

SOIL LOSS ANALYSIS
BRAND VINEYARDS
PRITCHARD HILL PROPERTIES, LLC
90, 92 & 95 LONG RANCH ROAD
ST. HELENA, CA
APN 030-220-034, 032-560-023
JUNE 26, 2020

The following analysis evaluates a proposed, approximately 30-acre development of mixed new and replanted vineyard, located on two assessor's parcels totaling approximately 109 acres, in the area known as Pritchard Hill, southeast of Lake Hennessey and north of Rector Reservoir in Napa County, California. The purpose of this exercise is to determine the proposal's potential to increase sediment delivery from the site. The analysis also compares predicted soil loss with the USDA soil loss tolerance standard ("T"). The analysis was prepared by David Steiner, CPESC, CPSWQ, at the request of and in consultation with Mike Muelrath of Applied Civil Engineering. This analysis has adapted the Universal Soil Loss Equation (USLE) protocol developed by the Napa RCD, with guidance from the NRCS (SCS) Field Office Technical Guide, to requirements of the Napa County Engineering Division. Modeled transects are drawn on the accompanying map, provided by Applied Civil Engineering. The accompanying Excel spreadsheet¹, along with an explanatory MS Word Addendum, incorporates USLE principles and formulas, as follows:

- The "R" value is derived from the median of the predicted range of 2-year/6-hour storms for this site, according to NOAA Atlas 14. A printout of the NOAA Atlas 14 table accompanies this submittal.
- The "LS" value is calculated per algorithms based on USDA empirical data, using plotted slope lengths and gradients, over fifteen representative transects through the seven proposed, new and replanted vineyard blocks. The effects of concave, convex and complex slopes are calculated via USDA segmented slope protocols, which assign greater influence to downslope segments.
- The "K" (soil erosivity) and "T" (soil loss tolerance) values were taken from the Napa County Web Soil Survey. Copies of the NCWSS printouts accompany this submittal. Where Mapping Unit (soil type) boundaries cross modeled transects, the slope segment protocol is used to determine appropriately weighted values of these factors, as well.
- Pre-project "C" value: To account for varying levels of vegetation and ground cover, USDA segmenting protocols—again, assigning greater influence to downslope segments—have also been applied to "C" factor determinations. Values assigned to each segment were selected from Table 5 of the "Special Applications for Napa County" USLE pamphlet, based on examination of imagery from Google Earth and the "Onxhunt" GPS application, and on observations during field visits on March 9, March 12, and May 4, 2020.

¹ *This Excel format segments modeled transects according to the most complex variable or USLE factor describing conditions along the transect. For example, a transect with five different types or levels of canopy or vegetative cover—but with uniform slope throughout—would*

nonetheless be assigned five separate slope entries (even though they were all the same), as the transect's segmentation (for all factors) would be based on cover, its most complex variable.

- Post-project “C” values were assigned to reflect the cover crop specifications in the Erosion Control Plan: non-tilled management with 80% cover will be established and maintained in all new and replanted vineyard blocks, except for Block 19, where the specification is for 85% percent cover, in order to (1) avoid soil loss increase and (2) comply with the USDA “T”, soil loss tolerance. Specifications for cover maintenance on vineyard avenues are the same as those within vineyard blocks; supplementary practices such as annual applications of seed and straw mulch, per specifications in the Erosion Control Plan, may be necessary to compensate for ground disturbance related to tractor and equipment traffic.
- For the most part, “P” (practice) factors are assigned the default maximum value (1). However, appropriate reductions of this factor are assigned to transects and/or segments, where indicated by cross-slope farming of either existing or proposed vineyard layouts.

Conclusion: With the assumption that the specified cover levels will be maintained, calculations predict that soil loss levels in proposed new and replanted vineyard blocks² will exceed neither current levels nor the USDA soil loss tolerance (“T”). (Please see accompanying Excel printouts, and explanatory addendum.)

² Although the predicted post-project soil loss of a few individual transects within proposed vineyard blocks (3 NW, 17 Mid, and 18 SW) slightly exceeds either “T” or pre-project soil loss levels, the predicted *net soil loss* for all vineyard blocks is within these standards.

Brand Vineyards
Pritchard Hill Properties, LLC
USLE Soil Loss Analysis
Explanatory Addendum
Pre-Project "C"
June 29, 2020

- Transect 3 NW: 75% Trees; 90% Cover: 10% G, 90% W (C = .0195)
- Transect 3 SE: (Existing Vineyard) 70% Cover, non-tilled (C= .047)
- Transect 13:
 - Segment 1: (Existing Vineyard) 70% Cover, non-tilled (C = .047)
 - Segment 2: 50% Trees; 90% Cover: 50% G, 50% W (C = .014)
 - Segment 3: (Existing Vineyard) 70% Cover, non-tilled (C = .047)
 - Segment 4: (Existing Vineyard) 70% Cover, non-tilled (C = .047)
- Transect 14:
 - Segment 1: (Existing Vineyard) 70% Cover, non-tilled (C = .047)
 - Segment 2: (Existing Vineyard) 70% Cover, non-tilled (C = .047)
- Transect 15 N:
 - Segment 1: (Existing Vineyard) 70% Cover, non-tilled (C = .047)
 - Segment 2: 75% Trees; 80% Cover: 50% G, 50% T (C = .027)
 - Segment 3: 75% Trees; 80% Cover: 50% G, 50% T (C = .027)
 - Segment 4: 75% Trees; 80% Cover: 50% G, 50% T (C = .027)
- Transect 15 S: (Existing Vineyard) 70% Cover, non-tilled (C = .047)
- Transect 17 NW:
 - Segment 1: 75% Low Brush; 70% Cover: 20% G, 80% W (C = .0468)
 - Segment 2: 75% Trees; 90% Cover: 0 G, 100% W (C = .021)
 - Segment 3: 25% Trees: 80% Cover: 50% G, 50% W (C = .028)
- Transect 17 Mid-North:
 - Segment 1: 75% Trees: 90% Cover: 0 G, 100% W (C = .021)
 - Segment 2: 50% Low Brush; 60% Cover: 50% G, 50% W (C = .060)
 - Segment 3: 50% Low Brush; 70% Cover: 50%G, 50% W (C = .044)
- Transect 17 Mid:
 - Segment 1: 75% Low Brush; 85% Cover: 10% G, 90% W (C = .027)
 - Segment 2: 50% Trees; 80% Cover: 10% G, 90% W (C = .0391)
 - Segment 3: 75% Trees; 90% Cover: 0 G, 100% W (C = .021)
 - Segment 4: 75% Trees; 90% Cover: 0 G, 100% W (C = .021)

- Transect 17 Mid-South:
 - Segment 1: 50% High Brush; 70% Cover: 30% G, 70% W (C = .0509)
 - Segment 2: 50% Low Brush; 70% Cover: 20% G, 80% W (C = .0512)

- Transect 17 SE:
 - Segment 1: 75% Low Brush; 85% Cover: 20% G, 80% W (C = .0248)
 - Segment 2: 75% High Brush; 90% Cover: 10% G, 90% W (C = .0195)
 - Segment 3: 50% Trees; 90% Cover: 0 G, 100% W (C = .021)
 - Segment 4: 75% Low Brush; 80% Cover: 30% G, 70% C (C = .0299)

- Transect 18 SW:
 - Segment 1: 75% High Brush: 85% Cover: 0 G, 100% W (C = .030)
 - Segment 2: 50% Trees: 90% Cover: 50% G, 50% W (C = .013)
 - Segment 3: 50% High Brush; 85% Cover: 10% G, 90% W (C = .028)

- Transect 18 NE: 75% Trees; 90% Cover: 20% G , 80% W (C = .018)

- Transect 19 South: 75% Trees; 90% Cover: 20% G, 80% W (C = .018)

- Transect 19 North: 75% Trees: 90% Cover: 20% G, 80% W (C = .018)

Transect Identification		Block 3 NW, Pre-project				
Acres		0.4 acres				
Total Slope Length		159 feet				
Number of Segments		2 segments				
		1	2	3	4	5
R		63	63	0.00	0.00	0.00
Factor (F)		0.35	0.65	0.00	0.00	0.00
Slope Length		159.00				
Slope %		13.8				
LS		2.66	4.80	0.00	0.00	0.00
K		0.10				
C		0.020				
P		1.00	1.00	1.00	1.00	1.00
T		1.00				
(F) (LS) (K) (C)		0.001815	0.0062	0.0000	0.0000	0.0000
A = (R) (F) (LS) (K) (C) (P)		0.11	0.39	0.00	0.00	0.00
						0.0080
						0.51 tons/acre/year
						0.20 tons/year

Transect Identification		Block 3 NW, Post-project				
Acres		0.4 acres				
Total Slope Length		159 feet				
Number of Segments		2 segments				
		1	2	3	4	5
R		63	63	0.00	0.00	0.00
Factor (F)		0.35	0.65	0.00	0.00	0.00
Slope Length		159.00				
Slope %		13.8				
LS		2.66	4.80	0.00	0.00	0.00
K		0.10				
C		0.022				
P		1.00	1.00	1.00	1.00	1.00
T		1.00				
(F) (LS) (K) (C)		0.002048	0.0069	0.0000	0.0000	0.0000
A = (R) (F) (LS) (K) (C) (P)		0.13	0.43	0.00	0.00	0.00
						0.0089
						0.56 tons/acre/year
						0.22 tons/year

Transect Identification		Block 3 SE, Pre-project				
Acres		0.4 acres				
Total Slope Length		150 feet				
Number of Segments		2 segments				
		1	2	3	4	5
R		63	63	0.00	0.00	0.00
Factor (F)		0.35	0.65	0.00	0.00	0.00
Slope Length		150.00				
Slope %		2.7				
LS		2.29	2.82	0.00	0.00	0.00
K		0.10				
C		0.047				
P		1.00	1.00	1.00	1.00	1.00
T		1.00				
(F) (LS) (K) (C)		0.000482	0.0086	0.0000	0.0000	0.0000
A = (R) (F) (LS) (K) (C) (P)		0.03	0.54	0.00	0.00	0.00
						0.0091
						0.57 tons/acre/year
						0.23 tons/year

Transect Identification		Block 3 SE, Post-project				
Acres		0.4 acres				
Total Slope Length		150 feet				
Number of Segments		2 segments				
		1	2	3	4	5
R		63	63	0.00	0.00	0.00
Factor (F)		0.35	0.65	0.00	0.00	0.00
Slope Length		150.00				
Slope %		2.7				
LS		2.29	2.82	0.00	0.00	0.00
K		0.10				
C		0.022				
P		1.00	1.00	1.00	1.00	1.00
T		1.00				
(F) (LS) (K) (C)		0.000226	0.0040	0.0000	0.0000	0.0000
A = (R) (F) (LS) (K) (C) (P)		0.01	0.25	0.00	0.00	0.00
						0.0043
						0.27 tons/acre/year
						0.11 tons/year

Transect Identification		Block 13, Pre-project		Block 13, Post-project	
Acres		2.1 acres		2.1 acres	
Total Slope Length		548 feet		548 feet	
Number of Segments		4 segments		4 segments	
		1	2	3	4
R		63	63	63	63
Factor (F)		0.12	0.30	0.30	0.35
Slope Length		548.00	548.00	548.00	548.00
Slope %		5.1	10.9	7.3	4.4
LS		1.28	3.57	2.04	0.88
K		0.10	0.10	0.32	0.32
C		0.047	0.014	0.047	0.047
P		1.00	1.00	1.00	0.37
T		1.00	1.00	2.00	2.00
(F) (LS) (K) (C)		0.000723	0.0011	0.0092	0.0046
A = (R) (F) (LS) (K) (C) (P)		0.05	0.07	0.58	0.11
					0.0000
					0.00
					0.0157
					0.80
					1.69

tons/acre/year
tons/year

Transect Identification		Block 13, Post-project	
Acres		2.1 acres	
Total Slope Length		548 feet	
Number of Segments		4 segments	
		1	2
		3	4
		5	
R		63	63
Factor (F)		0.12	0.30
Slope Length		548.00	548.00
Slope %		5.1	10.9
LS		1.28	3.57
K		0.10	0.10
C		0.022	0.022
P		1.00	1.00
T		1.00	2.00
(F) (LS) (K) (C)		0.000338	0.0018
A = (R) (F) (LS) (K) (C) (P)		0.02	0.11
			0.27
			0.05
			0.0000
			0.00
			0.0086
			0.46
			0.96

tons/acre/year
tons/year

Transect Identification		Block 14, Pre-project		Block 14, Post-project	
Acres		0.8 acres		0.8 acres	
Total Slope Length		165 feet		165 feet	
Number of Segments		2 segments		2 segments	
		1	2	3	4
		5			
R		63	63	63	63
Factor (F)		0.35	0.65	0.00	0.00
Slope Length		165.00	165.00	548.00	548.00
Slope %		17.0	12.1	10.9	10.9
LS		3.59	2.26	0.00	0.00
K		0.10	0.10	0.10	0.10
C		0.047	0.047	0.022	0.022
P		1.00	1.00	1.00	1.00
T		1.00	1.00	1.00	1.00
(F) (LS) (K) (C)		0.005913	0.0069	0.0000	0.0000
A = (R) (F) (LS) (K) (C) (P)		0.37	0.44	0.00	0.00
					0.00
					0.0128
					0.81
					0.65

tons/acre/year
tons/year

Transect Identification		Block 14, Post-project	
Acres		0.8 acres	
Total Slope Length		165 feet	
Number of Segments		2 segments	
		1	2
		3	4
		5	
R		63	63
Factor (F)		0.35	0.65
Slope Length		548.00	548.00
Slope %		5.1	10.9
LS		1.28	3.57
K		0.10	0.10
C		0.022	0.022
P		1.00	1.00
T		1.00	1.00
(F) (LS) (K) (C)		0.000987	0.0051
A = (R) (F) (LS) (K) (C) (P)		0.06	0.32
			0.00
			0.00
			0.0000
			0.00
			0.0061
			0.38
			0.31

tons/acre/year
tons/year

Transect Identification		Block 17 Mid, Pre-project				
Acres		5 acres				
Total Slope Length		464 feet				
Number of Segments		4 segments				
		1	2	3	4	5
R		63	63	63	63	
Factor (F)		0.12	0.23	0.30	0.35	0.00
Slope Length		464	464	464	464	
Slope %		12.9	22.4	18.1	24.1	
LS		4.14	8.70	6.56	9.57	0.00
K		0.10	0.10	0.10	0.10	
C		0.027	0.039	0.021	0.021	
P		1.00	1.00	1.00	1.00	
T		1.00	1.00	1.00	1.00	1.00
(F) (LS) (K) (C)		0.001342	0.0078	0.0041	0.0070	0.0000
A = (R) (F) (LS) (K) (C) (P)		0.08	0.49	0.26	0.44	0.00
						0.0203
						1.28
						6.40

tons/acre/year
tons/year

Transect Identification		Block 17 Mid, Post-project				
Acres		5 acres				
Total Slope Length		464 feet				
Number of Segments		4 segments				
		1	2	3	4	5
R		63	63	63	63	
Factor (F)		0.12	0.23	0.30	0.35	0.00
Slope Length		464	464	464	464	
Slope %		12.9	22.4	18.1	24.1	
LS		4.14	8.70	6.56	9.57	0.00
K		0.10	0.10	0.10	0.10	
C		0.022	0.022	0.022	0.022	
P		1.00	1.00	1.00	1.00	
T		1.00	1.00	1.00	1.00	1.00
(F) (LS) (K) (C)		0.001094	0.0044	0.0043	0.0074	0.0000
A = (R) (F) (LS) (K) (C) (P)		0.07	0.28	0.27	0.46	0.00
						0.0172
						1.08
						5.41

tons/acre/year
tons/year

Transect Identification		Block 17 Mid-South, Pre-project				
Acres		4 acres				
Total Slope Length		344 feet				
Number of Segments		2 segments				
		1	2	3	4	5
R		63	63	63	63	
Factor (F)		0.35	0.65	0.00	0.00	0.00
Slope Length		344	344			
Slope %		9.3	15.1			
LS		2.27	4.42	0.00	0.00	0.00
K		0.10	0.10			
C		0.051	0.051			
P		1.00	1.00			
T		1.00	1.00			1.00
(F) (LS) (K) (C)		0.00405	0.0147	0.0000	0.0000	0.0000
A = (R) (F) (LS) (K) (C) (P)		0.26	0.93	0.00	0.00	0.00
						0.0188
						1.18
						4.73

tons/acre/year
tons/year

Transect Identification		Block 17 Mid-South, Pre-project				
Acres		4 acres				
Total Slope Length		344 feet				
Number of Segments		2 segments				
		1	2	3	4	5
R		63	63	63	63	
Factor (F)		0.35	0.65	0.00	0.00	0.00
Slope Length		344	344			
Slope %		9.3	15.1			
LS		2.27	4.42	0.00	0.00	0.00
K		0.10	0.10			
C		0.022	0.022			
P		1.00	1.00			
T		1.00	1.00			1.00
(F) (LS) (K) (C)		0.00175	0.0063	0.0000	0.0000	0.0000
A = (R) (F) (LS) (K) (C) (P)		0.11	0.40	0.00	0.00	0.00
						0.0081
						0.51
						2.03

tons/acre/year
tons/year

Transect Identification		Block 17 SE, Pre-project				
Acre		4 acres				
Total Slope Length		404 feet				
Number of Segments		4 segments				
		1	2	3	4	5
R		63	63	63	63	
Factor (F)		0.12	0.23	0.30	0.35	0.00
Slope Length		404	404	404	404	
Slope %		17.8	19.8	18.8	27.5	0.00
LS		5.98	6.90	6.44	10.57	0.00
K		0.10	0.10	0.10	0.10	
C		0.025	0.020	0.021	0.030	
P		1.00	1.00	1.00	1.00	
T		1.00	1.00	1.00	1.00	1.00
(F) (LS) (K) (C)		0.001781	0.0031	0.0041	0.0111	0.0000
A = (R) (F) (LS) (K) (C) (P)		0.11	0.19	0.26	0.70	0.00
						0.0200
						1.26
						5.04

tons/acre/year
tons/year

Transect Identification		Block 17 SE, Post-project				
Acre		4 acres				
Total Slope Length		404 feet				
Number of Segments		4 segments				
		1	2	3	4	5
R		63	63	63	63	
Factor (F)		0.12	0.23	0.30	0.35	0.00
Slope Length		404	404	404	404	
Slope %		17.8	19.8	18.8	27.5	0.00
LS		5.98	6.90	6.44	10.57	0.00
K		0.10	0.10	0.10	0.10	
C		0.022	0.022	0.022	0.022	
P		0.60	0.67	0.67	0.67	
T		1.00	1.00	1.00	1.00	1.00
(F) (LS) (K) (C)		0.00158	0.0035	0.0042	0.0081	0.0000
A = (R) (F) (LS) (K) (C) (P)		0.06	0.15	0.18	0.34	0.00
						0.0175
						0.73
						2.92

tons/acre/year
tons/year

Transect Identification		Block 18 SW, Pre-project				
Acre		1 acre				
Total Slope Length		222 feet				
Number of Segments		3 segments				
		1	2	3	4	5
R		63	63	63		
Factor (F)		0.19	0.35	0.46	0.00	0.00
Slope Length		222	222	222		
Slope %		6.8	23.0	6.8		
LS		1.18	6.23	1.18	0.00	0.00
K		0.10	0.10	0.10		
C		0.030	0.013	0.028		
P		1.00	1.00	1.00		
T		1.00	1.00	1.00		1.00
(F) (LS) (K) (C)		0.000672	0.0028	0.0015	0.0000	0.0000
A = (R) (F) (LS) (K) (C) (P)		0.04	0.18	0.10	0.00	0.00
						0.0050
						0.32
						0.32

tons/acre/year
tons/year

Transect Identification		Block 18 SW, Post-project				
Acre		1 acre				
Total Slope Length		222 feet				
Number of Segments		3 segments				
		1	2	3	4	5
R		63	63	63		
Factor (F)		0.19	0.35	0.46	0.00	0.00
Slope Length		222	222	222		
Slope %		6.8	23.0	6.8		
LS		1.18	6.23	1.18	0.00	0.00
K		0.10	0.10	0.10		
C		0.017	0.017	0.017		
P		1.00	1.00	1.00		
T		1.00	1.00	1.00		1.00
(F) (LS) (K) (C)		0.000381	0.0037	0.0009	0.0000	0.0000
A = (R) (F) (LS) (K) (C) (P)		0.02	0.23	0.06	0.00	0.00
						0.0050
						0.32
						0.32

tons/acre/year
tons/year

Transect Identification		Block 18 NE, Pre-project				
Acres		0.8 acres				
Total Slope Length		246 feet				
Number of Segments		1 segment				
		1	2	3	4	5
R		63				
Factor (F)		1.00	0.00	0.00	0.00	0.00
Slope Length		246				
Slope %		17.1				
LS		4.42	0.00	0.00	0.00	0.00
K		0.10				
C		0.018				
P		1.00				
T		1.00				1.00
(F) (LS) (K) (C)		0.007963	0.0000	0.0000	0.0000	0.0080
A = (R) (F) (LS) (K) (C) (P)		0.50	0.00	0.00	0.00	0.50
						0.40

tons/acre/year
0.40 tons/year

Transect Identification		Block 18 NE, Post-project				
Acres		0.8 acres				
Total Slope Length		246 feet				
Number of Segments		1 segment				
		1	2	3	4	5
R		63				
Factor (F)		1.00	0.00	0.00	0.00	0.00
Slope Length		246				
Slope %		17.1				
LS		4.42	0.00	0.00	0.00	0.00
K		0.10				
C		0.017				
P		1.00				
T		1.00				1.00
(F) (LS) (K) (C)		0.00752	0.0000	0.0000	0.0000	0.0075
A = (R) (F) (LS) (K) (C) (P)		0.47	0.00	0.00	0.00	0.47
						0.38

tons/acre/year
0.38 tons/year

Transect Identification		Block 19 S, Pre-project				
Acres		2.5 acres				
Total Slope Length		525 feet				
Number of Segments		1 segment				
		1	2	3	4	5
R		63				
Factor (F)		1.00	0.00	0.00	0.00	0.00
Slope Length		525				
Slope %		21.0				
LS		8.50	0.00	0.00	0.00	0.00
K		0.32				
C		0.018				
P		1.00				
T		2.00				2.00
(F) (LS) (K) (C)		0.048958	0.0000	0.0000	0.0000	0.0490
A = (R) (F) (LS) (K) (C) (P)		3.08	0.00	0.00	0.00	3.08
						7.71

tons/acre/year
7.71 tons/year

Transect Identification		Block 19 S, Post-project				
Acres		2.5 acres				
Total Slope Length		525 feet				
Number of Segments		1 segment				
		1	2	3	4	5
R		63				
Factor (F)		1.00	0.00	0.00	0.00	0.00
Slope Length		525				
Slope %		21.0				
LS		8.50	0.00	0.00	0.00	0.00
K		0.32				
C		0.017				
P		0.67				
T		2.00				2.00
(F) (LS) (K) (C)		0.046238	0.0000	0.0000	0.0000	0.0462
A = (R) (F) (LS) (K) (C) (P)		1.95	0.00	0.00	0.00	1.95
						4.88

tons/acre/year
4.88 tons/year

Transect Identification		Block 19 N, Pre-project				
Acres		0.8 acres				
Total Slope Length		132 feet				
Number of Segments		1 segment				
		1	2	3	4	5
R		63				
Factor (F)		1.00	0.00	0.00	0.00	0.00
Slope Length		132				
Slope %		11.4				
LS		1.86	0.00	0.00	0.00	0.00
K		0.32				
C		0.018				
P		1.00				
T		2.00				2.00
(F) (LS) (K) (C)		0.010742	0.0000	0.0000	0.0000	0.0107
A = (R) (F) (LS) (K) (C) (P)		0.68	0.00	0.00	0.00	0.68
						0.54

tons/acre/year
tons/year

Transect Identification		Block 19 N, Post-project				
Acres		0.8 acres				
Total Slope Length		132 feet				
Number of Segments		1 segment				
		1	2	3	4	5
R		63				
Factor (F)		1.00	0.00	0.00	0.00	0.00
Slope Length		132				
Slope %		11.4				
LS		1.86	0.00	0.00	0.00	0.00
K		0.32				
C		0.017				
P		1.00				
T		2.00				2.00
(F) (LS) (K) (C)		0.010145	0.0000	0.0000	0.0000	0.0101
A = (R) (F) (LS) (K) (C) (P)		0.64	0.00	0.00	0.00	0.64
						0.51

tons/acre/year
tons/year

Brand (Petaluma Hill Properties)

NOAA's National Weather Service
Hydrometeorological Design Studies Center
 Precipitation Frequency Data Server (PFDS)

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NOAA ATLAS 14 POINT PRECIPITATION FREQUENCY ESTIMATES: CA

Data description

Data type: Units: Time series type:

Select location

1) Manually:

a) By location (decimal degrees, use "-" for S and W): Latitude: Longitude:

b) By station (list of CA stations):

c) By address

2) Use map (if ESRI interactive map is not loading, try adding the host: <https://js.arcgis.com/> to the firewall, or contact us at hdsc.questions@noaa.gov):

Topo

a) Select location
Move crosshair or double click

b) Click on station icon
 Show stations on map

Location information:
 Name: Saint Helena, California, USA*
 Latitude: 38.4720°
 Longitude: -122.3600°
 Elevation: 1142.2 ft **

* Source: ESRI Maps
 ** Source: USGS

POINT PRECIPITATION FREQUENCY (PF) ESTIMATES
 WITH 90% CONFIDENCE INTERVALS AND SUPPLEMENTARY INFORMATION
 NOAA Atlas 14, Volume 6, Version 2

Contact Us
 Inquiries

PF tabular PF graphical Supplementary information

PDS-based precipitation frequency estimates with 90% confidence intervals (in inches) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.140 (0.124-0.159)	0.170 (0.151-0.194)	0.211 (0.187-0.241)	0.245 (0.215-0.282)	0.293 (0.247-0.350)	0.330 (0.272-0.404)	0.369 (0.296-0.465)	0.411 (0.319-0.535)	0.470 (0.348-0.641)	0.518 (0.369-0.734)
10-min	0.201 (0.178-0.228)	0.244 (0.217-0.278)	0.303 (0.268-0.345)	0.351 (0.308-0.404)	0.419 (0.354-0.501)	0.473 (0.390-0.580)	0.530 (0.425-0.667)	0.589 (0.458-0.767)	0.674 (0.500-0.919)	0.743 (0.529-1.05)
15-min	0.242 (0.216-0.275)	0.295 (0.262-0.336)	0.366 (0.324-0.417)	0.425 (0.373-0.489)	0.507 (0.428-0.606)	0.572 (0.472-0.701)	0.640 (0.514-0.807)	0.713 (0.554-0.927)	0.815 (0.604-1.11)	0.898 (0.640-1.27)
30-min	0.352 (0.313-0.399)	0.429 (0.381-0.487)	0.531 (0.471-0.606)	0.616 (0.541-0.710)	0.736 (0.621-0.880)	0.830 (0.685-1.02)	0.929 (0.745-1.17)	1.03 (0.804-1.35)	1.18 (0.877-1.61)	1.30 (0.929-1.85)
60-min	0.516 (0.459-0.585)	0.628 (0.558-0.714)	0.778 (0.689-0.887)	0.903 (0.793-1.04)	1.08 (0.910-1.29)	1.22 (1.00-1.49)	1.36 (1.09-1.72)	1.52 (1.18-1.97)	1.73 (1.28-2.36)	1.91 (1.36-2.71)
2-hr	0.782 (0.696-0.888)	0.954 (0.848-1.09)	1.18 (1.05-1.35)	1.36 (1.20-1.57)	1.61 (1.36-1.93)	1.80 (1.49-2.21)	2.00 (1.60-2.52)	2.20 (1.71-2.86)	2.47 (1.83-3.37)	2.69 (1.92-3.81)
3-hr	1.00 (0.895-1.14)	1.23 (1.09-1.40)	1.52 (1.34-1.73)	1.75 (1.53-2.01)	2.06 (1.74-2.46)	2.30 (1.89-2.81)	2.54 (2.03-3.20)	2.78 (2.16-3.62)	3.11 (2.30-4.24)	3.36 (2.40-4.76)
6-hr	1.52 (1.35-1.72)	1.86 (1.65-2.11)	2.29 (2.03-2.62)	2.64 (2.32-3.04)	3.11 (2.62-3.71)	3.45 (2.85-4.23)	3.80 (3.04-4.78)	4.14 (3.22-5.39)	4.61 (3.41-6.28)	4.95 (3.53-7.02)
12-hr	2.14 (1.91-2.43)	2.66 (2.37-3.03)	3.32 (2.94-3.79)	3.85 (3.38-4.43)	4.54 (3.83-5.43)	5.05 (4.17-6.19)	5.57 (4.46-7.01)	6.08 (4.72-7.90)	6.75 (5.00-9.20)	7.25 (5.17-10.3)
24-hr	2.98 (2.68-3.39)	3.78 (3.39-4.29)	4.78 (4.29-5.44)	5.58 (4.97-6.39)	6.62 (5.74-7.80)	7.40 (6.31-8.87)	8.18 (6.82-10.00)	8.95 (7.30-11.2)	9.97 (7.85-12.9)	10.7 (8.21-14.3)
2-day	3.91 (3.52-4.44)	4.99 (4.48-5.67)	6.37 (5.71-7.25)	7.46 (6.64-8.55)	8.90 (7.71-10.5)	9.98 (8.50-12.0)	11.0 (9.22-13.5)	12.1 (9.88-15.2)	13.5 (10.7-17.5)	14.6 (11.2-19.5)
3-day	4.55 (4.09-5.16)	5.83 (5.24-6.62)	7.46 (6.69-8.49)	8.76 (7.80-10.0)	10.5 (9.08-12.3)	11.8 (10.0-14.1)	13.0 (10.9-15.9)	14.3 (11.7-17.9)	16.0 (12.6-20.8)	17.3 (13.2-23.1)
4-day	5.05 (4.54-5.73)	6.48 (5.82-7.36)	8.31 (7.45-9.46)	9.76 (8.69-11.2)	11.7 (10.1-13.8)	13.1 (11.2-15.7)	14.5 (12.1-17.8)	16.0 (13.0-20.0)	17.8 (14.0-23.1)	19.3 (14.7-25.7)
7-day	6.23 (5.60-7.07)	8.00 (7.18-9.08)	10.2 (9.18-11.7)	12.0 (10.7-13.8)	14.3 (12.4-16.9)	16.0 (13.7-19.2)	17.7 (14.8-21.7)	19.4 (15.8-24.3)	21.6 (17.0-28.0)	23.3 (17.8-31.0)
10-day	7.04 (6.33-7.99)	9.04 (8.12-10.3)	11.6 (10.4-13.1)	13.5 (12.0-15.5)	16.1 (13.9-18.9)	18.0 (15.3-21.5)	19.8 (16.6-24.3)	21.7 (17.7-27.1)	24.1 (19.0-31.2)	25.8 (19.8-34.5)
20-day	9.22 (8.30-10.5)	11.9 (10.7-13.5)	15.1 (13.5-17.2)	17.6 (15.7-20.2)	20.9 (18.1-24.6)	23.2 (19.8-27.8)	25.5 (21.3-31.1)	27.7 (22.6-34.6)	30.5 (24.0-39.5)	32.6 (24.9-43.4)
30-day	11.1 (9.99-12.6)	14.3 (12.8-16.2)	18.1 (16.2-20.6)	21.0 (18.7-24.1)	24.8 (21.5-29.2)	27.5 (23.4-32.9)	30.0 (25.1-36.7)	32.5 (26.5-40.7)	35.7 (28.1-46.2)	37.9 (29.0-50.6)
45-day	13.5 (12.2-15.4)	17.3 (15.5-19.6)	21.8 (19.5-24.8)	25.2 (22.4-28.9)	29.5 (25.6-34.7)	32.6 (27.7-39.0)	35.4 (29.6-43.3)	38.2 (31.2-47.8)	41.7 (32.8-54.0)	44.1 (33.8-58.9)
60-day	16.1 (14.5-18.3)	20.4 (18.3-23.2)	25.6 (22.9-29.1)	29.4 (26.2-33.7)	34.3 (29.7-40.3)	37.7 (32.1-45.1)	40.8 (34.1-49.9)	43.9 (35.8-54.9)	47.6 (37.5-61.7)	50.3 (38.5-67.1)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

Estimates from the table in CSV format:

Main Link Categories:
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US Department of Commerce
 National Oceanic and Atmospheric Administration
 National Weather Service
 Office of Water Prediction (OWP)
 1325 East West Highway
 Silver Spring, MD 20910
 Page Author: HDSC webmaster
 Page last modified: April 21, 2017

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Soil Chemical Properties

Soil Erosion Factors

K Factor, Rock Free

K Factor, Whole Soil

[View Description](#) [View Rating](#)

View Options

Map

Table

Description of Rating

Rating Options

Detailed Description

Advanced Options

Aggregation Method **Dominant Condition**

Component Percent Cutoff

Tie-break Rule
 Lower
 Higher

Layer Options (Horizon Aggregation Method)
 Surface Layer (Not applicable)
 Depth Range (Weighted Average)

Top Depth
Bottom Depth
 Inches
 Centimeters

All Layers (Weighted Average)

[View Description](#) [View Rating](#)

T Factor

Wind Erodibility Group

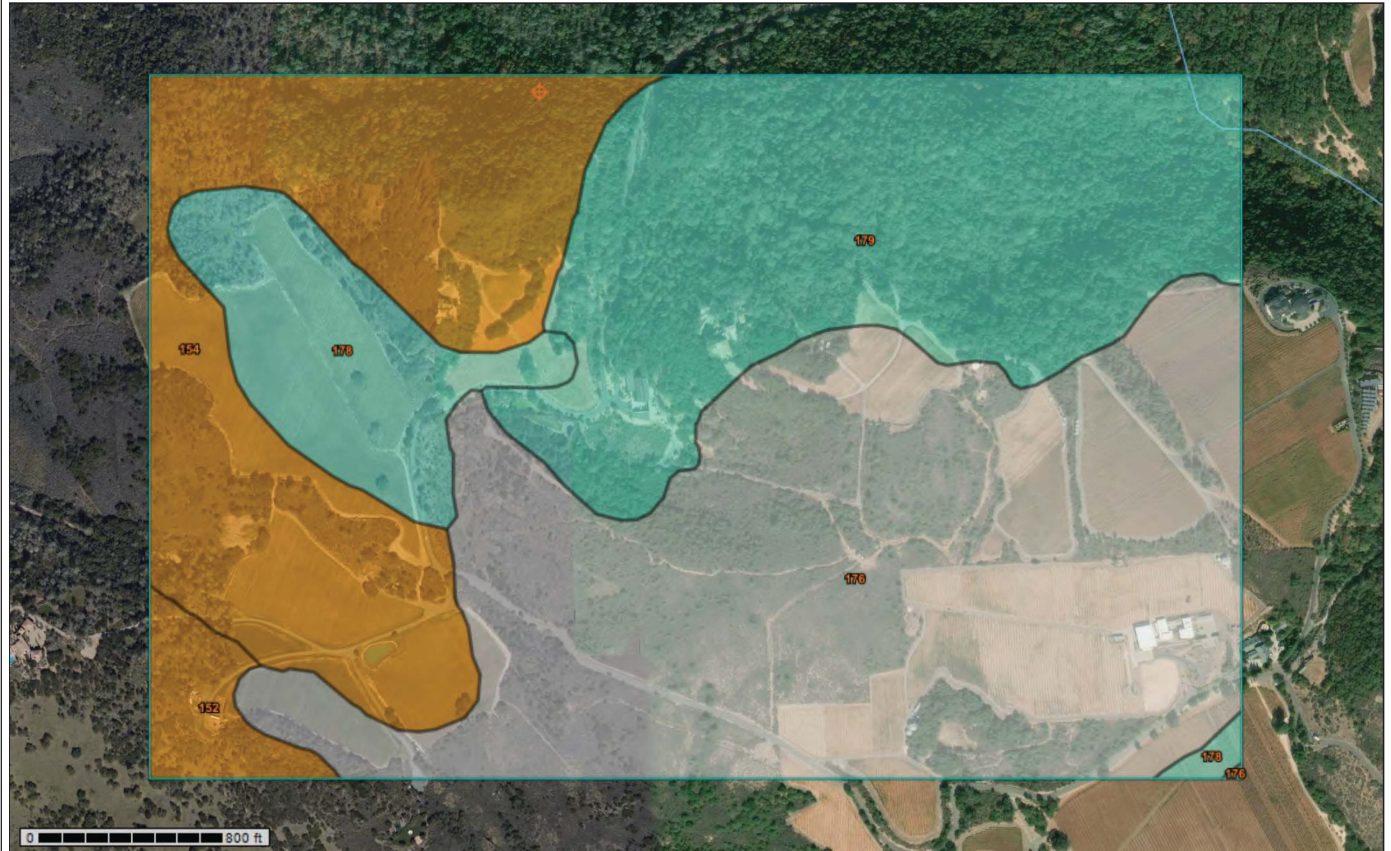
Wind Erodibility Index

Soil Health Properties

Soil Physical Properties

Map — K Factor, Whole Soil

Scale (not to scale)



Warning: Soil Ratings Map may not be valid at this scale.

You have zoomed in beyond the scale at which the soil map for this area is intended to be used. Mapping of soils is done at a particular scale. The soil surveys that comprise your AOI were mapped at 1:24,000. The design of map units and the level of detail shown in the resulting soil map are dependent on that map scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Tables — K Factor, Whole Soil — Summary By Map Unit

Summary by Map Unit — Napa County, California (CA055)

Soil Qualities and Features
 Water Features

Summary by Map Unit — Napa County, California (CA055)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
152	Hambright rock-Outcrop complex, 30 to 75 percent slopes	.10	8.0	2.4%
154	Henneke gravelly loam, 30 to 75 percent slopes	.10	71.5	21.4%
176	Rock outcrop-Hambright complex, 50 to 75 percent slopes		139.9	41.9%
178	Sobrante loam, 5 to 30 percent slopes	.32	26.9	8.1%
179	Sobrante loam, 30 to 50 percent slopes	.32	87.8	26.3%
Totals for Area of Interest			334.0	100.0%

Description — K Factor, Whole Soil

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity (Ksat). Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

"Erosion factor Kw (whole soil)" indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Rating Options — K Factor, Whole Soil

Aggregation Method: Dominant Condition

Component Percent Cutoff: *None Specified*

Tie-break Rule: Higher

Layer Options (Horizon Aggregation Method): Surface Layer (Not applicable)

View Soil Information By Use: All Uses

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Properties and Qualities Ratings

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Soil Chemical Properties

Soil Erosion Factors

K Factor, Rock Free

K Factor, Whole Soil

T Factor

[View Description](#) | [View Rating](#)

View Options

Map

Table

Description of Rating

Rating Options

Detailed Description

Advanced Options

Aggregation Method: Dominant Condition

Component Percent Cutoff

Tie-break Rule: Lower, Higher

Interpret Nulls as Zero: Yes, No

[View Description](#) | [View Rating](#)

Wind Erodibility Group

Wind Erodibility Index

Soil Health Properties

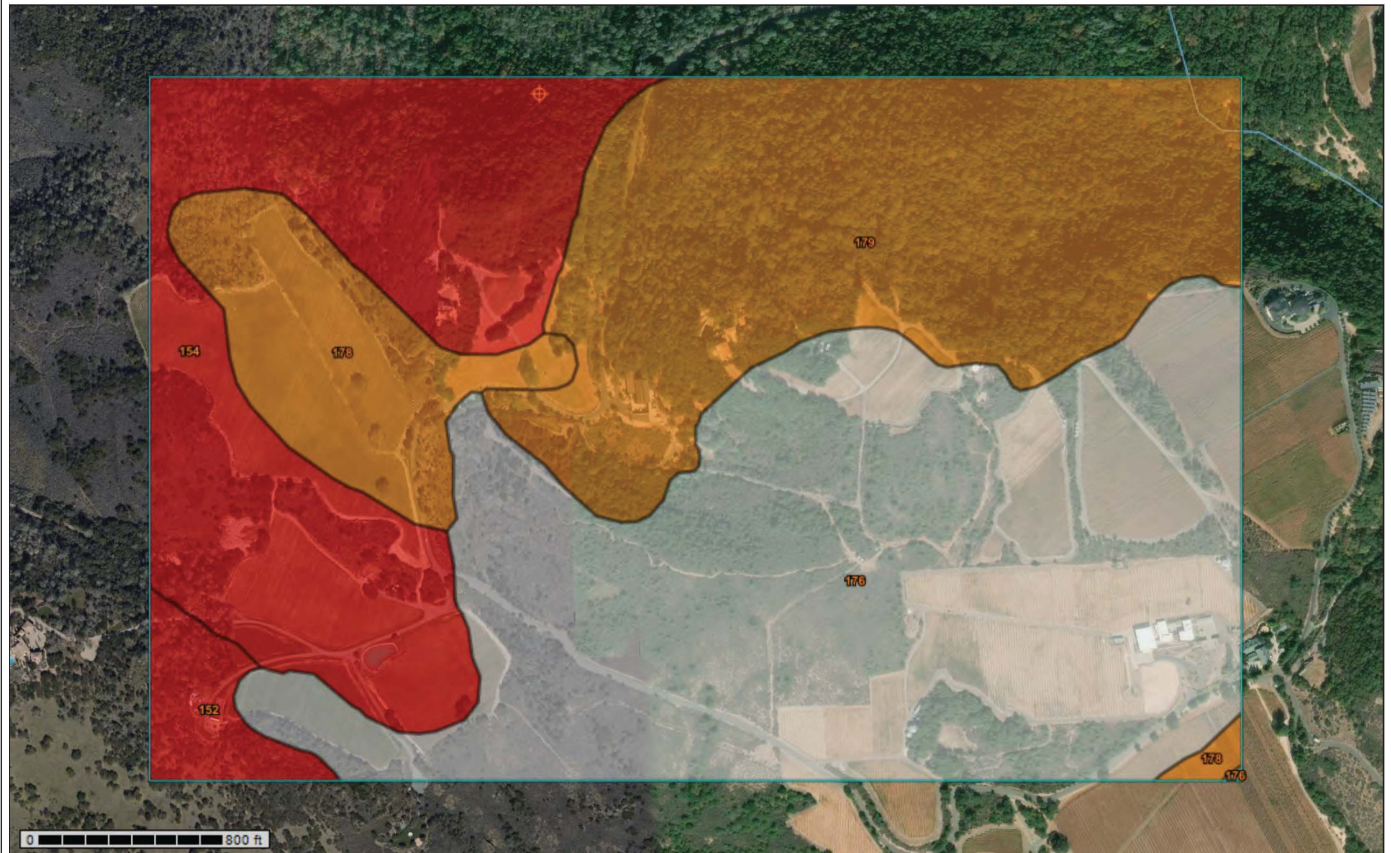
Soil Physical Properties

Soil Qualities and Features

Water Features

Map — T Factor

Scale (not to scale)



Warning: Soil Ratings Map may not be valid at this scale.

You have zoomed in beyond the scale at which the soil map for this area is intended to be used. Mapping of soils is done at a particular scale. The soil surveys that comprise your AOI were mapped at 1:24,000. The design of map units and the level of detail shown in the resulting soil map are dependent on that map scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Tables — T Factor — Summary By Map Unit

Summary by Map Unit — Napa County, California (CA055)

Summary by Map Unit — Napa County, California (CA055)				
Map unit symbol	Map unit name	Rating (tons per acre per year)	Acres in AOI	Percent of AOI
152	Hambright rock-Outcrop complex, 30 to 75 percent slopes	1	8.0	2.4%
154	Henneke gravelly loam, 30 to 75 percent slopes	1	71.5	21.4%
176	Rock outcrop-Hambright complex, 50 to 75 percent slopes		139.9	41.9%
178	Sobrante loam, 5 to 30 percent slopes	2	26.9	8.1%
179	Sobrante loam, 30 to 50 percent slopes	2	87.8	26.3%
Totals for Area of Interest			334.0	100.0%

Description — T Factor

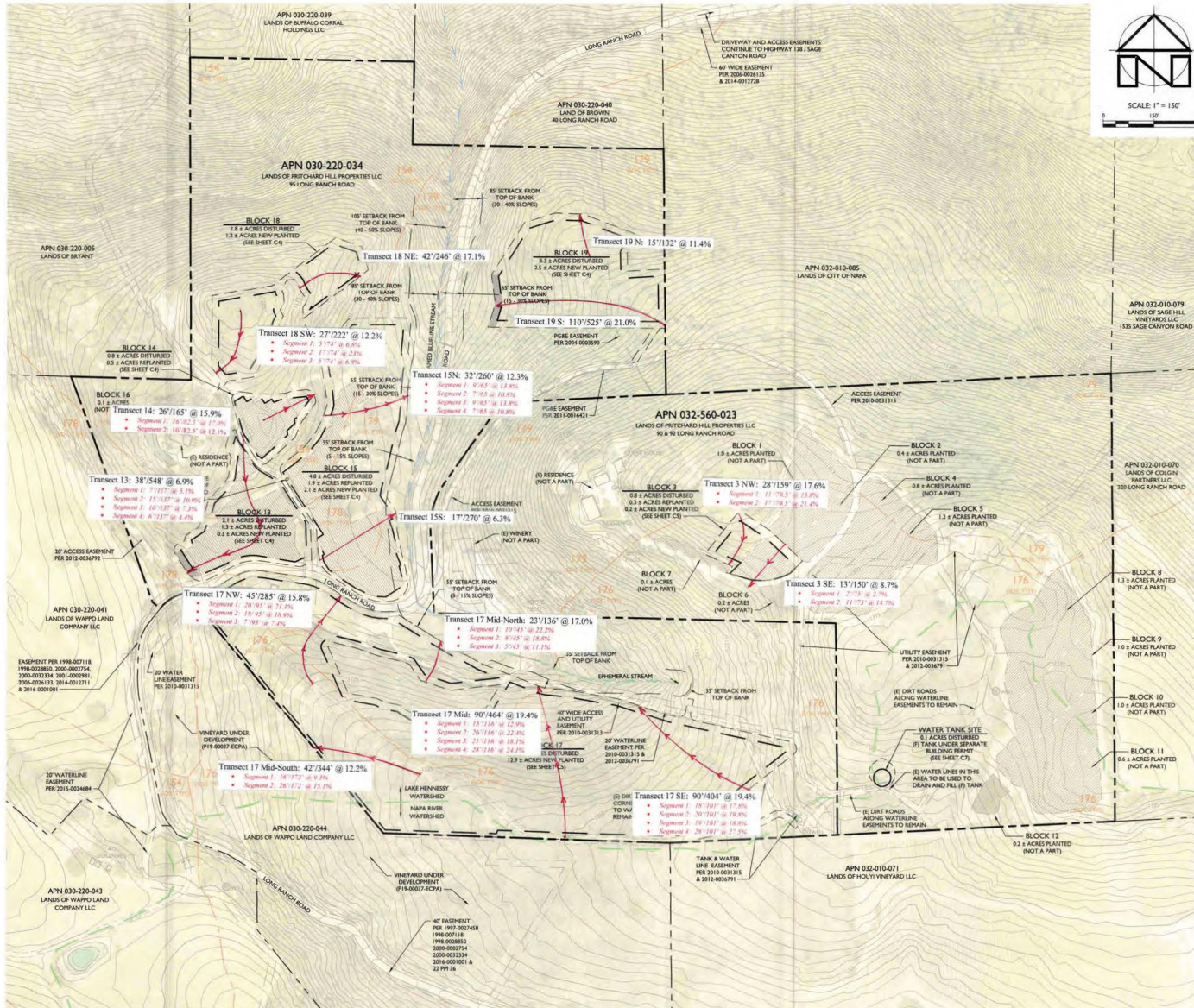
The T factor is an estimate of the maximum average annual rate of soil erosion by wind and/or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Rating Options — T Factor

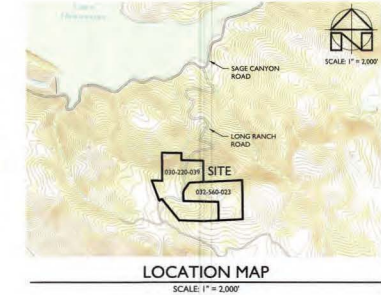
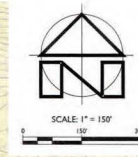
Units of Measure: tons per acre per year
Aggregation Method: Dominant Condition
Component Percent Cutoff: *None Specified*
Tie-break Rule: Lower
Interpret Nulls as Zero: No

PRITCHARD HILL PROPERTIES LLC

UNIVERSAL SOIL LOSS EXHIBIT



OVERALL SITE PLAN
SCALE: 1" = 150'



PROJECT INFORMATION:
PROPERTY OWNER & APPLICANT:
 PRITCHARD HILL PROPERTIES LLC
 420 PALM STREET
 PALO ALTO, CA 94301
SITE ADDRESS:
 90, 92 & 95 LONG RANCH ROAD
 ST. HELENA, CA 94574
ASSESSOR'S PARCEL NUMBERS:
 032-560-023 & 030-220-034
PARCEL SIZES:
 42.3 ± & 66.6 ± ACRES
PROJECT SIZES:
 30.0 ± ACRES TOTAL DISTURBED
 23.2 ± ACRES TOTAL PLANTED
 4.0 ± ACRES REPLANTED
 19.2 ± ACRES NEW PLANTED
ZONING:
 AGRICULTURAL WATERSHED (AW)
WATER SOURCE:
 EXISTING WELLS

LEGEND:

---	APPROXIMATE PROPERTY LINE
---	BLUELINE STREAM
---	EPHEMERAL STREAM
---	EXISTING VINEYARD BLOCK
---	VINEYARD AVENUE / LIMIT OF GRADING
---	LIMIT OF VINEYARD BLOCK
---	SOIL TYPE BOUNDARY

SOILS TYPE LEGEND:

TYPE	DESCRIPTION
154	HENNEKE GRAVELLY LOAM, 30 TO 75 PERCENT SLOPES
176	ROCK OUTCROP-HAMBRIGHT COMPLEX, 50 TO 75 PERCENT SLOPES
178	SOBRANTE LOAM, 5 TO 30 PERCENT SLOPES
179	SOBRANTE LOAM, 30 TO 50 PERCENT SLOPES

SOIL TYPE BOUNDARIES SHOWN ON THIS MAP ARE BASED ON THE NAPA COUNTY GEOGRAPHIC INFORMATION SYSTEM DATA AND SHOULD BE CONSIDERED APPROXIMATE.

APPLIED CIVIL ENGINEERING
 2074 West Lincoln Avenue
 San Jose, CA 95128
 (408) 253-1100
 (408) 253-1101
 (408) 253-1102
 (408) 253-1103
 (408) 253-1104
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 (408) 253-1197
 (408) 253-1198
 (408) 253-1199
 (408) 253-1200

PRITCHARD HILL PROPERTIES LLC
 UNIVERSAL SOIL LOSS EXHIBIT
 OVERALL SITE PLAN

PREPARED UNDER THE DIRECTION OF:

 DRAWN BY: PowerCAD
 CHECKED BY: MRH
 DATE: JUNE 2020
 REVISIONS: BY:

JOB NUMBER: 15-132
 FILE: 15-132EXH-LSLE.DWG
 ORIGINAL SIZE: 24" X 36"
 SHEET NUMBER:
 OF