

Tree Replanting and Carbon Sequestration Plan

File # P21-00274-ECPA

Napa County, CA

Introduction

Napa County has requested a Replanting Plan and Carbon Sequestration Plan for the removal of 8-walnut trees in the development of new vineyards on the property. Replanting and carbon sequestration will occur within the 0.35-acres of vineyard that will be removed to comply with the required stream setback.

The property is located north east of the city of Napa at 1228 Hagen Road, within the USGS Napa Quadrangle. The previous owner developed vineyard within an open grassland field adjacent to Sarco Creek. Due to proximity of Sarco Creek and existing slopes, a 150 to 105 ft. setback is required in this area.

Carbon sequestration is the long term storage of carbon dioxide as biomass. Trees are significant elements for sequestering terrestrial carbon biomass. Trees are sinks for atmospheric CO₂ as approximately 50 percent of their standing biomass consists of bound carbon. Trees and all vegetation, absorb carbon dioxide and release oxygen during the process of photosynthesis. The carbon absorbed by trees in this process is stored in the wood.

The rate of carbon sequestration depends on the growth characteristics of tree species, the conditions for growth, where the tree is planted and density of the tree's wood. This plan focuses on replanting with native species to the area, and not necessarily the fastest growing species, to provide native wildlife habitat as well as sequester carbon for the future.

This Plan addresses replanting native trees on the project site for 8-walnuts to be removed, and addresses carbon sequestration required by Napa County. Woody debris is proposed to be retained on the property that will serve a dual purpose of providing wildlife habitat as well as carbon sequestration as woody debris slowly decays as part of the carbon cycling. New planted trees will grow and begin to sequester carbon overtime, and offset the loss of carbon resulting by the removal of 8 trees over time.

Replanting Plan

The area proposed for replanting is within the 0.35-acres of vineyard that will be removed (planted by a previous owner) within the stream setback. The site is on land under the ownership of the applicant. The proposed re-planting will have available water for establishment and an onsite vineyard manager with experience in maintaining native vegetation. Once vines and hardware are removed, 24 native trees (a 3:1 replanting ratio) will be installed. (See Plate I. for Planting Location)

Replacement Plantings – Species

Common Name	Scientific Name	Number
Coast Live Oak	<i>Quercus agrifolia</i>	12
Black Oak	<i>Quercus kelloggii</i>	12

Planting Design and Layout: Trees should be placed at approximately (20-30 foot centers) and placed in a random spacing pattern within the planting zone.

Planting Stock: Planting stock should be purchased from local native plant nurseries. Recommended plant size of one gallon size or equivalent. Tree species specified are commonly available at local native plant nurseries. If the species specified above are unavailable, ecologically appropriate substitutions of species and/or changes in composition will be made by a qualified specialist.

Plant Protection: All plants should receive a 3’x3’ woven polypropylene weed mat. The mats will be secured to the ground with heavy gauge steel staples or pins. The weed mat will serve as mulch for soil moisture retention and weed suppression purposes. Woven polypropylene is recommended over other weed control fabrics because of its durability and resistance to punctures. Because rodents are active near the project area, all planting stock should also have browse protection.

If tubes are used (such as Tubex®, BluEx®, or similar product) it is recommended that grow tubes which are specifically designed for restoration activities be used. Protective bird netting must be installed atop of the grow tubes, if tubes are used. Collar and screen hardware may be an option if a restoration contractor is used for the plant installation.

All plant protection hardware should be removed at the end of the project monitoring period or when plants are established, typically 3 years after installation. Failure to remove planting hardware may ultimately lead to plant mortality.

Nutrients: All plants should be given an appropriate amount of fertilizer at the time of planting to promote healthy growth in the first growing season. General purpose, slow release fertilizers, such as Ozmocote® 14-14-14 or Agriform® pellets are commonly used in plant installations. It is important that the fertilizer is applied directly to the root site of the plants (sub- soil surface) to avoid encouraging weed growth.

Timing: Typically, the best time of year to install native plants is in the late fall, when the soil has become adequately wet from fall rain. Getting plants in the ground early gives the plants more time to develop roots and site familiarity before breaking dormancy in the spring. Delaying planting into the late winter and spring, can decrease planting success if an irrigation system is not online. If planting techniques such as direct seeding and vegetative propagation are used, the planting window is narrowed and controlled by the timing required by the type of seeds used.

Irrigation: To minimize drought stress and to encourage successful establishment, the plants must be irrigated during the dry season. The first year of establishment is the most critical, and

supplemental irrigation may be needed for the first three to five years. A simple above-ground drip irrigation system is recommended (it may be that hand watering can be used since the site is so small). All woody plants should be targeted with drip emitters. The irrigation system should run at regular intervals and the system should be checked on a regular basis to insure that the system is functioning properly and that the plants are getting the proper quantity of water. A typical irrigation regime for a first year of project is a once weekly watering of 1 to 3 gallons per plant. Lengthening the period between watering to two weeks may be adequate during subsequent years.

Irrigation should be activated in the spring when soil on the site begins to dry out, typically in mid to late April. Drought conditions may require an earlier activation date, and heavier spring rains may allow for a later activation date. Irrigation to the site would typically be shut down by mid-October. Early fall rains may allow for an earlier shut down date, and a prolonged fall drought may require that irrigation occur later into the fall.

Maintenance: Weed control can be just as important as irrigation during the first few years of native planting. Weeds directly compete with the plantings for water, light, and nutrients. Heavy weed growth can also provide habitat for rodents, such as mice, voles, and gophers, which can girdle young plants and damage drip irrigation lines.

Hand Weeding: Spring hand weeding of all weeds growing inside the plant protection hardware and weed mat openings will have the most profound positive effect on the young plant. It is important to carefully perform hand weeding when weeds have not become too large and the soil is still soft and moist from winter rains. Periodic hand weeding may be necessary throughout the growing season if irrigation is used. It is very important that crews performing hand weeding are familiarized with the different species selected, so that the project plants are not accidentally damaged or removed.

Weed Mowing/Weed-Eating: It may be desired by the property owner and/or property manager to mow weeds in the project area. Weed removal can also be very beneficial to the plantings, as long as great care is taken not to damage the plants, plant protection hardware, weed mats, or the irrigation system. It is very important that personnel performing weed-eating be shown the various elements of the enhancement planting and that steps be taken to prevent any damage to the plants, hardware, or the irrigation system.

Performance Standards: Tree plantings shall have a minimum of 80% survival at the end of three years. Each year, percent survival, vegetated cover and the success of the planted stock shall be monitored, recorded and reported. The encroachment by invasive species shall be noted and if called for, removal programs of invasive species shall be implemented.

Replacement plantings shall achieve an 80% survival rate and be monitored for 5 years to demonstrate that success criteria have been met.

Carbon Sequestering Plan

Carbon sequestration is defined as: the process by which carbon dioxide is taken up by trees, grasses and vegetation by the process of photosynthesis and stored as biomass. Carbon turnover is a function of metabolism, oxidation/burning with subsequent carbon release or carbon binding by photosynthesis. The following management practices are prescribed to achieve on site carbon sequestering balance:

- **No burning of vegetation;**
- **Stumps and large wood (>6in) should be kept on site;**
- **Small branches, roots and limbs should be chipped and placed on site;**
- **Inter row plantings of native grasses within the vineyard;**
- **Retention of vineyard trimmings on the property and**
- **Replacement tree plantings at 3:1 ratio with 80% survival.**

Retention of wood debris (stored carbon) on-site and replacement planting at a 3:1 will offset the carbon loss of removing 8-Walnut trees. Stumps and logs will begin to degrade over time and lose carbon in to the atmosphere as new trees begin to grow and sequester carbon.

Monitoring Plan

A monitoring plan is essential for assurance of the goals of the replanting plan. The monitoring plan proposed is an assessment of the project upon completion of the prescribed work at the end five years. At the end of five years total survivorship should be 80% of the total planted stock as per the performance standard.

To ensure a success all plantings shall be monitored (survival counts and photo monitoring) and maintained as necessary for a minimum of five years.

Performance Standard

A performance standard of 80% survival at the end of five years is proposed as a success standard for compliance by this project.

If the 80% survival is not meeting these goals, the permittee is responsible for replacement plantings, additional watering, weeding, invasive exotic eradication, or any other practice, to achieve these requirements. Replacement plantings shall be monitored with the same survival and growth requirements for five years after planting.

Monitoring should be conducted in the fall a year following planting. Monitoring reports should be submitted to the Napa County Planning, Building & Environmental Services by December 1st of each year.

Monitoring Report Contents

- 1.0 Project Information
 - 1.1 Project name
 - 1.2 Applicant name, address, and phone number
 - 1.3 Consultant name, address, and phone number
- 2.0 Site Information
 - 2.1 Location of the site (including regional map)
 - 2.2 Specific purpose/goals for the replanting
 - 2.3 Date planting was completed
 - 2.4 Dates, and summary of previous monitoring visits
 - 2.5 Name, address and contact number of responsible parties for the site
 - 2.6 Summary of remedial action, if any
- 3.0 Tabulated Results of Monitoring Visits, Including Previous Years
- 4.0 Summary of Field Data
- 5.0 Photo Monitoring
- 6.0 Problems Noted and Proposed Remedial Measures

Contingency Plan & Adaptive Management

Death of new plants will necessitate replanting. Yearly monitoring for achievement of the success will identify problems and remedial adaptive management to correct any problems will be implemented.

Responsible Party For Short -Term and Long-Term Maintenance

Responsible party for development, short term maintenance and long-term maintenance will be the property owner. It is the owner's responsibility to keep the biologist informed as to the progress of work. The biologist shall prepare annual monitoring reports for submittal to Napa County Planning, Building & Environmental Services

Should you have any questions, please do not hesitate to contact us at: Email kjeldsen@sonic.net, or phone (707) 544-3091.

Plate I. Location of Plantings

