



**COUNTY of NAPA**  
OFFICE OF CONSERVATION, DEVELOPMENT & PLANNING  
CONSERVATION DIVISION

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SEPTEMBER 22, 2006

**NAPA CANYON LLC VINEYARDS**

c/o Mark Power  
23 Pinnacle Peak  
Napa, CA 94558

**RE: NAPA CANYON LLC VINEYARDS**  
Erosion Control Plan 02253-ECPA  
Assessor's Parcel: 059-040-065

Dear Mr. Power:

The above-referenced erosion control plan for earthmoving activities in connection with the installation of approximately 139 acres of new vineyard on a 316.76-acre parcel has been reviewed by Napa County pursuant to the goals and standards contained in Napa County's Conservation Regulations (Chapter 18.108 of the County Code). Furthermore, the earthmoving activities and subsequent vineyard development and operation have been reviewed in compliance with the California Environmental Quality Act (CEQA). An Initial Study/Mitigated Negative Declaration was prepared, dated December 2004 (SCH# 2004122089) and adopted as of the date of this letter. Additionally, you have signed the Project Revision Statement and the Mitigation Monitoring and Reporting Program (attached), which outline your responsibilities.

The subject erosion control plan has been revised to reflect the mitigation measures as contained in the Initial Study/Mitigated Negative Declaration and subsequently approved this date. The approved plan consists of 3 sheets and a 3-page narrative and supporting documentation dated June 29, 2006 and March 17, 2006, respectively, prepared by Arvin Chaudhary (RPE #54006). Please be advised that the effective approval date is October 11, 2006, unless an appeal to the Napa County Board of Supervisors is filed in accordance with Chapter 2.88 (Appeals) of the County Code. You may not begin any earthmoving activities before that date and subject to the conditions listed below. You will be notified if a timely appeal is filed. Please note you are responsible for acquiring all other necessary permits for the activity that is subject to the erosion control plan.

In addition to the requirements and responsibilities contained in the Project Revision Statement and associated Mitigation Monitoring Reporting Program, this approval is contingent upon the owner and the owner's agents implementing all components of the following condition(s):

- **Recordation of Deed Restriction:** The property owner shall record a deed restriction on the 170-acre California Red Legged Frog habitat (or whatever total amount of acreage is required by US Fish and Wildlife Services) in accordance with Mitigation Measure BR-1 to protect and maintain these areas in perpetuity. The deed restriction shall be in a form acceptable to County Counsel and shall be recorded within 60 days of Project approval or if an appeal is filed within 60 days after a final decision is made by the Board of Supervisors on the Project.

1195 THIRD STREET  
SUITE 210

NAPA, CALIFORNIA  
94559

TELEPHONE:  
707-253-4417

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707-253-4336

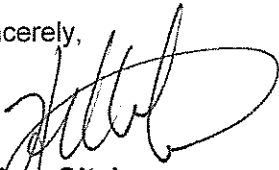
WWW.CO.NAPA.CA.US

- **NVUSD Storm Drainage Facilities:** No earthmoving or other activities associated with the project shall commence until the NVUSD storm drainage facilities have been installed and are ready to accept the conveyed project runoff. The property owner shall provide the County written notification from NVUSD that the facilities are installed and operational. If the facilities aren't installed and another drainage system is proposed, the property owner shall prepare and submit to the County a modified ECPA to reflect the changes to be re-evaluated for compliance with applicable Napa County Codes and CEQA.
- Prior to commencement of grading and earthmoving activities, the property owner shall acquire any applicable state and federal permits. Any changes to the project boundaries resulting from the acquisition of other permits shall be included in a final as-built erosion control plan to be submitted to the County.

Please note, adherence throughout the duration of the project to the Oversight and Operation regulations specified in County Code Section 18.108.135 (attached), which deal with among other things installation oversight, erosion control measure maintenance, monitoring, failure response, and non-compliance is required. The owner and/or the owner's contractor must keep the approved plan or a copy thereof available on-site while vineyard installation work is taking place. Said work includes, but is not limited to, ground clearing, grading, vine planting, and installation and maintenance of erosion control measures. Finally, no grading, earthmoving activities, or soil disturbance of any kind other than installation of winterization measures can take place between October 1<sup>st</sup> of each year and April 1<sup>st</sup> of the following year pursuant to Section 18.108.070(L) of the Napa County Conservation Regulations.

If you have any questions regarding this approval or the conditions under which it has been issued, please contact Project Planner Brian Bordona at (707) 253-4417. Moreover, please notify Soil Conservationist Dave Steiner of the Napa County Resource Conservation District at (707) 252-4188 at least **3 days** prior to the commencement of any vegetation clearing or earthwork so that necessary and required inspections can be scheduled.

Sincerely,



**Hillary Gitelman**  
**Planning Director**

Attachment: Responses to Comments  
Signed Project Revision Statement  
Signed Mitigation Monitoring and Reporting Program  
County Code Section 18.108.135

cc: Patrick Lowe, Deputy Director-Conservation Division (w/o plan)  
Brian Bordona, Supervising Planner-Conservation Division (w/o plan)  
Laura Anderson, Deputy County Counsel (w/o plan)  
David Steiner, Napa Co Resource Conservation District (w/ plan and attachments)  
Arvin Chaudhary, Plan Preparer (w/ plan and attachments)

PROJECT REVISION STATEMENT  
**#02253-ECPA Erosion Control Plan**  
**Napa Canyon LLC Vineyard**

I hereby revise and modify #02253-ECPA for Napa Canyon LLC Vineyard proposal for approximately 139 acres of new vineyard on Assessor's Parcel Number 059-040-065 (formerly 059-040-044) to include all of the following:

1. Abandonment of Use Permit #U-248889 and all associated modifications not already abandoned #95046-MOD, #95175-MOD for a 9 and 18 hole golf course and related structures including clubhouse, café and dining room.
2. Access to the vineyard/parcel shall be off of Flosden Road (newly renamed Newell Road), not off of American Canyon Road and shall be reflected in the ECPA drawings.
3. Dust abatement program during the installation and construction phase:
  - Cover all trucks hauling soil and other loose materials, or require all trucks to maintain at least two feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer) in accordance with Section 23114 of the California Vehicle Code during transit to and from the parcel;
  - Sweep (preferably with water sweepers) Flosden Road, in proximity to the parcel access, when visible soil material is carried onto the street;
  - Cover all exposed stockpiles;
  - Suspend grading and earthmoving activities when winds exceed 25 mph.
4. Avoid and/or minimize disturbance of California Red-legged Frog:
  - Approximately 170 acres of existing habitat shall be set aside in perpetuity. This 170 acre preserve includes the tributary to American Canyon Creek which currently supporting a CRLF population, and surrounding upland grassland habitat. This area shall be delineated on the ECPA drawings.
  - Maintain a minimum 150 foot setback from CRLF habitat in the tributary to American Canyon Creek with the exception of short-term activities associated with the removal of the culvert on this drainage.
  - A qualified biologist shall be retained to:
    - conduct preconstruction surveys within the culvert removal zone (located within the tributary to American Canyon Creek) two weeks prior to any earth disturbing activities or installation of #02253 – ECPA;
    - conduct a training session to educate all construction personnel prior to any earthmoving activities or installing #02253-ECPA measures/features on the sensitivity and identification of the CRLF and the penalties for taking these species, provide visual materials to assist in identifying the species, and repeat training sessions when new employees access the project site;
    - demarcate CRLF avoidance areas in the field;
    - be on-site to monitor culvert removal activities on the tributary to American Canyon Creek and remain on-site until initial vegetation clearing and habitat disturbance is completed;
    - Relocate with authorization of the USFWS, any CRLF detected within the culvert removal zone to a USFWS-approved location in the project vicinity.
5. Conduct pre-construction surveys to avoid disturbing burrowing owls:
  - a qualified biologist shall be retained to conduct a survey, as described by the California Burrowing Owl Consortium (1997), for burrowing owls and occupied burrows no more than two weeks before installation of #02253-ECPA; if occupied owl burrows are found within the survey area, the biologist, in consultation with CDFG, shall make a determination whether or not construction would affect the occupied burrows or disrupt reproductive behavior; if it is determined, that installation of #02253-ECPA would physically affect occupied burrows or disrupt reproductive behavior during the nesting season (March through August) then avoidance of those areas shall occur (California Burrowing Owl

Consortium 1997; CDFG 1995), and if it is determined that construction would affect occupied burrows during September through February, specific procedures shall be developed in consultation with the CDFG.

6. Conduct pre-construction surveys to avoid disturbing special-status bird nests:

- During the breeding season (March 1 through July 31), a qualified wildlife biologist shall be retained to conduct preconstruction surveys of all potential nesting habitat for birds within 500 feet of any earthmoving activities; if active bird nests are found during preconstruction surveys, a no-disturbance buffer, acceptable in size to CDFG avoidance guidelines, would be created around active nests during the breeding season and/or until it is determined that all young have fledged.

7. All required permits from the Corps, CDFG, and SF RWQCB shall be obtained prior to any earthmoving activities associated with the installation of #02253-ECPA measure/features in areas under the jurisdiction of these agencies. Copies of these permits or other correspondence shall be provided to Napa County Conservation, Development and Planning Department.

8. In the event of discoveries of subsurface cultural resources, human remains, etc., the following shall occur:

- In the event that any prehistoric or historic subsurface cultural resources are discovered during ground disturbing activities, all work within 50 feet of the resources shall be halted. A qualified archaeologist or paleontologist shall be hired and will assess the significance of the find. If any find is determined to be significant, my representatives and the qualified archaeologist and/or paleontologist shall meet to determine the appropriate course of action. All significant cultural materials recovered shall be subject to scientific analysis, professional museum curation, and a report prepared by the qualified archaeologist according to current professional standards.
- In the event that a discovery of a breas, true, and/or trace fossil are discovered during ground disturbing activities, all work within 50 feet of the find shall be temporarily halted or diverted until the discovery is examined by a qualified paleontologist. The paleontologist shall notify the appropriate agencies to determine procedures that would be followed before ground disturbing activities are allowed to resume at the location of the find.
- In the event of the discovery of human remains, no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains shall occur until the Napa County Coroner is contacted. The Napa County Conservation, Development and Planning Department shall be notified as well.

9. All fueling, maintenance of vehicles and other equipment and staging areas shall occur at least 100 feet from aquatic habitats, all fueling, maintenance of vehicles and other equipment shall occur at least 100 feet from storm drainage inlets to prevent accidental discharge into the drainage system. To prevent the accidental discharge of fuel or other fluids associated with vehicles and other equipment, all workers shall be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur.

10. A California registered geotechnical engineer shall be retained to identify, evaluate, and oversee the repair of shallow soil failures to ensure that future vineyard activities do not result in water quality impacts attributable to reactivation of old landslides or continued soil creep. Slope drainage features shall be incorporated, as determined necessary by the geotechnical engineer, to adequately drain the slope of excess shallow groundwater. Drainage prescriptions recommended by the geotechnical engineer shall be sized and designed to tie into and operate in concert with the erosion control features of #02253 – ECPA. Final grading of landslide areas shall be inspected by a California-certified engineering geologist and the geotechnical engineer shall submit a final report to the detailing the slope repair techniques.

11. An erosion control measure/features maintenance program shall be implemented to include the following:

- Inspect all straw wattle lines regularly and immediately following rainfall events. Straw wattles that show signs of excessive silt accumulation and overflow, disintegration, failure to perform, or have been otherwise damaged shall be immediately replaced.

- Inspect all flow dissipation structures on a regular basis and immediately following rainfall events. Flow dissipation structures that have undergone structural changes due to excessive runoff and sediment deposition and show indications of failure such as accumulated sediment, displaced rock, exposed filter fabric, downstream gully, piping (preferential flow pathways), overtopping, clogged culvert ends, or other indications of improper function, shall be immediately cleaned out and repaired.
- Inspect all drop inlet structures on a regular basis and immediately following rainfall events. Drop inlet structures that are restricted due to tillage or organic matter or show other indications of improper function, shall be immediately cleaned-out and repaired.
- Inspect and repair permanent waterbars annually prior to the winter season and all avenues over 10% slope shall be waterbarred. All avenues that experience surface damage from turnaround traffic shall be immediately reseeded and mulched.


12. The following elements shall be implemented by the project engineer:

- In consultation representatives of the Napa County Resource Conservation District (NCRCD), the areas of excessive slope length and gradient shall develop a feasible mid-slope flow dissipation strategy for long slopes susceptible to erosion. A civil and geotechnical engineer shall design a feasible subsurface drain system of adequate capacity. The intent of these features shall be to evenly distribute storm flows to the various dissipation structures and avoid concentrated flows generated.
- Design appropriate and feasible measures to convey stormwater runoff away from Blocks C, D, and G to reduce volumes and rates of surface water entering the adjacent Napa Valley Unified School District (NVUSD) parcels. The conveyance designs shall ensure that stormwater flow rates and volumes entering the NVUSD parcel do not exceed those under the existing, pre-project conditions.

I further commit Napa Canyon LLC Vineyards and its successors-in-interest to (a) record within 30 days of project approval a notice acceptable to the Director of the Napa County Conservation Development & Planning Department communicating the above commitments to any future purchasers of the property; (b) include in all property leases a provision that informs the lessee of these restrictions and binds them to adhere to them, and (c) inform in writing all persons doing work on this property of these limitations.

Moreover, prior to issuance of an approval for #02253-ECPA, Napa Canyon LLC Vineyards hereby commits itself to enter into an agreement, in a form acceptable to Napa County Counsel, to defend, indemnify and hold harmless the County of Napa and/or its agents, officers, and employees from any claim, action, or proceeding against the County and/or its agents, officers, or employees, to block, set aside, void, or annul adoption of the environmental document prepared on this project or approval of the ECPA itself.

Finally, Napa Canyon LLC Vineyards understands and explicitly agrees that with regards to all CEQA and Permit Streamlining Act (Government Code Sections 63920-63962) deadlines, this revised application will be treated as a new project. The new date on which said application will be considered complete is the date on which an executed copy of this project revision statement is received by the Napa Co Conservation, Development and Planning Department.

  
 Owner \_\_\_\_\_  
 CO-MANAGING MEMBER  
 NAPA CANYON, LLC  
 Date 06-08-05

## SECTION 5

### SUMMARY OF MITIGATION MONITORING OR REPORTING PROGRAM

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The following is a summary of mitigation measures integrated into the project, which are adequate to reduce all potentially significant impacts to a less-than-significant level.

The Mitigation Monitoring or Reporting Program (MMRP) is organized in a table format, keyed to each potentially significant impact and each mitigation measure incorporated into the project. The tables following each measure provide a breakdown of how the mitigation measures would be implemented, who would be responsible, and when it would occur. They consist of four column headings defined as follows:

- **Implementation Procedure:** This column provides additional information on how the mitigation measures will be implemented.
- **Monitoring or Reporting Actions:** This column contains an outline of the appropriate steps to verify compliance with the mitigation measure.
- **Monitoring or Reporting Responsibility:** This column contains an assignment of responsibility for the monitoring or reporting tasks.
- **Monitoring or Reporting Schedule:** This column provides the general schedule for conducting each monitoring or reporting task, identifying where appropriate both the timing and the frequency of the action.

#### 5.1 AIR QUALITY

**Measure AQ-1:** The owner and/or representative shall ensure that following measures regarding air quality are included in the contractor specifications to address the potential for air quality impacts during construction:

- Cover all trucks hauling soil and other loose materials, or require all trucks to maintain at least two feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer) in accordance with Section 23114 of the California Vehicle Code during transit to and from the parcel;
- Sweep (preferably with water sweepers) Flosden Road, in proximity to the parcel access, when visible soil material is carried onto the street;
- Cover all exposed stockpiles;
- Suspend grading and earthmoving activities when winds exceed 25 mph.

IMPLEMENTATION PROCEDURE	MONITORING OR REPORTING ACTIONS	MONITORING OR REPORTING RESPONSIBILITY	MONITORING OR REPORTING SCHEDULE
1. Applicant/owner shall have Measure AQ-1 incorporated into the ECPA.	1. Applicant/owner reviews specifications.	1. Applicant/Owner.	1. Prior to County Approval of #02253 -ECPA.
2. Applicant/owner ensure contractor implements Measure AQ-1.	2. Applicant/owner, representative or contractor monitors implementation of measures and provides a letter of compliance to Napa County.	2. Applicant/Owner.	2. During installation of #02253 - ECPA.

## 5.2 BIOLOGICAL RESOURCES

**Measure BR-1** – The applicant/owner shall implement the following elements to avoid or minimize impacts to CRLF:

- provide for no loss of CRLF habitat by setting aside, in perpetuity, approximately 170 acres of existing habitat on the parcel. This preserve includes the tributary to American Canyon Creek, which currently supports a CRLF population, and surrounding upland grassland habitat. As part of the Corps application (see **Measure BR-4** below), the applicant/owner shall submit a Biological Assessment (BA). The USFWS would use the BA in issuing a Biological Opinion that would be made a part of the Corps permit;
- maintain a minimum 150 feet setback from CRLF habitat in the tributary to American Canyon Creek with the exception of short-term activities associated with the removal of the culvert on this drainage;
- and, the applicant/owner shall hire a qualified biologist to:
  - conduct preconstruction surveys within the culvert removal zone (located within the tributary to American Canyon Creek) two weeks before the installation of #02253 – ECPA;
  - conduct a training session before installing #02253-ECPA to educate all construction personnel on the sensitivity and identification of the CRLF and the penalties for taking these species, provide visual materials to assist in identifying the species, and repeat training sessions when new employees access the project site;
  - demarcate CRLF avoidance areas in the field;
  - be on site to monitor culvert removal activities on the tributary to American Canyon Creek and remain on-site until initial vegetation clearing and habitat disturbance is completed;
  - with the authorization of the USFWS, relocate any CRLF detected within the culvert removal zone to a USFWS-approved location in the project vicinity.

**Measure BR-2** – The applicant/owner shall implement the following elements to avoid disturbing burrowing owl:

- hire a qualified biologist to conduct a survey, as described by the California Burrowing Owl Consortium (1997), for burrowing owls and occupied burrows no more than two weeks before installation of #02253-ECPA<sup>1</sup>;
- if<sup>2</sup> occupied owl burrows are found within the survey area, the biologist, in consultation with CDFG, shall make a determination whether or not construction would affect the occupied burrows or disrupt reproductive behavior;
- if it is determined, that installation of #02253-ECPA would physically affect occupied burrows or disrupt reproductive behavior during the nesting season (March through August) then avoidance is the only mitigation available (California Burrowing Owl Consortium 1997; CDFG 1995). Construction would be delayed within 300 feet (a CDFG guideline) of occupied burrows until it is determined owls are not nesting or until the biologist determines juvenile owls are self-sufficient or are no longer using the natal burrow as their primary source of shelter; and,
- if it is determined that construction would affect occupied burrows during September through February, mitigation procedures shall be developed in consultation with the CDFG.

**Measure BR-3** – The applicant/owner shall implement the following elements to avoid disturbing special-status bird nests:

- earth-moving and grading activities performed during the non-breeding season (August 1 through February 28) require no mitigation. For ground disturbing activities occurring during the breeding season (March 1 through July 31), a qualified wildlife biologist would conduct preconstruction surveys of all potential nesting habitat for birds within 500 feet of earthmoving activities;
- if active bird nests are found during preconstruction surveys, a no-disturbance buffer, acceptable in size to CDFG avoidance guidelines, would be created around active nests during the breeding season and/or until it is determined that all young have fledged; and,
- If preconstruction surveys indicate nests are inactive or potential habitat is unoccupied during the installation of #02253 - ECPA, no further mitigation is required.

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<sup>1</sup> If it is determined that implementation of #02253-ECPA would not affect occupied burrows or disrupt breeding behavior, the subsequent bullets under BR-2 are not necessary.

<sup>2</sup> For mitigation measures BR – 2 and BR – 3, an “if/then” mitigation scenario is described because implementing some mitigation measures depends on the results of a preceding measure. The mitigation measures are reasonable and feasible with an established track record of mitigating impacts.



**Measure BR-4** – The applicant/owner shall implement the following element:

- obtain all applicable permits from the Corps, CDFG, and SF RWQCB before installing #02253-ECPA activities in areas under the jurisdiction of these agencies. Conditions may include replacing the lost wetlands (approximately 0.079 acres) at a ratio determined by the Corps, RWQCB, and the CDFG. On-site mitigation is typically preferred by the regulatory agencies. The applicant/owner is setting aside a CRLF preserve and its associated wetlands as a proposed mitigation for the loss of 0.079 acres (or roughly one-half percent of wetlands on the parcel). The owner has committed to preserving 170 acres of the parcel, which includes Corps jurisdictional wetlands.

IMPLEMENTATION PROCEDURE	MONITORING OR REPORTING ACTIONS	MONITORING OR REPORTING RESPONSIBILITY	MONITORING OR REPORTING SCHEDULE
1. Applicant/owner shall implement Measure BR-1.	1. Applicant/owner: submit a BA to the Corps/USFWS; set aside CRLF preserve; maintain 150' setback, and hire qualified biologist. Biologist to conduct preconstruction surveys, training sessions, demarcate CRLF areas, monitor culvert removal and remove any CRLF with USFWS concurrence. Biologist provides compliance reports to the applicant/ owner, Napa County, USFWS and CDFG.	1. Applicant/owner and qualified biologist.	1. Set aside CRLF preserve before installation of #02253 – ECPA. During installation of #02253 – ECPA and life of vineyard maintain 150' setback. Two weeks before removal of culvert, biologist to conduct surveys and demarcate CRLF avoidance areas. First day of installation of #02253 – ECPA, biologist to conduct training session, and whenever new employees access the site. Biologist to monitor culvert removal and relocate CRLF.
2. Applicant/owner shall implement Measure BR-2.	2. Applicant/owner: hires qualified biologist. Biologist conducts surveys and determines which if/then scenario applies. Biologist provides compliance reports to the owner, Napa County and CDFG.	2. Applicant/owner and biologist.	2. No more than two weeks prior to installation of #02253 – ECPA.

IMPLEMENTATION PROCEDURE	MONITORING OR REPORTING ACTIONS	MONITORING OR REPORTING RESPONSIBILITY	MONITORING OR REPORTING SCHEDULE
3. Applicant/owner shall implement Measure BR-3.	3. Applicant/owner hires qualified biologist. Biologist surveys site during breeding season and determines which if/then scenario applies. Biologist provides compliance reports to the owner, Napa County and CDFG.	3. Applicant/owner and biologist.	3. Before installation of #02253 - ECPA.
4. Applicant/owner shall implement Measure BR-4.	4. Applicant/owner to obtain permits and submits copies of permits to Napa County.	4. Applicant/owner	4. Before installation of #02253 - ECPA.

### 5.3 CULTURAL RESOURCES

Measure CUL-1 – The applicant/owner shall implement the following elements:

- in the event that any prehistoric or historic subsurface cultural resources are discovered during ground disturbing activities, all work within 50 feet of the resources shall be halted. A qualified archaeologist or paleontologist would assess the significance of the find. If any find is determined to be significant, representatives of the owner and the qualified archaeologist and/or paleontologist shall meet to determine the appropriate course of action, subject to the approval of Napa County Conservation, Development and Planning Department. All significant cultural materials recovered shall be subject to scientific analysis, professional museum curation, and a report prepared by the qualified archaeologist according to current professional standards.

Measure CUL-2 – The applicant/owner shall implement the following elements:

- in the event that a discovery of a breas, true, and/or trace fossil are discovered during ground disturbing activities, all work within 50 feet of the find shall be temporarily halted or diverted until the discovery is examined by a qualified paleontologist. The paleontologist shall notify the appropriate agencies to determine procedures that would be followed before ground disturbing activities are allowed to resume at the location of the find.

Measure Cul-3 – The applicant/owner shall implement the following elements:

- in the event of the discovery of human remains, no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains shall occur until the County Coroner is contacted. The Napa County Conservation, Development and Planning Department shall be notified as well. If the County Coroner determines the remains to be Native American, then the County Coroner shall contact the Native American Heritage Commission (NAHC) within 24 hours. The NAHC shall identify the person or persons it believes to be the most likely descended (MLD) from the deceased Native American. The MLD may make recommendations to the landowner for means of treating or disposing of, with

appropriate dignity, the human remains and any associated grave goods as provided in Public Resources Code Section 5097.98. Or, if an MLD is not identified or fails to make a recommendation within 24 hours after being notified by the HAHC, or the landowner rejects the recommendation of the MLD, and mediation by the NAHC fails to provide measures acceptable to the landowner, the landowner shall rebury the Native American human remains and associated grave goods with appropriate dignity on the property in a location not subject to further subsurface disturbance.

IMPLEMENTATION PROCEDURE	MONITORING OR REPORTING ACTIONS	MONITORING OR REPORTING RESPONSIBILITY	MONITORING OR REPORTING SCHEDULE
1. Applicant/owner shall have Measure CUL-1 incorporated into #02253 – ECPA.	1. Owner reviews #02253 - ECPA. Applicant/owner hires qualified archaeologist if a find is discovered. Archaeologist reports to applicant/owner and Napa County.	1. Applicant/owner and archaeologist.	1. During installation #02253 - ECPA.
2. Applicant/owner shall have Measure CUL-2 incorporated into #02253 – ECPA.	2. Applicant/owner reviews #02253 - ECPA. Applicant/owner hires qualified paleontologist if a find is discovered. Paleontologist reports to applicant/owner and Napa County.	2. Applicant/owner and paleontologist.	2. During installation of #02253 - ECPA.
3. Applicant/owner shall have Measure CUL-3 incorporated into #02253 – ECPA.	3. Applicant/owner reviews #02253 - ECPA. Applicant/owner hires qualified archaeologist if a find is discovered. Archaeologist reports to applicant/owner and Napa County.	3. Applicant/owner and archaeologist.	3. During installation of #02253 - ECPA.

## 5.4 HAZARDS AND HAZARDOUS MATERIALS

**Measure HHM-1** – The applicant/owner shall implement the following element:

- All fueling, maintenance of vehicles and other equipment and staging areas shall occur at least 100 feet from aquatic habitats until these areas are modified by #02253 – ECPA (e.g., pipelines installed). Once the aquatic habitats within the limits of #02253 – ECPA have been modified, all fueling, maintenance of vehicles and other equipment shall occur at least 100 feet from storm drainage inlets to prevent accidental discharge into the drainage system. To prevent the accidental discharge of fuel or other fluids associated with vehicles and other equipment, all workers shall be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur.

**Measure HHM-2** – The applicant/owner shall implement the following element:

- Each year when the applicant/owner renews the Restricted Materials Permit, a Risk Management Plan shall be submitted if the business handles or stores threshold quantities of regulated substances on the federal Accidental Release Prevention Program. The applicant/owner will also be referred to Napa County's Department of Environmental Management. If the grower stores materials at or above the threshold levels, the applicant/owner is required to develop a Hazardous Materials Business Plan, which includes an inventory, an owner/operator identification form, and a site map showing storage locations and access roads.

IMPLEMENTATION PROCEDURE	MONITORING OR REPORTING ACTIONS	MONITORING OR REPORTING RESPONSIBILITY	MONITORING OR REPORTING SCHEDULE
1. Applicant/owner shall have Measure HHM-1 incorporated into #02253 - ECPA.	1. County reviews #02253 - ECPA.	1. Applicant/owner.	1. Before County approval of #02253 - ECPA, and during installation of #02253 - ECPA and vineyard operations.
2. Applicant/owner shall implement Measure HHM-2 each year.	2. Applicant/owner prepares and submits a Risk Management Plan. Owner prepares Hazardous Materials Business Plan.	2. Applicant/owner.	2. Each year when owner renews the Restricted Materials Permit.

## 5.5 HYDROLOGY AND WATER QUALITY

**Measure HWQ-1** – The applicant/owner shall implement the following element:

- Inspect all straw wattle lines regularly and immediately following rainfall events. Straw wattles that show signs of excessive silt accumulation and overflow, disintegration, failure to perform, or have been otherwise damaged shall be immediately replaced.

**Measure HWQ-2** – The applicant/owner shall implement the following element:

- Inspect all flow dissipation structures on a regular basis and immediately following rainfall events. Flow dissipation structures that have undergone structural changes due to excessive runoff and sediment deposition and show indications of failure such as accumulated sediment, displaced rock, exposed filter fabric, downstream gully, piping (preferential flow pathways), overtopping, clogged culvert ends, or other indications of improper function, shall be immediately cleaned out and repaired.

**Measure HWQ-3** – The applicant/owner shall implement the following element:

- Inspect all drop inlet structures on a regular basis and immediately following rainfall events. Drop inlet structures that are restricted due to tillage or organic matter or show other indications of improper function, shall be immediately cleaned-out and repaired.

**Measure HWQ-4** – The applicant/owner shall implement the following element:

- Prior to approval of #02253 – ECPA, the applicant/owner shall retain a California registered geotechnical engineer to identify, evaluate, and oversee the repair of shallow soil failures to ensure that future vineyard activities do not result in water quality impacts attributable to reactivation of old landslides or continued soil creep. Slope drainage features shall be incorporated, as determined necessary by the geotechnical engineer, to adequately drain the slope of excess shallow groundwater. Drainage prescriptions recommended by the geotechnical engineer shall not be an independent drainage system, but rather, shall be sized and designed to tie into and operate in concert with the erosion control features of #02253 – ECPA. Final grading of landslide areas shall be inspected by a California-certified engineering geologist and the geotechnical engineer shall submit a final report to the detailing the slope repair techniques.

**Measure HWQ-5**– The applicant/owner shall implement the following element:

- Inspect and repair permanent waterbars annually prior to the winter season and all avenues over 10% slope should be waterbarred as an annual maintenance/winterization practice. All avenues that experience surface damage from turnaround traffic shall be immediately reseeded and mulched.

**Measure HWQ-6** – The applicant/owner shall implement the following element:

- The applicant/owner, in consultation with the project engineer and representatives of the Napa County Resource Conservation District (NCRCD), shall identify areas where excessive slope length and gradient may result in unmanageable and localized concentration of stormwater flow. The project engineer, with concurrence from the NCRCD, shall develop a feasible mid-slope flow dissipation strategy for long slopes susceptible to erosion. A civil and geotechnical engineer shall design a feasible subsurface drain system of adequate capacity. The intent of these features is to evenly distribute storm flows to the various dissipation structures and avoid concentrated flows generated in certain blocks.

**Measure HWQ-7** – The applicant/owner shall implement the following element:

- Modify #02253-ECPA, to include appropriate and feasible measures to convey stormwater runoff away from Blocks C, D, and G in order to reduce volumes and rates of surface water entering the adjacent Napa Valley Unified School District (NVUSD) parcel. The conveyance designs shall ensure that stormwater flow rates and volumes entering the NVUSD parcel do not exceed those under the existing, pre-project conditions.

**5.0 SUMMARY OF MITIGATION MONITORING OR REPORTING PROGRAM**

IMPLEMENTATION PROCEDURE	MONITORING OR REPORTING ACTIONS	MONITORING OR REPORTING RESPONSIBILITY	MONITORING OR REPORTING SCHEDULE
1. Applicant/owner shall inspect all erosion control structures noted in HWQ-1, HWQ-2, HWQ-3, HWQ-5.	1. Applicant/owner conducts inspections and makes repairs.	1. Applicant/owner.	1. During installation of #02253 - ECPA and the vineyard operations.
2. Applicant/owner shall identify shallow soil features noted in HWQ-4.	2. Applicant/owner hires California registered geotechnical engineer to design the repairs to the shallow soil features. The California registered geotechnical engineer reports to applicant/owner, Napa County, and RCD on the repair design.	2. Applicant/owner and engineering geologist.	2. Prior to approval of #02253 - ECPA.
3. Applicant/owner shall have Measures HWQ-6 and HWQ-7 incorporated into #02253 - ECPA.	3. Applicant/owner reviews #02253 - ECPA. Owner hires civil and geotechnical engineer. Civil and geotechnical engineer reports to owner and Napa County.	3. Applicant/owner, civil and geotechnical engineer.	3. Before County approval of #02253 - ECPA.

I further commit **Napa Canyon LLC Vineyards** and its successors-in-interest to (a) record within 30 days of project approval a notice acceptable to the Director of the Napa County Conservation Development & Planning Department communicating the above commitments to any future purchasers of the property; (b) include in all property leases a provision that informs the lessee of these restrictions and binds them to adhere to them, and (c) inform in writing all persons doing work on this property of these limitations.

Moreover, prior to issuance of an approval for #02253-ECPA, **Napa Canyon LLC Vineyards** hereby commits itself to enter into an agreement, in a form acceptable to Napa County Counsel, to defend, indemnify and hold harmless the County of Napa and/or its agents, officers, and employees from any claim, action, or proceeding against the County and/or its agents, officers, or employees, to block, set aside, void, or annul adoption of the environmental document prepared on this project or approval of the ECPA itself.

Finally, **Napa Canyon LLC Vineyards** understands and explicitly agrees that with regards to all CEQA and Permit Streamlining Act (Government Code Sections 63920-63962) deadlines, this revised application will be treated as a new project. The new date on which said application will be considered complete is the date on which an executed copy of this project revision statement is received by the Napa Co Conservation, Development and Planning Department.

Owner: \_\_\_\_\_

Date: \_\_\_\_\_

09-21-06

### **18.108.135 Oversight and operation.**

A. Installation Oversight. The qualified professional preparing an erosion control plan shall oversee its implementation. Prior to the first winter rains after construction begins and each year thereafter until the project has received a final inspection from the county or its agent and been found complete, the qualified professional shall inspect the site and certify in writing to the director that all of the erosion control measures required at that stage of development have been installed in conformance with the plan and related specifications.

B. Maintenance. The property owner is responsible for insuring that the erosion control measures installed operate properly and are effective in reducing to a minimum erosion and related sedimentation. The property owner shall either personally or have personnel inspect and repair/clean as necessary the erosion control measures installed at least weekly during the period between October 1st and April 1st of each year. Moreover, the property owner shall either be onsite him/herself or have personnel on site as required when it is raining to inspect the erosion control measures present and take those actions necessary to keep them functioning properly.

C. Monitoring. For projects disturbing more than one acre of land or with an average slope greater than fifteen percent, the property owner shall implement, prior to the first winter rains after installation of the planned facilities is commenced, a permanent, on-going program of self-monitoring of ground cover condition, and erosion control facility operation. The ground cover monitoring shall follow the procedures promulgated by the National Resource Conservation Service (NRCS, formerly the SCS) for determining rangeland condition for hydrologic assessment.

For projects involving disturbance of more than forty acres of land or containing areas with slopes greater than thirty percent totaling a quarter acre or more, an Annual Erosion Control Plan Operation Status Report specifying ground cover condition and how the erosion control measures involved are operating shall be provided to the director and, if in a sensitive domestic water supply drainage, the owner/operator(s) of any public-serving drinking water supply reservoir present by September 1st of each year. This report shall specify the proposed management and cultural measures to be used the following year to return or maintain the ground cover in good condition in all parts of the area disturbed including vineyard avenues and any remedial actions that will be taken to get the other erosion control measures present to operate in such a manner as to minimize erosion and resultant sedimentation.

D. Failures. The following provisions shall apply where erosion control measures have failed or are in imminent danger of failing.

1. Property Owner Duties—Temporary Measures. The property owner shall:

- a. Notify the director in writing of the failure or pending failure of any erosion control measures within twenty-four hours of discovery and indicate the temporary measures taken to stabilize the situation;
- b. Modify, within twenty-four hours of the time that they receive comments from the independent engineer hired by the county to review the adequacy of these temporary measures, the temporary measures in the manner deemed necessary by the property owner's engineer so as to make them adequate to prevent further damage and problems;

2. Property Owner Duties—Permanent Remedial Measures. The property owner shall:

- a. Submit within ninety-six hours after the discovery of a failure or pending failure:
  - i. An engineered plan for the remedial measures necessary to permanently correct the problem and an engineer's estimate of the cost thereof, and
  - ii. A plan for cleanup of the damage done with an engineer's estimate for the cost of this work;
- b. Resubmit to the county, within forty-eight hours of the time comments are received from the independent engineer hired by the county to review the temporary measures installed, the plan, and engineer's cost estimates revised plans and estimates;
- c. Pay the county the costs of this review within forty-eight hours of demand;
- d. Post a security in one of the forms specified by subsection (A)(1) through (4) of Section 17.38.030 in the amount equal to one hundred percent of the accepted estimated total cost to do the work required to correct the situation and cleanup the damage done within forty-eight hours of demand; and
- e. Insure that the revised plan prepared is fully implemented within ninety-six hours of its approval.

The time frames specified in this subsection are maximums. The director may in the case of an immediate threat to public health and/or safety require performance in shorter time periods.

3. Plan Preparer Duties. The plan preparer shall provide a notice to the county within twenty-four hours of full implementation of the plan prepared to permanently correct the problem certifying that the measures

shown have been installed in conformance with said plan and related specifications.

4. Noncompliance. Failure to adhere to the provisions of subsections (D)(1) and (2) above may be considered a threat to public health and safety. The director may in such instances take immediate action without further notice or hearing to remedy the situation and bill the property owner for the remedial work done. The director shall keep an itemized account of the costs incurred in remedying the situation. The board shall conduct a hearing on the costs in accordance with Sections 1.20.090 through 1.20.130 of this code and shall give the property owner an opportunity to object to the costs prior to recording a lien against the property or pursuing other cost-recovery actions.

E. Inspection.

1. Each project requiring an erosion control plan that has not received a final inspection and been found complete by the director or his/her agent shall be inspected by the county or its agent after the first major storm event of each winter until the project has been completed and stable for three years. If it is found that the erosion control program implemented is not functioning properly or is ineffective the property owner shall take such remedial measures as the director deems necessary to reduce erosion and related sedimentation to minimal levels. The full costs of said measures and the related inspections shall be borne by the property owner.

2. Five percent of projects that have received a final inspection and been found complete by the director or his/her agent shall be spot checked by the director or his/her agent each year to confirm groundcover condition and the proper operation of other erosion control measures. The director, in cooperation with the Napa County Resource Conservation District (RCD) and other county departments and agencies, will develop a remedial program to address any deficiencies that may be identified as the result of these spot checks. The property owner shall implement this program, which may include re-seeding all or some portions of the site or changing agricultural or management practices. He/she shall pay all costs associated with these spot-checks.

F. Right of Entry. With the property owner's consent, with a warrant, or in an emergency, the property owner shall give the director and his/her agents full and complete access to and throughout the project area so as to allow:

1. Inspection of the erosion control and any remedial measures installed there to insure that they are functioning properly,
2. The making of necessary repairs or corrections to alleviate an erosion control problem or potential erosion control problem, or
3. The performance of needed maintenance.

(Ord. 1219 § 4, 2003)



ECP # 02253  
 OBSERVATION, DEVELOPMENT, AND PLANNING  
 DEPARTMENT  
 DATE: Sept. 22, 2006  
 BY: B. Bardana for H. Gidelman  
 PAGE: NARRATIVE

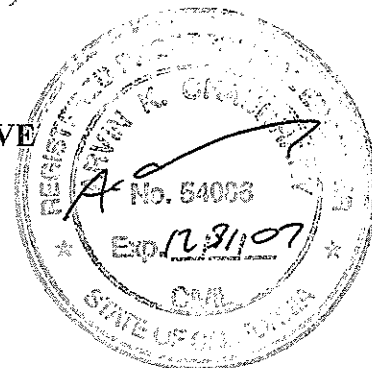
# **NAPA CANYON VINEYARDS, LLC**

## **VINEYARD EROSION CONTROL NARRATIVE**

for APN 059-040-044

**American Canyon Road, Napa County**

Prepared by Arvin K. Chaudhary, PE



### **NARRATIVE**

#### **1. The nature and purpose of the land disturbing activity and the amount of grading involved.**

##### **A. Purpose**

This erosion control plan is for a new vineyard on the subject parcel. The disturbed area will be approximately 138 acres on a 317 acre parcel. The parcel is in Township 4 North, Range 3 West, and is on the Napa Junction Quad Map (see section enlargement of relevant area of quad sheet). This site currently has an active approved use permit for the development of 9 and 18 hole golf courses and related structures including clubhouse, café, and dining room.

##### **B. Grading**

Grading will be limited to clearing and deep ripping of the vineyard areas and repair of three small slides on the interior of Blocks B and E near the center of the site. All planting will be on existing contours and there will be no recontouring or terracing. The existing pad area and clubhouse building will be utilized for equipment storage and staging. There are two areas greater than 30% slope – 0.5 acres in Block D and 0.7 acres in Block E. Both locations are on the interior of the blocks. There will be utilities installed in the 60' easement on the west side of the project that will tie into those utilities being installed as part of the Flosden Road project in the City of American Canyon.

##### **C. Access**

The main point of access will be the existing access driveways off of American Canyon Road. On site access will be via perimeter and vineyard avenues approximately 20' in width.

#### **2. Description of existing site conditions, including topography, vegetation and soils.**

The subject area of the parcel is currently covered with grasses and is used for cattle grazing. The project biologist, Monk & Associates, has prepared a detailed special status plant survey of the parcel. The report is attached to this narrative. Elevations range from 80 to 450 feet based the USGS Quad elevations. Photos were taken of the project sites and are included in Exhibit #2. This project will have no impact on the canopy area.

Currently the parcel is used for cattle grazing. Grading and construction for the approved golf course clubhouse and parking area was begun previously but not completed. This pad area will be used for equipment staging and storage. An extensive geotechnical report was prepared for the approved golf course project. An update to this report was by William K. Langbehn, GE, and is attached to this narrative.

Aerial mapping was conducted by Cartwright Aerial Surveys in 1985 and additional field surveys were conducted by Chaudhary & Associates, Inc in 2001.

A field visit was performed on April 26th, 2002 by Arvin Chaudhary to check the existing features in and around the project area and the downstream conditions.

**3. Natural features onsite including streams, lakes, reservoirs, roads, drainage, and other areas that may be affected by the proposed activity.**

There are two blueline streams adjacent to the project area. The stream at the northwest corner of the site north of Block A is unnamed and the project will maintain at least a 55' setback. The stream at the south end of the parcel is American Canyon Creek and the project will maintain a 150' setback from the unnamed north tributary of American Canyon Creek that runs along the east side of the project area as this tributary has California Red-Legged Frog habitat.

**4. Location and source of water for irrigation or other uses.**

The source of water for the proposed project will be from the City of American Canyon.

**5. Soil types/soil series identified in the Soil Conservation Service (SCS) Napa County Soil Survey.**

The USDA-Soil Conservation Service Napa County Soil Survey (map sheet 46) shows type 132 Fagen Clay Loam. Erosion hazard is considered moderate and runoff is rapid.

Excerpts from the soil survey area are in Exhibit #3.

**6. Critical areas if any, within the development site that have serious erosion potential or problems.**

There were two areas noted during the Use Permit Environmental Review for the golf course project. These areas have been reviewed and addressed in the Geotechnical Report Update.

**7. Erosion control Calculations:**

See Exhibit #4 for calculations.

**8. Proposed erosion control methods including:**

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

1. Straw wattles will be installed where shown to prevent sediment from leaving the project site.
2. Straw bales will be installed at locations of concentrated flow to prevent sediment from leaving the project site.
3. Energy dissipators will be installed at all existing and proposed outlets.
4. Storm drain inlets and pipes will be installed to collect heavier flows and discharge them away from potential frog habitat.
5. Exposed areas will be seeded and mulched or landscaped.

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

1. A permanent cover crop will be utilized for all disturbed areas. The cover crop will be generated by seeding with Zorro Fescue at 12 pounds per acre, Idaho Fescue at 8 pounds per acre, and Crimson Clover or Hyken Rose Clover at 8 pounds per acre.

The cover crop will be managed each year such that any areas that have less than 80% vegetative cover will be reseeded and mulched until adequate coverage is achieved. The cover crop shall be mowed only and shall not be disced. All shall be straw mulched at a rate of 3000 lbs./acre.

2. Any additional disturbed areas will be seeded and mulched as described in 8b #1.

**c) Proposed erosion control measures for materials storage locations.**

1. Traffic and storage areas will be surfaced with crushed tunnel rock spoils and have straw wattles installed along the downstream perimeter.

**9. Stormwater stabilization measures to handle any increased peak rates of runoff from the development of the site that would result in flooding or channel degradation downstream.**

No impacts are expected as a result of runoff from the project site. This watershed was included in the City of American Canyon Drainage Master Plan prepared in 1996. City of American Canyon design guidelines call for the use of the Rational Method for projects up to 640 acres. The 'C' Factors required by the City are a pre-project value of 0.55 (open space including pasture) and post-project value of 0.45 for agricultural land of slopes greater than 7%. Therefore runoff is calculated to be approximately 18% less post-project.

**10. An implementation schedule showing the following:**

- a) The proposed vegetation clearing, earth moving/grading, and/or construction/planting schedule.**

<u>ESTIMATED DATE</u>	<u>DESCRIPTION</u>
7-15-2006	Commence clearing of site.
7-25-2006	Rip and install storm drain lines
8-25-2006	Complete vine installation
9-5-2006	Straw wattles and other sediment retention devices installed.
9-15-2006	All erosion control systems and facilities completed including cover crop and seeding and mulching.

- b) The proposed schedule for winterizing the site (non-municipal watershed) by October 15th.**

If delays in the proposed construction schedule given in #10a occur, installation of structural erosion control measures will take precedence over other operations. Straw wattle sediment barriers will be in place by September 5.

- c) The proposed schedule of installation of all interim erosion and sediment control measures, (including vegetative measures) and the stage of completion of such devices/measures at the end of the grading season (i.e. on October 15 [except in 5 designated municipal watersheds where it is September 1<sup>st</sup>] of each year the permit will be in effect).**

Please refer to items 10a and 10b above.

- d) The proposed schedule for installation of permanent erosion and sediment control devices required.**

Please refer to items 10a and 10b above.

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

The estimated cost for this project is as follows:

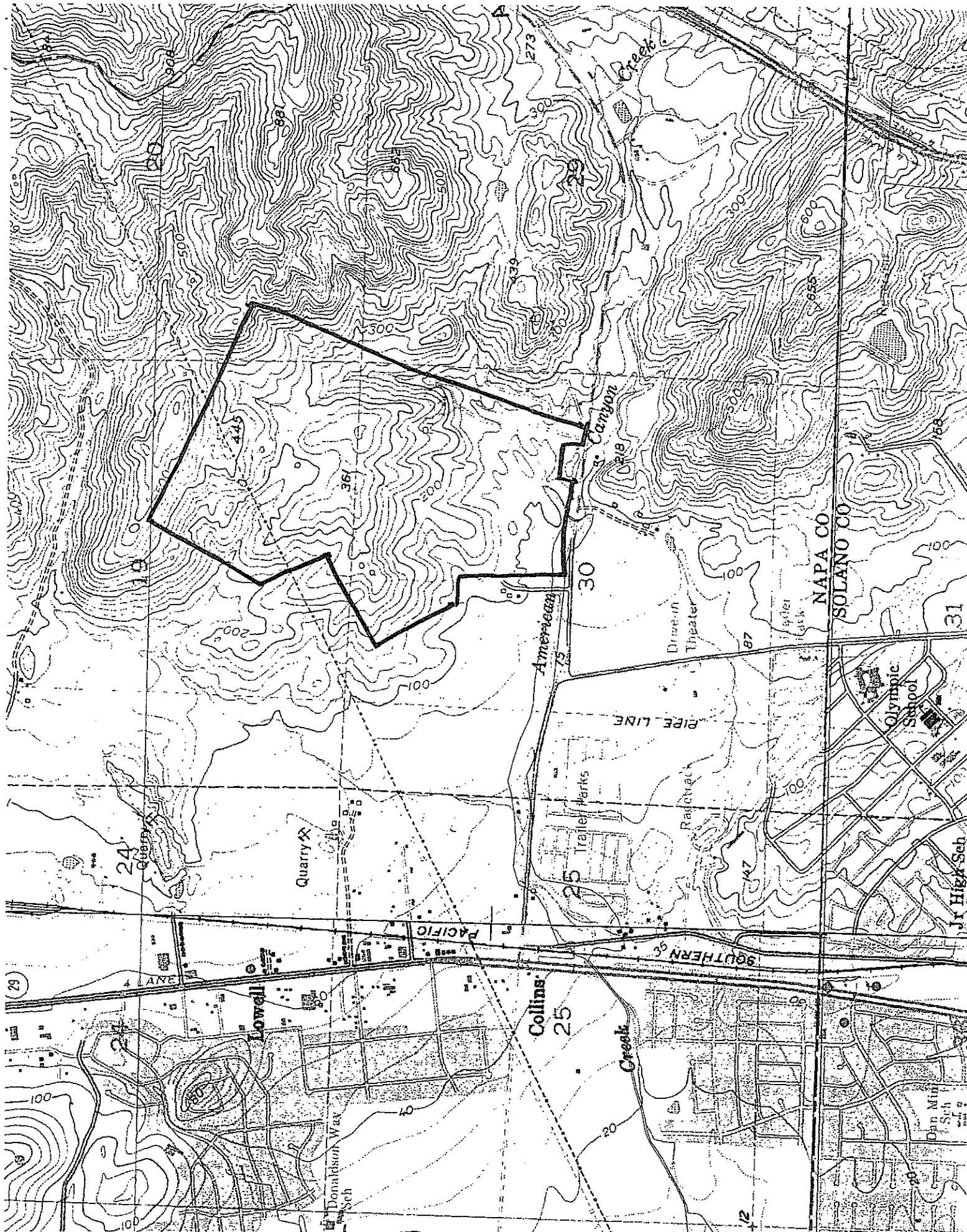
Straw Wattles	\$ 6,000
Straw Bale Barriers	\$ 1,500
Permanent seed and mulch	\$ 9,500
Energy Dissipators	\$ 7,000
10% Contingency	\$ 2,400
<b>Total</b>	<b>\$ 26,400</b>

Note: cost estimate does not include fencing, ripping, soil amendments, irrigation, etc.

3/17/2006

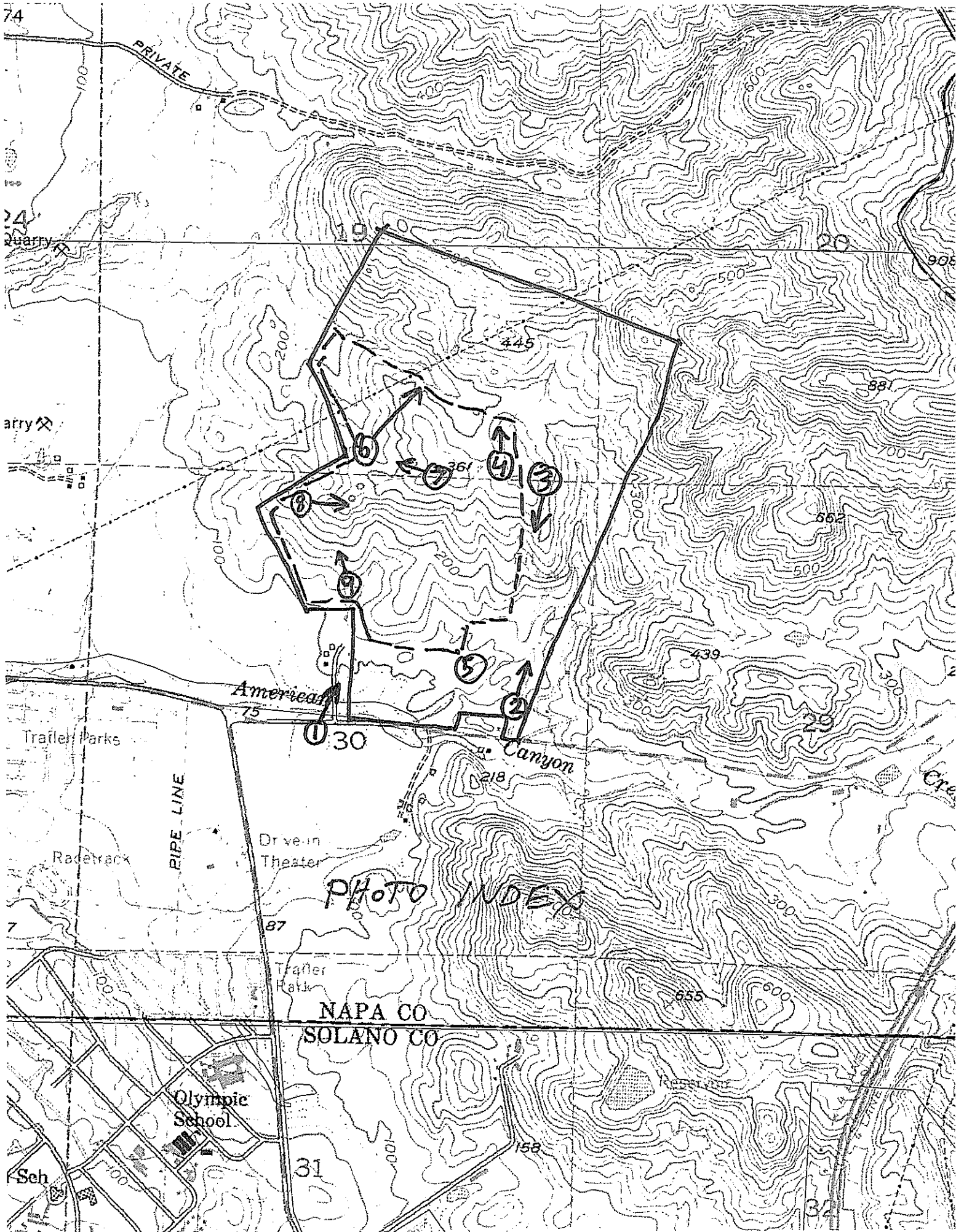
**EXHIBIT #1**

**USGS MAP**



3/17/2006

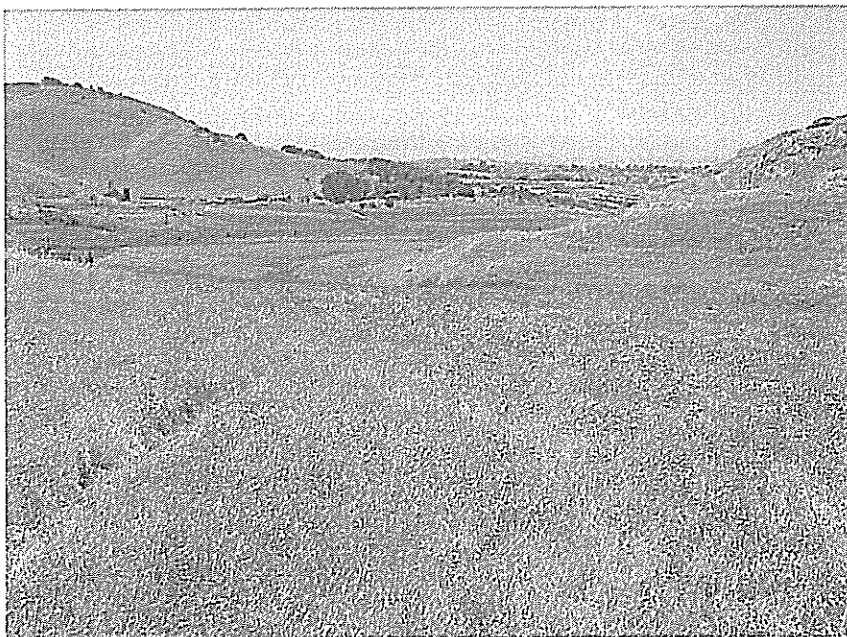
**EXHIBIT #2**  
**PHOTO SURVEY**





**Photo 1:** Southern area of the vineyard looking north from American Canyon Road.

**Photo 2** Looking north from the easterly access driveway. Darker band near the middle of the picture is the unnamed blueline tributary to American Canyon.



**Photo 3:** Northeast corner of the proposed vineyard area looking south.



**Photo 4:** Northeast portion of the proposed vineyard looking north.



**Photo 5:** One of the two cisterns at the south portion of the parcel.

**Photo 6:** Northwest portion of the proposed vineyard looking northeasterly.





**Photo 7:** Northwest portion of the proposed vineyard looking west.



**Photo 8:** Center of the proposed vineyard looking east from the west property line.



**Photo 9:** Center of the proposed vineyard looking north at one of the two slide locations.

3/17/2006

**EXHIBIT #3**  
**SOIL SURVEY DATA**

silty clay. Depth to weathered sandstone ranges from 40 to 60 inches.

131—Fagan clay loam, 5 to 15 percent slopes. This moderately sloping to strongly sloping soil is on foot slopes on uplands. It has the profile described as representative for the series.

Included with this soil in mapping were small areas of Bressa, Diablo, Dibble, and Haire soils and areas of soils in the vicinity of Kelly Road and Highway 12 that are dark fine sandy loam underlain by soft sandstone.

Runoff is medium. The hazard of erosion is moderate.

This soil is mainly used for range and pasture. A few small areas are in dryland grain. Capability unit IIIe-3 (15); Fine Loamy range site.

132—Fagan clay loam, 15 to 30 percent slopes. This moderately steep soil is on side slopes on uplands.

Included with this soil in mapping were small areas of Diablo, Dibble, Haire, and Hambright soils and a strong brown clayey soil that has a profile similar to this Fagan soil but is less than 40 inches deep to bedrock. Also included were small areas of a soil that is similar to this Fagan soil but that is calcareous in the subsoil.

Runoff is rapid. The hazard of erosion is moderate.

This soil is mainly used for range and pasture. A few small areas are in dryland grain. Capability unit IVe-3 (15); Fine Loamy range site.

133—Fagan clay loam, 30 to 50 percent slopes. This steep soil is on uplands.

Included with this soil in mapping were small areas of Diablo, Dibble, and Hambright soils. Also included were small areas of a fine sandy loam and areas of soils that are similar to this Fagan soil but that are less than 40 inches deep to bedrock.

Runoff is rapid. The hazard of erosion is high. This soil is subject to landslips.

This soil is used as range and watershed. Capability unit VIe-1 (15); Fine Loamy range site.

134—Fagan clay loam, 30 to 50 percent slopes, slipped. This steep soil is on uplands. It has a profile similar to the one described as representative for the series, but the areas are scarred with old and recent landslips. Occasional rock outcrops occur on ridgetops.

Included with this soil in mapping were small areas of Diablo, Dibble, and Hambright soils, small areas of soils less than 40 inches deep to bedrock, and small areas of soils that are alkaline or slightly calcareous in the subsoil. Occasional rock outcrops occur on ridgetops.

Runoff is rapid. The hazard of erosion is high.

This soil is used for range and watershed. Capability unit VIIe-1 (15); Fine Loamy range site.

## Felta series

The Felta series consists of well drained soils on terraces. Slope is 5 to 50 percent. Elevation is 300 to 2,000 feet. These soils formed in material weathered from volcanic tuffs mixed with uplifted river sediment and metamorphosed basic rock. The vegetation is madrone, Douglas-fir, scrub oak, and manzanita. The mean annual precipitation is 30 to 40 inches, and the

mean annual temperature is 50° to 62° F. Summers are hot and dry, and winters are cool and moist. The frost-free season is 220 to 260 days.

In a representative profile the surface layer is grayish brown, slightly acid very gravelly loam 7 inches thick. The subsoil is grayish brown, medium acid very gravelly clay loam 19 inches thick. The substratum is brown, strongly acid very gravelly sandy clay loam.

Permeability is moderate. The effective rooting depth is 60 inches or more. Available water capacity is 4 to 6 inches.

Felta soils are used mostly for watershed, wildlife habitat, and recreation.

Representative profile of Felta very gravelly loam in an area of Boomer-Forward-Felta complex, 5 to 30 percent slopes, about 1,800 feet west on Lyman Canyon Drive from State Highway 29 and 100 feet north of Lyman Canyon Road, NW¼NE¼ sec. 22, T. 8 N., R. 6 W., T. 8 N.:

A1—0 to 7 inches, grayish brown (10YR 5/2) very gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many fine roots; common fine interstitial pores; 50 percent gravel; slightly acid (pH 6.5); clear wavy boundary.

B21t—7 to 16 inches, grayish brown (10YR 5/2) very gravelly clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many fine roots; many fine interstitial pores; 60 percent gravel; medium acid (pH 6.0); clear wavy boundary.

B22t—16 to 26 inches, grayish brown (10YR 5/2) very gravelly clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and medium roots; many fine interstitial pores; common thin clay films lining pores and as bridges; 60 percent gravel; medium acid (pH 5.8); clear irregular boundary.

C—26 to 60 inches, brown (10YR 5/3) very sandy clay loam, dark grayish brown (10YR 4/2) moist; massive; hard, firm, slightly sticky and slightly plastic; few fine roots; common fine interstitial pores; common thin clay films lining pores and as bridges; 55 percent gravel; strongly acid (pH 5.5).

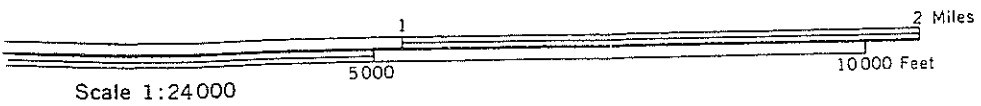
The A horizon is gray or grayish brown (10YR 5/2). Reaction is slightly acid or neutral. The gravel content ranges from 50 to 60 percent.

The Bt horizon is gray or grayish brown (10YR 5/2). Reaction is slightly acid or medium acid. The horizon is 50 to 60 percent gravel.

The C horizon is brown, pale brown, or brownish gray (10YR 6/3, 6/2, and 5/3). Reaction is medium acid to strongly acid. The gravel content ranges from 50 to 60 percent. Depth to weathered old alluvium is 40 to 60 inches or more.

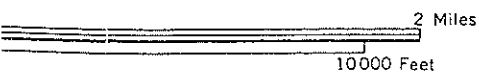
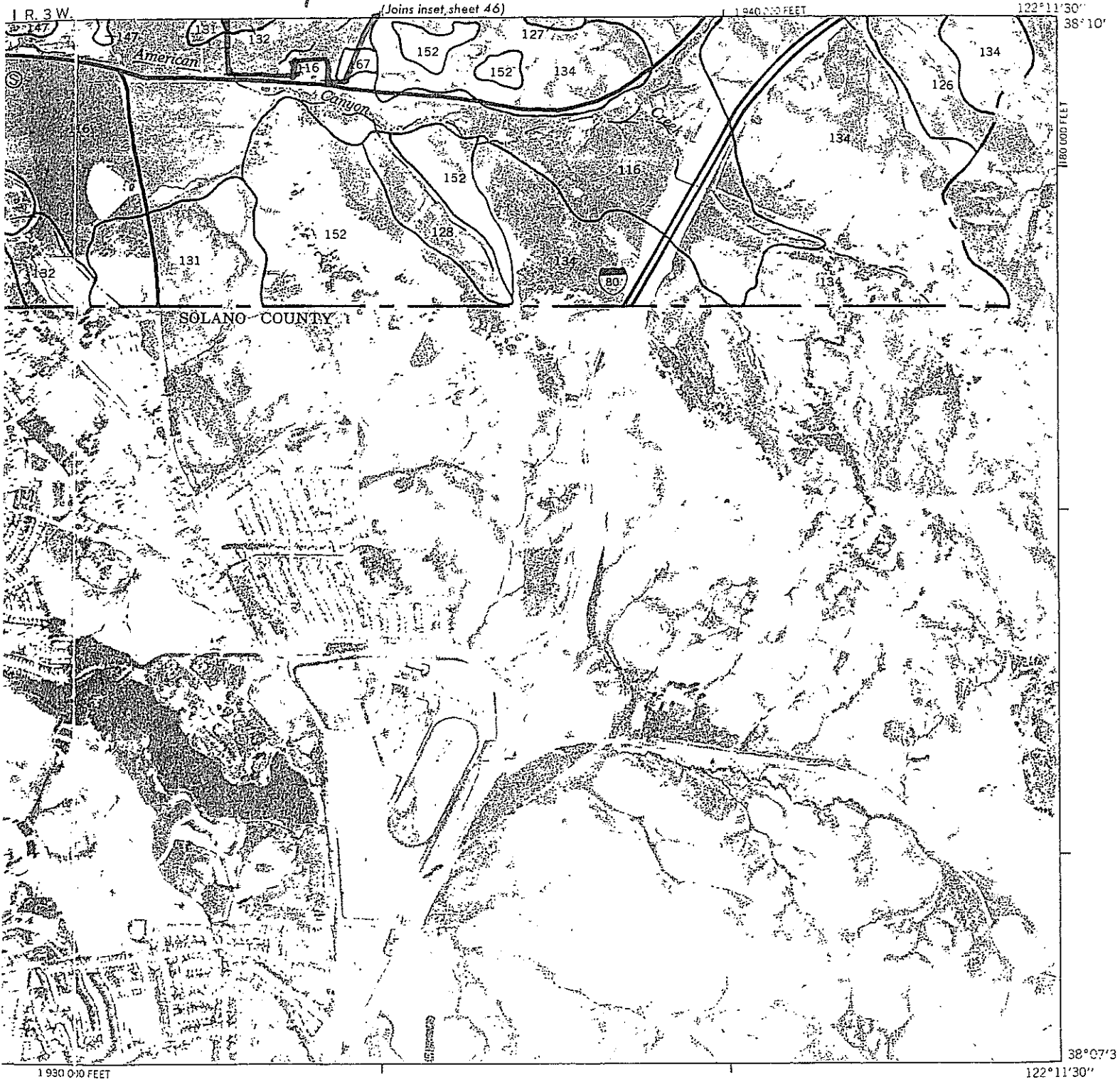


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SEE PREVIOUS PAGE



3/17/2006

**EXHIBIT #4**  
**SOIL LOSS CALCULATIONS**

# USLE LAYOUT AND PRACTICE ALTERNATIVES

A=(R)(K)(LS)(C)(P)

Napa Canyon Vineyards, LLC

Flosden Rd/American Canyon Rd

SOIL TYPE: Fagen Clay Loam (132, rapid runoff/moderate erosion)

TOLERANCE: 3 Tons/acre-year

DATE: 4/22/2002

# /ACRES:		18		19		24	
FACTOR:	DESCRIPTION	Block A	Block E	Block E	Block D	Block D	Block D
R	Rainfall	45	45	45	45	45	
K	Soil Erosiveness	0.28	Forward Loam	0.28	Forward Loam	0.28	Forward Loam
L	Max Slope length (ft)	500		662	714		
S	Avg Gradient	13.0	Avg.	19.0	Avg.	20.0	Avg.
LS	Calculated LS	4.35		8.36	9.30		
C	Cover	0.023	80%, Non Tilled	0.023	80%, Non Tilled	0.023	80%, Non Tilled
P	Practice	1	On contour	1	On contour	1	On contour
A	Soil loss, tons/acre	1.26		2.42		2.69	





***WILLIAM K. LANGBEHN CE GE***

***1034 Richmond Street, El Cerrito, CA 94530***

***fax (510) 558-8310***

***Geotechnical Engineer***

***phone (510) 558-8028***

*"Licensed by the California Dept. of Consumer Affairs, Board for Professional Engineers and Land Surveyors"*

May 21, 2002

Mark Power  
Napa Canyon LLC  
3264 Villa Lane  
Napa, California 94558

RE: Geotechnical Update and Plan Review  
Track I Erosion Control Plan  
Napa Canyon Vineyard (APN 0059-040-044)  
Floden Road at American Canyon Road  
Napa County, California

Dear Mr. Power:

At your request, the undersigned engineer has reviewed the geotechnical aspects of the Vineyard Erosion Control Plan (VECP) for the Napa Canyon vineyard development area proposed at the subject site in Napa County, California.

A geotechnical investigation of this site was prepared by Rogers/Pacific, Inc. (RPI) on January 24, 1991 for a previous country club development proposal. RPI remained involved with various geotechnical aspects of the prior development, including grading and foundation construction for the existing clubhouse building in 1992. In addition, plan review comments and supplemental investigation recommendations were provided for the most recent golf course development concept in 1997. These latter stages of the geotechnical work were completed by the undersigned engineer, then the project manager for RPI. Since that time, RPI became Geolith Consultants in 1998 and later ceased operations in 2001 when Prof. Rogers took an endowed chair from the University of Missouri. Due to the major changes in the site development concept and since the geotechnical report is now more than 10 years old, this letter also serves to update the geotechnical investigation report.

Although some additional subsurface exploration and supplemental geotechnical recommendations will likely be needed for modified development proposals in other areas, the proposed vineyard development area appears to primarily require only minimal, on-contour grading in one of the more stable hillside areas of the site. Consequently, the existing information and recommendations contained in the referenced geotechnical report generally remain valid for this site for the purposes of the proposed vineyard development area. Any comments or supplemental recommendations appropriate at this time for the proposed vineyard development area are presented below.

The VECP plans were prepared by Chaudhary and Associates and include 3 sheets dated April 22, 2002. Based on the results of this review, it is my opinion that the VECP plans are in general conformance with the recommendations and intent of the referenced soil report. The only minor comments I have at this time are presented in the following paragraphs.

As noted above, the grading for the vineyard will be minimal but should include repair of two small, recently active landslides within the planting area. These small slides are located in secondary, colluvium-filled drainage swales at the lower west side of Block E and near the extreme northern tip of Block B. These locations are also shown on Figure 3 of the soil report, although the slide areas currently appear somewhat larger due to probable re-activation in 1998. The remedial grading required in these local areas can be used to create smoother slope contours across the swales and can generally follow the recommendations given in the text of the soil report, including extensive subdrain installations. However, deep sub-excavation into bedrock may not be required due to the shallow nature of the sliding at these locations. Fortunately, the colluvium-filled swales that flank the slopes in other areas of the vineyard development appear stable and should not be de-stabilized by the proposed vineyard provided the drainage improvements and erosion control measures are properly installed and maintained. Any earthwork operations for gully repair or to locally fill-in the swales for smoother slope contours should also follow the recommendations given in the soil report to minimize the risk of future slope stability problems in these sensitive areas.

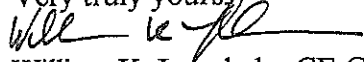
Some recent borrow cuts exposing sandstone bedrock were noted in the lower west sections of Blocks C and D, possibly source areas for the existing clubhouse fill pad. Topsoil replacement and any slope reconstruction needed in these locally steep areas should also generally follow the recommendations of the soil report. However, the top 3 feet of topsoil placed in any planting areas need only be compacted to 85% relative compaction, assuming a finished slope surface of no steeper than 3:1 will be provided.

Finally, the notes should make reference to the geotechnical report and this update letter, and should state that all mass grading for slide repair or slope construction should be done per the requirements of the soil report. In addition, all grading operations, foundation construction and drainage installations at the site should be done under the observation of the undersigned engineer or other qualified professional, as required by the County.

The undersigned engineer has employed accepted geotechnical engineering procedures, and the professional opinions and conclusions are made in accordance with generally accepted geotechnical engineering principles and practices. This warranty is in lieu of all other warranties, either expressed or implied.

I hope this letter is adequate for your needs at this time and I appreciate the opportunity to be of service on this project. Please call if there are any questions on this matter.

Very truly yours,



William K. Langbehn CE GE  
Consulting Geotechnical Engineer  
(510) 558-8028

WKL/bhs

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Copies: Addressee (5, 3 by special delivery, 1 by fax)  
Brian Bordona/Napa County Planning (1)  
Chaudhary & Associates (2, 1 by fax)



March 12, 2002

Napa Canyon LLC  
3264 Villa Lane  
Napa, California 94558

Attention: Mr. Mark Power

**RE: Special-Status Plant Survey Report  
American Canyon Golf Course Site  
Napa County, California**

Dear Mr. Power:

In 1996 and 1998, Monk & Associates LLC (M&A) completed focused surveys for special-status (that is, rare, threatened, or endangered) plants on the Napa Canyon LLC project site (herein referred to as the project site) located on American Canyon Road in Napa County, California. No special-status plants were identified during these two years of surveys. Below we provide a description of the project site's plant communities, our survey methods and results.

## **1. PLANT COMMUNITIES**

Two distinct upland plant communities, non-native annual grassland and serpentine rock outcrop, and three wetland plant communities: perennial seeps, isolated wetlands, and ephemeral drainages, characterize the project site. Of these five plant communities, non-native annual grassland is the dominant plant community on the project site. It is estimated that non-native annual grassland covers approximately 75 percent of the project site.

During M&A's special-status plant surveys, we identified 198 plant species on the project site. Of these 198 species, 109 species are native to California (which means that 89 species are grasses and forbs introduced to California from other countries). While the number of native species on the project site is high, the percent cover of native species is low. Native California species represent approximately five percent of the project site's total vegetative cover. Below, we describe the five plant communities in detail.

### **1.1 Non-Native Annual Grassland**

Prior to the settlement of Europeans in California, the California landscape was dominated by native, perennial bunchgrasses. When the Europeans settled in California, a variety of Mediterranean grass and forb species were brought to California for use as crops or ornamentals, or inadvertently in the fur and digestive systems of livestock. Land use changes, such as domestic animal grazing, has resulted in highly palatable native plants being reduced or eliminated. Introduced species tolerant of grazing pressure, particularly annual grasses of Eurasian ancestry, have displaced the native grasses, creating a new kind of grassland community. The project site is an example of how cattle grazing can greatly change the

vegetative composition of the landscape. The project site was used as a dairy ranch from before the turn of the century until at least the 1960s. While the project site is no longer a dairy, cattle grazing continues.

Dominant grass and forb species on the project site are non-native species such as Italian rye grass (*Lolium multiflorum*), wild oats (*Avena barbata*, *A. fatua*), rose clover (*Trifolium hirtum*), hay field tarplant (*Hemizonia congesta* ssp. *luzulifolia*), bellardia (*Bellardia trixago*), black mustard (*Brassica nigra*), and milk thistle (*Silybum marianum*). Native species also occur in this plant community; however, their total percent cover is much lower than the non-native species. Native species found in the non-native annual grassland community include lupines (*Lupinus bicolor*, *L. formosus*, *L. latifolius*, *L. nanus*, and *L. succulentus*), tidy tips (*Layia chrysanthemoides*), elegant brodiaea (*Brodiaea elegans*), ookow (*Dichelostemma congestum*), smooth owl's clover (*Triphysaria faucibarbatata* ssp. *versicolor*), and yellow cream sacs (*Castilleja rubicundula* ssp. *lithospermoides*).

## 1.2 Serpentine Rock Outcrop

In the project site's southeastern quarter is a relatively small serpentine rock outcrop (area estimated at less than 15 acres). While the vegetation composition of this rock outcrop has been altered due to years of cattle grazing and past quarrying activities, plant species endemic to serpentinite substrate, such as Greene buckwheat (*Eriogonum luteolum* var. *luteolum*), branched phacelia (*Phacelia ramosissima* var. *ramosissima*), purple needle grass (*Nasella pulchra*), and small California gilia (*Gilia achillefolia* ssp. *multicaulis*) are still growing on the outcrop. However, cattle grazing in this area has resulted in the germination and growth of non-native annual grasses on the rock such as soft chess brome (*Bromus hordeaceus*), red brome (*Bromus madritensis* ssp. *rubens*), and rat tail fescue (*Vulpia myuros*).

## 1.3 Perennial Seeps

Perennial seeps are located in the southern portion of the project site, and in a valley bottom between opposing hill slopes in the northern portion of the project site. These seeps receive perennial water from underground aquifers which allows them to flow during the winter months and remain saturated to the surface throughout the rest of the year. Clear Lake clay soils characterize these seep habitats. The seeps also supply some downstream ephemeral drainages with a near-constant supply of water in the upper reaches of these channels. Hydrophytic (i.e., wetland) vegetation growing in these seeps includes seep monkey flower (*Mimulus guttatus*), penny royal (*Mentha pulegium*), watercress (*Rorippa nasturtium-aquaticum*), coyote thistle (*Eryngium aristulatum*), meadow barley (*Hordeum brachyantherum*), iris-leaved rush (*Juncus phaeocephalus*), swamp thistle (*Cirsium douglasii*), Italian rye grass, rabbit's foot grass (*Polypogon monspilensis*), bird's foot trefoil (*Lotus corniculatus*), and sedge (*Carex* sp.).

## 1.4 Ephemeral Drainages

Ephemeral drainages are located on the northwestern, northeastern, eastern, and southern portions of the project site. The drainages on the northeastern, eastern, and southern portions of the site flow south and west into American Canyon Creek. The two ephemeral drainages in the northwestern portion of the project site flow west into unnamed tributaries. The project site's largest drainages

flow approximately seven to eight months of the year and remain saturated for an additional two months of the year, while the smaller drainages only flow during and immediately after storm events. In the southern portion of the project site is the longest ephemeral drainage. This drainage runs parallel with American Canyon Road. This drainage alternates between areas that are 100 percent vegetated and areas that are unvegetated and eroded down to a hardpan. These unvegetated areas form deep pools in the winter months. The portions of this drainage that are vegetated are dominated by seep monkey flower, iris-leaved rush, water cress, cow clover (*Trifolium wormskjoldii*), bugle nettle (*Stachys ajugoides*), and rabbit's foot grass.

### 1.5 Isolated Wetlands

Isolated wetlands are those wetlands that are hydrologically removed from other wetland areas on the project site. Isolated wetlands are located in the northern, western, and southwestern portions of the project site. Most of the project site's isolated wetlands are small areas that inundate for a few months of the year, forming small pools. A few of the isolated wetlands do not inundate to the surface at all, but only saturate. Hydrophytic vegetation in the isolated wetlands consists of water starwort (*Callitriche* sp.), hyssop loose strife (*Lythrum hyssopifolia*), iris-leaved rush, meadow barley, curly dock (*Rumex crispus*), and yellow cress (*Rorippa curvisiliqua*). Hydrology is provided by direct precipitation, and percolation is restricted in these wetlands due to the clay hardpan in the Clear Lake clays and Fagan clay loams found in these areas.

## 2. SPECIAL-STATUS PLANT SURVEYS

### 2.1 Survey Methodology

Prior to conducting the 1996 and 1998 surveys on the project site, M&A searched California Department of Fish and Game's (CDFG) Natural Diversity Database (RareFind Application) for records of special-status plants within the vicinity of the project site. M&A also reviewed the California Native Plant Society's (CNPS) *Inventory of Rare and Endangered Vascular Plants of California* for occurrences of special-status plants in Napa County. From these two sources, M&A compiled a list of 30 plant species that potentially occur in habitats similar to those found on the project site. Of these 30 plants, 6 are listed as rare, threatened, or endangered by the State and/or Federal government, and 12 other species are on CNPS' List 1B. List 1B is for those species that CNPS considers rare, threatened, and endangered in California and elsewhere. All of the plants constituting List 1B meet the definitions of Section 1901, Chapter 10 (Native Plant Protection Act) or Sections 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and are eligible for State listing. The remaining 12 plant species are on one of CNPS' remaining lists: List 2, 3, or 4 (all special-status plants considered for this analysis are listed on Table 1).

Surveys for special-status plants followed CDFG's guidelines which state that: (1) surveys must be conducted at the time of year when special-status plants are both evident and identifiable; (2) surveys must be floristic in nature, with all plants observed identified to the level necessary to determine their rarity status; and (3) surveys should be conducted throughout the growing season. Following these guidelines, M&A conducted surveys for special-status plants on March 18, April 10, May 8, June 14, and July 12, 1996, and April 23, 30, May 22, 27, and June 22,

1998. M&A biologists Sarah Lynch and Geoff Monk conducted the 1996 surveys. Sarah Lynch and M&A's subconsulting botanist, Jane Valerius, conducted the 1998 surveys. Surveys were conducted by two biologists walking meandering transects (spaced approximately 50 to 100 feet apart) throughout the project site, noting each plant species observed. Plants that needed further evaluation were collected and keyed in the lab.

## 2.2 Survey Results

All plants observed on the project site during the March through July 1996 surveys and the April through July 1998 surveys are listed in Tables 2a (1996 surveys) and 2b (1998 surveys), attached. No special-status plant species were identified on the project site during two years of surveys appropriately timed between the months of March and July. Due to the long-term, year-round cattle grazing on the project site, natural vegetative conditions were altered many years ago. As a result, non-native plant species have out-competed most of the native species from the grassland community, and now dominate this community. Non-native species have also encroached upon the native species in the serpentine rock outcrops and wetland communities.

During our surveys we identified one species of buckwheat (*Eriogonum luteolum*) at the serpentine rock outcrop and one species of coyote mint (*Monardella douglasii*) in the perennial seeps that are known to have rare varieties in the San Francisco Bay Area. Specimens of both the buckwheat and the coyote mint were compared with specimens at the Jepson Herbarium at the University of California Berkeley, and then sent to the species' experts for species and variety confirmation. Dr. James Reveal of the University of Maryland confirmed the buckwheat as being *Eriogonum luteolum* var. *luteolum*, a common variety of Greene's buckwheat. Ms. Barbara Castro, District Botanist of the Plumas National Forest in Oroville, confirmed the coyote mint as being *Monardella douglasii* var. *douglasii*, the common variety of Douglas' coyote mint. Hence, no special-status species were identified.

Due to the dominance of non-native species on the project site, future establishment of special-status plant species on the project site seems unlikely, and no impacts to special-status plants are expected from development of the project as proposed. If you have any questions regarding M&A's special-status plant surveys or survey report, please do not hesitate to call one of us at (925) 947-4867. Thank you.

Sincerely,



Sarah Lynch  
Senior Associate Biologist



Geoff Monk  
Principal Biologist

Attachment: Tables

**Table 1**  
**Special-Status Plants Potentially Occurring on**  
**the American Canyon Project Site**  
**Napa County, California**

Species	Status <sup>1</sup>	Habitat Affinities	Blooming Period
<i>Astragalus breweri</i> Brewer's milk vetch	Federal: None State: None CNPS: List 4	Chaparral; cismontane woodland; meadows; grassland; often on serpentine.	April - June
<i>Astragalus rattanii</i> var. <i>jepsonianus</i> Jepson's milk-vetch	Federal: None State: None CNPS: List 1B	Cismontane woodland; grassland (often serpentine).	April - June
<i>Astragalus tener</i> var. <i>tener</i> alkali milk-vetch	Federal: None State: None CNPS: List 1B	Playas; grasslands with adobe clay soil; vernal pools (alkaline).	March - June
<i>Balsamorhiza macrolepis</i> var. <i>macrolepis</i> big-scale balsamroot	Federal: None State: None CNPS: List 1B	Cismontane woodland; grassland; sometimes serpentine.	March - June
<i>Castilleja affinis</i> ssp. <i>neglecta</i> Tiburon Indian paintbrush	Federal: FE State: CT CNPS: List 1B	Grassland (serpentine).	April - June
<i>Delphinium uliginosum</i> swamp larkspur	Federal: None State: None CNPS: List 4	Chaparral; grassland; serpentine seeps.	May - June
<i>Downingia pusilla</i> dwarf downingia	Federal: None State: None CNPS: List 2	Mesic grasslands; vernal pools.	March - May
<i>Eriogonum luteolum</i> var. <i>caninum</i> Tiburon buckwheat	Federal: None State: None CNPS: List 3	Chaparral; coastal prairie; grassland (serpentine).	June - September
<i>Fritillaria pluriflora</i> adobe-lily	Federal: None State: None CNPS: List 1B	Chaparral; cismontane woodland; grasslands (often on adobe).	February - April
<i>Fritillaria purdyi</i> Purdy's fritillary	Federal: None State: None CNPS: List 4	Chaparral; grassland (serpentine).	March - June
<i>Hesperolinon breweri</i> Brewer's western flax	Federal: None State: None CNPS: List 1B	Chaparral; cismontane woodland; grassland (mostly serpentine).	May - July
<i>Hesperolinon drymarioides</i> drymaria-like western flax	Federal: None State: None CNPS: List 1B	Closed cone coniferous forest; chaparral; cismontane woodland; grasslands (serpentine).	May - August

**Table 1**  
**Special-Status Plants Potentially Occurring on**  
**the American Canyon Project Site**  
**Napa County, California**

Species	Status <sup>1</sup>	Habitat Affinities	Blooming Period
<i>Lasthenia conjugens</i> Contra Costa goldfields	Federal: FE State: None CNPS: List 1B	Mesic grasslands; vernal pools.	March - June
<i>Lathyrus jepsonii</i> var. <i>jepsonii</i> Delta tule pea	Federal: None State: None CNPS: List 1B	Freshwater and brackish marsh.	May-June
<i>Layia septentrionalis</i> Colusa layia	Federal: None State: None CNPS: List 1B	Chaparral; cismontane woodland; grassland; (sandy or serpentine soils).	April - May
<i>Legenere limosa</i> legenere	Federal: None State: None CNPS: List 1B	Vernal pools.	May - June
<i>Lessingia hololeuca</i> woolly-headed lessingia	Federal: None State: None CNPS: List 3	Coastal scrub; lower montane coniferous forest; grasslands; (clay and serpentine soils).	June - October
<i>Lilaeopsis masonii</i> Mason's lilaeopsis	Federal: None State: CR CNPS: List 1B	Brackish or freshwater marsh; riparian scrub.	April - October
<i>Limnanthes vinculans</i> Sebastopol meadowfoam	Federal: FE State: CE CNPS: List 1B	Mesic meadows; vernal pools.	April - May
<i>Micropus amphibolus</i> Mt. Diablo cottonweed	Federal: None State: None CNPS: List 4	Broad-leaved upland forest; cismontane woodland; grassland.	April - May
<i>Navarretia leucocephala</i> ssp. <i>bakeri</i> Baker's navarretia	Federal: None State: None CNPS: List 1B	Cismontane woodland; lower montane coniferous forest; mesic meadows; grassland; vernal pools.	May - July
<i>Navarretia leucocephala</i> ssp. <i>pauciflora</i> few-flowered navarretia	Federal: FE State: CT CNPS: List 1B	Vernal pools (volcanic ash flow).	June
<i>Perideridia gairdneri</i> ssp. <i>gairdneri</i> Gairdner's yampah	Federal: None State: None CNPS: List 4	Broad-leaved upland forest; chaparral; grassland; vernal pools (mesic conditions).	June - October
<i>Plagiobothrys strictus</i> Calistoga popcorn flower	Federal: FE State: CT CNPS: List 1B	Broad-leaved upland forest; meadows; grassland; alkaline areas near thermal springs.	March-June



**Table 1**  
**Special-Status Plants Potentially Occurring on**  
**the American Canyon Project Site**  
**Napa County, California**

Species	Status <sup>1</sup>	Habitat Affinities	Blooming Period
<i>Pogogyne douglasii</i> ssp. <i>parviflora</i> Douglas' pogogyne	Federal: None State: None CNPS: List 3	Chaparral (serpentine); vernal freshwater marsh; grassland; vernal pools.	May - June
<i>Psilocarphus brevissimus</i> var. <i>multiflorus</i> delta woolly-marbles	Federal: None State: None CNPS: List 4	Vernal pools	May - June
<i>Ranunculus lobbii</i> Lobb's aquatic buttercup	Federal: None State: None CNPS: List 4	Cismontane woodland; grassland; vernal pools (mesic conditions).	March - May
<i>Sidalcea oregana</i> ssp. <i>hydrophila</i> marsh checkerbloom	Federal: None State: None CNPS: List 1B	Meadows; riparian forests; mesic conditions.	July - August
<i>Thelypodium brachycarpum</i> short-podded thelypodium	Federal: None State: None CNPS: List 4	Chaparral; meadows (serpentine, adobe; alkaline).	June - August
<i>Trifolium amoenum</i> showy Indian clover	Federal: None State: None CNPS: List 1B	Grassland (sometimes serpentine).	April - June

1. Status Designations:

Federal

- E Federal listed Endangered Species.
- T Federal listed Threatened Species.
- C Federal Candidate for listing as threatened or endangered. Data are sufficient to support listing of this species.

State

- E State listed Endangered Species.
- T State listed Threatened Species.

CNPS

List 1B - CNPS designation. Plants rare, threatened, or endangered in California and elsewhere. Species with this listing meet the definitions of Section 1901, Chapter 10 of the CDFG Code and are eligible for State listing. Also, likely to meet biological criteria to be classified as rare under CEQA (Section 15380(b)).

List 2 - CNPS designation. Plants rare, threatened, or endangered in California, but more common elsewhere. Species with this listing meet the definitions of Section 1901, Chapter 10 of the CDFG Code and are eligible for State listing.

List 3 - CNPS designation. Plants about which more information is necessary. A review list.

List 4 - CNPS designation. A watch list for plants of limited distribution in California.

**Table 2a**  
**Plants Observed on the Proposed**  
**American Canyon Hotel and Club House Project Site**  
**on March 18, April 10, May 8, June 14, and July 12, 1996**

<u>Scientific Name<sup>1</sup></u>	<u>Common Name</u>
<i>Achyrrachaena mollis</i>	blow wives
<i>Agoseris retrorsa</i>	spear leaf dandelion
<i>Agrostis viridis</i>	whorled bent grass
<i>Amaranthus</i> sp.	pig weed
<i>Amsinckia lycopsoides</i>	fiddleneck
<i>Amsinckia menziesii</i> var. <i>intermedia</i>	fiddleneck
<i>Anagalis arvensis</i>	scarlet pimpernel
<i>Anthemis cotula</i>	mayweed
<i>Artemisia douglasiana</i>	mugwort
<i>Avena fatua</i>	wild oats
<i>Bellardia trixago</i>	bellardia
<i>Briza minor</i>	little quaking grass
<i>Brodiaea elegans</i>	elegant brodiaea
<i>Bromus diandrus</i>	rip-gut brome
<i>Bromus hordeaceus</i>	soft chess brome
<i>Callitriche marginata</i>	water star wort
<i>Calochortus venustus</i>	butterfly mariposa lily
<i>Calystegia subacaulis</i> ssp. <i>subacaulis</i>	morning glory
<i>Carduus pycnocephala</i>	Italian thistle
<i>Castilleja rubicundula</i> ssp. <i>lithospermoides</i>	yellow cream sacs
<i>Centaurea calcitrapa</i>	purple star thistle
<i>Centaurea solstitialis</i>	yellow star thistle
<i>Centaureum muehlenbergii</i>	Monterey centaury
<i>Cerastrium arvense</i>	chickweed
<i>Chenopodium murale</i>	red stem pigweed
<i>Cirsium vulgare</i>	bull thistle
<i>Conium maculatum</i>	poison hemlock
<i>Convolvulus arvensis</i>	bind weed
<i>Cotula cornopifolia</i>	brass buttons
<i>Crypsis schoenoides</i>	swamp timothy
<i>Cynara cardunculus</i>	artichoke thistle
<i>Cynodon dactylon</i>	Bermuda grass
<i>Cyperus eragrostis</i>	umbrella sedge
<i>Dichelostemma congestum</i>	ookow
<i>Dichelostemma multiflorum</i>	many flower bluedicks
<i>Dipsacus fullonum</i>	wild teasel
<i>Eleocharis obtusa</i> var. <i>engelmannii</i>	obtuse spike rush
<i>Elymus glaucus</i> x <i>E. elymoides</i>	hybrid: blue wild rye x squirrel tail
<i>Epilobium brachycarpum</i>	willow herb
<i>Erodium botrys</i>	broad leaf filaree
<i>Erodium cicutarium</i>	redstem filaree
<i>Erodium moschatum</i>	white-stem filaree
<i>Eschscholzia californica</i>	California poppy
<i>Foeniculum vulgare</i>	fennel
<i>Geranium dissectum</i>	cut leaf geranium
<i>Gnaphalium purpureum</i>	purple cudweed

Table 2a (continued).

<u>Scientific Name<sup>1</sup></u>	<u>Common Name</u>
<i>Hemizonia congesta</i> ssp. <i>luzulifolia</i>	hay field tarplant
<i>Hesperevax sparsiflora</i>	erect hesperevax
<i>Hirschfelda incana</i>	mustard
<i>Hordeum brachyantherum</i>	meadow barley
<i>Hordeum marinum</i> ssp. <i>gussoneanum</i>	Mediterranean barley
<i>Hordeum murinum</i> ssp. <i>leporinum</i>	foxtail barley
<i>Hypochoeris radicata</i>	rough cat's ear
<i>Juncus balticus</i>	Baltic rush
<i>Juncus bufonius</i> var. <i>bufonius</i>	toad rush
<i>Juncus bufonius</i> var. <i>congestus</i>	toad rush
<i>Juncus xiphioides</i>	iris leaved rush
<i>Lactuca saligna</i>	willow lettuce
<i>Lactuca serriola</i>	prickly lettuce
<i>Leymus triticoides</i>	creeping wild rye
<i>Lolium multiflorum</i>	Italian rye grass
<i>Lotus corniculatus</i>	bird's foot trefoil
<i>Lotus wrangelianus</i>	California lotus
<i>Lupinus albifrons</i> var. <i>albifrons</i>	silvery lupine
<i>Lupinus bicolor</i>	bicolored lupine
<i>Lythrum hyssopifolia</i>	hyssop loose strife
<i>Malva parviflora</i>	cheese weed
<i>Malvella leprosa</i>	alkali mallow
<i>Medicago polymorpha</i>	bur clover
<i>Melilotus alba</i>	white sweet clover
<i>Melilotus indica</i>	yellow sweet clover
<i>Mentha pulegium</i>	penny royal
<i>Mentha spicata</i> var. <i>spicata</i>	spearmint
<i>Mimulus guttatus</i>	seep monkey flower
<i>Oxalis pes-caprae</i>	Bermuda buttercup
<i>Paspalum distichum</i>	knot grass
<i>Perideridia howellii</i>	Howell's yampah
<i>Perideridia kelloggii</i>	Kellogg's yampah
<i>Picris echioides</i>	bristly ox tongue
<i>Phalaris minor</i>	small canary grass
<i>Plagiobothrys stipitatus</i> var. <i>micranthus</i>	popcorn flower
<i>Plantago lanceolata</i>	English plantain
<i>Plantago major</i>	common plantain
<i>Poa annua</i>	annual blue grass
<i>Polygonum arenastrum</i>	knot weed
<i>Polygonum lapathifolium</i>	willow weed
<i>Polypogon monspilensis</i>	rabbit's foot grass
<i>Ranunculus muricatus</i>	spine fruited buttercup
<i>Raphanus sativus</i>	wild radish
<i>Rorippa nasturtium-aquaticum</i>	water cress
<i>Rosa</i> sp. (ornamental)	rose
<i>Rubus procerus</i>	Himalayan blackberry
<i>Rumex crispus</i>	curly dock
<i>Rumex pulcher</i>	fiddle dock
<i>Rumex salicifolius</i>	willow dock
<i>Sanicula bipinnatifida</i>	purple sanicle
<i>Scandix pecten-veneris</i>	scandix
<i>Scirpus</i> sp.	rush
<i>Silene gallica</i>	campion

Table 2a (continued).

<u>Scientific Name</u> <sup>1</sup>	<u>Common Name</u>
<i>Silybum marianum</i>	milk thistle
<i>Sisymbrium officinale</i>	hedge mustard
<i>Sisyrinchium bellum</i>	blue eyed grass
<i>Sonchus asper</i>	sow's ear
<i>Stachys ajugoides</i>	bugle nettle
<i>Torilis nodosa</i>	torilis
<i>Tragopogon</i> sp.	oyster plant
<i>Trifolium ciliolatum</i>	tree clover
<i>Trifolium dubium</i>	shamrock
<i>Trifolium fragiferum</i>	strawberry clover
<i>Trifolium hirtum</i>	rose clover
<i>Trifolium incarnatum</i>	crimson clover
<i>Trifolium longipes</i>	clover
<i>Trifolium oliganthum</i>	few flowered clover
<i>Trifolium repens</i>	white clover
<i>Trifolium subterranean</i>	subterranean clover
<i>Triphysaria pusilla</i>	dwarf owl's clover
<i>Triphysaria versicolor</i> ssp. <i>faucibarbata</i>	smooth owl's clover
<i>Triteleia hyacinthina</i>	white triteleia
<i>Triteleia laxa</i>	Ithuriel's spear
<i>Veronica peregrina</i> ssp. <i>xalapensis</i>	purslane speed well
<i>Vicia benghalensis</i>	purple vetch
<i>Vicia sativa</i> ssp. <i>sativa</i>	spring vetch
<i>Vulpia bromoides</i>	fescue
<i>Wyethia angustifolia</i>	narrow leaved mule ears
<i>Xanthium spinosum</i>	spiny cockle bur
<i>Xanthium strumarium</i>	rough cockle bur
<i>Zannichellia palustris</i>	horned pondweed

1. Nomenclature according to Hickman, J. (ed.) 1993. The Jepson Manual: higher plants of California.

**Table 2b**  
**Plant Species Observed on the**  
**American Canyon Golf Course Site**  
**on April 23, 30, May 22, 27, and June 22, 1998**

\* denotes California native species

<u>Scientific Name</u>	<u>Common Name</u>
* <i>Achillea millefolium</i>	common yarrow
* <i>Achyraea mollis</i>	blow wifes
* <i>Aesculus californica</i>	California buckeye
* <i>Agoseris heterophylla</i>	annual dandelion
* <i>Agrostis exarata</i>	spike bent grass
* <i>Allium amplexans</i>	paper onion
* <i>Amsinckia menziesii</i> var. <i>intermedia</i>	intermediate fiddleneck
<i>Anagalis arvensis</i>	scarlet pimpernel
<i>Anthemis cotula</i>	dog fennel
* <i>Aphanes occidentalis</i>	lady's mantel
<i>Arabidopsis thaliana</i>	mouse-ear cress
* <i>Artemisia douglasiana</i>	mugwort
* <i>Astragalus gambelii</i>	Gambel milkvetch
<i>Avena barbata</i>	slender wild oat
<i>Avena fatua</i>	wild oat
<i>Bellardia trixago</i>	bellardia
* <i>Berula erecta</i>	cut-leaf water parsnip
<i>Brachypodium distachyon</i>	purple falsebrome
<i>Brassica nigra</i>	black mustard
<i>Briza minor</i>	little quaking grass
* <i>Brodiaea elegans</i>	elegant brodiaea
<i>Bromus diandrus</i>	rip gut brome
<i>Bromus hordeaceus</i>	soft chess brome
<i>Bromus madritensis</i> ssp. <i>rubens</i>	red brome
* <i>Calandrinia ciliata</i>	red maids
* <i>Callitriche</i> sp.	water starwort
* <i>Calochortus luteus</i>	yellow mariposa lily
* <i>Calochortus vestae</i>	clay mariposa lily
* <i>Calystegia subacaulis</i> ssp. <i>subacaulis</i>	morning glory
* <i>Camissonia ovata</i>	sun cups
<i>Capsella bursa-pastoris</i>	shepherd's purse
<i>Carduus pycnocephala</i>	Italian thistle
* <i>Carex</i> sp.	sedge
* <i>Castilleja attenuata</i>	valley tassels
* <i>Castilleja exserta</i> ssp. <i>exserta</i>	purple owl's clover
* <i>Castilleja rubicundula</i> ssp. <i>lithospermoides</i>	yellow cream sacs
<i>Centaurea calcitrapa</i>	purple star thistle
<i>Centaurea melitensis</i>	toocalote
<i>Centaurea solstitialis</i>	yellow star thistle
* <i>Centaurium trichanthum</i>	alkali centaury
* <i>Cerastrium arvense</i>	field chickweed
<i>Cerastrium glomeratum</i>	mouse ear chickweed
<i>Chamomilla suaveolens</i>	pineapple weed
* <i>Chlorogalum pomeridianum</i>	soap plant
<i>Cichorium intybus</i>	chicory

**Table 2b**  
**Plants Observed at American Canyon Golf Course in 1998**

<u>Scientific Name</u>	<u>Common Name</u>
* <i>Cirsium douglasii</i>	Douglas' thistle
<i>Cirsium vulgare</i>	bull thistle
* <i>Claytonia perfoliata</i>	miner's lettuce
<i>Convolvulus arvensis</i>	bind weed
<i>Conyza</i> sp.	horse weed
<i>Cotula cornopifolia</i>	brass buttons
* <i>Crassula connata</i>	pygmy weed
<i>Cynara cardunculus</i>	artichoke thistle
<i>Cynodon dactylon</i>	Bermuda grass
* <i>Cyperus eragrostis</i>	umbrella sedge
* <i>Daucus pusillus</i>	rattlesnake weed
* <i>Dichelostemma congestum</i>	ookow
<i>Dipsacus fullonum</i>	wild teasel
* <i>Eleocharis obtusa</i> var. <i>engelmannii</i>	spike rush
* <i>Elymus glaucus</i>	blue grass
* <i>Elymus multisetus</i>	big squirrel tail
* <i>Epilobium brachycarpum</i>	willow herb
* <i>Equisetum laevigatum</i>	horse tail
* <i>Equisetum palustre</i>	branched horse tail
* <i>Eremocarpus setigerus</i>	dove weed
* <i>Erigeron philadelphicus</i>	Philadelphia daisy
* <i>Eriogonum luteolum</i> var. <i>luteolum</i>	Greene buckwheat
* <i>Eriogonum nudum</i> var. <i>auriculatum</i>	curled leaf buckwheat
<i>Erodium cicutarium</i>	redstem filaree
<i>Erodium moschatum</i>	white-stem filaree
* <i>Eryngium aristulatum</i>	coyote thistle
* <i>Eschscholzia californica</i>	California poppy
<i>Eucalyptus globulus</i>	blue gum eucalyptus
* <i>Euphorbia spathulata</i>	spatulate leaf spurge
* <i>Filago gallica</i>	puff weed
<i>Foeniculum vulgare</i>	fennel
* <i>Galium aparine</i>	bed straw
<i>Galium murale</i>	tiny bed straw
<i>Geranium dissectum</i>	cut leaf geranium
<i>Geranium molle</i>	bird's foot geranium
* <i>Gilia achillefolia</i> ssp. <i>multicaulis</i>	small California gilia
* <i>Gnaphalium purpureum</i>	purple cudweed
* <i>Hemizonia congesta</i> ssp. <i>luzulifolia</i>	hay field tarplant
* <i>Hesperervax sparsiflora</i>	erect hesperervax
<i>Hirschfeldia incana</i>	field mustard
* <i>Hordeum brachyantherum</i>	California meadow barley
* <i>Hordeum depressum</i>	low barley
<i>Hordeum marinum</i> ssp. <i>gussoneanum</i>	Mediterranean barley
<i>Hordeum murinum</i> ssp. <i>leporinum</i>	fox tail barley
<i>Hypochoeris glabra</i>	smooth cat's ear
<i>Hypochoeris radicata</i>	rough cat's ear
* <i>Juncus balticus</i>	Baltic rush
* <i>Juncus bufonius</i>	toad rush
* <i>Juncus phaeocephalus</i> var. <i>phaeocephalus</i>	brown head rush
<i>Lactuca saligna</i>	willow lettuce
<i>Lactuca serriola</i>	prickly lettuce
* <i>Layia chrysanthemoides</i>	smooth layia

**Table 2b**  
**Plants Observed at American Canyon Golf Course in 1998**

<u>Scientific Name</u>	<u>Common Name</u>
<i>Lepidium campestre</i>	field cress
* <i>Lepidium nitidum</i>	pepper grass
* <i>Leymus triticoides</i>	creeping rye grass
<i>Lolium multiflorum</i>	Italian rye grass
* <i>Lomatium utriculatum</i>	spring gold
<i>Lotus corniculatus</i>	deer weed
* <i>Lotus wrangelianus</i>	California lotus
* <i>Lupinus bicolor</i>	bicolored lupine
* <i>Lupinus formosus</i> var. <i>formosus</i>	summer lupine
* <i>Lupinus latifolius</i>	broad leaf lupine
* <i>Lupinus nanus</i>	sky lupine
* <i>Lupinus succulentus</i>	succulent lupine
<i>Lythrum hyssopifolia</i>	hyssop loose strife
* <i>Madia gracilis</i>	slender madia
<i>Malva parviflora</i>	cheeseweed
<i>Malva sylvestris</i>	giant cheeseweed
* <i>Marah fabaceus</i>	wild cucumber
<i>Marrubium vulgare</i>	horehound
<i>Medicago polymorpha</i>	bur clover
<i>Melilotus indica</i>	yellow sweet clover
<i>Mentha pulegium</i>	penny royal
* <i>Microseris douglasii</i> ssp. <i>tenella</i>	Douglas' microseris
* <i>Mimulus guttatus</i>	seep monkey flower
* <i>Monardella douglasii</i> ssp. <i>douglasii</i>	Douglas' coyote mint
* <i>Nasella pulchra</i>	purple needle grass
<i>Parentucellia viscosa</i>	yellow parentucellia
<i>Paspalum distichum</i>	dallis grass
* <i>Perideridia kelloggii</i>	Kellogg's yampah
* <i>Phacelia ramosissima</i> var. <i>ramosissima</i>	branched phacelia
<i>Phalaris minor</i>	small canary grass
<i>Phalaris paradoxa</i>	hood canary grass
<i>Picris echioides</i>	bristly ox tongue
* <i>Plagiobothrys fulvus</i>	fulvus popcorn flower
* <i>Plantago erecta</i>	California plantain
<i>Plantago lanceolata</i>	English plantain
<i>Plantago major</i>	common plantain
<i>Poa annua</i>	annual blue grass
<i>Polygonum arenastrum</i>	knotweed
* <i>Polygonum lapathifolium</i>	willow weed
* <i>Polypodium californica</i>	California polypody fern
* <i>Quercus agrifolia</i>	coast live oak
* <i>Ranunculus orthorhynchus</i> var. <i>bloomeri</i>	bloomer buttercup
* <i>Ranunculus californicus</i>	California buttercup
<i>Ranunculus muricatus</i>	spiny fruited buttercup
<i>Raphanus raphanistrum</i>	jointed charlock
<i>Raphanus sativus</i>	wild radish
* <i>Rhamnus californica</i>	California coffeeberry
* <i>Rorippa curvisiliqua</i>	yellow cress
* <i>Rorippa nasturtium-aquatica</i>	water cress
<i>Rubus discolor</i>	Himalayan blackberry
<i>Rumex crispus</i>	curly dock
<i>Rumex pulcher</i>	fiddle dock
* <i>Rumex salicifolius</i> var. <i>salicifolius</i>	willow dock

**Table 2b**  
**Plants Observed at American Canyon Golf Course in 1998**

<u>Scientific Name</u>	<u>Common Name</u>
<i>*Sagina apetala</i>	dwarf pearlwort
<i>*Sambucus mexicana</i>	blue elderberry
<i>*Sanicula bipinnatifida</i>	purple sanicle
<i>Scandix pecten-veneris</i>	scandix
<i>*Scirpus acutus</i>	hard stem bulrush
<i>*Scrophularia californica</i> ssp. <i>californica</i>	California bee plant
<i>Senecio vulgaris</i>	common ground sel
<i>*Sidalcea malvaeflora</i>	checker mallow
<i>Silene gallica</i>	windmill pink
<i>Silybum marianum</i>	milk thistle
<i>Sisymbrium officinale</i>	hedge mustard
<i>*Sisyrinchium bellum</i>	blue eyed grass
<i>Sonchus asper</i>	sow's ear
<i>Spergularia arvensis</i> ssp. <i>arvensis</i>	stickwort
<i>*Stachys ajugoides</i> ssp. <i>rigida</i>	ridge hedge nettle
<i>Stellaria media</i>	chickweed
<i>Taeniathrum caput-medusa</i>	medusa head
<i>Torilis nodosa</i>	torilis
<i>*Toxicodendron diversilobum</i>	poison oak
<i>Tragopogon porrifolius</i>	oyster plant
<i>*Trifolium ciliolatum</i>	tree clover
<i>Trifolium dubium</i>	shamrock
<i>Trifolium fragiferum</i>	strawberry clover
<i>Trifolium glomeratum</i>	clover
<i>Trifolium hirtum</i>	rose clover
<i>Trifolium incarnatum</i>	crimson clover
<i>*Trifolium oliganthum</i>	few flowered clover
<i>Trifolium repens</i>	white clover
<i>Trifolium subterranean</i>	subterranean clover
<i>*Trifolium variegatum</i>	white-tip clover
<i>*Trifolium wormsjkoldii</i>	cow clover
<i>*Triphysaria versicolor</i> ssp. <i>faucibarbata</i>	smooth owl's clover
<i>*Triphysaria faucibarbata</i> ssp. <i>versicolor</i> X <i>T. pusilla</i>	hybrid: smooth + dwarf owl's clover
<i>*Triphysaria pusilla</i>	dwarf owl's clover
<i>*Triteleia hyacinthina</i>	white triteleia
<i>*Triteleia laxa</i>	Ithuriel's spear
<i>*Typha angustifolia</i>	narrow-leaved cattail
<i>*Verbena lasiostachys</i> var. <i>scabrida</i>	verbena
<i>Vicia sativa</i> ssp. <i>nigra</i>	black vetch
<i>Vicia sativa</i> ssp. <i>sativa</i>	spring vetch
<i>Vicia villosa</i> ssp. <i>varia</i>	winter vetch
<i>*Viola pedunculata</i>	Johnny jump-up
<i>Vulpia bromoides</i>	brome fescue
<i>*Vulpia microstachys</i> var. <i>ciliata</i>	hairy fescue
<i>Vulpia myuros</i>	rat tail fescue
<i>*Wyethia angustifolia</i>	narrow leaved mule ears
<i>*Xanthium strumarium</i>	cockle bur





# Vineyard Potential of American Canyon Golf Course



By

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August 2001

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## **Vineyard Potential of American Canyon Golf Course**

This report presents the results of a reconnaissance of the American Canyon property in Napa County CA. The property is located Northeast of the intersection of American Canyon Road and Flosden Road in American Canyon, CA. The property is located near several other vineyards, at least one of which has been in production for a number of years. At the time of our visit, the property was used for cattle grazing. The purpose of this study was a preliminary assessment of the feasibility of planting the property to vineyards.

A field evaluation was conducted on August 7, 1997, soil work was conducted on August 13, 1997. In August of 2001, Nord Coast Vineyard Service was asked to revise the report based on new property boundaries and designation of critical habitat for the endangered Red-legged Frog. No site visit was made in conjunction with this report revision, and so it is assumed conditions on the site have remained similar to those observed in 1997.

Vineyards in the American Canyon region are gaining a reputation for producing high quality grapes. The climate is similar to the Carneros region of Napa and Sonoma Counties and as a result, several wineries and independent growers now have vineyard holdings in this area. Many of these plantings are still very young. Pinot Noir and Chardonnay have excelled in this region, but other varieties are growing in popularity. In our opinion any varieties doing well in Carneros or southern Napa County should do well at this site.

In addition to our field visit, we reviewed a number of geotechnical references from the area, these references cover expected soil types and landslip/landslide risk potential.

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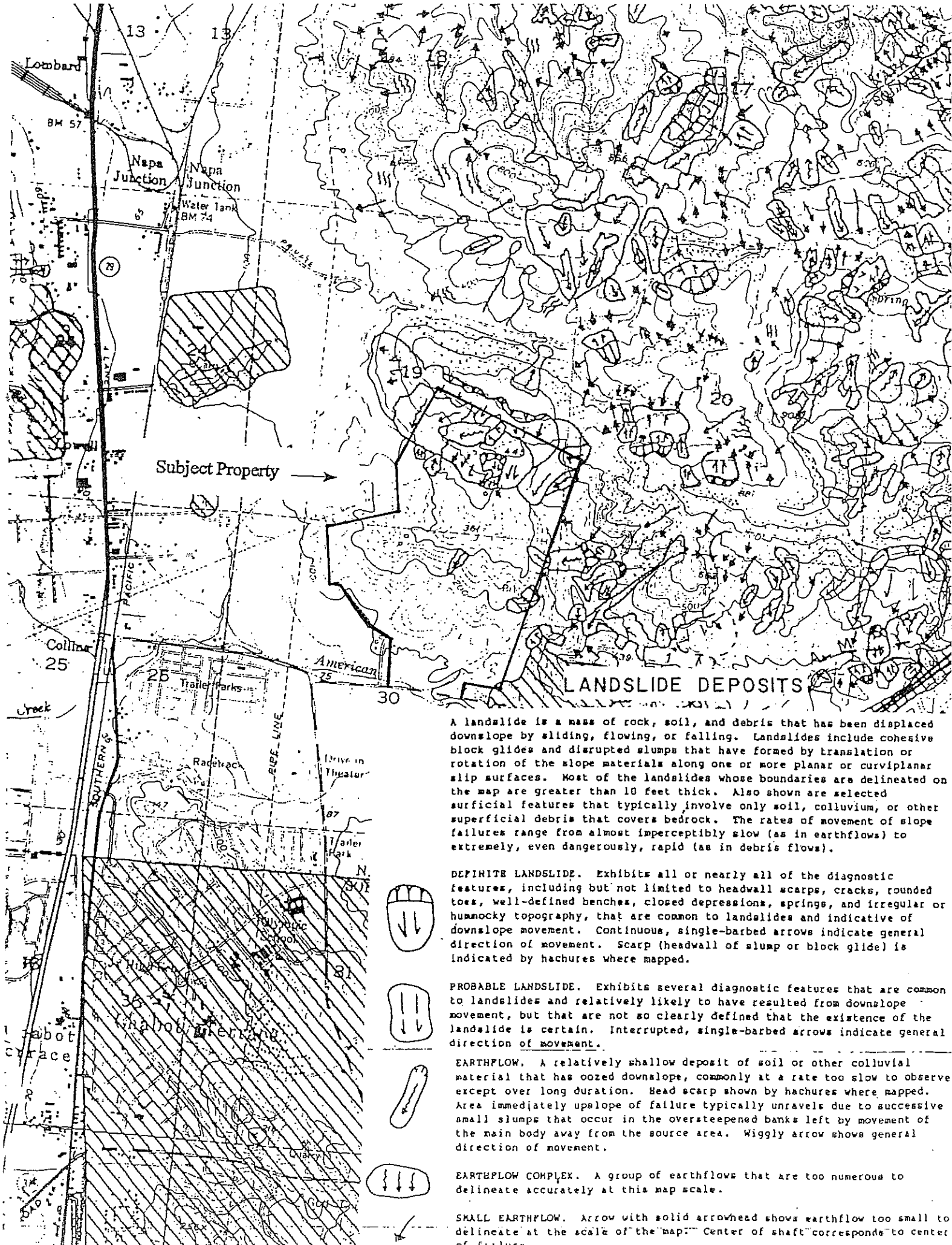
## Site Conditions

Slopes varies considerably over the site. Slopes ranged from essentially flat on the Southern portion to greater than 25% on the Northern end. In Napa County, any area over 5% slope will require a erosion control plan and there are no vineyard plantings on lands greater than 30% slope without a use permit. The costs of planting vineyards with erosion control are increased substantially over flat land farming.

The State of California has specifically determined this general area to be a high landslide area risk, and has prepared maps specifically addressing landslips which have occurred in this area. As can be seen on the following map, most of the property is given a landslide hazard of 3, on a 1-4 scale, on the Landslide Hazards Identification Map. A hazard of 3 is considered "Generally Susceptible" to landslides, with 1 being slight/no hazard. According to the map, "slopes within this area are at or near their stability limits due to a combination of weaker materials and steeper slopes. Although most slopes within area 3 do not currently contain landslide deposits, they can be expected to fail, locally, when modified."

Over 150 acres of the property is designated as a hazard of 4 because major slips have already occurred on these slopes. These areas cannot be planted due to the landslip problems. Area 4 is "characterized by steep slopes and includes most landslides. Slopes within Area 4 should be considered naturally unstable, subject to failure even in the absence of activities of man.

The second map shows known landslides and slips in the area. The area designated as landslide hazard 4 has had numerous large slips in the recent past. Visually we could identify areas of slippage on the steeper slopes at the North end of the property.



# LANDSLIDE DEPOSITS

A landslide is a mass of rock, soil, and debris that has been displaced downslope by sliding, flowing, or falling. Landslides include cohesive block slides and disrupted slumps that have formed by translation or rotation of the slope materials along one or more planar or curvilinear slip surfaces. Most of the landslides whose boundaries are delineated on the map are greater than 10 feet thick. Also shown are selected surficial features that typically involve only soil, colluvium, or other superficial debris that covers bedrock. The rates of movement of slope failures range from almost imperceptibly slow (as in earthflows) to extremely, even dangerously, rapid (as in debris flows).

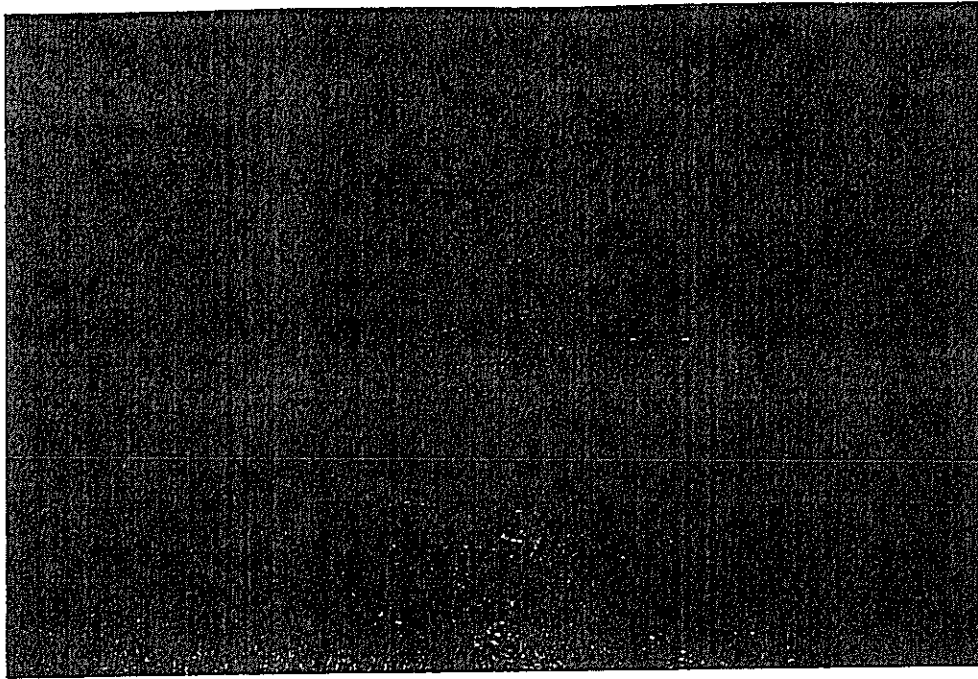
**DEFINITE LANDSLIDE.** Exhibits all or nearly all of the diagnostic features, including but not limited to headwall scarps, cracks, rounded toes, well-defined benches, closed depressions, springs, and irregular or hummocky topography, that are common to landslides and indicative of downslope movement. Continuous, single-barbed arrows indicate general direction of movement. Scarp (headwall of slump or block glide) is indicated by hachures where mapped.

**PROBABLE LANDSLIDE.** Exhibits several diagnostic features that are common to landslides and relatively likely to have resulted from downslope movement, but that are not so clearly defined that the existence of the landslide is certain. Interrupted, single-barbed arrows indicate general direction of movement.

**EARTHFLOW.** A relatively shallow deposit of soil or other colluvial material that has oozed downslope, commonly at a rate too slow to observe except over long duration. Head scarp shown by hachures where mapped. Area immediately upslope of failure typically unravels due to successive small slumps that occur in the oversteepened banks left by movement of the main body away from the source area. Wiggly arrow shows general direction of movement.

**EARTHFLOW COMPLEX.** A group of earthflows that are too numerous to delineate accurately at this map scale.

**SMALL EARTHFLOW.** Arrow with solid arrowhead shows earthflow too small to delineate at the scale of the map. Center of shaft corresponds to center of failure.



View of landslips on North property.

### **Geology and Soils**

The Napa County Soil Survey shows 2 major soil types on the property. They are: Fagen Clay Loams at 5-15% slopes and 15-30% slopes; and Haire Clay Loams in the lower areas. The Soil Survey is a good place to start, but is often not accurate when we begin to look at an individual property. Our soil investigation identifies 3 major soil types on this property, which are: Fagen Series, Millsholm Series and Diablo Series. The soil types on this property were very consistent with elevation. Sandstone with yellow, red and brown colors was found throughout the property. At the base of the slopes the Diablo Series is present. The soil series varies with soil depth on the steeper slopes. Millsholm series is generally present on the soils with less than 18" of soil. Fagan series is present on the slopes with 18-45" of soil.

The hazard of erosion with Fagan Soils is high. The landslips on this property have occurred where the Fagan Series is located. The higher the erosion

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Vineyard plantable

American Canyon Rd.

Slips and/or >30%

Critical Habitat

# Signature Resorts: American Canyon Property

United States State Plane 1983  
California Zone 2 0402  
NAD83 (Conus)

N

Scale 1:10000

0 1250  
Feet

r081318a.cor

8/19/1997

Pathfinder Office™

Trimble

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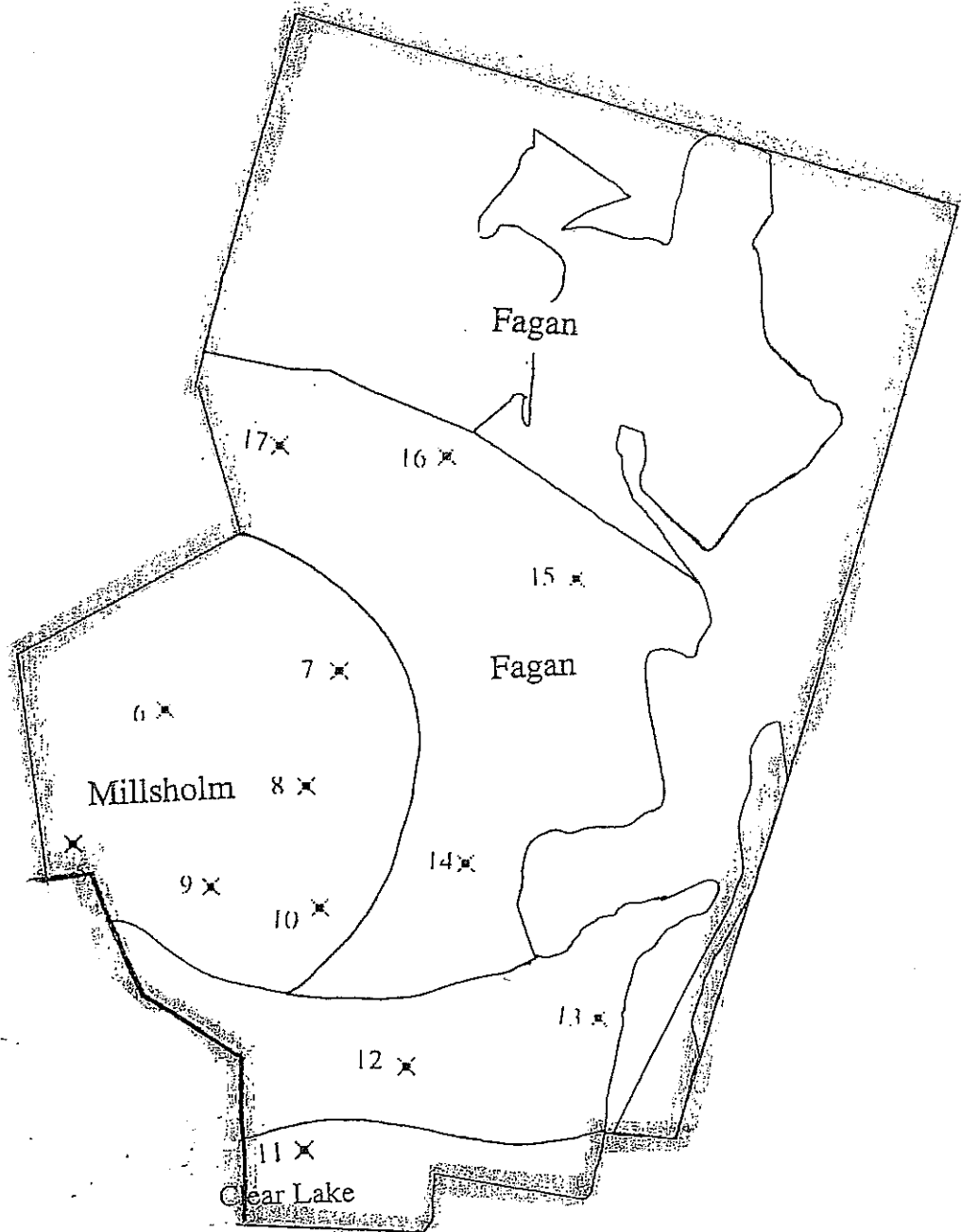
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American Canyon Rd.

# Signature Resorts: American Canyon Property

United States State Plane 1983  
California Zone 2 0402  
NAD83 (Conus)

N

Scale 1:10000



r081318a.cor  
8/19/1997  
Pathfinder Office™  
Trimble

hazard, the greater the cost of development due to increased erosion control methods on the hillsides. There were areas both to the North and East where there were significant rock outcroppings. These rocky areas can be difficult if not impossible to farm. The slope of these areas will likely make it unplantable even if it is included in the property.

The California Red-legged frog was recently list as an endangered species. As a result, some 4 million acres of the Bay area have been described as critical habitat. In general, no development is allowed in critical habitat areas, so those areas have been deleted from consideration of vineyard plantable. According to mapping done by William Hexmalhalch Architects Inc in March of 2001, Red-legged Frog habitat is found along the eastern and southern boundaries of the property. Much of this land was previously determined to be unplantable, for other reasons.

### **Physical Limitations**

Approximately 150 acres are considered plantable at this site. There are clay loam and clay soils. The hills are rolling and range from 5-30% slope. An erosion control plan will be required for this area from Napa County. The soils range from deep to shallow. Production may be up to 20% lower in the areas with soils less than 2'. These shallow soils are less than 15% of the property.

Areas which are considered unplantable include large rock outcropping, red-legged frog habitat, slopes > 30%, and slips which have already occurred on the property. Much of this property is located in landslide hazard zone 4. However, scattered in this area are some areas of more level ground. These could be planted into small odd-shaped blocks avoiding slide areas. This planting approach increases



both the development and farming costs. In addition, there is a continuing risk of slips and slides which could destroy the planting.

### **Chemical Analysis**

The portions of the property identified as vineyard plantable have no chemical limiting factors for vineyard production. As with most vineyard sites in Napa County, soil amendments will need to be added for optimum growth. The elements which are low at this site are phosphorous, potassium, zinc and calcium. These can easily be added as preplant amendments. On the higher elevations, the soil becomes very thin, less than 1 foot in spots. However, since the rock beneath is already penetrated by grass roots, the vines will be able to grow into it. Production will be lower in these areas, but it is still suitable for vineyard production.

The soil amendments to be added vary by soil type. Refer to soil series map to determine the locations of soil type.

### **Water Issues**

Water is often the limiting factor to new vineyard development in this area. Most wells in the surrounding area have low production coupled with high boron and/or salt content. This can occur on wells in low areas, as well as those located on higher slopes. In general, wells cannot be counted on for irrigation in the American Canyon region.

Recycled water from American Canyon is a potential source of water. The cities estimate for having water to the site is 2003. This water will be cleaned to Title 22 standards and should be adequate for vineyard use. Other vineyards in the

area are planning on the use of this water when it becomes available. Reclaimed water is usually less expensive than just about any other source.

Another potential source for water is the raw water line which runs from Napa to Vallejo. It currently runs at or close to the southwestern corner of this property. Many of the vineyards in the area have access to this water, and find it economical to use. The quality of this water has been fine for vineyards.

### **Frost Protection**

Many of the vineyards in this region have no frost protection, as the climate in the tends to stay above freezing in the spring in most years. However, many of these same vineyards had frost damage in 2001, due to an unusually cold night in early April. Damage ranged from very mild to severe depending on location. Given the cost and constraints of water use, well placed wind machines might be the best option prevent most frost damage, if it was felt to be needed. Temperature data loggers could be place on the property during the winter before planting to determine the need for frost protection.

### **Summary**

Due to physical limitations, approximately one half of the property is not plantable. This determination is based on Red-legged Frog critical habitat, landslips, slopes greater than 30%, and rock outcroppings. These areas are delineated on the attached map. There are approximately 150 gross acres we consider plantable with vineyard potential. Avenues, creek setbacks, and loading pad arease can reduce the actual vine acres by up to 10%. Even in these plantable areas, the costs of planting vineyards will be higher on this property than others with less slope and more soil.

## **Recommendations**

### **Fagan Series**

1. Apply 3 tons/acre gypsum in the fall before planting.
2. Apply 2500 lb/acre potash in the fall before planting.
3. Apply 40 lb/acre zinc sulfate in the fall before planting.
4. Rip and disk the soil.
5. Broadcast 150 lb/acre concentrated super phosphate in the spring of planting.

### **Diablo Series**

1. Apply 10 tons/acre gypsum in the fall before planting.
2. Apply 2500 lb/acre potash in the fall before planting.
3. Apply 40 lb/acre zinc sulfate in the fall before planting.
4. Rip and disk the soil.
5. Broadcast 150 lb/acre concentrated super phosphate in the spring of planting.

### **Millsholm Series**

1. Apply 4 tons/acre gypsum in the fall before planting.
2. Apply 1700 lb/acre potash in the fall before planting.
3. Apply 40 lb/acre zinc sulfate in the fall before planting.
4. Rip and disk the soil.
5. Broadcast 200 lb/acre concentrated super phosphate in the spring of planting.