

P-ECP-NAR
P05-0121
025-380-017



EDWARDS ENGINEERING

1606 Main Street, Suite 203
Napa, California 94559
(707) 258-6297 • Fax (707) 258-8971

Napa County
Resource Conservation District

Finds

Plan # P05-0121

Technically Adequate for Erosion and
Sediment Control

by

Beth Painter

Date 8/16/05

APRIL, 2005
10410705

THE THREE TWINS, LLC
VINEYARD EROSION CONTROL PLAN
704 GREENFIELD ROAD
ST. HELENA, CALIFORNIA
APN 025-380-017

RECEIVED

AUG 16 2005

NAPA CO. CONSERVATION Plan # P05-0121
DEVELOPMENT & PLANNING DEPT.

APPROVED

CONSERVATION, DEVELOPMENT, AND PLANNING
DEPARTMENT

EROSION CONTROL PLAN

DATE: 8-18-05

BY: DE

PAGE cover OF Narrative



Brent Edwards 8/8/5
Brent Edwards, P.E. RCE 51461

Revised August 8, 2005

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NARRATIVE

- 1) **Nature and Purpose of Project:** The proposed project consists of developing ± 4.0 net acres of new vineyard with a gross development area of approximately ± 5.4 acres including vineyard avenues. The project is located on APN 025-380-017 which is a 22.96 acre parcel.

The subject parcel has an existing home with paved driveway, swimming pool and tennis court. The areas where vineyard are proposed were previously cleared of trees. There is no existing vineyard located on the subject parcel. No fencing is proposed as part of this project as existing fencing that was installed by the previous owner should be adequate for protection of the vineyard.

The property is located within the Hennessey watershed at 704 Greenfield Road. Ground slopes within the project site range from 0 to 30% with no proposed development on ground slopes exceeding 30%. Average ground slope for gross development area is 14.8%.

Ground disturbance will be limited to tillage of the ground prior to planting of the vineyard. No diversions, insloped roadways or storm drainage facilities are proposed as part of this project. Due to the relatively small disturbed area and moderate slopes, surface flows will remain as sheet flow and no facilities will be installed to concentrate flows or decrease travel times.

A geologic assessment of the site has been completed and no areas of special concern were noted by the project geologist within or adjacent to the proposed vineyard development areas. A rare plant study is currently being conducted and will be submitted upon completion of the required spring site visits.

- 2) **Existing Site Conditions:** The project site is predominantly vegetated with non-native grasses with various species of Oak trees. There are approximately 7 Oak trees to be removed from Block A as a result of this project. Trees to be removed are as indicated on the Plan. No additional trees will be removed as a result of this project.

The project is located within the Hennessey municipal watershed. However, the project as proposed is well within the required clearing limits with 60% of grass and brush areas retained and 97% of the tree canopy retained. Canopy retention calculations were based on the 1993 Napa County digital aerial ortho photographs available from the Napa County GIS web site and are included in Appendix F.

Site photographs are included in Appendix B. Site photographs were taken on January 19, 2005 by Brent Edwards. The aerial photograph shown on the Plan is the 2002 aerial photograph from the Napa County GIS web site.

- 3) **On-site Features:** There are no blue-line streams, Napa County definitional streams, reservoirs or other hydrologic features located adjacent to the proposed development areas. However, significant setbacks were observed from drainages that are located on the property as shown on the Plans.

The existing driveway, residence, and other manmade features are shown on the Plan.

- 4) **Location and Source of Water:** There is an existing groundwater well on the project site that is currently being used for residential use and landscape irrigation. This well will be utilized to irrigate the proposed vineyard. The Phase I Water Availability Analysis is included as Appendix C to this narrative.
- 5) **Site Soils:** Soils within the project site are identified in the Napa County Soil Survey as Sobrante Loam with 5 - 30% ground slope, Sobrante Loam with 30 - 50% ground slope, and Haire Loam with 2 - 9 % ground slope. The boundaries of these soils types are shown on the Plan.
- 6) **Critical Areas of Erosion:** There are no significant existing erosion problems and the proposed development should not change this condition. The development areas were limited to areas of stable ground conditions with moderate slopes.
- 7) **Proposed Erosion Control Methods:** The proposed erosion control measures for this project are as follows:

Seed and maintain permanent, non-till cover crop as specified on Plan. Spraying shall be limited to spot spraying (no strip spraying) in order to maintain 80% ground cover within vineyard areas.

Exterior vineyard avenues will not be ripped during vineyard development. Vineyard avenues will not be disced once the vineyard is developed. In addition, no grading will be performed on vineyard avenues, thus effects to existing sheet flow drainage patterns will be minimized.

The entire site will be winterized following ground preparation by seeding with a temporary cover crop and straw mulching the entire site.

As a temporary measure, straw wattles will be installed and maintained during the first and second winter following commencement of vineyard development.

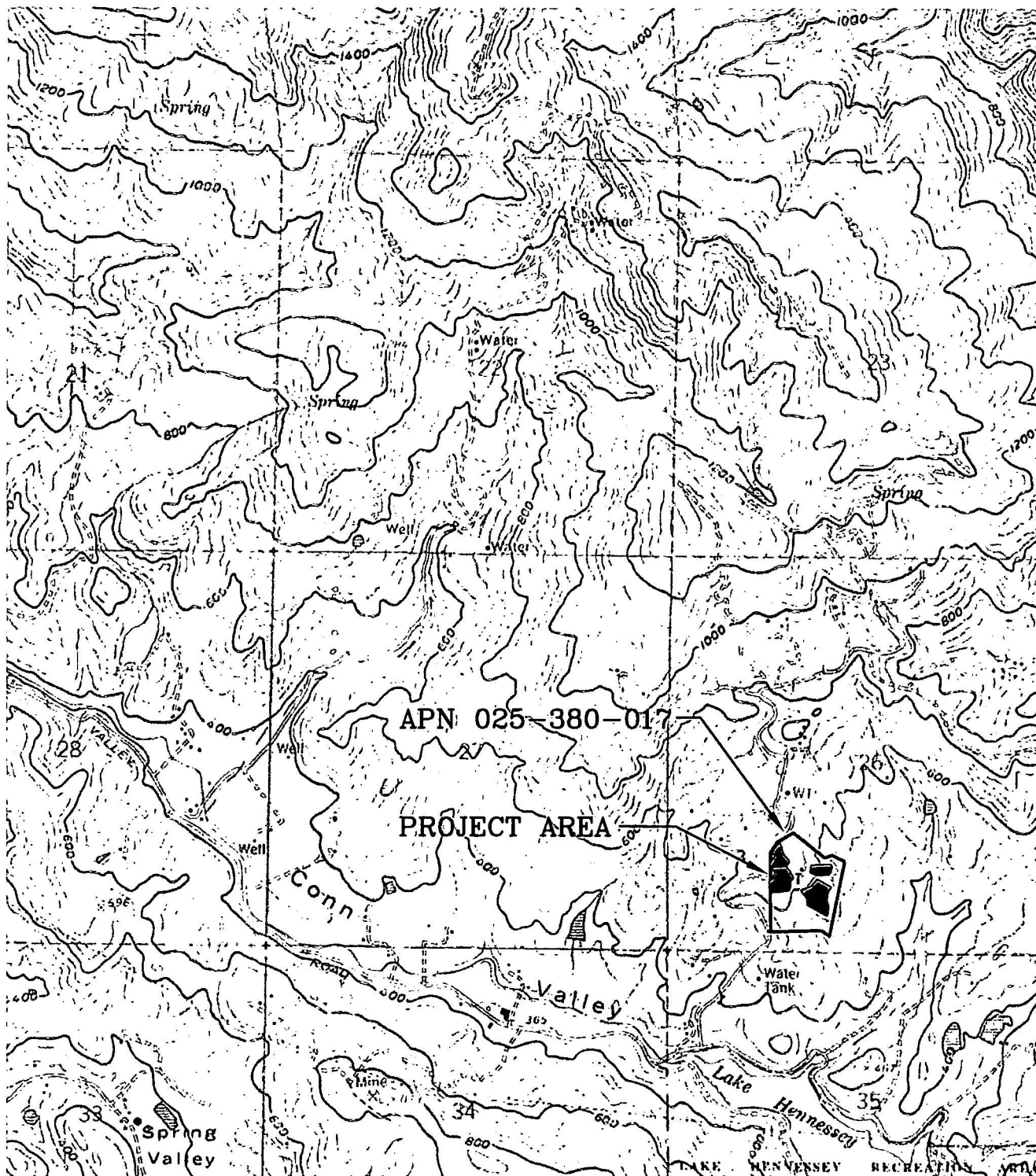
- 8) **Storm Water Stabilization Measures:** There are no storm water stabilization measures proposed for this project due to the relatively small size of the project and the anticipated use of a no-till permanent cover crop which will have similar ground coverage to existing

grasses. Additionally, no increase in peak runoff is anticipated as sheet flow runoff patterns are being maintained within proposed vineyard blocks.

- 9) **Implementation Schedule:** The proposed implementation schedule for this project is as follows:

August 15, 2005	Begin clearing and ground preparation, proceed with development of vineyard and implementation of Erosion Control Plan.
September 1, 2005	Vineyard infrastructure completed. Temporary cover crop seeded, straw mulch and straw wattles in place.
April 1, 2006	Proceed with planting of vineyard.
September 1, 2006	Permanent cover crop seeded and all disturbed areas straw mulched. Straw wattles re-installed.

- 10) **Estimated Cost of Erosion Control Measures:** Estimated cost of implementing the erosion control measures shown on this Plan is \$10,000 to \$15,000.



VICINITY MAP

1" = ±2000'



**EDWARDS
ENGINEERING**

1808 MAIN STREET, SUITE 203
NAPA, CALIFORNIA 94559
(707) 258-6297

VICINITY MAP

DWG. NUMBER: 10410706C

DATE: 03-20-05

SCALE: 1" = ±2000'

TALMADGE PROPERTY
704 GREENFIELD RD.
ST. HELENA, CALIFORNIA
APN 025-380-017

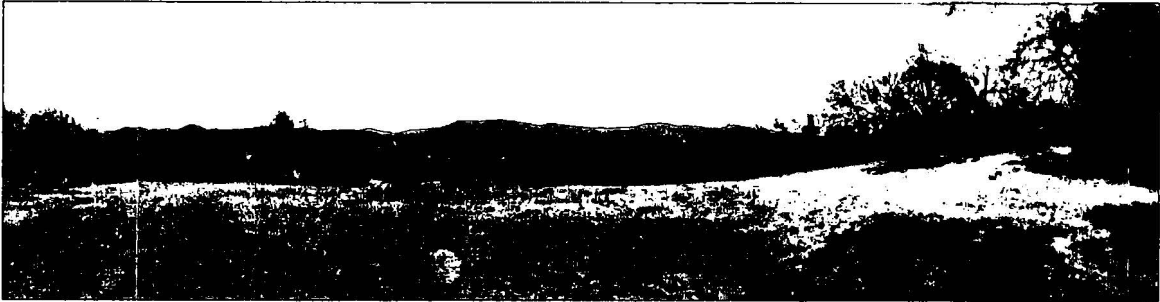


Photo #1 – Block “A” from Greenfield Road entrance.

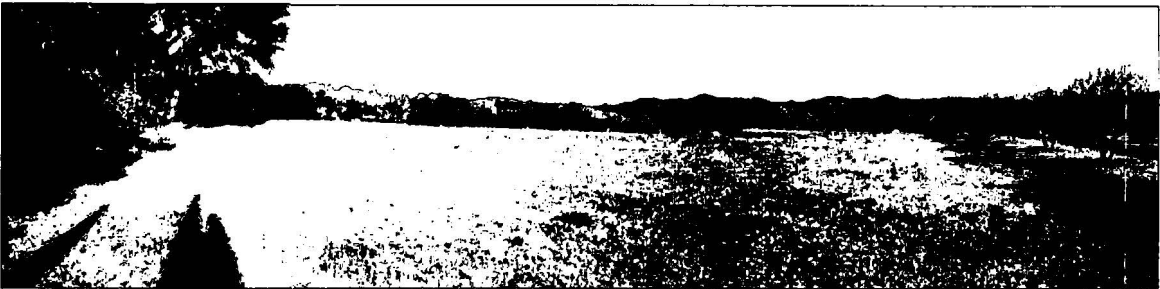


Photo #2 – Block “B” from Greenfield Road entrance

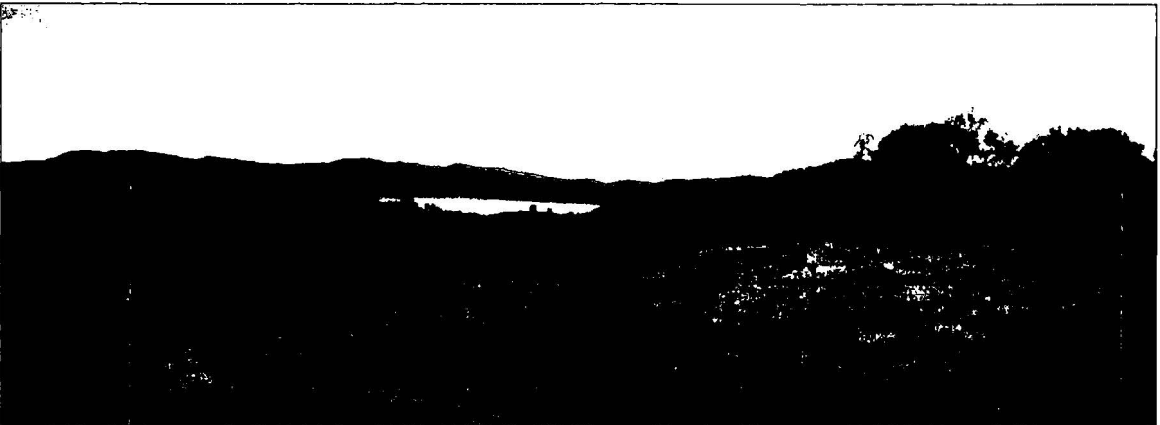


Photo #3 – Blocks “C” and “D” from below residence

APPENDIX C

PHASE I WATER AVAILABILITY ANALYSIS

Attachment D

PHASE I WATER AVAILABILITY ANALYSIS

File #: _____ Owner: THE THREE TWINS, LLC Parcel #: 025-380-017

This form is intended to help those who must prepare a Phase I Water Availability Analysis. The Department will not accept an analysis that is not on this form.

BACKGROUND: A Phase I Water Availability Analysis is done in order to determine what changes in water use will occur on a property as a result of the a conversion. Staff uses this information to determine whether the project may have a detrimental effect on groundwater levels. If it may, additional information will be required. You will be advised if additional information is needed.

PERSONS QUALIFIED TO PREPARE: Any person that can provide the needed information

PROCEDURE:

STEP 1: Prepare and attach to this form an 8-1/2"x11" site plan of your parcel(s) with the locations of all structures, gardens, vineyards, etc in which well water will be used shown

STEP 2: Determine the allowable groundwater use allotment for your parcel(s).

Total size of parcel(s)	<u>23</u> acre(s)
Multiply by parcel location factor	x <u>0.5</u> acre-foot per acre per year (see back)
Allowable groundwater allotment	= <u>11.5</u> acre-foot per year

STEP 3: Determine the estimated water use for all vineyards on your parcel(s) currently and after the planned conversion; actual water usage figures may be substituted for the current usage estimate (please indicate if this is done). Estimate future use for both the vineyard establishment period and thereafter

Current Usage:

Number of <u>planted</u> acres	<u>0</u> acres
Multiply by number of vines/acre	x _____ vines per acre
Multiply by gallons/vine/year	x _____ gallons of water per vine per year
Divide by 325,821 gallons/af	= <u>0</u> af of water per yr used for vineyard irrigation

Future Usage:

Number of <u>planted</u> acres	<u>4.0</u> acres
Multiply by number of vines/acre	x <u>1450</u> vines per acre
Multiply by gallons/vine/year	x <u>100</u> gallons of water per vine per year (long-term)
	<u>100</u> gallons of water per vine per year (establish)
Divide by 325,821 gallons/af	= <u>1.8</u> af of water per yr used (vineyard long-term)
	<u>1.8</u> af of water per yr used (vineyard establish)

STEP 4: Using the guidelines on the next page, actual water usage figures, and/or detailed water use projections, tabulate the existing and projected future water usage on the parcel(s) in acre-foot per year (af/yr) {1 af = 325,821 gallons}.

Existing Usage:

Residential	<u>0.5</u> af/yr
Farm Labor Dwelling	<u>0</u> af/yr
Winery	<u>0</u> af/yr
Commercial	<u>0</u> af/yr
Vineyard(long-term)	<u>0</u> af/yr

Future Usage:

Residential	<u>0.9</u> af/yr
Farm Labor Dwelling	<u>0</u> af/yr
Winery	<u>0</u> af/yr
Commercial	<u>0</u> af/yr
Vineyard(long-term)	<u>1.8</u> af/yr

ALLOWING FOR
FUTURE GUEST
HOUSE

" (establish) 0 af/yr

Other Agriculture	<u>0</u> af/yr
Landscaping	<u>0.5</u> af/yr
Other Usage	<u>0</u> af/yr
TOTAL	<u>1.0</u> af/yr

" (establish) 1.8 af/yr

Other Agriculture	<u>0</u> af/yr
Landscaping	<u>0.5</u> af/yr
Other Usage	<u>0</u> af/yr
TOTAL	<u>3.2</u> af/yr

STEP 5: Attach all supporting information that may be significant to this analysis including but not limited to all water use calculations for the various uses listed

Parcel Location Factors

The allowable allotment of water is based on the location of your parcel. Valley floor areas include all locations on the floor of the Napa Valley and Carneros Basin except for groundwater deficient areas. Groundwater deficient areas are areas that have been determined by the Department of Public Works as having a history of problems with groundwater. All other areas are classified as Mountain Areas. Public Works can assist you in determining your classification.

Parcel Location Factors

Valley Floor	1.0 acre foot per acre per year
Mountain Areas	0.5 acre foot per acre per year
Groundwater Deficient Area (MST)	0.3 acre foot per acre per year

Guidelines For Estimating Water Usage:

Residential:

Single Family Residence	0.5 acre-foot per year
Farm Labor Dwelling	1.0 acre-foot per year (6 people)
Second Unit	0.4 acre-foot per year
Guest Cottage	0.1 acre-foot per year

Winery:

Process Water	2.15 acre-foot per 100,000 gal. of wine
Domestic and Landscaping	0.50 acre-foot per 100,000 gal. of wine

Commercial:

Office Space	0.01 acre-foot per employee per year
Warehouse	0.05 acre-foot per employee per year

Agricultural:

Vineyards	
Irrigation only	0.2 to 0.5 acre-foot per acre per year
Heat Protection	0.25 acre foot per acre per year
Frost Protection	0.25 acre foot per acre per year
Irrigated Pasture	4.0 acre-foot per acre per year
Orchards	4.0 acre-foot per acre per year
Livestock (sheep or cows)	0.01 acre-foot per acre per year

Landscaping:

Landscaping	1.5 acre-foot per acre per year
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APPENDIX D

USLE CALCULATIONS

**The Three Twins, LLC
USLE Calculations
@80% Ground Cover**

	Slope	Length	P	C	K	R	LS	A
A	13	290	1	0.022	0.32	90	2.83	1.79
B	8.3	250	0.6	0.022	0.32	90	1.65	0.63
C	Removed from Project							
D	17.3	290	1	0.022	0.32	90	4.99	3.16
E	17	142	0.9	0.022	0.32	90	3.33	1.90

Weighted Average for Project -

Block Name	Avg "A" (ton/ac/yr)	Block Acreage	A * Acres
A	1.8	1.6	2.9
B	0.6	0.8	0.5
C	Removed from project		
D	3.2	2.2	7.0
E	1.9	0.7	1.3
			2.2 Avg tons per acre per year

APPENDIX E

GEOLOGIC ASSESMENT



KLEINFELDER

An employee owned company

February 28, 2005

File: 53892-1

Mr. Brent Edwards
Edwards Engineering
1606 Main Street, Suite 203
Napa, CA 94559

Subject: **PRELIMINARY GEOLOGIC ASSESSMENT**
Talmadge Property (APN 025-380-017)
704 Greenfield Road
St. Helena, California

Dear Mr. Edwards,

At your request, Kleinfelder, Inc. has performed a preliminary engineering geologic and geotechnical evaluation of landslide, general slope stability and related erosion potential of the proposed vineyard development on the Talmadge Property in St. Helena, Napa County, California. This report was prepared in accordance with the Napa County publication, *Guidelines for Preparing Landslide Hazard Evaluations* and *Title 18 Zoning, Section 18.108.027, Sensitive Domestic Water Supply Drainages*.

SCOPE OF WORK

The purpose of this investigation was to evaluate the potential impact to surface erosion and slope stability from proposed vineyard development. Our evaluation included the following tasks:

- Review of available published geologic references from our library for the site vicinity.
- Review of *Baseline Vineyard Soil Analysis Report* prepared for this site by Crop Care Associates, dated October 2004.
- Review of aerial photographs for site geomorphology.
- A geologic site reconnaissance by our Certified Engineering Geologist on February 2, 2005.
- Preparation of this letter.

This report presents the results of our geologic reconnaissance and our professional opinions regarding the general stability and erosion potential at the property prior to development of this proposed vineyard block. Subsurface exploration was not performed as part of this study.

PROJECT DESCRIPTION

The site is accessed by a driveway located at 704 Greenfield Road, in St Helena, California. As shown on a Vineyard Erosion Control Plan and topographic map prepared by Edwards Engineering, dated January 12, 2005, the approximately 20-acre site is irregular in shape, 3.6 net acres of which is proposed for vineyard development. The topographic base and proposed vineyard map by Edwards Engineering is presented as the base map for our Site Plan, Plate 1, attached.

Topographically, the site consists of a relatively broad, gentle to moderately sloped knoll with two moderately steep and somewhat incised southeast-flowing drainages on the east side of the parcel. Slope gradients on-site range from approximately 2.5:1V (40%) in localized areas on the edges of the drainage channels to more typical gentle slopes ranging from 12H:1V (8%) to 5H:1V (20%). Slope gradients within proposed vineyard areas typically range from nearly horizontal to 5H:1V (20%). The majority of the site and proposed vineyard areas are covered by grassy vegetation. Mature trees are concentrated within the drainages and on portions of gentle ridgelines on the site.

REGIONAL AND SITE GEOLOGY

Fox et al. (1973, USGS Basic Data Contribution 56, Miscellaneous Field Studies Map MF-483) shows the site to be underlain by bedrock of the Pliocene-age Sonoma Volcanics. The immediate site vicinity is shown to be underlain by rhyolitic lava flows, locally containing intercalated rhyolitic tuff. Beyond the site boundaries, the bedrock in the vicinity is mapped as sedimentary deposits (within the Sonoma Volcanics) consisting of unconsolidated interbedded and inter-tonguing tuffaceous sand, silt, volcanic gravel, bedded tuff, clay and diatomites. Bedding within in the site vicinity is shown to be oriented to the northwest with gentle dips of approximately 20° to the southwest.

Dwyer et al. (1976, USGS Open File Map 76-74) do not show any evidence of landsliding or other slope instabilities on or immediately adjacent to the site.

GEOLOGIC RECONNAISSANCE

Geologic reconnaissance was conducted at the site by our Certified Engineering Geologist on February 2, 2005. The half-day reconnaissance focused on identifying existing and potential areas of slope instability and erosion. No evidence of slope instability or pronounced erosion was observed on the site. The majority the proposed vineyard areas are blanketed with sandy clay to silty sandy soils with varying percentages of gravel derived from the underlying volcanic bedrock. These soils are described using agricultural nomenclature by Crop Care Associates Inc. (October 2004) as ranging from clay loam to sandy loam, also with varying percentages of gravel. As part of our field work, we probed the soils throughout the proposed vineyard areas

with a hand probe to determine relative depth and consistency of the soils. Soil penetration by hand-probe varied between 4 inches and 24 inches in the proposed vineyard areas. Refusal on shallow bedrock was encountered locally with portions of the proposed vineyards. Soils typically ranged in consistency from stiff/medium dense to hard/dense, generally increasing in depth.

Bedrock outcrops and surface boulders were observed in several places on the site and locally within proposed vineyard areas. Exposed bedrock and surface boulders typically consist of welded rhyolitic tuff, lithic tuff and andesite (locally). Areas underlain by bedrock and residual soils less than 3 feet thick are labeled on the Site Plan, Plate 1, as Tv (Tertiary Volcanics). Areas considered to be underlain by soils greater than 3 feet thick and subject to downhill creep (slow movement due to gravity) are mapped as colluvium, Qc on Plate 1.

CONCLUSION AND RECOMMENDATIONS

Based on the results of our research, reconnaissance and evaluation, no landslides were found to exist within the boundaries of the project site. General slope stability appears to be good. No areas of potential slide activity or significant creep were identified within proposed vineyard development areas; and, it is our opinion that properly prepared vineyard development and maintenance should not adversely affect the erosion potential of this site and or present an adverse condition for sensitive domestic water supply drainage. The primary geotechnical concern is the potential for rill erosion as a result of vineyard preparation activities. Erosion protection can be adequately addressed in vineyard planning and maintenance.

The successful performance of any erosion control system is dependent on how well the system is maintained by the vineyard operators. Also, additional erosion control measures may be required as site conditions dictate. The time between initial ripping of the site and the emergence of a cover crop is the time when the site is at greatest risk for soil loss due to erosion. Edwards Engineering has proposed an erosion control plan and should modify the plan as necessary.

LIMITATIONS

Our services consist of professional opinions, conclusions, and recommendations that are made in accordance with generally accepted geotechnical engineering principals and practices. No warranty is expressed or implied.

The conclusions and recommendations contained in this report are based upon review of the topographic and vineyard layout data presented on the Erosion Control Plan, dated 1/12/05, prepared by Edwards Engineering, review of selected published geologic literature, and our site reconnaissance. Variations may exist and conditions not observed or described in this letter report could be encountered during vineyard preparation. Our conclusions and recommendations are based on observed conditions. If conditions other than those described in this letter are


encountered, we should be notified so that additional recommendations, if warranted, can be provided.

The implementation and maintenance of the erosion control measures for the vineyard, including any future modifications, are the sole responsibility of the Owner. In the event that there are any changes in the nature or design of the proposed project, or if any future additions are planned, the conclusions and recommendations contained in this report should not be considered valid unless the project changes are reviewed by Kleinfelder and conclusions and recommendations presented in this report are modified or verified in writing. Reliance on this report by others must be at their own risk unless we are consulted on the use or limitations. We cannot be responsible for the impacts of any changes in geotechnical standards, practices, or regulations subsequent to performance of services without our further consultation. We can neither vouch for accuracy of information supplied by others, nor accept consequences for un-consulted use of segregated portions of this letter.

We trust this letter provides you with the information you have requested at this time. If you have questions or require additional services, please contact us at (707) 571-1883.

Respectfully submitted,

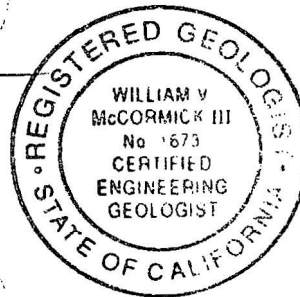
KLEINFELDER, INC.

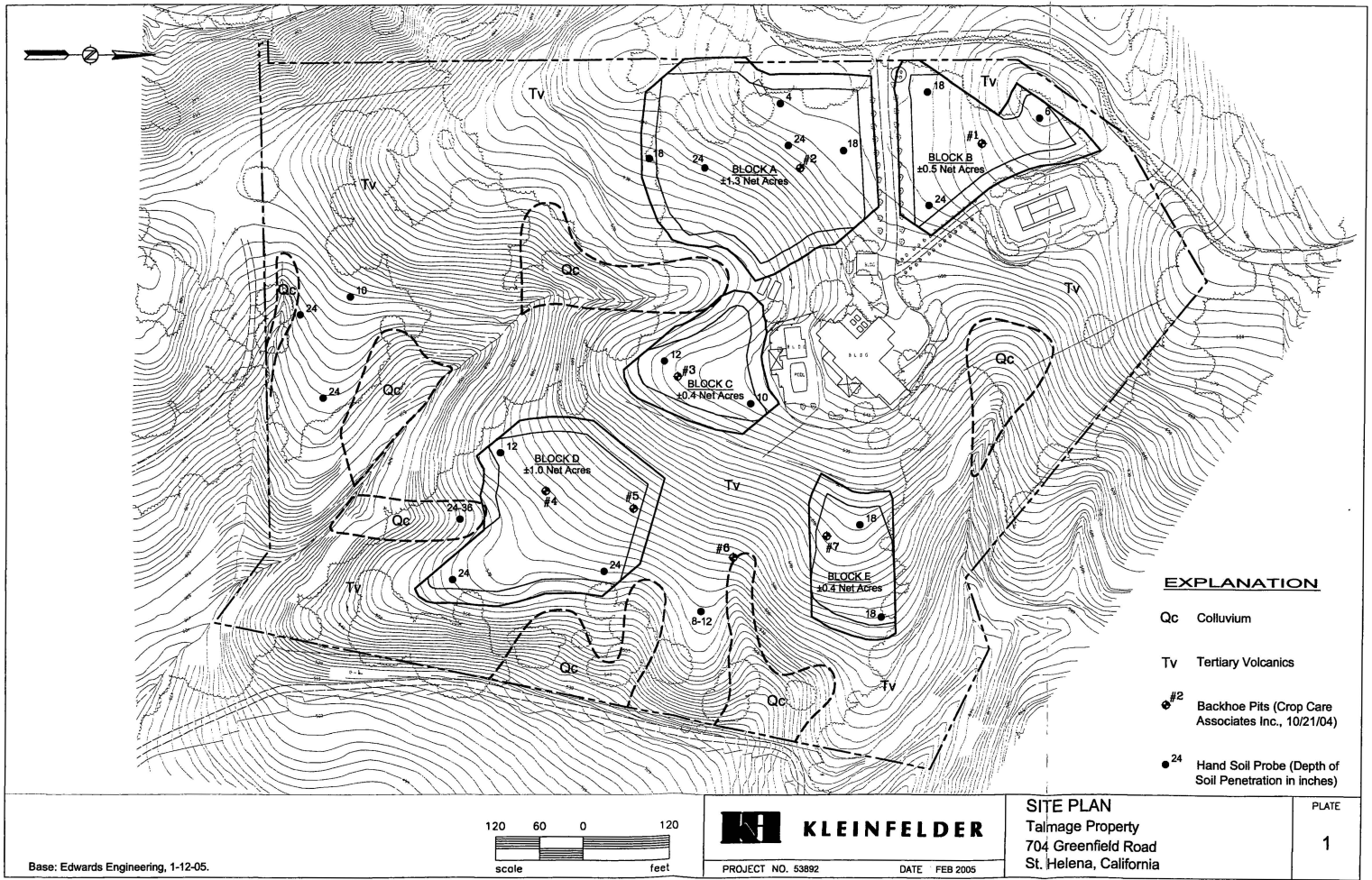


William V. McCormick, CEG 1673
Sr. Engineering Geologist/Geotechnical Mgr.

WVMjkd

Attachments: Site Plan (Plate 1)



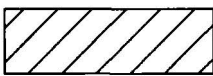


APPENDIX F

CANOPY RETENTION CALCUATIONS



LEGEND



TREE CANOPY TO
BE REMOVED

SOURCE OF PHOTOGRAPHY:
NAPA COUNTY 1993 ORTHOPHOTO
ST. HELENA, SE TILE

REVISED 7/14/5

**EDWARDS
ENGINEERING**
1606 MAIN STREET, SUITE 203
NAPA, CALIFORNIA 94559
(707) 258-6297

**TREE & BRUSH
CANOPY AREAS**

THE THREE TWINS, LLC
704 GREENFIELD RD.
ST. HELENA, CALIFORNIA
APN 025-380-017

DWG. NUMBER: 10410705C DATE: 03-20-05 SCALE: 1" = ±2000'

The Three Twins, LLC
Canopy Retention Calculations

Canopy to Remain	Canopy to Remove
0.03	0.19
0.08	0
5.09	0.04
0.20	0.02
0.35	0.02
0.08	
0.02	
0.03	
1.67	
0.15	
0.26	
0.54	
8.50	0.27 Acres

Gross Development Area =	5.4 Acres
Canopy Removed =	0.27 Acres
Open area removed =	5.13 Acres
Open area preserved =	7.62 Acres
Parcel Acreage	23.00 Acres
Existing hardscape / landscape =	1.48 Acres
% of grass / shrub / open retained=	60%
% of Canopy retained =	97%

APPENDIX G

NAPA COUNTY COVER CROP
RENEWAL PROTOCOL



CHARLES WILSON
Director

COUNTY of NAPA

CONSERVATION, DEVELOPMENT AND PLANNING

PATRICK LYNCH
Assistant Director

TO: Whom it may concern

FROM: Patrick Lowe, Deputy Director, Conservation Division

DATE: July 19, 2004

RE: Protocol for Re-Planting/Renewal of Approved Non-Tilled Vineyard Cover Crops

Rationale: Under normal farming conditions non-tilled vineyard cover crops may need to be routinely re-established, or renewed, every four to five years based on factors routinely encountered during vineyard floor management. Those factors include:

- Weed management and weed competition with the selected cover crop,
- Excessive competition with vines by the selected cover crop, and
- Poor seed development and germination, where the selected annual cover crop relies upon annual seed production for year-to-year succession.

In addition, unforeseen events may affect vineyard floor management systems in a much shorter time frame. It may become necessary to re-establish or renew the non-tilled cover crop on a limited emergency basis. Such limited emergency situations might include unforeseen events such as:

- Substantial infestation by "pests," such as burrowing rodents, insects, fungi that reduce the vigor and effectiveness of the selected cover crop,
- Catastrophic weather conditions, such as prolonged drought or unseasonable heavy rainfall,
- Degraded soil structure and function, such as compaction, rutting or mounding due to unavoidable vineyard operations during wet soil conditions,
- A temporary or permanent loss of irrigation water supply, leading to increased reliance on ambient soil moisture to maintain cover crop production, and
- Unforeseen excavation or grading to repair damaged irrigation or runoff control systems.

Protocol: Erosion Control Plans should provide site-specific specifications for cover crop re-establishment or renewal for the predictable circumstances mentioned above. However, when it becomes necessary, either by routine or emergency, to re-establish or renew vineyard cover crop a protocol incorporating the following measures should be followed:

- Seek professional consultation, including soil nutrient analysis, to determine the reasons for the original cover crop's failure. Adjust soil fertility, irrigation and seed selection accordingly,
- When tillage is necessary, alternate rows should be tilled, seeded, and straw-mulched to effectively accomplish the re-establishment/renewal process over a two-year period,

- Tillage and re-seeding should be conducted in the following manner:
 - In year 1, till to prepare seed bed and sow desired cover crop in every other row ("the evens"), leaving the alternate rows ("the odds") untilled and mowed only,
 - Mulch all tilled rows having an up and down hill (perpendicular to contour) row direction with 4000 lbs./acre of loose straw, or approved equivalent, after seeding,
 - Tilled rows with cross-slope (parallel to contour) row direction and slope gradients less than 15% may not require straw mulch,
 - In year 2, till to prepare seed bed and sow desired cover crop in "odd" rows,
 - In year 2, leave "even" rows untilled and mowed only,
 - Mulch rows tilled in year 2 as specified above,
 - Put all re-establishment measures in place by the regular winterization deadline based upon your location (September 1st in Domestic Water Supply Drainages and October 15th elsewhere), and
 - In year 3, return all rows to non-tilled culture.