The Project components are listed below and discussed in the following sections.

- Rezoning and Voluntary Parcel Merger
- Road Improvements and Maintenance
- Timberland Conversion
- Sustainable Timber Management
  - Commercial Timberland Management Areas
  - Riparian Management Areas
  - Large Tree Management Areas
- Windy Gap Preserve
- Soda Springs Reserve Dedication
- Sustainable Vineyard Planting and Operations

REZONING AND VOLUNTARY PARCEL MERGER

Over many decades the parcels on the Property were created for the convenience of prior owners without benefit of contemporary land use policies, environmental review, or impact mitigation. As a result, the existing parcelization is inconsistent with the County's General Plan land use densities, creating the potential for resource fragmentation as individual parcels are sold to separate owners and developed. Figures 2 and 3 present the current parcels[5]; while Figures 5 and 6 present the proposed parcel configuration to be achieved through voluntary merger of existing parcels. Figure 6 identifies those areas that are proposed to be rezoned.

The Project proposes to address the existing General Plan inconsistency and fragmentation potential by reducing the number of parcels from the current total of 160 to 63 (a reduction of 97 parcels) as a public benefit conditioned on the approval of the immediate rezoning, rezoning CUP, TCP, and THP necessary for vineyard development and project components.

The existing zoning of the Property based on the County Zoning Map and Assessor Parcel acreage numbers is 15,645 acres Timber Production (TP) and 3,655 acres Rural Resource Development (RRD) (see footnote 1). The Project proposes to rezone areas of existing RRD to TP, immediately rezone proposed vineyard areas from TP to RRD, and rezone specific areas of TP to Public Facility (PF). The Project proposes to maximize the amount of resulting TP acres by utilizing split zoning that only rezones to RRD those portions of parcels currently zoned TP that are proposed for vineyard development or proposed to be subject to the Windy Gap Preserve easement area as depicted in Figure 6. The proposed rezoning (based on the Assessor Parcel acreages) would result in 14,590 acres TP, 1,861 acres RRD, 2,627 acres RRD/Biotic (Windy Gap Preserve Easement), and 221 acres Public Facilities (PF) for the County Park Dedication area, based on the County Assessor's recorded acreage totals (see Table 1).

[5] The Property contains 103 Assessor's parcels; however, see footnote #2 for discussion of the 160 certificates of compliance parcels that exist on the Property.

Table 1. Zoning Acreages

Zoning Category	Existing Zoning Acreage	New Zoning Acreage
RRD	3,655	1,861
TP	15,645	14,590
RRD/BIOTIC	n/a	2,627
PF	n/a	221

* Zoning acreage numbers are based on the County Zoning Map Assessor Parcel acreages. (See footnote 1).

ROAD IMPROVEMENTS AND MAINTENANCE

Most roads on the Property were constructed from the 1930s through the 1970s and were used to provide access for timber harvesting and cattle grazing activities. Roads on the Property were constructed primarily on weak and low strength marine sandstones and shales of the Coastal Belt Franciscan Complex bedrock. Roads historically were native surfaced with in-sloped to flat road shapes and inboard ditches with berms constructed along the outside edge of the road, construction techniques that concentrate flows and created many erosion problems on the property. Although many of the roads are presently drivable with a standard four-wheel drive vehicle, maintenance in the past was minimal and sporadic. Rills and small gullies and poor road drainage on the existing seasonal logging roads have historically delivered large amounts of sediment to waterways either at stream crossings or through hill slope gullies caused by concentrated runoff.

PPV has identified approximately 93 miles of existing on-site logging roads required to access Project components, as illustrated in Figure 8. These road improvements are proposed to be implemented as conditions of approval. Pacific Watershed Associates (PWA) was hired by PPV and has conducted sediment source investigations and developed improvement plans on 63.9 miles of Project roads designed to increase usability, simplify long-term maintenance, and reduce erosion. In addition to the 63.9 miles of existing roads assessed by PWA, approximately 29.1 miles of on-site existing and a small amount of new roads are also required to access Project components. These roads have been assessed by Kent & Associates (refer to Appendix A, Timberland Conversion / Vineyard Development Road Plan). Final Project roads and improvement standards will be determined during the County and CDF review process.

Road locations were selected to ensure that vineyard activities do not preclude efficient access for timber management operations on RRD/TP parcels. Roads will be retained within or on the edges of the new vineyard locations in a manner that provides efficient access to the timber resource without unreasonably interfering with vineyard operations.

The objectives of the Timberland Conversion/Vineyard Development Road Plan presented in Appendix A, are threefold:

(1) Substantially reduce or minimize future sediment delivery to nearby streams by upgrading road drainage structures to a storm-proof condition that will accommodate a 24-hour, 100-year storm discharge and "disconnecting" road surface drainage from watercourses;

(2) Provide for year-around and safe use of specified Project roads; and

(3) Reduce long-term maintenance requirements and costs. Project road improvements will include upgrading/storm proofing at least 63.9 miles of existing logging roads to permanent four-season standards and upgrading 29.1 miles of road to provide seasonal access for timber conversion per CDF requirements.

In addition to upgrading Project roads to address water quality issues, the Project also will establish a road maintenance association so that water quality benefits gained are maintained into the future. Existing roads not identified as Project roads will be classified and considered during continued refinement of Project road improvements.

The Project construction is staged so that road upgrades will occur over a three-year construction period prior to, or concurrent with, associated vineyard development. Roads that access vineyards scheduled to be constructed during the first two years of the Project will be upgraded to storm-proof condition the first year of the Project. During the second year, roads that access vineyards to be constructed during the third year of the Project will be upgraded to storm-proof condition. Road construction monitoring will be performed with regular visits to construction sites by the responsible Registered Professional Forester (RPF). During road construction activities, status reports of road upgrades will be submitted to CDF and the North Coast Regional Water Quality Control Board (NCRWQCB) on a regular basis. During the wet season, fall, winter, and spring inspections shall be made by the responsible RPF and monitoring reports shall be submitted to CDF and NCRWQCB. The Road Improvement and Maintenance Plan contains the construction and implementation schedule of road upgrading/storm proofing (see Figure 8 and Appendix A).

Access to the Property is available via County roads (Stewarts Point-Skaggs Springs Road/Annapolis Road/Soda Springs Road from the south and Rockpile Road from the east) and private roads (Kelly Road and Mendosoma III Roads). Primary access to the Property is anticipated to be via Stewart Point-Skaggs Springs Road, Annapolis Road, Soda Springs Road, and Kelly Road, but final determination will be made subsequent to the traffic analysis and consultation with the County and other stakeholders.

Road improvements will utilize aggregate material found onsite. An Aggregate Borrow Sites Reclamation Plan (Rec Plan) has been submitted to address the regulatory requirements of the California Surface Mining and Reclamation Act (SMARA) of 1975 and associated regulations, as well as Sonoma County ordinances.

The preparation of the Rec Plan required the creation of detailed criteria for identifying, screening, and selecting aggregate borrow sites. Environmental impacts will be minimized by utilizing multiple smaller borrow pit sites located in close proximity to existing roads away from streams and sensitive resources (see Figure 8). The criteria included the following:

- Aggregate borrow sites will be greater than 200 feet from all Class I watercourses (see Timberlands Management, Riparian Management Area in later sections) and greater than 75 feet from all Class II watercourses. Potential aggregate borrow sites will be at or near the tops of ridges, typically well removed from watercourses.
- Aggregate borrow sites will not be located within areas known to have special status plants, species, or cultural resources.

- The aggregate borrow sites will be surveyed for rock types to verify the availability of aggregate of acceptable durability. California Department of Transportation Test Method 229 will be used to quantify durability.
- Each rock type at each aggregate borrow site will be geologically evaluated for the potential presence of naturally occurring asbestos (NOA). Any rock types that potentially contain NOA will be tested for NOA by transmission electron microscopy (TEM). All rock types containing greater than 0.25 weight percent of asbestos will be excluded from use.

TIMBERLAND CONVERSION

The Project proposes to convert 1,671 acres of "timberland" [6] to vineyards plus an additional 190 acres classified as "non-timberland," i.e. grassland, for a total of 1,861 acres of vineyard. Only a small portion of the overall Property is suitable for high quality vineyards due to soil, slope, and microclimates constraints. Conversion areas are located to avoid environmentally sensitive resources to the greatest extent practicable, and represent the minimum vineyard acreage that is required if the array of public benefits are to be funded.

Due to topography, microclimate, and soils considerations, as mentioned above, the timber conversion areas identified for vineyards are widely dispersed on ridge top locations, as opposed to large contiguous blocks, and generally are less than optimally stocked from a timber resource standpoint. These conversion areas also lack significant biological diversity and have lower value wildlife habitat compared to a well-managed forest, due to their current condition of high tanoak competition and young, dense, small diameter trees. The Project proposes to not only protect the remaining timberlands via easements but to proactively plant approximately 1 million trees to restore the existing forest resource and mitigate the loss of trees required to develop the proposed vineyards (See Forest Restoration below). This will result in 3 conifers planted for every 1 tree (½ hardwood and (½ conifer) removed for vineyard development.

Conversion areas are very narrowly defined with setbacks established from sensitive waterways and unstable areas. The conversion areas are sited on bench lands and ridge tops that have slopes averaging 15% to 20% (38% maximum slope) and represent the best locations for high quality grape production due to favorable soil, slope, and microclimate conditions. Each individual conversion area has been evaluated in the field in terms of its suitability for vineyards, with criteria including existing road access, slope (averaging 15 to 20% with the maximum at 38%), size, soils, geometric shape, location, and distance from sensitive areas, i.e., watercourses, unstable areas, rare species/plants and archeological sites, with appropriate buffers created where necessary.

A timber inventory of these areas conducted in the spring of 2006 estimated that a relatively low volume of approximately 8,160 thousand board feet (bf) (net Scribner short log scale) of conifer timber will be harvested from the converted lands. Table 2, Conversion Area Forest Stand Description, below, describes the total amount of timber estimated to be harvested. Existing timber volumes on the conversion areas are relatively low compared to a well managed forest, and are comprised of 3,822 thousand-board feet of redwood (47%), 3,746 thousand-board feet of Douglas

[6] See California Public Resources Code Section 4526: "'Timberland' means land, … which is available for, and capable of, growing a crop of trees of any commercial species used to produce lumber and other forest products, including Christmas trees. …"

fir (46%), and 591 thousand board feet of sugar pine (7%) (see Table 2 and Appendices C and D, Timber Management). Note that presently there is a greater representation of tanoak and other hardwoods than conifers in terms of number of trees and basal area per acre.

Table 2. Conversion Area Forest Stand Description

Species	Total Board Feet	Board Feet per Acre	Total Trees	Trees per Acre	Basal Area (square feet) per Acre
Redwood	3,822,575	2,602	59,169	40	37
Douglas-fir	3,746,319	2,550	53,847	37	30
Other Conifers	591,751	403	4,384	3	4
Total Conifers	**8,160,645**	**5,555**	**117,400**	**80**	**71**
Tanoak	3,550,624	2,417	134,072	91	57
Other Hardwoods	1,681,925	1,145	50,779	35	25
Total Hardwoods	**5,232,549**	**3,562**	**184,851**	**126**	**82**
Total (All Species)	**13,393,194**	**9,117**	**302,251**	**206**	**153**

Timber conversion areas (1,671 acres; see Table 3) are generally characterized by stands of small, densely spaced trees with relatively high tanoak competition. Soils are average to poor for growing trees (Timber Site Class 3 and 4 as defined by California Forest Practice Rules Section 1060). RPF's performed field review of each conversion area and determined stocking levels from ocular analysis using stocking waiver criteria. Approximately 21% of the conversion area is currently understocked by Forest Practice Rule standards, and has high tanoak stocking levels. Approximately 79% of the conversion area is considered stocked by Forest Practice Rule standards with greater than or equal to 50 square feet of basal area per acre of conifers, but is dominated primarily by young dense small diameter stands of redwood, Douglas fir, and tanoak with a majority of the over-story less than 20" diameter at breast height (DBH). Therefore, virtually 100 percent of the timber conversion areas can be considered less than optimally stocked from a resource standpoint, and lacks significant wildlife habitat values due to their current condition. Appendix D provides a description of forest vegetation types found on the conversion area and the volume and species of trees on the conversion area.

Table 3. Vineyard/Timberland Conversion Acreage

	Total Acres	% of Total Property	Site Class III	Site Class IV	Non-Timber	UnderStocked	Stocked
Timberland to be Converted	1671	8%	1311	369	N/A	357 (21%)	1314 (79%)
Non-Timberland	190	1%	N/A	N/A	190	N/A	N/A
Total New Vineyards	1861	9%	1267	404	190	357	1314

All timber harvesting associated with the conversion will be conducted pursuant to a CDF Timber Conversion Permit and associated Timber Harvest Plan. Trees within the flagged conversion area boundaries will be cut by hand or with a feller buncher, and ground-based systems (tractors and rubber tiredskidders) will be used to yard (move) the cut logs to landing locations. Temporary erosion control measures (e.g., installation of straw bales and silt fences and mulching or seeding of exposed soils near streams) will be implemented, consistent with California Forest Practice Rules intended to protect water quality until permanent erosion control structures are installed, as discussed below under Vineyard Planting and Operations.

The status of timber harvest operations, compliance with California Forest Practice Rules and mitigation requirements will be monitored pursuant to an approved monitoring and reporting plan, with supervision by a Registered Professional Forester (RPF) to ensure that all best management practices are implemented correctly and in a timely manner. The conversion and associated timber harvests will take place over a three-year period, with the potential for two, one-year extensions. Road improvement work will be completed in phases to ensure that ingress and egress for timber harvesting activities and conversion utilize upgraded internal roads. Subsequent to leaving the Property, trucks will use privately maintained roads (Kelly Road and other easements) and County Roads (Rockpile Road, Soda Springs Road, Annapolis Road, and Stewarts Point-Skaggs Springs Road). Primary public road access to the Property is anticipated to be via Stewarts Point-Skaggs Spring Road, Annapolis Road, and Soda Springs Road.

Timber conversion and improvements to Project roads (see Road Improvements and Maintenance discussion above) will occur over a three-year period in coordination with proposed timber conversion and vineyard development activities (see Figures 8 and 11, and Appendix A).

County Ordinance 5651 Mitigation/Public Benefit

The Project proposes to protect approximately 14,868 acres for timber management but still must comply with Sonoma County Ordinance 5651. This ordinance requires that for every acre of timberland converted to another use, two acres of stocked timberlands of comparable or better timber Site Class, as defined by the California Forest Practice Rules (FPR), with slopes of 50% or

less, be protected as mitigation. The Project will convert approximately 1,671 acres of timberland to vineyards and, therefore, requires approximately 3,342 acres to be protected as mitigation. The 1,671-acre conversion area includes 1,342 acres of Timber Site Class III, and 329 acres of Timber Site Class IV. The Project, not including the Windy Gap Preserve or the Soda Springs Reserve dedication, has identified 2,681 acres of Timber Site Class III, and 612 acres of Timber Site Class IV with slopes of 50% or less, totaling 3,293 acres. This is 49 acres less than the 3,342 acres required per Ordinance 5651 (see Figure 12). If the County determines that no credit be given for the acreage proposed to be dedicated to the County for the Soda Springs Reserve, which currently contains 72 acres of Site Class III under 50% slope, these additional 49 acres will be addressed by restocking currently under-stocked Site Class III lands elsewhere on the Property on slopes of 50% or less.

Timber Conversion and Public Benefit Sequencing

In order to ensure that the public benefits are implemented concurrently and proportionally with the timber conversion, PPV has developed a project schedule that identifies construction phases and associated road improvements and forest restoration areas.

Timber conversion, improvements to Project roads, forest restoration actions, and necessary greenhouse gas offset goals (see discussion below) will occur over a three- to five-year period in coordination with proposed timber conversion and vineyard development activities (see Figures 8, 11, and 12, and Appendix A). Parcel merger, park expansion, trail easement, Windy Gap Preserve easements and the working forest conservation easements are proposed to be conditioned on project approval, including County, CDF, and resolution of potential litigation and implemented prior to conversion activities being initiated. This "front loading" of benefits creates certainty that many of the public benefits will be realized prior to any conversion of timber or vineyard development proceeding.

Forests and Climate

Climate Goals / Carbon Neutral

Preservation Ranch seeks to fully offset greenhouse gas emissions ("GHGs", CO_2, or carbon) throughout the life of the Project, and significantly increase the Property's carbon sequestration potential over time, as the proposed working forest and conservation easements, park expansion, and restoration action benefits are realized. The Project proposes the conversion of 9% of the Property to vineyards and the restoration and preservation of over 90% of the Property in a manner that will increase carbon or CO_2 (a GHG) sequestration rates and storage capacity for the foreseeable future. Despite the fact that the vast majority of the Property is proposed to be managed in a way that will have a positive effect on climate change over time, Preservation Ranch acknowledges the "net present value" of GHG emissions – an emission avoided today is worth more than an emission avoided tomorrow. Accordingly, Preservation Ranch intends to seek to be carbon neutral by offsetting all GHG emissions related to the proposed conversion of forest to vineyard while concurrently implementing working forest and conservation easements, park expansion, and restoration actions that will increase the Property's carbon sequestration overtime.

Regulatory Status –Context of the Preservation Ranch Project

California is currently developing strategies to meet the important requirements outlined in AB 32 – The Global Warming Solutions Act. Forests have been identified as being both part of the solution and part of the challenge to achieving overall GHG emission reduction targets. Forests provide climate benefits when they are managed to increase sequestration and/or managed to decrease emissions associated with natural and/or manmade forest loss. It is expected that forests will help contribute to the CO_2 reduction requirements identified in AB 32.

The policies and regulations that will be adopted to implement the AB 32 strategies have yet to be determined and therefore, some uncertainty exists as to how best to quantify GHG impacts for Preservation Ranch or any other current project. Regardless, it is expected that an analysis of the immediate emissions of CO_2 associated with the conversion of forests to other uses and the associated loss of carbon sequestration potential will be conducted during the California Environmental Quality Act ("CEQA") process.

California Climate Action Registry

Preservation Ranch intends to seek California Climate Action Registry ("CCAR") registration.

The CCAR is a private non-profit organization originally formed by the State of California. The California Registry serves as a voluntary greenhouse gas (GHG) registry to protect and promote early actions to reduce GHG emissions by organizations. The California Registry provides leadership on climate change by developing and promoting credible, accurate, and consistent GHG reporting standards and tools for organizations to measure, monitor, third-party verify, and reduce their GHG emissions consistently across industry sectors and geographical borders.

The CCAR has developed Forest Protocols for determining GHG baselines and for tracking GHG emissions and reductions. To initiate the process, Preservation Ranch intends to register and develop its GHG baseline pursuant to CCAR protocols. This information will be utilized by Preservation Ranch in determining any necessary GHG offsets and provided to the County once completed to assist it during the CEQA process.

SUSTAINABLE TIMBER MANAGEMENT

Preservation Ranch proposal for Sustainable Timber Management includes the following key components: a) One Forest Concept; b) Forest Restoration; c) Commercial Timberland Management Areas; d) Riparian Management Areas; and e) Large Tree Management Areas. Table 4 summarizes the acreage of these timber management areas. The One Forest Concept and Forest Restoration are discussed below.

Table 4. Sustainable Timber Management

Preservation Ranch Timber Management			
Category	**Management Priority**	**Acreage**	**% of Total Property**
Commercial	Timber/Wildlife Habitat	11,355	59%
Riparian	Fish & Wildlife Habitat/Timber	1,635	7%
Large Tree Management	Wildlife Habitat/Timber	1,878	10%
Total		**14,868**	**76%**

Each Sustainable Timber Management Area is managed for a different primary purpose, as indicated by name, but with the common goal of improving the timber resource, creating more diverse forest structure for wildlife habitat, reducing fire hazard, and increasing carbon storage. Each component is proposed to be enforced via the "One Forest" conservation easement (see discussion below). These one forest, conservation, easement restrictions will cover approximately 14,868 acres and not only mitigate potential impacts associated with the proposed conversion but provide public benefits including:

- **Improved Timber Resource and Increased High Quality Timber Products**: Increasing conifer inventory furthers Sonoma County's resource policy by providing high quality timber that benefits the local timber industry and increases lumber produced in California. The Project's restrictive easements and restoration actions will ensure that the timber resource is managed in a sustainable and environmentally sensitive manner subject to standards going beyond California's strict environmental laws, resulting in decreased demand for timber from states or countries with fewer environmental restrictions.

- **Enhanced Wildlife Habitat**: Sustained yield/uneven-aged timber management will enhance wildlife habitat by putting into place management restrictions via easement on approximately 14,868 acres that promote ecologically complex forests containing a diversity of vegetation types and forest structures with significantly more large trees present than current conditions. Benefits to wildlife habitat are further extended by the creation of the 2,702-acre Windy Gap Preserve via conservation easement that contains three ecologically distinct habitats as well as the headwaters of 3 fish bearing streams (see discussion below).

- **Reduced Fire Hazard**: Active forest management will significantly change the present condition where overly dense even aged forests with interlocking canopies create a high risk of catastrophic wildfire. By reducing unnaturally high levels of tanoak biomass in the forest over-story, fuel loads will be lightened, and forests will become more fire resistant and more closely resemble pre-settlement conditions with more open and diverse forest canopies. Reduction of fire risk will lower the potential impacts of large-scale wildfires, which eliminate forest cover, cause increased sediment delivery to watercourses and severely degrade the quality and availability of wildlife habitat. It should be noted that vineyard conversion areas act as firebreaks, assisting in the effort to reduce fire hazard overall and mitigate for a short-term increase in fire hazard associated with forest restoration actions (discussed below).

- **Increased Carbon Storage**: The projected increases in timber inventories via forest restoration, working forest and conservation easements, and park expansion that will help remove carbon dioxide from the atmosphere by actively storing greater amounts of carbon in the standing trees over time. In addition to these increases in carbon sequestration, Preservation Ranch intends to seek to offset all greenhouse gas emissions associated with the establishment of the Project's vineyard component.

- **Increased Local Employment**: Forest restoration work will provide more employment for local workers in the coming decade. Increasing the long-term growth and production of timber from the Property will increase employment and economic stimulus for local sawmills, local harvesting and trucking companies, and the local economies of rural communities supported by these businesses.

The "One Forest" Concept

"One Forest" is a term describing a project-wide management plan that Preservation Ranch will put in place, ensuring that 14,868 acres of the Property will be subject to sustained yield and uneven aged forestry requirements and environmental restrictions that improve wildlife and fisheries habitat and watershed values. This approach allows multiple ownerships within the Preservation Ranch property while still ensuring that the 14,868-acre Sustainable Timber Management Area will be responsibly managed as a single resource, in perpetuity. This maximizes forest resource protections and environmental benefits while integrating agriculture and wildlife conservation with a large working forest, at the level of the entire landscape.

Timber Management and Timber Rights

The One Forest Concept will utilize a single management entity, The Preservation Ranch Forest Group ("Forest Group"), to control and manage the entire 14,868 acres of Sustainable Timber Management Area that reaches across most of the proposed 63 parcels. The One Forest Concept prohibits fragmentation of the timber resource and the wildlife and fisheries habitat across this large landscape by placing the timber rights and timber management in the hands of the Forest Group as opposed to the potential individual property owners. This management structure will ensure that timber management decisions are made in the best interest of the long-term management of the resource.

The Goals and Third Party Certification

The 14,868 acre Sustainable Timber Management Area will be managed using a single forest management plan that is being prepared consistent with the Forest Stewardship Council's ("FSC") principles and criteria for forest management. Preservation Ranch intends to seek third party certification of its One Forest management plan by a qualified entity.

The One Forest management plan is intended to be a living plan that will be used and updated, consistent with the working forest conservation easement (discussed below). The plan will describe the Property and the current baseline conditions of the natural resources, the proposed management of these resources to meet the long-term goals, the working forest conservation easement environmental protection conditions, and an adaptive management strategy to update the plan to improve management techniques that help meet the long-term goals.

The following are long-term goals of the One Forest Concept:

- *Keep the Forest Resource Large*: Maintain a large, economically viable tract of timberland with the goal of restoring a more biologically diverse and productive forest. Increase growth and health of native conifers and create greater standing timber inventories over time using state of the art silvicultural techniques to restore a forest similar in character to the pre-settlement forest.
- *Make it Sustainable*: Create a model of sustainable land use that integrates forest and wild-land management with agricultural production, and eliminates or reduces conflicts between these two resource uses. The management approach will use the underlying concept of sustainability to guide all management actions taking into account the intrinsic environmental potential, sensitivities, and limitations of this landscape. A sustainable forest resource will allow for a sustainable economic return that will provide long-term funding for the continued restoration of the forests, the oak woodlands, the riparian areas, and the watercourses on the property. A sustainable forest will benefit the local environment, the local economy, and local social values as well as store significant amounts of carbon thereby reducing the effects of global warming.
- *Improve Watersheds and Fisheries*: Restore a significant portion of the Gualala River Watershed that supports a healthy native fishery by implementing stream enhancement projects and road stabilization efforts based on state of the art scientific knowledge.
- *Improve Wildlife Habitat*: Forest restoration efforts will be designed to increase diversity and functionality of wildlife habitat for indigenous species with particular concern for rare species such as the northern spotted owl.
- *Keep it Current*: Incorporate adaptive management strategies that monitor the effectiveness of restoration work and allows for continuing improvements of restoration methods to reach these primary goals based on pertinent scientific research.

The Working Forest Conservation Easement

A working forest conservation easement will be secured for the forest that will ensure that important conservation goals are carried out in perpetuity. Some of these goals include:

- Sustainable management of the forest resource using uneven-aged management techniques.
- Broadened riparian management areas
- Management for large trees
- Third party monitoring

Over time as new property owners purchase fee title to the individual parcels, they will do so with full knowledge that the area of their Property outside of the designated vineyard footprint is actively managed by the Forest Group. This group will hold the timber rights and manage the forest consistent with a conservation easement that ensures third party oversight of timber management practices to protect environmental resources. Benefits to the property owners include reduced fire risk, enhanced aesthetics and wildlife habitat, and reduced management costs.

The working forest conservation easement and timber management plan requires close coordination between property owner and the Forest Group to limit the potential interference between timber and agricultural operations. The potential conflict between agriculture and timber management is reduced by the fact that timber management activities are not only dispersed over a large geographic area but also occur over an extended time period (intervals of 15 to 20 years), which may be contrasted with the annual farming cycle of vineyards. Furthermore, even during those years when forest management necessitates vineyard access, the location and timing of timber management activities will be planned to minimize interference with farming activities.

Forest Restoration

Goals/Objectives

Forest restoration efforts are intended to improve the health and productivity of the 14,868-acre Sustainable Timber Management Area over time, and ensure that the objectives are met of creating healthy, fire resistant forests with enhanced wildlife and fisheries habitat, as well as increasing levels of carbon storage. The Project will plant approximately 1 million conifers to restore approximately 3,738 acres of timberlands currently experiencing artificially high tanoak competition caused in large part by past aggressive timber harvesting and lack of follow-up tanoak control (refer to Existing Inventory discussions above) using proven forest restoration techniques. The proposed restoration areas are dispersed throughout the Property and will result in a significant proportion of the forest with a more natural composition of conifers and hardwoods.

Overall, the proposed forest restoration measures will over time result in a more fire resistant forest, higher conifer inventory levels, a commercial timber resource with greater revenue production, a more structurally diverse forest canopy with greater habitat complexity benefiting a wider variety of wildlife species, and increased carbon storage resulting in greater reduction of the effects of worldwide greenhouse gas emissions. Returning conifers to a dominant forest canopy position allows economically viable commercial thinning to occur sooner as more large trees are produced in

a shorter period of time, which further reduces live fuel loads. Using uneven aged selective forest management systems in addition to the forest restoration measures will create a well-spaced, more vertically and horizontally diverse forest structure that is far less susceptible to a catastrophic wildfire.

A restored forest will have similar conifer to hardwood composition as the pre-settlement proportions of approximately 80% conifer stocking to 20% tanoak and other hardwood species stocking[7], as opposed to the current range of 40 to 60% tanoak stocking and site occupancy in many areas. Current stocking on the conversion area which is representative of the forests on the Property is 46% conifer, and 54% hardwood stocking (37% of total stocking is tanoak) (see Table 3, Conversion Acreage).

Approximately 2,638 acres out of the approximately 3,738 acres identified for restoration meet BOF stocking requirements but have a high tanoak competition factor (greater than 50 square feet/acre). The remaining approximately 1,100 acres proposed for restoration currently do not meet the 50 square foot/acre of basal area FPR stocking standard; however, these areas may meet the FPR point count standard (see Table 5 below), and will be replanted to increase stocking. These restoration areas were identified based on their timber site class (high enough to respond well to timber stand improvement practices), as well as geographic location (more shaded north and east facing slopes where possible). It should also be noted that the proposed forest restoration acreage is not required to meet the County's 2 to 1 mitigation requirement for timberland conversion but rather it's in addition to Ordinance 5651 mitigation requirements, although some areas will overlap.

Table 5. Forest Restoration Acreage

Present Condition	Acres
Stocked with High Tanoak Composition (>50 square feet/acre)	2,638
Stocked with < 50 square feet/acre of Conifers	1,100
TOTAL	**3,738**

Refer to Appendix C, which presents a discussion of the assumptions and results comparing the No Project and Proposed Project alternatives including Forest Restoration. Based on modeled assumptions, Forest Restoration will result in increased conifer inventories, increased carbon storage, and improved wildlife habitat. Appendix C describes scope, practices, location, implementation schedule, monitoring, and reporting of the restoration forestry component of the Project.

[7] Measured in square feet of basal area/acre.

Restoration Actions

Forest restoration will involve two main processes, vegetation control using Integrated Vegetation Management (IVM) and replanting with native conifers (estimated at over 1 million seedlings) applied in varying degrees depending on the existing conditions and needs of a given site. Forest restoration will occur concurrently with vineyard restoration at an average of 2.2 acres of restoration for every 1 acre of timber conversion (see Figure 12). Restoration efforts will be spread over approximately a 3- to 5-year time period to reduce potential for losses from seedling mortality in exceedingly dry years and to reduce potential short-term environmental impacts, as discussed below. Restoration areas will be distributed across the Property and buffered by untreated areas to reduce short-term impacts of the change in vegetation from these stand improvement practices.

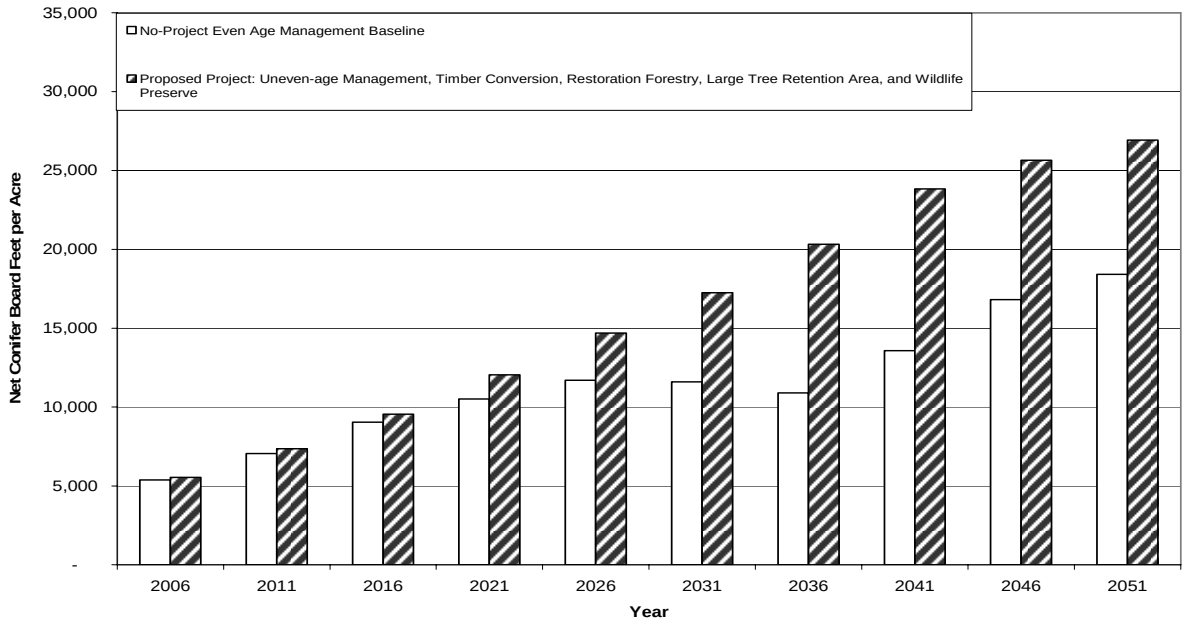
Forest Restoration has a significant effect on increasing conifer volume growth and increasing the relative size of trees in the forest.[8] Table 6 presents a comparison of conifer inventory (board feet per acre) on Preservation Ranch as a result of Project forest management practices, including:

- No Project Baseline (current condition): continuation of current even-aged timber management practices.
- Proposed Project: conversion of 1,671 acres; uneven-aged, sustained yield timber management practices on the remainder of the Property; restoration management on approximately 3,738 acres; a Large Tree Retention Area of approximately 1,878 acres; park dedication of approximately 221 acres; and a Wildlife Preserve easement of 2,702 acres.

The Proposed Project's average timber volume at the end of the 50-year planning period is 24,000 board feet per acre of conifers, compared to No Project Baseline average timber volume of 18,000 board feet per acre, a +33% increase in timber volume.

[8] The no-Project and Proposed Project comparison was modeled by John Nickerson, Dogwood Springs Forestry, and is based on a version of the Project as of January 2007. Subsequent to the modeling activities, approximately 221 acres of the area that was modeled as large tree retention, which included harvest activities, have been proposed for dedication as a County Park and approximately 184 acres of oak woodland have been added to the proposed Windy Gap Preserve easement. These actions are anticipated to have a positive effect on conifer volumes. Further modeling incorporating the current Project component acreages and proposed management activities will be conducted during environmental review and is anticipated to show increases in conifer volumes.

Table 6. Comparison of Conifer Inventory Levels (per acre): No Project vs. Proposed Project through 2051[9]



Fire Hazard Reduction

Forest restoration also has the beneficial effect of reducing overall fire hazard, reducing the effective rate of fire spread, fire duration and intensity, reducing fuel ignitability, and the potential ignition of tree crowns. Restoration does so by: reducing continuous horizontal fuels with the creation of a more open forest canopy - the restored stand has a structure that is less susceptible to crown fire due to this gap creation, and reducing the vertical continuity of vegetative fuels by reducing levels of tanoak stocking[10].

The increased level of conifer stocking resulting from forest restoration also creates a favorable economic return that is necessary to support continued silvicultural treatments that maintain the more open canopy conditions. Reduction of fire hazards will reduce the potential of catastrophic loss of forest cover and the direct loss of forest wildlife habitats.

Table 7, Comparison of Restored Stand to a Non-Restored Stand, presents a stand visualization based on growth and yield modeling of forests on the Property. The restored stand shows a structure that is less susceptible to crown fire due to gaps and less continuous horizontal canopy conditions, and has a more naturally balanced conifer to hardwood ratio. The non-restored stand has a dense middle story canopy of tanoak that results in a higher crown bulk density and is more susceptible to crown fires due to higher levels of ladder fuels.

Additionally, the location of the proposed vineyards on ridge top locations will create fuel breaks that will prevent or slow the spread of wildfire. The location of new reservoirs across the Property, and the storm proofing of roads will improve the ability of fire fighters to effectively control fires by

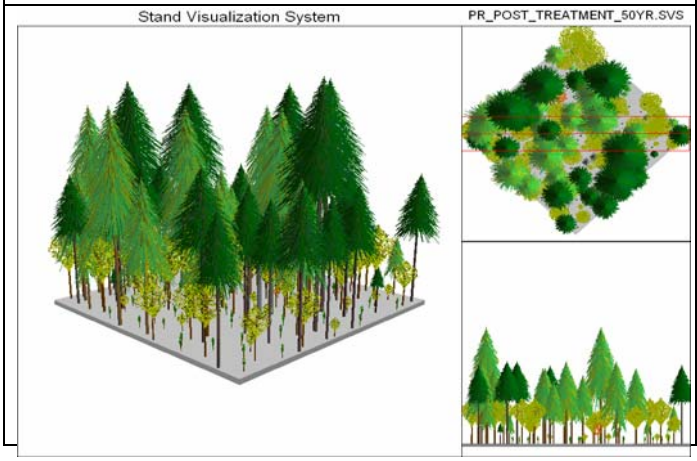
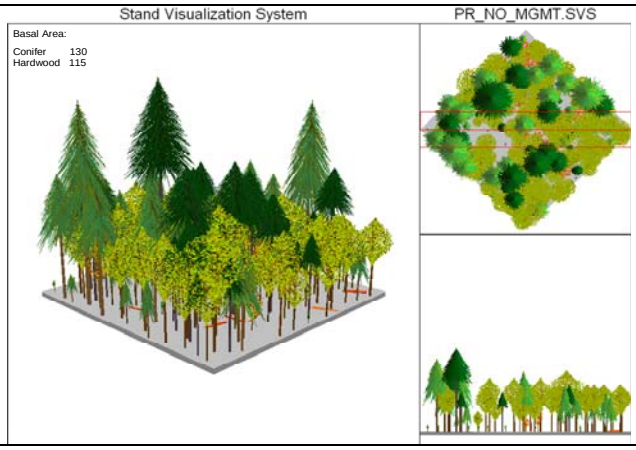
[9] See footnote 8.

[10] California Forest Practice Act, Section 4584(k) (1).

allowing quick access and a ready source of water for filling helicopter drop buckets and the tanks of ground based fire equipment.

Table 7. Comparison of Restored Stand to a Non-Restored Stand

This visualization is based on actual data that is projected 50 years. The restored stand achieves its conifer dominance due to restoration action that reduces tanoak competition and plants additional redwoods and Douglas-fir. The non-restored stand allows current competition levels to persist.

Restored Stand (50 years later)	Non-Restored Stand (50 years later)
More merchantable timber volume - the planted conifers have achieved approximately 16-inch DBH (Diameter at Breast Height) and represent approximately 180 square feet of basal area per acre (+38% increase vs. non restored stand of 130 square feet per acre).	Only the conifers that were present in the over-story have managed to continue growing, and the growth on these trees is impacted by low levels of soil moisture due to the competing tanoaks. Conifers represent 130 square feet of basal area per acre.
Provides favorable yield supporting an economically viable harvest	A harvest at this time would suffer a low yield of conifers, and hardwood competition problems would persist in the post harvest stand.
Greater variety in height and diameter makes more fire resistant	Dense tanoak middle story canopy is highly susceptible to crown fire.
Greater biodiversity	
	

Carbon Storage

Preservation Ranch seeks to fully offset greenhouse gas emissions ("GHGs", CO_2, or carbon) throughout the life of the Project, and significantly increase the Property's carbon sequestration potential over time, as the proposed timber management and restoration action benefits are realized. The Project proposes the conversion of 9% of the Property to vineyard and the restoration, preservation, and management of over 90% of the Property in a manner that will increase carbon or

CO2 (a GHG) sequestration rates and storage capacity for the foreseeable future. Despite the fact that the vast majority of the Property is proposed to be managed in a way that will have a positive effect on climate change over time, Preservation Ranch acknowledges the "net present value" of GHG emissions – an emission avoided today is worth more than an emission avoided tomorrow. Accordingly, Preservation Ranch intends to seek to be carbon neutral by offsetting all GHG emissions related to the proposed conversion of forest to vineyard in addition to implementing working forest and conservation easements, park expansion, and restoration actions that will increase carbon sequestration over time. (See discussion of Forests and Climate above).

Integrated Vegetation Management

Forest restoration requires that competing tanoak vegetation be effectively managed to increase growing space for conifers. The Project will be using an Integrated Vegetation Management (IVM) approach. Keys to an IVM program include: 1) its integration of planning and design on a landscape-level basis, as well as maintenance practices and specific vegetation control tactics; 2) its preventive nature, emphasizing a wide variety of maintenance practices to promote appropriate and healthy growth of desired vegetation; 3) its emphasis on knowledge about the vegetation and regular monitoring of vegetation levels as well as evaluation of control methods applied; and 4) use of management and control approaches in preference to elimination or eradication. In general, IVM establishes an approach to manage vegetation problems within tolerable limits.[11]

The IVM approach follows a continuum that begins with careful planning and understanding of the desired forest conditions, followed by appropriate maintenance and management by foresters with up-to-date training.

The IVM approach emphasizes a thorough knowledge of the vegetation problem, pre-determined tolerance thresholds, regular monitoring to determine when those levels are met, and treatment of the vegetation problem with appropriate cultural, mechanical, biological and, where needed, chemical measures. Tolerance thresholds are set at levels that keep vegetation problems or pest numbers problems low enough to prevent unacceptable damage, annoyance, or public safety hazards while remaining economically feasible and environmentally sensitive.

The IVM approach encompasses the use of chemical controls limited to those situations where they may be the most environmentally responsible, are the safest way to deal with a problem, or where other control measures have proven ineffective at meeting tolerance levels. When chemical controls are necessary, decisions on their use will consider any possible effects on human and animal life (toxicity) and any tendencies for the chemical to move in the environment (mobility). Decisions on chemical use are made in conjunction with other control methods that are effective and practical.

In the case of tanoak control, eradication is not a goal of the IVM strategy, rather it is to reduce tanoak levels in the over-story and return it to a more natural under-story or middle-story position. Different alternatives are available for effectively controlling tanoak including mechanical methods such as timber harvesting and removal of trees, cutting trees and leaving them on the ground, prescribed fires which effectively kill tanoak (a species very intolerant to the heat from fire), and chemical methods such as frilling where site-specific trees are treated and left on site standing to decompose.

[11] Integrated Vegetation and Pest Management Policy Guidelines, By Hennepin County Environmental Services, April, 2002.

After reviewing the effectiveness, worker safety, cost, and environmental impacts of these three methods, frilling has been determined to be the method that will best meet the objectives of tanoak control for the Preservation Ranch Project. The Alternative methods, including manual release cutting and prescribed burning and frilling with herbicides, were considered for tanoak control. Manual release methods have been found to result in sprouting of tanoak stumps, which must be repeatedly cut to allow conifer seedlings to be in a free to grow condition. Repeated manual release cuttings are progressively expensive, result in high levels of ground fuels, and are increasingly dangerous for forest workers navigating steep slopes. Prescribed burning is an effective method of controlling tanoak but is very difficult to control on the steep and densely vegetated slopes on the Property, and can result in killing existing conifer stocking. Prescribed burning increases the risk of uncontrolled wildfire that can result in natural resource and property damage.

The chosen alternative of frilling of site-specific tanoak trees with a low toxicity herbicide (Imazypyr) allows the most effective control of unwanted vegetation and is an environmentally safe method when properly applied. Frilling prescriptions will treat specific tanoak trees only, with appropriate buffers along watercourses. Within treatment blocks, which range from 10 to 40 acres in size, approximately 10% of the area and tanoak trees over 18- to 20-inches diameter will not be treated to retain wildlife habitat values of structure and tanoak mast, a food source, resulting in retention of approximately 25 square feet/acre basal area of hardwoods including tanoak after the frilling treatment.

Frilling of tanoak is conducted by a Licensed Pesticide Applicator under the advisement of a Pest Control Recommendation from a Licensed Pesticide Advisor following label directions and precautions. The Department of Pesticide Regulation regulates pesticide sales and use, product evaluation and registration, and environmental monitoring, among other things, through County Agricultural Commissioners. A monthly Pesticide Use Report is filed with the Sonoma County Agricultural Commissioner regarding the amount applied and acreage treated. Imazapyr, applied as per label restrictions, is a Caution level herbicide, i.e., a Class IV (least toxic) in the most undiluted Imazapyr formulation, on EPA's scale of short–term toxicity of I (most toxic) to IV (least toxic). The Forest Restoration in Appendix C presents the discussion of the Integrated Vegetation Management approach used for Restoration Forestry.

Sudden Oak Death: In 2007 forest managers witnessed a significant increase in the presence of Sudden Oak Death disease (SOD) on the Property, which is beginning to kill infected tanoak trees over a widespread area particularly on the southern portion of the Property. Restoration areas will be reviewed prior to treatment to determine the need to frill tanoak in areas affected by SOD. If SOD is effectively reducing tanoak competition to the extent that the restoration area has less than 25 square feet/acre of live tanoak remaining, the area will not require frilling prior to conifer planting.

Replanting

Areas where tanoak is controlled by frilling or effectively reduced by SOD as described above will be replanted with conifers from the appropriate seed zones during the first or second winter season after tanoak treatment, at a rate of 200 to 400 trees/acre. Seedlings include redwood, Douglas fir, and sugar pine trees. It is estimated that over 1 million seedlings will be planted as part of the forest restoration.

Monitoring of Restoration Practices

The RPF planning and overseeing the IVM and replanting efforts will perform quality control audits of frilling and replanting efforts, and provide to CDF and the County's designated forester a log of areas that have been restored.

Commercial Timberland Management Areas

Commercial Timber Management Areas will implement measures intended to increase timber sustainability and productivity while improving wildlife habitat, reducing fire hazards, and increasing carbon storage. The Commercial Timberland Management Area covers approximately 11,355 acres out of the approximately 14,868-acre Sustainable Timber Management Area on the Property.[12] The Commercial Timberland Management Areas are proposed to be zoned Timber Production and will accordingly have the primary objective of preservation and enhancement of commercial timberland within Sonoma County by restricting future timberland conversion, requiring commercial timber sustainability and productivity. These objectives will be enforced via the One Forest Concept conservation easement restrictions (discussed above) requiring the timber to be managed as a single forest with future timber harvest activities to implement sustained yield and uneven-aged timber management, as well as timberland conversion limitations.

Existing Timber Inventory

In order to understand the Project's benefits, it is important to understand the current condition of the Property. The Property's timber resources are substantially depleted due to past logging practices that removed the larger conifer trees, leaving small conifers, tanoak, and other competing hardwoods in their place. This has resulted in a forest with timber volumes at only 25 percent and annual growth rates at less than 50 percent of those found in a well managed healthy forest. Logging that occurred in the late 1980s and early 1990s removed the remaining merchantable trees over 15-inch diameter, resulting in the removal of nearly all trees older than 35 to 40 years at the time. This aggressive logging provided tanoaks and other hardwoods an opportunity to become established throughout the Property, competing with young conifers for space, water, and nutrients. Although limited planting and hardwood control activities occurred on the Property in the late 1990s, a very high proportion of the Property is currently in need of timber stand improvement to increase conifer stocking levels, as summarized on Table 8 below.

[12] Commercial Timberland Management Areas include all TP land on TP and RRD/TP parcels not identified for Large Tree Retention, Riparian Management, or Wildlife Preserve.

Table 8. 2006 Timber Inventory Stocking Levels

Stocking	Stocking in Basal Area Square Feet/Acre (BA)	% of Timbered Area
Poorly Stocked	<50 BA Conifers	30%
Stocked with High Tanoak	>50 BA Conifers >50 BA Tanoak	41%
Well Stocked	>50 BA Conifers <50 BA Tanoak	29%

The 2006 inventory data indicates that the Property, as discussed above, has generally low stocking of currently merchantable redwood and Douglas fir saw-timber (less than 12-inches diameter at breast height). In addition, forests throughout the Property have an unnaturally high level of upper story growing space occupied by competing tanoak. The inventory also indicates that over-story tree size is generally small and density is high.

Despite the fact that approximately 70% of the timberland has conifer stocking levels greater than 50 square feet per acre of basal area, other factors such as tanoak competition for sunlight, water, and space limit the young conifers' ability to grow now and in the immediate future. Present inventory levels are significantly below "well stocked" (see Table 8) levels for Site Class III timberland, the predominant timber site class on the Property. Average conifer volume per acre is presently 5,880 board feet of 45 to 50 year old redwood and Douglas fir that are competing for space, water, and nutrients with the prolific tanoak and current conifer growth per acre is relatively low at 336 board feet per acre per year (see Table 9). Currently, 73% of the conifer tree volume on the Property is in trees less than 24-inches diameter at breast height.

A well stocked and managed forest of this age should contain four times this level or an average of 24,000 board feet per acre of conifers with growth rates averaging 750 board feet per acre per year across the Property. Appendix C includes a Timber Inventory with a summary of forest data collected on the Property in 2006 including timber volumes, basal area per acre, and trees per acre.

Table 9. 2006 Timber Inventory Summary and Current Growth

Year	Total Volume (bf) All Species	Conifer Volume (bf)	Conifer Volume (bf) per Acre	Annual Conifer Growth (bf)	Conifer Growth per Acre per Year (bf)	Conifer Percentage Growth per Year (bf)	Total Hardwood Volume (bf)
2006	116,802,000	91,689,000	5,880	5,240,000	336	5.7%	25,115,584

Given this relatively depleted existing timber inventory, a key public benefit of this Project is restoration of the Property's forest to a more productive and healthy condition, creating a viable commercial timber resource while improving habitat, carbon storage, and reducing fire hazard. Forest restoration can be accomplished by increasing Douglas fir and redwood inventories and reducing the unnaturally high percentage of competing tanoak inventories. A restored forest will have similar conifer to tanoak composition (measured in square feet of basal area/acre) as the pre-settlement conditions of approximately 80% conifer to 20% tanoak and other hardwood species.

Uneven Aged Management and Sustained Yield of Timber

"Uneven aged management" as defined by the California Forest Practice Act (Article 7.5 CCR 4593.2) means the management of a specific forest with the goal of establishing a well stocked stand of various age classes and which permits the periodic harvest of individual or small groups of trees to realize a yield while continually establishing a new crop. Uneven-age management requires that trees of all size and age classes are continuously present throughout the forest, and uses selective harvesting rather than clear cutting to regenerate timber stands. Single trees or small groups of trees are harvested, and harvest areas are restocked with natural regeneration from seed fall and/or planted to reach optimum stocking levels. The benefit of uneven-aged management is derived from retaining aesthetic values and wildlife habitat structure on every forest stand that is managed, although management costs can be higher and less total timber volume is typically produced than with the even-age clear-cut harvest system.

"Sustained yield" is defined as limiting the yield of commercial wood that an area of commercial timberland can produce continuously at a given intensity of management to that which is consistent with required environmental protections and which achieves a balance between growth and harvest over time. The time period measuring the balance between growth and removal shall not be greater than 10 years. Additionally there will be a requirement for harvest levels to be not more than 90% of growth for a minimum of 60 years, at which point harvests may be balanced but shall not exceed growth. These restrictions will increase inventory levels over time and will be enforced with a restrictive easement on each parcel.

Riparian Management Areas

In aggregate, the Riparian Management Area (RMA) will afford added protection to all Class I fish bearing watercourses on the Property (a total of 29.1 miles). The primary objective is managing these riparian forests to improve habitat for all fish and wildlife and specifically for the threatened steelhead trout that are present in the watershed that encompasses the Property, as well as the threatened coho salmon found downstream from the Property. Additionally, the Project has funded fish habitat studies to be made available to the public for determining potential restoration options.[13]

Any future timber activities in the RMA will be designed and constrained to meet the following riparian objectives (source: California Salmonid Stream Habitat Restoration Manual, CDFG.):

- Controlling the amount of light reaching the stream which affects temperature and productivity.
- Providing litter and invertebrate fall.
- Promoting steam bank stability.
- Buffering impacts from adjacent uplands.
- Providing large woody debris for recruitment to channels.

Creation of the RMA along Class I watercourses will help foster the growth of a large tree forest that will provide beneficial habitat values for steelhead. Juvenile steelhead spend one to two years in fresh water prior to migrating to the ocean. Adult steelhead return to spawn in river gravels, and require cover, deep pools and cool water temperatures for the rearing of young. Allowing growth and retention of large trees in this extended riparian zone will benefit steelhead by providing increased canopy cover and shade (reducing water temperature). Large trees also provide future inputs of large woody debris to the streams, altering stream structure through the formation of deeper pools that provide shelter and the creation of new spawning gravel beds.

The RMA includes 29.1 miles of Class I watercourses on the Property, and the protected area is approximately 1,635 acres (8% of the total Property) out of the approximately 14,868 acres of timber management area on the Property. This 400-foot RMA zone (total) exceeds by 100 feet that which is required by current BOF Forest Practice Rules that mandate a 300-foot (150-foot each side) Watercourse and Lake Protection Zone for fish bearing (Forest Practices Rule Class I) watercourses within the Gualala River watershed. The Gualala River is a Clean Water Act Section 303(d) Listed Impaired water body for both sediment and temperature. Accordingly, it is subject to the Board of Forestry Forest Practice Threatened and Impaired watercourse rules (T&I Rules) due to the presence of the threatened steelhead trout (on Property) and coho salmon (located downstream from the Property in the Main Fork Gualala up to and including the North Fork Gualala only). Several large tributaries of the Gualala River bisect Preservation Ranch and provide habitat for the Federal and State threatened steelhead trout. These tributaries are Rockpile Creek, Buckeye Creek, Fuller Creek, and the Wheatfield Fork of the Gualala River. Fish-bearing watercourses on the Property will be protected in exceedance of current requirements with permanent 200-foot zones (400-foot total) on each side of the watercourse (measured on the side slope from the edge of the riparian vegetation) (see Figure 10).

[13] Preservation Ranch is currently analyzing the conclusions of various studies it has funded to identify the most practicable and effective fish habitat restoration actions.

As the majority of Class I streams have steep, sensitive side slopes, the additional 100 feet of riparian protection, coupled with the fish-friendly timber management objectives within the RMA (discussed below), provide significant benefits to riparian habitat on the Property. A 200-foot zone on each side of the watercourse increases the area where large trees can fall and reach the stream channels (providing desirable large woody debris in the streams), as well as protecting larger riparian wildlife corridors throughout the Property.[14] The larger zone created also provides the riparian forests with greater buffering against the potential affects of future adjacent commercial timber management practices, and effectively creates an area managed to grow large trees that in time will resemble forest conditions that existed prior to timber harvesting in the region. The RMA will eventually create an over-story of widely spaced large trees (over 40-inch diameter at breast height) with a greater diversity of canopy structure and greater diversity of species of hardwood and shrubs growing in the middle and under-stories than currently exists.

Restrictive Easements/Protected Riparian Areas

The 400-foot RMA (200 feet per side) will be protected by restrictive easements that require best management practices consistent with the current Board of Forestry Threatened and Impaired Watercourse Forest Practice Rule (14 CCR 916.9(g)). These rules have proven to be effective at protecting sensitive riparian areas consistent with the California Department of Fish & Game's (CDFG's) California Salmonid Stream Habitat Restoration Manual objectives listed above. The rules include provisions that require retention of high near-stream canopy levels. RMA management practices will allow silvicultural treatments providing for light selective thinning of conifers and competing tanoak hardwoods to encourage growth of larger diameter conifer trees. These larger trees will eventually fall over into the watercourses and be more effectively anchored in the streams than the current small densely spaced trees. A provision for adaptive management will be included in the restrictive easements to allow the most current Board of Forestry Threatened and Impaired Watercourse Protection Rules regarding canopy retention levels to be implemented. Timber conversions will also be prohibited in the RMA via restrictive easement.

Large Tree Management Areas

The Project proposes the creation of two Large Tree Management Areas (LTMAs) named the Elk Creek LTMA and the Buckeye Creek LTMA (see Figure 10). The LTMAs will be managed over time to recreate older forest conditions and associated wildlife habitat, reduce fire risk, and increase carbon storage while also allowing sustainable harvesting of high quality timber products, thereby maintaining the County's productive timber base.

The LTMAs will be managed with the following restrictions:

- Timberlands in the LTMAs will require uneven-aged and sustained yield timber management, and will be less intensively managed with approximately one third of each acre growing and retaining six conifer trees/acre greater than 32-inches diameter at breast height (DBH) and two conifer trees/acre greater than 40-inches DBH at all times.

[14] The 200-foot RMA was chosen based on the average potential height of mature conifers on the Property being approximately 200 feet. Accordingly, this distance allows conifers to mature and eventually fall and provide large wood debris for fish.

- Provisions include permanent retention of functional attributes of older forests including larger snags, and large down wood.

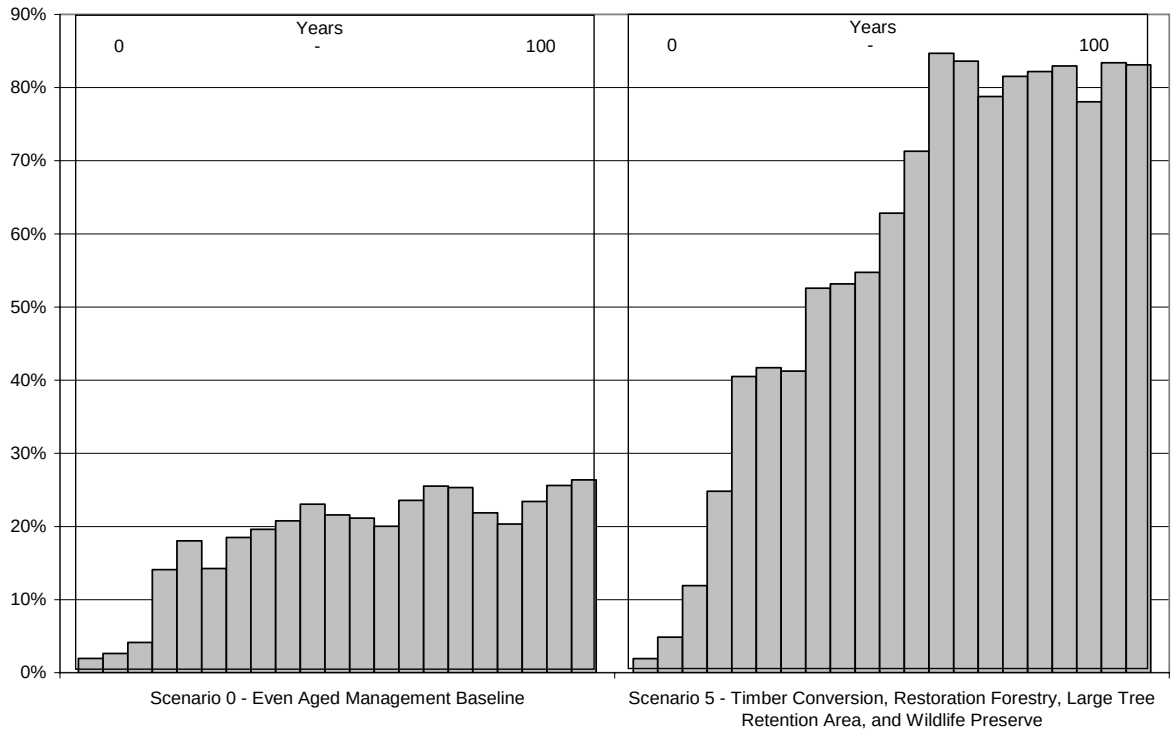
These two LTMAs total approximately 1,878 acres (>9% of the total Property), where large redwood, Douglas fir, and sugar pine trees will be grown and selectively retained. These areas are strategically located contiguous to two adjacent old growth redwood reserves at Soda Springs Reserve Park and a private property straddling the Wheatfield Fork that is permanently protected with a Sonoma County Agriculture Preserve and Open Space District *Forever Wild* conservation easement that prevents harvesting of timber. (Also see previous discussion of 221-acre dedication to the Soda Springs Reserve Park in Existing Parcel Merger and Rezoning section.)

The LTMAs will put in place provisions via restrictive easements to retain larger trees and old forest characteristics that will result in improvements to the biodiversity of wildlife and fisheries habitats on the Property, create forests that are resistant to catastrophic wildfires, increase carbon storage, and provide aesthetic values that are commonly associated with older forests. The LTMAs will also mitigate loss of wildlife habitat on the conversion areas by significantly improving the existing forest habitat within these areas as well as expanding areas of contiguous habitat in conjunction with the adjacent reserves. Creation of these LTMAs will increase habitat for wildlife that are dependent on or use large tree habitat for nesting, roosting, foraging and cover, such as the Federal and State threatened northern spotted owl (limited presence) and marbled murrelet (not currently present). In addition, when the large trees die and fall over they will provide snags and large diameter downed logs which are typically found in old growth forests in the region and provide high quality habitat for birds, mammals, reptiles, and amphibians.

An additional benefit is an improved aesthetic experience for the public, who enjoy viewing forests of large trees. The LTMAs are visible to the public from Stewarts Point-Skaggs Springs Road and from the portion of the Kelly Road that is located within the Property and accesses Soda Springs County Reserve. Furthermore, creation of these LTMAs adjacent to currently protected old growth redwood preserves will increase the effective size of these biodiverse habitats creating larger core old forest reserves at no cost to the public while still allowing environmentally sensitive timber harvesting to occur.

Table 10, Development of Large (greater than 24-inch DBH) Conifer-Dominated Stands with Canopy Closure greater than 50%, shows the beneficial effects of Large Tree Retention (Scenario 0 refers to the no-Project alternative and Scenario 5 refers to the 2006 Project components). There is a significant increase in forested acres with trees greater than 24-inch diameter at breast height over the 100-year planning period (Scenario F) in comparison to the no-Project even-age management alternative (Scenario A).

Table 10. Development of Large (Greater than 24-inch DBH) Conifer-Dominated Stands with Canopy Closures greater than 50% as a Percentage of the Total Preservation Ranch Timberlands



Restrictive Easements/Protected Areas

The Project proposes the creation of the two LTMAs discussed below.

Buckeye Creek LTMA - The Buckeye Creek LTMA, approximately 351 acres in size, is located within parcels that adjoin the 40-acre Soda Springs Reserve Park and the approximately 221-acre park dedication and straddles Kelly Road, which accesses the Reserve. The Buckeye Creek LTMA also borders a significant stretch of Buckeye Creek, a major fish-bearing tributary to the Gualala River.[15]

Elk Creek LTMA - The Elk Creek LTMA, approximately 1,527 acres in size, is within parcels that are contiguous to a large private property parcel containing an old growth redwood forest protected by a Sonoma County Agricultural Preserve and Open Space District *Forever Wild* conservation easement. This southern LTMA also borders a significant stretch of the Wheatfield Fork of the Gualala River, a major fish-bearing tributary of the Gualala River.

LTMA's conservation easement restrictions include large tree retention, and snag and downed wood retention components.

[15] The Buckeye Creek LTMA was originally 540 acres in size and has been reduced to enable the dedication of 221 acres to the County for the purposes of expanding the Soda Springs Reserve.

- At least eight conifer trees/acre or a minimum of 40 square feet of basal area/acre shall be retained after harvest of the trees in the top size classes that are present prior to harvest (upper 30% of size classes over 18-inch diameter at breast height (DBH)) until the large tree retention goal of six trees/acre 32 to 39-inch DBH, and two trees/acre 40-inch DBH and greater are retained.
- A minimum of three conifer snags/acre greater than 24-inch DBH, and a minimum of ten downed conifer logs/acre equal to or greater than 24-inch in diameter and a minimum of 10 feet in length shall be retained after harvest.

These two large, strategically located LTMAs offer the benefit of ensuring that future timber operations will result in improved old forest habitat, reduced fire risk, and increased carbon storage, while maintaining the County's commercial timber resources, in comparison to a conservation easement that may prohibit commercial timber operations.

SODA SPRINGS RESERVE DEDICATION AND PUBLIC TRAIL

The Soda Springs Reserve is currently 40 acres in size and will be increased by 221 acres with the donation of land surrounding the Reserve that is currently owned by Preservation Ranch. The areas that will be added are two adjacent legal parcels to the north and south that will create a large buffer to the existing old growth redwood forest on the reserve. The northern addition includes land on both sides of the main fork of Buckeye Creek, which will prevent development of this significant steelhead bearing creek.

In addition to the dedication of 221 acres, Preservation Ranch is also providing a public trail easement that will allow for the development of an approximately 5 mile loop trail accessible from the existing Soda County Reserve Park. Adding this land and trail easement to the existing preserve will increase recreational values for the public and provide a significant public benefit (see Figure 13).

WINDY GAP PRESERVE EASEMENT

An approximately 2,702-acre forest easement called the Windy Gap Preserve (Preserve) will be created, managed and protected in perpetuity (see Figures 5, 6, 7, and 9). The Preserve includes 3 headwaters and approximately 5 miles of fish bearing streams that provide important fisheries habitat and spans an ecozone between the cooler, wetter coastal vegetation types dominated by redwoods, bay, maple, and tanoak and the hotter, drier interior vegetation types dominated by oak woodlands, grasslands (savannas) and Douglas-fir forests. The Preserve also connects the Buckeye Creek Watershed and the Wheatfield Fork Watershed. This strategic location results in high habitat diversity and connectivity, both key features for a preserve. The mixture of oak woodlands/savannas[16], conifer hardwood and mixed evergreen vegetation types along with riparian

[16] Oak woodlands and grasslands vegetation types have been combined into one category called oak woodlands/savannas because the two types often overlap and integrate on Preservation Ranch where treeless grassland units are relatively small within the wildlife preserve (<20 acres).

vegetation types along the streams represent some of the best and most diverse wildlife habitat on the Preservation Ranch. The goals for the Wildlife Preserve are as follows:

Goals for Creation and Management of Windy Gap Preserve

1. Create a permanent preserve that provides high quality habitat for native species and provides a migration corridor across the Property connecting the Buckeye Creek watershed with the Wheatfield Fork watershed.

2. Maintain the quality and functionality of wildlife habitat on the Preserve, particularly the continued viability and health of the oak woodland ecosystems.

3. Provide opportunities for research into effectiveness of forest and stream restoration practices in cooperation with local groups.

The Preserve also includes approximately 5 miles of Class I fish bearing streams that provide critical fisheries habitat. These streams are important as winter resting areas for spawning steelhead and summer rearing habitat for steelhead at Redwood Creek and Pulchar Creek, both tributaries to the Wheatfield Fork, and within the headwaters of Buckeye Creek. The only activities that will be permitted along Class I streams within the Preserve are restoration and monitoring.

The Preserve contains three primary forest vegetation types: oak woodlands/savannas (approximately 1,000 acres), mixed evergreen forest (approximately 200 acres), and conifer-hardwood forest (approximately 1,500 acres). The oak woodlands/savannas within the Preserve represent the largest block of contiguous oak woodlands on the Property. Oak woodlands provide very complex horizontal and vertical structure that is used by a high number of wildlife species[17]. The oak woodlands/savannas within the Wildlife Preserve will be protected to ensure that the high wildlife values are retained.

The primary threats to oak woodlands/savannas within Sonoma County are development and conifer encroachment by Douglas fir. In the past, Douglas fir encroachment was controlled by periodic low intensity burning by Native Americans and ranchers, but burning effectively ended in the 1930s with the advent of fire suppression efforts. A periodic fire regime will not be returned to the oak woodlands/savannas in Sonoma County. Douglas-fir encroachment is occurring within the oak woodlands/savannas on the Preservation Ranch and will eventually result in a significant conversion to conifer dominated forest types over time, without active control of Douglas-fir regeneration. While vineyard conversion is planned for a portion of the oak woodlands/savannas on the Preservation Ranch, an area of oak woodlands approximately 5 times as large as that included in the vineyard conversion is planned for permanent protection with a conservation easement and active management to control Douglas-fir encroachment.

The Preserve also includes forest lands (mixed evergreen forest and conifer-hardwood forest) that will be protected by a conservation easement restricting commercial timber harvest activities to those specifically for the purpose of improving wildlife habitat and/or reducing fire hazard. The

[17] Tietje, Purcell, and Drill. 2005. Oak Woodlands as Wildlife Habitat. In A Planner's Guide for Oak Woodlands, University of California Agriculture and Natural Resources Publication 3491. 15-3.

Preserve contains a high proportion (27%) of the mixed evergreen forest type[18] found on the Property, which is a transitional hardwood and conifer forest between the dense conifer forests of the coast and the open woodlands and savannas of the interior. The mixed evergreen forest is characterized by a high proportion of Pacific madrone, California black oak, canyon live oak, Shreve oak, and California bay interspersed with stands of coast redwood and Douglas fir. This natural community provides significant food sources for migratory songbirds that forage on madrone berries in winter months and acorns for mammals including western gray squirrels, acorn woodpeckers, western scrub-jays, woodrats, mice, and insects[19].

The remainder of the Preserve contains conifer-hardwood forest. This forest type on the Wildlife Preserve has a high proportion of hardwood species other than tanoak such as California bay, Oregon white oak, Pacific madrone and canyon live oak intermixed with Douglas fir with some pockets of redwood and some dense stands of tanoak. Tree size and density of these forests is similar to the other forests on the Property, which are characterized by dense stands of young smaller diameter trees (12- to 20-inch diameter at breast height).

Both of these non-oak woodland forest types will be allowed to grow in perpetuity without extractive forest management or road construction. Eventually these forests will grow to become approximately 1,700 acres of old growth conifer and hardwood forests, or if fire(s) occurs, recover naturally without an alteration to forest structure through salvage logging.

There are two Wildlife Species of Special Concern known to occur in the Preserve area; Cooper's Hawk and the Foothill yellow-legged frog. In addition the portions of Buckeye Creek within the Preserve are believed to be important spawning and rearing habitat for steelhead trout, a federally listed threatened species (as discussed above).

The creation of the Windy Gap Preserve is both mitigation for potential Project impacts and is a significant benefit to the public, as oak woodlands in California are known to provide habitat for many bird, mammal, reptile, and amphibian species (347 in number, over 50% of the vertebrate species in California) and over 5,000 insect species, many of which are important predators/parasites of agricultural pests which use these woodlands as reproductive and/or over-wintering refuges. Over 2,000 plant species, of which 130 are listed as sensitive, are found on oak woodlands statewide[20].

Table 11 summarizes the Windy Gap Preserve Characteristics.

[18] Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. State of California, The Resources Agency, Department of Fish and Game.

[19] Tietje, Purcell, and Drill. 2005.ibid.

[20] Deem, A. 2006. A Guide to California's Wildlife on Private Forestlands. The Forest Foundation.

Table 11. Windy Gap Preserve Characteristics

Vegetation Type	*Approx Acres*	*Vegetation*	*Habitat Structure*	*Management*	*Dedicated Protection*	*Impact on Wildlife*
Oak Woodlands/ Savannas	1,000	Grasslands, Shreve Oak, Oregon white oak, Douglas fir	Open Canopy [21]	Oak Woodland Management and Conservation Plan	Conservation Easement	Benefit from retaining and restoring oak woodland type
Mixed Evergreen Forest	200	Pacific madrone, California black oak, canyon live oak, Shreve oak, California bay, Douglas fir	Open, Semi-open and Closed Canopy [22]	None Proposed	Conservation Easement	Benefit from retention of high hardwood component, mixed structure forest
Conifer-Hardwood Forest	1,500	Douglas fir, redwood, tanoak Oregon white oak	Closed Canopy[23]	None Proposed	Conservation Easement	Benefit from development of vertically diverse conifer forest
TOTAL	Approx 2,702					

Conservation Easement

The entire 2,702-acre Windy Gap Preserve will be protected by conservation easement. The conservation easement will ensure that the Windy Gap Preserve is protected from commercial timber operations and new development but will allow for habitat restoration activities. In addition to this blanket protection of the entire 2,702 acres, the conservation easement also establishes an Oak Woodland Management and Conservation Plan (OWMC) for the 1,000 acres of oak woodland, referred to as the Oak Woodland Management Area (OWM) contained within the Windy Gap Preserve. The conservation easement will be funded by the Project to ensure the OWMC's restoration and management activities are implemented. The amount of the funding will depend on the amount determined necessary by the entity holding the conservation easement.

The primary goal within the OWM area is to maximize vegetative biodiversity and increase the quality of wildlife habitat. The oak woodlands will be managed pursuant to a management plan

[21] Alligator lizard, jackrabbit, spotted towhee, deer mouse, cooper's hawk, long-tailed weasel, steller's jay, western bluebird, bobcat, sharp-shinned hawk, ringtail cat, varied thrush, hoary bat, acorn woodpecker, western screech owl, western pond turtle, western rattlesnake, porcupine, mountain lion, spotted skunk, striped skunk

[22] Dusky footed woodrat, alligator lizard, jackrabbit, spotted towhee, deer mouse, cooper's hawk, long-tailed weasel, steller's jay, western bluebird, bobcat, sharp-shinned hawk, mountain lion, spotted skunk, striped skunk

[23] Northern spotted owl, ringtail cat, varied thrush, pileated woodpecker, vaux's swift, brown creeper, hoary bat, black bear

created by oak woodland ecologists that is based on inventory data and field observations collected on the Property in 2005. The management plan will identify threat levels, treatments, and monitoring provisions to restore the oak woodlands. Currently, the primary threat is encroachment of Douglas fir, and treatments include cutting invading trees, which currently are not yet of merchantable size. Cut trees will be bucked into shorter lengths to reduce fire hazard, and left to biodegrade where cut.

The OWM area will undergo periodic surveys and inventories with adaptive management procedures instituted to control conifer invasion and maintain oak composition. Adaptive management allows for altering management prescriptions to better meet the objectives of maintaining and restoring oak woodlands based on observing the results of past prescriptions.

SUSTAINABLE VINEYARD PLANTING AND OPERATIONS

Small vineyards will be planted on the conversion areas that are widely dispersed throughout the Property, primarily on the less biologically sensitive ridge tops. The individual vineyard locations are shown on Figure 7 with associated acreages in Table 12 below. These vineyards have been located and designed using vineyard/engineering practices that are environmentally sensitive and compliant with the Sonoma County VESCO Ordinance, the federal Clean Water Act, the California Porter-Cologne Water Quality Control Act, cultural resource surveys, botanical surveys, wildlife surveys, wetland surveys, sensitive species surveys and other applicable regulatory requirements (see list of required permits/approvals). In addition to regulatory requirements, vineyards have been designed using site specific data including geologic landslide surveys, soil and climate analysis, biological and botanical surveys, water quality/hydrology studies and assessments of existing drainage features to ensure that the Project will result in high quality vineyards established in an environmentally responsible manner. Appendix B presents the Vineyard Development Plans and provides details for the sections discussed below.

Table 12. Preservation Ranch Vineyards (see Figure 7)

Name	Acres
Bear 1.0	357
Bear 1.2	2
Bear 1.3	1.8
Bear 1.4	0.9
Bear 4.0	1.7
Big Rock 1.0	47
Big Rock 2.0	3.3
Buckwheat 1.0	13.5
Buckwheat 2.1	2.5
Buckwheat 2.2	2.5
Buckwheat 3.0	6.8
Buckwheat 4.0	2.3
Buckwheat 4.1	0.3
Evans 1.0	158
Evans 2.0	26.2
Evans 3.0	14.1
Fuller Creek 2.0	16.9
Fuller Creek 2.2	5.8
Fuller Creek 6.1	0.5
Fuller Creek 6.4	0.5
Gardner 1.0	38.5
Gardner 2.0	15.1
Gardner 3.0	23.9
Gardner 4.0	9.4
Gardner 5.0	6.7
Gardner 5.1	1.4
Hoover 1.0	61.1
Icola 1.0	122
Icola 1.1	7.1
Icola 1.3	1.7
John West 1.0	35.4
John West 2.0	16.8
Lookout 1.0	18.5
Lookout 2.0	2.6
Lower Easy 1.0	126.3
Lower Easy 1.1	3.5
Lower Easy 1.2	0.9
Lower Easy 3.0	1.9
Lower Easy 3.1	3.3
Middle Hoover 1.0	64.7
Middle Hoover 2.0	25
Middle Hoover 3.0	8
Middle Hoover 3.1	11.3
Middle Hoover 3.1.2	1.7
Moody 1.0	65
Moody 2.0	18.9
Moody 3.0	1.8
Oakridge 1.0	43.4
Oakridge 2.0	10
Oakridge 2.1	4.2
Oakridge 2.2	0.7
Oakridge 5.0	4
Oakridge 5.0.1	2.8
Oakridge 6.0	5
School 1.0	68.2
School 2.0	51.2
School 3.0	7.7
School 4.0	6.5
School 5.0	6.8
Stanley 1.0	137
Tabor 1.0	140.8
Tabor 5.0	6.7
Tabor 5.1	1.3
Tabor 5.2	0.8
Tabor 7.0	4.5
Tabor 8.0	3.4
Total	**1,861**

Site Preparation

Licensed Timber Operators (LTO) will conduct all vineyard site preparation. Following completion of timber harvest and removal of forest products, the conversion area will be cleared of roots, stumps, and woody material with a tractor using a brush rake or excavator. Stumps and roots will be pulled out of the ground with an excavator, D-8 tractor or equivalent. Unmerchantable woody material will be tractor piled and chipped, with chips hauled off site, or tractor piled with slash burned on site. Chips may be spread as a ground cover or incorporated for decomposing organic matter in the vineyard and/or spread in adjacent forested areas, but shall not be piled such that soils or water quality are negatively affected. Construction staging areas would be located at each vineyard block. Erosion control measures in compliance with Federal, State, and local regulations/ordinances will be put in place prior to the onset of the winter period, October 15.

Vineyard Soil Preparation and Grading

Following site preparation by the LTO, the vineyard installation contractor will begin soil preparation for the vineyards. In order to enhance the soil's water storage capacity, the soil preparation depth will vary as site soil conditions dictate, with woody material removed from the soil. Subsequent to soil preparation, minor grading of vineyard sites will be required to provide an even surface for farming operations. The grading will smooth contours and establish avenues for tractors, construction of driveways, parking areas, farm worker housing and agricultural buildings.

Watercourses/Grading

Grading operations will also involve filling portions of some designated Class III watercourses (areas with no aquatic life present) and drainage areas at specific sites (farm-over). Class III watercourse areas designated for fill have been identified based on site specific conditions, using engineering practices designed to protect water quality. No grading operations will occur in the vicinity of Class I and II streams. Class I streams will be protected with 200-foot (400-foot total) no-harvest Watercourse and Lake Protection Zone (WLPZ), which exceeds the California Forest Practice Rules requirements (See Riparian Management Area discussion). Class II streams will have a 100-foot (200-foot total) no harvest buffer WLPZ regardless of side slope, which also exceeds the California Forest Practice Rules requirements.

Engineered erosion control measures will be implemented to protect water quality at sites where Class III watercourses are designated for farming-over. Class III farm-over sites have been evaluated based on depth of the topsoil, soil type and erosion hazard rating, bed slope, bed and bank stability, and height and width of the channel. In limited circumstances where determined necessary, subsurface drainage will be installed to stabilize the fill and collect subsurface water that collects in the drainage. The fill within the Class III farm-over sites will be keyed or benched into the subsoil depending on the soil conditions and slope. However, it is important to note that Class III farm-over sites average from very minor swales to larger erosional features with most closer to the minor swale category. The limits of filling the Class III farm-over sites are shown in Appendix B, Vineyard Development Plans. Class III watercourses that flow through (not originating in) a vineyard footprint will not be farmed-over, and will be buffered with engineered erosion control measures to protect water quality. All Class III watercourses farm-over sites have been surveyed for Department

of Fish and Game, U.S. Army Corps of Engineers jurisdiction and will be subject to necessary permitting requirements.

Vineyard Planting

The vineyard sites will be cultivated prior to planting and soil amendments will be incorporated as described in the Baseline Soil Analysis for Vineyard Development. The fumigation of soils has been determined to be unnecessary; therefore no soil fungicides or fumigants will be used. The irrigation lines installed will consist of a drip irrigation system. A permanent cover crop will then be planted over the entire vineyard area by October 15, prior to the start of the wet season. The vine rows will then be staked and the vines planted. After vine establishment, the permanent cover crop will be mowed for weed control rather than cultivated, which will reduce the exposed soil area and lessen the potential for soil erosion. Herbicides under the vine rows will only be used if mowing and mulching to control weed species proves to be ineffective. Noxious weed species will also be controlled to prevent spread onto adjacent lands.

Erosion Control

Temporary erosion control methods will employ the following Best Management Practices (BMPs) consistent with the Clean Water Act Storm Water Pollution Prevention Plans and VESCO: (1) geotextile fence barriers will be placed where significant earthwork occurs next to WLPZ's; (2) the cleared area will be straw mulched with small grain straw at a rate of two tons/acre, and all disturbed slope areas will be seeded for erosion control prior to the start of the wet season (approximately October 15); (3) fiber roll and jute netting check dams will be placed in runoff swales where erosion potential is significant; (4) sediment barriers using geotextile silt fences and straw bales will be installed to protect watercourses near the vineyard by October 15; (5) vineyard activities using heavy equipment will occur only during the period April 1-October 15 in order to avoid operations in the wet seasons, with no equipment operations on saturated soils year round; (6) temporary hillside "V" ditches will be installed on variable slopes to piped outlets to catch runoff; (7) temporary overland corrugated plastic pipes will be installed to convey V-ditch flows into armored outlets; (8) the outlets shall flow into reservoir/catch basins where feasible; (9) geotextile fence barriers will be installed in low slope field edges areas where significant earthwork may occur next to existing channels at watercourse crossings; and (10) straw blanket or fiber netting mulch will be installed on cut and fill slopes where straw retention is unlikely.

Consistent with the Storm Water Pollution Prevention Plan requirements, a storm water monitoring program will be developed and implemented to verify the effectiveness of erosion control measures and to provide immediate repairs or enhancements as necessary to protect water quality.

Permanent erosion control measures will be designed, to the extent feasible, to mimic natural mature forest runoff and drainage conditions and would implement the following BMPs: (1) establish a permanent cover crop within one year using erosion control seed mix; (2) install permanent drainage improvements per finalized Project plans and construction specifications; (3) install permanent road way drainage improvements per final Project plans and specifications; and, (4) install rock armor ditch and pipe outfalls into the drainage channel areas.

Water Storage/Reservoirs

The Project includes approximately 40 new 10- to 49-acre-foot water storage reservoirs on the Property. Figure 7 presents the proposed locations. All water for vineyard irrigation for this Project will be supplied by the reservoirs. The use of the reservoirs is intended to eliminate the need to use groundwater for vineyard irrigation. No groundwater or surface water from streams or rivers will be used to fill the reservoirs for irrigation. The vineyards will be irrigated by capturing a small percentage of the annual rainfall as it forms diffuse sheet flow on the vineyard footprint during large storm events (see below). The irrigation demand for the vineyards will be approximately 6 inches per acre per year. Sheet flow runoff from a portion of each vineyard site will be collected within the vineyard footprint in a drainage system that will flow by gravity and/or pumped to the reservoirs. The reservoirs have been sited based on the ability to collect water by gravity, by geographic constraints, and by vicinity to stable stream channels to address reservoir overflow discharges. Geotechnical investigations will be required to determine the final reservoir locations. The reservoir will not only act as storage for irrigation but also to provide detention to mitigate peak runoff from the vineyard, and function as sedimentation ponds.

Irrigation water from the storage reservoirs will be pumped or flow by gravity through irrigation mains located within the vineyard avenues. Depending on the configuration of the various vineyard blocks, water distribution pipelines will be installed in the access roads to provided irrigation for remote vineyard blocks. Above ground drip irrigation will be used within the vineyards for irrigation.

Excavation of reservoirs will take place only during the dry season period of May 1 to October 15. The dam surfaces and exposed soils above the high waterline of the reservoir will be protected from surface erosion by a combination of grass seeding at a rate of 25 lbs./acre and straw mulch at a coverage rate of 90%, and will have an average depth of two inches when applied. These soil stabilization measures will be applied prior to the October 15 onset of the wet season. All work related to reservoir construction will be done in accordance with the Clean Water Act Storm Water Pollution Prevention Plan and other applicable regulatory requirements. All reservoirs are sized and configured to be exempt from State Department of Dam Safety requirements.

Water Collection System

The irrigation collection system is sized for a 100-year storm event in accordance with the Sonoma County Water Agency (SCWA) Flood Control Design Criteria Manual (1983). The collection system captures and directs sheet flow water (outside of bed and bank) to the reservoirs for storage and detention and provides a structural BMP to mitigate potential vineyard field erosion, and mitigate potential channel erosion associated with potential peak flow increases from conversion/vineyard areas. For the purposes of designing the collection system, the primary criterion was to collect runoff from a sufficient amount of acreage within each vineyard site to meet the annual irrigation demand. The United States Geological Survey (USGS) estimates the mean annual runoff in the vicinity of the Project to be 24 inches, based on a period of 39 years from 1931 to 1970.

The SCWA Flood Control Design Criteria Manual uses the rational formula for determining runoff tributary areas less than 640 acres. The potential vineyard sites are typically located on ridge tops that limit individual vineyard block runoff tributary areas to well below 640 acres. Therefore, the use of the rational method for estimating runoff within the vineyards is appropriate.

Sustainable Vineyard Operation

Limited-size vineyards capable of producing high quality wines will be planted on the Property and farmed sustainably. In 1989, the American Agronomy Society adopted the following definition for sustainable agriculture: "A sustainable agriculture is one that, over the long term, enhances environmental quality and the resource base on which agriculture depends; provides for basic human food and fiber needs; is economically viable; and enhances the quality of life for farmers and society as a whole." The Sustainable Agriculture Research and Education Program at University of California, Davis (UC SAREP) emphasizes that sustainable agriculture integrates three main goals: environmental health, economic profitability, and social and economic equity. UC SAREP also points out that a systems perspective is essential to understanding sustainable agriculture.

Irrigation is provided by water captured during winter rains and stored in reservoirs constructed on site. This water is distributed to the vine via underground pipe and above ground drip hose with emitters of ½ or 1 gallon per minute. Water is provided on a supplementary basis. Winter rains fill the soil profile providing water to the plant usually into the summer months. It is estimated that providing approximately 6-acre inches of water (75 gallons per vine per year assuming 2,188 vines planted per acre) is a reasonable irrigation program. Drip irrigation is applied slowly and precisely so there is no runoff. Any suspended sediment that may still remain in the water (after being in a settling pond for months and not captured in the irrigation filter system) would be deposited beneath the emitter.

The vineyards will be managed using sustainable agricultural practices, which include engineered irrigation and erosion control measures and permanent cover crops. Pest control will utilize Integrated Pest Management techniques, with chemical pesticides and herbicides employed only as a last resort.

Floor management is comprised of establishing and maintaining a cover crop between the rows and of managing vegetative growth under the vine row to minimize competition with the vine for irrigated water and nutrients while developing the vines in years 1 to 3. Cover crop vineyard floor coverage is targeted at 70% year around.

Cover crops are primarily planted in the late fall and before the winter rains. Straw cover is utilized while the cover crop seed is germinating and establishing roots. The seed selected for cover crop is a mixture of small grain, clover, and grass, based on specific objectives. During vineyard establishment the focus is on erosion control and some biomass for organic matter. The small grain establishes quickly while the clover and grass are plants that fill in to create dense growth. The cover crop provides many benefits to the vineyard.

1) Holds the soil in place during the winter months
2) Provides habitat for beneficial insects in the spring/summer months
3) Keeps vineyard row traffic dust to a minimum
4) Opens pores in the soil for water and air to enter the root zone

Once the cover crop is established, the ground between the rows will be disturbed only to re-establish cover crops as needed. The cover crop is maintained by mowing when it is growing, to limit its use of ground moisture. Mowing is done only when the surface becomes dry enough for equipment to pass without causing serious compaction in the soil.

To control weeds under the vine row, specialized implements will undercut weeds until they encounter an obstacle such as a vine stake. At this point, they retract out of the vine row until the obstacle is passed. This approach is very effective unless there are numerous rock obstacles in the soil or late rains have prevented entering the field with the equipment until the weeds are large and well established. This form of mechanical weed control under the vine row provides a desirable alternative to the use of herbicides.

Some organic growers have utilized mulch (a thick layer of either straw or wood ships) under the vine rows to shade emerging weeds. This approach to weed control will be evaluated. However, this type of mulch can provide an environment that is favorable for the development of large populations of rodent pests, so alternative types of mulch materials will be reviewed.

If, at times, the use of cover crops and mechanical weeding is not sufficient, an application of Glyphosate (aka Roundup) would be used to assist in under-vine row weed control. No pre-emergent herbicides will be used. Only organic surfactants would be used with the application of the Glyphosate. A Glyphosate-only regimen has been proven to be both effective and environmentally benign, is bound in the upper 2-inches of soil and totally dissipates in two weeks after application.

Vines will be planted in rows approximately 5-½ to 6 feet apart, and vines will be spaced three to four feet apart. Preservation Ranch intends to plant nursery raised vines with drought and phylloxera resistant rootstocks.

Each vineyard will be fenced to exclude deer. A total of approximately 450,000 feet of fencing will be required for the vineyard areas. The fencing will be eight-foot high deer fencing with exit doors at corners to allow any trapped wildlife out. Fencing used will allow passage of small native animals. Fencing will be placed as close to the vineyard footprint edge as is practical and feasible to reduce impacts on wildlife habitat and future timber management.

Farm Labor Housing

Full-Time Employees

As part of the agricultural operation, the Project seeks to provide agricultural employee housing for approximately thirty-five full-time, non-seasonal, agricultural employees. This farm labor housing will be located in the vicinity of the proposed Lower Easy and Evans Ridge vineyards. The actual locations will be within the vineyard conversion areas and based on suitable access, septic capability, and water availability. Seasonal farm worker housing will be provided in accordance with the regulations set forth in Section 26-88-010 (l) of the Sonoma County Zoning Code.

Seasonal Labor

Preservation Ranch will be utilizing farm labor contractors to provide season labor as discussed below. Portable latrines shall be provided at work sites along with potable water containers to avoid

reliance on Preservation Ranch ground water. All seasonal workers will be transported to and from the vineyards via privately owned vehicles or vans provided by the farm labor contractor.

The general vineyard operational and harvesting procedures, techniques, staffing, and time frames are outlined below:

- December to March – This is the pruning season. The labor force requirement is calculated based on ⅓-acre per day per worker. Based on 1,600 net vineyard acres, the labor requirement is 4,800 labor days which will require up to 100 workers over 48 working days. Seasonal labor demand is 100 – 35 (full time workers) = **65 seasonal workers over 48 working days.**
- March – Growth begins for canes and shoots.
- April to May – This is the "Suckering" season, which manipulates growth thru selective pruning of canes and shoots. This labor force is based on ⅓-acre per day per worker. Based on 1,600 net vineyard acres, the labor requirement is 4,800 labor days which will require up to 120 workers over 40 working days. Seasonal labor demand is 120 – 35 (full time workers) = **85 seasonal workers over 40 working days.**
- June to July – Canopy management. Selective pruning of the canopy is performed during this season. Irrigation is also performed. The labor force is typically ½ that required for pruning or suckering so is estimated at 2,400 labor days which requires 60 workers over 40 working days. Seasonal labor demand is 60 – 35 (full time workers) = **25 seasonal workers over 40 working days.**
- August – This is the "slack" period. Some hand weeding is performed. Irrigation is also performed. The labor force required for canopy management would still be utilized during this period so labor demand = **25 seasonal workers over 20 working days.**
- September to mid-October – Preparation for harvest starts, with harvest beginning in about mid-September and ending by mid-October. Labor requirements can be estimated based on 60 workers per 300 acres but the timing of harvest activities is staggered based on the ripeness of the fruit in particular blocks and the preference of the winemaker. Based on this the total labor demand is estimated at up to 80 workers over 30 working days. Seasonal labor demand is 80 – 35 (full time workers) = **45 seasonal workers over 30 working days.**