



# Negative Declaration & Notice Of Determination

PLANNING & BUILDING DEPARTMENT • COUNTY OF SAN LUIS OBISPO  
976 OSOS STREET • ROOM 200 • SAN LUIS OBISPO • CALIFORNIA 93408 • (805) 781-5600

**ENVIRONMENTAL DETERMINATION NO. ED13-100**

**DATE: 11/27/2013**

**PROJECT/ENTITLEMENT:** Rava Major Grading Permit; PMT2012-02397

**APPLICANT NAME:** Chad Rava

**ADDRESS:** P.O. Box 1531 Paso Robles, CA 93447

**CONTACT PERSON:** Robert C. Tartaglia

**Telephone:** 805-391-3661

**PROPOSED USES/INTENT:** Request by Chad Rava for a major grading permit to construct an 8.5 acre-foot (2.77 million gallon) capacity frost protection reservoir for an existing 185-acre vineyard. The proposed project would result in the disturbance of approximately 1.4 acres (60,980 square feet) and 12,839 cubic yards of grading, including 8,388 cubic yards of cut and 4,451 cubic yards of fill, on a 195-acre parcel. The proposed project is within the Agriculture land use category.

**LOCATION:** The proposed project is located west of California State Route 41 (SR 41), at the northwest corner of SR 41 and Clark Road, approximately two miles southwest of the community of Shandon, in the rural Shandon-Carrizo planning area.

**LEAD AGENCY:** County of San Luis Obispo  
Dept of Planning & Building  
976 Osos Street, Rm. 200  
San Luis Obispo, CA 93408-2040  
Website: <http://www.sloplanning.org>

**STATE CLEARINGHOUSE REVIEW:** YES  NO

**OTHER POTENTIAL PERMITTING AGENCIES:** California Department of Fish and Wildlife  
Air Pollution Control District Regional Water Quality Control Board

**ADDITIONAL INFORMATION:** Additional information pertaining to this Environmental Determination may be obtained by contacting the above Lead Agency address or (805)781-5600.

**COUNTY "REQUEST FOR REVIEW" PERIOD ENDS AT .....4:30 p.m. on December 12, 2013**

**30-DAY PUBLIC REVIEW PERIOD begins at the time of public notification**

## Notice of Determination

State Clearinghouse No. \_\_\_\_\_

This is to advise that the San Luis Obispo County \_\_\_\_\_ as  *Lead Agency*  
 *Responsible Agency* approved/denied the above described project on \_\_\_\_\_, and has made the following determinations regarding the above described project:

The project will not have a significant effect on the environment. A Negative Declaration was prepared for this project pursuant to the provisions of CEQA. Mitigation measures and monitoring were made a condition of approval of the project. A Statement of Overriding Considerations was not adopted for this project. Findings were made pursuant to the provisions of CEQA.

This is to certify that the Negative Declaration with comments and responses and record of project approval is available to the General Public at the 'Lead Agency' address above.

Airlin Singewald

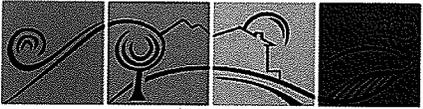
County of San Luis Obispo

Signature

Project Manager Name

Date

Public Agency



# Initial Study Summary – Environmental Checklist

PLANNING & BUILDING DEPARTMENT • COUNTY OF SAN LUIS OBISPO  
976 OSOS STREET • ROOM 200 • SAN LUIS OBISPO • CALIFORNIA 93408 • (805) 781-5600

(ver 5.1) Using Form

**Project Title & No.** Rava Major Grading Permit ED13-100 (PMT2012-02397)

**ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:** The proposed project could have a "Potentially Significant Impact" for at least one of the environmental factors checked below. Please refer to the attached pages for discussion on mitigation measures or project revisions to either reduce these impacts to less than significant levels or require further study.

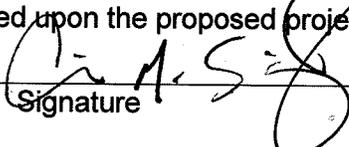
- |  |  |  |
|--|--|--|
| <input type="checkbox"/> Aesthetics                      | <input type="checkbox"/> Geology and Soils           | <input type="checkbox"/> Recreation                  |
| <input type="checkbox"/> Agricultural Resources          | <input type="checkbox"/> Hazards/Hazardous Materials | <input type="checkbox"/> Transportation/Circulation  |
| <input checked="" type="checkbox"/> Air Quality          | <input type="checkbox"/> Noise                       | <input type="checkbox"/> Wastewater                  |
| <input checked="" type="checkbox"/> Biological Resources | <input type="checkbox"/> Population/Housing          | <input checked="" type="checkbox"/> Water /Hydrology |
| <input type="checkbox"/> Cultural Resources              | <input type="checkbox"/> Public Services/Utilities   | <input type="checkbox"/> Land Use                    |

**DETERMINATION:** (To be completed by the Lead Agency)

On the basis of this initial evaluation, the Environmental Coordinator finds that:

- The proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- Although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- The proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- The proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- Although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Airlin Singewald  
Prepared by (Print)

  
Signature

11/27/13  
Date

Steve McMasters  
Reviewed by (Print)

  
Signature

Ellen Carroll,  
Environmental Coordinator (for) 11/27/13  
Date

### **Project Environmental Analysis**

The County's environmental review process incorporates all of the requirements for completing the Initial Study as required by the California Environmental Quality Act (CEQA) and the CEQA Guidelines. The Initial Study includes staff's on-site inspection of the project site and surroundings and a detailed review of the information in the file for the project. In addition, available background information is reviewed for each project. Relevant information regarding soil types and characteristics, geologic information, significant vegetation and/or wildlife resources, water availability, wastewater disposal services, existing land uses and surrounding land use categories and other information relevant to the environmental review process are evaluated for each project. Exhibit A includes the references used, as well as the agencies or groups that were contacted as a part of the Initial Study. The County Planning Department uses the checklist to summarize the results of the research accomplished during the initial environmental review of the project.

Persons, agencies or organizations interested in obtaining more information regarding the environmental review process for a project should contact the County of San Luis Obispo Current Planning Division, 976 Osos Street, Rm. 200, San Luis Obispo, CA, 93408-2040 or call (805) 781-5600.

## **A. PROJECT**

**DESCRIPTION:** The proposed project is a request by Chad Rava for a major grading permit to construct a frost protection reservoir with a maximum holding capacity of 8.5 acre-feet (2.77 million gallons) of water to support an existing 185-acre vineyard. The proposed project would result in approximately 1.4 acres (60,980 square feet) of disturbance, including 8,388 cubic yards of cut and 4,451 cubic yards of fill, on a 195-acre parcel. The proposed project is within the Agriculture land use category, and is located at the northwest corner of Highway 41 and Clark Road, approximately 2 miles southwest of the community of Shandon, in the rural Shandon-Carrizo planning area.

**ASSESSOR PARCEL NUMBER(S):** 017-251-018

Latitude: 35 degrees 38' 2.04" N Longitude: -120 degrees 24' 14.4" W **SUPERVISORIAL DISTRICT # 1**

## **B. EXISTING SETTING**

**PLANNING AREA:** Shandon/Carrizo, Rural

**TOPOGRAPHY:** Nearly level to gently sloping

**LAND USE CATEGORY:** Agriculture

**VEGETATION:** Vineyards

**COMBINING DESIGNATION(S):** None

**PARCEL SIZE:** 195 acres

**EXISTING USES:** Vineyards

### **SURROUNDING LAND USE CATEGORIES AND USES:**

<i>North:</i> Agriculture; agricultural uses	<i>East:</i> Agriculture; agricultural uses
<i>South:</i> Agriculture; agricultural uses	<i>West:</i> Agriculture; agricultural uses

## **C. ENVIRONMENTAL ANALYSIS**

During the Initial Study process, several issues were identified as having potentially significant environmental effects (see following Initial Study). Those potentially significant items associated with the proposed uses can be minimized to less than significant levels.



# COUNTY OF SAN LUIS OBISPO INITIAL STUDY CHECKLIST

## 1. AESTHETICS

*Will the project:*

	Potentially Significant	Impact can & will be mitigated	Insignificant Impact	Not Applicable
a) <i>Create an aesthetically incompatible site open to public view?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) <i>Introduce a use within a scenic view open to public view?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) <i>Change the visual character of an area?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) <i>Create glare or night lighting, which may affect surrounding areas?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) <i>Impact unique geological or physical features?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) <i>Other:</i> _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Setting.** The proposed project is located west of Highway 41, approximately 2 miles southwest of the community of Shandon, in the rural Shandon-Carrizo planning area. The community of Shandon lies at the confluence of Cholame Creek and San Juan Creek where they form the Estrella River. It is set against the Temblor Range to the east and the Cholame Hills to the north, and surrounded by agricultural lands, including vineyards, row crops, and dry-farmed land.

The subject property is located in a predominately agricultural area. It contains one of the many vineyards on the floor of the Shandon Valley, south of the community of Shandon and west of San Juan Creek. Many of the surrounding vineyards contain agricultural reservoirs. Topography is relatively level to gently sloping, with some rolling hills in the backdrop.

The subject parcel is entirely planted with vineyards, except for an approximately 1.7-acre area where the agricultural reservoir is proposed. The parcel contains no structures other than two wells, vineyard trellis, and irrigation equipment.

**Impact.** The proposed project is a request to construct an 8.5 acre-foot frost protection reservoir to support an existing 185-acre vineyard. The proposed project would result in approximately 1.4 acres (60,980 square feet) of disturbance, including 8,388 cubic yards of cut and 4,451 cubic yards of fill, on a 195-acre parcel. The proposed reservoir would be located in a gently sloping area of the site, about 1,500 feet west of Highway 41. Based on the applicant's drawings (Tartaglia Engineering, 2013), the proposed reservoir would have a 16-foot profile, as measured from the bottom of the reservoir (1,119-foot elevation) to the top of the berm (1,135-foot elevation). The berm (2:1 slope) would extend 5 feet above the existing ground level. The berm would be mostly screened from view by existing vineyards. While a portion of the berm could be visible from Highway 41, it would appear aesthetically compatible with the surrounding landscape. For these reasons, the proposed project would have less than significant visual impacts.

**Mitigation/Conclusion.** No mitigation measures are necessary.

## 2. AGRICULTURAL RESOURCES

*Will the project:*

	Potentially Significant	Impact can & will be mitigated	Insignificant Impact	Not Applicable
a) <i>Convert prime agricultural land, per NRCS soil classification, to non-agricultural use?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) <i>Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) <i>Impair agricultural use of other property or result in conversion to other uses?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) <i>Conflict with existing zoning for agricultural use, or Williamson Act program?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) <i>Other:</i> _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Setting.** The subject parcel is in the Agriculture land use category, is under a Williamson Act contract in the Shandon Ag Preserve Area, and contains farmland of statewide importance and Class II prime agricultural soils. The 195-acre parcel is planted with about 185 acres of vineyard land. The vineyard was originally planted about 40 years ago. From time to time some vines are replanted within the vineyard as they age and become less productive. In 2012, about 1.7 acres of vineyard land was removed from the site in anticipation of the proposed reservoir. Surrounding parcels in the Shandon Valley are also planted with vineyards.

The proposed reservoir is located on the following soil type:

- **Arbuckle-San Ysidro Complex (2 - 9% slope).**

Arbuckle. This gently sloping coarse loamy soil is considered moderately drained. The soil has moderate erodibility and low shrink-swell characteristics, as well as having potential septic system constraints due to: slow percolation. The soil is considered Class IV without irrigation and Class II when irrigated.

San Ysidro. This gently sloping coarse loamy soil is considered moderately to well drained. The soil has high erodibility and low shrink-swell characteristics, as well as having potential septic system constraints due to: slow percolation. The soil is considered Class IV without irrigation and Class II when irrigated.

A small portion of the subject parcel also contains the following soil type:

- **Rincon clay loam (2 - 9% slope).** This gently sloping, fine loamy bottom soil is considered not well drained. The soil has moderate erodibility and moderate shrink-swell characteristics, as well as having potential septic system constraints due to: slow percolation. The soil is considered Class IV without irrigation and Class II when irrigated.

**Impact.** The proposed project is a request to construct an 8.5 acre-foot frost protection reservoir to support an existing 185-acre vineyard. The proposed project would result in approximately 1.4 acres (60,980 square feet) of disturbance, including 8,388 cubic yards of cut and 4,451 cubic yards of fill, on a 195-acre parcel. The 1.7-acre area where the proposed reservoir would be located is not currently planted with grape vines. According to the applicant, the reservoir is an essential component of the vineyard operation, as it provides a readily available water supply for the vineyard's frost protection sprinkler system. The proposed reservoir would not interfere with nearby agricultural uses. The

County Department of Agriculture reviewed the proposal and commented that the "permit should clarify off-site transfer of reservoir water and/or other uses of the reservoir are prohibited" (Auchinachie; November 6, 2013).

The project's water supply impacts are described in Section 14, Water and Hydrology.

**Mitigation/Conclusion.** At the time of application for grading permits, the project plans must clearly state that the purpose of the proposed reservoir is for on-site frost protection only and that off-site transfer of reservoir water and/or other uses of the reservoir are prohibited. This mitigation measure is required per a recommendation of the County Department of Agriculture. With implementation of this mitigation measure, impacts to agriculture would be less than significant.

**3. AIR QUALITY**

*Will the project:*

	Potentially Significant	Impact can & will be mitigated	Insignificant Impact	Not Applicable
a) <i>Violate any state or federal ambient air quality standard, or exceed air quality emission thresholds as established by County Air Pollution Control District?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) <i>Expose any sensitive receptor to substantial air pollutant concentrations?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) <i>Create or subject individuals to objectionable odors?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) <i>Be inconsistent with the District's Clean Air Plan?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) <i>Result in a cumulatively considerable net increase of any criteria pollutant either considered in non-attainment under applicable state or federal ambient air quality standards that are due to increased energy use or traffic generation, or intensified land use change?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**GREENHOUSE GASES**

f) <i>Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g) <i>Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
h) <i>Other:</i> _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Setting.** The Air Pollution Control District (APCD) has developed and updated their CEQA Air Quality Handbook (2012) to evaluate project specific impacts and help determine if air quality mitigation measures are needed, or if potentially significant impacts could result. To evaluate long-term emissions, cumulative effects, and establish countywide programs to reach acceptable air quality levels, a Clean Air Plan has been adopted (prepared by APCD).

**Greenhouse Gas (GHG) Emissions** are said to result in an increase in the earth's average surface temperature. This is commonly referred to as global warming. The rise in global temperature is associated with long-term changes in precipitation, temperature, wind patterns, and other elements of the earth's climate system. This is also known as climate change. These changes are now thought to be broadly attributed to GHG emissions, particularly those emissions that result from the human production and use of fossil fuels.

The passage of AB32, the California Global Warming Solutions Act (2006), recognized the need to reduce GHG emissions and set the greenhouse gas emissions reduction goal for the State of California into law. The law required that by 2020, State emissions must be reduced to 1990 levels. This is to be accomplished by reducing greenhouse gas emissions from significant sources via regulation, market mechanisms, and other actions. Subsequent legislation (e.g., SB97-Greenhouse Gas Emissions bill) directed the California Air Resources Board (CARB) to develop statewide thresholds.

In March 2012, the San Luis Obispo County Air Pollution Control District (APCD) approved thresholds for GHG emission impacts, and these thresholds have been incorporated the APCD's CEQA Air Quality Handbook. APCD determined that a tiered process for residential / commercial land use projects was the most appropriate and effective approach for assessing the GHG emission impacts. The tiered approach includes three methods, any of which can be used for any given project:

1. Qualitative GHG Reduction Strategies (e.g. Climate Action Plans): A qualitative threshold that is consistent with AB 32 Scoping Plan measures and goals; or,
2. Bright-Line Threshold: Numerical value to determine the significance of a project's annual GHG emissions; or,
3. Efficiency-Based Threshold: Assesses the GHG impacts of a project on an emissions per capita basis.

For most projects the Bright-Line Threshold of 1,150 Metric Tons CO<sub>2</sub>e/year (MT CO<sub>2</sub>e/yr) will be the most applicable threshold. In addition to the residential/commercial threshold options proposed above, a bright-line numerical value threshold of 10,000 MT CO<sub>2</sub>e/yr was adopted for stationary source (industrial) projects.

It should be noted that projects that generate less than the above mentioned thresholds will also participate in emission reductions because air emissions, including GHGs, are under the purview of the California Air Resources Board (or other regulatory agencies) and will be "regulated" either by CARB, the Federal Government, or other entities. For example, new vehicles will be subject to increased fuel economy standards and emission reductions, large and small appliances will be subject to more strict emissions standards, and energy delivered to consumers will increasingly come from renewable sources. Other programs that are intended to reduce the overall GHG emissions include Low Carbon Fuel Standards, Renewable Portfolio standards and the Clean Car standards. As a result, even the emissions that result from projects that produce fewer emissions than the threshold will be subject to emission reductions.

Under CEQA, an individual project's GHG emissions will generally not result in direct significant impacts. This is because the climate change issue is global in nature. However, an individual project could be found to contribute to a potentially significant cumulative impact. Projects that have GHG emissions above the noted thresholds may be considered cumulatively considerable and require mitigation.

**Impact.** As proposed, the project would result in approximately 1.4 acres (60,980 square feet) of disturbance, including 8,388 cubic yards of cut and 4,451 cubic yards of fill, on a 195-acre parcel. This will result in the creation of construction dust, as well as short- and long-term vehicle emissions. The project will be moving less than 1,200 cubic yards/day of material and will disturb less than four acres of area, and therefore will be below the general thresholds triggering construction-related mitigation. The project is also not in close proximity to sensitive receptors that might otherwise result in nuisance complaints and be subject to limited dust and/or emission control measures during construction. However, the project will be subject to fugitive dust control measures pursuant to Land Use Ordinance Section 22.52.160.

From an operational standpoint, based on Table 1-1 of the CEQA Air Quality Handbook (2012), the project will not exceed operational thresholds triggering mitigation. The project is consistent with the general level of development anticipated and projected in the Clean Air Plan. No significant air quality impacts are expected to occur.

This project is a request to construct an 8.5 acre-foot frost protection reservoir to support an existing 185-acre vineyard. Using the GHG threshold information described in the Setting section, the project is expected to generate less than the Bright-Line Threshold of 1,150 metric tons of GHG emissions. Therefore, the project's potential direct and cumulative GHG emissions are found to be less significant and less than a cumulatively considerable contribution to GHG emissions. Section 15064(h)(2) of the CEQA Guidelines provide guidance on how to evaluate cumulative impacts. If it is shown that an incremental contribution to a cumulative impact, such as global climate change, is not 'cumulatively considerable', no mitigation is required. Because this project's emissions fall under the threshold, no mitigation is required.

The project site is not located in an APCD designated naturally occurring asbestos zone (SLOAPCD 2012 CEQA Handbook, Figure 4-1).

APCD's referral response indicated that the project's air quality impacts would fall below levels warranting mitigation beyond standard ordinance requirements (Mutziger; November 15, 2013).

**Mitigation/Conclusion.** Implementation of Land Use Ordinance standards for dust control will reduce the project's air quality impacts to less than significant levels. No additional mitigation is necessary.

**4. BIOLOGICAL RESOURCES**

*Will the project:*

	Potentially Significant	Impact can & will be mitigated	Insignificant Impact	Not Applicable
a) <i>Result in a loss of unique or special status species* or their habitats?</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) <i>Reduce the extent, diversity or quality of native or other important vegetation?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) <i>Impact wetland or riparian habitat?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) <i>Interfere with the movement of resident or migratory fish or wildlife species, or factors, which could hinder the normal activities of wildlife?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

#### 4. BIOLOGICAL RESOURCES

*Will the project:*

	Potentially Significant	Impact can & will be mitigated	Insignificant Impact	Not Applicable
e) <b>Conflict with any regional plans or policies to protect sensitive species, or regulations of the California Department of Fish &amp; Wildlife or U.S. Fish &amp; Wildlife Service?</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) <b>Other:</b> _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

\* Species – as defined in Section 15380 of the CEQA Guidelines, which includes all plant and wildlife species that fall under the category of rare, threatened or endangered, as described in this section.

**Setting.** The 195-acre parcel is planted with about 185 acres of grape vines. In 2012, about 1.7 acres of grape vines were removed in anticipation of the proposed reservoir. This area has been tilled and is denuded of vegetation. An unnamed creek is located about 1,500 feet to the east of the proposed agricultural reservoir.

The Natural Diversity Database (or other biological references) identified the following species potentially existing within approximately one mile of the proposed project:

- **The Bank swallow (*Riparia riparia*).** This species has been found about .71 mile to the north east. It is considered threatened by the state. The Bank swallow once bred throughout the lowlands of the State with major populations on the broad river valleys of central California. The swallow builds nests within a 2-3 foot deep burrow that it digs perpendicularly into near vertical earthen banks along streams, coastal bluffs, and sand and gravel pits. The species is colonial and migratory, spending the spring and summer months in the Central Valley and wintering in South America. The several colonies that make up the breeding population in California (upper Sacramento River) each year have ranged in size from 5 to over 3,000 burrows. Typically, the birds lay a clutch of 3-5 eggs beginning in early April, and by mid-July most of the nesting activities are completed. Bank swallows feed on a variety of flying insects. Collapsed burrows due to natural bank sloughing or human caused disturbance or colony destruction are significant mortality factors for nestlings. There are only a handful of unique coastal nesting areas (Ft. Funston and Ano Nuevo).
- **Tulare grasshopper mouse (*Onychomys torridus tularensis*).** This species has been found about .71 mile to the north east. Tulare grasshopper mouse is considered a California Species of Special Concern. The Tulare grasshopper mouse lives in arid grasslands, shrub lands, and alkali sink habitats in the San Joaquin Valley. This species is carnivorous, feeding on scorpions, beetles, grasshoppers, pocket mice, western harvest mice, lizards, and frogs with some seeds taken when no other food sources are available. Young are born in the late spring to early summer and both parents care for them. Grasshopper mice are territorial and males will produce a sharp call to mark their territory. Predators of this species include badgers, San Joaquin kit fox, coyote, and barn owls. Primary threats include habitat destruction and fragmentation and the use of pesticides. This species is currently considered a California species of special concern (CDFG, 2007).

The subject parcel does not contain suitable habitat to support the above species, since it lacks vegetation and has been actively farmed for the past 40 years.

#### San Joaquin Kit Fox

The Natural Diversity Database also identified this area as important habitat for the San Joaquin Kit Fox, a federally listed endangered species and a state listed threatened species. The San Joaquin kit fox is Federal Endangered and California Threatened. The kit fox is uncommon to rare. They reside

in arid regions of the southern half of the state (Grinnell et al. 1937, Wilson and Ruff 1999:150). This usually nocturnal mammal lives in annual grasslands or grassy open stages of vegetation dominated by scattered brush, shrubs, and scrub. Kit foxes primarily are carnivorous, subsisting on black-tailed jackrabbits and desert cottontails, rodents (especially kangaroo rats and ground squirrels), insects, reptiles, and some birds, bird eggs, and vegetation (Egoscue 1962, Laughrin 1970, Morrell 1971, 1972, Orloff et al. 1986). Their cover is provided by dens they dig in open, level areas with loose-textured, sandy and loamy soils (Laughrin 1970, Morrell 1972). Pups are born in these dens in February through April. Pups are weaned at about 4-5 months. Some agricultural areas may support these foxes. Potential predators are coyotes, large hawks and owls, eagles, and bobcats. Cultivation has eliminated much habitat. Kit foxes are vulnerable to many human activities, such as hunting, use of rodenticides and other poisons, off-road vehicles, and trapping.

**Impact.** The project site does not support any sensitive native vegetation or special status species. A San Joaquin Kit Fox Habitat Evaluation Form was prepared by Kevin Merk Associates, Inc. on November 26, 2013. The evaluation resulted in a score of 71, which requires that all impacts to kit fox habitat be mitigated at a ratio of 3 acres conserved for each acre impacted (3:1). The project will result in the permanent disturbance of 0.88 acre of kit fox habitat. Although the project would result in 1.2 acres of site disturbance during construction, it would result in the permanent removal of only 0.88-acre of kit fox habitat for the open water surface of the reservoir.

**Mitigation/Conclusion.** With regards to the San Joaquin kit fox, the applicant will be required to mitigate the loss of 0.88-acre of kit fox habitat by one of the following ways:

- ✓ Deposit of funds to an approved in-lieu fee program;
- ✓ Provide for the protection of kit foxes in perpetuity through acquisition of fee or conservation easement of suitable habitat in the kit fox corridor area; or
- ✓ Purchase credits in an approved conservation bank.

To prevent inadvertent harm to kit fox, the applicant has agreed to retain a biologist for a pre-construction survey, a pre-construction briefing for contractors, and monitoring activities in addition to implementing cautionary construction measures. These mitigation measures are listed in detail in Exhibit B Mitigation Summary Table.

The implementation of the above measures will mitigate biological impacts to a level of insignificance.

## 5. CULTURAL RESOURCES

*Will the project:*

	Potentially Significant	Impact can & will be mitigated	Insignificant Impact	Not Applicable
a) <i>Disturb archaeological resources?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) <i>Disturb historical resources?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) <i>Disturb paleontological resources?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) <i>Other:</i> _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Setting.** The proposed project is within the historic territory of the Obispeno Chumash and Salinan-speaking Native Americans. These Native Americans established a sophisticated system of horticulture, using seed scattering, harrowing, selective harvesting, coppicing and spot burning to produce crops of acorns, grass, wildflower seeds. They also hunted wildlife and foraged for juncus, willow, redbud, and elderberry for basket making. The founding of Mission Asistencia at Santa Margarita in the 1780s and Mission San Miguel in 1797 led to the gradual depopulation of native communities in this area.

The Highway 41/46 corridor has historically served as a traveling route between the coastal areas and the Central Valley. These same routes were previously used by aboriginals for the movement of people and goods as well. The nearby community of Shandon represents one of the few remaining small, agricultural communities that were relatively common in San Luis Obispo County in the last 1800s and early 1900s. Most of these communities have disappeared leaving behind little physical evidence or written documentation.

Based on County records, no archaeological surveys have been conducted and no cultural resources are known to exist within a ¼ mile radius of the subject parcel.

The subject parcel has been actively used as a vineyard for the past 40 years. No structures are present on the parcel and no paleontological resources are known to exist in the area.

**Impact.** The project is not located in an area that would be considered culturally sensitive due to lack of physical features typically associated with prehistoric occupation. The project site has been previously disturbed due to historic and recent agricultural activities and is located 1,500 feet east of the nearest blue line stream, an unnamed creek. No evidence of cultural materials was noted on the property. Impacts to historical or paleontological resources are not expected.

**Mitigation/Conclusion.** No significant cultural resource impacts are expected to occur, and no mitigation measures are necessary.

## 6. GEOLOGY AND SOILS

*Will the project:*

	Potentially Significant	Impact can & will be mitigated	Insignificant Impact	Not Applicable
a) <i>Result in exposure to or production of unstable earth conditions, such as landslides, earthquakes, liquefaction, ground failure, land subsidence or other similar hazards?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) <i>Be within a California Geological Survey "Alquist-Priolo" Earthquake Fault Zone", or other known fault zones*?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) <i>Result in soil erosion, topographic changes, loss of topsoil or unstable soil conditions from project-related improvements, such as vegetation removal, grading, excavation, or fill?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) <i>Include structures located on expansive soils?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) <i>Be inconsistent with the goals and policies of the County's Safety Element relating to Geologic and Seismic Hazards?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) <i>Preclude the future extraction of valuable mineral resources?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g) <i>Other:</i> _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

\* Per Division of Mines and Geology Special Publication #42

**Setting.** The following relates to the project's geologic aspects or conditions:

- Topography: Nearly level to gently sloping
- Within County's Geologic Study Area?: No
- Landslide Risk Potential: High
- Liquefaction Potential: Low
- Nearby potentially active faults?: No      Distance? Not applicable
- Area known to contain serpentine or ultramafic rock or soils?: No
- Shrink/Swell potential of soil: Low to moderate
- Other notable geologic features? None

Land Use Ordinance Section 22.52.100.C.3 requires projects involving more than 5,000 cubic yards of grading to include a geotechnical engineering report. The applicant supplied a geotechnical engineering report (Beacon Geotechnical, Inc.; May 21, 2013) for the proposed project. It concluded that the site is suitable for the proposed project from a geotechnical engineering standpoint provided the recommendations of the report are successfully implemented.

**Impact.** As proposed, the project will result in approximately 1.4 acres (60,980 square feet) of disturbance, including 8,388 cubic yards of cut and 4,451 cubic yards of fill, on a 195-acre parcel. The project is required by code to incorporate the recommendations of the geotechnical engineering report. Implementation of these recommendations will reduce the project's potential geologic impacts to less than significant levels.

**Mitigation/Conclusion.** There is no evidence that measures above what will already be required by ordinance or codes are needed.

**7. HAZARDS & HAZARDOUS MATERIALS - Will the project:**

	Potentially Significant	Impact can & will be mitigated	Insignificant Impact	Not Applicable
a) <i>Create a hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) <i>Create a hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) <i>Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 1/4-mile of an existing or proposed school?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**7. HAZARDS & HAZARDOUS MATERIALS - Will the project:**

	Potentially Significant	Impact can & will be mitigated	Insignificant Impact	Not Applicable
d) <i>Be located on, or adjacent to, a site which is included on a list of hazardous material/waste sites compiled pursuant to Gov't Code 65962.5 ("Cortese List"), and result in an adverse public health condition?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) <i>Impair implementation or physically interfere with an adopted emergency response or evacuation plan?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) <i>If within the Airport Review designation, or near a private airstrip, result in a safety hazard for people residing or working in the project area?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) <i>Increase fire hazard risk or expose people or structures to high wildland fire hazard conditions?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
h) <i>Be within a 'very high' fire hazard severity zone?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
i) <i>Be within an area classified as a 'state responsibility' area as defined by CalFire?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
j) <i>Other:</i> _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Setting.** Due to local jurisdiction, fire hazard severity zone data not available. Based on the County's fire response time map, it will take approximately 0-10 minutes to respond to a call regarding fire or life safety. Refer to the Public Services section for further discussion on Fire Safety impacts.

The project is not located in an area of known hazardous material contamination. The project is not within a 'high' or 'very high' severity risk area for fire. The project is not within the Airport Review area.

**Impact.** The proposed project is a request to construct an 8.5 acre-foot frost protection reservoir to support an existing 185-acre vineyard. It will not construct buildings for human habitation and therefore will not introduce people into the Salinas River "dam inundation" area or expose people to any other hazard. The project does not propose the use of hazardous materials or the generation of hazardous wastes. The project does not present a significant fire safety risk. The project is not expected to conflict with any regional emergency response or evacuation plan.

**Mitigation/Conclusion.** No significant impacts as a result of hazards or hazardous materials are anticipated, and no mitigation measures are necessary.

## 8. NOISE

*Will the project:*

	Potentially Significant	Impact can & will be mitigated	Insignificant Impact	Not Applicable
a) <i>Expose people to noise levels that exceed the County Noise Element thresholds?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) <i>Generate permanent increases in the ambient noise levels in the project vicinity?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) <i>Cause a temporary or periodic increase in ambient noise in the project vicinity?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) <i>Expose people to severe noise or vibration?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) <i>If located within the Airport Review designation or adjacent to a private airstrip, expose people residing or working in the project area to severe noise levels?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) <i>Other:</i> _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Setting.** The project is not within close proximity of loud noise sources, and will not conflict with any sensitive noise receptors (e.g., residences). There are no existing sensitive receptors anywhere in the vicinity of the proposed project. Based on the Noise Element's projected future noise generation from known stationary and vehicle-generated noise sources, the project is within an acceptable threshold area.

**Impact.** The project is not expected to generate loud noises, nor conflict with the surrounding uses. It would not expose people existing noise sources.

**Mitigation/Conclusion.** No significant noise impacts are anticipated, and no mitigation measures are necessary.

## 9. POPULATION/HOUSING

*Will the project:*

	Potentially Significant	Impact can & will be mitigated	Insignificant Impact	Not Applicable
a) <i>Induce substantial growth in an area either directly (e.g., construct new homes or businesses) or indirectly (e.g., extension of major infrastructure)?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) <i>Displace existing housing or people, requiring construction of replacement housing elsewhere?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) <i>Create the need for substantial new housing in the area?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**9. POPULATION/HOUSING**

*Will the project:*

Potentially Significant      Impact can & will be mitigated      Insignificant Impact      Not Applicable

d) *Other:* \_\_\_\_\_                  

**Setting** In its efforts to provide for affordable housing, the county currently administers the Home Investment Partnerships (HOME) Program and the Community Development Block Grant (CDBG) program, which provides limited financing to projects relating to affordable housing throughout the county. The County's Inclusionary Housing Ordinance requires provision of new affordable housing in conjunction with both residential and nonresidential development and subdivisions.

**Impact.** The proposed project is a request to construct an 8.5 acre-foot frost protection reservoir for an existing 185-acre vineyard. It will not construct buildings for human habitation, result in a need for a significant amount of new housing, or displace existing housing.

**Mitigation/Conclusion.** No significant population and housing impacts are anticipated. No mitigation measures are necessary.

**10. PUBLIC SERVICES/UTILITIES**

*Will the project have an effect upon, or result in the need for new or altered public services in any of the following areas:*

Potentially Significant      Impact can & will be mitigated      Insignificant Impact      Not Applicable

- a) *Fire protection?*
- b) *Police protection (e.g., Sheriff, CHP)?*
- c) *Schools?*
- d) *Roads?*
- e) *Solid Wastes?*
- f) *Other public facilities?*
- g) *Other:* \_\_\_\_\_

**Setting.** The project area is served by the following public services/facilities:

Police: County Sheriff      Location: Templeton (approximately 20 feet to the west)

---

Fire: Cal Fire (formerly CDF)      Hazard Severity: Unknown      Response Time: 5-10 minutes  
 Location: Creston (approximately 10 miles to the southwest)

---

School District: Shandon Joint Unified School District.

For additional information regarding fire hazard impacts, go to the 'Hazards and Hazardous Materials' section

**Impact.** The proposed project is a request to construct an 8.5 acre-foot frost protection reservoir for an existing 185-acre vineyard. Since it will not construct buildings for human habitation or result in a need for a significant amount of new housing, the proposed project is not anticipated to increase demands on public facilities or utilities.

**Mitigation/Conclusion.** No significant public services/utilities impacts are anticipated. No mitigation measures are necessary.

### 11. RECREATION

<i>Will the project:</i>	Potentially Significant	Impact can & will be mitigated	Insignificant Impact	Not Applicable
a) <i>Increase the use or demand for parks or other recreation opportunities?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) <i>Affect the access to trails, parks or other recreation opportunities?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) <i>Other _____</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Setting.** The County's Parks and Recreation Element does not show that a potential trail goes through the proposed project. The project is not proposed in a location that will affect any trail, park, recreational resource, coastal access, and/or Natural Area.

**Impact.** The proposed project will not create a significant need for additional park, Natural Area, and/or recreational resources.

**Mitigation/Conclusion.** No significant recreation impacts are anticipated, and no mitigation measures are necessary.

### 12. TRANSPORTATION/CIRCULATION

<i>Will the project:</i>	Potentially Significant	Impact can & will be mitigated	Insignificant Impact	Not Applicable
a) <i>Increase vehicle trips to local or areawide circulation system?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) <i>Reduce existing "Level of Service" on public roadway(s)?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) <i>Create unsafe conditions on public roadways (e.g., limited access, design features, sight distance, slow vehicles)?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) <i>Provide for adequate emergency access?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) <i>Conflict with an established measure of effectiveness for the performance of the circulation system considering all modes of transportation (e.g. LOS, mass transit, etc.)?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) <i>Conflict with an applicable congestion management program?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

## 12. TRANSPORTATION/CIRCULATION

<i>Will the project:</i>	Potentially Significant	Impact can & will be mitigated	Insignificant Impact	Not Applicable
<b>g) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>h) Result in a change in air traffic patterns that may result in substantial safety risks?</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>i) Other:</b> _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Setting.** The County has established the acceptable Level of Service (LOS) on roads for this rural area as "C" or better. The existing road network in the area, including Highway 41, is operating at acceptable levels. Based on existing road speeds and configuration (vertical and horizontal road curves), sight distance is considered acceptable. Referrals were sent to County Public Works.

**Impact.** The proposed project is a request to construct an 8.5 acre-foot frost protection reservoir for an existing 185-acre vineyard. After construction activities are complete, the proposed project is not anticipated to increase vehicle trips on the existing road network. As a result, it will have no impact on existing road service or traffic safety levels. The project does not conflict with adopted policies, plans and programs on transportation.

**Mitigation/Conclusion.** No significant traffic impacts were identified, and no mitigation measures above what are already required by ordinance are necessary.

## 13. WASTEWATER

<i>Will the project:</i>	Potentially Significant	Impact can & will be mitigated	Insignificant Impact	Not Applicable
<b>a) Violate waste discharge requirements or Central Coast Basin Plan criteria for wastewater systems?</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>b) Change the quality of surface or ground water (e.g., nitrogen-loading, day-lighting)?</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>c) Adversely affect community wastewater service provider?</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>d) Other:</b> _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Setting/Impact.** The proposed project is a request to construct an 8.5 acre-foot frost protection reservoir for an existing 185-acre vineyard. It would not generate wastewater or require wastewater disposal.

**Mitigation/Conclusion.** No significant wastewater impacts are anticipated, and therefore no mitigation is necessary.

## 14. WATER & HYDROLOGY

*Will the project:*

	Potentially Significant	Impact can & will be mitigated	Insignificant Impact	Not Applicable
<b>QUALITY</b>				
a) <i>Violate any water quality standards?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) <i>Discharge into surface waters or otherwise alter surface water quality (e.g., turbidity, sediment, temperature, dissolved oxygen, etc.)?</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) <i>Change the quality of groundwater (e.g., saltwater intrusion, nitrogen-loading, etc.)?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) <i>Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide additional sources of polluted runoff?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) <i>Change rates of soil absorption, or amount or direction of surface runoff?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) <i>Change the drainage patterns where substantial on- or off-site sedimentation/ erosion or flooding may occur?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g) <i>Involve activities within the 100-year flood zone?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>QUANTITY</b>				
h) <i>Change the quantity or movement of available surface or ground water?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
i) <i>Adversely affect community water service provider?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
j) <i>Expose people to a risk of loss, injury or death involving flooding (e.g., dam failure, etc.), or inundation by seiche, tsunami or mudflow?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
k) <i>Other:</i> _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Setting.** The subject parcel overlies the Shandon sub-area of the Paso Robles Groundwater Basin (the basin). Encompassing an area of approximately 505,000 acres (790 square miles), the basin extends from the Garden Farms area south of Atascadero to San Ardo in Monterey County, and from the Highway 101 corridor to east of Shandon. It is the primary, and in many places the only, source of water available to property owners throughout the North County.

### Resource Capacity Study

In January 2007 the Board of Supervisors directed the preparation of a Resource Capacity Study (RCS) for the Paso Robles Groundwater Basin in accordance with the County's Resource Management System (RMS).

The RMS is a mechanism for ensuring a balance between land development and the resources necessary to sustain such development. When a resource deficiency becomes apparent, efforts are made to determine how the resource might be expanded, whether conservation measures could be introduced to extend the availability of unused capacity, or whether development should be limited or redirected to areas with remaining resource capacity. The RMS is designed to avoid adverse impacts from depletion of a resource.

The RMS describes a resource in terms of its "level of severity" (LOS) based on the rate of depletion and an estimate of the remaining capacity, if any. In response to a resource issue or recommended LOS, the Board of Supervisors may direct a Resource Capacity Study (RCS) be conducted. An RCS provides additional details that enable the Board of Supervisors to certify a LOS and adopt whatever measures are needed to eliminate or reduce the potential for undesirable consequences.

<b>LOS I</b>	Level I is reached for a water resource when increasing water demand projected over nine years equals or exceeds the estimated dependable supply.
<b>LOS II</b>	Level II for a water resource occurs when water demand projected over seven years (or other lead time determined by a resource capacity study) equals or exceeds the estimated dependable supply.
<b>LOS III</b>	A Level of Severity III exists when water demand equals the available resource; the amount of consumption has reached the dependable supply of the resource.

In February 2011, the County Board of Supervisors approved the Paso Robles Groundwater Basin Resource Capacity Study (RCS), which links the state of the basin to land use policy, basin monitoring and water conservation. The RCS concludes that the groundwater basin is approaching or has reached its "perennial yield" – the amount of usable water of a groundwater basin that can be withdrawn and consumed economically each year for an indefinite period of time.

The RCS established an LOS III for the main basin and a separate LOS I for the Atascadero sub-basin, which is hydrogeologically distinct from the main basin.

The County Board of Supervisors, after considering a number of studies about this groundwater basin and approving related documents [i.e., Paso Robles Groundwater Basin Resource Capacity Study (RCS), February, 2011; Paso Robles Groundwater Basin Management Plan (GMP), March, 2012, have concluded the following conditions exist:

- Groundwater levels are generally dropping throughout the basin.
- Pumping of groundwater from the basin has reached or is quickly approaching the basin's "perennial yield."

California law does not allow the County to limit how much water a property owner pumps from the ground. The County must use only the authority it has to address this issue.

#### Basin-wide Supply and Demand

The main basin has an estimated perennial yield of approximately 97,700 afy (Fugro, 2005) and the hydrogeologically distinct Atascadero sub-basin has a perennial yield of approximately 16,400 afy (Fugro, 2000). The most recent pumping estimate shows total outflows of 91,838 afy to 96,723 afy in the main basin and 15,255 afy to 16,012 in the Atascadero sub-basin as of 2009 (Fugro, 2010).

Although more recent water balance estimates are not presently available, the RCS includes several water balance projections or scenarios that forecast the status of the basin to the year 2025. Based on these scenarios, total basin outflows in the year 2013 would range from 83,407 afy to 107,018 afy. Under the "reasonable worst case" scenario, the basin outflows (107,018 afy) would exceed perennial yield (97,700 afy) by about 10 percent in 2013. Table 1 compares the assumptions used in each of these scenarios. The scenarios that exhibit the greatest effect on when perennial yield is reached are those that reduce the vineyard water use factor.

**Table 1: Comparison of RCS Water Balance Scenarios for the Paso Robles Groundwater Basin**

RCS Scenario	Low (# 4)	Mid (# 3)	High (#2)
Estimated 2013 Outflows	83,407 afy	92,547 afy	107,018 afy
Perennial Yield Reached	2025	2019	2011
Agricultural Groundwater Pumping	+1.5%/year	+1.5%/year	+3%/year
Rural/Small Community Groundwater Pumping	+1.5%/year	+1.7%/year	+3.4%/year
Small Commercial Pumping	+4%/year	+ 4%/year	+ 8%/year
Vineyard Water Use	0.75 – 1.00 afy/year	1.00 – 1.25 afy/year	1.25 – 1.50 afy/year
Rural Pumping	1.7 afy/acre	1.7 afy/acre	1.7 afy/acre

Monitoring Wells

The San Luis Obispo County Flood Control and Water Conservation District maintains monitoring well locations throughout the groundwater basin. Measurements are conducted twice a year to determine groundwater levels. The latest measurements taken in April 2013 are related in “hydrographs” which are geographic representations of changes in groundwater levels over time along with yearly rainfall. Hydrographs are developed for four areas of the main basin. According to these hydrographs graphically show that groundwater levels have recently fallen in all four areas:

- **Shandon – water levels have dropped approximately 17 feet from 2011 to 2013.**
- Creston – water levels have dropped approximately 25 feet from 2011 to 2013.
- Estrella – water levels have dropped approximately 25 feet from 2012 to 2013.
- San Juan – water levels have dropped approximately 5 feet from 2012 to 2013.

Estimated Basin Pumping by User – Main Basin

There are five different groups of groundwater users in the basin:

- Agriculture
- Commercial
- Rural
- Small Community Systems
- Small Commercial (e.g. golf courses, wineries, institutional uses)

Table 2 shows the estimated amount of pumping by each user group. In 2006, Agriculture and rural users accounted for 83 percent of water use in the basin. Urban users accounted for the remaining 17 percent of pumping.

**Table 2: Total Groundwater Pumping by User (1997, 2000, and 2006) (afy)**

Groundwater User	1997	2000	2006
Net Agriculture	49,683	56,551	56,680
Urban	13,513	14,629	15,665
Rural	9,400	9,993	10,891
Small Community <sup>1</sup>	---	---	594
Small Commercial	1,465	1,465	2,323
<b>Total</b>	<b>74,061</b>	<b>82,638</b>	<b>88,153</b>

Source: Paso Robles Groundwater Basin Resource Capacity Study, 2011

<sup>1</sup>Small Community was included in Rural in 1997 and 2000

### RCS Implementation - Water Conservation Requirements

In addition to certifying levels of severity for the Paso Robles Groundwater Basin and Atascadero sub-basin, the 2011 RCS recommended several land use measures to curtail water demands in the basin. This included a recommendation to adopt water conservation requirements for development projects located in the Paso Robles Groundwater Basin. On September 25, 2012, the County Board of Supervisors carried out this recommendation by amending Article 9 of the Land Use Ordinance, Title 22 of the County Code, to establish water conservation requirements for projects located in the following areas:

- Rural portions of the Paso Robles Groundwater Basin, except for the Atascadero sub-basin;
- Whitley Gardens and Creston village reserve lines; and
- The unincorporated Paso Robles urban reserve line.

The water conservation requirements:

- Require new discretionary development to offset its net new water demand for non-agricultural purposes;
- Require that offsets conserve water used or potentially used for non-agricultural purposes;
- Exempt agricultural processing uses from the offset requirements;
- Prohibit general plan amendments that would result in a net increase in the use of water for non-agricultural purposes until a Level of Severity I is certified by the Board of Supervisors;
- Prohibit the approval of new land divisions until a Level of Severity (LOS) I is certified by the Board of Supervisors; and
- Include conservation measures for outdoor water use by discretionary development.

### Urgency Ordinance

On August 27, 2013, the County Board of Supervisors adopted a 45-day urgency ordinance establishing a moratorium on new or expanded irrigated crop production and new development dependent upon a well in the Paso Robles Groundwater Basin unless such uses qualify for an exemption or offset their total projected water use. It does not apply in the Atascadero sub-basin. On October 8, 2013, the Board continued the urgency ordinance for a period of two years. The purpose of the ordinance is to cap water demand while the County conducts studies and reports required to consider a comprehensive ordinance and/or general plan amendment addressing water shortages within the Paso Robles Groundwater Basin. The urgency ordinance includes an exemption for "new ponds, reservoirs and dams constructed to regulate or store a supply of water for frost protection, seasonal irrigation, or livestock purposes." Although they are exempt from the urgency ordinance, agricultural ponds with a storage capacity of more than one acre-foot are subject to environmental review under CEQA.

### Vineyard Water Use

The 195-acre subject parcel is planted with about 185 acres of grape vines. Two on-site wells supply irrigation for the existing vineyard. The wells are approximately 650 feet deep and are completed in the Paso Robles Formation. These wells have production capacities of 1,250 and 1,400 gallons per minute (gpm). According to the project water impact analysis (GSI Water Solutions, Inc.; October 28, 2013), the vineyard typically applies 1.50 acre-feet of water per irrigated acre. This results in about 277.5 afy to irrigate the 185-acre vineyard.

### Drainage Characteristics

The topography of the parcel is relatively level to gently sloping. The nearest blue line creek to the property is an unnamed creek located about 1,500 feet east of the project, on the opposite side of Highway 41. As described in the NRCS Soil Survey, the soil surface is considered to have moderate

to high erodibility. The project is not located within the 100-year Flood Hazard designation. Soil drainage characteristics are considered well drained to not well drained.

Projects involving more than one acre of disturbance are subject to preparing a Storm Water Pollution Prevention Plan (SWPPP) to minimize on-site sedimentation and erosion, unless the project qualifies for an agricultural exemption. When work is done in the rainy season, the County's Land Use Ordinance requires that temporary erosion and sedimentation measures to be installed.

For areas where drainage is identified as a potential issue, the Land Use Ordinance (LUO Sec. 22.52.110 or CZLUO Sec. 23.05.042) includes a provision to prepare a drainage plan to minimize potential drainage impacts. When required, this plan would need to address measures such as: constructing on-site retention or detention basins, or installing surface water flow dissipaters. This plan would also need to show that the increased surface runoff would have no more impacts than that caused by historic flows.

### Sedimentation and Erosion

Soil type, area of disturbance, and slopes are key aspects to analyzing potential sedimentation and erosion issues. The project's soil types and descriptions are listed in the previous Agriculture section under "Setting". As described in the NRCS Soil Survey, the project's soil erodibility is considered moderate to high.

A sedimentation and erosion control plan is required for all construction and grading projects (LUO Sec. 22.52.120, CZLUO Sec. 23.05.036) to minimize these impacts. When required, the plan is prepared by a civil engineer to address both temporary and long-term sedimentation and erosion impacts. Projects involving more than one acre of disturbance are subject to the preparation of a Storm Water Pollution Prevention Plan (SWPPP), which focuses on controlling storm water runoff. The Regional Water Quality Control Board is the local extension who monitors this program.

### **Impact**

#### Water Quality

The proposed project involves approximately 1.4 acres (60,980 square feet) of disturbance, including 8,388 cubic yards of cut and 4,451 cubic yards of fill, on a 195-acre parcel. The project is not located on moderate to steep slopes, nor is it located within a 100-year Flood Hazard designation or within 100 feet of a creek or surface water body. The project is located on highly erodible soils.

Implementation of the following County standards will reduce the project's water quality impacts to less than significant levels:

- Requirements for drainage, sedimentation and erosion control for construction and permanent use;
- Stockpiles will be properly managed during construction to avoid material loss due to erosion; and
- All hazardous materials and/or wastes will be properly stored on-site, which include secondary containment should spills or leaks occur.

#### Water Quantity

The proposed project is a request to construct an 8.5 acre-foot frost protection reservoir for an existing 185-acre vineyard. Water used to fill the reservoir will be sourced from two wells at a combined pumping rate of 2,650 gpm. The stored water will be used for frost protection purposes. According to the project's water impact study (GSI, 2013), there are an average of five frost events per season (one during March and two each during April and May), and each frost event typically occurs every two weeks and generally lasts one or two nights. At the end of the frost season, any residual water may be applied to the vineyard as irrigation. The reservoir will remain empty for the rest of the year.

The water impact study (GSI, 2013) asserts that the proposed reservoir will help increase water-use efficiency during frost protection periods. This is because, in the absence of a reservoir, frost protection practices at the site require operating both wells at full capacity during frost periods allowing little ability to control water application rates and volumes. However, the study does not quantify the resulting water savings.

Although the proposed reservoir may increase water-use efficiency by enabling better water management, it would also result in water loss through evaporation from the water surface to the atmosphere. To compensate for this evaporative water loss, the vineyard would have to increase groundwater pumping. Based on a surface area of 0.88-acre and historic climate data, GSI calculated the evaporative water loss during the frost season to be 1.1 acre-feet.

Overall, the proposed reservoir would reduce the vineyard's water use since it would replace 1.7 acres of previously planted vineyard land. This area includes both the area of disturbance for the reservoir and berming (1.4 acres) and a 12-foot wide perimeter surrounding the reservoir for access. Based on the vineyard's water application rate for irrigation (1.50 afy/acre), the removal of 1.7 acres of vineyard land would result in a water savings of approximately 2.5 acre-feet. The water study also looks at the irrigation rates at 84 vineyards located east of Shandon during a near normal rainfall year and site-specific irrigation practices typically employed at the proposed reservoir site to calculate a net water use reduction ranging between 1.7 and 2.5 acre feet. Thus, GSI concludes that the evaporation from the reservoir would be between 0.6 and 1.4 acre-feet less than the amount of water that would have otherwise been applied to the vineyard area.

Although the urgency ordinance does not apply to agricultural reservoirs, it provides a benchmark for evaluating the water quantity impacts for new development projects in the basin and the adequacy of proposed mitigation measures. The urgency ordinance would require new or expanded irrigated agriculture and development dependent on a well to offset new water demand at a 1:1 ratio. Based on the project's estimated evaporative water losses of 1.1 acre-feet and proposed water offsets of between 1.7 and 2.5 acre-feet, it would result in an offset ratio (water saved / new water demand) of between 1.54 and 2.27.

In addition, the vineyard already employs several water efficiency measures, including:

- Low-flow Rain Bird ® sprinklers (0.37 gpm) are used at the site to help ensure that more of the irrigated water is applied to the vine tissues and root zones and not the bare ground surface, lessening the chance for runoff, erosion, and ponding.
- PureSense ® temperature sensors are used to assist with application scheduling and ensure that water is applied during the appropriate periods. The sensors communicate with the pumping system and are programmed to turn the system on at 33 degrees F and off at 32 degrees F after the frost period. The sensors are already programmed to operate at the lowest temperate thresholds to effectively protect vine tissues from frost damage. There is no more efficiency that can be gained (GSI, 2013).
- The reservoir booster pumps will have variable speed drives that enable the application flow rate and pressure in each area to be better controlled so that water is used efficiently and not wasted or allowed to runoff from the field area.

### Well Interference

GSI also evaluated the effects of the proposed reservoir on neighboring well levels. The two nearest wells to the subject parcel are located between 2,100 and 3,100 feet from the wells that would supply the proposed reservoir. The predicted drawdown at the closest neighboring well is approximately 1.4 feet. This drawdown is approximately 8.2 feet less than predicted if the current frost protection practices were to continue without the use of the reservoir.

**Mitigation/Conclusion.** As specified above for water quality, existing regulations and/or required plans will adequately address surface water quality impacts during construction and permanent use of

the project. No additional measures above what are required or proposed are needed to protect water quality. The project's water quantity impact is due to evaporative water losses in the amount of 1.1 afy. This impact is offset by the removal of 1.7 acres of vineyard land resulting in water savings of approximately 1.7 to 2.5 acre-feet. Based on this water savings, the proposed project would exceed the 1:1 offset requirement of the urgency ordinance, if it were to apply to agricultural reservoirs.

As described in Section 2, Agricultural Resources, at the time of application for grading permits, the project plans shall clearly state the purpose of the reservoir for on-site frost control and that off-site transfer of reservoir water and/or other uses of the reservoir are prohibited.

Since the project would enable water storage for frost protection, it would reduce the amount of water simultaneously pumped from the basin during frost events and would therefore reduce drawdown at neighboring wells by an estimated 8.2 feet. For the reasons described above, the proposed project is anticipated to have less than significant water and hydrology impacts.

## 15. LAND USE

*Will the project:*

	Inconsistent	Potentially Inconsistent	Consistent	Not Applicable
a) <i>Be potentially inconsistent with land use, policy/regulation (e.g., general plan [County Land Use Element and Ordinance], local coastal plan, specific plan, Clean Air Plan, etc.) adopted to avoid or mitigate for environmental effects?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) <i>Be potentially inconsistent with any habitat or community conservation plan?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) <i>Be potentially inconsistent with adopted agency environmental plans or policies with jurisdiction over the project?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) <i>Be potentially incompatible with surrounding land uses?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) <i>Other:</i> _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Setting/Impact.** The proposed project is subject to the following Planning Area Standard as found in the County's LUO:

1. Planning Area Standard Chapter: 22.110 Shandon Carrizo Planning Area

Surrounding uses are identified on Page 2 of the Initial Study. The proposed project was reviewed for consistency with policy and/or regulatory documents relating to the environment and appropriate land use (e.g., County Land Use Ordinance, Local Coastal Plan, etc.). Referrals were sent to outside agencies to review for policy consistencies (APCD for Clean Air Plan, etc.). The project was found to be consistent with these documents (refer also to Exhibit A on reference documents used).

The project is not within or adjacent to a Habitat Conservation Plan area. The project is consistent or compatible with the surrounding uses as summarized on page 2 of this Initial Study.

Construction and grading activities associated with the proposed reservoir will be subject to fugitive

dust control measures pursuant to Land Use Ordinance Section 22.52.160.

The project is exempt from the Paso Robles Groundwater Basin Urgency Ordinance and the Water Conservation planning area standards, which do not apply to agricultural reservoirs. However, based on the project's estimated evaporative water losses of 1.1 acre-feet and proposed water offsets of between 1.7 and 2.5 acre-feet, it would result in an offset ratio (water saved / new water demand) of between 1.54 and 2.27. This exceeds the 1:1 offset requirement that applies to development not exempt from the urgency ordinance.

**Mitigation/Conclusion.** No inconsistencies were identified and therefore no additional measures above what will already be required were determined necessary.

**16. MANDATORY FINDINGS OF SIGNIFICANCE**

Potentially Significant	Impact can & will be mitigated	Insignificant Impact	Not Applicable
----------------------------	--------------------------------------	-------------------------	-------------------

*Will the project:*

- |    |   |                          |                          |                                     |                          |
|----|---|--------------------------|--------------------------|-------------------------------------|--------------------------|
| a) | <i>Have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?</i> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) | <i>Have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)</i>  | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| c) | <i>Have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?</i>  | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

For further information on CEQA or the county's environmental review process, please visit the County's web site at "[www.sloplanning.org](http://www.sloplanning.org)" under "Environmental Information", or the California Environmental Resources Evaluation System at: [http://www.ceres.ca.gov/topic/env\\_law/ceqa/guidelines](http://www.ceres.ca.gov/topic/env_law/ceqa/guidelines) for information about the California Environmental Quality Act.

## Exhibit A - Initial Study References and Agency Contacts

The County Planning Department has contacted various agencies for their comments on the proposed project. With respect to the subject application, the following have been contacted (marked with an ) and when a response was made, it is either attached or in the application file:

<u>Contacted</u>	<u>Agency</u>	<u>Response</u>
<input checked="" type="checkbox"/>	County Public Works Department	<b>Attached</b>
<input checked="" type="checkbox"/>	County Environmental Health Division	<b>In File**</b>
<input checked="" type="checkbox"/>	County Agricultural Commissioner's Office	<b>Attached</b>
<input type="checkbox"/>	County Airport Manager	<b>Not Applicable</b>
<input type="checkbox"/>	Airport Land Use Commission	<b>Not Applicable</b>
<input checked="" type="checkbox"/>	Air Pollution Control District	<b>Attached</b>
<input type="checkbox"/>	County Sheriff's Department	<b>Not Applicable</b>
<input checked="" type="checkbox"/>	Regional Water Quality Control Board	<b>None</b>
<input type="checkbox"/>	CA Coastal Commission	<b>Not Applicable</b>
<input checked="" type="checkbox"/>	CA Department of Fish and Wildlife	<b>None</b>
<input type="checkbox"/>	CA Department of Forestry (Cal Fire)	<b>Not Applicable</b>
<input type="checkbox"/>	CA Department of Transportation	<b>Not Applicable</b>
<input type="checkbox"/>	Community Services District	<b>Not Applicable</b>
<input type="checkbox"/>	Other _____	<b>Not Applicable</b>
<input type="checkbox"/>	Other _____	<b>Not Applicable</b>

*\*\* "No comment" or "No concerns"-type responses are usually not attached*

The following checked ("") reference materials have been used in the environmental review for the proposed project and are hereby incorporated by reference into the Initial Study. The following information is available at the County Planning and Building Department.

<input checked="" type="checkbox"/> Project File for the Subject Application	<input type="checkbox"/> Design Plan
<u>County documents</u>	<input type="checkbox"/> Specific Plan
<input type="checkbox"/> Coastal Plan Policies	<input checked="" type="checkbox"/> Annual Resource Summary Report
<input checked="" type="checkbox"/> Framework for Planning (Coastal/Inland)	<input type="checkbox"/> Circulation Study
<input checked="" type="checkbox"/> General Plan (Inland/Coastal), includes all maps/elements; more pertinent elements:	<u>Other documents</u>
<input checked="" type="checkbox"/> Agriculture Element	<input checked="" type="checkbox"/> Clean Air Plan/APCD Handbook
<input checked="" type="checkbox"/> Conservation & Open Space Element	<input checked="" type="checkbox"/> Regional Transportation Plan
<input type="checkbox"/> Economic Element	<input checked="" type="checkbox"/> Uniform Fire Code
<input checked="" type="checkbox"/> Housing Element	<input checked="" type="checkbox"/> Water Quality Control Plan (Central Coast Basin – Region 3)
<input checked="" type="checkbox"/> Noise Element	<input checked="" type="checkbox"/> Archaeological Resources Map
<input type="checkbox"/> Parks & Recreation Element/Project List	<input checked="" type="checkbox"/> Area of Critical Concerns Map
<input checked="" type="checkbox"/> Safety Element	<input checked="" type="checkbox"/> Special Biological Importance Map
<input checked="" type="checkbox"/> Land Use Ordinance (Inland/Coastal)	<input checked="" type="checkbox"/> CA Natural Species Diversity Database
<input type="checkbox"/> Building and Construction Ordinance	<input checked="" type="checkbox"/> Fire Hazard Severity Map
<input checked="" type="checkbox"/> Public Facilities Fee Ordinance	<input checked="" type="checkbox"/> Flood Hazard Maps
<input type="checkbox"/> Real Property Division Ordinance	<input checked="" type="checkbox"/> Natural Resources Conservation Service Soil Survey for SLO County
<input checked="" type="checkbox"/> Affordable Housing Fund	<input checked="" type="checkbox"/> GIS mapping layers (e.g., habitat, streams, contours, etc.)
<input type="checkbox"/> Airport Land Use Plan	<input checked="" type="checkbox"/> Other Paso Robles Groundwater Basin Resource Capacity Study, 2011
<input type="checkbox"/> Energy Wise Plan	
<input checked="" type="checkbox"/> Shandon/Carrizo Area Plan and Update EIR	

In addition, the following project specific information and/or reference materials have been considered as a part of the Initial Study:

1. Beacon Geotechnical. (May 21, 2013). *Geotechnical Engineering Report for Proposed Frost Protection Reservoir.*
2. Fugro Consultants. (March 2010). *Paso Robles Groundwater Basin Water Balance Review and Update.*
3. Mark Battany. (September 2013). *Grape Notes Newsletter – Reducing vineyard water use: mechanisms, strategies and limitations.*
4. Fugro Consultants. (February 2005). *Paso Robles Groundwater Basin Study – Phase II.*
5. Fugro Consultants. (August 2002). *Paso Robles Groundwater Basin Study – Phase I.*
6. GSI Water Solutions, Inc. (August 2013). *Generalized Difference in Spring Groundwater Elevations Between 1997 and 2013.*
7. GSI Water Solutions, Inc. (October 15, 2013). *PMT2012-02397 Major Grading Permit – Technical Memorandum.*
8. Kevin Merk Associates, LLC. (November 26, 2013). *San Joaquin Kit Fox Habitat Evaluation for Frost Protection Pond, Rava Ranch, San Luis Obispo, California.*
9. Todd Engineers. (May 2009). *Evaluation of Paso Robles Groundwater Basin Pumping.*
10. Todd Engineers. (December 2007). *Update for the Paso Robles Groundwater Basin.*

## Exhibit B - Mitigation Summary Table

Per Public Resources Code Section 21081.6, the following measures also constitute the mitigation monitoring and/or reporting program that will reduce potentially significant impacts to less than significant levels. These measures will become conditions of approval (COAs) should the project be approved. The Lead Agency (County) or other Responsible Agencies, as specified in the following measures, are responsible to verify compliance with these COAs.

### Agricultural Resources

**AG-1** At the time of application for grading and/or construction permits, the project plans shall clearly state the purpose of the reservoir for on-site frost control and that off-site transfer of reservoir water and/or other uses of the reservoir are prohibited.

### Biological Resources

#### *San Joaquin Kit Fox*

The Kit Fox Evaluation, which was completed for Rava Major Grading Permit PMT2012-02397 by Kevin Merk Associates, LLC, indicates the project will impact 0.88 acres of San Joaquin kit fox habitat. The evaluation resulted in a score of 71, which requires that all impacts to kit fox habitat be mitigated at a ratio of 3 acres conserved for each acre impacted (3:1). Total compensatory mitigation required for the project is 2.64 acres, based on 3 times 0.88 acres impacted. Note that the required mitigation ratio is subject to change upon the completion of the California Department of Fish and Wildlife's review of the habitat evaluation. The mitigation options identified in BR-1 through BR-11 apply to the proposed project only; should the project change, the mitigation obligation may also change, and a reevaluation of the mitigation measures would be required.

**BR-1** Prior to issuance of grading and/or construction permits, the applicant shall submit evidence to the County of San Luis Obispo, Department of Planning and Building, Environmental and Resource Management Division (County) (see contact information below) that states that one or a combination of the following three San Joaquin kit fox mitigation measures has been implemented:

- a. Provide for the protection in perpetuity, through acquisition of fee or a conservation easement of 2.64 acres of suitable habitat in the kit fox corridor area (e.g. within the San Luis Obispo County kit fox habitat area, northwest of Highway 58), either on-site or off-site, and provide for a non-wasting endowment to provide for management and monitoring of the property in perpetuity. Lands to be conserved shall be subject to the review and approval of the California Department of Fish and Game (Department) (see contact information below) and the County.

This mitigation alternative (a.) requires that all aspects of this program must be in place before County permit issuance or initiation of any ground disturbing activities.

- b. Deposit funds into an approved in-lieu fee program, which would provide for the protection in perpetuity of suitable habitat in the kit fox corridor area within San Luis Obispo County, and provide for a non-wasting endowment for management and monitoring of the property in perpetuity.

Mitigation alternative (b) above can be completed by providing funds to The Nature Conservancy (TNC) pursuant to the Voluntary Fee-Based Compensatory Mitigation Program (Program). The Program was established in agreement between the Department and TNC to preserve San Joaquin kit fox habitat, and to provide a voluntary mitigation alternative to project proponents who must

mitigate the impacts of projects in accordance with the California Environmental Quality Act (CEQA). The fee, payable to "The Nature Conservancy" (see contact information below), would total \$6,600 of fee based on \$2500 per acre. This fee is calculated based on the current cost-per-unit of \$2,500 per acre of mitigation, which is scheduled to be adjusted to address the increasing cost of property in San Luis Obispo County, and a recommended 3:1 mitigation ratio under review by Fish and Wildlife; your actual cost may increase depending on the timing of payment. This fee must be paid after the Department provides written notification identifying your mitigation options but prior to County permit issuance and initiation of any ground disturbing activities.

- c. Purchase 2.64 credits in a Department-approved conservation bank, which would provide for the protection in perpetuity of suitable habitat within the kit fox corridor area and provide for a non-wasting endowment for management and monitoring of the property in perpetuity.

Mitigation alternative (c) above can be completed by purchasing credits from the Palo Prieto Conservation Bank (see contact information below). The Palo Prieto Conservation Bank was established to preserve San Joaquin kit fox habitat, and to provide a voluntary mitigation alternative to project proponents who must mitigate the impacts of projects in accordance with the California Environmental Quality Act (CEQA). The cost for purchasing credits is payable to the owners of The Palo Prieto Conservation Bank, and would total \$6,600. This fee is calculated based on the current cost-per-credit of \$2,500 per acre of mitigation. The fee is established by the conservation bank owner and may change at any time. Your actual cost may increase depending on the timing of payment. Purchase of credits must be completed prior to County permit issuance and initiation of any ground disturbing activities.

**BR-2 Prior to issuance of grading and/or construction permits**, the applicant shall provide evidence that they have retained a qualified biologist acceptable to the County Division of Environmental and Resource Management. The retained biologist shall perform the following monitoring activities:

- a. **Prior to issuance of grading and/or construction permits and within 30 days prior to initiation of site disturbance and/or construction**, the biologist shall conduct a pre-activity (i.e. pre-construction) survey for known or potential kit fox dens and submit a letter to the County reporting the date the survey was conducted, the survey protocol, survey results, and what measures were necessary (and completed), as applicable, to address any kit fox activity within the project limits.
- b. The qualified biologist shall conduct weekly site visits during site-disturbance activities (i.e. grading, disking, excavation, stock piling of dirt or gravel, etc.) that proceed longer than 14 days, for the purpose of monitoring compliance with required Mitigation Measures BR-3 through BR11. Site-disturbance activities lasting up to 14 days do not require weekly monitoring by the biologist unless observations of kit fox or their dens are made on-site or the qualified biologist recommends monitoring for some other reason (see BR-2-c3). When weekly monitoring is required, the biologist shall submit weekly monitoring reports to the County.
- c. **Prior to or during project activities**, if any observations are made of San Joaquin Kit fox, or any known or potential San Joaquin kit fox dens are discovered within the project limits, the qualified biologist shall re-assess the probability of incidental take (e.g. harm or death) to kit fox. At the time a den is discovered, the qualified biologist shall contact the U.S. Fish and Wildlife Service and the Department for guidance on possible additional kit fox protection measures to implement and whether or not a Federal and/or State incidental take permit is needed. If a potential den is encountered during construction,

work shall stop until such time the U.S. Fish and Wildlife Service/Department determine it is appropriate to resume work.

If incidental take of kit fox during project activities is possible, **before project activities commence**, the applicant must consult with the U.S. Fish and Wildlife Service and the Department (see contact information below). The results of this consultation may require the applicant to obtain a Federal and/or State permit for incidental take during project activities. The applicant should be aware that the presence of kit foxes or known or potential kit fox dens at the project site could result in further delays of project activities.

In addition, the qualified biologist shall implement the following measures:

1. **Within 30 days prior to initiation of site disturbance and/or construction**, fenced exclusion zones shall be established around all known and potential kit fox dens. Exclusion zone fencing shall consist of either large flagged stakes connected by rope or cord, or survey laths or wooden stakes prominently flagged with survey ribbon. Each exclusion zone shall be roughly circular in configuration with a radius of the following distance measured outward from the den or burrow entrances:
  - a) Potential kit fox den: 50 feet
  - b) Known or active kit fox den: 100 feet
  - c) Kit fox pupping den: 150 feet
2. All foot and vehicle traffic, as well as all construction activities, including storage of supplies and equipment, shall remain outside of exclusion zones. Exclusion zones shall be maintained until all project-related disturbances have been terminated, and then shall be removed.
3. If kit foxes or known or potential kit fox dens are found on site, daily monitoring during ground disturbing activities shall be required by a qualified biologist.

**BR-3 Prior to issuance of grading and/or construction permits**, the applicant shall clearly delineate as a note on the project plans, that: "*Speed signs of 25 mph (or lower) shall be posted for all construction traffic to minimize the probability of road mortality of the San Joaquin kit fox*". Speed limit signs shall be installed on the project site **within 30 days prior to initiation of site disturbance and/or construction**,

In addition, **prior to permit issuance and initiation of any ground disturbing activities**, conditions BR-3 through BR-11 of the Developer's Statement/Conditions of Approval shall be clearly delineated on project plans.

**BR-4 During the site disturbance and/or construction phase**, grading and construction activities after dusk shall be prohibited unless coordinated through the County, during which additional kit fox mitigation measures may be required.

**BR-5 Prior to issuance of grading and/or construction permit and within 30 days prior to initiation of site disturbance and/or construction**, all personnel associated with the project shall attend a worker education training program, conducted by a qualified biologist, to avoid or reduce impacts on sensitive biological resources (i.e. San Joaquin kit fox). At a minimum, as the program relates to the kit fox, the training shall include the kit fox's life history, all mitigation measures specified by the county, as well as any related biological report(s) prepared for the project. The applicant shall notify the County shortly prior to this meeting. A kit fox fact sheet shall also be developed prior to the training program, and distributed at the

training program to all contractors, employers and other personnel involved with the construction of the project.

**BR-6 During the site-disturbance and/or construction phase,** to prevent entrapment of the San Joaquin kit fox, all excavation, steep-walled holes or trenches in excess of two feet in depth shall be covered at the close of each working day by plywood or similar materials, or provided with one or more escape ramps constructed of earth fill or wooden planks. Trenches shall also be inspected for entrapped kit fox each morning prior to onset of field activities and immediately prior to covering with plywood at the end of each working day. Before such holes or trenches are filled, they shall be thoroughly inspected for entrapped kit fox. Any kit fox so discovered shall be allowed to escape before field activities resume, or removed from the trench or hole by a qualified biologist and allowed to escape unimpeded.

**BR-7 During the site-disturbance and/or construction phase,** any pipes, culverts, or similar structures with a diameter of four inches or greater, stored overnight at the project site shall be thoroughly inspected for trapped San Joaquin kit foxes before the subject pipe is subsequently buried, capped, or otherwise used or moved in any way. If during the construction phase a kit fox is discovered inside a pipe, that section of pipe will not be moved, or if necessary, be moved only once to remove it from the path of activity, until the kit fox has escaped.

**BR-8 During the site-disturbance and/or construction phase,** all food-related trash items such as wrappers, cans, bottles, and food scraps generated shall be disposed of in closed containers only and regularly removed from the site. Food items may attract San Joaquin kit foxes onto the project site, consequently exposing such animals to increased risk of injury or mortality. No deliberate feeding of wildlife shall be allowed.

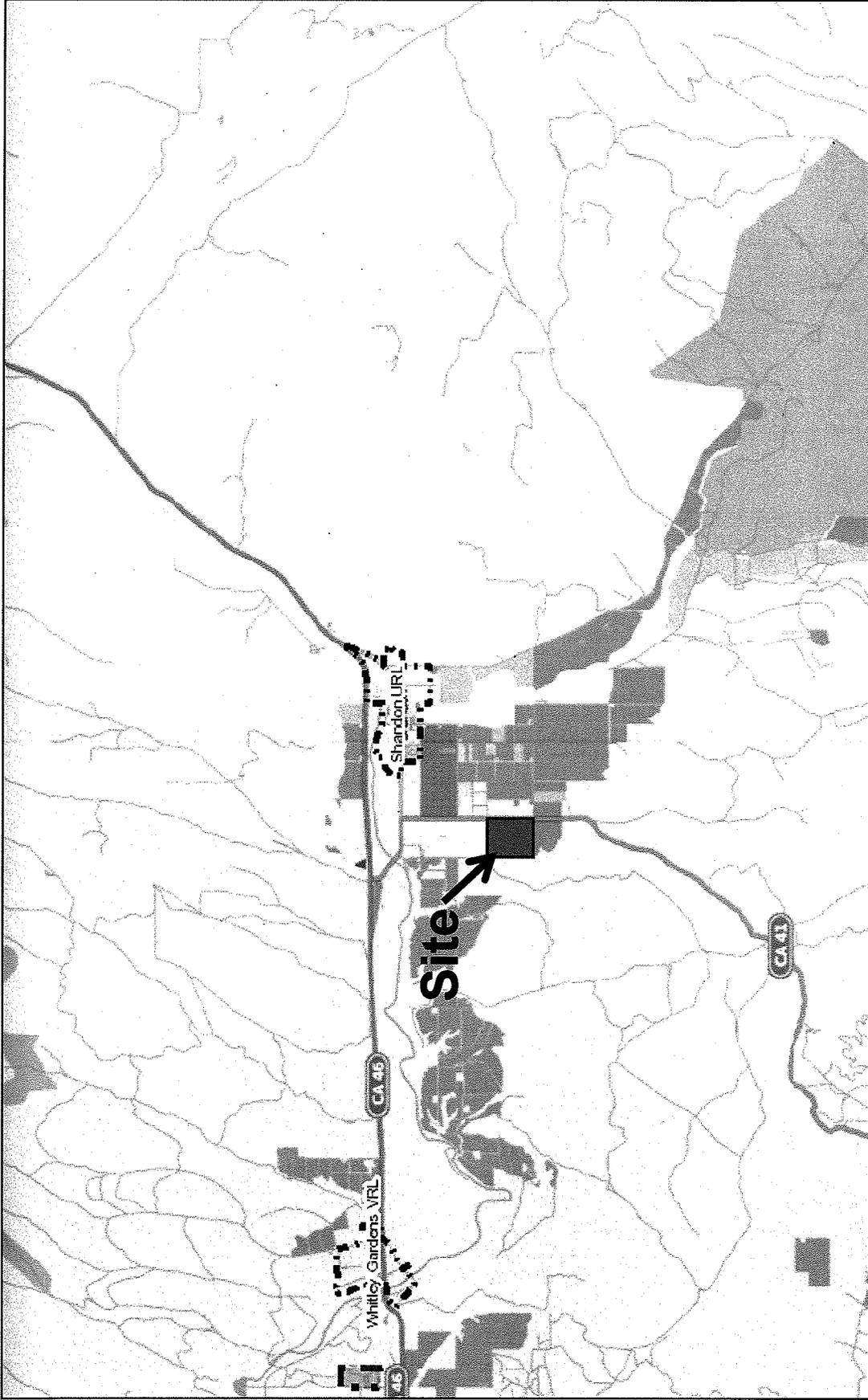
**BR-9 Prior to, during and after the site-disturbance and/or construction phase,** use of pesticides or herbicides shall be in compliance with all local, state and federal regulations. This is necessary to minimize the probability of primary or secondary poisoning of endangered species utilizing adjacent habitats, and the depletion of prey upon which San Joaquin kit foxes depend.

**BR-10 During the site-disturbance and/or construction phase,** any contractor or employee that inadvertently kills or injures a San Joaquin kit fox or who finds any such animal either dead, injured, or entrapped shall be required to report the incident immediately to the applicant and County. In the event that any observations are made of injured or dead kit fox, the applicant shall immediately notify the U.S. Fish and Wildlife Service and the Department by telephone (see contact information below). In addition, formal notification shall be provided in writing within three working days of the finding of any such animal(s). Notification shall include the date, time, location and circumstances of the incident. Any threatened or endangered species found dead or injured shall be turned over immediately to the Department for care, analysis, or disposition.

**BR-11 Prior to final inspection, or occupancy, whichever comes first,** should any long internal or perimeter fencing be proposed or installed, the applicant shall do the following to provide for kit fox passage:

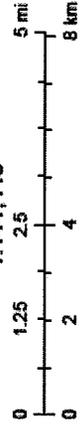
- a. If a wire strand/pole design is used, the lowest strand shall be no closer to the ground than 12".
- b. If a more solid wire mesh fence is used, 8" x 12" openings near the ground shall be provided every 100 yards.

Upon fence installation, the applicant shall notify the County to verify proper installation. Any fencing constructed after issuance of a final permit shall follow the above guidelines.



November 27, 2013

1:144,448



PROJECT

Chad Rava  
Major Grading Permit PMT2012-02397

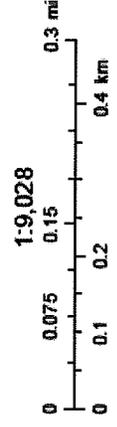
EXHIBIT



Vicinity Map



November 27, 2013



**PROJECT**

Chad Rava  
Major Grading Permit PMT2012-02397

**EXHIBIT**

Aerial Photograph





November 27, 2013

1:36,112  
0 0.3 0.6 1 1.2 mi  
0 0.5 1 2 km

PROJECT

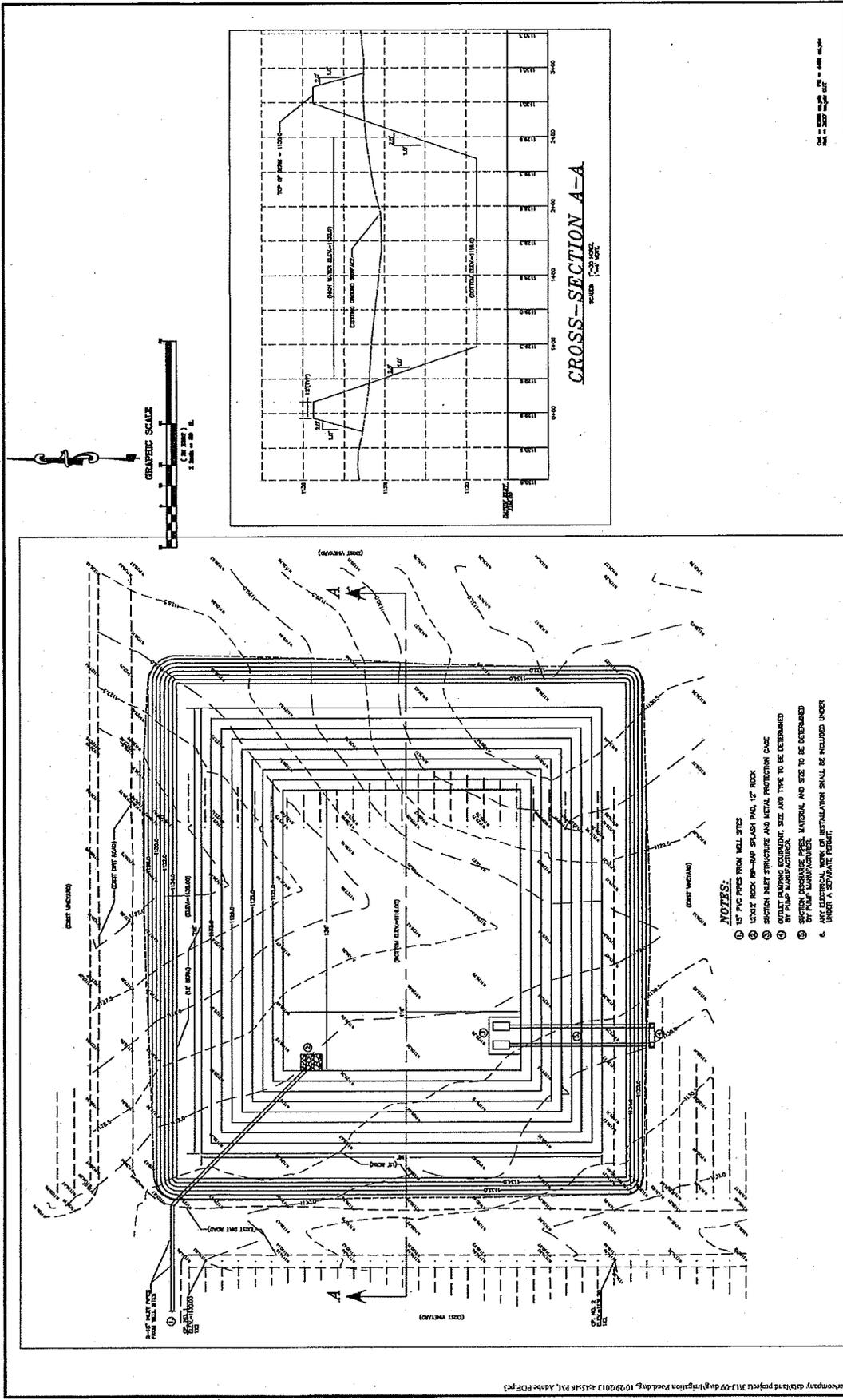
Chad Rava  
Major Grading Permit PMT2012-02397

EXHIBIT

Land Use Category Map







REV.	DESCRIPTION	DATE	APP.	BY
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

<b>T. TARTAGLIA ENGINEERING</b> CIVIL ENGINEERING 1000 S. GARDEN AVENUE SUITE 100 GARDEN GROVE, CA 92640 TEL: (714) 261-1111 FAX: (714) 261-1112 WWW: TARTAGLIAENGINEERING.COM	
<b>CHAD RAVA</b> PROJECT MANAGER	

UNDERGROUND SERVICE ALERT DIAL: 811 TWO WORKING DAYS BEFORE YOU DIG	
--	--



**DEVELOPER'S STATEMENT FOR:  
Chad Rava  
Major Grading Permit  
PMT2012-02397**

The applicant agrees to incorporate the following measures into the project. These measures become a part to the project description and therefore become a part of the record of action upon which the environmental determination is based. All construction/grading activity must occur in strict compliance with the following mitigation measures. These measures shall be perpetual and run with the land. These measures are binding on all successors in interest of the subject property.

**Note:** The items contained in the boxes labeled "Monitoring" describe the County procedures to be used to ensure compliance with the mitigation measures.

**Agricultural Resources**

**AG-1** At the time of application for grading and/or construction permits, the project plans shall clearly state the purpose of the reservoir for on-site frost control and that off-site transfer of reservoir water and/or other uses of the reservoir are prohibited.

**Biological Resources**

*San Joaquin Kit Fox*

The Kit Fox Evaluation, which was completed for Rava Major Grading Permit PMT2012-02397 by Kevin Merk Associates, LLC, indicates the project will impact 0.88 acres of San Joaquin kit fox habitat. The evaluation resulted in a score of 71, which requires that all impacts to kit fox habitat be mitigated at a ratio of 3 acres conserved for each acre impacted (3:1). Total compensatory mitigation required for the project is 2.64 acres, based on 3 times 0.88 acres impacted. Note that the required mitigation ratio is subject to change upon the completion of the California Department of Fish and Wildlife's review of the habitat evaluation. The mitigation options identified in BR-1 through BR-11 apply to the **proposed project only**; should the project change, the mitigation obligation may also change, and a reevaluation of the mitigation measures would be required.

**BR-1** Prior to issuance of grading and/or construction permits, the applicant shall submit evidence to the County of San Luis Obispo, Department of Planning and Building, Environmental and Resource Management Division (County) (see contact information below) that states that one or a combination of the following three San Joaquin kit fox mitigation measures has been implemented:

- a. Provide for the protection in perpetuity, through acquisition of fee or a conservation easement of 2.64 acres of suitable habitat in the kit fox corridor area (e.g. within the San Luis Obispo County kit fox habitat area, northwest of Highway 58), either on-site or off-site, and provide for a non-wasting endowment to provide for management and monitoring of the property in perpetuity. Lands to be conserved shall be subject to the review and approval of the California Department of Fish and Game (Department) (see contact information below) and the County.

This mitigation alternative (a.) requires that all aspects of this program must be in place before County permit issuance or initiation of any ground disturbing activities.

- b. Deposit funds into an approved in-lieu fee program, which would provide for the protection in perpetuity of suitable habitat in the kit fox corridor area within San Luis Obispo County, and provide for a non-wasting endowment for management and monitoring of the property in perpetuity.

Mitigation alternative (b) above can be completed by providing funds to The Nature Conservancy (TNC) pursuant to the Voluntary Fee-Based Compensatory Mitigation Program (Program). The Program was established in agreement between the Department and TNC to preserve San Joaquin kit fox habitat, and to provide a voluntary mitigation alternative to project proponents who must mitigate the impacts of projects in accordance with the California Environmental Quality Act (CEQA). The fee, payable to "The Nature Conservancy" (see contact information below), would total \$6,600 of fee based on \$2,500 per acre. This fee is calculated based on the current cost-per-unit of \$2,500 per acre of mitigation, which is scheduled to be adjusted to address the increasing cost of property in San Luis Obispo County, and a recommended 3:1 mitigation ratio under review by Fish and Wildlife; your actual cost may increase depending on the timing of payment. This fee must be paid after the Department provides written notification identifying your mitigation options but prior to County permit issuance and initiation of any ground disturbing activities.

- c. Purchase 2.64 credits in a Department-approved conservation bank, which would provide for the protection in perpetuity of suitable habitat within the kit fox corridor area and provide for a non-wasting endowment for management and monitoring of the property in perpetuity.

Mitigation alternative (c) above can be completed by purchasing credits from the Palo Prieto Conservation Bank (see contact information below). The Palo Prieto Conservation Bank was established to preserve San Joaquin kit fox habitat, and to provide a voluntary mitigation alternative to project proponents who must mitigate the impacts of projects in accordance with the California Environmental Quality Act (CEQA). The cost for purchasing credits is payable to the owners of The Palo Prieto Conservation Bank, and would total \$6,600. This fee is calculated based on the current cost-per-credit of \$2,500 per acre of mitigation. The fee is established by the conservation bank owner and may change at any time. Your actual cost may increase depending on the timing of payment. Purchase of credits must be completed prior to County permit issuance and initiation of any ground disturbing activities.

**Monitoring:** Required prior to issuance of a grading and/or construction permit. Compliance will be verified by the County Division of Environmental and Resource Management.

**BR-2 Prior to issuance of grading and/or construction permits**, the applicant shall provide evidence that they have retained a qualified biologist acceptable to the County Division of Environmental and Resource Management. The retained biologist shall perform the following monitoring activities:

- a. **Prior to issuance of grading and/or construction permits and within 30 days prior to initiation of site disturbance and/or construction**, the biologist shall conduct a pre-activity (i.e. pre-construction) survey for known or potential kit fox dens and submit a letter to the County reporting the date the survey was conducted, the survey protocol, survey results, and what measures were necessary (and completed), as applicable, to address any kit fox activity within the project limits.
- b. The qualified biologist shall conduct weekly site visits during site-disturbance activities (i.e. grading, disking, excavation, stock piling of dirt or gravel, etc.) that proceed longer than 14 days, for the purpose of monitoring compliance with required

Mitigation Measures BR-3 through BR11. Site- disturbance activities lasting up to 14 days do not require weekly monitoring by the biologist unless observations of kit fox or their dens are made on-site or the qualified biologist recommends monitoring for some other reason (see BR-2-c3). When weekly monitoring is required, the biologist shall submit weekly monitoring reports to the County.

- c. **Prior to or during project activities**, if any observations are made of San Joaquin Kit fox, or any known or potential San Joaquin kit fox dens are discovered within the project limits, the qualified biologist shall re-assess the probability of incidental take (e.g. harm or death) to kit fox. At the time a den is discovered, the qualified biologist shall contact the U.S. Fish and Wildlife Service and the Department for guidance on possible additional kit fox protection measures to implement and whether or not a Federal and/or State incidental take permit is needed. If a potential den is encountered during construction, work shall stop until such time the U.S. Fish and Wildlife Service/Department determine it is appropriate to resume work.

If incidental take of kit fox during project activities is possible, **before project activities commence**, the applicant must consult with the U.S. Fish and Wildlife Service and the Department (see contact information below). The results of this consultation may require the applicant to obtain a Federal and/or State permit for incidental take during project activities. The applicant should be aware that the presence of kit foxes or known or potential kit fox dens at the project site could result in further delays of project activities.

In addition, the qualified biologist shall implement the following measures:

1. **Within 30 days prior to initiation of site disturbance and/or construction**, fenced exclusion zones shall be established around all known and potential kit fox dens. Exclusion zone fencing shall consist of either large flagged stakes connected by rope or cord, or survey laths or wooden stakes prominently flagged with survey ribbon. Each exclusion zone shall be roughly circular in configuration with a radius of the following distance measured outward from the den or burrow entrances:
  - a) Potential kit fox den: 50 feet
  - b) Known or active kit fox den: 100 feet
  - c) Kit fox pupping den: 150 feet
2. All foot and vehicle traffic, as well as all construction activities, including storage of supplies and equipment, shall remain outside of exclusion zones. Exclusion zones shall be maintained until all project-related disturbances have been terminated, and then shall be removed.
3. If kit foxes or known or potential kit fox dens are found on site, daily monitoring during ground disturbing activities shall be required by a qualified biologist.

<p><b>Monitoring:</b> Required prior to issuance of a grading and/or construction permit. Compliance will be verified by the County Division of Environmental and Resource Management.</p>
--

**BR-3 Prior to issuance of grading and/or construction permits**, the applicant shall clearly delineate as a note on the project plans, that: "*Speed signs of 25 mph (or lower) shall be posted for all construction traffic to minimize the probability of road mortality of the San Joaquin kit fox*". Speed limit signs shall be installed on the project site **within 30 days prior to initiation of site disturbance and/or construction**,

In addition, **prior to permit issuance and initiation of any ground disturbing activities**, conditions BR-3 through BR-11 of the Developer's Statement/Conditions of Approval shall be clearly delineated on project plans.

**BR-4 During the site disturbance and/or construction phase**, grading and construction activities after dusk shall be prohibited unless coordinated through the County, during which additional kit fox mitigation measures may be required.

**BR-5 Prior to issuance of grading and/or construction permit and within 30 days prior to initiation of site disturbance and/or construction**, all personnel associated with the project shall attend a worker education training program, conducted by a qualified biologist, to avoid or reduce impacts on sensitive biological resources (i.e. San Joaquin kit fox). At a minimum, as the program relates to the kit fox, the training shall include the kit fox's life history, all mitigation measures specified by the county, as well as any related biological report(s) prepared for the project. The applicant shall notify the County shortly prior to this meeting. A kit fox fact sheet shall also be developed prior to the training program, and distributed at the training program to all contractors, employers and other personnel involved with the construction of the project.

**BR-6 During the site-disturbance and/or construction phase**, to prevent entrapment of the San Joaquin kit fox, all excavation, steep-walled holes or trenches in excess of two feet in depth shall be covered at the close of each working day by plywood or similar materials, or provided with one or more escape ramps constructed of earth fill or wooden planks. Trenches shall also be inspected for entrapped kit fox each morning prior to onset of field activities and immediately prior to covering with plywood at the end of each working day. Before such holes or trenches are filled, they shall be thoroughly inspected for entrapped kit fox. Any kit fox so discovered shall be allowed to escape before field activities resume, or removed from the trench or hole by a qualified biologist and allowed to escape unimpeded.

**BR-7 During the site-disturbance and/or construction phase**, any pipes, culverts, or similar structures with a diameter of four inches or greater, stored overnight at the project site shall be thoroughly inspected for trapped San Joaquin kit foxes before the subject pipe is subsequently buried, capped, or otherwise used or moved in any way. If during the construction phase a kit fox is discovered inside a pipe, that section of pipe will not be moved, or if necessary, be moved only once to remove it from the path of activity, until the kit fox has escaped.

**BR-8 During the site-disturbance and/or construction phase**, all food-related trash items such as wrappers, cans, bottles, and food scraps generated shall be disposed of in closed containers only and regularly removed from the site. Food items may attract San Joaquin kit foxes onto the project site, consequently exposing such animals to increased risk of injury or mortality. No deliberate feeding of wildlife shall be allowed.

**BR-9 Prior to, during and after the site-disturbance and/or construction phase**, use of pesticides or herbicides shall be in compliance with all local, state and federal

regulations. This is necessary to minimize the probability of primary or secondary poisoning of endangered species utilizing adjacent habitats, and the depletion of prey upon which San Joaquin kit foxes depend.

**BR-10** During the site-disturbance and/or construction phase, any contractor or employee that inadvertently kills or injures a San Joaquin kit fox or who finds any such animal either dead, injured, or entrapped shall be required to report the incident immediately to the applicant and County. In the event that any observations are made of injured or dead kit fox, the applicant shall immediately notify the U.S. Fish and Wildlife Service and the Department by telephone (see contact information below). In addition, formal notification shall be provided in writing within three working days of the finding of any such animal(s). Notification shall include the date, time, location and circumstances of the incident. Any threatened or endangered species found dead or injured shall be turned over immediately to the Department for care, analysis, or disposition.

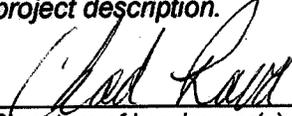
**BR-11** Prior to final inspection, or occupancy, whichever comes first, should any long internal or perimeter fencing be proposed or installed, the applicant shall do the following to provide for kit fox passage:

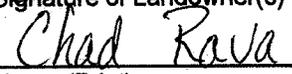
- a. If a wire strand/pole design is used, the lowest strand shall be no closer to the ground than 12".
- b. If a more solid wire mesh fence is used, 8" x 12" openings near the ground shall be provided every 100 yards.

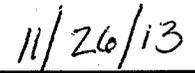
Upon fence installation, the applicant shall notify the County to verify proper installation. Any fencing constructed after issuance of a final permit shall follow the above guidelines.

**Monitoring (San Joaquin Kit Fox Measures BR-3 – BR-11):** Compliance will be verified by the County Division of Environmental and Resource Management in consultation with the California Department of Fish and Game. As applicable, each of these measures shall be included on construction plans.

*The applicant understands that any changes made to the project subsequent to this environmental determination must be reviewed by the Environmental Coordinator and may require a new environmental determination for the project. By signing this agreement, the owner(s) agrees to and accepts the incorporation of the above measures into the proposed project description.*

  
 \_\_\_\_\_  
 Signature of Landowner(s)

  
 \_\_\_\_\_  
 Name (Print)

  
 \_\_\_\_\_  
 Date



DEPARTMENT OF PLANNING AND BUILDING

THIS IS A NEW PROJECT REFERRAL

RECEIVED  
OCT 31 2013  
BY: \_\_\_\_\_

DATE: 10/30/2013

TO: AG

FROM: Airlin Singewald – North County Team / Development Review

**PROJECT DESCRIPTION:** PMT2012-02397 RAVA - The proposed project is a request by Chad Rava for a major grading permit to construct an 8.5 acre-foot frost protection reservoir for an existing 190-acre vineyard. The proposed project would result in approximately 1.4 acres of disturbance and 12,839 cubic yards of cut and fill on a 192-acre parcel. Site location is Hwy 41, Shandon. APN: 017-251-018.

Return this letter with your comments attached no later than: 14 days from receipt of this referral. CACs please respond within 60 days. Thank you.

PART 1 - IS THE ATTACHED INFORMATION ADEQUATE TO COMPLETE YOUR REVIEW?

- YES (Please go on to PART II.)
- NO (Call me ASAP to discuss what else you need. We have only 10 days in which we must obtain comments from outside agencies.)

PART II - ARE THERE SIGNIFICANT CONCERNS, PROBLEMS OR IMPACTS IN YOUR AREA OF REVIEW?

- YES (Please describe impacts, along with recommended mitigation measures to reduce the impacts to less-than-significant levels, and attach to this letter)
- NO (Please go on to PART III)

PART III - INDICATE YOUR RECOMMENDATION FOR FINAL ACTION.

Please attach any conditions of approval you recommend to be incorporated into the project's approval, or state reasons for recommending denial.

IF YOU HAVE "NO COMMENT," PLEASE SO INDICATE, OR CALL.

THE PROPOSED IRRIGATION/FROST PROTECTION RESERVOIR IS TO SUPPORT EXISTING ON-SITE VINEYARD PRODUCTION. PERMIT SHOULD CLARIFY OFF-SITE TRANSFER OF WATER AND/OR OTHER USES OF THE RESERVOIR ARE PROHIBITED.

11/6/13  
Date

LYDIA MUCKENBACH  
Name

5914  
Phone



SAN LUIS OBISPO COUNTY  
**DEPARTMENT OF PUBLIC WORKS**

Paavo Ogren, Director

---

County Government Center, Room 207 • San Luis Obispo CA 93408 • (805) 781-5252  
Fax (805) 781-1229 email address: [pwd@co.slo.ca.us](mailto:pwd@co.slo.ca.us)

---

**MEMORANDUM**

Date: November 8, 2013  
To: Airlin Singewald, Project Planner  
From: Tim Tomlinson, Development Services  
Subject: **Public Works Comments on PMT2012-03297, Rava Grading Permit, HWY 41, Shandon, APN 017-251-018**

Thank you for the opportunity to provide information on the proposed subject project. It has been reviewed by several divisions of Public Works, and this represents our consolidated response.

---

**Public Works Comments:**

A. The location of the proposed project is not shown on the plans provided. We are assuming that it is located in the northwest corner of the southwest quarter of the property.

**Project Requirements:**

**Drainage**

1. The applicant shall submit drainage plans for review and approval in accordance with Section 22.52.110 (Drainage) of the Land Use Ordinance.
2. The applicant shall submit complete erosion and sedimentation control plans for review and approval in accordance with 22.52.120.
3. The project shall comply with the requirements of the National Pollutant Discharge Elimination System Phase I and / or Phase II storm water program and the County's Storm Water Pollution Control and Discharge Ordinance, Title 8, Section 8.68 et sec.



**APCD Comments Regarding Rava and Boneso Agricultural Ponds Referrals**

**Andrew Mutziger** to: Airlin Singewald  
Cc: Aeron Arlin Genet, Tim Fuhs, Alyssa Roslan

11/14/2013 03:38 PM

History: This message has been replied to.

Airlin,

Thank you for contacting APCD and for the additional information.

You noted that the ordinance requires dust control measures.

Regarding NOA, since both of these projects are east of the Salinas River, NOA evaluations are not required; See NOA Map in Section 4.4 of the APCD CEQA Air Quality Handbook - [http://www.slocleanair.org/images/cms/upload/files/CEQA\\_Handbook\\_2012\\_v1.pdf](http://www.slocleanair.org/images/cms/upload/files/CEQA_Handbook_2012_v1.pdf).

Due to their relatively small scale, the APCD has no further comments regarding these two projects.

Please let me know if you have any questions.

Sincerely,

Andy Mutziger  
Air Quality Specialist  
San Luis Obispo County Air Pollution Control District  
(805) 781-5956  
fax: (805) 781-1002  
[www.slocleanair.org](http://www.slocleanair.org)

Airlin Singewald They will be balanced on site. Airlin Singewald S... 11/14/2013 03:08:06 PM

From: Airlin Singewald/Planning/COSLO  
To: Andrew Mutziger/APCD/COSLO@Wings  
Date: 11/14/2013 03:08 PM  
Subject: Re: FW: Agricultural Ponds Referrals

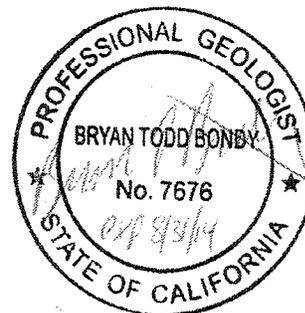
They will be balanced on site.

Airlin Singewald  
San Luis Obispo County  
Department of Planning and Building  
(805) 781-5198  
[asingewald@co.slo.ca.us](mailto:asingewald@co.slo.ca.us)

Andrew Mutziger Hi Airlin, A quick question - both projects have e... 11/14/2013 03:02:41 PM

Airlin Singewald Hi Andy, Thank you for the quick response. I for... 11/14/2013 12:43:40 PM

From: Airlin Singewald/Planning/COSLO  
To: Andrew Mutziger/APCD/COSLO@Wings  
Cc: Aeron Arlin Genet/APCD/COSLO@Wings, Bill Robeson/Planning/COSLO@Wings  
Date: 11/14/2013 12:43 PM  
Subject: Re: FW: Agricultural Ponds Referrals



## Technical Memorandum

Date: October 28, 2013

Project No.: 0497.002

To: Chad Rava

From: Jeff Barry; Bryan Bondy, PG, CHG; and Kenny Janssen / GSI Water Solutions, Inc.

SUBJECT: PMT2012-02397 – RAVA VINEYARDS MAJOR GRADING PERMIT

RE: FROST PROTECTION RESERVOIR WATER USAGE IMPACT ANALYSIS

---

This technical memorandum presents results from a water impact analysis to support the environmental review process for the PMT2012-02397 – Rava Vineyards Major Grading Permit. This memorandum addresses the water usage related issues identified in a letter to Robert Tartaglia from the San Luis Obispo County Department of Planning and Building (County) dated September 20, 2013. The water usage related issues that the County identified are ***bolded and italicized*** for reference.

### Site Location

The site of the proposed frost protection reservoir (reservoir) is located west of California State Route 41, approximately two miles southwest of Shandon, California (Figure 1). The reservoir site is located in the Shandon subarea of the Paso Robles Groundwater Basin.

## Data Sources – Reservoir Design and Operations

The reservoir design information cited in this document was obtained from grading and drainage plans developed by Tartaglia Engineering (2013). Key elements of the design that pertain to this impact analysis are summarized below:

- Reservoir area of disturbance: 60,980 square feet (1.4 acres)
- Total reservoir footprint area<sup>1</sup>: 73,410 square feet (1.7 acres)
- Water depth at full reservoir volume: 14 feet
- Water surface at full reservoir volume: 38,316 square feet (0.9 acres)
- Reservoir volume at full capacity: 2.77 million gallons (8.5 acre-feet)
- Reservoir liner: Clay, 4 inches thick along slopes and bottom

Current frost protection practices and reservoir management and operation practices were obtained from Chad Rava (Rava, C., Rava Vineyards, written communication, September, 2013).

## Reservoir Management and Operation Practices

***Describe the time periods (for an average year) and manner in which the reservoir will be filled and emptied.***

Water used to fill the reservoir will be sourced from two wells (Rava wells 1 and 2) located west of the proposed reservoir (Figures 1 and 2). The wells are approximately 650 feet deep and are completed in the Paso Robles Formation. The production capacity of well 1 is 1,250 gallons per minute (gpm). The production capacity of well 2 is 1,400 gpm.

The volume of the proposed reservoir will be 8.5 acre-feet (2.77 million gallons) and it will be filled an average of five times per year to meet frost protection needs between the months of mid-March through May<sup>2</sup>. At a combined pumping rate of 2,650 gpm for wells 1 and 2, the reservoir will take approximately 17.4 hours to initially fill. A reservoir booster pump equipped with a variable-speed drive will be used to pump water from the reservoir into the irrigation system for frost protection needs. Subsequent reservoir

---

<sup>1</sup> The total footprint area includes a 12-foot wide perimeter surrounding the reservoir for access.

<sup>2</sup> On average, there are five frost events per season, approximately two events per month (one during March and two each during April and May). Each frost event typically occurs every two weeks and generally lasts for one to two nights.

filling times and volumes will be less assuming there is residual volume remaining in the reservoir from the last frost protection filling event.

***Will the reservoir be lined with pervious or imperious materials?***

The inside slopes and bottom of the reservoir will be lined with a 4-inch thick clay liner (Tartaglia Engineering, 2013).

***Estimate the amount of water, if any, which would percolate back into the groundwater basin.***

The amount of water percolating back to the groundwater system via seepage loss from the reservoir can be estimated using the following equation (USDA 1996):

$$Q = KA \left( \frac{H + d}{d} \right)$$

where,  $Q$  is the seepage volume in cubic feet per day,  $K$  is the hydraulic conductivity of the clay liner in feet per day,  $A$  is the area of the water surface of the reservoir at full volume in square feet,  $H$  is the depth of water in the reservoir above the clay liner in feet, and  $d$  is the thickness of the clay liner in feet. The hydraulic conductivity of clay is estimated at  $10^{-4}$  feet per day (Freeze and Cheery 1979). The water depth of the reservoir when full will be approximately 14 feet. The area of the water surface at full reservoir volume will be approximately 38,316 square feet (0.9 acres). The thickness of the clay liner will be 0.33 feet.

Using the equation and input parameters identified above, the volume of water seeping from the reservoir and percolating back to the groundwater system is estimated at 0.004 acre-feet per day, or 0.06 acre-feet per year, assuming the reservoir is at full volume for three days (one day to fill and two days to utilize) and five frost events per year.

***Describe any alternative management practices that could increase the water efficiency (i.e. minimize evaporative losses) of the proposed reservoir. Describe the timing for employing the frost protection sprinklers. How soon are sprinklers turned on/off before/after a frost? Can the timing be adjusted to improve water efficiency?***

Rava Vineyards already employs several water efficiency measures, including:

- Low-flow Rain Bird® sprinklers (0.37 gpm) are used at the site to help ensure that more of the irrigated water is applied to the vine tissues and root zones and not the bare ground surface, lessening the chance for runoff, erosion, and ponding.

- PureSense temperature sensors are used to assist with application scheduling and ensure that water is applied during the appropriate periods. The sensors communicate with the pumping system and are programmed to turn the system on at 33°F and off at 32°F after the frost period. The sensors are already programmed to operate at the lowest temperature thresholds to effectively protect vine tissues from frost damage; there is no more efficiency that can be gained.
- The reservoir booster pumps will have variable speed drives that enable the application flow rate and pressure in each area to be better controlled so that water is used efficiently and not wasted or allowed to runoff from the field area.

The reservoir itself will help increase water-use efficiency during the frost protection periods. In the absence of the reservoir, frost protection practices at the site require operating both wells at full capacity during frost periods allowing little ability to control water application rates and volumes. Having the ability to pump stored water from the reservoir at an adjustable rate will provide more operational flexibility to better match application rates and volumes with frost protection needs. This will significantly reduce the amount of time the wells are operated and thereby the total volume of water applied. The added operational flexibility will also reduce potential drawdown interference on neighboring wells and total groundwater use as well 1 and 2 pumping durations and volumes will be less. Without a reservoir, the vineyard will need to continue operating the wells at full capacity during frost protection periods.

## Well Interference

***To the extent that such information is available, describe the number, location, and estimated water levels of existing wells on the subject parcel and surrounding parcels. Describe the estimated/observed change of well levels during peak irrigation periods.***

Pumping a well causes the groundwater level in an aquifer to be drawn down. The magnitude and areal extent of drawdown at any point in the aquifer depends on the physical characteristics (e.g., transmissivity and storativity) of the aquifer and well usage (e.g., pumping rate and duration). Drawdown caused by pumping is directly proportional to the well's pumping rate and duration and is inversely proportional to transmissivity, storativity, and distance from the pumping well.

A commonly used method to predict changes in groundwater level ( $s$ , in feet) at distance from a pumped well in a confined aquifer is the non-equilibrium well equation (Theis, 1935):

$$s = \frac{114.6QW(u)}{T}$$

where,  $Q$  is the pumping rate in gpm,  $W(u)$  is the well function of  $u$ , and  $T$  is aquifer transmissivity in gallons per day per foot (gpd/ft). In the well function,  $u$  is equal to:

$$u = \frac{1.87r^2S}{Tt}$$

where,  $r$  is the distance from the pumping well to a point where drawdown ( $s$ ) is predicted,  $S$  is aquifer storativity (dimensionless), and  $t$  is pumping time in days. Values for the Theis (1935) well function at various values for  $u$  were obtained from Driscoll (1986).

The average transmissivity of the Paso Robles Formation in the Shandon area is 11,000 gpd/ft (Fugro and Cleath 2002). The average storativity of the Paso Robles Formation is 0.002 (Fugro and Cleath 2002) based on reported values for the Atascadero area (none are available for the Shandon subarea). As previously mentioned, water used to fill the reservoir will be sourced from wells 1 and 2. Standing groundwater elevations for these wells are provided in Table 1. Assuming well 1 is pumping at a rate of 1,250 gpm while well 2 is pumping at 1,400 gpm, the reservoir will take approximately 17.4 hours (0.73 days) to fill.

Drawdown in the aquifer at distance from wells 1 and 2 are provided in Table 2, for two scenarios: (1) proposed project scenario with a frost protection reservoir, and (2) current frost protection practices without a reservoir. At a combined pumping rate of 2,650 gpm for a period of 0.73 days under the proposed scenario, approximately 48 feet of drawdown is predicted at a distance of 500 feet and approximately 2 feet of drawdown at a distance of 2,000 feet. No measurable drawdown (0.1 feet or less) is predicted at a distance of 3,000 feet or greater. Alternatively, at a combined pumping rate of 2,650 gpm for a period of two days under the current frost protection practice scenario (i.e., without a reservoir), the drawdown at distance is greater (Table 2), approximately 73 feet at a distance of 500 feet and approximately 11 feet at a distance of 2,000 feet.

The nearest wells to wells 1 and 2 are located on an adjacent parcel east of the site (wells Ra48 and Ra44W; Figure 2). Standing groundwater levels for these wells are provided in Table 1. The Ra44W well is located approximately 2,100 and 3,050 feet from wells 1 and 2, respectively. The Ra48 well is located approximately 2,200 and 3,100 feet from wells 1 and 2, respectively. The closest well is located at a distance of 2,100 feet. At this distance, the drawdown is predicted to be approximately 1.4 feet, approximately 8.2 feet less than predicted under the current frost protection scenario, and therefore is not expected to cause adverse well interference impacts. This assumes that the water level in the aquifer will recover to pre-pumping levels before the next reservoir filling. Assuming there are five frost events per

season, one every two weeks from mid-March through May, there should be adequate time for the water level to fully recover with no residual drawdown remaining in the aquifer before the next filling<sup>3</sup>.

## Estimated Effects from Evaporation

*Describe estimated evaporative water losses from the surface of the proposed agricultural reservoir. This estimate should be based on reasonable worst case assumptions regarding climatic conditions, including number of frost events.*

Evaporation of water from the reservoir during the frost protection season (March through May) was estimated using the Jensen-Haise equation (McGuinness and Bordne 1972; Winter et al. 1995):

$$PET = \{[(0.014T_a - 0.50)(Q_s)]0.000673\}2.54$$

where *PET* is potential evapotranspiration in cm/day, *T<sub>a</sub>* is the air temperature in degrees Fahrenheit, and *Q<sub>s</sub>* is solar radiation in calories/cm<sup>2</sup>/day. Potential evapotranspiration is the amount of water that would evaporate and transpire from a surface if a sufficient source of water was available. Equations developed for the determination of *PET* are commonly used to estimate evaporation from open water surfaces (Winter et al. 1995). The meteorological data *T<sub>a</sub>* and *Q<sub>s</sub>* were obtained from a California Irrigation Management Information System network weather station (CIMIS #52) located in the central coast valleys region of San Luis Obispo County.

Total *PET* for the frost protection months of March through May are provided in Table 3. Total open-water evaporation during this time is estimated at 1.2 feet. When multiplied by the surface area of the water in the reservoir at full volume (0.9 acres), the total volumetric evaporative loss during the frost protection season is estimated at 1.1 acre-feet.

Evaporation of water from the reservoir during the frost protection season was also estimated using reference evapotranspiration (*ET<sub>o</sub>*) data multiplied by an open-water factor of 1.05 (Battany 2013a). The *ET<sub>o</sub>* data were obtained for Zone 10 (Shandon area) from the California Department of Water Resources, Office of Water Use Efficiency (Jones 1999). Total evaporation during this time is estimated at 1.18 feet (Table 4), very consistent with the estimated determined using the Jensen-Haise equation (Table 3).

---

<sup>3</sup> Assuming theoretical, idealized aquifer conditions (no leakance, no boundaries, and homogeneity), the water level in a well will recover to the pre-pumping level following termination of pumping. Under such conditions, the total recovery time typically equals the pumping duration.

When multiplied by a surface area of 0.9 acres, the total volumetric evaporative loss during the frost protection season was also estimated at 1.1 acre-feet.

Both methods resulted in an estimated total open-water evaporative loss of 1.1 acre-feet during the frost protection season. The total evaporative loss is considered a conservative estimate since the reservoir will not be maintained at full volume throughout the entire frost protection season (i.e., the open-water, evaporative area of the reservoir will be less than at full reservoir volume throughout most of the season as the reservoir will be filled only in preparation for a frost event).

## Water Offsets

***Describe proposed measures to offset estimated evaporative water losses. Some examples include removing on or off-site crops, improving water efficiency for irrigation systems, and employing alternative cover crop timing/practices.***

This project proposes to offset the evaporative water loss from the reservoir during the frost protection season by removing on-site vineyards. Removing on-site vineyards will result in water savings because this area will no longer be irrigated during the irrigation season; thus, impacts to the groundwater resource from pumping that volume of water will be reduced.

Based on site drawings and grading plans developed by Tartaglia Engineering, the proposed reservoir will occupy and replace approximately 1.7 acres of previously irrigated vineyard land (Figure 2). This area includes both the area of disturbance for the active reservoir and berming (1.4 acres) and a 12-foot wide perimeter surrounding the reservoir for access. The amount of water proposed to offset the evaporation loss is discussed below.

The decrease in water used to irrigate the 1.7 acres of vineyard land to be removed from production was estimated using results from a nearby irrigation monitoring study (Battany 2013b). In order to improve estimates of vineyard water use in the region, the study measured total annual irrigation water application at 84 vineyards located within the Paso Robles Groundwater Basin east of Shandon during the years of 2010 through 2012. The annual totals include all sprinkler and drip applications for crop irrigation needs (primary and cover), leaching requirements, and frost protection practices.

Irrigation application totals for vineyards monitored during each year of the study are provided in Table 5 (as reported by Battany 2013b or determined from Figures 5a-5c therein). The results show that individual site irrigation amounts varied widely throughout the study area, measuring as low as 0.5 inches in 2011 at one site to as high as 28.2 inches in 2012 at another site. Battany (2013b) attributes the broad range of water use to variable irrigation practices by growers within the study area, stemming from various site-

specific factors such as rainfall, site elevation and exposure, soil water holding capacity, vine rooting depth, cover crop and tillage practices, fruit production goals, salinity conditions and leaching requirements, and frost protection needs. The average annual irrigation applications for years 2010, 2011, and 2012 were 10.4, 8.3, and 12.0 inches, respectively.

Applying the average annual irrigation application totals for years 2010, 2011, and 2012 to the 1.7 acre vineyard area proposed for removal results in a water-use reduction ranging between 1.2 and 1.7 acre-feet (Table 5). The years 2010 through 2012 however, were characterized as having above-average rainfall overall (2010 and 2011 were significantly above average whereas 2012 was near average), and Battany (2013b) states that the irrigation amounts are likely not representative of drier years, whereby more irrigation water would have been required.

In order to estimate an irrigation total more representative of the overall average climate condition at the proposed reservoir site, historical rainfall data recorded at a nearby precipitation gauge were used to predict the annual irrigation total based on a relationship established by findings from the study (Battany 2013b). The relationship shows that irrigation application is inversely proportional to the preceding winter's rainfall total, naturally meaning less irrigation in wet years and more in dry years. Using rainfall totals recorded throughout the study area, (Battany 2013b) describes the relationship between the annual irrigation total in inches ( $y$ ) and the preceding winter's rainfall total in inches ( $x$ ) as:

$$y = -0.2756x + 14.481$$

Using the average preceding winter's rainfall total (NOV through MAR) recorded at the Shandon precipitation gauge (Shandon #73) over a 72-year period of record from 1937 to 2009 (8.8 inches), the annual irrigation total at the reservoir site is predicted at 12.1 inches. This predicted value is very consistent with the average value reported for year 2012 of the irrigation study (12.0 inches), a year characterized as having a near-average rainfall total. The predicted value is also consistent with the annual average irrigation use of 12.1 inches established for the Shandon area as part of the Paso Robles Groundwater Basin modeling update effort being conducted by *GEOSCIENCE* Support Services, Inc. and Todd Engineers (Lin, E., Todd Engineers, personal communication, October 2013). Applying the 12.1 inches predicted using historical rainfall observations at Shandon to the 1.7 acre vineyard area proposed to be removed from production results in a water-use reduction of 1.7 acre-feet (Table 5).

Excluding frost protection, Rava vineyards typically applies 1.5 acre-feet of water per irrigated acre, or 18 inches. Though slightly above average for the irrigation study area, the total is within the range of individual site irrigation amounts observed by the irrigation study for year 2012 (2.7 to 28.2 inches; Table 5). Applied to the 1.7 acre reservoir footprint area, this equates to a total vineyard water-use reduction of approximately 2.5 acre-feet.

Based on irrigation application totals observed at 84 vineyards located east of Shandon during a near-normal rainfall year (12 inches) and site-specific irrigation practices typically employed at the proposed reservoir site (18 inches), the decrease in water used to irrigate the 1.7 acres of vineyards to be removed from production ranges between 1.7 and 2.5 acre-feet. This compares to 1.1 acre-feet of evaporative loss from the reservoir during the frost protection season. Consequently, the evaporation from the reservoir will be between 0.6 and 1.4 acre-feet less than the amount of water that would have otherwise been applied to the vineyard area and so the water-use offset requirement has been met.

## Summary and Conclusions

The water impact analysis results presented in this technical memorandum address the water usage related issues requested by the County to support an environmental review of the Rava Vineyards Major Grading Permit (PMT2012-02397). Results of the analysis are summarized below:

- **Reservoir management and operations practices** – Water used to fill the reservoir will be sourced from two wells at a combined pumping rate of 2,650 gpm. The stored water will be used for frost protection purposes. On average, there are five frost events per season (one during March and two each during April and May). Each frost event typically occurs every two weeks and generally lasts for one to two nights. The irrigation system uses low-flow sprinklers operated by a booster pump with a variable speed drive and is controlled by temperature sensors. These water efficiency measures help to ensure that water is applied during appropriate periods and used most efficiently.
- **Well interference** – At a distance of 2,100 feet (distance to the closest neighboring well), drawdown from pumping the reservoir source wells is predicted to be approximately 1.4 feet. This drawdown is approximately 8.2 feet less than predicted if the current frost protection practices were to continue without the use of a reservoir. Consequently, the 1.4 feet of drawdown is not expected to cause adverse interference impacts to neighboring wells.
- **Estimated effects of evaporation** – The evaporative loss from the reservoir during the frost protection season (mid-March through May) is estimated to total 1.1 acre-feet.
- **Water offsets** – The evaporative water loss from the reservoir during the frost protection season is proposed to be offset by removing on-site vineyards. Based on irrigation application totals observed at area vineyards and at the Rava vineyard site, the decrease in water used to irrigate the 1.7 acres of vineyards to be removed from production ranges between 1.7 and 2.5 acre-feet. As a result, the evaporative loss from the reservoir will be 1.5 to 2.3 times less than the amount of irrigation water required for the vineyard area.

In conclusion, the reservoir will help to increase water-use efficiency during the frost protection period at the site and will ultimately reduce the drawdown interference on neighboring wells and overall groundwater dependency. Removing the on-site vineyards will result in an overall water savings, and because the evaporative water loss from the reservoir will be less, the water-use offset requirement has been met. Without a reservoir, the vineyard will need to continue operating the wells at full capacity during frost protection periods with no benefits to the groundwater resource.

## List of Tables

- Table 1 – Groundwater Level Data
- Table 2 – Well Interference Estimates
- Table 3 – Open-Water Evaporation Estimates Using the Jensen-Haise Equation
- Table 4 – Open-Water Evaporation Estimates Using Reference Evapotranspiration Rates
- Table 5 – Average Annual Irrigation Application for Vineyards near Shandon, CA

## List of Figures

- Figure 1 – Site Location Map
- Figure 2 – Rava Ranch and Reservoir Site

## References

- Battany, M., 2013a, Reducing Vineyard Water Use: Mechanisms, Strategies, and Limitations, University of California Cooperative Extension, San Luis Obispo and Santa Barbara Counties, *Grape Notes*, September 2013.
- Battany, M., 2013b, Update on the Paso Robles Vineyard Irrigation Study, University of California Cooperative Extension, San Luis Obispo and Santa Barbara Counties, *Grape Notes*, April 2013.
- Cooper, H.H., Jr. and Jacob, C.E., 1946, A Generalized Graphical Method for Evaluating Formation Constants and Summarizing Well Field History: Transactions, American Geophysical Union, Vol. 27, No. 4.
- Driscoll, F.G., 1986, Groundwater and Wells, 2nd Edition, Johnson Screens, St. Paul, MN, p. 1089.
- Freeze, R.A. and Cherry, J.A., 1979, Groundwater, Prentice-Hall Inc., Englewood Cliffs, NJ
- Fugro West, Inc. and Cleath and Associates, 2002, Final Report Paso Robles Groundwater Basin Study, Phase I, report prepared for the County of San Luis Obispo Public Works Department, August 2002, 171 pp, 77 figures.
- Jones, D.W., 1999, California Irrigation Management Information System (CIMIS) Reference Evapotranspiration Map, developed as a cooperative project between the University of California's Department of Land, Air and Water Resources and the California's Department of Water Resources' Water Use Efficiency Office.
- McGunniss, J.L., and Bordne, E.F., 1972, A Comparison of Lysimeter-derived potential evapotranspiration with Computed Values, Technical Bulletin 1452, 71 pp., Agricultural Research Service, U.S. Department of Agriculture, Washington, D.C., 1972
- Tartaglia Engineering, 2013, Rava Vineyards – Frost Protection Pond Grading and Drainage Plan, May 16, 2013.

Theis, C.V., 1935, The Relation Between the Lowering of the Piezometric Surface and the Rate and Duration of Discharge of a Well Using Groundwater Storage, Trans. Amer. Geophys. Union, Vol. 16, pp. 519-524.

Winter, T. C., Rosenberry, D. O., and Sturrock, A. M., 1995, Evaluation of 11 Equations for Determining Evaporation for a Small Lake in the North Central United States: Water Resources Research, v. 31, no. 4, p. 983-993.

United States Department of Agriculture (USDA), 1996, Agricultural Waste Management Field Handbook (Part 651, Chapter 10), Appendix 10D – Geotechnical Design and Construction Guidelines for Waste Impoundment Liners, prepared by the Natural Resources Conservation Service (NRCS), rev. 1, July 1996.

## **Tables**

---

**TABLE 1  
GROUNDWATER LEVEL DATA**

<b>Well ID</b>	<b>Date</b>	<b><sup>(1)</sup>Standing Water Level (ft amsl)</b>
Rava Well 1	4/28/2008	932.5
Rava Well 2	6/8/2013	983.9
Ra 44W	4/17/2003	948.2
Ra 44W	6/20/2006	994.7
Ra 44W	4/25/2007	985.2
Ra 44W	7/20/2007	961.2
Ra 44W	10/27/2009	961.2
Ra 44W	7/19/2011	959.2
Ra 44W	4/17/2013	948.2
Ra 48	7/19/2011	892.9
Ra 48	4/17/2013	875.9
Ra 48	3/19/1974	967.4
Ra 48	8/21/2000	914.4
Ra 48	4/7/2003	911.4
Ra 48	6/26/2006	915.2
Ra 48	6/26/2007	854.4
Ra 48	7/20/2007	848.4
Ra 48	10/27/2009	884.4
Ra 48	7/19/2011	855.4
Ra 48	4/17/2013	866.4

(1) These are actively used wells and the water level may still be recovering at the time the measurement was taken; ft amsl is feet above mean sea level

The groundwater level data were provided by the well owners.

**TABLE 2  
WELL INTERFERENCE ESTIMATES**

Distance From Pumping Well(s) (ft)	Feet of Drawdown at Distance from Pumping Well(s)				Difference in Drawdown with no Project Scenario (i.e., without a reservoir) (ft)
	With a Frost Protection Reservoir		Without a Reservoir		
	Rava Well 1 Q = 1,250 gpm t = 0.73 days	Rava Well 2 Q = 1,400 gpm t = 0.73 days	Rava Wells 1 and 2 Q = 2,650 gpm t = 0.73 days	Rava Wells 1 and 2 Q = 2,650 gpm t = 2 days	
100	63	70	133	160	27
200	45	50	95	122	27
300	35	39	73	100	27
400	27	31	58	85	27
500	23	25	48	73	25
600	18	21	39	63	24
700	15	17	32	55	23
800	12	14	26	50	25
900	10	11	21	44	23
1,000	8	9	17	37	21
2,000	0.8	0.9	1.8	11	8.9
2,100	0.6	0.7	1.4	9.6	8.2
2,200	0.5	0.5	1.0	8.3	7.2
3,000	0.04	0.05	0.09	2.8	2.7



**TABLE 3  
OPEN-WATER EVAPORATION ESTIMATES USING THE JENSEN-HAISE  
EQUATION**

Month	<sup>(1)</sup> Solar Radiation, Qs (cal/cm <sup>2</sup> )	<sup>(1)</sup> Maximum Air Temp., Ta (°F)	<sup>(3)</sup> PET		<sup>(2)</sup> Average Rainfall (in)
			(in)	(ft)	
JAN	222.3	64.2	1.9	0.2	2.16
FEB	277.2	64.6	2.1	0.2	2.15
MAR	399.1	65.3	3.4	0.3	1.87
APR	530.6	68.9	5.0	0.4	0.88
MAY	576.0	70.9	5.9	0.5	0.24
JUN	631.0	74.3	6.9	0.6	0.04
JUL	623.8	77.2	7.6	0.6	0.02
AUG	571.2	79.3	7.3	0.6	0.03
SEP	475.6	79.3	5.9	0.5	0.22
OCT	356.1	76.6	4.3	0.4	0.46
NOV	272.5	70.5	2.7	0.2	0.94
DEC	217.5	65.3	1.9	0.2	1.68
<b>AVERAGE TOTAL (ANNUAL)</b>			<b>54.7</b>	<b>4.6</b>	<b>10.69</b>
<b>AVERAGE TOTAL (MAR THROUGH MAY)</b>			<b>14.3</b>	<b>1.2</b>	<b>2.99</b>

(1) California Irrigation Management Information System (CIMIS) weather station; San Luis Obispo (CIMIS#52); period of record: 1987-2000.

(2) San Luis Obispo County weather station at Shandon (#73); period of record: 1937-2009

(3) PET is potential evapotranspiration. PET is the evaporative water loss that would take place if a sufficient source of water was available and was calculated using the Jensen-Haise equation (McGuinness and Bordne 1972; Winter et al. 1995). Equations developed for determination of PET are commonly used for determination of evaporation from open water (Winter et al. 1995).



**TABLE 4  
OPEN-WATER EVAPORATION ESTIMATES USING REFERENCE EVAPOTRANSPIRATION  
RATES**

Month	<sup>(1)</sup> Average Reference ET, ETo (in)	<sup>(2)</sup> Open-Water Evaporation		<sup>(3)</sup> Average Rainfall (in)
		(in)	(ft)	
JAN	0.93	0.98	0.1	2.16
FEB	1.68	1.76	0.1	2.15
MAR	3.10	3.26	0.3	1.87
APR	4.50	4.73	0.4	0.88
MAY	5.89	6.18	0.5	0.24
JUN	7.20	7.56	0.6	0.04
JUL	8.06	8.46	0.7	0.02
AUG	7.13	7.49	0.6	0.03
SEP	5.10	5.36	0.4	0.22
OCT	3.10	3.26	0.3	0.46
NOV	1.50	1.58	0.1	0.94
DEC	0.93	0.98	0.1	1.68
<b>AVERAGE TOTAL (ANNUAL)</b>	<b>49.12</b>	<b>51.58</b>	<b>4.3</b>	<b>10.69</b>
<b>AVERAGE TOTAL (MAR THROUGH MAY)</b>	<b>13.49</b>	<b>14.16</b>	<b>1.2</b>	<b>2.99</b>

(1) Monthly average reference evapotranspiration (ETo) for Zone 10 (Jones 1999)

(2) ETo multiplied by 1.05 (Battany 2013a)

(3) San Luis Obispo County weather station at Shandon (#73); period of record: 1937-2009



**TABLE 5  
AVERAGE ANNUAL IRRIGATION APPLICATION FOR VINEYARDS NEAR SHANDON, CA**

Year	<sup>(1)</sup> Total Annual Irrigation Application (inches)			<sup>(2)</sup> Total Annual Irrigation Application at the Proposed Reservoir Site (acre-feet)		
	Minimum	Average	Maximum	Minimum	Average	Maximum
2010	3.1	10.4	27.1	0.4	1.5	3.8
2011	0.5	8.3	24.9	0.1	1.2	3.5
2012	2.7	12.0	28.2	0.4	1.7	4.0
			<sup>(3)</sup> $y = -0.2756x + 14.481 =$			
			Historical Average			
			1.7			

(1) Based on results from an irrigation study that monitored total annual irrigation water application at 84 vineyards located within the Paso Robles Groundwater Basin east of Shandon during the years of 2010 through 2012 (Battany 2013b).

(2) Calculated by converting the Total Annual Irrigation Application from inches to feet and multiplying by 1.7 acres, the irrigated vineyard area to be taken out of production to make room for the frost protection reservoir

(3) The annual irrigation total at the proposed reservoir site predicted using the following relationship:  $y = -0.2756x + 14.481$  (Battany 2013b), where  $y$  is the annual irrigation total in inches and  $x$  is the preceding winter's rainfall total in inches. The value for  $x$  used the average preceding winter's rainfall total (NOV through MAR) recorded at the City of Shandon precipitation gauge (Shandon #73) over a 72-year period of record from 1937 to 2009 (8.8 inches). The resulting value for  $y$  when  $x = 8.80$  inches is 12.1 inches, and was converted to acre-feet by dividing by 12 and multiplying by 1.7 acres.



## Figures

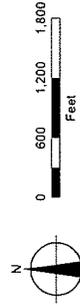
---

**FIGURE 1**

Site Location Map  
Rava Vineyards  
Frost Protection Reservoir  
Water Usage Impact Analysis

**LEGEND**

- Rava Ranch Well
- Neighboring Well
- Rava Ranch 2 Vineyards
- Roads
- Watercourses



**MAP NOTES:**  
Created in 2013  
Data Sources: USGS, ESRI, Aerial photo taken on  
May 8, 2012 by Bing Maps.  
Water Solutions, Inc.

