3.8 HAZARDS

3.8 HAZARDS

INTRODUCTION

The hazards impact analysis assesses the potential for hazards (including, but not limited to, hazardous substances) to exist on or near the Fairfax Conversion project site, or to be used as part of the proposed project. This section provides general information on hazards and reviews existing information about such hazards in the project area. Additionally, potential impacts and mitigation measures are identified. Information for this analysis is drawn from the 1989 *Sonoma County General Plan*[1] and the project *Erosion Control and Mitigation Plan* (ECP) prepared by Erickson Engineering, Inc.[2]

ENVIRONMENTAL SETTING

Existing Land Uses

The proposed project consists of the construction of an approximately 190-acre vineyard, located on a 324-acre property approximately one-half mile southeast of Annapolis in Sonoma County. Historically, a large portion of the project site was utilized as an apple orchard and for sheep farming. Currently, the project site contains an old barn and the remnants of a sawmill. The site has not been actively used for agriculture since approximately 1964.

The properties surrounding the project site are largely rural residential; and agriculture, including timber and wine grape production, is a typical land use in the area. Existing vineyards are located northeast of the property boundary, and the general vicinity surrounding the project site also includes other properties in the process of conversion to vineyards. The area southwest of the site is currently being used for timber production. A landfill/waste disposal site is located southeast of the property boundary. The residences surrounding the project site include the Starcross Monastic Community located north of the project site, as well as five rural residences located immediately northwest, west, and south of the project site.

Hazardous Materials

Public health is potentially at risk wherever hazardous materials are stored or used. A necessary distinction exists between the "hazard" of these materials and the acceptability of the "risk" they pose to human health and the environment. A hazard is any situation that has the potential to cause damage to human health and the environment. The risk to health and public safety is determined by the probability of exposure, in addition to the inherent toxicity of a material. When the risk of an activity is judged acceptable by society, in relation to perceived benefits, then the activity is judged to be safe. For

example, ammonia is a common household chemical that has been judged safe for use in our society. Although contact with ammonia can be hazardous to health, irritating the eyes, respiratory tract and skin, and even causing bronchitis or pneumonia following severe exposures, the risk of such a severe exposure is believed to be low. Therefore, the use of household ammonia is thought to be a safe activity.

Factors that can influence the health effects of exposure to hazardous materials include the dose the person is exposed to, the frequency of exposure, the duration of exposure, the exposure pathway (route by which a chemical enters a person's body) and the individual's unique biological susceptibility.

Pesticide Residue

The project site currently contains the remnants of an apple orchard, which was probably last actively maintained in the 1950s or early 1960s. Use of agricultural pesticides was common during that time period. Pesticides in use at that time, such as DDT, have proven to be persistent in the environment and include chemicals containing arsenic and lead. DDT was used extensively in agricultural operations until the early 1970s.

Storage Tanks

Neither above-ground nor underground storage tanks have been identified as existing on the project site.

Existing On-site Structures

Project documentation provided by NCRM Consulting Archaeologist Maximillian Neri notes that the project site contains the remains of a sawmill and a collapsed structure that may be a garage. The sawmill probably dates to the 1920s or 1930s. All that remains of the site is a decomposed foundation consisting of large redwood beams, with some of the main floor joists still visible as well. Surrounding the foundation is extensive evidence of landscaping and grading, and the entire area adjacent to the mill has clearly been leveled as evidenced by large push piles of soils and some trash present, mostly to the southwest of the mill. In addition, various historical refuse items are present, many in the above mentioned push piles. These items include iron pipe sections, clear and colored glass fragments, miscellaneous machinery and cable fragments, automotive parts, and various food tin fragments.

An improved dirt road passes just south of the mill and a second, much smaller, collapsed structure that may be a garage is located adjacent to the road and roughly 120 feet southwest of the mill. Despite the fact that the building is completely collapsed, the garage-like structure appears to be more recent than the mill itself because the milled board fragments are much less deteriorated than the mill foundation.

Landfill

Landfills are a commonly recognized source of leachate. Leachate is a liquid produced when water percolates through the landfill waste. The water reacts with, and entrains, the products various products of decomposition which can include hazardous chemicals and unhealthy concentrations of more benign substances. Leachate poses a problem when the liquid enters the groundwater, or when flooding results in overland flows. However, the landfill site is located downslope of the project site; therefore, the potential leachate flows from the landfill would not have an effect on the proposed project.

Wildland Fire

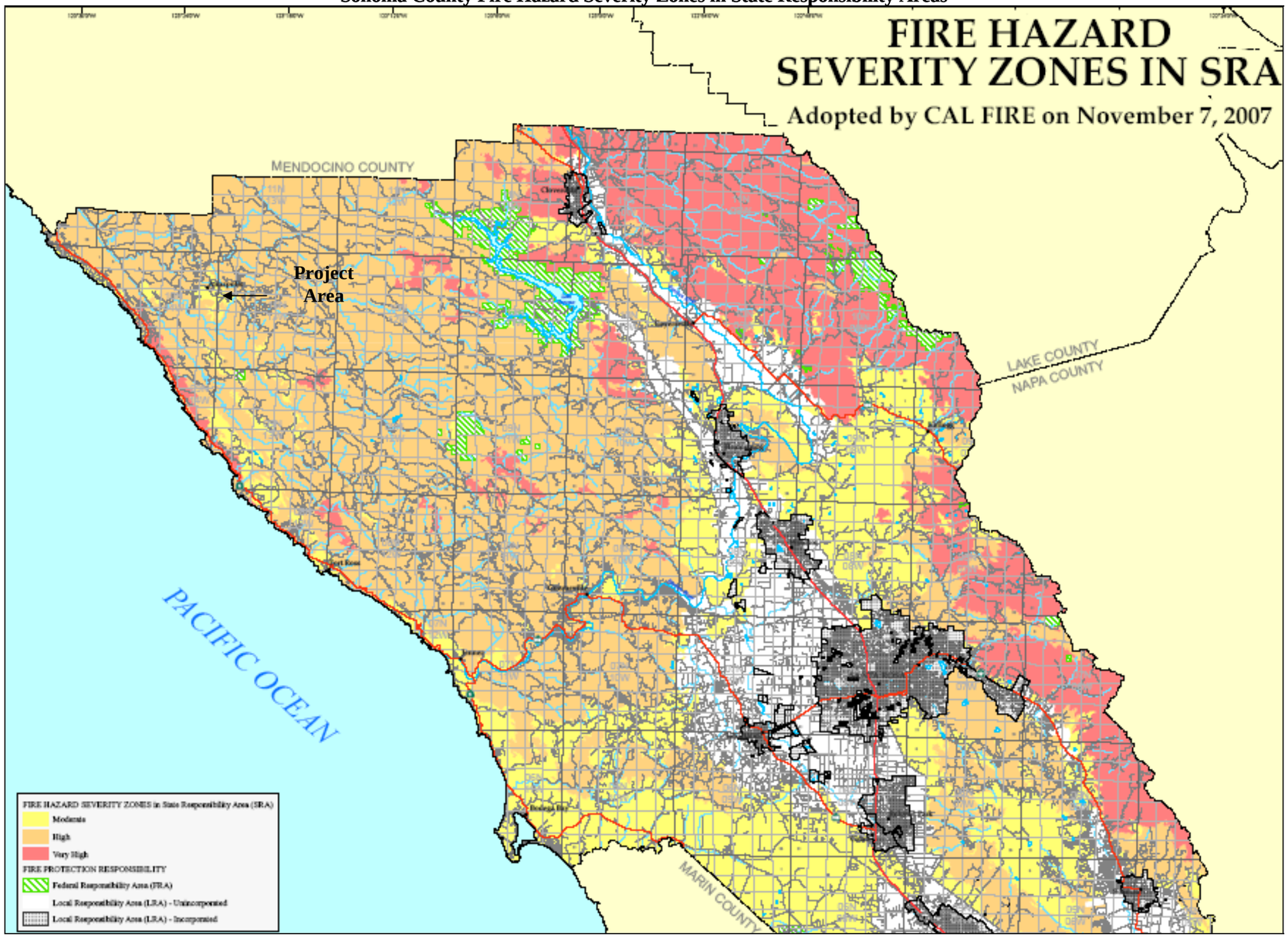
Another hazard that places people and structures at risk is wildland fire. As stated in the Sonoma County General Plan,

> "The combination of highly flammable fuel, long dry summers, and steep slopes creates a significant natural hazard of large wildland fires in many areas of Sonoma County. Wildland fire results in death, injury, economic losses, and a large public investment in firefighting efforts. Woodlands and other natural vegetation are destroyed resulting in the loss of timber, wildlife habitat, scenic quality and recreation. Soil erosion, sedimentation of fisheries and reservoirs, and downstream flooding can also result."

The General Plan notes that in order to reduce the risk of fire damage in rural areas, the types and intensities of land uses should be limited. Wildland fire hazards may be reduced by mitigation measures such as the removal of vegetation and installation of dependable water systems, but the hazards cannot be eliminated entirely. Rural development should be most restricted where natural fire hazards are high, fire protection is limited, and inadequate road access prevents timely response by firefighting personnel and rapid evacuation by residents.

The California Department of Fire and Forestry (CAL FIRE) is responsible for fire protection in the Annapolis area. Fire hazard severity for Sonoma County has been mapped by CAL FIRE. Over half of Sonoma County, including the Annapolis area, has been rated as moderate or high fire hazard risk (see Figure 3.8-1, Sonoma County Fire Hazard Severity Zones in State Responsibility Areas). The highest hazard is found in mountainous areas with dry summers, adequate fuel, and steep slopes. The project site currently contains timber stands, grassland, and chaparral fields, which are typical of fire-adapted plant communities in California, and the site is located within the moderate to high fire hazard zone.

Figure 3.8-1
Sonoma County Fire Hazard Severity Zones in State Responsibility Areas



REGULATORY CONTEXT

The term "hazardous substance" refers to both hazardous materials and hazardous wastes. A material is defined as hazardous if the material appears on a list of hazardous materials prepared by a federal, state, or local regulatory agency, or if the material has characteristics defined as hazardous by such an agency.

Table 3.8-1 lists general hazardous material categories and the nature of the hazards associated with each category.

Table 3.8-1
General Hazardous Material Categories and Hazard Nature

General Category	Nature of the Hazard
Compressed Gases	Pressurized gases, liquefied gases, cryogenic gases, dissolved gases stored under pressure and can explode.
Severe Poisons	Substances that may cause death or injury at relatively low concentrations or significant health effects from chronic exposure at relatively low concentrations.
Moderate Poisons	Substances that may cause death or injury at relatively low concentrations, or significant health effects from chronic exposure or harmful effects from acute exposure at higher concentrations.
Water Reactives	Materials that react violently with water to produce fire or toxic fumes other than strong acids or bases.
Oxidizers	Materials that release oxygen or add to the intensity of a fire.
Flammables	Liquids or solids that readily burn and/or are difficult to extinguish.
Corrosives	Materials that are strong acids or bases, will corrode skin or metal, and may react violently with water.
Radioactives	Materials that emit ionizing radiation.
Biohazards	Disease-producing living organisms or spores.
Other Hazardous Materials	Includes carcinogens, halogenated solvents, explosives and others.

Source: Cal EPA

The California Environmental Protection Agency, Department of Toxic Substances Control (CAL-EPA, DTSC) defines hazardous waste, as found in the California Health and Safety Code Section 25141(b), as follows:

> ". . . its quantity, concentration, or physical, chemical, or infections characteristics: (1) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible illness; (2) pose a substantial present or potential hazard to human health or the environment, due to factors including, but not limited to, carcinogenicity, acute toxicity, chronic toxicity, bioaccumulative properties, or persistence in the environment, when improperly treated, stored, transported, or disposed of, or otherwise managed."

Many agencies regulate hazardous substances. The following discussion contains a summary review of regulatory controls pertaining to hazardous substances, including federal, state, and local laws and ordinances.

Federal

Federal agencies that regulate hazardous materials include the Environmental Protection Agency (EPA), the Occupational Safety and Health Administration (OSHA), the Department of Transportation (DOT), and the National Institute of Health (NIH). The following federal laws and guidelines govern hazardous materials.

- Federal Water Pollution Control
- Clean Air Act
- Occupational Safety and Health Act
- Federal Insecticide, Fungicide, and Rodenticide Act
- Comprehensive Environmental Response, Compensation, and Liability Act
- Guidelines for Carcinogens and Biohazards
- Superfund Amendments and Reauthorization Act Title III
- Resource Conservation and Recovery Act
- Safe Drinking Water Act
- Toxic Substances Control Act

Prior to August 1992, the principal agency at the federal level regulating the generation, transport and disposal of hazardous waste was the EPA under the authority of the Resource Conservation and Recovery Act (RCRA). As of August 1, 1992, however, the California Department of Toxic Substance Control (DTSC) was authorized to implement the state's hazardous waste management program for the EPA. The federal EPA continues to regulate hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA). The EPA also regulates pesticide use nationwide and has exclusive authority over pesticide labeling. Use of a pesticide is limited to the applications and restrictions on the label, and the label restrictions are legally enforceable.

State

The California Environmental Protection Agency (Cal-EPA) and the State Water Resources Control Board establish rules governing the use of hazardous materials and the management of hazardous waste. Applicable state and local laws include the following:

- Public Safety/Fire Regulations/Building Codes
- Hazardous Waste Control Law
- Hazardous Substances Information and Training Act
- Air Toxics Hot Spots and Emissions Inventory Law
- Underground Storage of Hazardous Substances Act
- Porter-Cologne Water Quality Control Act

Within Cal-EPA, DTSC has primary regulatory responsibility, with delegation of enforcement to local jurisdictions that enter into agreements with the state agency, for the management of hazardous materials and the generation, transport and disposal of hazardous waste under the authority of the Hazardous Waste Control Law (HWCL).

The California Department of Pesticide Regulation (DPR) regulates pesticides within the State of California and has legal authority to adopt restrictions on pesticide use going beyond the regulations of the U.S. Environmental Protection Agency. DPR operates with extensive authority in the California Food and Agricultural Code and in the California Code of Regulations.

Under California law, pesticide products must be registered by DPR in order to be sold and used in California. Before a substance is registered as a pesticide for the first time, DPR conducts a thorough evaluation. If DPR determines that further restrictions need to be placed on the use of a pesticide product to mitigate potential adverse effects including human health effects and environmental effects, DPR classifies the pesticide as a restricted pesticide, and individual applications need a permit from the county agricultural commissioner. After a pesticide is registered for use in this state, DPR has an ongoing obligation to review new information received about the pesticide that might show new problems beyond those identified in the registration process. Where the review of new information shows that a significant adverse impact has occurred or is likely to occur, DPR is required to reevaluate the registration.

The handling of pesticides may include potentially hazardous materials. Only personnel with the proper license and/or certification are permitted to handle potentially hazardous materials, and they must follow all state and local regulations.

Local

Sonoma County General Plan

The Sonoma County General Plan sets forth various goals, policies and programs that would apply to projects within the unincorporated portion of the County. The following goals and objectives are applicable to the proposed project.

Goal PS-3.1 Prevent unnecessary exposure of people and property to risks of damage or injury from wildland and structural fires.

Objective PS-3.1 Continue to utilize complete data on wildland and urban fire hazards.

Objective PS-3.2 Regulate new development to reduce the risks of damage and injury from known fire hazards to acceptable levels.

Goal PS-3.1 Prevent unnecessary exposure of people and property to risks of damage or injury from hazardous materials.

Objective PS-4.1 Maintain complete documentation and assessments of data on hazardous materials.

Objective PS-4.2 Regulate the transport, storage, use and disposal of hazardous materials in order to reduce the risks of damage and injury from hazardous materials to acceptable levels.

Sonoma County Hazard Mitigation Plan

The Sonoma County Hazard Mitigation Plan (HMP)[3] analyses the risk posed to people and property in Sonoma County by earthquakes, landslides, floods, and wildland fires; and presents mitigation actions that can be implemented to reduce personal harm and property damage. Wildland fires are of particular concern in the project area.

The combination of highly flammable fuel, long dry summers and steep slopes creates a significant natural hazard of large wildland fires in many areas of Sonoma County. Wildfire behavior is based on three primary factors: weather, topography and fuel. Wildland fire season in Sonoma County spans the months after the last spring rains have fallen and until the first fall or winter rains occur. The months of August, September and October have the greatest potential for wildland fires as vegetation dries out, humidity levels fall, and off shore winds blow. Figure 2-10 of the HMP indicates that Annapolis is located in an area where the risk of wildland fires ranges from moderate to very high.

The following goals and objective are applicable to the proposed project.

Goal 4 Reduce the vulnerability of people and property exposed to wildland fire hazards in Sonoma County.

Objective 4.1 Assure that adequate wildland fire hazard information and maps are available and utilized to guide decisions that impact risks.

Policy 4.1.4 Consider and apply available wildland fire hazard information in the review of project applications and other decision-making that impact risk.

IMPACTS AND MITIGATION MEASURES

Standards of Significance

In accordance with CEQA, the effects of a project are evaluated to determine if they would result in a significant adverse impact on the environment. An EIR is required to

focus on these effects and offer mitigation measures to reduce or avoid any significant impacts that are identified. The criteria, or standards, used to determine the significance of impacts may vary depending on the nature of the project. For the purposes of the EIR, an impact is considered significant if the proposed project could:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials; or
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment.

Method of Analysis

A visual review of site conditions was undertaken by Raney staff on March 31, 2005. During the evaluation, an environmental assessment field checklist was completed, photographs were taken, and pertinent observations related to the condition of the environment at the site (and adjacent properties) were noted. Raney also conducted a records search of the Department of Toxic Substances Control Hazardous Waste and Substances Site on January 4, 2005. In addition, in the course of cultural resources assessment for the site, a site history review was performed by Mr. Maximillian Neri of NCRM to identify former uses. Mr. Neri also met with local landowner and historical society member Gary Craig to discuss the presence of the two sawmills described in the historical record.

Project-Specific Impacts and Mitigation Measures

3.8-1 Safety-related impacts pertaining to the presence of hazardous chemicals associated with the old sawmill site.

As noted in the project Erosion Control and Mitigation Plan, known chemical contaminants have not been identified on the project site, either in association with past agricultural practices, or from other practices typically involving high chemical usage. In addition, a review of the DTSC Hazardous Waste and Substances Site List (Cortese List) did not reveal any toxic sites within the project site or in the project vicinity.

However, the project site does contain the ruins of an old sawmill and another structure near the sawmill. Although the sawmill is severely deteriorated and the other structure (possibly a garage) has collapsed, these two structures were likely built prior to the mid-1970s; therefore, the possibility exists that the building materials could contain asbestos. These asbestos-containing materials (ACMs) could include, but are not limited to: resilient floor coverings, drywall joint compounds, acoustic ceiling tiles, piping insulation, electrical insulation, and fireproofing materials.

Lead-based paints could also be present in the existing structures. Typically, exposure to lead from older vintage paint is possible when the paint is in poor condition or is being removed. In construction settings, workers could be exposed to airborne lead during renovation, maintenance or removal work. Lead-based paints were phased out of production in the early 1970s. The onsite buildings could have been constructed prior to the ban on lead-based paints and, therefore, may contain these materials.

Additionally, because it is currently unknown whether the historical uses of the sawmill included wood treatment, the sawmill site could potentially contain currently unknown subsurface chemical hazards, including, but not limited to creosote, arsenic, and fire retardants. Furthermore, as noted previously, the vicinity of the sawmill site contains evidence of landscaping and grading, and large push piles of soil and historical garbage are present. The garbage includes industrial debris such as iron pipe sections, miscellaneous machinery and cable fragments, and automotive parts. Such refuse may contain the residues of chemicals including fuels, lubricants, and solvents, among others.

Exposure to friable asbestos and lead particles, if present in the deteriorated structures on the project site, could prove hazardous to construction workers during demolition activities. Additionally, the presence of historical chemicals and garbage buried on the site could result in worker exposure to hazardous chemicals of an undetermined nature. Therefore, the impact of hazardous chemicals on the project site would be considered ***potentially significant***.

Mitigation Measure(s)

Implementation of the following mitigation measures would mitigate potential impacts to a *less-than-significant* level by ensuring that any hazardous materials present on the proposed project site would be properly identified and disposed of, and any affected soils would be remediated in accordance with local, State, and federal standards.

3.8-1(a) *Prior to issuance of a demolition permit by the County for any on-site structures, the applicant shall provide a site assessment that determines whether the old sawmill foundation to be demolished contains asbestos and/or other hazardous substances. If asbestos and/or other hazardous substances are found at levels above the applicable fiber count (asbestos) or TTLC (other substances) set by DTSC, the application shall include an asbestos abatement plan and/or hazardous substance remediation plan and the contractor shall take appropriate precautions to protect his/her workers, the surrounding residences, and to dispose of any hazardous construction waste in a manner consistent with local, State, and federal standards, subject to approval by the County Building Official and DTSC.*

3.8-1(b) *Prior to issuance of grading and/or demolition permits, multiple soil samples shall be taken from the abandoned mill site and the samples shall be analyzed by a licensed toxic substances specialist. If hazardous chemicals are detected at levels in the soil samples above the applicable TTLC set by the DTSC, the applicant shall retain a licensed and certified hazardous waste removal contractor to prepare a remediation plan for the contaminated areas in accordance with local, State, and federal regulations and to the satisfaction of Sonoma County Environmental Health Department and the DTSC.*

3.8-2 Safety-related impacts pertaining to the presence of hazardous chemicals associated with past illegal activities on the site.

The project site contains numerous piles of historic and recent garbage and other debris, including several illegally dumped automobiles. Furthermore, neighbors have reported additional potentially hazardous debris buried in various locations on the site.

While it is unlikely that the majority of this refuse constitutes a hazardous materials threat to workers on the project site, it is possible that over time, the dumped vehicles have leaked lubricants, fuel, coolant, or other fluids into the ground. During project construction, if work crews were to come into contact with these materials, injury could result. Therefore, the impact would be considered ***potentially significant***.

Mitigation Measure(s)

Implementation of the following mitigation measure would mitigate potential impacts to a *less-than-significant* level by ensuring that any toxic substances located on the project site would be identified and properly disposed, and any affected soils would be remediated in accordance with local, State, and federal regulations.

3.8-2 *Prior to issuance of grading and/or demolition permits, multiple soil samples shall be taken from the eastern portion of the project site in the vicinity of the dumped vehicles, and the samples shall be analyzed by a licensed toxic substances specialist. If hazardous chemicals are detected at levels in the soil samples above the applicable TTLC set by the DTSC, the applicant shall retain a licensed and certified hazardous waste removal contractor to prepare a remediation plan for the contaminated areas in accordance with local, State, and federal regulations and to the satisfaction of Sonoma County Environmental Health Department and the DTSC.*

3.8-3 Impacts relating to the past use of agricultural chemicals on the project site.

The project area is rural residential in character, with various agricultural uses being conducted on surrounding properties. The project site was last actively used for agricultural operations during the late 1950s or early 1960s, and past activities on the site included sheep farming and the operation of an apple orchard. Maintenance of the apple orchard may have included the application of common pesticides of that era. Pesticides used in the mid-20th century were often "persistent," having chemical constituents that did not break down quickly in the environment. The possibility exists that pesticides, including herbicides, insecticides, or other agricultural chemical residues from that time, remain on the property. If these were to be disturbed and enter the atmosphere or waterways during timber harvesting or earthmoving activities in the course of project development, a health hazard to workers, nearby residents, and biological resources could result. Therefore, the impact pertaining to agricultural chemical applications in past decades would be considered ***potentially significant***.

Mitigation Measure(s)

Implementation of the following mitigation measure would mitigate potential impacts to a *less-than-significant* level by ensuring that any concentrations of agricultural chemical residue located on the project site would be identified and properly disposed, and any affected soils would be remediated to the satisfaction of the Sonoma County Environmental Health Department and the DTSC.

3.8-3 *Prior to the initiation of any ground disturbance activities, the project applicant shall provide to the Sonoma County Environmental Health Department a detailed environmental assessment pertaining to the on-site soils. If pollutants of concern are not detected, further mitigation is not necessary. If the assessment finds concentrations of any agricultural chemical residue that is above the applicable TTLC set forth by the DTSC, thereby, potentially creating an unacceptable risk to workers on the project site, prior to issuance of a grading permit, the Sonoma County Environmental Health Department shall require the applicant to remediate the pesticide to the satisfaction of Sonoma County Environmental Health Department and the DTSC.*

3.8-4 Impacts relating to the potential use of agricultural chemicals during project operations.

Timber Harvest/Vineyard Installation

The project applicant does not intend to use herbicides to remove vegetation from the site as a part of conversion and timber harvesting operations; nor, would insecticides or fungicides be used during the conversion. All vegetation proposed for removal as part of the proposed timber harvest operations would be removed

via mechanical means as outlined in the THP. Therefore, the timber harvest and vineyard installation activities would not result in any adverse impacts related to pesticide use (herbicides, insecticides, and fungicides).

Role of Pesticides in Vineyard Operations

Vineyard managers commonly utilize various pest control strategies, including pesticides, in order to minimize risk of crop damage or loss. Common vineyard pests in California include birds, deer, and gophers, as well as smaller pests such as insects, mites, nematodes, and various diseases. The most notable insect threat currently facing vineyard development in California is the glassy-winged sharpshooter (GWSS) (*Homalodisca coagulata*), a small, non-native leafhopper that transmits Pierce's Disease, caused by the bacterium *Xylella fastidiosa*. This pathogen debilitates grapevines and various other commercially-valuable host plants by clogging the xylem, a fluid-conducting tissue. A successful treatment for the disease does not currently exist. Pierce's Disease has been found in Sonoma County; however, the disease has not yet been found in the project area as of this writing. Due to the threat of attack by any number of insect species, operation of the proposed project could result in the introduction of pesticidal chemicals to the project site. However, many important grape diseases (i.e., powdery mildew and bunch rot) can be minimized by cultural practices such as canopy management. All pesticide applications for the project would be preceded by thorough monitoring of pest and natural enemy populations, careful selection of the least disruptive material, and meticulous planning of applications timing and technique. Even then, only when sustained economic damage is occurring are pesticides applied.

Regulatory Environment

The following discussion contains a summary review of regulatory controls pertaining to hazardous substances, including federal and state laws. For a review of the local laws and ordinances governing pesticide use in Sonoma County, please refer to the "Regulatory Context" section above.

Federal

Federal agencies that regulate hazardous materials include the Environmental Protection Agency (EPA), the Occupational Safety and Health Administration (OSHA), the Department of Transportation (DOT), and the National Institute of Health (NIH). The following federal laws and guidelines govern hazardous materials.

- Federal Water Pollution Control
- Clean Air Act
- Occupational Safety and Health Act
- Federal Insecticide, Fungicide, and Rodenticide Act

- Comprehensive Environmental Response, Compensation, and Liability Act
- Guidelines for Carcinogens and Biohazards
- Superfund Amendments and Reauthorization Act Title III
- Resource Conservation and Recovery Act
- Safe Drinking Water Act
- Toxic Substances Control Act

As of August 1, 1992, however, the California Department of Toxic Substance Control (DTSC) was authorized to implement the state's hazardous waste management program for the EPA. The federal EPA continues to regulate hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA). The EPA also regulates pesticide use nationwide and has exclusive authority over pesticide labeling. Use of a pesticide is limited to the applications and restrictions on the label, and the label restrictions are legally enforceable.

State

The California Environmental Protection Agency (Cal-EPA) and the State Water Resources Control Board establish rules governing the use of hazardous materials and the management of hazardous waste. Applicable state and local laws include the following:

- Public Safety/Fire Regulations/Building Codes
- Hazardous Waste Control Law
- Hazardous Substances Information and Training Act
- Air Toxics Hot Spots and Emissions Inventory Law
- Underground Storage of Hazardous Substances Act
- Porter-Cologne Water Quality Control Act

Within Cal-EPA, DTSC has primary regulatory responsibility, with delegation of enforcement to local jurisdictions that enter into agreements with the state agency, for the management of hazardous materials and the generation, transport and disposal of hazardous waste under the authority of the Hazardous Waste Control Law (HWCL).

The California Department of Pesticide Regulation (DPR) regulates pesticides within the State of California and has legal authority to adopt restrictions on pesticide use going beyond the regulations of the U.S. Environmental Protection Agency. DPR operates with extensive authority in the California Food and Agricultural Code and in the California Code of Regulations.

Under California law, pesticide products must be registered by DPR in order to be sold and used in California. Before a substance is registered as a pesticide for the first time, DPR conducts a thorough evaluation. If DPR determines that further restrictions need to be placed on the use of a pesticide product to mitigate potential adverse effects including human health effects and environmental effects, DPR classifies the pesticide as a restricted pesticide, and individual applications need a permit from the county agricultural commissioner. After a pesticide is registered for use in this state, DPR has an ongoing obligation to review new information received about the pesticide that might show new problems beyond those identified in the registration process. Where the review of new information shows that a significant adverse impact has occurred or is likely to occur, DPR is required to reevaluate the registration.

The handling of pesticides may include potentially hazardous materials. Only personnel with the proper license and/or certification are permitted to handle potentially hazardous materials; and they must follow all state and local regulations.

Role of Agricultural Commissioners

The Sonoma County Agricultural Commissioner is the primary enforcer of pesticide regulations within Sonoma County for agricultural users. The Commissioner's Office oversees, monitors and evaluates the use, records, storage and sales of pesticides as required in the California Food and Agricultural Code, the California Code of Regulations and the Business and Professions Code. Growers, including the project applicant, must obtain the proper permit or other document from the Agricultural Commissioner in the event that pesticides are applied for commercial or agricultural use. One function of the pesticide permitting program is recording data on agricultural pesticide use. The pesticide use information is obtained from the Pesticide Use Reports, submitted monthly by growers and/or other applicators. Other functions of this program include incident and illness investigations, as well as field and headquarter inspections. Staff also provides education to the community and growers in safe pesticide application practices, including classes for continuing education hours needed by pesticide applicators to keep their applicators license valid.

Pesticide Control Advisors and Qualified Applicators

Only personnel with the proper license and/or certification are permitted to handle potentially hazardous materials. As a result, chemical applications would take place under the supervision of a licensed qualified applicator (QA). Pesticide Control Advisers (PCA) would be consulted for any new or atypical pest issues that arise. To become a PCA or a QA, individuals must pass a written exam, and maintain their certification by participating in continuing education classes. Common applications such as fungicides do not call for PCA consultation. When

required, a PCA recommendation would be obtained before ordering any restricted pesticide(s). Additionally, the applicant would be required to renew any applicable chemical application permits through the Sonoma County Agricultural Commissioner's Office and file monthly Pesticide Use Reports with the County as discussed above.

Potential Pesticides to be Used

Mildew and Botrytis (a fungal blight) are the most commonly treated vineyard disease issues. Mildew treatments are rotated from year to year to avoid the development of resistant strains of mildew. Sulfur applications are avoided to the extent practicable after verasion (a period of grape development that typically occurs in late June). Many seasons there may be no applications outside of mildew treatments and herbicides (within the vineyard rows).

The use of insecticides would only occur in reaction to an active and economically significant infestation. In most years, insecticides would likely not be used. However, when needed to avoid sustained economic damage, reduced risk insecticides would be preferentially used for insects such as leafhoppers, mites, and mealybug (See Table 3.8-2 for a list of potential chemicals, their targeted species, mode of action, breakdown products, and toxicity).

Potential for Adverse Effects

Numerous factors are involved in determining the potential for adverse effects as a result of pesticide use. One of the primary factors is the method in which such pesticides are stored, used, and disposed of by the user. Additional factors include the proximity of sensitive receptors and resources, such as residences, schools, domestic wells, natural habitats and species. The applicant has prepared a Pesticide Management Plan to address many of the above concerns. The Plan must be approved by CALFIRE prior to project implementation. The following is an outline of the proposed Pesticide Management Plan:

Pesticide Management Plan

(A) Storage Areas

Agricultural chemicals will be stored in a locked metal storage building within the corporation yard following commencement of vineyard activities. According to the applicant, pesticides would only be ordered on an as needed/as used basis, such that pesticides would not be stored longer than a few days prior to application. The exception would be sulfur dust which may be ordered in bulk early in the season to cover more than one application. The site will be posted with signs warning against entry and warning of chemical contents within the building.

Table 3.8-2
Agricultural Chemicals to Potentially be Applied Onsite

(If after implementation of cultural practices the use of chemical control is deemed necessary, it is anticipated that only a few of the below reduced risk pesticides would be necessary, as discussed in the above text)

Chemical Name *(Active Ingredient)*	**Target Pest**	**Mode of Action**	**Hazardous Breakdown Products**	**Delivery System**	**Restrictions on Use**	**Toxicity***
Adjuvants/Surfactants						
CMR Silicone Surfactant *Organo-Modified Siloxane*	N/A	Surfactant/Spreader not pesticide	Combustion: CO/CO_2	Applied in the same manner as pesticide with which the substance is mixed.	Do not apply directly to surface waters.	When mixed with pesticide, the Restricted Entry Interval for the pesticide should be followed.
Latron ™ *Phthalic/glycerol alkyl resin*	N/A	Spreader/Sticker not pesticide	None Known	Applied in the same manner as pesticide with which the substance is mixed.	None identified.	N/A
Tripline Foam-Away	N/A	Anti-Foam, not pesticide	Combustion: CO, CO_2	Applied in the same manner as pesticide with which the substance is mixed.	None identified.	N/A
Fungicides						
Abound ™ *Azoxystrobin*	Broad spectrum fungicide with activity against several diseases including downy mildew and powdery mildew.	Single-Site	Combustion: CO/CO_2	Applied by hand-operated or tractor mounted sprayer.	Not to be applied directly to water, areas where surface water is present, or intertidal areas below the mean high water mark. Do not allow to get into surface water, drains, and ground water.	Restricted Entry Interval of 4 hours following spraying. Toxic to freshwater and estuarine/marine fish.
CSC Dusting Sulfur, ™ Kumulus ,™ Special Electric ™ *Sulfur*	Powdery mildew.	Multi-site Contact	Combustion: SO_2, H_2S, CS_s	Applied by tractor mounted blower/sprayer.	None identified.	Low toxicity.
Dithane *Mancozeb*	Broad spectrum fungicide.	Multi-site Contact	Combustion: CS_2, H_sS	Applied by tractor mounted blower/sprayer.	Not to be applied directly to water, areas where surface water is present, or intertidal areas below the mean high water mark. Do not allow to get into surface water, drains, and ground water.	Restricted Entry Interval of 24 hours following spraying. Very highly toxic to aquatic organisms.
Kaligreen *Potassium hydrogencarbonate*	Powdery mildew.	Potassium ion balance disruption	CO_2, Potassium	Applied by tractor mounted blower/sprayer.	None identified.	Restricted Entry Interval of 4 hours following spraying.
Quintec ™ *Quinoxyfen*	Protectant fungicide for control of powdery mildew diseases.	Multi-site	None under normal conditions of storage and use	Applied by tractor mounted blower/sprayer.	Prevent from entering into soil, ditches, sewers, waterways, and/or groundwater.	Restricted Entry Interval of 12 hours following spray

Table 3.8-2
Agricultural Chemicals to Potentially be Applied Onsite

(If after implementation of cultural practices the use of chemical control is deemed necessary, it is anticipated that only a few of the below reduced risk pesticides would be necessary, as discussed in the above text)

Chemical Name *(Active Ingredient)*	Target Pest	Mode of Action	Hazardous Breakdown Products	Delivery System	Restrictions on Use	Toxicity*
Serenade™ dried *Bacillus subtilis*	Fungal inhibitor, protects against powdery mildew, botrytis, and sour rot.	Multi-site	None Known	Applied by tractor mounted blower/sprayer.	None identified.	Restricted Entry Interval of 4 hours following spraying. Non-toxic to species tested on, not expected to impose any environmental rist.
Sovran ™ *Kresoxim-methyl*	Powdery mildew and botrytis.	Mitochondrial electron transport inhibitor	Oxides of Carbon and Nitrogen	Applied by tractor mounted blower/sprayer.	Not to be applied directly to water, areas where surface water is present, or intertidal areas below the mean high water mark. Do not allow to get into surface water, drains, and ground water.	Restricted Entry Interval of 12 hours following spraying. Toxic to freshwater and estuarine/marine fish, and marine invertebrates.
Stylet Oil *Hydrotreated parafinnic distillate*	Powdery mildew, also works as an insecticide targeting mites, whitefly, and leafminers.	Smothering and Barrier	Combustion: CO, CO_2, SO_2, NO	Applied by tractor mounted blower/sprayer.	Not to be applied directly to water, areas where surface water is present, or intertidal areas below the mean high water mark. Do not allow to get into surface water, drains, and ground water.	Restricted Entry Interval of 4 hours following spraying. Toxic to fish.
Vangard™ *4-Cyclopropyl-6-methyl-2-phenylamino-pyrimidine*	Broad spectrum fungicide used to control powdery mildew and botrytis.	Single-Site	None Known	Applied by tractor mounted blower/sprayer.	Not to be applied directly to water, areas where surface water is present, or intertidal areas below the mean high water mark. Do not allow to get into surface water, drains, and ground water.	Restricted Entry Interval of 48 hours following spraying. Toxic to fish and aquatic invertebrates.
Herbicides						
Roundup™ *Potassium salt of Glyphosate*	Broad spectrum herbicide for control of weeds and grasses within grape rows.	Inhibit plant protein synthesis	Hydrogen gas (H_2) Combustion: CO, P_xO_y, NO_x	Applied by hand sprayer.	Keep out of drains, sewers, ditches, and water ways.	Restricted Entry Interval of 4 hours following spraying. Moderately toxic to fish.
Insecticides						
Admire™, Provado™ *Imidacloprid*	For use against sucking insects including leafhoppers, aphids, and white fly.	Acetylcholine agonist (mimic)	HCL, HCN, CO, NOx	Applied by tractor mounted blower/sprayer.	Not to be applied directly to water, areas where surface water is present, or intertidal areas below the mean high water mark. Do not apply the product if drift to	Restricted Entry Interval of 12 hours following spraying. Highly toxic to bees and aquatic invertebrates.

Table 3.8-2
Agricultural Chemicals to Potentially be Applied Onsite

(If after implementation of cultural practices the use of chemical control is deemed necessary, it is anticipated that only a few of the below reduced risk pesticides would be necessary, as discussed in the above text)

Chemical Name *(Active Ingredient)*	Target Pest	Mode of Action	Hazardous Breakdown Products	Delivery System	Restrictions on Use	Toxicity*
					blooming crops or weeds if bees are visiting treatment areas. Do not allow to get into surface water, drains, and ground water.	
Agri-Mek™ *Abamectin*	Spider mites.	Chloride channel activator	None Known	Applied by tractor mounted blower/sprayer.	Not to be applied directly to water, areas where surface water is present, or intertidal areas below the mean high water mark. Do not apply the product if drift to blooming crops or weeds if bees are visiting treatment areas. Do not allow to get into surface water, drains, and ground water.	Restricted Entry Interval of 12 hours following spraying. Highly toxic to bees, fish, and aquatic invertebrates.
Nexter ™ *Pyridazinone*	Aphids, mites, leafhoppers, and whitefly.	Insect mitochondrial electron transport inhibitor	HCl, Oxides of Nitrogen, SO_x, CO	Applied by tractor mounted blower/sprayer.	Not to be applied directly to water, areas where surface water is present, or intertidal areas below the mean high water mark. Do not apply the product if drift to blooming crops or weeds if bees are visiting treatment areas.	Restricted Entry Interval of 12 hours following spraying. Toxic to fish, aquatic invertebrates, and bees.

Source: Don Clark, Vineyard Manager for Artesa; Material Data Safety Sheets and Product labels for individual, name brand chemicals.

*The Restricted Entry Interval listed is from the labels of the individual products and is considered somewhat indicative of the chemical toxicity; however, in the State of California the Restricted Entry Interval for all pesticides is a minimum of 24 hours which is greater than or equal to the required time interval of all of the above listed pesticides except for Vangard.

Abound
http://www.syngentacropprotection-us.com/prodrender/index.asp?nav=labels&ProdID=51
Provado
http://www.cdms.net/LabelsMsds/LMDefault.aspx?pd=6486
CMR Silicone Surfactant
http://www.montereychemical.com/label/CMRSilSurfactant.pdf
Diathane
http://www.cdms.net/LabelsMsds/LMDefault.aspx?manuf=11&t=
Kaligreen
http://www.cdms.net/LabelsMsds/LMDefault.aspx?manuf=129&t=
Latron
http://www.cdms.net/LabelsMsds/LMDefault.aspx?manuf=7&t=

Table 3.8-2
Agricultural Chemicals to Potentially be Applied Onsite

(If after implementation of cultural practices the use of chemical control is deemed necessary, it is anticipated that only a few of the below reduced risk pesticides would be necessary, as discussed in the above text)

Chemical Name *(Active Ingredient)*	Target Pest	Mode of Action	Hazardous Breakdown Products	Delivery System	Restrictions on Use	Toxicity*
Nexter http://www.cdms.net/LabelsMsds/LMDefault.aspx?pd=8447 **Quintec** http://www.cdms.net/LabelsMsds/LMDefault.aspx?pd=6582&t= **Roundup** http://www.monsanto.com/monsanto/ag_products/crop_protection/labels_msds.asp **Serenade** http://www.agraquest.com/products-solutions/labels-msds.html **Sovran** http://www.cdms.net/LabelsMsds/LMDefault.aspx?pd=3813&t= **Stylet Oil** http://www.cdms.net/LDat/ld5QF002.pdf **Vangard** http://www.syngentacropprotection-us.com/prodrender/index.asp?nav=LABELS&ProdID=661&ProdNM=Vangard%20WG It should be noted that the above list of pesticides/herbicides/fungicides were provided by the applicant based on their past use and anticipated future use. As new chemicals are approved the above listed chemical may be replaced.						

(B) Mixing Areas

A dedicated mixing site will be set up near the storage facility. The site will consist of a concrete pad with a raised lip to catch any spills. All mixing will be done in the spray tank, and residues from containers and mixing devices will be rinsed into the tank to be applied in the field. Empty containers will be triple rinsed, punctured, and recycled at an appropriate waste facility.

(C) Application

Pesticide applications would generally occur between 3:00 am and 9:00 am. Most applications occur in the period from April-July; usually one herbicide application in December or January. All label restrictions would be strictly followed. In general, applications do not occur during rains or when rain is likely. All spray applications would stop at winds in excess of 5 miles-per-hour. All workers will be trained in what they are applying, what the target pest is, and what to do in the event of an emergency prior to spray application. In addition, protective suits, gloves, face masks, and goggles in various sizes will be kept on site for the use of pesticide applicators. Where required, respirators are custom fit to each worker who may need one after a doctor's visit to assure their health and condition for wearing one.

(D) Spill Prevention Measures

Any activity that would make spills likely (mixing, cleaning, storage) would occur far from riparian areas, leaving wide buffers. Pesticide application Best Management Practices would be followed, including: spraying from outside edge of vineyard towards the inside; using sprayer/nozzle/pressure combinations that minimize drift; not spraying while during rain or when rain is likely, and not spraying when wind speeds exceed 5 miles-per-hour. In addition, the vegetated areas and WLPZs would intercept and reduce the flow of any pesticide contaminated water. Furthermore, no-till farming minimizes the movement of soil/dust that may have had contact with pesticides into waterways.

(E) Remedial Measures

The storage building would contain a spill containment kit that would consist of absorbent clay (cat litter), broom, dust pan, fire extinguisher, protective suit, gloves and warning tape. In the event that a spill or leak occurs, the incident will be reported to the Sonoma County Agricultural Commissioner. The area will be

immediately isolated with warning tape, and absorbent material (cat litter) will be spread on the spill. Contaminated material will be placed in a sealed metal drum and labeled with the name of the pesticide, and disposed of as hazardous waste in conformance with State and County guidelines. Employees will be trained in dealing with spill at the time of hiring, and annually thereafter. Contact information for the Agricultural Commissioners Office, Local Emergency Response Personnel, Sonoma County Department of Emergency Services, State Office of Emergency Services, and the closest medical facility will be prominently posted within the storage area.

The presence and location of sensitive receptors is a primary concern when considering the efficacy of the Pesticide Management Plan in addressing potential risks. Sensitive receptors and resources on or adjacent to the project site are outlined below:

Sensitive Receptors

(A) Residences

Six residences are located within close proximity to the proposed project site. The residences are primarily single-family homes, with the Starcross Monastic Community being the exception. As outlined in Chapter 3.3, *Air Quality*, the prevailing winds are from the northwest. As a result, the winds would typically carry airborne particles away from most of the residences. The possibility exists that wind patterns associated with the topography and heated air moving uphill could blow towards the residences north and west of the site during the day; however, as outlined above in the Pesticide Management Plan, pesticides would be applied in the early morning before the air begins to warm, and would not be applied when wind speeds exceed five miles-per-hour. As a result, the prevailing wind would be the primary factor in determining the potential for pesticide drift. The residence located south of the project site is located south and west of vineyard blocks 4 and 5a. The landscape between the residence and the vineyard blocks is heavily forested. Pesticides would be applied directly to the vines, or the ground within the vine rows in the case of herbicides, at low speeds to ensure the maximum effectiveness of the treatment, and to reduce the potential for drift. Furthermore, as discussed above, pesticides would only be applied when wind speeds are very low (less than 5 mph). Therefore, pesticides would be unlikely to drift any substantial distance, and any pesticides that become airborne would likely be intercepted by the intervening foliage.

Summary

Residences are located in close proximity to the site, and residents expressed substantial concerns related to the use of pesticides. However, due to the local topography, vegetative patterns, and controls on the timing, type, and climate under which pesticides may be applied adverse affects are not anticipated.

(B) Schools

Horicon Elementary School, located approximately 1,500 feet "as the crow flies" from the far western edge of the project site, is the closest school in the vicinity of the project site. Even in densely populated areas where residences are located at the edge of development, adjacent to ongoing agricultural operations that include aerial pesticide applications, the typical buffer width required is 500 feet. The distance from the point where the project site is nearest the school is approximately 1,500 feet. In addition, the majority of the intervening terrain is densely forested, though a few residences exist within approximately 800 feet of the project site's nearest boundary. Therefore, given the adequate buffer distance to the nearest school as well as the reasons set forth in the above discussion for "Residences" (i.e., implementation of the Pesticide Management Plan), adverse affects to schools are not anticipated.

(C) Domestic Wells

As shown in Figure 3.7-6 of the *Hydrology and Water Quality* chapter of this DEIR, numerous domestic wells are located in the project vicinity. The wells are located primarily upslope of the project site to the north and west. As stated in Chapter 3-7:

> The groundwater gradient most likely parallels the slope of the geologic contact, which is in turn generally parallel to the surface topography. Almost all of the project area is underlain by this sloping shallow aquifer. Groundwater flows are generally from west- northwest to east-southeast, toward Patchett Creek. The geometry of the aquifer and the location of the contact between the Franciscan and the Ohlson Ranch Formations to the west are uncertain. Even if the geologic contact west of the project site dips to the west, the geometry of the rock formations under the project site is relatively well-defined, and groundwater from the project site would still be expected to flow to the east-southeast.

Therefore, both overland flow and groundwater flow from the project site would not interact with existing domestic wells, and as a result, pesticide use is not anticipated to adversely affect either groundwater or surface flow. Potential impacts to special status species via pesticide interactions are discussed below, and in Chapter 3.4, Biological Resources.

(D) Sensitive Habitats and Sensitive Species

Riparian habitats and the associated aquatic species, including the foothill yellow-legged frog, are the primary area of concern on the project site with regard to potential adverse impacts from pesticide use. The project site contains both Class II and III drainages. Many aquatic species are very sensitive to pesticides, and as shown in Table 3.8-2, pesticides that may be used on the project site are highly toxic to aquatic species. However, the Class II and Class III watercourses on-site would be protected by Watercourse and Lake Protection Zones (WLPZs), as per Forest Practice Rules guidelines. WLPZ buffer widths are designated according to side slope. For Class II watercourses with side slopes under 30 percent, the buffer is 50 feet; for those with side slopes between 30 and 50 percent, the buffer is 75 feet; and for those with side slopes greater than 50 percent, the buffer is 100 feet. For Class III watercourses with a side slope less than 30 percent, the buffer is 25 feet, and for those with slopes greater than 30 percent, the buffer is 50 feet. In addition, all Class III watercourses near conversion areas would be protected by variable Equipment Exclusion Zones (EEZs) ranging in width from 25 feet to 50 feet. Trees and brush will not be removed from any portion of the WLPZs or EEZs.

Cover crops would also be planted in-between vineyard rows and along the outside borders of vineyard blocks. In addition, overland flow of stormwater would be routed into settling basins to reduce turbidity. All of the above factors would serve to intercept airborne and waterborne pesticide residues.

The vineyard has been designed to ensure that agricultural runoff does not enter either the Annapolis manzanita or thin-lobed horkelia preserves, as evidenced by Mitigation Measures 3.4-1 and 3.4-2 of the *Biological Resources* chapter of this Draft EIR, which state that following completion of vineyard development activities, the applicant shall ensure that any herbicide applications which may take place in the nearby vineyard unit(s) do not affect or enter the thin-lobed horkelia and Annapolis manzanita reserves. The plan shall be subject to the review and approval of the Department of Forestry and the Sonoma County Permit and Resource

Management Department. Therefore, adverse impacts to protected vegetation are not anticipated.

Alternatives to Pesticide Use

Integrated Pest Management

One of the applicant's goals for this project is to minimize the use of pesticides and herbicides through the use of Integrated Pest Management (IPM). IPM refers to a broad array of practices that focuses on long-term prevention or suppression of pest problems with minimum impact on human health, the environment, or non-target organisms. IPM practices may include such methods as selection of resistant planting stock; modification of planting schedules and timing; sound irrigation and organic waste disposal procedures; and use of traps, mulches, cover crops, non-toxic spray oils, and natural pest enemies (biological control). The University of California has developed IPM practices specific to grape production.[4] The IPM Plan for the proposed project is listed in Table 3.8-3, below. The applicant has indicated that instead of using methyl bromide fumigation on the site's soil prior to vineyard development, resistant rootstock would be utilized by vineyard managers in order to reduce the chance of damage from agents such as grape phylloxera (*Daktulosphaira vitifoliae*), a small, soil-dwelling aphid-like insect which damages vine roots by feeding on them. The UC Pest Management Guidelines indicates that the use of resistant rootstock is the only completely effective means of phylloxera control; pesticide use is not an effective means of eradicating phylloxera. Other pest management methods that may be used on the project site could include habitat control (deer fencing around individual vineyard blocks and bird netting on vineyard rows), beneficial predator inducement (nest boxes for raptors), and predator enhancement via importation (importation of beneficial insects or bacteria).

As mentioned above, Pierce's Disease has been reported in Sonoma County.[5] While the introduction of GWSS/Pierce's Disease to the project area could have substantial negative economic effects to existing vineyards in the project area, implementation of the proposed project would not introduce this pest to the project area, because grapes would not be imported from other counties infested with GWSS (as could be the case with a winery), but rather would be grown on-site in an area that is currently free of GWSS. Furthermore, should GWSS/Pierce's Disease spread to Sonoma County, the applicant would address the issue consistent with the IPM guidelines for grape sharpshooters, which include monitoring, trapping, and chemical controls for infestations.

Table 3.8-3
Integrated Pest Management Plan for the Proposed Project

Disease/Pest	Monitoring Methods	Cultural/Chemical Control Methods (Within the context of an IMP Plan chemicals are used sparingly after cultural methods have been implemented)	Control Adjustments Near Natural Areas and Riparian Corridors
Powdery Mildew	Applications made preventively, however, weather monitoring allows expanded intervals	Canopy management (shoot thinning and positioning, leafing). Chemical controls include sulfur, Stobilurins and DMIs	Care is taken not to allow drift along vineyard edges by monitoring wind speed and direction. Sprayers turned off before row end if necessary. Edges treated separately from the outside.
Botrytis Bunch Rot	Visual Monitoring	Canopy management and leaf removal provides primary control. Serenade™ and Vangard™ have been used for chemical control	Care is taken to not allow drift along vineyard edges. See Powdery Mildew
Grape Phylloxera		Resistant rootstock exclusively used	
Spider Mites	Monitoring includes mite counts per leaf and assessment of distribution of mites in canopy.	Dust control and irrigation management and avoidance of excessive sulfur. Occassionally Agri-mek™ or Nexter™ miticides are used in spot application.	Care is taken to not allow drift along vineyard edges. See Powdery Mildew
Grape leafhopper	Monitoring of GLH counts/leaf and injury	Vigor and canopy management. Occasionally, Provado™ applied to limited acreage.	Care is taken to not allow drift along vineyard edges. See Powdery Mildew
Weeds	Monitoring of under vine areas	Contact systemic herbicides (eg., Roundup™). Spot hand weeding, no cultivation.	Care is taken to not allow drift along vineyard edges. No cultivation reduces erosion risk.
Pierce' s Disease and Sharpshooters	Not seen or expected at vineyard	Occasionally, Provado™ applied to limited acreage.	If needed: Care is taken to not allow drift along vineyard edges. See Powdery Mildew

Source: Don Clark, Nord Vineyard Services - Vineyard Manager for Artesa, April 2008.

Fish Friendly Farming

In addition to the use of IPM, the Fairfax vineyard would be enrolled in the Fish Friendly Farming Program[6] and the California Association of Winegrape Growers Sustainable Winegrowing Program.[7] Other Artesa vineyards already participate in the Sustainable Winegrowing Program. One of the primary goals of the Fish Friendly Farms program is to limit chemical use in order to reduce impacts on fish species. Chemical use is reduced through the implementation of Beneficial Management Practices.

Conclusion

Through the applicant's use of IPM practices and compliance with all current pesticide and herbicide application regulations, the risk to people or biological resources from the application of agricultural chemicals during vineyard operations would not be adverse. However, should an accident cause the unregulated release of agricultural chemicals into the environment a ***potentially significant*** impact could occur.

Mitigation Measure(s)
Implementation of the following mitigation measure would mitigate potential impacts to a *less-than-significant* level:

3.8-4 Implement Mitigation Measure 3.7-4.

3.8-5 Impacts from wildfire hazards.

As shown in Figure 3.8-1, the project site is located within an area with moderate or high potential for large wildland fires. The terrain around Annapolis is rugged, with steep slopes below the semi-level ridgetop. The area is heavily vegetated with timber, grassland, and chaparral, and summer and fall climatic conditions are warm and dry. As such, the area has been identified as having a seasonal moderate to high fire hazard. Therefore, the possibility exists for wildland fires to have an adverse effect on the project site. The site is considered to be wildland, and CAL FIRE is the agency responsible for fire suppression.

Following the timber harvest, any remaining woody material not suitable for commercial use would be piled and/or chipped onsite. During vineyard operations all pruned vegetation would be chipped and spread as mulch, and burning would not occur. Therefore, although the project would not be expected to result in an adverse impact related to the creation of fires, because the project site is identified by CAL FIRE as a moderate to high fire hazard area, the impact of wildland fire on the proposed project, including employees associated with the project, would be considered ***potentially significant***.

Mitigation Measure(s)
Implementation of the following mitigation measure would mitigate potential impacts to a *less-than-significant* level:

3.8-5 *A fire hazard reduction zone shall be observed along those portions of the timberland conversion area that are adjacent to Annapolis Road, a county maintained public road. The fire hazard reduction zone shall extend 100 feet from the edge of Annapolis Road. Within this zone, slash created and trees knocked down by road construction or timber operations shall be treated for fire hazard reduction by lopping, piling and burning or removal from the zone. Lopping used within a fire hazard reduction zone shall consist of severing and spreading slash so that no part of it remains more than 30 inches above the ground.*

Cumulative Impacts

Cumulative impacts to Hazards are analyzed in Impact Statement 4-9 of Chapter 4, *Cumulative Impacts*.

Endnotes

[1] *Sonoma County General Plan*, November 1989.
[2] Erickson Engineering, Inc., *Erosion Control and Mitigation Plan*, April 14, 2008.
[3] *Sonoma County Hazard Mitigation Plan*, September 2006.
[4] http://www.ipm.ucdavis.edu/PMG/selectnewpest.grapes.html
[5] http://www.cdfa.ca.gov/pdcp/images/PDdistributionByCounty.jpg
[6] http://www.fishfriendlyfarming.org/a_why.html
[7] http://www.sustainablewinegrowing.org/

3.9 TRANSPORTATION AND CIRCULATION

3.9 TRANSPORTATION AND CIRCULATION

INTRODUCTION

This section describes the existing and future setting for transportation and circulation both with and without the proposed project. The analysis provides information on local roadway networks, levels of service, the potential effects associated with increases in traffic volumes as a result of the proposed project, and the increased demand for transit service and bicycle facilities associated with the project. Information in this section is based on the Traffic Impact Study[1] prepared by TJKM Transportation Consultants (Draft EIR Appendix Q), the project Timber Harvest Plan[2] (Draft EIR Appendix E), and the Sonoma County General Plan.[3]

ENVIRONMENTAL SETTING

The Fairfax Conversion Project involves the development of an approximately 190-acre vineyard on a 324-acre property in Sonoma County. Located on the Pacific coastline, Sonoma County is bordered by Mendocino County to the north, Lake and Napa Counties to the east, and Marin County to the south. The project area is located on a broad, flat ridge between Grasshopper Creek and the Wheatfield Fork of the Gualala River. The project site is accessible from Annapolis Road (a county road) via two private permanent gravel roads and seasonal roads.

Existing Traffic Infrastructure

Existing roadways in the vicinity of the Fairfax Conversion project site are shown in Figure 3.9-1 and described below.

Roadways

State Route 1 (SR-1) is a scenic two-lane roadway that runs north/south. The roadway has sharp horizontal curves, resulting in inadequate line of sight for most sections. An advisory posted speed limit of 40 mph is installed on most segments of the roadway. Immediately north of Annapolis Road, the peak hour traffic volume is approximately 248 vehicles per hour (vph) in the AM period and 214 vph in the PM period.

Annapolis Road is a two-lane undivided roadway with noticeable horizontal and vertical curves resulting in poor line of sight. Annapolis Road is a rural road fronted by open space, forest, and vineyards. The refuse disposal transfer station located about 8.5 miles from Annapolis Road/State Route 1 (SR-1) generates truck traffic on Annapolis Road. A small airport is also located off Annapolis Road. The posted speed limit on Annapolis

Road is 30 mph. At its northern terminus, Annapolis Road intersects with SR-1. At its southern terminus, Annapolis Road meets Stewarts Point Road via a narrow stream bridge. Just east of SR-1, the peak hour traffic volume is approximately 140 vph in the AM period and 158 vph in the PM period. Stewarts Point Road is a two-lane undivided roadway with noticeable horizontal and vertical curves resulting in poor line of sight for motorists. Stewarts Point Road is a rural road fronted by forests. A few farmhouses are located along Stewarts Point Road near SR-1. The peak hour traffic volume immediately east of SR-1 is approximately 80 vph in the AM period and 72 vph in the PM period.

Study Intersections and Roadway Segments

The intersections and roadway links studied for the Fairfax Conversion project and their existing conditions are described in detail below.

Intersections

The following three existing unsignalized intersections were analyzed to determine if the proposed project would have any significant traffic impacts on the surrounding roadway network (See Figure 3.9-1):

1. SR-1 / Annapolis Road
2. SR-1 / Stewarts Point Road
3. Stewarts Point Road / Annapolis Road

The existing turning movement volumes and lane configurations for each existing intersection are shown in Figures 3.9-2 and 3.9-3 respectively.

Roadway Segments

The Traffic Impact Study also evaluated the level of service for the following roadway segments/links:

1. SR-1 between Annapolis Road and Stewarts Point Road
2. Annapolis Road between SR-1 and Stewarts Point Road
3. Stewarts Point Road between SR-1 and Annapolis Road

Level of Service Criteria

Level of Service (LOS) is a qualitative measure describing operational conditions within a traffic stream and how the conditions are perceived by motorists and passengers. The LOS generally describes these conditions in terms of such factors as speed and travel time, delay, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. Six LOS are defined for each type of facility (i.e., roadway or intersection) that is analyzed. The LOS levels are given letter designations from A to F, with LOS A representing the best operating conditions and LOS F representing the worst.

Figure 3.9-1
Project Location

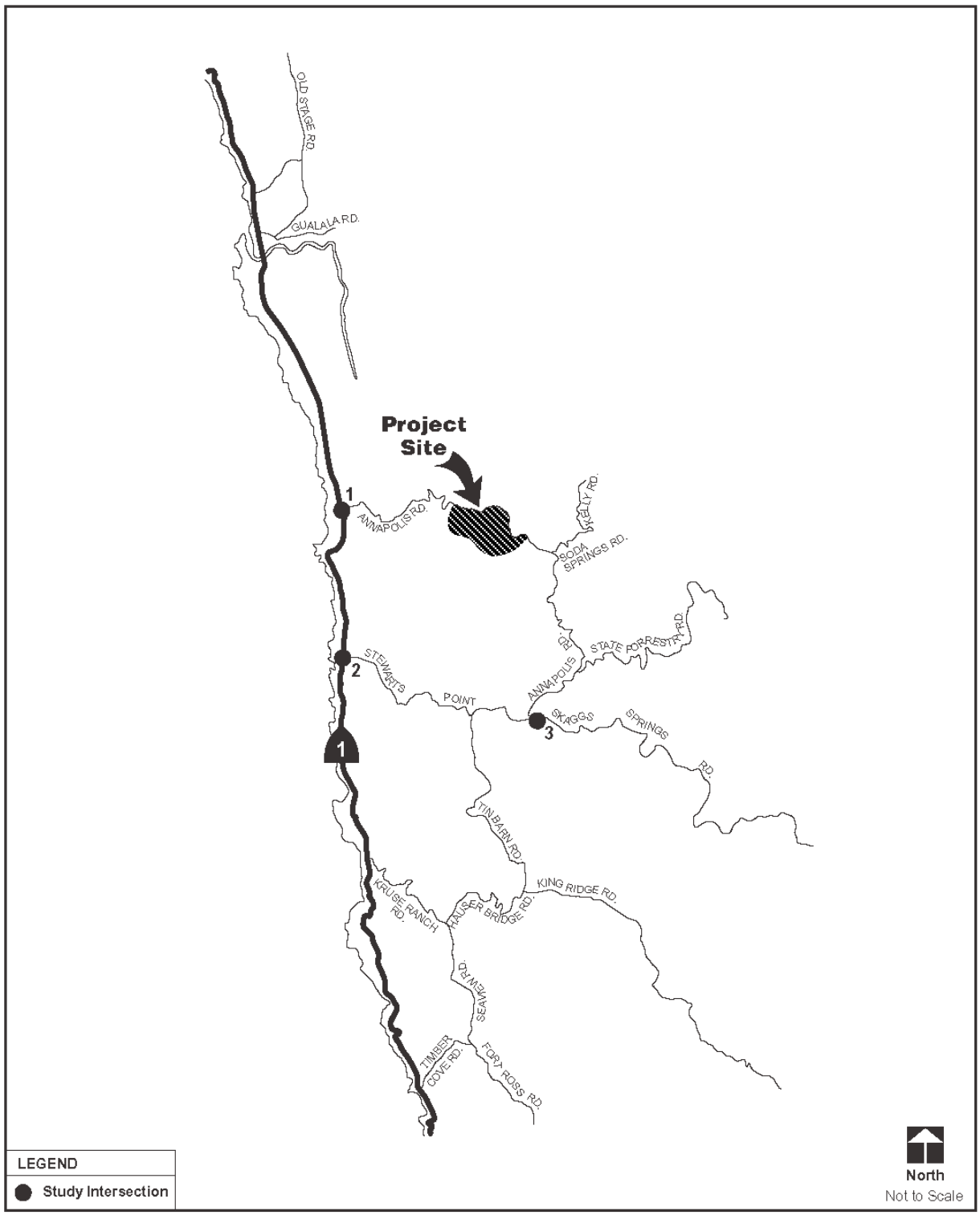


Figure 3.9-2
Existing Turning Movement Volumes

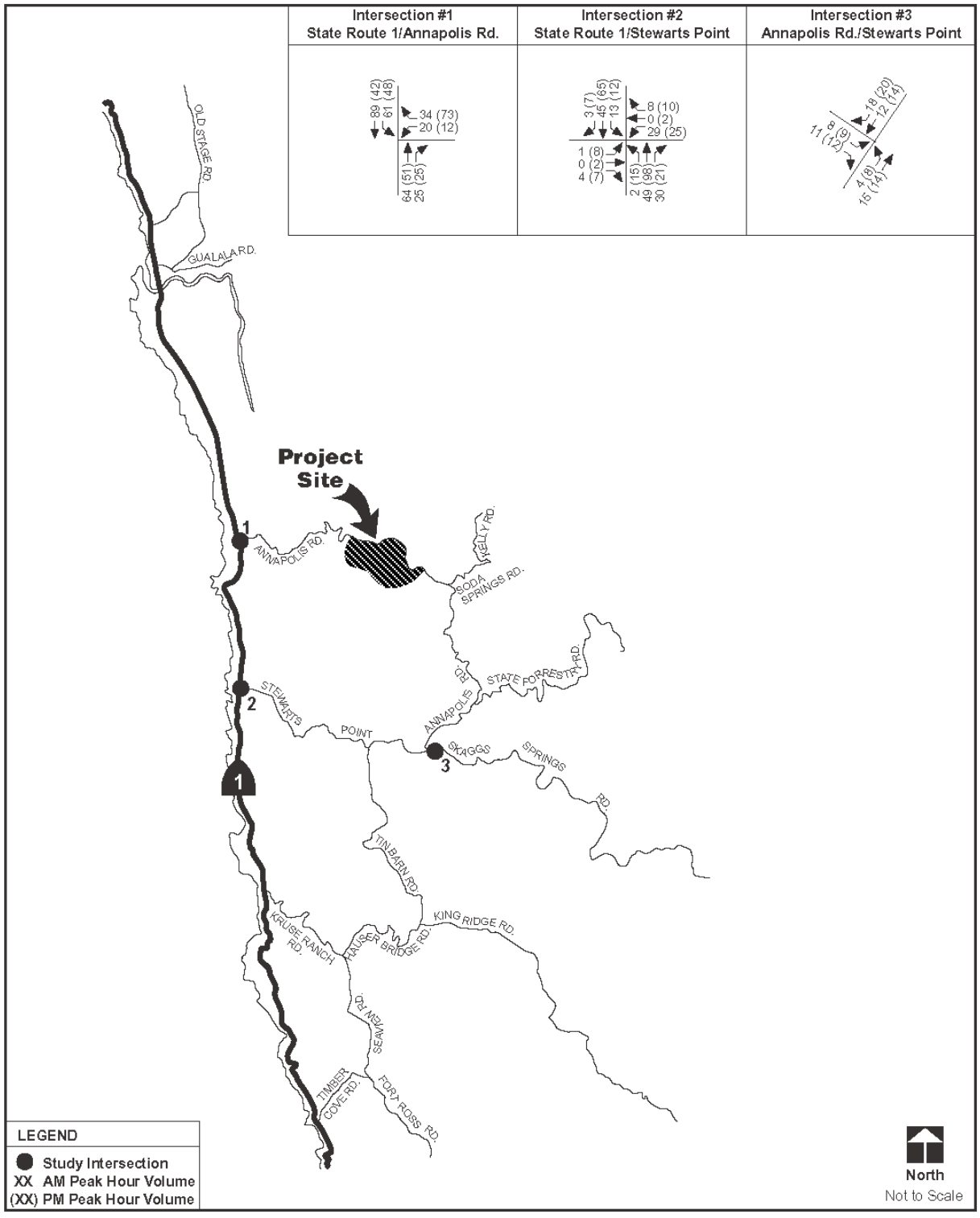
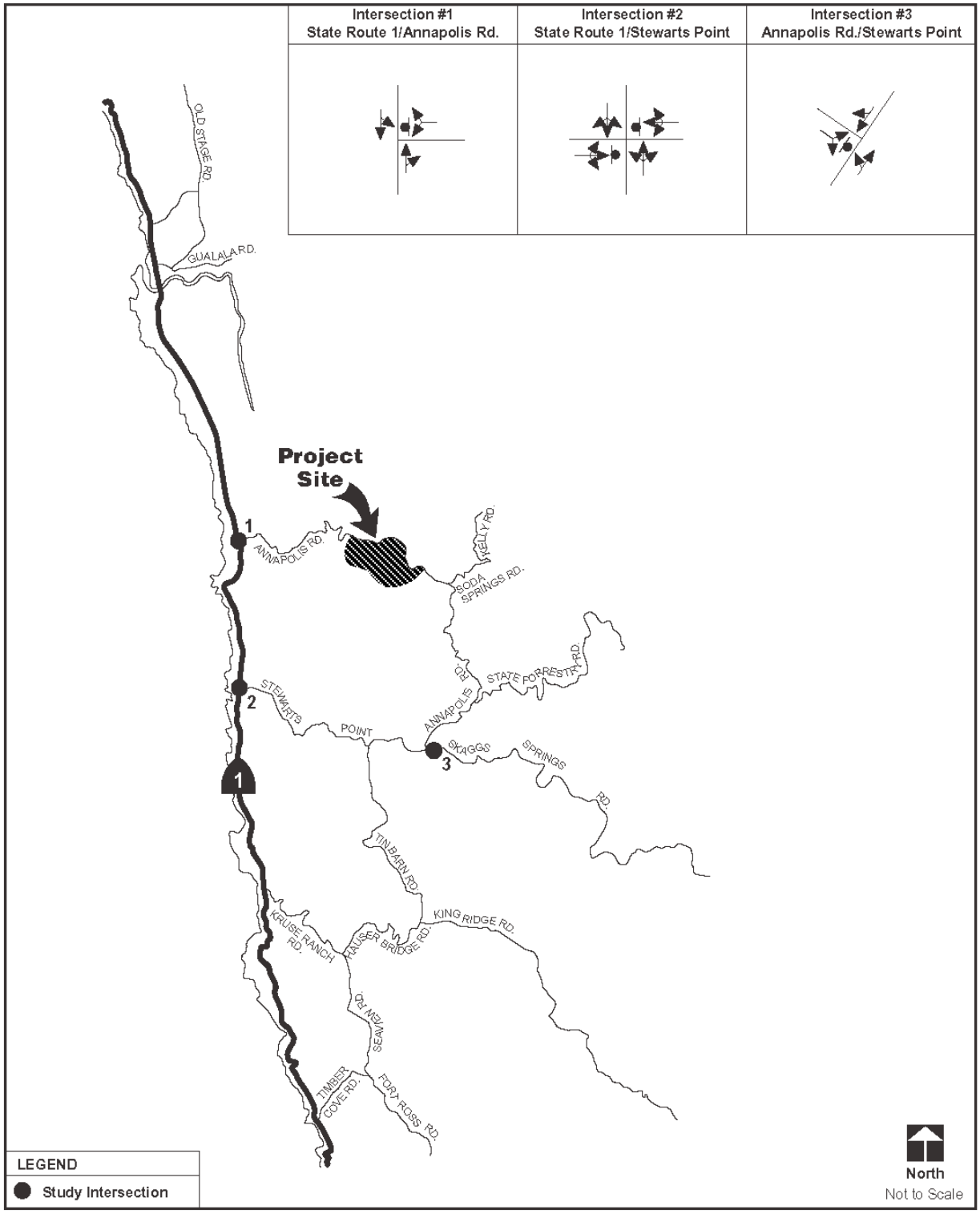


Figure 3.9-3
Existing Lane Configurations



LOS criteria for unsignalized intersections are provided in Table 3.9-1. Peak hour intersection conditions are reported as delay in seconds per vehicle with corresponding LOS.

Table 3.9-1
Unsignalized Intersection LOS Criteria

Level of Service	Description	Average Control Per Vehicle (Seconds)
A	Little or no delays	≤ 10.0
B	Short traffic delays	> 10.0 to 15.0
C	Average traffic delays	> 15.0 to 25.0
D	Long traffic delays	> 25.0 to 35.0
E	Very long traffic delays	> 35.0 to 50.0
F	Extreme traffic delays with intersection capacity exceeded	> 50.0

Source: TJKM, December 2, 2004.

Existing Traffic Counts

The existing AM and PM peak hour traffic turning movement counts for the study intersections were conducted by BayMetrics Traffic Resources in the second week of December 2003. The population of Annapolis has not changed substantially in the intervening years, nor have there been land use changes to the degree that the traffic conditions are significantly different. The traffic counts are included as Appendix B in the Traffic Impact Study, and are summarized in Figure 3.9-2.

Existing Intersection Operations

All the study intersections are unsignalized and operate at an acceptable LOS A for both major and minor movements. Table 3.9-2 summarizes the results of the intersection LOS analysis for existing conditions. Detailed calculations are contained in Appendix C of the Traffic Impact Study.

Transit Service

The Mendocino Transit Authority (MTA) provides bus services to various locations in Mendocino County. The South Mendocino Coast Bus Route 95 provides service from Point Arena south to Santa Rosa. Annapolis Road, which provides access to the project site, is located along Route 95.

Table 3.9-2
Existing Peak Hour Intersection Level of Service

Intersection	Control	AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS
SR-1/Stewarts Point Road	Two-Way Stop	8.6 (9.7)	A (A)	9.0 (10.2)	A (A)
Stewarts Point Road/ Annapolis Road	One-Way Stop	2.8 (8.6)	A (A)	3.1 (8.6)	A (A)
SR-1/Annapolis Road	One-Way Stop	7.8 (10.2)	A (A)	6.0 (9.7)	A (A)

Note: LOS = Level of Service
X = Intersection level of service
X.X = Overall intersection delay in seconds per vehicle
(X) = Level of service for the minor approach
(X.X) = Average delay for the minor approach (in seconds per vehicle)
Delay = Values in parenthesis indicated average delay for the critical movement at One- and Two-Way STOP controlled intersections.
Source: TJKM, December 2, 2004.

REGULATORY CONTEXT

Existing policies, laws, and regulations that would apply to the proposed project are summarized below.

State

The California Department of Transportation (Caltrans) has jurisdiction over state highways. Therefore, Caltrans controls all construction, modification, and maintenance of state highways, such as SR-1.

Local

Sonoma County General Plan

The following Sonoma County General Plan Circulation and Transit Element policies would be applicable to the proposed project.

Policy CT-5a — Use Figure CT-6a on page 313 as the improvement plan for this area's freeways, arterials, and collectors. All other roadways are local roads.

Policy CT-5b — Develop a bypass route for SR-1 at Bodega Bay as shown in the Local Coastal Plan. No other new facilities are proposed in the arterial and collector systems.

Policy CT-5c	Design improvements on SR-1 to improve traffic flow during peak periods of recreation travel including turn lanes for Sonoma Coast State Beaches, parking areas and shoulder improvements.

IMPACTS AND MITIGATION MEASURES

Standards of Significance

According to the Sonoma County General Plan, a significant traffic-related impact would occur if the addition of project-related traffic were to result in any of the following:

- Conflicts with the Sonoma County General Plan objective of maintaining LOS C or better on arterial and collector roads. It should be noted that this objective is not rigidly applied and may be varied dependent upon local values (i.e., Table CT-1, Table CT-2 or Figure CT-6e [1] of the General Plan);
- Substantially increased hazards due to a design feature (e.g., sharp curves or dangerous intersection) or incompatible uses (e.g., farm equipment);
- Inadequate emergency access; or
- Conflicts with adopted alternative transportation policies, plans, or programs.

Additionally, according to Sonoma County traffic impact study guidelines, the LOS standard for intersections is LOS D or better at the build-out of the Sonoma County General Plan. LOS D is generally considered to be an acceptable threshold for intersection operations. Therefore, any intersections exceeding this threshold would be considered significantly impacted.

Method of Analysis

TJKM Transportation Consultants conducted a Traffic Impact Study for the Fairfax Conversion project. The analysis performed by TJKM is intended to quantify the traffic impacts of the project and to address the circulation and roadway improvements needed to mitigate these impacts. It should be noted that the Traffic Impact Study was conducted for a larger net vineyard area than is currently proposed. Therefore, the traffic analysis is a conservative estimate that reflects a larger potential impact than would occur under the proposed project. Where appropriate trip numbers have been changed to reflect the reduced project size, the changes are noted in the text. The analysis, summarized below, encompasses all of the major intersections that could be affected by the proposed project. The analysis considers the project's impacts on current traffic conditions, as well as conditions occurring in the future. Level of service methodology is provided as Appendix A of the Traffic Impact Study.

The operating conditions at all study intersections were evaluated using TRAFFIX version 7.6 software and Highway Capacity Manual (HCM) 2000 methodology.

Appendix A of the Traffic Impact Study contains a detailed description of this methodology.

Scenarios

The following scenarios were evaluated for this study:

- *Existing* – Intersection and roadway conditions based on existing traffic counts and field surveys.
- *Existing Plus Project* – Intersection and roadway conditions based on existing plus project traffic count estimates.
- *Cumulative Without Project* – Future (2025) forecast conditions assuming full build-out of the Sonoma County Capital Improvements Program (2000) and using an annual growth factor of 9.7 percent.
- *Cumulative Plus Project* – Future (2025) forecast conditions with the addition of project-related traffic.

Existing Plus Project Scenario

Short-term Construction Traffic

The existing seasonal roads would be used to access timber within the project area, and would require minimal grading for maintenance purposes during timber hauling operations. One temporary road would be constructed for timber harvesting operations. The road would be located on stable slopes of less than 15 percent. In addition, the road would be constructed with a minimal amount of excavation and is not located within any of the WLPZs adjacent to the plan area. The road would be removed following timber harvesting operations and would become part of the proposed vineyard.

Both the timberland conversion and vineyard development associated with the proposed project would result in the generation of short-term construction-related traffic on area roadways. Traffic impacts to area roadways from project timber harvesting and vineyard development activities are discussed qualitatively in the THP, and are assessed in this EIR chapter under Impact Statement 3.9-2.

Vineyard Operational Trip Generation

Trip generation is defined as the number of "vehicle trips" produced by a particular land use or project. A trip is defined as a one-direction vehicle movement. The total number of trips generated by each land use includes the inbound and outbound trips.

The following analysis of trip generation characteristics of vineyards is deduced from the production input and output of a typical vineyard, trip generation research for wineries conducted by Sonoma County, and a telephone interview with the vineyard Director of Operations.

A single grapevine can produce 6.6 pounds of grapes during a typical year, enough to make 2.4 bottles of wine. A one-acre block of vineyard may:

- Yield about 1,089 vines;
- Yield about 4.5 tons of grapes; and
- Require 2.5 labor hours for an eight-person crew.

Vineyard traffic consists of two components, employee traffic and truck traffic. Trips generated during the harvest season are used for this analysis.

Employees

The largest component of vineyard traffic is employee trips. Seasonal employees are used during the harvest season. Seasonal employment can range from two months to six months. The number of seasonal employees needed depends upon the season and the rate at which the grapes ripen. A good yield would require about 30 to 40 tons per day harvest.

Interviews with vineyard operators have indicated that seasonal workers are typically hired on a piece rate basis (i.e., paid by amount of tonnage harvested) and full-time employees on an hourly basis. For a 200-acre vineyard, nine eight-person crews (i.e., 72 seasonal workers) would be needed for harvesting the grapes. Six full-time employees would be needed for vineyard operations such as vineyard equipment maintenance, irrigation, tractor work, etc.

Employee trips constitute home-to-work trips, lunch trips, errands, and other business trips. Ten percent of the employees are expected to carpool from home to work, while 50 percent are anticipated to carpool for lunch. Errands and other business would be expected to generate 0.2 trips per employee.

To be conservative in the traffic analysis, TJKM assumed a high percentage of car ownership among seasonal workers. Based upon an average occupancy of three employees per car for carpooling, average employee traffic is estimated at 128 trips per day.

Vineyard employees usually start work at 6:30 AM and end work at 3:30 PM. This shift is outside typical peak AM and PM periods for commute traffic (7:00 to 9:00 AM and 4:00 to 6:00 pm, respectively). Although such employee trips would normally not be included in estimating peak period traffic, the morning and afternoon trips are assumed to occur during the peak hours for the purpose of this analysis in order to gauge the worst-case scenario of traffic flow. The morning and afternoon employee trips are estimated at 73 trips (obtained by assuming that ten percent would carpool with a three-person vehicle occupancy and the remaining 70 employees would drive alone).

Truck Traffic

Truck traffic varies with the season. Trucks transport grapes from vineyards to wineries during the harvest season, which runs about eight weeks between late August and late October.

Non-harvest truck (gross vehicle weight less than 26,000 pounds) trips may include haulage of liquid fertilizers with a capacity of 3,000 gallons per truck. Based on information from Don Clark, the Artesa Vineyard Manager, an estimated 15 gallons of concentrated liquid fertilizer would be needed to fertilize the vineyard. Specific fertilizer application amounts depend upon vine needs. On the average, the vineyard may require one truck load of liquid fertilizer for the entire year. This is a reduction from the six truck trips noted in the Traffic Study.

Grapes are usually delivered in double gondola trucks carrying 22 tons of grapes each, or on flatbed trucks carrying 11 tons of grapes each. In order to estimate the number of trucks required to deliver grapes, a truck composition of 80 percent gondola trucks and 20 percent flatbed trucks was used. These assumptions are based on TJKM's familiarity and experience in studying similar vineyard projects in the area. On the average, each truck hauling grapes would carry 19.8 tons of fruit.

Using the TJKM formula, a 137-acre vineyard could yield up to 617 tons of grapes annually. This would require about 31 (= 617/19.8) trucks to haul the grapes during the harvest season. At an average harvest rate of 30 tons per day, approximately 21 maximum working days would be needed to harvest all 617 tons of grapes. This total tonnage and number of day estimate is less than the conservative estimate evaluated in the Traffic Impact Study due to subsequent project revisions. Roughly five days is assumed for other non-harvest activities such as loading trucks and preparing the soil for the next planting.

The total number of weekday truck trips for the harvest season is approximately the total number of trucks divided by the number of weekdays for the harvest, multiplied by two trips (one inbound and one outbound) per truck. The result of this equation is an average of two truck trips per day required during the harvest season.

Table 3.9-3 includes a summary of peak hour traffic generated by the proposed vineyard.

<u>Vineyard Operational Trip Distribution and Assignment</u>

Trip distribution is the process of determining in what proportion vehicles would travel between the project site and various destinations within the study area. Trip assignment is the process of determining the various routes vehicles would take from the project site to each destination.

Table 3.9-3
Project Trip Generation

AM Peak Hour						PM Peak Hour					
Employee Trips		Truck Trips		Total Trips		Employee Trips		Truck Trips		Total Trips	
In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
73	0	2	0	75	0	0	73	0	2	0	75

Note: Trips assumed to occur during AM and PM peak periods.

Source: TJKM, December 2, 2004.

Traffic from SR-1 would only have access to the project site via Annapolis Road from the north and Stewarts Point Road from the south. Access via Annapolis Road appears to be the shorter of the two routes. Additionally, traffic using Stewarts Point Road would have to cross two narrow one-lane bridges, making Annapolis Road the more desirable means of accessing the project site.

Figure 3.9-4 illustrates the trip distribution assumptions. The assumptions are based on the existing traffic counts and knowledge of the area. Projected trip distribution is as follows:

- 30 percent of traffic using Annapolis Road would travel to and from the north on SR-1.
- 30 percent of traffic using Annapolis Road would travel to and from the south on SR-1.
- 5 percent would travel to and from the surrounding areas.
- 5 percent of traffic using Stewarts Point Road would travel to and from the north on SR-1.
- 30 percent of traffic using Stewarts Point Road would travel to and from the south on SR-1.

Existing Plus Project Traffic

The estimated number of vehicle trips that would be generated by the proposed project was added to the existing turning movement volumes to come up with the existing plus project traffic volume projections. Figure 3.9-5 illustrates the existing plus project traffic volume projections at the study intersections. Detailed calculations are contained in Appendix D of the Traffic Impact Study.

Figure 3.9-4
Project Trip Distribution

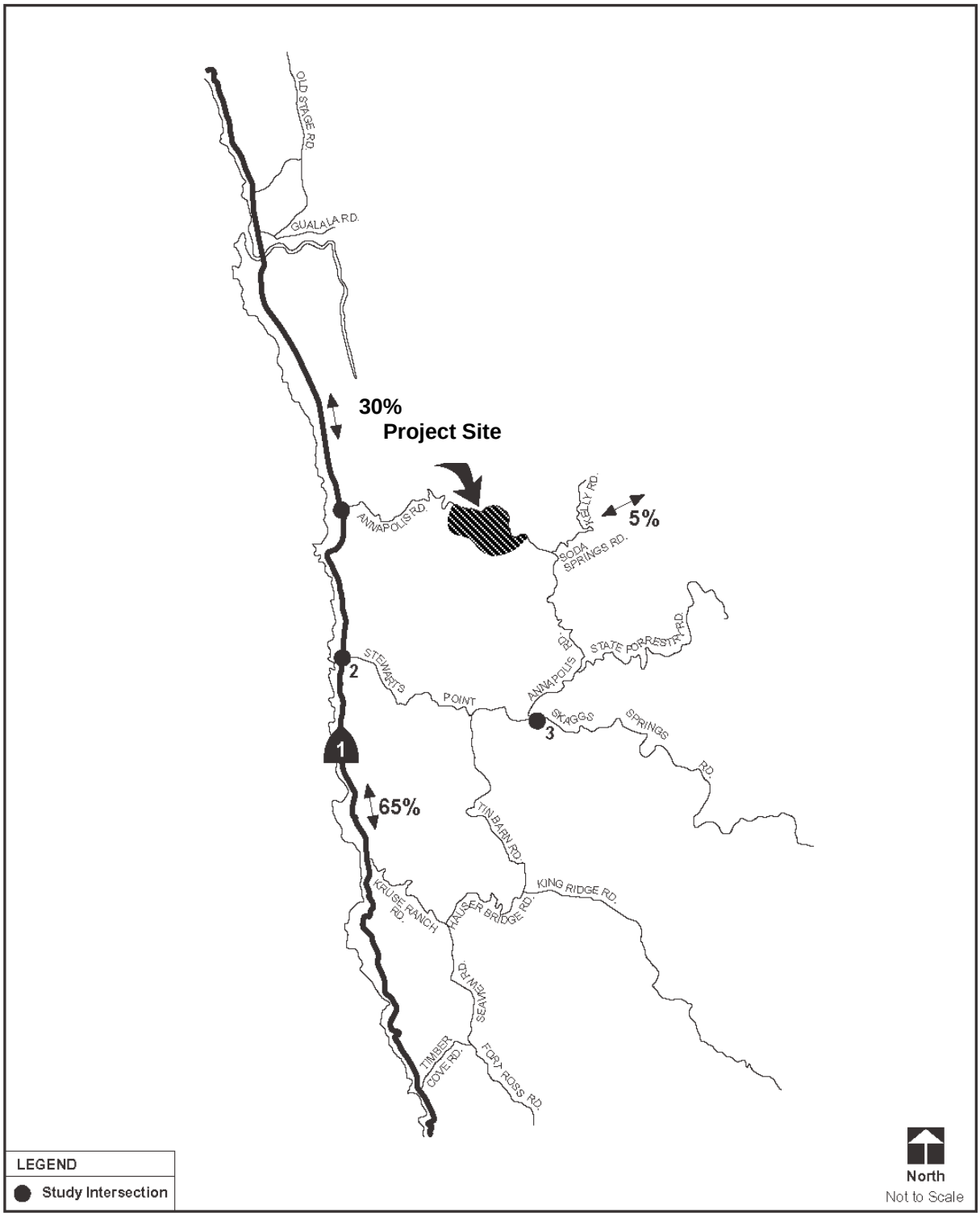
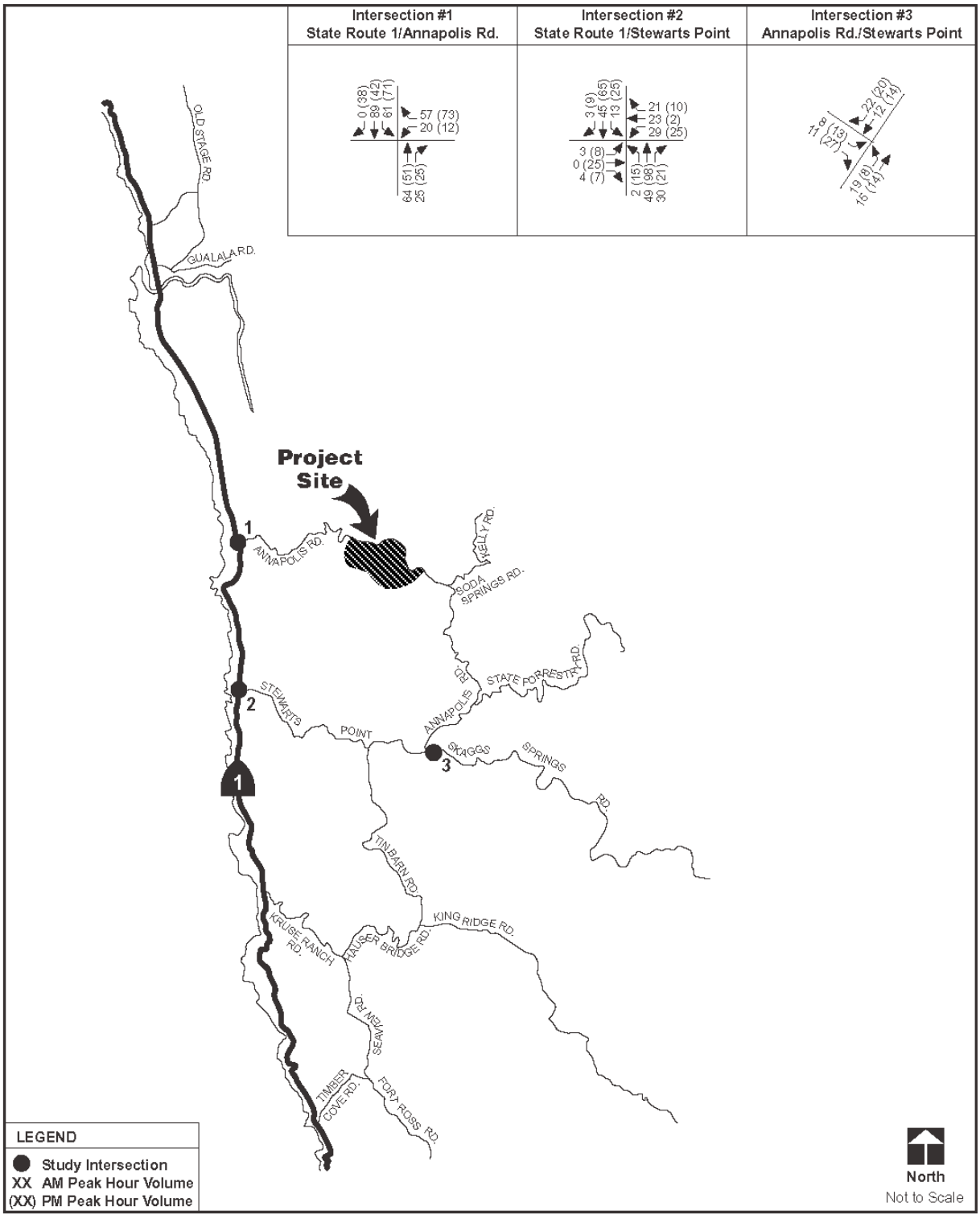


Figure 3.9-5
Existing Plus Project Turning Movement Volumes



Existing Plus Project Study Intersection LOS

Peak hour intersection conditions are reported as delay in seconds per vehicle with corresponding LOS. The operating conditions at all study intersections were evaluated using TRAFFIX version 7.6 software and Highway Capacity Manual (HCM) 2000 methodology. Appendix A of the Traffic Impact Study contains a detailed description of this methodology. Table 3.9-4 summarizes the intersection LOS under this scenario.

Link Level of Service Analysis

The Existing Plus Project LOS for the SR-1, Annapolis Road, and Stewarts Point Road segments/links are summarized in Table 3.9-5. Please refer to Appendix E of the Traffic Impact Study for detailed data.

The projected contribution of the proposed project to vehicle trips on each roadway segment is shown in Table 3.9-6. Table 3.9-6 shows a small percentage of traffic contributing to the study roadway segments would be generated from the project. For example, the project would contribute about 32 percent of the traffic under Existing plus Project Traffic Conditions on Stewarts Point Road, a condition not likely to have an impact on the one-way traffic movement on the two small bridges on Annapolis Road and Stewarts Point Road.

Project-Specific Impacts and Mitigation Measures

3.9-1 Operational traffic impacts to study intersections and roadway segments/links.

Although the proposed vineyard would not be open to the public and therefore not increase existing tourist traffic on area roadways, the vineyard would generate traffic during pruning and harvest periods. Annual pruning of the vines would take approximately two to four weeks. Traffic during the pruning period would be limited to passenger vehicles and standard trucks. During harvest time, additional traffic would be limited to passenger vehicles and trucks driven by vineyard personnel and commercial grape trucks. Harvesting operations are also estimated to take a maximum of two to four weeks each year. Commercial grape truck traffic would be limited to approximately three loads per day at maximum vineyard production.

Due to the short duration of pruning and harvesting operations and the limited number of vehicles required to transport project personnel, this traffic would not significantly change current traffic patterns along the local roadways. Nor would the addition of a maximum of three commercial truck trips per day, for a maximum of one month per year, be expected to result in a significant adverse impact on current traffic patterns along the project haul routes.

Table 3.9-4
Existing Plus Project Intersection Levels of Service

Intersection	Control	AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS
SR-1/Stewarts Point Road	Two-Way Stop	7.4 (10.0)	A (A)	8.6 (10.4)	A (A)
Stewarts Point Road/ Annapolis Road	One-Way Stop	3.4 (8.7)	A (A)	4.2 (8.7)	A (A)
SR-1/Annapolis Road	One-Way Stop	8.6 (11.4)	A (A)	6.7 (9.9)	A (A)

Note: LOS = Level of Service
X = Intersection level of service
X.X = Overall intersection delay in seconds per vehicle
(X) = Level of service for the minor approach
(X.X) = Average delay for the minor approach (in seconds per vehicle)
Delay =Average stopped delay at signalized intersections and average delay for all movements at STOP-controlled intersections. Values in parenthesis indicated average delay for the critical movement at One- and Two-Way STOP-controlled intersections.

Source: TJKM, December 2, 2004.

Table 3.9-5
Existing Plus Project Peak Hour Level of Service on Arterial Roads

Road	Lanes per Dir.	Hourly Capacity	Time of Day	Volume	Volume/ Capacity Ratio	LOS
SR-1	1	2280	AM	306	0.13	B
			PM	272	0.12	B
Annapolis Road	1	1780	AM	164	0.09	B
			PM	182	0.10	B
Stewarts Point Road	1	1780	AM	114	0.07	A
			PM	106	0.06	A

Source: TJKM, December 2, 2004.

Table 3.9-6
Percent Project Trip Contribution (Link Level)

Roadway Segment	Existing Traffic (AM)	Project Traffic (AM)	Total Traffic (AM)	Percent Project Traffic (AM)	Existing Traffic (PM)	Project Traffic (PM)	Total Traffic (PM)	Percent Project Traffic (PM)
SR-1 (SB link)	248	58	306	*19*	124	58	272	*22*
Annapolis Road (WB link)	140	24	164	*15*	158	24	182	*14*
Stewarts Point Road (WB link)	80	34	114	*30*	72	34	106	*32*

Source: TJKM, December 2, 2004.

Intersection and roadway segment levels of service under the Existing Plus Project scenario were calculated by TJKM Transportation Consultants, and are shown in Tables 3.9-4 and 3.9-5 below.

As shown in Table 3.9-4, the TJKM traffic impact analysis found that all study intersections are projected to operate at LOS A under Existing Plus Project Conditions. A comparison of Tables 3.9-2 and 3.9-4 illustrates that the LOS for the study intersections remain unchanged with the addition of the proposed project, with insignificant increases in delays in the near term.

Additionally, Table 3.9-5 shows that the SR-1, Annapolis Road, and Stewarts Point Road segments in the project vicinity are expected to operate at LOS B or better under the Existing Plus Project scenario. This result implies that traffic generated by the proposed conversion of the existing timberland area to a vineyard is not expected to cause any noticeable congestion on the SR-1, Annapolis Road, and Stewarts Point Road study segments.

For these reasons, the proposed project would have ***less-than-significant*** impacts to study intersections and study roadway segments/links.

Mitigation Measure(s)
None required.

3.9-2 Short-term traffic impacts due to timber harvesting and vineyard development.

The proposed project would result in short-term traffic increases on local roadways during the timber harvesting and vineyard development activities. These increases were evaluated qualitatively in the project THP in addition to their inclusion in the present discussion.

Timber Harvesting Operations

Timber harvested from the project site would be hauled from the Conversion/Plan Area on either of the two following routes: 1) via a private road system to Annapolis Road, then west to SR-1; or 2) via a private road system to Annapolis Road, then east on Annapolis Road to Skaggs Springs Road. From there, the trucks would head east on Skaggs Springs Road to Dry Creek Road, and then east on Dry Creek Road to SR-101. All of these roads have been historically used for log transport, and they are currently being used for transport of both logs and grapes. In addition to these and other commercial uses, these routes are used by residents of the area and tourists.

Hauling associated with the proposed timber operation would generally take place on weekdays when tourist traffic is at a minimum, thus reducing any potentially

adverse effects log hauling could have on current traffic conditions. Due to the low volume of timber to be removed from the Conversion/Plan Area, the proposed hauling operations would be of short duration. Over a three month period approximately 250 loads of logs would be removed from the project area, which would result in approximately 3 round trips per day. In addition, log hauling on these roads occurs regularly, and use of these roads for the transport of logs as a part of this conversion THP would not change the flow of traffic present on the haul routes today. As such, the proposed harvest activity would have a minimal impact on the present traffic conditions along the haul routes.

Vineyard Development Operations

The proposed vineyard development would result in increased traffic along the haul route intermittently throughout the year. During initial vineyard development operations, daily traffic to the project area would increase over existing conditions. Increased traffic would consist of standard-sized trucks and passenger vehicles used by vineyard personnel. The addition of this small number of standard vehicles during vineyard development would not have a significant effect on traffic along the proposed haul routes. During initial vineyard development, commercial vehicular traffic would be limited to the delivery of equipment and drainage and irrigation supplies to the project site. These deliveries would be conducted periodically throughout the vineyard development phase and would not result in daily commercial vehicular traffic along the haul route. As such, project-related traffic would be consistent with current commercial delivery vehicle traffic along the haul route, and would not result in a significant adverse impact on current traffic patterns.

For these reasons, project-generated traffic associated with development of the vineyard would not be adverse. However, the introduction of logging trucks to the project area would have a ***potentially significant*** impact on existing (near-term) traffic conditions.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level by ensuring that measures are taken to reduce the effect of logging and construction traffic on local roadways; thereby, enhancing roadway safety.

3.9-2 *Prior to any logging taking place on the site, the project applicant shall prepare a Construction Traffic Management Plan for review and approval by CAL FIRE. The plan should include all plans for temporary traffic control, temporary signage and striping, location points for ingress and egress of logging vehicles, staging areas, and timing of logging activity which appropriately limits hours during which large construction equipment may be brought on or off the site.*

3.9-3 On-going traffic impacts to due to vineyard management operations.

Once initial vineyard development is complete, traffic would be generated by the vineyard during pruning and harvest periods. Annual pruning of the vines would take approximately 2 to 4 weeks. Due to the short duration of pruning operations and the limited number of vehicles required to transport project personnel, this traffic would not significantly change current traffic patterns along the haul route. During harvest time, additional traffic would be limited to passenger vehicles and trucks driven by vineyard personnel and commercial grape trucks. As shown in Table 3.9-3, peak trips during this period are not expected to exceed 75 total trips in the morning and evening; including, two truck trips during each period. Harvesting operations are estimated to take a maximum of 2-4 weeks each year. Again, the additional passenger vehicle traffic generated would not affect current traffic patterns along the haul route. The addition of a maximum of 75 total vehicle trips in the morning and evening of one month per year would result in a ***less-than-significant*** impact on traffic patterns along the haul route.

Mitigation Measure(s)
None required.

3.9-4 Impacts to alternative transportation services.

The Mendocino Transit Authority Route 95 provides service from Point Arena south to Santa Rosa. Annapolis Road, which provides access to the project site, is located along Route 95. Therefore, Route 95 would provide the nearest public transportation services in the vicinity of the project site. However, the proposed project would not introduce additional residents in the area, which would generate the need for the project to be served by public transportation. Therefore, the project would have ***less-than-significant*** impacts to alternative transportation.

Mitigation Measure(s)
None required.

Cumulative Impacts

Cumulative impacts to Transportation and Circulation are analyzed in Impact Statement 4-10 of Chapter 4, Cumulative Impacts.

Endnotes

[1] *Final Report – Traffic Impact Study for Artesa Vineyards Project*, TJKM Transportation Consultants, December 2, 2004.
[2] *Timber Harvesting Plan, Fairfax Conversion*, California Department of Forestry and Fire Protection, July 2007.
[3] *Sonoma County General Plan*, Sonoma County, 1989.

3.10 NOISE

3.10 NOISE

INTRODUCTION

This section discusses the existing noise environment in the project vicinity and identifies potential impacts and mitigation measures associated with implementation of the Fairfax Conversion Project. Specifically, this section analyzes potential noise impacts stemming from the future development of the project site, relative to applicable noise criteria and the existing ambient noise environment. In addition, the analysis addresses the impacts of construction-related noise. This section was prepared by Bollard & Brennan, Inc. with assistance from Raney Planning & Management. The chapter is based on measurements conducted by Bollard & Brennan, Inc., as well as the Sonoma County *General Plan*[1] and its associated EIR.[2]

ENVIRONMENTAL SETTING

Acoustical Terminology

Noise is often described as unwanted sound. Sound is defined as any pressure variation in air that the human ear can detect. If the pressure variations occur frequently enough, they can be heard and are called sound. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second, called Hertz (Hz).

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. As a result, the decibel scale was devised. The decibel scale uses the hearing threshold (20 micropascals of pressure) as a point of reference, defined as 0 dB. Other sound pressures are then compared to the reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB, and changes in levels (dB) correspond closely to human perception of relative loudness.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable and can be approximated by the A-weighing network. A strong correlation exists between A-weighted sound levels (expressed as dBA) and the way the human ear perceives noise. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. All noise levels reported in this section are in terms of A-weighted levels. Table 3.10-1 contains definitions of acoustical terminology used in this section.

Table 3.10-1
Acoustical Terminology

Term	Definition
Acoustics	The science of sound
Ambient Noise	The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.
Attenuation	The reduction of noise.
A-Weighting	A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.
Decibel or dB	Fundamental unit of sound. A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.
CNEL	Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7-10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.
Frequency	The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz.
L_{dn}	Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.
L_{eq}	Equivalent or energy-averaged sound level.
L_{max}	The highest root-mean-square (RMS) sound level measured over a given period of time.
L_{50}	Median noise level, or level exceeded 50 percent of hour.
Loudness	A subjective term for the sensation of the magnitude of sound.
Noise	Unwanted sound.
Threshold of Hearing	The lowest sound that can be perceived by the human auditory system, generally considered to be 0 dB for persons with perfect hearing.
Threshold of Pain	Approximately 120 dB above the threshold of hearing.

Source: Bollard & Brennan, Inc., April 2004

Community noise is commonly described in terms of the "ambient" noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (Leq), which corresponds to a steady-state A-weighted sound level containing the same total energy as a time-varying signal over a given time period (usually one hour). The Leq is the foundation of the composite noise descriptor, L_{dn}, and shows very good correlation with community response to noise.

The Day-night Average Level (Ldn) is based upon the average noise level over a 24-hour day, with a +10 decibel-weighing applied to noise occurring during nighttime (10:00 PM to 7:00 AM) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because Ldn represents a 24-hour average, it tends to disguise short-term variations in the noise environment.

Existing Land Uses In The Project Vicinity

The project site is located approximately 0.5 to 0.75 miles southeast of the town of Annapolis, in rural Sonoma County, California. The areas surrounding the project site include stands of timber interspersed with grassland and chaparral. The area southwest of the site is currently being used for timber production. Existing vineyards are located northeast of the property boundary, and the general vicinity surrounding the project site also includes other areas in the process of being converted to vineyards. North of Annapolis Road is the Starcross Monastic Community. A rural residence exists immediately west of the property boundary.

The existing ambient noise environment in the immediate project vicinity is defined primarily by natural sounds (wind, birds, insects, etc). Intermittent vehicle passages on Annapolis Road also contribute to the ambient noise environment. The project area noise environment was subjectively characterized by Bollard & Brennan staff as being "fairly quiet."

To quantify existing noise levels in the project vicinity, a noise survey was conducted on the project site on March 11, 2004. Significant amounts of new development and traffic have not been added to area roads since the time of the noise survey; therefore, the survey results are still sufficient for the purposes of this analysis. Please see Figure 3.10-1 for locations of the ambient noise measurement sites. The measurement results are provided in Table 3.10-2.

The ambient noise survey results indicate that the measured daytime ambient noise levels at the project site are fairly low, a condition typical of rural areas that are removed from appreciable traffic or other noise sources.

Figure 3.10-1
Ambient Noise Measurement Sites

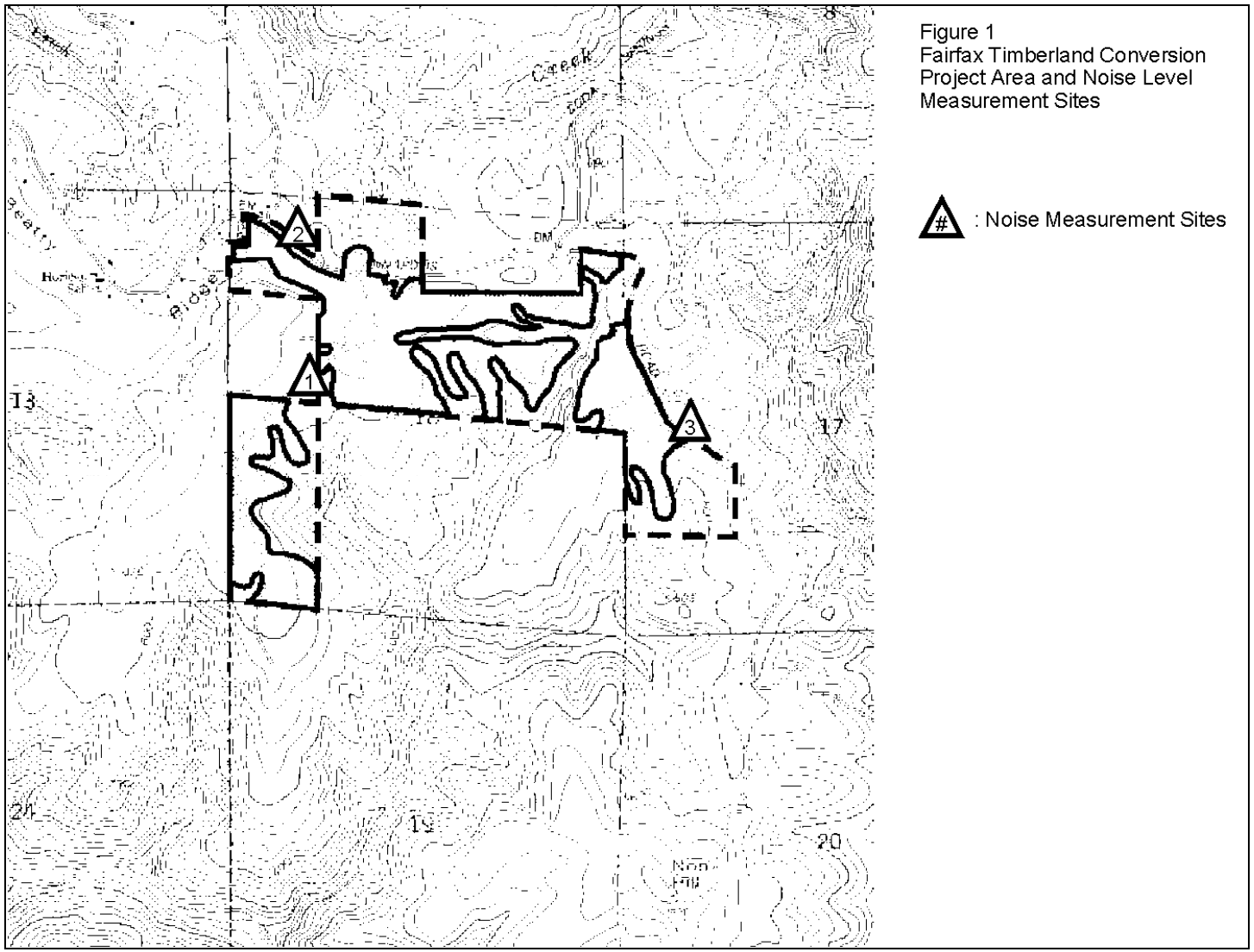


Table 3.10-2
Ambient Noise Monitoring Results
Fairfax Conversion Project Site - March 11, 2004

Site	Location	Measured Sound Level, dBA	
		Average (L_{eq})	Maximum (L_{max})
1	Fern Valley Road at Wellman Property	33	55
2	Annapolis Road	47	68
3	Eastern Site Boundary	31	42

Source: Bollard & Brennan, Inc.

REGULATORY CONTEXT

To limit population exposure to physically and/or psychologically damaging noise levels, the State of California, various county governments, and most municipalities in the State have established standards and ordinances to control noise. Specifically, standards and regulations included in the Sonoma County General Plan Noise Element and CEQA are applicable to the proposed project. The following provides a general overview of the existing regulations established by the County and CEQA.

State

Under the California Environmental Quality Act (CEQA) guidelines a project would have a significant impact if the project "increases substantially the ambient noise levels for adjoining areas." In practice, significant noise impacts are usually identified in CEQA analyses if the project would result in a clearly noticeable ambient noise level increase, commonly considered to be 5 dB.

Local

Sonoma County General Plan

The Sonoma County General Plan sets forth various goals, policies, and programs that would apply to projects in the unincorporated areas of Sonoma County. The following goals, policies, and programs are applicable to the proposed project:

Goal NE-1 Protect people from the harmful effects of exposure to excessive noise and to achieve an environment in which people and land uses may function without impairment from noise.

Objective NE-1.1	Provide noise exposure information so that noise impacts may be effectively evaluated in land use planning and project review.
Objective NE-1.2	Develop and implement measures to avoid exposure of people to excessive noise levels.
Objective NE-1.3	Protect the present noise environment and prevent intrusion of new noise sources which would substantially alter the noise environment.
Objective NE-1.4	Mitigate noise from recreational and tourist serving uses.

IMPACTS AND MITIGATION MEASURES

Standards of Significance

For purposes of this EIR, implementation of the proposed project would result in significant noise and vibration impacts if the project would result in any of the following:

- Exposure of persons to, or generation of, noise levels in excess of standards established in the Sonoma County General Plan Noise Element. Specifically, daytime (7 AM to 10 PM) exterior noise levels of 70 dB L_{max} and 50 dB L_{50} at nearby residential areas resulting from on-site activities. Nighttime noise level limits are 5 dB lower. Noise from off-site traffic would be considered significant if it exceeded the County Noise Element standard of 60 dB L_{dn} at residential areas;
- Exposure of persons to, or generation of, excessive groundborne vibration or groundborne noise levels;
- A substantial permanent increase, defined as 5 dB, in ambient noise levels in the project vicinity above levels existing without the project;
- A substantial temporary or periodic increase, defined as 5 dB, in ambient noise levels in the project vicinity above levels existing without the project; or
- Exposure of persons to excessive noise levels generated by the operations of a public airport or a private airstrip.

Method of Analysis

To quantify existing noise levels in the project vicinity, a noise survey was conducted on the project site on March 11, 2004. A Larson Davis Laboratories (LDL) Model 820 precision integrating sound level meter was used for the ambient noise level measurement survey. The meter was calibrated before and after use with an LDL Model CA200 acoustical calibrator to ensure the accuracy of the measurements. The equipment used

meets all pertinent specifications of the American National Standards Institute for Type 1 sound level meters (ANSI S1.4).

The noise level meter was programmed to record the maximum and average noise levels at each site during the survey. The maximum value, denoted Lmax, represents the highest noise level measured. The average value, denoted Leq, represents the energy average of all of the noise received by the sound level meter microphone during the monitoring period.

Project-Specific Impacts and Mitigation Measures

3.10-1 Short-term construction noise impacts.

During the construction phases of the project, noise from vineyard development activities would add to the noise environment in the immediate project vicinity. The site preparation would begin with the clearing of the trees, vegetation, and rocks from the vineyard blocks. Once the site is cleared, heavy machinery, including tractors, would clear and rip the soil, and an excavator would move rocks and other large debris. The vineyard development activities would generate maximum noise levels ranging from 85 to 90 dB at a distance of 50 feet, as indicated in Table 3.10-3. The closest residence is located slightly more than 50 feet from the northeast side of the project boundary. Once the 25-foot wide perimeter avenue is established, the majority of construction activities would occur more than 75 feet away. All other residences are located even further from construction activities.

Table 3.10-3
Typical Construction Equipment Noise Levels

Type of Equipment	Maximum Level, dB at 50 feet
Bulldozers	87
Heavy Trucks	88
Backhoe	85
Pneumatic Tools	85

Source: Bollard & Brennan, Inc.

The earthmoving and other site preparation activities would be temporary and would be anticipated to take place during daytime working hours. However, should construction activities occur outside of daytime working hours a ***potentially significant*** impact related to noise generation would occur.

Mitigation Measure(s)
Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant level.*

3.10-1 *Timber harvest and vineyard construction activities shall be restricted to the hours of 7:00 am to 4:00 pm Monday through Saturday. Construction shall be prohibited on Sundays. In addition, all heavy construction equipment and all stationary noise sources (such as diesel generators) shall be fitted with factory-specified mufflers; and equipment warm up areas, water tanks, and equipment storage areas shall be located in an area as far away from residences in existence at the time of EIR certification as is feasible. These criteria shall be included in the improvement plans submitted to the Sonoma County Permit and Resource Management Department prior to initiation of construction.*

3.10-2 Long-term increase in existing traffic noise levels.

According to the traffic study prepared for the proposed project, the project would generate increased traffic on the existing roadway network. The traffic section of the Draft EIR states that the proposed project would increase peak hour traffic volumes on State Route 1, Annapolis Road, and Stewarts Point Road by 15 to 30 percent during the AM peak hour, and by 14 to 32 percent during the PM peak hour. The project would generate 146 average daily employee automobile trips during the two- to three-week harvest season, as well as four heavy truck trips per day to haul the harvested grapes. During non-harvest conditions, the proposed project could create the need for delivery of approximately one truckload of fertilizer throughout the season.

As stated by Bollard & Brennan, because the decibel scale is logarithmic, a doubling of traffic on local roadways (i.e., a 100 percent increase in volume) would correspond to a 3 dB increase in ambient noise levels. However, as noted in the traffic study, the proposed project would be expected to result in a maximum traffic volume increase of 30 to 32 percent on local roadways during the harvest season, resulting in a maximum predicted traffic noise level increase of only 1.5 dB over existing baseline levels. This level of increase is well below the 5 dB traffic noise significance threshold used for the present analysis. Therefore, the impact would be considered ***less-than-significant***.

Mitigation Measure(s)
None required.

3.10-3 Noise impacts related to operation of the vineyard.

Activities involved with the operation of the Fairfax Vineyard would vary by season, but would not be extensive outside the harvesting and pruning periods. During harvest season, a typical yield of four to five tons of grapes per acre is anticipated. Harvest season for a vineyard of the size proposed would, according to the applicant, last approximately two to three weeks, and generate approximately two truckloads of grapes per harvest day, resulting in four truck

trips. If manual harvesting were to be employed, approximately 72 seasonal workers would pick the grapes and load them onto tractors, roughly between the hours of 11:00 PM and 10:00 AM each day. The manual harvesting of grapes is not considered to be a significant noise-producing activity. However, the applicant has indicated that mechanical harvesting may be utilized instead of hand-picking crews. Mechanical harvesting would generate a greater amount of noise during the night hours than would manual harvesting.

During non-harvest periods, activity at the vineyard would generally be light, with the exception of pruning, which would take place between February and April each year. Weed control would be another potential noise-generating activity performed either manually by a crew using hoes, or through the use of tractors. Over time, however, permanent cover cropping between the vine rows would provide a competitive barrier to weeds. In addition, the project applicant does not use noise cannons as bird deterrents at any of Artesa's other vineyards, and would not use them on the project site.

Mechanical activities associated with the vineyard maintenance are estimated to generate maximum noise levels equal to or less than those generated by the construction equipment identified in Table 3.10-3. Based on a maximum noise level of 85 dB at a reference distance of 50 feet, Bollard & Brennan state in their Environmental Noise Analysis that operational noise levels could exceed the County's 70 dB noise level standard at sensitive areas (residences) located within 280 feet of the operating equipment during daytime hours, and within 500 feet of residences during nighttime hours, given the nighttime noise penalty of +10 dB.

Because nighttime mechanical harvesting operations within 500 feet of existing noise-sensitive land uses would exceed Sonoma County noise standards and significantly exceed existing background noise levels, this impact is considered ***potentially significant***.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant level.*

3.10-3 *In order to minimize noise impacts to residences surrounding the project site during grape harvest season, mechanical harvesting operations shall be limited as follows:*

- *Daytime mechanical harvesting operations shall be limited to areas at least 280 feet from residences in existence at the time of EIR certification; and*
- *Nighttime mechanical harvesting operations shall be limited to areas at least 500 feet from residences in existence at the time of EIR certification.*

These criteria shall be included in the improvement plans submitted to the Sonoma County Permit and Resource Management Department prior to initiation of construction. These criteria shall be implemented unless it can be demonstrated through noise level measurements conducted by a qualified environmental noise consultant that such activities do not result in exceedance of the Sonoma County interior noise level standards.

Cumulative Impacts

Cumulative impacts to Geology are analyzed in Impact Statements 4-11 and 4-12 of Chapter 4, Cumulative Impacts.

Endnotes

[1] Sonoma County *General Plan*, March 23, 1989.
[2] Sonoma County *General Plan EIR*, December 1986.

3.11 AESTHETICS

3.11 AESTHETICS

INTRODUCTION

This section of the EIR describes the existing aesthetic values of the project area and evaluates potential impacts of the project with respect to implementation of the Fairfax Conversion Project. In addition, Sonoma County General Plan goals and policies pertaining to aesthetics are described. The California Environmental Quality Act (CEQA) describes the concept of aesthetic resources in terms of scenic vistas, scenic resources (such as trees, rock outcroppings, and historic buildings along a State scenic highway), and the existing visual character or quality of the project site.

Sources cited include the *Sonoma County General Plan*[1] and the *Sonoma County General Plan EIR*.[2] In addition, site surveys were conducted by Raney Planning & Management, Inc. in December 2003 and March 2005.

ENVIRONMENTAL SETTING

Sonoma County, the most northerly of the nine counties in the San Francisco Bay Region, is located along the Pacific coastline beginning roughly forty miles north of San Francisco and the Golden Gate Bridge. Sonoma County's 1,500 square miles include a diverse mosaic of landforms, environments, and human settlements. The sparsely settled western margin of the County, along the Pacific coastline, includes the redwood and mixed conifer forests of the Mendocino Highlands in the north and rolling oak-studded hills, dairylands, and coastal prairies in the south.

According to the Sonoma County General Plan, the unique quality of the County results from the attractiveness and diversity of its landscape. The scenic resources component of the General Plan includes three open space categories: community separators, scenic landscape units, and scenic highway corridors. Below, Figure 3.11-1 (Figure OS-2 from the Sonoma County General Plan, p. 170) shows these scenic resource areas. The project site is not located within, or adjacent to, any scenic resource areas.

The General Plan EIR uses visual units to identify Sonoma County's scenic resources. The visual units describe the major landscape units into which the County is divided. The General Plan EIR designates the project areas as being located within Visual Unit #2 – Mendocino Highlands of the Sonoma Coast/Gualala Basin area. Visual Unit #2 "is classified mainly according to views from within. It is made up of complex, steep, rugged ridges with scattered forest cover of varying density."

The properties surrounding the project site are largely rural residential. Agriculture, including timber production and wine grape production, is a typical land use in the area.

Existing vineyards are located northeast and east of the property boundary, and the general vicinity surrounding the project site also includes other properties that are in the process of conversion to vineyards. Land to the south of the site is currently being used for timber production. Residences surrounding the project site include the Starcross Monastic Community (34500 Annapolis Road), located north of the project site, and six rural residences located immediately northwest, west, and south of the project site (see Figure 3.11-2, Parcel Map).

The project site is largely composed of hillside areas covered in dense, second growth forest. In addition, some grassland and remnant orchard areas are located within the project site. Class II and III streams are located on the property, project impacts to streams are addressed in depth in Section 3.7 of this DEIR. In addition, the remnants of a mill site are located on the property; potential impacts to the mill site are addressed in depth in Section 3.5 of this DEIR.

ENVIRONMENTAL SETTING

Specific federal or State regulations do not directly pertain to the visual quality of an area.

Sonoma County General Plan

The goals and policies established in the Sonoma County General Plan that are applicable to the proposed project are as follows:

Open Space Element

Goal OS-1 Preserve the visual identities of communities by maintaining open space areas between cities and communities.

Goal OS-2: Retain the largely open, scenic character of important scenic landscape units.

Goal OS-3: Identify and preserve roadside landscapes which have a high visual quality as they contribute to the living environment of local residents and to the county's tourism economy.

Objective OS-3.1: Designate the scenic corridors on Figures OS-5a through OS-5i along roadways which cross highly scenic areas, provide visual links to major recreation areas, give access to historic areas, or serve as scenic entranceways to cities.

Figure 3.11-1
Sonoma County General Plan Scenic Resource Areas Map

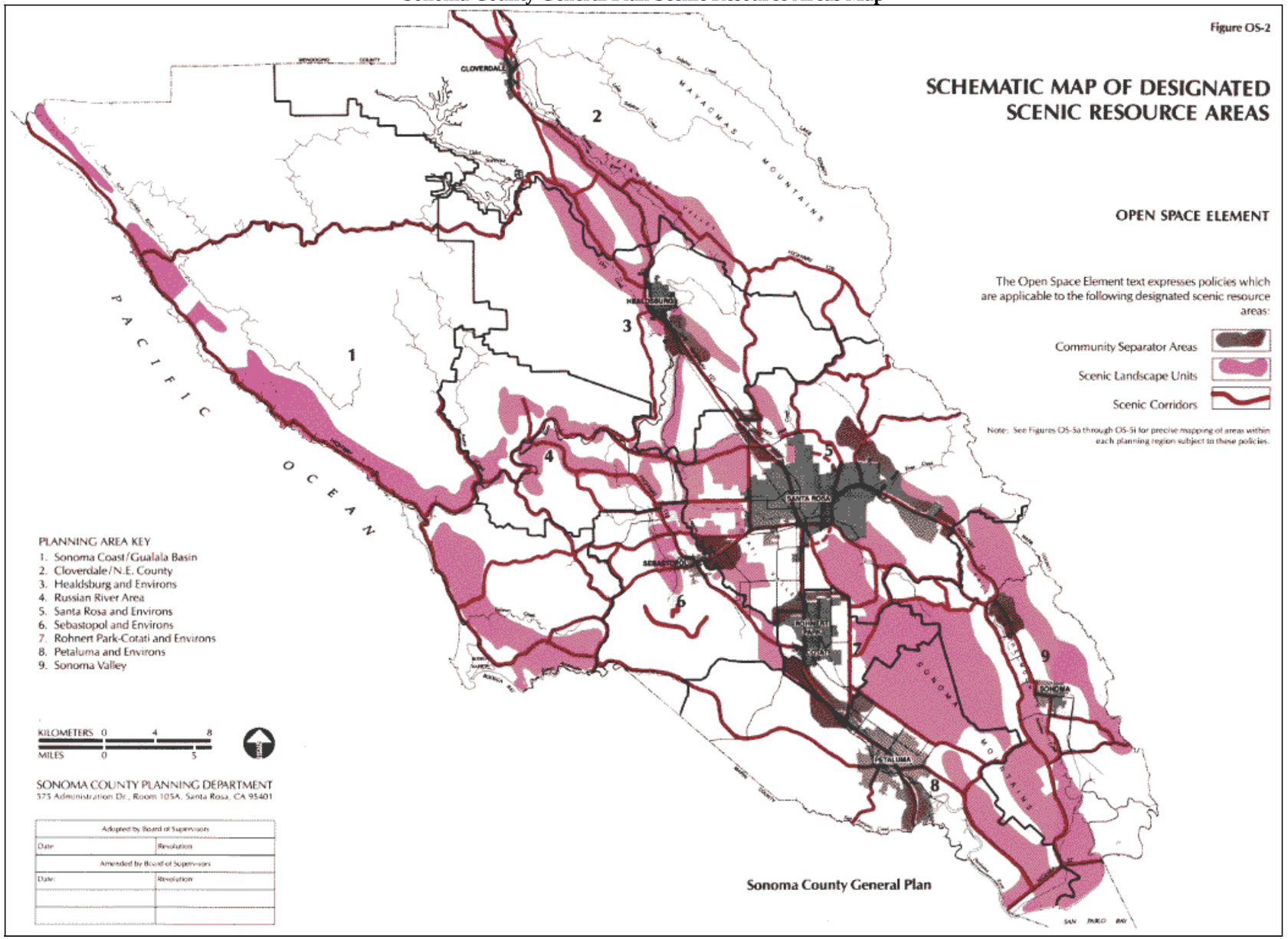
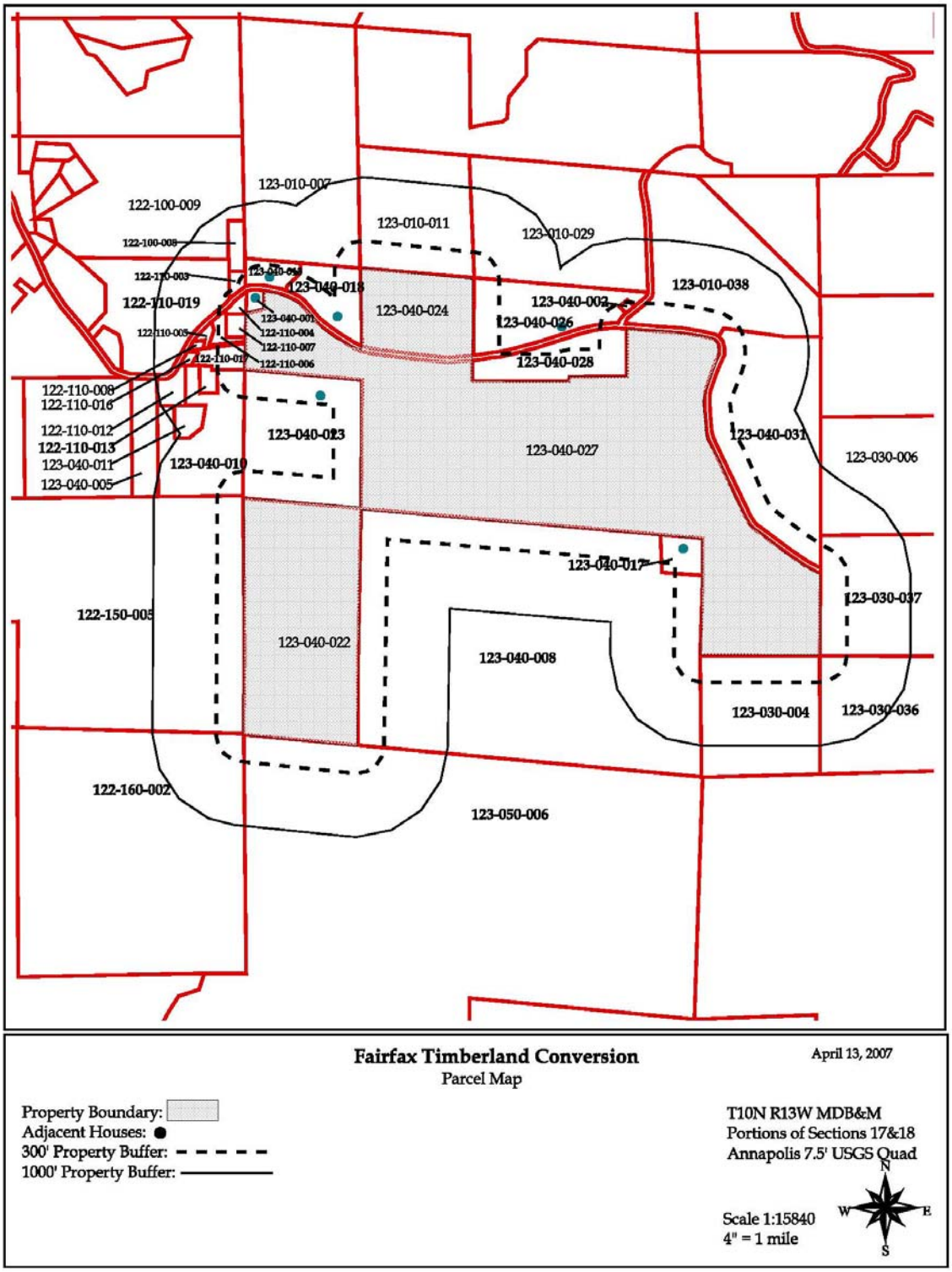


Figure 3.11-2
Project Area Parcel Map



Objective OS-3.2: Provide guidelines so future land uses, development and roadway construction are compatible with the preservation of scenic values along designated scenic highway corridors.

Land Use Element – (Part 2, Section 2.1.9) - Preservation of Scenic or Biotic Resources Areas

Sonoma County has many areas with important biotic resources or scenic qualities which are especially vulnerable to the impacts of development. These include wetlands, tidal lands, dunes, sea cliffs, marine terraces, headlands, watershed areas, unique geologic formations and rare or endangered plant or animal habitats. Often, these resources physically limit the manner in which these areas can be developed. The types of uses and intensities of development that are compatible with preservation of these resources must be considered together with the owners' concerns about the potential effects of any development restrictions on property values.

Goal LU-9 The uses and intensities of any land development shall be consistent with preservation of important biotic resource areas and scenic features.

Objective LU-9.1 Accomplish development on lands with important biotic resources and scenic features in a manner which preserves or enhances these features.

IMPACTS AND MITIGATION MEASURES

This section provides the standards of significance and method of analysis used to determine aesthetic impacts.

Standards of Significance

For the purposes of this EIR, an impact to aesthetic resources would be considered significant if the proposed project would have the following effects:

- Substantially alter or degrade the visual character or quality of the project site;
- Have a substantial adverse effect on a scenic vista; or
- Substantially increase light or glare in the project site or vicinity which would adversely affect day or nighttime views.

Method of Analysis

The section below gives full consideration to the effects on the project site resulting from the timberland conversion and acknowledges the physical changes to the existing setting. Impacts to the existing environment of the project site are to be determined by the

contrast between the site's visual setting before and after the proposed conversion and vineyard planting. In this analysis, emphasis has been placed on the transformation of the existing forest setting into a landscape characterized by agricultural uses. Although few standards exist to singularly define the various individual perceptions of aesthetic value from person to person, the degree of visual change can be measured and described in a reasonably objective manner in terms of visibility and visual contrast, dominance, and magnitude. Current residents adjacent to the project site and travelers along Annapolis Road would be considered sensitive to the visual and aesthetic alteration of the project site.

Project-Specific Impacts and Mitigation Measures

3.11-1 Impacts to scenic resources as defined in the Sonoma County General Plan.

The Sonoma County General Plan defines scenic resources under three open space categories in the Open Space Element: community separators, scenic landscape units, and scenic highway corridors. As indicated on Figure OS-2 in the Sonoma County General Plan (see Figure 3.11-1), the project site does not lie within a scenic landscape unit, a community separator, or a scenic highway corridor. As previously discussed, the Sonoma County General Plan EIR also divides the County into distinct visual units. The project site is located in the Mendocino Highlands (Visual Unit #2). According to the Sonoma County General Plan EIR (pg. 5), mitigation measures will reduce the level of impact on visual units (and scenic backdrops) to an insignificant level. These mitigation measures do not apply to the project site. For example, VR-2.1 states "Highway 1, the proposed by-pass, Cazadero Highway, Bohemian Highway, Jonive Road, Coleman Valley Road, and Stewarts Point/Skaggs Springs Road are designated as scenic highways." None of the above mentioned roads are located adjacent to the project property. Furthermore, the proposed vineyard use is consistent with the type of development/use anticipated for the project site in the General Plan.

Therefore, although the proposed project would result in the conversion of on-site timberland, because the project site is not located within a scenic landscape unit, community separator, or scenic corridor, and because the General Plan concluded less-than-significant for visual impacts implementation of the proposed project would result in ***less-than-significant*** impacts to designated scenic resources.

Mitigation Measure(s)
None required.

3.11-2 Impacts to existing scenic views visible from Annapolis Road.

The existing condition of the site includes a mixture of grasslands and forest cover (See Figure 3.11-3). Implementation of the proposed project would result in the conversion of 171 acres of timberland and approximately 19 acres of grassland into vineyards.

Figure 3.11-3
View East across Project Site From Annapolis Road

Scenic views of the property from much of Annapolis Road would be altered from existing views of timberland and grassland to views of vineyard rows. However, as can be seen in Figures 3.11-3 to 3.11-6 the project area is characterized by a mixture of open grasslands, agricultural uses, and forested areas.

Figure 3.11-4
View of Starcross Monastic Community North of Annapolis Road

Figure 3.11-5
View East on Annapolis Road at Intersection of Soda Springs Road and Annapolis Road

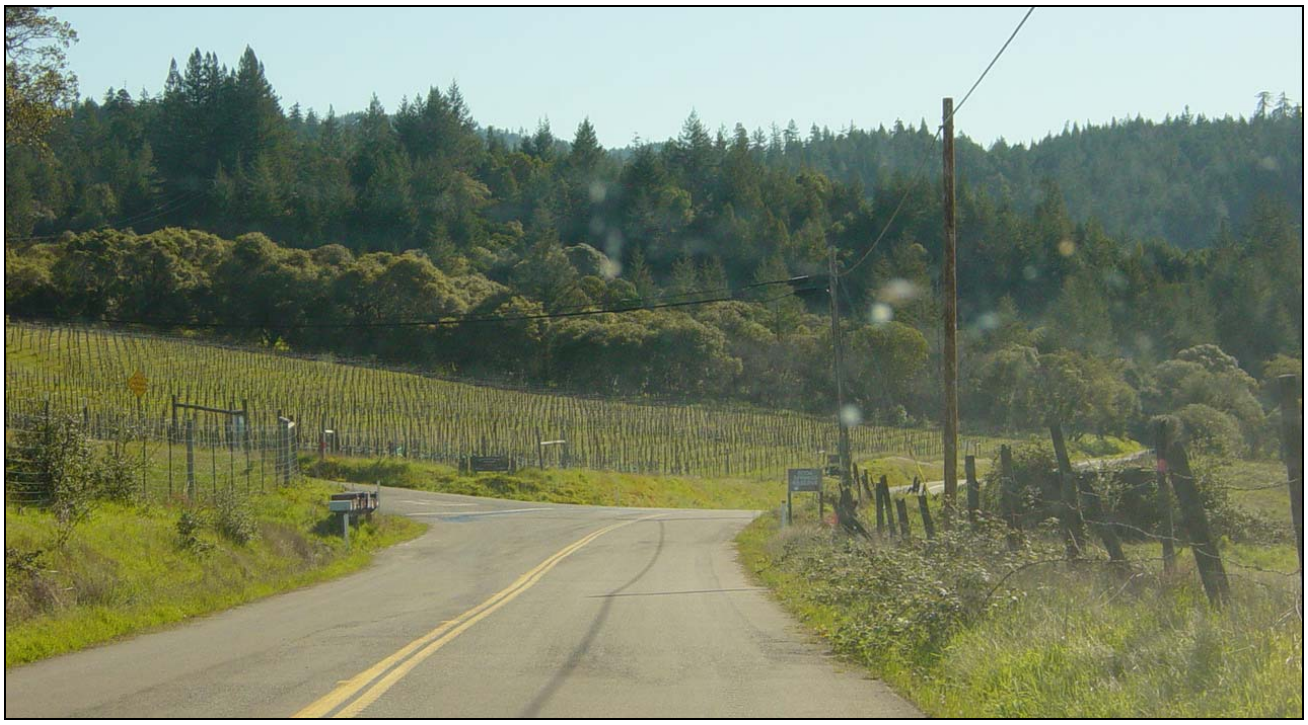
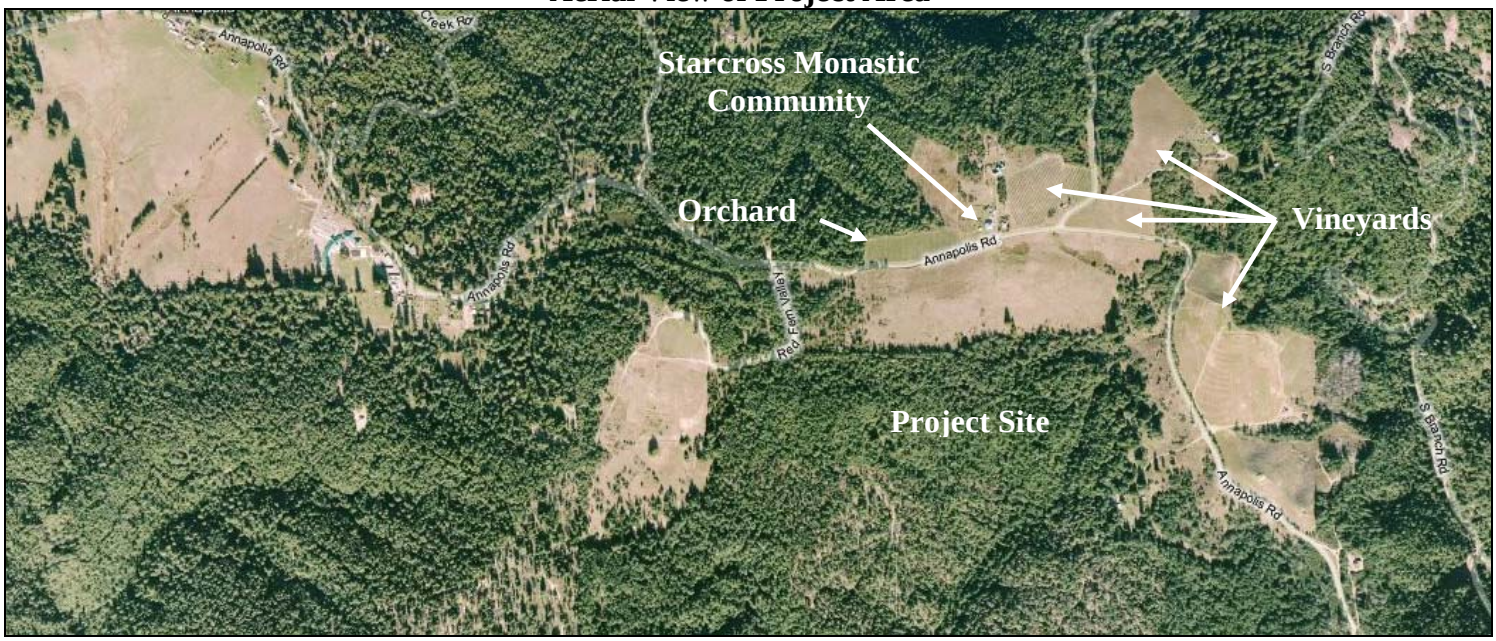


Figure 3.11-6
Aerial View of Project Area



Extensive vineyard areas are located northeast and east of the project site along Annapolis Road. The Scenic Resources Section in the Open Space Element of the Sonoma County General Plan is primarily concerned with maintenance of the openness of the scenic resources, which provides important visual relief from urban densities (General Plan, p. 175). Because the proposed project would not involve the construction of numerous buildings or result urbanization, implementation of the project would result in a change from one rural setting (timberland) to another (vineyard), thereby preserving the "openness" of the project site. Furthermore, because Annapolis Road is not included among the scenic corridors listed by the General Plan (See Figure 3.11-1), the conversion of second-growth timberland to vineyard would result in ***less-than-significant*** impacts to views of the project site from Annapolis Road.

Mitigation Measure(s)
None required.

3.11-3 Impacts to views from adjacent residences.

Agriculture, including timber and wine grape production, is a typical land use in the project area. Existing vineyards are located northeast and east of the property boundary, and the general vicinity surrounding the project site also includes other properties that are in the process of conversion to vineyards. The area to the south of the site is currently used for timber production.

However, several residential properties surround the project site as well, including the Starcross Monastic Community (34500 Annapolis Road) located north of the project site, and six rural residences located immediately northwest, west, and south of the project site (See Figure 3.11-7). As noted previously, the project site is currently void of development and views of the site from nearby residences consist of forest and grassland scenery. The proposed project would alter the existing views of timberlands; however, a substantial number of trees would remain on the project site as 190 acres of the 324-acre site would be included in the vineyard area, 19 acres of which would be grassland. However, as discussed above in Impact Statement 3.11-2, the project would result in a change from one rural setting (timberland) to another (vineyard). Furthermore, the streamside conservation areas, cultural resources sites, biological reserves, and natural topographic relief would serve to break the vineyard area into smaller, less visually pronounced areas. In addition, as discussed above, screening trees along Annapolis Road in the western portion of the project site would be retained. As a result, the existing grassland and forest views would be replaced with a mixture of vineyards and forests. In the absence of specific standards within planning documents impacts to viewsheds are highly subjective. However, as discussed above, vineyards are considered to be a highly valued landscape within Sonoma County. Therefore, while the existing views would be altered, the proposed project would have a ***less-than-significant*** impact to views from adjacent residences.

Figure 3.11-7
Aerial of Adjacent Residences

Mitigation Measure(s)
None required.

3.11-4 Impacts associated with light and glare from the proposed project.

The project site is currently undeveloped and consists of coniferous forest interspersed with grasslands and the remnants of previous agricultural uses. As such, the site currently does not produce any light or glare. While the proposed project would result in the construction of a small corporation yard on 1-acre south of Annapolis Road, the applicant has stated that the corporation yard would not be lighted at night. The yard will be equipped with motion-activated lights as a theft-deterrent. However, the only times the lights would actually be turned on at night for an extended period of time are (1) when the vineyard crew needs to prepare the tractors for nighttime operations, and (2) a few days during harvest should the crew need to start picking grapes early. In general, grape harvesting activities associated with the proposed project could result in the generation of light at night during harvesting season. Grape harvesting may take place by mechanical means during the night and early morning hours. Although the applicant has indicated that floodlights would not be used during harvest season, the harvesting machinery itself contains lights (headlights and other lights), which would create new sources of light and glare on the project site. Depending upon

the location of the harvesting operations, nearby residents could be subject to light and glare from the machinery. However, given the varied topography of the project site and the incorporation of approximately 133 acres of streamside buffers throughout the project site, much of the harvest machinery lighting would not be observable to residents in the site vicinity.

The applicant proposes to utilize reflective bird control ribbon, composed of Mylar® or a similar material, among the vine rows as a deterrent to birds which would otherwise feed on the grapes. Shiny, highly reflective ribbon-like tape is widely used in vineyards to deter birds from landing on the vines. The applicant proposes to use one-inch wide, six- to twelve-inch long strips of bird control ribbon on the vineyards on an as-needed basis to repel nuisance birds. The ribbon would generate small amounts of light and glare visible to adjacent residents and drivers on Annapolis Road.

Night and early morning light generation associated with grape harvesting activities would be of a seasonal nature, occurring only two months out of the year; and the lights would be concentrated in only a small area of the site at any given time. As a result, the proposed project would have a ***less-than-significant*** impact regarding light and glare.

Mitigation Measure(s)
None required.

3.11-5 Consistency of the proposed project's appearance with the surrounding scenery.

As shown in Figures 4.11-3 to 4.11-7, the project site is currently surrounded by timberland, residences, a monastery, a cemetery, and existing vineyards to the east and northeast. Although implementation of the proposed project would result in the conversion of existing timberland and grassland to a vineyard, because the project site is located adjacent to existing vineyards and because other vineyards exist in the vicinity, the conversion of the project site to a vineyard would not be inconsistent with the surrounding scenery. Therefore, the impact would be considered ***less-than-significant***.

Mitigation Measure(s)
None required.

Cumulative Impacts

Cumulative impacts to Aesthetics are analyzed in Impact Statement 4-13 of Chapter 4, Cumulative Impacts.

Endnotes

[1] County of Sonoma, *General Plan*. March 23, 1989.
[2] County of Sonoma, *General Plan EIR*. December 1986.

4. Cumulative Impacts

4. CUMULATIVE IMPACTS

Introduction

CEQA Guidelines Section 15130 requires that an EIR discuss the proposed project's cumulative and long-term effects on the environment. "Cumulative impacts" are defined as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." (CEQA Guidelines, § 15355; see also Pub. Resources Code, § 21083, subd. (b).) Stated another way, "a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts." (CEQA Guidelines, § 15130, subd. (a)(1).)

"[I]ndividual effects may be changes resulting from a single project or a number of separate projects." (CEQA Guidelines, § 15355, subd. (a).) "The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time." (CEQA Guidelines, § 15355, subd. (b).)

The need for cumulative impact assessment reflects the fact that, although a project may cause an "individually limited" or "individually minor" incremental impact that, by itself, is not significant, the increment may be "cumulatively considerable," and thus significant, when viewed together with environmental changes anticipated from past, present, and probable future projects. (CEQA Guidelines, §§ 15064, subd. (h)(1), 15065, subd. (c), 15355, subd. (b).) This formulation indicates that particular impacts may be less-than-significant on a project-specific basis but significant on a cumulative basis, because their small incremental contribution, viewed against the larger backdrop, is cumulatively considerable.

The lead agency should define the relevant geographic area of inquiry for each impact category (id., § 15130, subd. (b)(3)), and should then identify the universe of "past, present, and probable future projects producing related or cumulative impacts" relevant to the various categories, either through the preparation of a "list" of such projects or through the use of "a summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area wide conditions contributing to the cumulative impact" (id., subd. (b)(1)).

The possibility exists that the "cumulative impact" of multiple projects will be significant, but that the incremental contribution to that impact from a particular project

(e.g., Fairfax Conversion Project) may not itself be "cumulatively considerable." Thus, CEQA Guidelines section 15064, subdivision (h)(4), states that "[t]he mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed project's incremental effects are cumulatively considerable." Therefore, it is not necessarily true that, even where cumulative impacts are significant, any level of incremental contribution must be deemed cumulatively considerable.

In accordance with CEQA Guidelines section 15130(b), "the discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided for the effects attributable to the project alone."

This Chapter contains an evaluation of the impacts resulting from implementation of the proposed project when considered in conjunction with the development of other past, present or reasonably foreseeable future projects. The cumulative discussion is organized by each of the environmental issues evaluated in Sections 3.2 through 3.11 of the DEIR. Thresholds of significance for impacts are indicated in the relevant portions of Chapter 3. In addition, as outlined in CEQA Guidelines section 15130(b)(3), the geographic scope of the proposed project varies, depending on the type of impact discussed. For example, the cumulative impact area for air is the Sonoma Coast/Gualala Basin Planning Area; cumulative impacts to fisheries are described within the Gualala River Watershed.

FAIRFAX CONVERSION CUMULATIVE SETTING

The project area has historically been a rural/forested environment characterized by small farms and timber operations associated with the logging of the extensive redwood and fir forests. Increased development pressure has created the demand for rural residential development in the area. In addition, the demand for premium quality grapes and the high cost of land in the established wine grape areas of California have increased the pressure to develop vineyards in Northern Sonoma County. Incremental development typically results in the creation of traffic, air pollutants, increased demands on the available water resources, the introduction of invasive species, and the conversion of natural environments. The individual effects can cumulatively result in adverse traffic conditions, impacts to special-status species, disruption of hydrologic function, air pollution, and the fragmentation of habitat. As a result, the consideration of the proposed project in conjunction with existing and anticipated development is of substantial importance.

As indicated below in the discussion of the cumulative traffic conditions, the cumulative traffic conditions (2025 planning horizon) are based on an annual growth factor derived from link traffic volumes in Sonoma County's 1995 Congestion Management Program (CMP) Update. The estimated volumes assumed a full-build condition of the County's Capital Improvement Program at the time. In addition, an annual growth factor of 9.7% was used to estimate growth in turning movements at all study-area intersections. As the Air Quality and Noise analyses are based upon traffic data, the same cumulative setting was applied to those cumulative analyses (See Impact Statements 4-2, 4-3, 4-11, and 4-12

for the Air Quality and Noise cumulative analyses, respectively), although the air quality analysis also accounts for the larger regional air quality and topographical contexts in which the Town of Annapolis is located. The cumulative hydrology discussion evaluates potential impacts to the Wheatfield Fork Watershed, which is downstream of the Patchett Creek Watershed - both of which are included in the overall Gualala River Watershed. Changes in the hydrology of the Wheatfield Fork Watershed would not result in changes to the upstream Patchett Creek Watershed. The remaining cumulative impact discussions in the DEIR relied on a qualitative consideration (rather than the aforementioned quantitative assessments) of the combined effects of buildout of the Sonoma County General Plan with consideration also given to recent projects not anticipated in the Sonoma County General Plan. The qualitative cumulative impact assessments were conducted only for resource areas that can be meaningfully evaluated cumulatively without quantifying the related effects.

To provide a clearer understanding of the cumulative setting of which the proposed project is a part, Table 4-1 has been included below to list the Timber Harvest Plans filed in the Annapolis, Little Creek, and Grasshopper Creek watersheds over the last ten years, which would be expected to produce related impacts. The total of 5,535 acres amounts to approximately 28.8 percent of the 19,202 acres that compose the three watersheds in which the project is located. Of the 5,535 acres, approximately 162 acres have been or are proposed for conversion to uses other than forestry. The list includes both the Roessler and Sleepy Hollow Conversions that are currently under environmental review.

In addition, a recent proposal has been made by Premier Pacific Vineyards to develop approximately 1,861 acres of vineyard in the area. Approximately 750 of the 1,861 acres fall within the assessment area of the Fairfax Conversion Project THP and are considered to be part of the cumulative setting. The proposed 1,861-acre vineyard, referred to as the Preservation Ranch Project is part of an integrated land use plan that would establish the following: (1) 1,861 acres of sustainable vineyards; (2) 14,868 acres of Sustainable Timber Management Area; (3) 2,702 acres of core wildlife habitat called Windy Gap Preserve; (4) a 221-acre expansion of the Soda Springs Reserve; (5) a 5-mile public trail easement; (6) extinguishment of 97 legal parcels via voluntary merger; (7) approximately 90 residential sites on large vineyard parcels. The integrated land use plan maximizes forest resource protections and environmental benefits while integrating agriculture and wildlife conservation with a large working forest, over the entire landscape.

Table 4-1
Timber Harvest Plans in the Project Area Watersheds

THP#	Acres*	Silvicultural Method	Yarding Method	Comments	Location
Annapolis WAA					
1-08-124 SON	126	STR, SEL	T	2	T10N R14W Sec. 14
1-08-121 SON	206	VAR	C	3	T10N R14W Sec. 25
1-08-093 SON	112	VAR	T, C	3	T10N R13W Sec. 29 & 30
1-07-028 SON	185	ALT, REH	T, C	3	T10N R14W Sec. 24 T10N R13W Sec. 18 & 19
1-06-192 SON	200	ALT	T,C,H	2	T10N R13W Sec. 20, 28 & 29
1-06-110 SON	135	ALT, REH	T, C	2	T10N R14W Sec. 23,25,26&30
1-06-072 SON	110	STR, SEL	T,C	2	T10N R14W Sec. 25,26 & 35
1-05NTMP-017	120	SEL,GS,TRN,REH	T,C	2	T10N R14W Sec. 11 & 14
1-04-275 SON	50	SEL	T	2	T10N R14W Sec. 9, 15, 16 & 22
1-04-201 SON	35	CC,SEL,STR,SWR	T	2	T10N R14W Sec. 23 & 27
1-04-045 SON	296	TRN,ALT,REH,VAR,STR	T,C	2	T10N R13W Sec. 18, 19 & 20
1-04NTMP-001	62	SEL	T	2	T10N R14W Sec. 22, 23 & 26
1-03-008 SON	70	CC	T	1	T10N R14W Sec. 15, 16 & 22
1-02-174 SON	20	SEL	T	1	T10N R14W Sec. 10
1-01-202 SON	5	Conversion	T	1	T10N R13W Sec. 17
1-01-034 SON	50	STR	T	1	T11N R14N Sec. 25
1-00-468 SON	487	ALT,TRN,STR	T,C	1	T10N R13W Sec. 30, 31 & 32
1-00-129 SON	237	STR, ALT, REH	T, FB, C	1	T10N R14W Sec. 13, 24 T10N R13W Sec. 19
1-00NTMP-073	85	SEL	T	2	T10N R14W Sec. 11, 12, 13, 14
1-00NTMP-041	13	SEL	T	2	T10N R14W Sec. 10
1-99-390 SON	20	SEL	T	1	T10N R14W Sec. 18
1-99-354 SON	134	STR, CC, SWR	T, C	1	T10N R14W Sec. 9, 10, 15, 16
1-99-052 SON	197	STR, SS, REH	T	1	T10N R14W Sec. 25; T10N R3W Sec. 30, 31
1-99NTMP-021	38	SEL	T	2	T10N R14W Sec. 13
1-98-269 SON	82	CC	T, C	1	T10N R14W Sec. 14, 15, 22

Table 4-1
Timber Harvest Plans in the Project Area Watersheds

THP#	Acres*	Silvicultural Method	Yarding Method	Comments	Location
Little Creek WAA					
1-08-078-SON	40	TRN	T, C	2	T10N R14W Sec. 11
1-06NTMP-009	210	GS	T, C	2	T10N R13W Sec. 7 T10N R14W Sec. 11&12
1-05NTMP-013	160	SEL	T,C	2	T10N R14W Sec. 4 & 5
1-04-059 SON	25	Conversion	T	1	T10N R13W Sec. 12
1-04-055 SON	8	Conversion	T	1	T10N R13W Sec. 12
1-04-030 SON	16	Conversion	T	1	T10N R14W Sec. 2
1-02-019 SON	18	Conversion	T	1	T10N R14W Sec. 2
1-01-243 SON	38	ALT	T	1	T10N R14W Sec. 10
1-01-178 SON	30	ALT	T,C	1	T10N R14W Sec. 10
1-00-328 SON	63	STR	T	1	T10N R14W Sec. 12
1-99-445 SON	70	SEL	T	1	T10N R14W Sec. 4, 5 & 6
1-99-426 SON	35	STR	T	1	T10N R14W Sec. 35
1-99-258 SON	161	CC	T,C	1	T10N R14W Sec. 4, 5, 9 & 10
1-98-336 SON	70	CC	T,C	1	T10N R14W Sec. 5 T11N R14W Sec. 32
1-97-036 SON	174	STR	T,C	1	T10N R14W Sec. 3
Grasshopper Creek WAA					
1-06-157 SON	46	STR,SWS,SEL	T, C	2	T10N R13W Sec. 6 T11N R13W Sec. 31
1-06NTMP-001	628	SEL, GS	T, C	2	T10N R13W Sec. 6, 7 & 8
1-00-147 SON	90	Conversion	T	1	T10N R13W Sec. 7
1-98-236 SON	74	CC	T, FB, C	1	T10N R13W Sec. 3, 9, 10
1-97-070 SON	445	ALT	T	1	T10N R13W Sec. 4 & 5 T11N R13W Sec. 31,32&33
1-97-034 SON	59	STR	T, FB, C	1	T11N R14W Sec. 25, 26
Total	**5,535**				

***Acres within the assessment area – not total plan acres.**

Silvicultural Methods:

SEL - Selection
TRN- Transition
SWR - Shelterwood Removal
STSS- Seed Tree Seed Step
REH - Rehabilitation
ALT – Alternative Prescription
STR – Seed Tree Removal
CT- Commercial Thin
CC- Clearcut
VAR – Variable Retention
SS- Sanitation Salvage
GS-Group Selection

Logging Method:
C – Cable

Comments:
1- Completed

Table 4-1
Timber Harvest Plans in the Project Area Watersheds

THP#	Acres*	Silvicultural Method	Yarding Method	Comments	Location

T – Tractor
FB – Feller Buncher
H – Helicopter
2- Approved not yet completed
3 - Submitted Not Approved

Source :Fairfax Conversion Timber Harvest Plan, September 5, 2008.

CUMULATIVE IMPACTS

The following impact statements address cumulative impacts within each of the categories assessed in the subject chapters of the DEIR.

LAND USE

4-1 Cumulative impacts pertaining to land use issues, and particularly, loss of timberland due to vineyard development.

Introduction

Timber harvesting has historically been one of the most important industries in Sonoma County. In addition, it is widely recognized that timberlands play a significant role in maintaining water quality, providing wildlife habitat, and providing recreational and aesthetic benefits. Because of the recent increase in timber conversion applications for vineyard development in coastal Sonoma County, concerns have been raised over the potential for significant loss of timberland from this land use.

Timberland Trends in California

The overall status of California's remaining timberlands in terms of total inventory is improving. While the average volume of growing stock per acre on all ownerships declined from the 1950s through the 1970s, it has been increasing since then. In 1994, California's timberland inventory, the volume of growing stock on timberland, consisted of a net volume of approximately 55 billion cubic feet. National Forest lands have over half of the growing stock, but private industry forests hold the most productive tree growing sites and have higher growth rates. Overall, private industry timberland volume inventories are growing at a 2.8 percent annual rate, while rates for other owners vary from 2.0 to 2.3 percent.[1] Whether looked at on a volume basis or an area basis, California's timberlands have significant resources in stands dominated by trees over 100 years old. Across all ownerships, over 22 billion cubic feet (41 percent) is in

stands less than 100 years old while, more than 32 billion cubic feet (59 percent) exist in stands greater than 100 years. National Forest timberlands have a higher percentage of their growing stock in stands greater than 100 years (88 percent) as compared to private timberlands (25 percent).

During the past half century, timber harvesting on both public and private lands in California has fluctuated considerably. Timber harvest volume in California increased from four to six billion board feet between 1948 and 1955, but has declined since then. Timber harvest volume on public lands has declined dramatically since 1989 and recent harvest levels are now less than 0.2 billion board feet per year. Harvest on private lands has declined since 1990, though not as steeply as on public lands, reaching the lowest level in more than a decade in 2001.

Additional Factors Affecting Timberlands

As outlined above timber harvesting has decreased substantially since the late 1990s. The reduction in harvesting may be attributable to a number of sources including, but not limited to, increased imports of lumber, environmental concerns related to logging, and the closure of local timber mills. Most recently, the downturn in the housing market has reduced demand for wood products. Additional factors relate to changes in land use patterns. In addition to the conversion of timber to vineyards discussed above construction of rural residences can result in a reduction in the amount of forest available for logging as new residents typically move to forested areas for the existing setting and are less-likely to commercially harvest the timber on their property. In addition, new residents are likely to oppose timber harvesting in the surrounding community for a variety of reasons including, but not limited to, noise, air pollution, logging truck traffic, and concerns over impacts to biological resources. Therefore, while inventories of timber are increasing as a result of natural growth and reduced harvesting the additional factors discussed above may be reducing the amount of timberland available for harvest at a similar, or greater rate. However, quantification of the above listed factors is not feasible because of the wide variety of personal and corporate decisions that affect the desire, or ability of landowners to harvest timber.

Timber Harvesting in Sonoma County

Sonoma County is the geographic area of inquiry for purposes of assessing the project's cumulative impacts pertaining to land use issues. The Sonoma County 2020 General Plan EIR notes that there is an estimated 229,475 acres of timberland in Sonoma County. Commercial timberlands are concentrated in northwestern Sonoma County (the area in which the proposed project is located) where conifer and conifer/hardwood forests dominate. Reports produced by the Sonoma County Agricultural Commissioner's Office[2] indicate that recent timber production of logging in Sonoma County forests has varied from a high of 30.9

million board feet (1.0 board foot equals 0.183 cubic feet) in both 1999 and 2000, to a low of 8.9 million board feet in 2005. A total of 11,196,000 board feet of lumber was produced in 2006, the latest year for which data is available.

Timber Harvesting in the Project Watersheds

As shown in Table 4.0-1, Timber Harvest Plans covering 5,051 acres have been submitted within the last ten years. The total acreage amounts to approximately 26% of the 19,202 acre watershed assessment area. The majority of these past projects has been completed and are currently fully stocked. The more recent plans or those filed within the last 5 years, are considered to have a low to moderate impact on the watershed depending on the amount of time that has past since the completion of timber operations, yarding method utilized and the vegetative cover remaining post harvest.

Vineyard Development in Sonoma County

Vineyard development in Sonoma County and in California in general has expanded greatly over the past several years. Total vineyard acreage statewide has approximately doubled since 1990. Sonoma County Annual Crop Reports from the 1990's to 2007 indicate that total acreage of vineyards in the County has increased from 36,060 ac in 1994 to 60,928 acres in 2007, the latest year for which data is available. From 2006 to 2007 the total vineyard acreage increased by 625.9 acres. The total crop value in 2007 was given as approximately $416.5 million, which was down approximately four percent from 2005.

The U.C. Study

Sonoma County vineyard expansion rates were the subject of a University of California Cooperative Extension study ("U.C. Study"[3]) published in the May-June 2000 issue of *California Agriculture* (Merenlender 2000; Merenlender and Heaton 2000). The study examined the potential for use of Geographic Information Systems (GIS) to maintain a comprehensive land use mapping database for the purpose of tracking vineyard expansion in Sonoma County. It should be noted that the U.C. study did not include all areas of the County, but only evaluated the County's major appellation areas, which are legally-recognized geographic areas that have historically been the focus of viticultural activities in the County. Because the western third of the County has only recently begun to attract large-scale vineyard development, the study area did not include the coastal part of Sonoma County. In fact, as noted by Merenlender (p. 11), very little data exists on vineyard conversion trends in North Coast coniferous forests, because of the recent nature of the activities and because these uses are not reflected in currently available maps or statistics. As such, the study does not cover the Artesa Fairfax Project site near Annapolis.

Nonetheless, the U.C. study provides a useful context for examining cumulative impacts of vineyard development in Sonoma County. The authors determined that between June 1990 and June 1997, 11,663 acres of new vineyards were planted in the County's major appellation areas. This included the conversion of approximately 1,631 acres of dense hardwood forest; 278 acres of coniferous forest; 367 acres of shrubland; and 7,229 acres of oak grassland savanna. The 1999 Sonoma County Crop Report, and subsequent Crop Reports, utilized the results of the U.C. study in obtaining more accurate estimates of total vineyard acreage in the County than could be provided by the California Department of Food and Agriculture (CDFA), possibly because as noted in the U.C. study, "the counties with the most rapid vineyard development rates are often the farthest behind in reporting, and consequently have less reliable data."[4]

The U.C. study found that due to a variety of factors, a higher percentage of vineyards planted between 1990 and 1997 were located in upland areas with steeper slopes, and at higher elevations, than was the case prior to 1990. This fact has led to concerns about increased hillside erosion, sensitive species protection, and habitat fragmentation, in addition to aesthetics issues. One outcome of these concerns was the creation of the Sonoma County Vineyard Erosion and Sediment Control Ordinance (VESCO). The effects of vineyard expansion on other agricultural operations has also been cited as a concern because overreliance on a single industry contradicts the principles of sustainable agriculture, and could lead to increased use of pesticides and fertilizers.

Using GIS modeling, Merenlender and Heaton (p. 17) further mapped over 133,000 acres as being potential vineyard sites within the County (again, the modeling did not include western Sonoma County). However, the authors noted that it is unlikely that this much acreage would ever be planted to vineyards within the study area. This is true for a variety of reasons; for instance, economic fluctuations affecting new vineyard development in the County cannot be predicted with certainty. Increasing regulatory controls, such as the VESCO, may also play a part.

Other Information Sources

Currently, a comprehensive database does not exist for tracking vineyard-associated land use conversions among overlapping jurisdictions with different reporting requirements. As noted by County staff, a "data gap" exists between the ending of the U.C. study in 1997, and 1999, when the Sonoma County Agricultural Commissioner's Office began collecting vineyard acreage data as part of their Vineyard Planting Reports. The Vineyard Planting Reports compiled by the County and posted on the Agricultural Commissioner's website cover a period from January 1999 to April 2007 (as of this writing), although the data is incomplete due to variable reporting by applicants, particularly during the early period of reporting. It should be noted that vineyard applications spiked at 9,000

acres in late 1999 as landowners rushed to begin development prior to the enforcement of the VESCO.

A rough estimate of recent vineyard expansion trends may be derived by taking into consideration acreage statistics available from the County. Vineyard expansion in the County for the period July 1997 to April 2007 can be estimated by combining the annual County Crop Reports for June 1997 to December 2003 with 2004-2007 Vineyard Planting Report data.[5] Based on the Crop Reports for the 6.5-year period June 1997- December 2003 (dividing in half the total 1997 acreage gain [1,602 ac] because the U.C. study stopped in June 1997), total vineyard acreage increased from approximately 39,200 acres to 59,973 acres, an expansion of 20,773 acres.

This equates to an average of nearly 3,200 acres per year. In addition, the Vineyard Planting Report data from 2004 to early 2007 (See Table 4-2) indicates that approximately 6,051 acres were approved for new vineyard development in that time period (this figure includes 3,439 acres, 57 percent, in which the existing land use was reported as vineyard).

Table 4-2
Increase in Vineyard Acreages - Sonoma County

Year	New Acreage	Acreage with Vineyard Listed as Previous Use	Percentage
2004	2,004	1,111	55
2005	1,822	888	47
2006	1,523	843	55
2007*	702	597	85
Total	**6,051**	**3,439**	**57**

*Last data point was on April 24, 2007.

Source: http://www.sonoma-county.org/agcomm/vesco_rpt.asp

Adding the 1999-2003 Crop Report total and the 2004-2007 Planting Report total gives a grand total of 26,824 acres of vineyard added between June 1997 and April 2007 for a total of 66,024 acres, or an average of 2,439 acres per year of new vineyard development. Because the Vineyard Planting Reports are incomplete, these figures may be underestimates. However, the 2005 Sonoma County Crop Report lists 63,824.6 acres of vineyards as being in cultivation in 2005, which is within 25 acres of the above numbers when 2006 and 2007 are subtracted.

Timber Conversions to Vineyard – Countywide

CAL FIRE keeps records of the large timberland conversions and small conversion exemptions. Large conversion requests are those greater than three acres in size while small conversion requests are those less than three acres in

size. A June 20, 2002 County staff report[6] prepared by Mr. David Schiltgen notes that virtually all vineyard conversions between 1989 and 2001 have occurred outside the County's Timberland Production (TP) district, formerly known as the TPZ. The conversions have usually occurred in the Resource and Rural Development (RRD) district. Based on these records, from 1989 through 2004, 19 of the 22 large conversion requests approved were to accommodate vineyards. During this period, a total of 851 acres of timberland were approved for conversion. Of this total, 425 acres were converted through large acreage conversions. All but 56 of these acres were for vineyard uses. In addition, 426 acres were approved through small conversion exemptions.

As of September 2004, CAL FIRE had six large timber conversion applications pending in Sonoma County for an additional 369 acres, all of which were for vineyards. If approved, these would raise the 15 year total for timber conversion to 1,220 acres. The loss of timberland through the conversion process may be partially offset by new lands brought into timber production. The CAL FIRE reports that from 1989 to 2001, a total of 732 acres were planted to commercial timber species. These plantings occurred primarily in the area of the 1978 Creighton Ridge fire near Cazadero.

Timber Conversions to Vineyard

Vineyard development has occurred throughout the project vicinity in recent years, concentrated in areas of gentle terrain (ridgetops), high-quality soils, and relatively frost-free environments. Due to the good market for high quality wine grapes that currently exists, it is likely that interest in viticulture as a land use activity will continue to increase within the area. The potential for future vineyard development in the area may be somewhat limited by the relatively small proportion of the area containing attributes such as soils, climate, and terrain which are conducive to the production of premium grapes. CAL FIRE (2003) has estimated that approximately 800 acres of Goldridge soils remain available for development of high-quality pinot noir grape vineyards in the Annapolis area (including the Artesa property); however, this figure may not reflect more recent developments. Review of the site soils map (Figure 3.6-1) indicates that the proposed project could utilize on the order of 120 to 130 acres of these soils. The remaining Goldridge soils in the area may be unavailable for vineyard development for a variety of reasons, including unwillingness of current landowners to develop or sell their land. Additionally, although the wine market has been experiencing strong growth for the past few years, the market may become saturated, leading to reduced incentive to pursue new vineyard development.

Conclusion

The proposed project includes the conversion of approximately 190-acres of existing timber and grassland into vineyards. The proposed project would replace

the existing timberlands with a vineyard, the project is consistent with the types of allowable uses (agricultural) allowed on the project site by the General Plan. As a result, the changes in land use would be consistent with the General Plan. It should also be noted that the proposed project would place 133 acres of sensitive habitats, archaeological sites, and buffer areas in conservation easements which would ensure that they remain forested in perpetuity. Furthermore, as stated above, the loss of timber is largely an issue of resultant impacts to special-status species and water resources. These issues are addressed in Sections 3.4 and 3.7 of this EIR, respectively. Therefore, the proposed project's incremental contribution to the significant cumulative land use impacts is not cumulatively considerable, resulting in a ***less-than-significant*** impact.

Mitigation Measure(s)
None required.

AIR QUALITY

4-2 Cumulative impacts to regional air quality.

The project site is located within the Sonoma Coast/Gualala Basin Planning Area, which is the geographic area of inquiry for purposes of assessing the project's cumulative impacts to regional air quality. The Sonoma County General Plan EIR (p. 166) states that in the Sonoma Coast/Gualala Basin, air quality is usually very good. The area is generally free of pollutants due to prevailing winds and topography. Stationary emission sources include quarry operations and burning. Due to the increasingly stringent rules related to industrial operations, open burning, and woodburning stoves, it is not anticipated that these sources pose current or future air quality problems. In addition, the Northern Sonoma APCD currently has attained all federal ambient air quality standards, and for the past several years has attained all the state ambient air quality standards, with the exception of the recent non-attainment of the ozone standard. As discussed previously, the Northern Sonoma APCD has not physically exceeded the ozone standards since 2002; however, insufficient data collection has lead to the District being classified as a non-attainment zone. Therefore, the District will likely be classified attainment for ozone in the future as the air quality data is established. Furthermore, as discussed in Impact Statements 3.3-2 and 3.3-3 in Chapter 3.3, Air Quality, the operation of the proposed project would not result in any substantial adverse effects to air quality. Therefore, as the proposed project is consistent with the General Plan, and the General Plan EIR found that development under the General Plan would not pose current or future air quality problems, the proposed project's incremental contribution to air quality impacts is not cumulatively considerable and would result in a ***less-than-significant*** cumulative impact to regional air quality.

Mitigation Measure(s)
None required.

4-3 Cumulative contribution to Global Climate Change.

The proposed project would convert forests and grasslands to vineyards, a reservoir, corporation yard, and roads. According to the United States Environmental Protection Agency (USEPA, www.epa.gov) carbon sequestration rates vary by tree species, regional climate, topography, and management practices. In addition, soil carbon sequestration rates vary by soil type and cropping practice.

The USEPA information states that reforestation of previously harvested lands results in sequestration of approximately 1.1 to 7.7 metric tons of carbon per acre annually.[7] Studies conducted at the Jackson State Forest in Mendocino County[8] indicate that assuming the annual sequestration of approximately 2.0 metric tons of carbon per acre would be a reasonable expectation for the mixed coniferous forest located on the project site. Onsite vegetation is largely composed of second-growth forest; therefore, the reforestation sequestration rates currently apply. The USEPA information for grasslands indicates that carbon is sequestered at a rate of 0 to 1.9 tons per acre annually. Studies conducted in Shasta County in California indicate that non-grazed grasslands would sequester carbon at a rate of 0.02 metric tons per acre annually.[9] Following conversion of the project site, cover cropping and "no till" agricultural practices would be implemented in the vineyard area. Conservation tillage has been shown to sequester approximately 0 to 1.1 metric tons of carbon per acre per year on croplands. As the project site would be practicing conservation "no till" agricultural practices, including cover crops, the vineyard areas should sequester carbon within or above the conservation tillage range. Furthermore, vines are woody vegetation that would also sequester carbon. As a result, both the forested areas and the vineyard areas of the project site would continue to absorb carbon from the atmosphere.

Carbon accumulation in forests and soils eventually reaches a saturation point, beyond which additional sequestration is no longer possible. This happens, for example, when trees reach maturity, or when the organic matter in soils builds up to saturation levels. Even after saturation, the trees or agricultural practices would need to be sustained to maintain the accumulated carbon and prevent subsequent losses of carbon back to the atmosphere.

Out of a total of 324 acres, the proposed project includes the logging of approximately 171-acre timberland conversion area and developing approximately 19 acres of grassland. Approximately 171 acres would then be developed as a vineyard, including the cover cropped paths between the vines. Implementation of the proposed project would likely reduce the carbon absorption of the project site (See Table 4-3).

As discussed above, the project involves the implementation of cover crops and no-till practices. Furthermore, grape vines are a woody plant that would absorb

carbon. At this time a numerical model for analyzing the carbon sequestration of vineyards is not available. However, the carbon sequestration rates for the vineyard area are likely to be on the higher side of the estimates shown in Table 4-3 because carbon sequestration in woody plants such as vines would be higher than in grasses.

Logging and tilling would result in emissions of GHG through the use of tractors, logging trucks, and chainsaws. In addition, tilling and deep-ripping of the soils would release carbon currently stored in the soil. Following establishment of the project, vineyard operations would require the use of tractors and automobiles both for harvesting and transportation of workers.

Table 4-3
Onsite Carbon Sequestration Estimates

Current Use	Acreage (ac.)	Carbon Sequestration Rates (metric tons per acre per year)	Low Estimate (metric tons of carbon)	California Estimate (metric tons of carbon)	High Estimate (metric tons of carbon)
Pre-Conversion					
Forest (Reforestation rates)	305	1.1 to 7.7 (2.0 for California Estimate)	335.5	610	2,348.5
Grassland	19	0* to 1.9 (0.02 for California Estimate)	0	0.4	36.1
Pre-Conversion Totals	**324**		**335.5**	**610.4**	**2,384.6**
Post Conversion					
Vineyard (Conservation tillage)	159	0* to 1.1 (Mid-range of 0.55 assumed for California Estimate)	0	87.5	174.9
Preserved Forest (Reforestation rates)	134	1.1 to 7.7 (2.0 for California Estimate)	147.4	268	1,031.8
Roads, ponds, etc.	31	0	0	0	0
Post Conversion Totals	**324**		**147.4**	**355.5**	**1,206.7**

Net Change (decrease in carbon absorption)	**-188.1**	**-254.9**	**-1,177.9**

*Assumes that the soil is saturated with carbon.

Sources:
Greenhouse Gas Mitigation Potential in U.S. Forestry and Agriculture; 2005. Accessed on www.epa.gov June 2007.
Winrock International. Measuring and Monitoring Plans for Baseline Development and Estimation of Carbon Benefits for Change in Forest Management in Two Regions, March 2004. Accessed at http://www.energy.ca.gov/reports/CEC-500-2004-070/CEC-500-2004-070F.PDF on March 27, 2008.
Applied Geosolutions, LLC and Complex Systems Research Center, University of New Hampshire. Assessing Impacts of Rangeland Management and Reforestation of Rangelands on Greenhouse Gas Emissions: A Pilot Study for Shasta County, February 2007. Accessed at http://www.energy.ca.gov/2006publications/CEC-500-2006-108/CEC-500-2006-108.PDF on March 27,2008.

The following is a general estimate of the yearly carbon dioxide creation of the proposed project based on the employee vehicle miles traveled. The estimates are based on six months of peak harvest season trips, and six months of off-season trips. Estimates are not attempted for the use of tractors, power equipment, or large trucks. However, the numbers contained in Table 4-4 are still considered to be a conservative estimate of the proposed project's vehicle carbon dioxide production as the longest potential harvest season was presumed, and seven day work weeks were used on a year round basis.

As shown in Table 4-4, the proposed project would annually generate approximately 231 metric tons of carbon dioxide. The figure does not account for tractor emissions, small engine emissions (e.g., weedeaters), or the initial emissions associated with logging and conversion of the site. Currently, the project site serves as a carbon sink for emissions generated elsewhere. Following conversion the project site would continue to sequester carbon; however, the sequestration rate would be reduced as a result of the decreased tree cover. The combination of the reduction in sequestration and the vehicle carbon generation indicates that implementation of the proposed project would result in a scenario that falls in between the sequestration of 975.7 metric tons under the High Estimate (231 metric tons [operational emissions] – 1,206.7 metric tons [sequestration]) and a net increase in carbon of 83.6 metric tons under the Low Estimate (231 metric tons [operational emissions] – 147.4 metric tons [sequestration]) of carbon dioxide equivalents per year. Use of the California Estimate on carbon sequestration indicates that implementation of the proposed project would result in the sequestration of 124.5 metric tons of carbon dioxide equivalents (231 metric tons [emissions] – 355.5 metric tons [sequestration]). Therefore, except for the low carbon sequestration estimate, the project site would continue to sequester more carbon dioxide than vineyard activities would emit. Under the worst-case scenario the project would result in net emissions of 83.6 metric tons of carbon dioxide equivalents. In comparison, California emits approximately 492 million metric tons of carbon dioxide equivalents.

It is also important to note that certain aspects of the project's design, as well as operational activities, would help to minimize the generation of greenhouse gases. For example, wildfires are a large source of carbon emissions and the conversion of timberland adjacent to rural residential communities, such as the proposed project, would reduce the potential for fires started in the community spreading into the nearby forests, which could result in catastrophic wildfires. To further reduce the project's potential to result in wildfires, and reduce emissions, the project would chip woody wastes from logging and vineyard trimming instead of burning, and utilize solar powered electric water pumps instead of diesel powered water pumps. Furthermore, the proposed project would be subject to any regulations established by the ARB in response to the direction provided by AB 32. Over time the project's greenhouse gas emissions would be reduced through the implementation of the low-carbon fuel standard, as well as increased vehicle fuel efficiency.

Table 4-4
Vehicle Carbon Generation

Season	Employees	Trips	Ave Miles per Trip	Miles per day	Miles per Season	Carbon Generation Rate	Approximate Carbon Dioxide Generation*
Harvest (183 days)	72	128	25 miles	3,200	585,600	366 grams of CO_2 per mile	214.3 tons
Off-Season (182 days)	6	10 (.077 x 128)	25 miles	250	45,500	366 grams of CO_2 per mile	16.7 tons
Tons of Carbon Per Year							**231 metric tons**

*Carbon generation was determined as follows (Miles per season * 366 grams per mile / 1000 grams per kilogram / 1000 kilograms per metric ton)

Sources: For employees and traffic trips - *Traffic Impact Study for Artesa Vineyards Project*, 2004. For carbon dioxide generation - *Proposed Methodology to Model Carbon Dioxide Emissions and Estimate Fuel Economy,* Accessed on www.arb.ca.gov June 2007.

In addition, as stated in the traffic report, at least ten percent of project workers are expected to carpool to the project site. It is also very important to consider the current function of the project site as a carbon sink. The project site currently provides a service to the community as regards the sequestration of carbon. Implementation of the proposed project would reduce the magnitude of the service provided; however, it is likely that the project will continue to sequester carbon at a greater rate that the proposed project would generate carbon emissions.

Currently, thresholds of significance for GHGs have not been identified by either the ARB, or the NSCAPCD. Early actions proposed by the ARB[10] are not strictly

applicable to the proposed project, and the proposed project would be subject to any applicable State regulations as they are developed. Furthermore, in the context of statewide, nationwide, or global emissions, and considering the carbon sequestration that would continue to occur once the vineyards are planted, the proposed project's incremental contribution to this cumulative impact would not be cumulatively considerable. Therefore, the proposed project would have a ***less-than-significant*** impact on climate change.

Mitigation Measure(s)
None required.

BIOLOGICAL RESOURCES

4-4 Cumulative impacts to special status plants and wildlife.

Northwestern Sonoma County is the geographic area of inquiry for purposes of assessing the project's cumulative impacts to special status plants and wildlife. The lands of this region have been increasingly subject to vineyard conversion over the last twenty years. Implementation of the proposed project in conjunction with other proposed vineyard conversion projects such as Preservation Ranch (approximately 2,000 acres), Roessler (approximately 10 acres), and Sleepy Hollow (approximately 29 acres) would contribute to a cumulative regional loss of north coast coniferous forest, northern coastal grassland, coastal scrub, and wetland habitat, as well as to common plant and animal species. The northern coastal grassland is known to support a CNPS List 1.B.2 species: thin-lobed horkelia. The North Coast coniferous forest and coastal scrub habitat are known to support a hybrid population of manzanita (Annapolis manzanita) that is unique to the Annapolis area. Impacts to these vegetation communities onsite could contribute to the cumulative loss of these special-status species in the region. Additionally, the loss of project site vegetation communities would also contribute to a cumulative loss of wildlife foraging habitat and nesting habitats of common species.

The vineyard conversion would also result in potentially significant impacts to "waters of the United States" and stream channels that are regulated by the U.S. Army Corps of Engineers, the Regional Water Quality Control Board, and the California Department of Fish and Game. On a regional basis, these impacts would add to other development-related losses of "waters of the United States" and stream channels.

However, in Chapter 3.4, mitigation measures have been designed to reduce project impacts to special-status plants and animals to a less-than-significant level. The project would result in "no net loss" of wetlands, would establish preserves for special-status plants, would not infringe on waterways, and would avoid adverse impacts to special-status species through the implementation of mitigation required in this Draft EIR. For this reason, and because project-related

effects to wildlife corridors would be avoided or minimized by the applicant's incorporation of measures such as fencing of individual vineyard blocks and designation of a conservation easement around Patchett Creek (see Draft EIR Impact Statement 3.4-5 in Chapter 3.4, Biological Resources), the proposed project's incremental contribution to cumulative impacts to special-status plants and animals would not be cumulatively considerable, resulting in a ***less-than-significant*** cumulative impact.

Mitigation Measure(s)
None required.

4-5 Cumulative impacts to fisheries within the Gualala River watershed.

The Gualala River watershed is the geographic area of inquiry for purposes of assessing the project's cumulative impacts to fisheries. As stated in the project Fisheries Assessment (p. 12), the decrease of California's native fish populations, due to a multitude of factors including high sediment loading, increased water temperatures, restricted access to historic spawning sites, and flow reduction, cannot be understated. Greater than half of California's 67 native inland fish species are either extinct or in serious decline and protected as special-status species. This latter category includes the steelhead trout fishery in the Gualala River watershed.

The Fisheries Assessment (p. 12) further notes that the correlation between historic extractive land uses (e.g. timber harvesting, road construction) and cumulative adverse watershed effects in the Gualala River basin is well documented (See the Fisheries Assessment Bibliography in Appendix J to this DEIR). Past land use practices have significantly exacerbated erosion problems within the Gualala River basin, and continue to impact the basin today, with each of the Gualala River sub-basins currently impaired, to varying degrees, due to sediment levels. Ninety-five percent of the Gualala River watershed is privately owned, and it is likely that historic land use activities will continue. Continuation of such land uses may have potentially significant direct and/or indirect cumulative effects on the Gualala River steelhead trout population.

However, the direct factors that continue to limit the distribution and abundance of steelhead trout in the Gualala watershed, including reduced flow and increased sediment inputs and water temperature, result predominantly from the legacy of historic, improperly conducted land use practices. Present-day timber harvesting and road construction activities are subject to the water quality protection measures incorporated into the California Forest Practice Rules, while vineyards within Sonoma County are required to comply with the County Vineyard Sediment and Erosion Control Act (VESCO). It should further be noted that any future projects in the Gualala watershed and elsewhere in Sonoma County would be subject to CEQA environmental review, in which project-specific and cumulative impacts would be evaluated as part of the planning process. However,

as discussed in Chapter 3.7, Hydrology and Water Quality, cumulative development within the watershed would likely result in potentially significant cumulative impacts related to sedimentation, but the project's incremental contribution to this cumulative impact would be less-than-significant due to the net benefit the project is projected to create via reducing existing sedimentation rates.

To ensure that the proposed project does not result in adverse effects to fisheries, the proposed project has been designed to ensure that the project results in a decrease in sedimentation. In addition, mitigation has been included in the proposed project to ensure that monitoring of water quality is conducted to ensure that the estimated net decrease in sedimentation occurs. Therefore, the proposed project's incremental contribution to the cumulative impact would not be cumulatively considerable. (Please refer to Chapter 3.7, Hydrology and Water Quality, of this DEIR for further discussion.) Furthermore, as pointed out in Impact Statements 3.4-8 and 3.4-11 of Chapter 3.4, Biological Resources, the proposed project has the potential to enhance downstream conditions by reducing erosion and increasing summer base flow. Therefore, the proposed project would not only avoid adverse impacts to fisheries, but could also result in beneficial impacts related to sedimentation and summer base flow. For these reasons, the proposed project's incremental contribution to cumulative impacts to fisheries in the Gualala River watershed would not be cumulatively considerable, and the project would have a ***less-than-significant*** on fisheries.

Mitigation Measure(s)
None required.

CULTURAL RESOURCES

4-6 Cumulative impacts to cultural and paleontological resources.

Cultural and paleontological resources are unique and non-renewable resources, and the potential exists for development activities to damage and destroy such sites and features before the information inherent in them can be reviewed, recorded, and interpreted. The archaeology of prehistoric resources in their original contexts is crucial in developing an understanding of the social, economic, and technological character of cultural artifacts. Because such resources are best understood in the context of the system of which they are a part, the loss of any one archeological or paleontological site can affect others in a region. Similarly, paleontological resources are best understood in the context of the total fossil record for the strata and the time period in question.

In addition, the boundaries of an archeologically or paleontologically important site can extend beyond property boundaries. As a result, a meaningful approach to preserving and managing cultural and/or paleontological research must focus on the likely distribution of sensitive resources, rather than on project or parcel

boundaries. Such cultural and paleontological systems are represented by the total inventory of all sites and other remains.

Past land use practices have adversely affected the integrity of paleontological and archeological sites throughout Sonoma County and California. As described above, existing but undiscovered archeological or paleontological resources on the project site and throughout the project area could contain information pertinent to the general understanding of the prehistoric past of the region. Therefore, the potential exists for the proposed project, along with other cumulative development in Sonoma County, to damage or destroy cultural and/or paleontological resources particular to the area.

Sonoma County is the geographic area of inquiry for purposes of assessing the project's cumulative impacts to cultural and paleontological resources. Cumulative development under the Sonoma County General Plan could have a significant impact on cultural and paleontological resources. However, the recording and preservation of significant cultural and paleontological resources within the project area, as identified in the above mitigation measures, would reduce project impacts to a less-than-significant level. The proposed project's incremental contribution to the potentially significant cumulative impact would not be cumulatively considerable. Therefore, the project would have a ***less-than-significant*** cumulative impact.

Mitigation Measure(s)
None required.

GEOLOGY

4-7 Cumulative geologic and seismic impacts.

The proposed project would not significantly increase the number of people and structures that could be exposed to potential effects related to seismic hazards. Although the vineyard would employ manual labor crews for up to three or four months per year on a seasonal basis, the vineyard would not be open to the public. In addition, construction of new structures would be limited to the 1-acre corporation yard area on the site. As required by Sonoma County, all structures would be constructed to UBC standards.

Furthermore, potentially adverse environmental effects associated with seismic hazards, geologic or soils constraints, and topographic alteration are usually site-specific and generally would not combine with similar effects that could occur with other projects in the Annapolis area. All projects proposed in the area would be required to comply with the UBC and other applicable safety regulations. Consequently, the proposed project would generally not be affected by, nor would it affect, other development approved by the County of Sonoma. In addition, Impact Statement 3.7-2 in Chapter 3.7, Hydrology and Water Quality, addresses

cumulative impacts related to sedimentation. The analysis found that, in the long-term, implementation of BMPs and mitigation that requires annual inspections and permanent erosion measures would ensure that adverse impacts related to increased sedimentation do not occur. Therefore, the cumulative impact of the proposed project, relating to geology and soils, would be considered ***less-than-significant***.

Mitigation Measure(s)
None required.

HYDROLOGY AND WATER QUALITY

4-8 Cumulative impacts relating to water yield, peak flows, and sedimentation.

The Gualala River watershed is the geographic area of inquiry for purposes of assessing the project's cumulative impacts related to hydrology and water quality. Potential cumulative watershed impacts of the proposed vineyard development are addressed in this section. With many vineyard development projects occurring in the Annapolis area, there is a potential for cumulative effects of vineyards within a given watershed. A total maximum daily load (TMDL) has been completed for the Gualala River to address the sediment impairment as a result of excessive siltation.

Currently, vineyards exist proximal to the proposed vineyard development site. A significant potential exists for cumulative watershed impacts if the entire area is converted to vineyards. While one vineyard may not contribute much sediment to a stream, the cumulative effect of a small amount of sediment per vineyard could translate to more substantial sediment impacts to downstream water bodies.

Peak Flows

Hydrologic analyses of potential project effects have been conducted at different spatial scales, including the site (project area) scale and the watershed (impact area) scale. The foregoing analysis evaluated potential project effects on peak flows in very small drainages on the project site. It was estimated that peak flow increases in typical conversion areas could range up to about 30% for a 2-yr recurrence interval event for drainages of about 0.02 square miles. For the project area, comprising a drainage area of about two-thirds of a square mile, overall peak flow increase was estimated to be about 10% for a 2-yr recurrence interval event.

Hydrologic analyses conducted by West Yost Associates (WYA) for the Patchett Creek watershed evaluated potential project effects on off-site peak flows for the small watershed (1.76 square miles) draining the majority of the project area. WYA estimated peak flow increases resulting from the project would be as high as 5% for a 2-yr recurrence interval event and about 3% and 2% for 10-yr and 100-yr events, respectively.

Patchett Creek is a tributary of the Wheatfield Fork Gualala River, which has a drainage area of about 111 square miles. The project area occupies about 0.6% of the Wheatfield Fork watershed, and the Patchett Creek watershed contributes about 1.6% of the Wheatfield Fork watershed. Although no direct estimates of project impacts on peak flow in the Wheatfield Fork have been made, the small extent of the project area in relation to the Wheatfield Fork drainage area indicates that the likely magnitude of impact is negligible. Assuming a 5% peak flow increase in Patchett Creek, comprising 1.6% of the Wheatfield Fork watershed, and assuming that flow is proportional to drainage area, the corresponding peak flow increase in the Wheatfield Fork would be 0.08% (0.05 x 0.016 = 0.0008 or 0.08%). This potential magnitude of peak flow increase is insignificant.

Sedimentation

The project's long-term sediment contribution is projected to be less than existing levels. Specifically, as discussed in Chapter 3.7, Hydrology and Water Quality, upon implementation of the project sedimentation is estimated to decrease by 10 to 21 tons/yr. Other projects would also be required to implement BMPs; however, the efficacy of the measures implemented on other projects cannot be assured. Furthermore, additional sedimentation from construction is likely to occur. The effects of the proposed project, in combination with similar effects generated by other timber conversion and/or vineyard projects in the area, would be considered significant. However, as the proposed project would result in an estimated net decrease in sedimentation over time, the proposed project's incremental contribution to the significant cumulative impact would not be cumulatively considerable. As a result, with the project's BMPs and implementation of Mitigation Measures 3.7-2 (a-i) and 3.7-3 (a, b) required in the Hydrology and Water Quality chapter of the DEIR, the proposed project would have a ***less-than-significant*** cumulative impact.

Mitigation Measure(s)
None required.

HAZARDS

4-9 Cumulative impacts related to hazards.

Impacts associated with hazardous materials are site-specific and generally do not affect or are not affected by cumulative development. Cumulative effects could be of concern if the project were, for example, part of a larger development in which industrial processes that would use hazardous materials were proposed. However, this is not the case with this project, and project-specific impacts were found to be less-than-significant with the implementation of the recommended mitigation measures. In addition, development in the surrounding area would be subject to

the same federal, State, and local hazardous materials management requirements as the proposed project, which would minimize potential risks associated with increased hazardous materials use in the community, including potential effects, if any, on the proposed project. Therefore, implementation of the proposed project in conjunction with cumulative development would have a ***less-than-significant*** impact in relation to hazards.

Mitigation Measure(s)
None required.

TRANSPORTATION AND CIRCULATION

4-10 Cumulative (Year 2025) traffic impacts to the study intersections and roadway segments from vineyard operations.

Cumulative (Year 2025) Traffic Conditions

This section discusses cumulative (Year 2025) traffic conditions associated with the proposed vineyard operations under the No Project and Plus Project scenarios. Projected future traffic conditions are based on a 9.7 percent annual growth factor derived from link traffic volumes in Sonoma County's 1995 Congestion Management Program (CMP) update. Given that project completion is estimated within the next three to five years, a cumulative (long-term) traffic impact analysis would not apply to the short-term timber harvesting and vineyard development activities; therefore, the cumulative traffic analysis addresses only post-construction vineyard operations.

Cumulative (Year 2025) No Project Traffic

The Sonoma County travel demand model was used to generate average PM peak volumes. The annual growth factor was calculated from Year 1995 existing model-calibrated volumes and Year 2000 estimated volumes on SR-1 within the project area. The Year 2000 volumes assumed a full-buildout condition of the County's Capital Improvement Program. The growth factor was used to estimate growth in turning movements at all study area intersections. Cumulative (2025) No Project peak hour traffic volumes are shown on Figure 4-1.

Cumulative (Year 2025) Plus Project Traffic

The peak hour project volumes were added to the Cumulative Without Project traffic volumes to determine future traffic volumes with the proposed project. Cumulative (2025) Plus Project peak hour traffic volumes are shown on Figure 4.0-2.

Cumulative No Project Conditions

Cumulative Traffic Conditions

Cumulative (Year 2025) AM and PM peak hour traffic turning movements for the study area intersections are based on existing turning movement counts, which TJKM extrapolated to 2025 using the 9.7 percent annual growth factor described above in the Methods of Analysis section. Figure 4-1 shows the peak hour turning movement volumes at the study intersections.

Intersection Level of Service, Cumulative Conditions

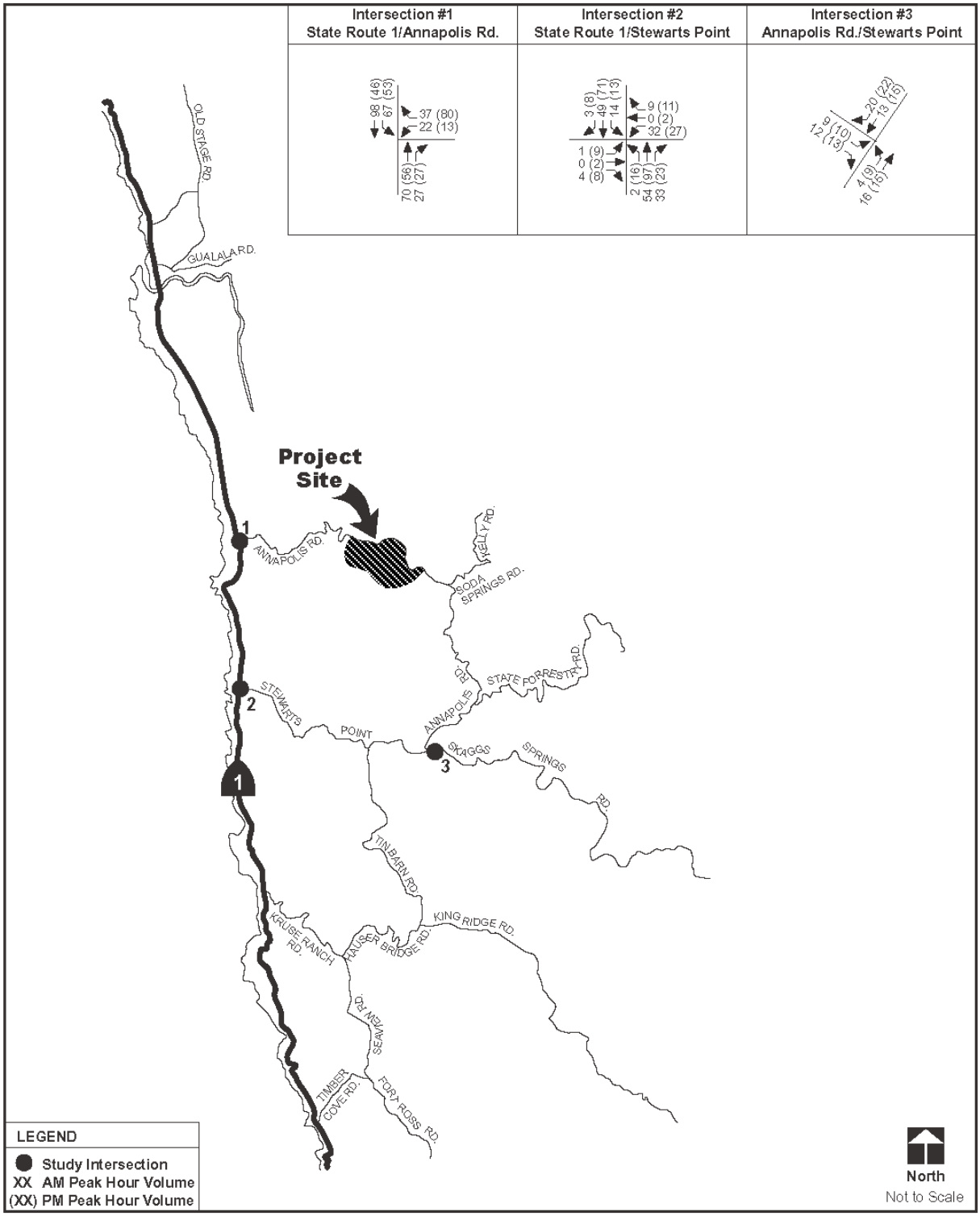
Under future conditions without the project, all study intersections are expected to operate at an acceptable LOS (B or better) for both major and minor movements. Table 4-5 summarizes the results of the intersection level of service analysis for Cumulative No Project conditions. Detailed calculations are provided in Appendix F of the Traffic Impact Study.

Cumulative Plus Project Conditions

Trip Generation, Distribution, and Assignment

For the Cumulative (Year 2025) Plus Project scenario, the project's trip generation, distribution, and directional assignment are all expected to be the same as in the Existing Plus Project condition. This is the case because it is reasonable to assume that the project trips would be the same regardless of whether they were added to Existing baseline or Cumulative baseline traffic (baseline meaning traffic conditions without the project).

Figure 4-1
Cumulative (Year 2025) No Project Turning Movement Volumes



Intersection Level of Service Analysis

Figure 4-2 illustrates the Cumulative (Year 2025) Plus Project traffic volume projections at the study area intersections. Table 4-6 summarizes the intersection levels of service under this scenario (also refer to Traffic Impact Study Appendix G).

With the addition of the project traffic under Cumulative (Year 2025) conditions, all study intersections are projected to operate at LOS B or better. A comparison of Tables 4-5 and 4-6 demonstrates that the study intersections would experience small but insignificant increases in approach delay with the largest increase (0.3 seconds) occurring at the SR-1/Annapolis Road intersection during the AM Peak Hour. Levels of service at two intersections would change from LOS A to LOS B; however, such a change is not detectable by the average driver.

Link Level of Service Analysis, Cumulative (Year 2025) Plus Project Conditions

The link LOS for SR-1, Annapolis Road, and Stewarts Point Road under Cumulative (Year 2025) Plus Project conditions is provided in Appendix H of the Traffic Impact Study, and summarized in Table 4-7. The table shows that in the project vicinity, these roadways are expected to operate at LOS B or better. This result implies that in the future, traffic generated by the proposed project would not be expected to cause any noticeable increase in congestion on the roads.

The contribution of the proposed project trips to each roadway segment is shown in Table 4-8. The table shows that project contributions to the study area roadway segments would be minimal. For example, the project would contribute approximately 30 percent of the traffic under the Cumulative (Year 2025) Plus Project scenario on Stewarts Point Road. This is not likely to have any impact on the one-way traffic movement on the two small bridges on Annapolis Road and Stewarts Point Road.

Figure 4-2
Cumulative (Year 2025) Plus Project Turning Movement Volumes

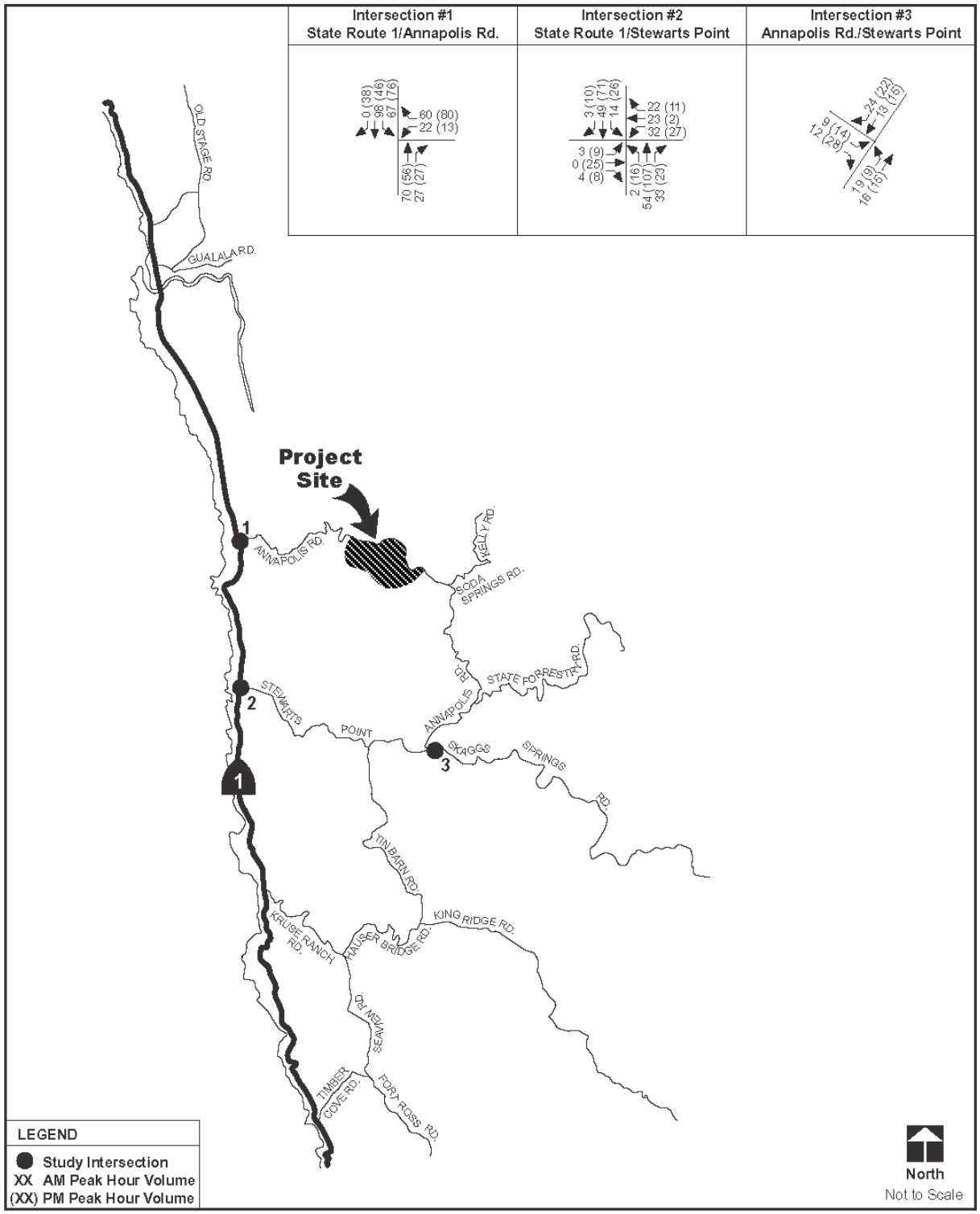


Table 4-5
Cumulative (Year 2025) No Project Intersection Levels of Service

Intersection	Control	A.M. Peak Hour		P.M. Peak Hour	
		Delay	LOS	Delay	LOS
SR-1/ Stewarts Point Road	Two-Way Stop	9.9 (9.9)	A (A)	10.2 (10.2)	B (B)
Stewarts Point Road/ Annapolis Road	One-Way Stop	8.6 (8.6)	A (A)	8.6 (8.6)	A (A)
SR-1/Annapolis Road	One-Way Stop	10.4 (10.4)	B (B)	9.9 (9.9)	A (A)

Note: LOS = Level of Service
X = Intersection level of service
X.X = Overall intersection delay in seconds per vehicle
(X) = Level of service for the minor approach
(X.X) = Average delay for the minor approach (in seconds per vehicle)
Delay = Values in parenthesis indicated average delay for the critical movement at One- and Two-Way STOP-controlled intersections.

Source: TJKM, December 2, 2004.

Table 4-6
Cumulative (Year 2025) Plus Project Intersection Levels of Service

Intersection	Control	A.M. Peak Hour		P.M. Peak Hour	
		Delay	LOS	Delay	LOS
SR-1/ Stewarts Point Road	Two-Way Stop	10.1 (10.1)	B (B)	10.4 (10.4)	B (B)
Stewarts Point Road/ Annapolis Road	One-Way Stop	8.7 (8.7)	A (A)	8.7 (8.7)	A (A)
SR-1/Annapolis Road	One-Way Stop	11.7 (11.7)	B (B)	10.0 (10.0)	B (B)

Note: LOS = Level of Service
X = Intersection level of service
X.X = Overall intersection delay in seconds per vehicle
(X) = Level of service for the minor approach
(X.X) = Average delay for the minor approach (in seconds per vehicle)
Delay =Average stopped delay at signalized intersections and average delay for all movements at STOP-controlled intersections. Values in parenthesis indicated average delay for the critical movement at One- and Two-Way STOP-controlled intersections.

Source: TJKM, December 2, 2004.

Table 4-7
Cumulative (Year 2025) Plus Project Peak Hour Level of Service on Arterial Roads

Road	Lanes per Dir.	Hourly Capacity	Time of Day	Volume	V/C	LOS
SR-1	1	2280	AM	330	0.14	B
			PM	293	0.13	B
Annapolis Road	1	1780	AM	177	0.10	A
			PM	197	0.11	A
Stewarts Point Road	1	1780	AM	114	0.06	A
			PM	139	0.08	A

Source: TJKM, December 2, 2004.

Table 4-8
Cumulative (Year 2025) Plus Project Percent Project Trip Contribution (Link Level)

Roadway Segment	Future Traffic (a.m.)	Project Traffic (a.m.)	Total Traffic (a.m.)	Percent Project Traffic (a.m.)	Future Traffic (p.m.)	Project Traffic (p.m.)	Total Traffic (p.m.)	Percent Project Traffic (p.m.)
SR-1 (SB link)	272	58	330	18	235	58	293	20
Annapolis Road (WB link)	153	24	177	14	173	24	197	12
Stewarts Point Road (WB link)	88	34	122	28	78	34	112	30

Source: TJKM, December 2, 2004.

Conclusion

Implementation of the proposed project and the associated incremental contribution of traffic trips to the surrounding roadway network in the cumulative scenario would not be cumulatively considerable. Long-term project-associated degradation of LOS at study area intersections and on study area roadway segments is projected to be minimal and unnoticeable to the average driver. Therefore, the cumulative impact to study area intersections and roadway segments would be considered ***less-than-significant***.

Mitigation Measure(s)
None required.

NOISE

4-11 Cumulative impacts from project-generated traffic noise.

The project would generate increased traffic on the existing roadway network in the Annapolis area. However, the project-generated traffic is expected to result in traffic noise level increases over cumulative no-project levels of approximately 1.5 dB, based on the forecast that the project would result in a 12 to 30 percent increase in traffic.

A substantial increase in traffic noise levels is defined as 5 dB. Due to the relatively small number of trips predicted to be generated by the proposed project when compared to no-project traffic volumes, traffic noise level increases are predicted to be insignificant on all segments of the local roadway network. Because the project-generated traffic would not cause significant cumulative traffic noise level increases along the existing roadway network, this impact is considered to be ***less-than-significant***.

Mitigation Measure(s)
None required.

4-12 Cumulative operational noise impacts.

With the exception of periodic maintenance and two to three weeks of harvesting per year, vineyards are not substantial noise-producing uses, and noise generated by such uses is highly localized. As a result, it is unlikely that noise generated by routine maintenance or seasonal harvesting would appreciably combine with noise generated on neighboring or distant properties to create a significant cumulative noise level increase. Therefore, this impact is considered to be ***less-than-significant***.

Mitigation Measure(s)
None required.

AESTHETICS

4-13 Cumulative impacts to the visual character of the region from the conversion of timberland to vineyard rows.

Trees and forested areas are typically considered aesthetically pleasing visual resources. Once a timber conversion occurs, the forested visual character of a site is, for practical purposes, permanently lost. (It should be noted, however, that enjoyment of forest scenery as opposed to vineyard scenery, which can also be considered aesthetically pleasing, is a matter of personal preference.) In addition, the conversion of forest to vineyards results in the temporary introduction of

additional minor amounts of light and glare at night where none previously existed during grape harvesting season.

By one estimate, Sonoma County has seen over 26,000 acres of vineyard added between June 1997 and April 2007 (see DEIR page 3.2-26). The vast majority of this vineyard expansion has occurred in non-timberland areas. Nonetheless, recent timberland conversion activities in Sonoma County have included an increasing amount of vineyard development. However, as discussed in Impact Statement 3.2-5 in Chapter 3.2, Land Use, of this DEIR, the proposed project is consistent with General Plan policies related to timber production and timber land conversion.

Sonoma County, as well as the more localized Annapolis area and the vicinity of the project site, are the geographic areas of inquiry for purposes of assessing the project's cumulative impacts to the visual character of the region. The proposed project, in conjunction with past and future timberland conversions to vineyard in Sonoma County, would contribute to a cumulative loss of timberland and associated aesthetic qualities. Cumulative development in areas identified as scenic landscape units by the Sonoma County General Plan would be considered to be particularly significant; however, development in areas not designated as scenic, where the proposed project is located, would not be considered adverse. Therefore, the cumulative impact to visual resources is considered to be ***less-than-significant***.

Mitigation Measure(s)
None required.

Endnotes

[1] California Department of Forestry and Fire Protection. The 2007 Policy Statement and Strategic Program of the Board of Forestry and Fire Protection; May 2007. http://www.bof.fire.ca.gov/PDFS/PolicyProgram5-1-07.pdf
[2] http://www.sonoma-county.org/agcomm/crop_report.htm
[3] Merenlender, Adina M. (2000, May-June). Mapping vineyard expansion provides information on agriculture and the environment. *California Agriculture*, 7-12.
[4] Merenlender, Adina M. (2000, May-June). Mapping vineyard expansion provides information on agriculture and the environment. *California Agriculture*, 9.
[5] http://www.sonoma-county.org/agcomm/vesco_rpt.asp
[6] http://www.sonoma-county.org/prmd/gp2020/pdf/tmbrcon4.pdf
[7] *Greenhouse Gas Mitigation Potential in U.S. Forestry and Agriculture*; 2005. Accessed on www.epa.gov June 2007.
[8] Winrock International. Measuring and Monitoring Plans for Baseline Development and Estimation of Carbon Benefits for Change in Forest Management in Two Regions, March 2004. Accessed at http://www.energy.ca.gov/reports/CEC-500-2004-070/CEC-500-2004-070F.PDF on March 27, 2008.
[9] Applied Geosolutions, LLC and Complex Systems Research Center, University of New Hampshire. Assessing Impacts of Rangeland Management and Reforestation of Rangelands on Greenhouse Gas Emissions: A Pilot Study for Shasta County, February 2007. Accessed at http://www.energy.ca.gov/2006publications/CEC-500-2006-108/CEC-500-2006-108.PDF on March 27,2008.
[10] California Air Resources Board. Proposed Early Actions to Mitigate Climate Change in California, April 20, 2007.

5. STATUTORILY REQUIRED SECTIONS

5. STATUTORILY REQUIRED SECTIONS

5.1 GROWTH-INDUCING IMPACTS

According to CEQA standards, a project would be considered to have a significant adverse impact on the environment if it would induce substantial growth or concentration of population in the surrounding environment. If the project, either directly or indirectly, would foster the construction of additional housing, significant growth-inducing impacts would occur. Growth is often induced through one or more of the following actions: extending urban services into a previously unserved area, extending a major roadway into a previously unserved area, or establishing major new employment opportunities.

The proposed project does not include housing and would not extend services or infrastructure, nor would a substantial number of jobs be created by the proposed project. Furthermore, most of the jobs associated with the project would be seasonal in nature and would not induce population growth by attracting a substantial workforce. Furthermore, as discussed in Chapter 3.2, Land Use, the proposed project is in compliance with applicable Department of Forestry and Fire and Sonoma County land use regulations and policies. In particular, vineyard development is allowed under the project site's current land use designation. Therefore, the proposed project would not induce growth, or result in environmental impacts related to growth-inducement.

5.2 CUMULATIVE IMPACTS

In compliance with CEQA Guidelines Section 15130, which requires that an EIR discuss the cumulative and long-term effects of the proposed project that adversely affect the environment, cumulative impacts of the proposed project have been addressed in Chapter 4, Cumulative Impacts.

5.3 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

CEQA Guidelines §15126.2(c) mandates that an EIR address any significant irreversible environmental changes that would result from implementation of a proposed project. An impact would fall into this category if:

- The project would involve a large commitment of nonrenewable resources;
- The primary and secondary impacts of a project would generally commit future generations to similar uses (e.g. a highway provides access to a previously remote area);
- The project involves uses in which irreversible damage could result from any potential environmental accidents associated with the project; or

- The phasing of the proposed consumption of resources is not justified (e.g., the project involves a wasteful use of energy).

The proposed project would involve the clearing of timber and the planting of a vineyard. As evidenced by the existing second-growth forest which naturally replaced orchard and grazing uses on the project site after the site was left fallow, conversion of the project site to a vineyard is not irreversible. Indeed, conifer seedlings continue to reclaim the remaining grasslands onsite. The project would not result in primary or secondary impacts that would commit future generations to similar uses. Nor would the project involve the large commitment nonrenewable resources or involve the unjustified consumption of resources. Furthermore, the project has been designed to avoid irreplaceable resources, and mitigation has been incorporated to further reduce environmental impacts.

5.4 Significant Unavoidable Impacts

According to CEQA Guidelines §15126.2(b), a Draft EIR must include a description of those impacts identified as significant and unavoidable should the proposed action be implemented. Such impacts would be considered unavoidable when it has been determined that either no mitigation, or only partial mitigation is feasible, such that the impact is not reduced to a level that is less than significant. The final determination of the significance of impacts and of the feasibility of mitigation measures would be made by CAL FIRE as part of its certification action.

As demonstrated in the technical chapters of the Draft EIR, implementation of the proposed project would not result in any significant and unavoidable impacts.