation (USLE) was used to model pre-project and post-project conditions and estimate soil loss rates from the project area due to sheet erosion. The Soil Loss Analysis prepared by Dave Steiner, CPESC, CPSWC is included as an attachment to this document.

The USLE calculations predict that net soil loss rates will decrease slightly relative to existing conditions after implementation of the proposed vineyard erosion control plan and in all cases will be less than the prescribed soil loss tolerance (T) for each soil type.

8. *Any/all proposed erosion control methods including, but not limited to:*

- a. *All drainage systems and facilities, walls, cribbing or other erosion protection devices to be constructed with, or as a part of the proposed work.*

The following measures will be implemented to minimize the potential for erosion on the project site during development and following completion of the vineyard development program:

- Sediment Barriers – Temporary silt fence and straw wattle type sediment barriers will be installed throughout the development area. The planned locations and installation details are provided on the erosion control plan. Additional sediment barriers will be installed as deemed necessary throughout the course of construction. The sediment barriers are intended to provide temporary sediment control during development and until the cover crop is established.
- Erosion Control Blankets – Erosion control blankets will be installed over seed on all cut and fill slopes that are steeper than 4:1 (Horizontal : Vertical). Erosion control blankets will provide additional protection from rainfall impact on exposed soils while the cover crop is getting established. The erosion control blanket locations, specifications and installation details are provided on the erosion control plan.
- Water Bars – Temporary water bars will be installed on vineyard avenues to divert runoff from the avenues to prevent rutting. Water bar locations and installation details are shown on the erosion control plan.
- Energy Dissipators – Rock rip-rap energy dissipators will be constructed at the outlet of all water bars that direct flow outside of the vineyard area to dissipate runoff energy and minimize the potential for erosion.

- b. *Proposed vegetative erosion control measures including maintenance of plant material and slopes until a specified percentage of plant coverage is uniformly established.*

Establishing an effective vegetative cover crop will be the primary method of preventing erosion from the vineyard development area. After the land preparation activities are complete a temporary cover crop will be planted and straw mulch will be spread throughout the cleared area to stabilize the project area through the winter. A minimum coverage of 85% is required to maintain erosion rates at acceptable levels. The seed, fertilizer and mulch specifications are provided on the erosion control plan.

This temporary cover crop will be cultivated in the spring and replanted in the fall for the first three years of the vineyard establishment period. Straw mulch will also be applied each fall during the vineyard established period. In the Fall following the vineyard establishment period all vineyard blocks will be planted with a permanent cover crop seed mix and farming practices will transition to a permanent cover, no-till, farming regime. The permanent cover crop will be mowed in the Spring. Spring mowing will be timed to

allow maturation of seeds and promote natural stand regeneration. All permanent cover crop areas will be reseeded every two to three years or more frequently as needed to maintain at least 85% cover. Straw mulching will also be implemented as needed to achieve the 85% coverage requirement.

Weed control under the vine rows will be primarily via mechanical means such as string trimmers and minimal herbicide usage. Herbicide used to control weeds within the vineyard block will be limited to spraying of post-emergent herbicide in a narrow 12 inch maximum width strip spray, if necessary to control weeds at the bases of the vines. The post emergent herbicide will be applied in the late winter or early spring to ensure that the spray area has vegetative protection through the rainy season. If the spray areas are not achieving adequate cover they must be mulched with straw and reseeded each year to provide the required cover.

The cover crop should be irrigated prior to the onset of the rainy season for at least the first Fall following development to establish a dense cover prior to the onset of heavy winter rains.

- c. *Proposed erosion control measures for vineyard avenues to accommodate farm or vineyard equipment and materials storage locations*

A permanent cover crop will be planted in the vineyard avenues the first Fall following land preparation activities and it will be maintained as permanent cover throughout the life of the vineyard. No tilling will occur in the vineyard avenues. The permanent cover crop will be mowed in the Spring. Mowing will be timed to allow maturation of seeds and promote natural cover crop regeneration. All permanent cover crop areas will be reseeded every two to three years or more frequently as needed to maintain at least 85% cover. Straw mulching and / or pre-irrigation of the cover crop will also be implemented as needed to achieve the 85% coverage requirement. No herbicides will be used in the vineyard avenues.

Alternatively, vineyard avenues may be lined with crushed rock to limit their susceptibility to erosion and provide all weather access.

Water bars and / or straw wattles will be installed across the sloping vineyard avenues to force runoff to adjacent stable areas so that runoff does not concentrate on the vineyard avenues and cause erosion.

9. Storm water stabilization measures to handle any increased peak rates of runoff from the development of the site that would result in flooding or channel degradation downstream. Include calculations of estimated increased runoff and/or an explanation of why an increase is/is not expected.

Detailed calculations of predicted runoff rates within the project area for both pre- and post-project conditions utilizing the United States Department of Agriculture Technical Release 55 (USDA TR-55) methodologies are presented in the Hydrologic Analysis prepared by David Steiner, CPESC, CPSWQ. These calculations indicate that post-project conditions, including built in mitigations, will result in runoff rates that are not greater than current conditions for the 2, 5, 10, 25, 50 and 100 year design storm events.

Since the project has been designed to maintain existing drainage patterns and since there will be no increase in peak runoff rates, the proposed project will not result in any significant change to local or regional hydrology / runoff patterns that could result in downstream flooding or channel degradation.

10. An implementation schedule indicating:

- a. The proposed vegetation clearing, earth moving/grading, and construction/planting schedule.
- b. The proposed schedule for winterizing the site (by October 15th of each year the permit is in effect except in a municipal watershed where it is by September 1st).
- c. The proposed schedule for installation of all interim erosion and sediment control measures (including vegetative measures) and the state of completion of such devices/measures at the end of the grading season (i.e., on October 15th [except in 5 designated municipal watersheds where it is September 1st] of each year the permit will be in effect).
- d. The proposed schedule for installation of any permanent erosion and sediment control devices required.

Vineyard Development Schedule

The schedule below is an estimate and is subject to change. Implementation of winterization and erosion control measure must be adjusted to accommodate any changes in development and planning under consultation with the Engineer. All land preparation, planting and erosion control work is to be performed by the property owner or by their contractor / vineyard manager.

April 2020

Commence Vineyard Development Program

Begin clearing and grubbing of existing vegetation. Complete land preparation for vineyard planting including: ripping, discing, rock removal and processing, recontouring and incorporation of soil amendments. Install drainage improvements, waterbars and rock energy dissipators.

Prior to October 15, 2020

Complete all earth disturbing activities & drainage improvements installation.

Winterize Site

Seed vineyard with temporary cover crop seed mix

Seed vineyard avenues with permanent cover crop seed mix

Place fertilizer, straw mulch and erosion control blankets

Install sediment barriers

Install water bars

Pre-irrigate cover crop to establish cover prior to rainy season.

Establish reserve of erosion control measures to be maintained onsite throughout the rainy season to facilitate rapid deployment. Materials shall include silt fence, straw wattle, straw, erosion control seed mix, erosion control blanket and plastic sheeting.

October 15, 2020 - April 2021

Inspect and maintain vegetative cover and erosion control devices at least once per week, prior to each anticipated rainfall event, at least once every 24 hours during extended rainfall events and following each rainfall event. Reseed and mulch any erosion damaged areas or areas with less than the specified cover percentage and repair or replace erosion control devices as necessary.

Spring 2021

Cultivate temporary cover crop within vineyard block footprint area and perform fine site grading to repair any storm damaged areas. No tilling of vineyard avenues is to be performed.

Install irrigation and trellis systems. Plant rootstock.

Prior to October 15, 2021

Complete all earth disturbing activities

Winterize Site

Seed vineyard with temporary cover crop seed mix

Seed vineyard avenues with permanent cover crop seed mix

Place fertilizer, straw mulch and erosion control blankets

Install sediment barriers

Install water bars

October 15, 2021 - April 2022

Inspect and maintain vegetative cover and erosion control devices at least once per week, prior to each anticipated rainfall event, at least once every 24 hours during extended rainfall events and following each rainfall event. Reseed and mulch any erosion damaged areas or areas with less than the specified cover percentage and repair or replace erosion control devices as necessary.

Spring 2022

Cultivate temporary cover crop and perform fine site grading to repair any storm damaged areas.

Prior to October 15, 2022

Complete all earth disturbing activities

Winterize Site

Seed vineyard with temporary cover crop seed mix

Seed vineyard avenues with permanent cover crop seed mix

Place fertilizer, straw mulch and erosion control blankets

Install sediment barriers

Install water bars

October 15, 2022 - April 2023

Inspect and maintain vegetative cover and erosion control devices at least once per week, prior to each anticipated rainfall event, at least once every 24 hours during extended rainfall events and following each rainfall event. Reseed and mulch any erosion damaged areas or areas with less than the specified cover percentage and repair or replace erosion control devices as necessary.

Spring 2023

Cultivate temporary cover crop and perform fine site grading to repair any storm damaged areas.

Prior to October 15, 2023

Complete all earth disturbing activities

Winterize Site

Seed vineyard rows with permanent cover crop seed mix

Seed vineyard avenues with permanent cover crop seed mix

Place fertilizer, straw mulch and erosion control blankets

Install sediment barriers

Install water bars

October 15, 2023 - April 2024

Inspect and maintain vegetative cover and erosion control devices at least once per week, prior to each anticipated rainfall event, at least once every 24 hours during extended rainfall events and following each rainfall event. Reseed and mulch any erosion damaged areas or areas with less than the specified cover percentage and repair or replace erosion control devices as necessary.

Spring 2024 & Beyond

See Annual Maintenance Schedule

Annual Maintenance Schedule

Spring

Mow permanent cover crop in vineyard and vineyard avenues and perform fine site grading to repair any storm damaged areas.

Prior to October 15

Winterize Site

Repair any damage to vineyard and vineyard avenues that has occurred during the farming season. Place seed and straw on all vineyard avenues as needed to achieve the specified cover percentage. Install water bars.

Place erosion control seed, fertilizer, straw mulch, erosion control blankets and sediment barriers as necessary to stabilize any erosion prone areas outside and adjacent to the vineyard areas.

October 15 - April 1

Inspect and maintain vegetative cover and erosion control devices at least once per week, prior to each anticipated rainfall event, at least once every 24 hours during extended rainfall events and following each rainfall event. Reseed and mulch any erosion damaged areas or areas with less than the specified percentage cover and repair or replace erosion control devices as necessary.

11. The estimated cost of implementation of the erosion and sediment control measures.

Implementation of erosion and sediment control measures for this project is anticipated to cost approximately \$5,000 to \$10,000 per acre for installation and maintenance. This estimate includes only the erosion and sediment control portions of the project, not the entire cost of permitting, engineering, land preparation, development, irrigation systems, trellis systems, and plants.