

# EXHIBIT E



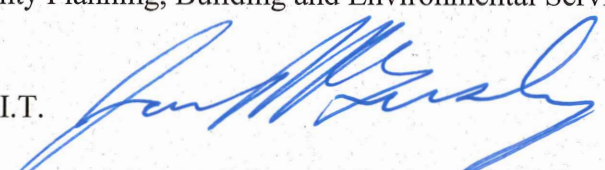
VINEYARD DESIGN  
EROSION CONTROL  
WATER DEVELOPMENT  
DRAINAGE  
PERMITTING  
GPS/GIS

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## MEMORANDUM

Date: May 16, 2019

To: Daniel Basore, Napa County Planning, Building and Environmental Services

From: James R. Bushey, P.E.  
Austin Lemire-Baeten, E.I.T. 

Cc: Brian Bordona, Napa County Planning, Building and Environmental Services

Re: Hess Collection Winery Track I ECP #P18-00445-ECPA  
APN 039-080-042  
Revised Soil Loss Analysis

This memo transmits the findings of a revised soil loss modeling analysis for the above-referenced Track I Erosion Control Plan (ECP). The Universal Soil Loss Equation (USLE) was used to predict pre-project and post-project soil loss from within the proposed vineyard development areas. A combination of topographic maps, aerial imagery and a site visit were used to determine pre-project transect locations, slopes and cover values. Pre-project and post-project cover values are consistent with the United States Department of Agriculture (USDA) – Natural Resource Conservation Service (NRCS) publication titled “The Universal Soil Loss Equation Special Applications for Napa County, California” (May 1994).

A site visit was conducted on July 6, 2018 by Jim Bushey and Matt Bueno of PPI Engineering to determine the pre-project cover values for each block. All proposed development areas were inspected, and the cover values used in this analysis represent existing conditions at the time of the site visit. An additional site visit was performed on April 16, 2019 by Matt Bueno and Daniel Basore of the Napa County Engineering Division to confirm pre-project conditions. The area has been historically grazed and is currently intermittently grazed by cattle for fire protection and fuel-load reduction purposes. Post-project cover values were calculated using the percent cover specified in the ECP.

This analysis includes approximately 16.0 net acres of proposed new vineyard and 0.9 net acres of existing vineyard that was previously developed utilizing the less-than-1-acre landscape exemption. The pre-project condition for the existing vineyard area was assumed to be the same

as the adjacent areas using Google Earth imagery. No changes or redevelopment activities are proposed for the existing vineyard block at this time.

The model, summarized on page 2 of the supporting documents (attached), predicts a net decrease of approximately 16.9 tons of soil loss per year for the project as a whole. The ECP has been designed to ensure compliance with Napa County policies requiring no-net-increases in soil loss for post-project conditions. Please see the following supporting documents that contain data tables, calculations, maps of transect locations and results from the analysis.



## **SUPPORTING DOCUMENTS**

**The Hess Collection Winery Track I ECP  
USLE Calculation Sheets**

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USLE Calculations  
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**USLE Calculations - Block/Transect Summary Sheet**

<b>Proposed Block</b>	<b>Proposed Development Acres</b>	<b>Pre-Project Soil Loss (tons/year)</b>	<b>Post-Project Soil Loss (tons/year)</b>	<b>Net Increase/Decrease (tons/year)</b>
1	15.18	52.37	41.89	10.47
2	0.92	5.75	1.15	4.60
3	0.31	0.17	0.14	0.03
4	4.20	8.02	6.41	1.60
5	1.14	1.04	0.83	0.21
<b>Totals</b>	21.75	67.34	50.43	16.92

Note: Individual estimates may not add to the totals due to rounding

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### Block 1, Transect 1

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Proposed Development Acres:	15.18
Soil Unit No. (100-182):	110
Soil Name:	Boomer-Forward-Felta
K, Soil Erodibility:	0.28
T, Soil Loss Tolerance (tons/acre):	4
R, Rainfall:	60
Total Transect Length (ft):	711
Number of Segments:	1
Individual Segment Lengths (ft):	711
Segment:	
Gradient (%):	17
m:	
Individual LS:	7.47
Factor:	
Product:	
LS, Length and Steepness:	7.47
Total Transect Average Gradient (%):	17
Farming Practice:	Up & Down Hill
P, Practice Factor (Table 6) <sup>1</sup> :	1.00
Vegetative Canopy:	No Canopy
Canopy Cover:	0%
Ground Cover:	70%
Percent Grass:	100%
Percent Weeds:	0%
C, Cover (Table 5) <sup>1</sup> :	0.028
A, Soil Loss (tons/acre):	3.45
Soil Loss in Proposed Development (tons):	52.37

<sup>1</sup> Tables 5 & 6 - USLE Special Applications for Napa County

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### Block 1, Transect 1

---

Proposed Development Acres:	15.18
Soil Unit No. (100-182):	110
Soil Name:	Boomer-Forward-Felta
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Individual Segment Lengths (ft):	711
Segment:	
Gradient (%):	17
m:	
Individual LS:	7.47
Factor:	
Product:	
LS, Length and Steepness:	7.47
Total Transect Average Gradient (%):	17
Farming Practice:	Up & Down Hill
P, Practice Factor (Table 6) <sup>1</sup> :	1.00
Cover Strategy:	Permanent
Age of Development:	Over 3 Years
Ground Cover:	80%
C, Cover (Table 4) <sup>1</sup> :	0.022
A, Soil Loss (tons/acre):	2.76
Soil Loss in Proposed Development (tons):	41.89

<sup>1</sup> Tables 4 & 6 - USLE Special Applications for Napa County

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## Block 2, Transect 2

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Proposed Development Acres:	0.92		
Soil Unit No. (100-182):	102		
Soil Name:	Aiken		
K, Soil Erodibility:	0.24		
T, Soil Loss Tolerance (tons/acre):	3		
R, Rainfall:	60		
Total Transect Length (ft):	266		
Number of Segments:	3		
Individual Segment Lengths (ft):	89		
Segment:	1	2	3
Gradient (%):	14	25	7
m:			0.5
Individual LS:	3.51	7.60	1.34
Factor:	0.19	0.35	0.46
Product:	0.67	2.66	0.62
LS, Length and Steepness:	3.94		
Total Transect Average Gradient (%):	15		
Farming Practice:	Up & Down Hill		
P, Practice Factor (Table 6) <sup>1</sup> :	1.00		
Vegetative Canopy:	Trees 13' Tall		
Canopy Cover:	75%		
Ground Cover:	40%		
Percent Grass:	50%		
Percent Weeds:	50%		
C, Cover (Table 5) <sup>1</sup> :	0.110		
A, Soil Loss (tons/acre):	6.25		
Soil Loss in Proposed Development (tons):	5.75		

<sup>1</sup> Tables 5 & 6 - USLE Special Applications for Napa County



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## Block 2, Transect 2

Proposed Development Acres:	0.92		
Soil Unit No. (100-182):	102		
Soil Name:	Aiken		
K, Soil Erodibility:	0.24		
T, Soil Loss Tolerance (tons/acre):	3		
R, Rainfall:	60		
Total Transect Length (ft):	266		
Number of Segments:	3		
Individual Segment Lengths (ft):	89		
Segment:	1	2	3
Gradient (%):	14	25	7
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Product:	0.67	2.66	0.62
LS, Length and Steepness:	3.94		
Total Transect Average Gradient (%):	15		
Farming Practice:	Up & Down Hill		
P, Practice Factor (Table 6) <sup>1</sup> :	1.00		
Cover Strategy:	Permanent		
Age of Development:	Over 3 Years		
Ground Cover:	80%		
C, Cover (Table 4) <sup>1</sup> :	0.022		
A, Soil Loss (tons/acre):	1.25		
Soil Loss in Proposed Development (tons):	1.15		

<sup>1</sup> Tables 4 & 6 - USLE Special Applications for Napa County

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### Block 3, Transect 3

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Proposed Development Acres:	0.31
Soil Unit No. (100-182):	110
Soil Name:	Boomer-Forward-Felta
K, Soil Erodibility:	0.28
T, Soil Loss Tolerance (tons/acre):	4
R, Rainfall:	60
Total Transect Length (ft):	210
Number of Segments:	1
Individual Segment Lengths (ft):	210
Segment:	
Gradient (%):	7
m:	0.5
Individual LS:	1.19
Factor:	
Product:	
LS, Length and Steepness:	1.19
Total Transect Average Gradient (%):	7
Farming Practice:	Up & Down Hill
P, Practice Factor (Table 6) <sup>1</sup> :	1.00
Vegetative Canopy:	No Canopy
Canopy Cover:	0%
Ground Cover:	70%
Percent Grass:	100%
Percent Weeds:	0%
C, Cover (Table 5) <sup>1</sup> :	0.028
A, Soil Loss (tons/acre):	0.55
Soil Loss in Proposed Development (tons):	0.17

<sup>1</sup> Tables 5 & 6 - USLE Special Applications for Napa County

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### Block 3, Transect 3

---

Proposed Development Acres:	0.31
Soil Unit No. (100-182):	110
Soil Name:	Boomer-Forward-Felta
K, Soil Erodibility:	0.28
T, Soil Loss Tolerance (tons/acre):	4
R, Rainfall:	60
Total Transect Length (ft):	210
Number of Segments:	1
Individual Segment Lengths (ft):	210
Segment:	
Gradient (%):	7
m:	0.5
Individual LS:	1.19
Factor:	
Product:	
LS, Length and Steepness:	1.19
Total Transect Average Gradient (%):	7
Farming Practice:	Up & Down Hill
P, Practice Factor (Table 6) <sup>1</sup> :	1.00
Cover Strategy:	Permanent
Age of Development:	Over 3 Years
Ground Cover:	80%
C, Cover (Table 4) <sup>1</sup> :	0.022
A, Soil Loss (tons/acre):	0.44
Soil Loss in Proposed Development (tons):	0.14

<sup>1</sup> Tables 4 & 6 - USLE Special Applications for Napa County

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#### **Block 4, Transect 4**

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Proposed Development Acres:	4.20
Soil Unit No. (100-182):	110
Soil Name:	Boomer-Forward-Felta
K, Soil Erodibility:	0.28
T, Soil Loss Tolerance (tons/acre):	4
R, Rainfall:	60
Total Transect Length (ft):	562
Number of Segments:	1
Individual Segment Lengths (ft):	562
Segment:	
Gradient (%):	12
m:	
Individual LS:	4.13
Factor:	
Product:	
LS, Length and Steepness:	4.13
Total Transect Average Gradient (%):	12
Farming Practice:	Up & Down Hill
P, Practice Factor (Table 6) <sup>1</sup> :	1.00
Vegetative Canopy:	No Canopy
Canopy Cover:	0%
Ground Cover:	70%
Percent Grass:	100%
Percent Weeds:	0%
C, Cover (Table 5) <sup>1</sup> :	0.028
A, Soil Loss (tons/acre):	1.91
Soil Loss in Proposed Development (tons):	8.02

<sup>1</sup> Tables 5 & 6 - USLE Special Applications for Napa County

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#### **Block 4, Transect 4**

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Proposed Development Acres:	4.20
Soil Unit No. (100-182):	110
Soil Name:	Boomer-Forward-Felta
K, Soil Erodibility:	0.28
T, Soil Loss Tolerance (tons/acre):	4
R, Rainfall:	60
Total Transect Length (ft):	562
Number of Segments:	1
Individual Segment Lengths (ft):	562
Segment:	
Gradient (%):	12
m:	
Individual LS:	4.13
Factor:	
Product:	
LS, Length and Steepness:	4.13
Total Transect Average Gradient (%):	12
Farming Practice:	Up & Down Hill
P, Practice Factor (Table 6) <sup>1</sup> :	1.00
Cover Strategy:	Permanent
Age of Development:	Over 3 Years
Ground Cover:	80%
C, Cover (Table 4) <sup>1</sup> :	0.022
A, Soil Loss (tons/acre):	1.53
Soil Loss in Proposed Development (tons):	6.41

<sup>1</sup> Tables 4 & 6 - USLE Special Applications for Napa County

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## Block 5, Transect 5

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Proposed Development Acres:	1.14
Soil Unit No. (100-182):	110
Soil Name:	Boomer-Forward-Felta
K, Soil Erodibility:	0.28
T, Soil Loss Tolerance (tons/acre):	4
R, Rainfall:	60
Total Transect Length (ft):	285
Number of Segments:	1
Individual Segment Lengths (ft):	285
Segment:	
Gradient (%):	9
m:	0.5
Individual LS:	1.98
Factor:	
Product:	
LS, Length and Steepness:	1.98
Total Transect Average Gradient (%):	9
Farming Practice:	Up & Down Hill
P, Practice Factor (Table 6) <sup>1</sup> :	1.00
Vegetative Canopy:	No Canopy
Canopy Cover:	0%
Ground Cover:	70%
Percent Grass:	100%
Percent Weeds:	0%
C, Cover (Table 5) <sup>1</sup> :	0.028
A, Soil Loss (tons/acre):	0.91
Soil Loss in Proposed Development (tons):	1.04

<sup>1</sup> Tables 5 & 6 - USLE Special Applications for Napa County

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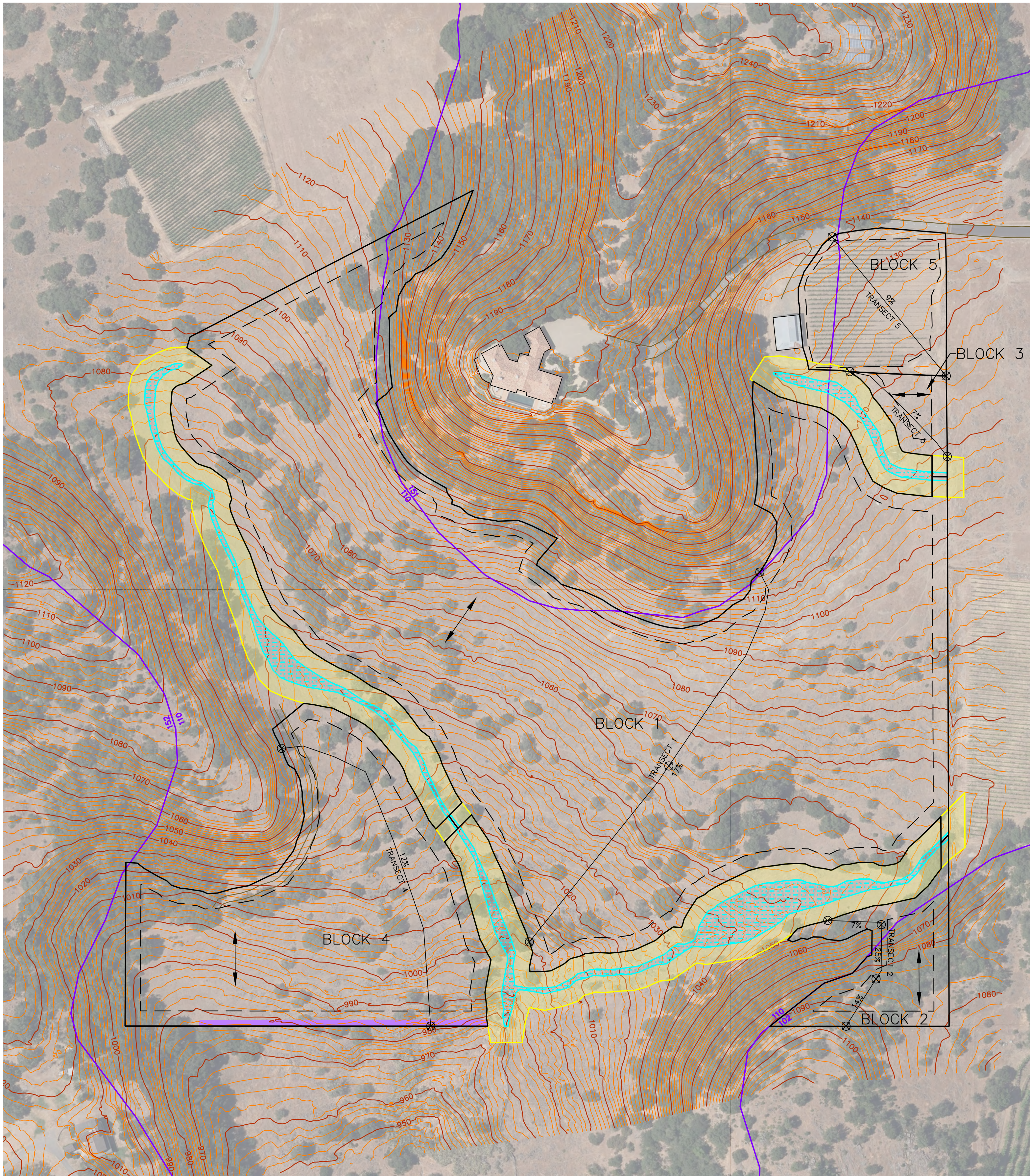
## Block 5, Transect 5

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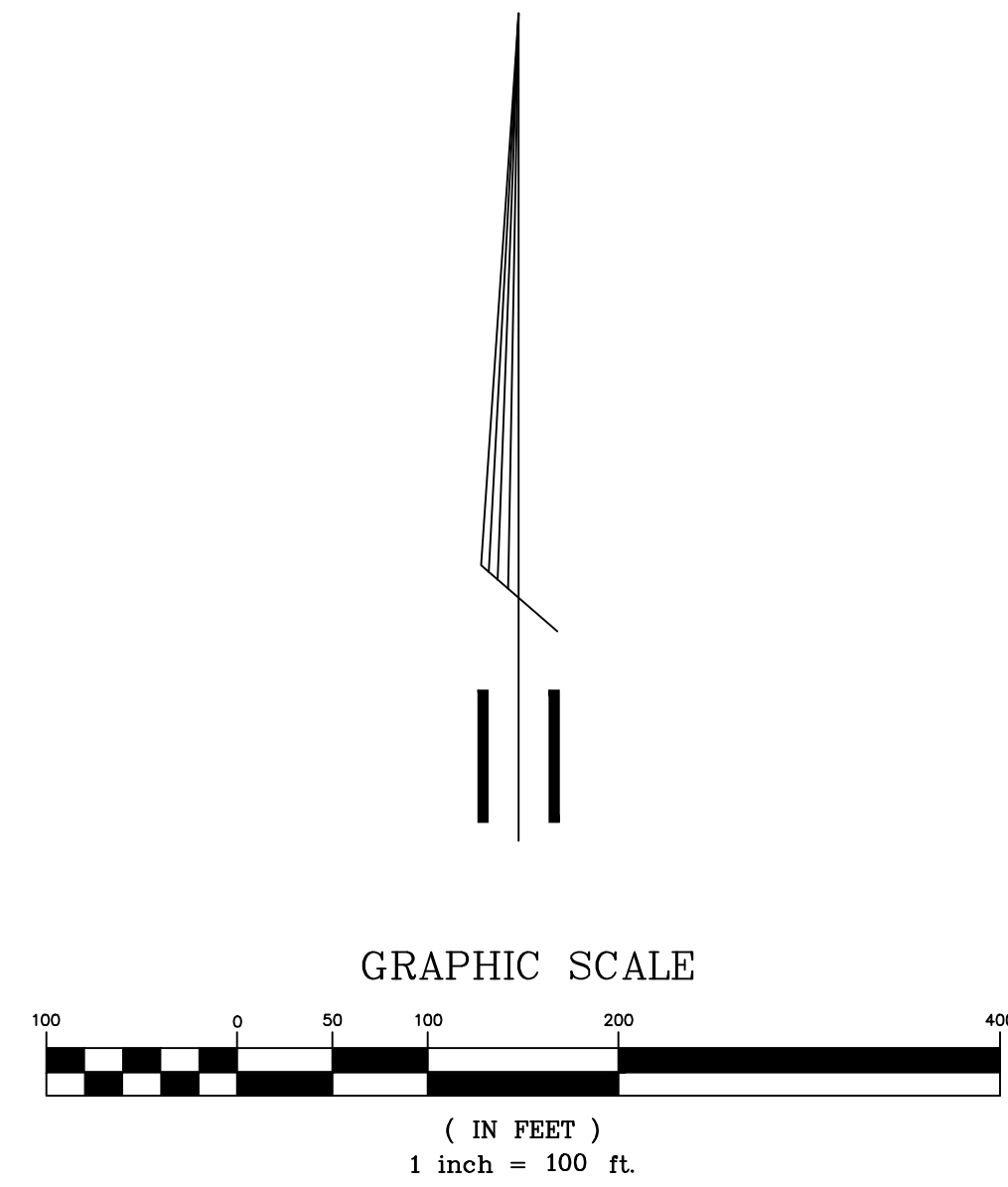
Proposed Development Acres:	1.14
Soil Unit No. (100-182):	110
Soil Name:	Boomer-Forward-Felta
K, Soil Erodibility:	0.28
T, Soil Loss Tolerance (tons/acre):	4
R, Rainfall:	60
Total Transect Length (ft):	285
Number of Segments:	1
Individual Segment Lengths (ft):	285
Segment:	
Gradient (%):	9
m:	0.5
Individual LS:	1.98
Factor:	
Product:	
LS, Length and Steepness:	1.98
Total Transect Average Gradient (%):	9
Farming Practice:	Up & Down Hill
P, Practice Factor (Table 6) <sup>1</sup> :	1.00
Cover Strategy:	Permanent
Age of Development:	Over 3 Years
Ground Cover:	80%
C, Cover (Table 4) <sup>1</sup> :	0.022
A, Soil Loss (tons/acre):	0.73
Soil Loss in Proposed Development (tons):	0.83

<sup>1</sup> Tables 4 & 6 - USLE Special Applications for Napa County





TOPOGRAPHIC MAPPING SOURCE: AMERICAN AERIAL MAPPING, INC., 2' CONTOURS, JANUARY 2018  
2014 NAPA COUNTY ORTHOPHOTOS



### LEGEND

- SEASONAL WETLAND MAPPED BY WRA
- 26' UNDISTURBED FILTER STRIP
- EXISTING ROAD
- EXISTING BUILDING
- PROPOSED VINEYARD DEVELOPMENT AREA BY TRANSECT
- PROPOSED VINEYARD BLOCK BOUNDARY
- USLE TRANSECT WITH SLOPE
- PROPOSED VINEYARD DIRECTION
- PROPOSED ROCK FILLED AVENUE (SEE ECP)
- SOIL TYPE BOUNDARY

### USDA SOIL CLASSIFICATIONS:

- 102 AIKEN LOAM 30-50% SLOPE
- 110 BOOMER-FORWARD-FELTA COMPLEX 30-50% SLOPE
- 151 HAMBRIGHT-ROCK OUTCROP COMPLEX 2-30% SLOPE
- 152 HAMBRIGHT-ROCK OUTCROP COMPLEX 30-75% SLOPE

R:\11712901\11712901.dwg P:\11712901\11712901.dwg 11/15/2018 10:00:00 AM

REV. NO.	DESCRIPTION	BY	DATE
1	THIS DRAWING SUPERSEDES DRAWING 11712901USLE. BLOCK 5 IS NOW INCLUDED IN SOIL LOSS ANALYSIS.	ALB	05/15/19

2800 JEFFERSON STREET NAPA, CA 94558 707/253-1808 FAX 707/253-1804	JOB NO: 11712901	SCALE: AS SHOWN	DRAWN BY: ALB	DATE: 05-15-19	SHEET: 1 OF: 1
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THE HESS COLLECTION WINERY 2847 ATLAS PEAK ROAD EROSION CONTROL PLAN SOIL LOSS MODELING	
DESIGN ENGINEER: J. BUSHEY	

DWG. NO: 11712901U2	
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