

MEMORANDUM

Date: January 22, 2021

To: Alexei Belov, Napa County Planning, Building and Environmental Services

From: James R. Bushey, P.E.
Rachel L. Rosasco, E.I.T.



Cc: John McDowell, Napa County Planning, Building and Environmental Services

Re: G1 Financial Corporation Track I ECP, #P20-00163-ECPA
1220 Soda Canyon Road
APN 039-150-091
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). At the request of the Napa County Engineering Division, the analysis has been revised to use the segmented method for calculating slope length factors in blocks where there is a change in soil type. Soil loss calculations in Blocks 2, 4, and 5B have been revised accordingly. The Napa County Engineering Division had also requested verification that the Block 1 row grade was within Natural Resources Conservation Service (NRCS) Practice Standard Code 331 for Contour Orchards and Other Perennial Crops. However, the proposed vine row direction in Block 1 has been revised such that the block will now be farmed up/downhill as opposed to cross slope. Consequently, row grade verification according to Practice Standard Code 331 is no longer applicable. Additionally, the proposed vine row direction has changed for Blocks 2, 3, 5A, and 5B such that these blocks will also now be farmed up/downhill. Soil loss calculations for these blocks have been revised to account for the new up/downhill vine row direction.

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 September 4, 2019 by Cody Corsetti and Rachel Rosasco of PPI Engineering to determine the pre-project cover values for each block and/or transect area. 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 conducted on June 30, 2020 with Pamela Arifian and Alexei Belov of Napa County Planning, Building & Environmental Services (PBES), Willis Blakewell of Blakewell Consulting, Johnnie White of Pina Vineyard Management, and Annalee Sanborn and Cody Corsetti of PPI Engineering to verify the pre-project cover values for each block and/or transect area. Post-project cover values were calculated using the percent cover specified in the revised ECP. This analysis is limited to the proposed vineyard areas as well as vineyard avenues (2.5 gross acres).

The revised model, summarized on page 2 of Attachment A, predicts a net decrease of approximately 0.1 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.

ATTACHMENT A

SUPPORTING DOCUMENTS

**G1 Financial Corporation Track I ECP
USLE Calculation Sheets**

G1 Financial Corporation Track I ECP
USLE Calculations
PPI Engineering
1/22/2021
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USLE Calculations - Transect Summary Sheet

Proposed Block Transect	Proposed Development Acres	Pre-Project Soil Loss (tons/year)	Post-Project Soil Loss (tons/year)	Net Increase/Decrease (tons/year)
1	0.47	0.26	0.22	0.05
2	0.78	0.19	0.16	0.04
3	0.34	0.05	0.04	0.01
4	0.67	0.22	0.20	0.02
5A	0.11	0.03	0.03	0.00
5B	0.15	0.03	0.03	0.00
Totals	2.52	0.80	0.68	0.12

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

G1 Financial Corporation Track I ECP
USLE Calculations Pre-Project
PPI Engineering
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Pre-Project Block 1, Transect 1

Proposed Development Acres:	0.47
Soil Unit No. (100-182):	155
Soil Name:	Kidd
K, Soil Erodibility:	0.28
T, Soil Loss Tolerance (tons/acre):	2
R, Rainfall:	45
Total Transect Length (ft):	114
Number of Segments:	1
Individual Segment Lengths (ft):	114
Segment:	
Gradient (%):	18
m:	
Individual LS:	3.23
Factor:	
Product:	
LS, Length and Steepness:	3.23
Total Transect Average Gradient (%):	18
Farming Practice:	Up & Down Hill
P, Practice Factor (Table 6) ¹ :	1.00
Vegetative Canopy:	Trees 13' Tall
Canopy Cover:	50%
Ground Cover:	90%
Percent Grass:	50%
Percent Weeds:	50%
C, Cover (Table 5) ¹ :	0.014
A, Soil Loss (tons/acre):	0.56
Soil Loss in Proposed Development (tons):	0.26

¹ Tables 5 & 6 - USLE Special Applications for Napa County

G1 Financial Corporation Track I ECP
USLE Calculations Post-Project
PPI Engineering
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Post-Project Block 1, Transect 1

Proposed Development Acres:	0.47
Soil Unit No. (100-182):	155
Soil Name:	Kidd
K, Soil Erodibility:	0.28
T, Soil Loss Tolerance (tons/acre):	2
R, Rainfall:	45
Total Transect Length (ft):	114
Number of Segments:	1
Individual Segment Lengths (ft):	114
Segment:	
Gradient (%):	18
m:	
Individual LS:	3.23
Factor:	
Product:	
LS, Length and Steepness:	3.23
Total Transect Average Gradient (%):	18
Farming Practice:	Up & Down Hill
P, Practice Factor (Table 6) ¹ :	1.00
Cover Strategy:	Permanent
Age of Development:	Over 3 Years
Ground Cover:	90%
C, Cover (Table 4) ¹ :	0.011
A, Soil Loss (tons/acre):	0.46
Soil Loss in Proposed Development (tons):	0.22

¹ Tables 4 & 6 - USLE Special Applications for Napa County

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 USLE Calculations Pre-Project
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Pre-Project Block 2, Transect 2

Proposed Development Acres:	0.78		
Soil Unit No. (100-182):	155	155	179
Soil Name:	Kidd	Kidd	Sobranite
K, Soil Erodibility:	0.28	0.28	0.32
T, Soil Loss Tolerance (tons/acre):	2	2	2
R, Rainfall:	45		
Total Transect Length (ft):	127		
Number of Segments:	3		
Individual Segment Lengths (ft):	42		
Segment:	1	2	3
Gradient (%):	9	9	9
m:	0.5	0.5	0.5
Individual LS:	1.32	1.32	1.32
Total Transect Average Gradient (%):	9		
Segment Factor:	0.19	0.35	0.46
Segmented K*LS:	0.39		
Farming Practice:	Up & Down Hill		
P, Practice Factor (Table 6) ¹ :	1.00		
Vegetative Canopy:	No Canopy		
Canopy Cover:	0%		
Ground Cover:	90%		
Percent Grass:	50%		
Percent Weeds:	50%		
C, Cover (Table 5) ¹ :	0.014		
A, Soil Loss (tons/acre):	0.25		
Soil Loss in Proposed Development (tons):	0.19		

¹ Tables 5 & 6 - USLE Special Applications for Napa County

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 USLE Calculations Post-Project
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Post-Project Block 2, Transect 2

Proposed Development Acres:	0.78		
Soil Unit No. (100-182):	155	155	179
Soil Name:	Kidd	Kidd	Sobranite
K, Soil Erodibility:	0.28	0.28	0.32
T, Soil Loss Tolerance (tons/acre):	2	2	2
R, Rainfall:	45		
Total Transect Length (ft):	127		
Number of Segments:	3		
Individual Segment Lengths (ft):	42		
Segment:	1	2	3
Gradient (%):	9	9	9
m:	0.5	0.5	0.5
Individual LS:	1.32	1.32	1.32
Total Transect Average Gradient (%):	9		
Segment Factor:	0.19	0.35	0.46
Segmented K*LS:	0.39		
Farming Practice:	Up & Down Hill		
P, Practice Factor (Table 6) ¹ :	1.00		
Cover Strategy:	Permanent		
Age of Development:	Over 3 Years		
Ground Cover:	90%		
C, Cover (Table 4) ¹ :	0.011		
A, Soil Loss (tons/acre):	0.20		
Soil Loss in Proposed Development (tons):	0.16		

¹ Tables 4 & 6 - USLE Special Applications for Napa County

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Pre-Project Block 3, Transect 3

Proposed Development Acres:	0.34
Soil Unit No. (100-182):	179
Soil Name:	Sobranite
K, Soil Erodibility:	0.32
T, Soil Loss Tolerance (tons/acre):	2
R, Rainfall:	45
Total Transect Length (ft):	94
Number of Segments:	1
Individual Segment Lengths (ft):	94
Segment:	
Gradient (%):	7
m:	0.5
Individual LS:	0.80
Factor:	
Product:	
LS, Length and Steepness:	0.80
Total Transect Average Gradient (%):	7
Farming Practice:	Up & Down Hill
P, Practice Factor (Table 6) ¹ :	1.00
Vegetative Canopy:	Trees 13' Tall
Canopy Cover:	50%
Ground Cover:	90%
Percent Grass:	50%
Percent Weeds:	50%
C, Cover (Table 5) ¹ :	0.014
A, Soil Loss (tons/acre):	0.16
Soil Loss in Proposed Development (tons):	0.05

¹ Tables 5 & 6 - USLE Special Applications for Napa County

G1 Financial Corporation Track I ECP
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Post-Project Block 3, Transect 3

Proposed Development Acres:	0.34
Soil Unit No. (100-182):	179
Soil Name:	Sobranite
K, Soil Erodibility:	0.32
T, Soil Loss Tolerance (tons/acre):	2
R, Rainfall:	45
Total Transect Length (ft):	94
Number of Segments:	1
Individual Segment Lengths (ft):	94
Segment:	
Gradient (%):	7
m:	0.5
Individual LS:	0.80
Factor:	
Product:	
LS, Length and Steepness:	0.80
Total Transect Average Gradient (%):	7
Farming Practice:	Up & Down Hill
P, Practice Factor (Table 6) ¹ :	1.00
Cover Strategy:	Permanent
Age of Development:	Over 3 Years
Ground Cover:	90%
C, Cover (Table 4) ¹ :	0.011
A, Soil Loss (tons/acre):	0.13
Soil Loss in Proposed Development (tons):	0.04

¹ Tables 4 & 6 - USLE Special Applications for Napa County

G1 Financial Corporation Track I ECP
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Pre-Project Block 4, Transect 4

Proposed Development Acres:	0.67		
Soil Unit No. (100-182):	155	155	179
Soil Name:	Kidd	Kidd	Sobranite
K, Soil Erodibility:	0.28	0.28	0.32
T, Soil Loss Tolerance (tons/acre):	2	2	2
R, Rainfall:	45		
Total Transect Length (ft):	219		
Number of Segments:	3		
Individual Segment Lengths (ft):	73		
Segment:	1	2	3
Gradient (%):	8	11	12
m:	0.5		
Individual LS:	1.46	2.29	2.58
Total Transect Average Gradient (%):	10		
Segment Factor:	0.19	0.35	0.46
Segmented K*LS:	0.68		
Farming Practice:	Up & Down Hill		
P, Practice Factor (Table 6) ¹ :	1.00		
Vegetative Canopy:	No Canopy		
Canopy Cover:	0%		
Ground Cover:	90%		
Percent Grass:	70%		
Percent Weeds:	30%		
C, Cover (Table 5) ¹ :	0.011		
A, Soil Loss (tons/acre):	0.34		
Soil Loss in Proposed Development (tons):	0.22		

¹ Tables 5 & 6 - USLE Special Applications for Napa County

G1 Financial Corporation Track I ECP
 USLE Calculations Post-Project
 PPI Engineering
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Post-Project Block 4, Transect 4

Proposed Development Acres:	0.67		
Soil Unit No. (100-182):	155	155	179
Soil Name:	Kidd	Kidd	Sobranite
K, Soil Erodibility:	0.28	0.28	0.32
T, Soil Loss Tolerance (tons/acre):	2	2	2
R, Rainfall:	45		
Total Transect Length (ft):	219		
Number of Segments:	3		
Individual Segment Lengths (ft):	73		
Segment:	1	2	3
Gradient (%):	8	11	12
m:	0.5		
Individual LS:	1.46	2.29	2.58
Total Transect Average Gradient (%):	10		
Segment Factor:	0.19	0.35	0.46
Segmented K*LS:	0.68		
Farming Practice:	Cross Slope With Strips		
P, Practice Factor (Table 6) ¹ :	0.45		
Cover Strategy:	Permanent		
Age of Development:	Over 3 Years		
Ground Cover:	80%		
C, Cover (Table 4) ¹ :	0.022		
A, Soil Loss (tons/acre):	0.30		
Soil Loss in Proposed Development (tons):	0.20		

¹ Tables 4 & 6 - USLE Special Applications for Napa County

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Pre-Project Block 5A, Transect 5A

Proposed Development Acres:	0.11
Soil Unit No. (100-182):	179
Soil Name:	Sobranite
K, Soil Erodibility:	0.32
T, Soil Loss Tolerance (tons/acre):	2
R, Rainfall:	45
Total Transect Length (ft):	40
Number of Segments:	1
Individual Segment Lengths (ft):	40
Segment:	
Gradient (%):	15
m:	
Individual LS:	1.50
Factor:	
Product:	
LS, Length and Steepness:	1.50
Total Transect Average Gradient (%):	15
Farming Practice:	Up & Down Hill
P, Practice Factor (Table 6) ¹ :	1.00
Vegetative Canopy:	No Canopy
Canopy Cover:	0%
Ground Cover:	90%
Percent Grass:	70%
Percent Weeds:	30%
C, Cover (Table 5) ¹ :	0.011
A, Soil Loss (tons/acre):	0.24
Soil Loss in Proposed Development (tons):	0.03

¹ Tables 5 & 6 - USLE Special Applications for Napa County

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Post-Project Block 5A, Transect 5A

Proposed Development Acres:	0.11
Soil Unit No. (100-182):	179
Soil Name:	Sobranite
K, Soil Erodibility:	0.32
T, Soil Loss Tolerance (tons/acre):	2
R, Rainfall:	45
Total Transect Length (ft):	40
Number of Segments:	1
Individual Segment Lengths (ft):	40
Segment:	
Gradient (%):	15
m:	
Individual LS:	1.50
Factor:	
Product:	
LS, Length and Steepness:	1.50
Total Transect Average Gradient (%):	15
Farming Practice:	Up & Down Hill
P, Practice Factor (Table 6) ¹ :	1.00
Cover Strategy:	Permanent
Age of Development:	Over 3 Years
Ground Cover:	90%
C, Cover (Table 4) ¹ :	0.011
A, Soil Loss (tons/acre):	0.24
Soil Loss in Proposed Development (tons):	0.03

¹ Tables 4 & 6 - USLE Special Applications for Napa County

G1 Financial Corporation Track I ECP
 USLE Calculations Pre-Project
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Pre-Project Block 5B, Transect 5B

Proposed Development Acres:	0.15	
Soil Unit No. (100-182):	155	179
Soil Name:	Kidd	Sobranite
K, Soil Erodibility:	0.28	0.32
T, Soil Loss Tolerance (tons/acre):	2	2
R, Rainfall:	45	
Total Transect Length (ft):	69	
Number of Segments:	2	
Individual Segment Lengths (ft):	35	
Segment:	1	2
Gradient (%):	12	12
m:		
Individual LS:	1.45	1.45
Total Transect Average Gradient (%):	12	
Segment Factor:	0.35	0.65
Segmented K*LS:	0.44	
Farming Practice:	Up & Down Hill	
P, Practice Factor (Table 6) ¹ :	1.00	
Vegetative Canopy:	No Canopy	
Canopy Cover:	0%	
Ground Cover:	90%	
Percent Grass:	70%	
Percent Weeds:	30%	
C, Cover (Table 5) ¹ :	0.011	
A, Soil Loss (tons/acre):	0.22	
Soil Loss in Proposed Development (tons):	0.03	

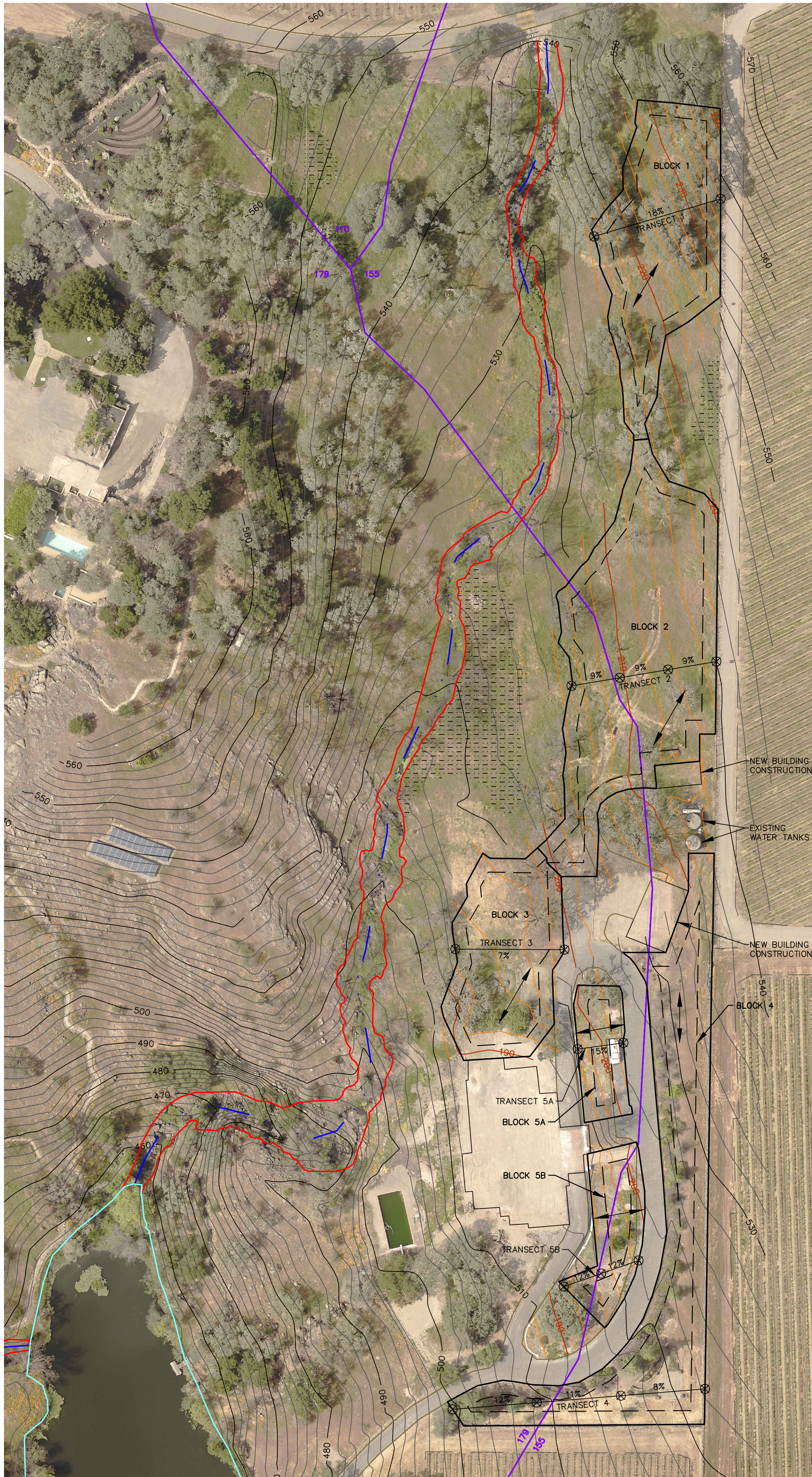
¹ Tables 5 & 6 - USLE Special Applications for Napa County

G1 Financial Corporation Track I ECP
 USLE Calculations Post-Project
 PPI Engineering
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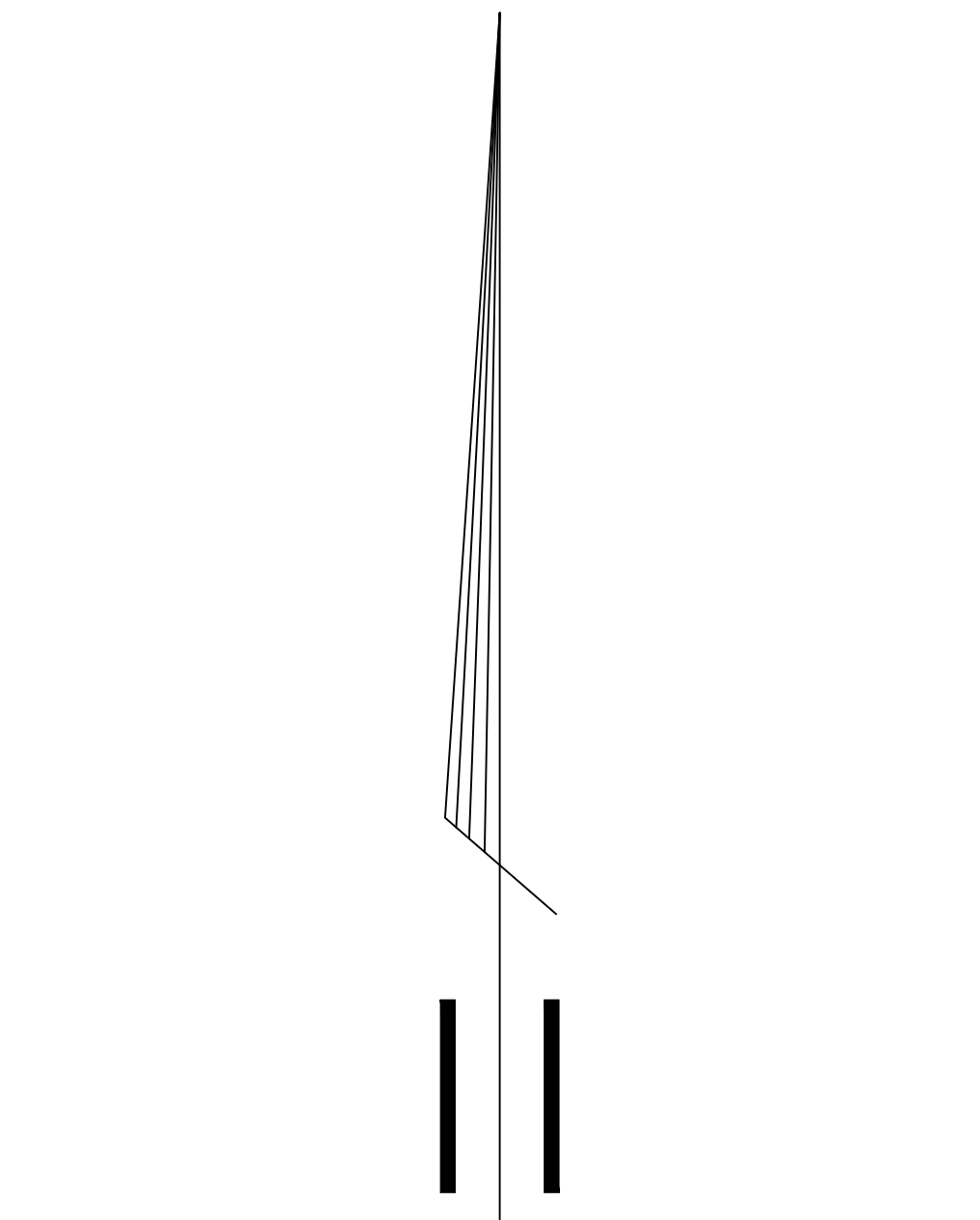
Post-Project Block 5B, Transect 5B

Proposed Development Acres:	0.15	
Soil Unit No. (100-182):	155	179
Soil Name:	Kidd	Sobranite
K, Soil Erodibility:	0.28	0.32
T, Soil Loss Tolerance (tons/acre):	2	2
R, Rainfall:	45	
Total Transect Length (ft):	69	
Number of Segments:	2	
Individual Segment Lengths (ft):	35	
Segment:	1	2
Gradient (%):	12	12
m:		
Individual LS:	1.45	1.45
Total Transect Average Gradient (%):	12	
Segment Factor:	0.35	0.65
Segmented K*LS:	0.44	
Farming Practice:	Up & Down Hill	
P, Practice Factor (Table 6) ¹ :	1.00	
Cover Strategy:	Permanent	
Age of Development:	Over 3 Years	
Ground Cover:	90%	
C, Cover (Table 4) ¹ :	0.011	
A, Soil Loss (tons/acre):	0.22	
Soil Loss in Proposed Development (tons):	0.03	

¹ Tables 4 & 6 - USLE Special Applications for Napa County



TOPOGRAPHIC MAPPING SOURCE: AMERICAN AERIAL CONTOURS, 2' CONTOUR INTERVAL, JULY 1999. ASSUMED COORDINATE SYSTEM WAS USED.
PPI ENGINEERING INC. CONTOURS, 2' CONTOUR INTERVAL, OCTOBER 2020.
2018 NAPA COUNTY AERIAL PHOTO.



GRAPHIC SCALE

(IN FEET)
1 inch = 60 ft.

LEGEND

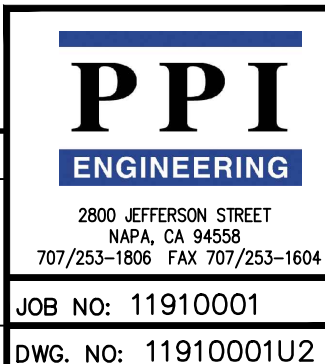
- PPI ENGINEERING 10' INDEX CONTOUR
- PPI ENGINEERING 2' INTERMEDIATE CONTOUR
- AMERICAN AERIAL 10' INDEX CONTOUR
- AMERICAN AERIAL 2' INTERMEDIATE CONTOUR
- EXISTING VINEYARD AREA
- U.S.G.S. BLUE LINE STREAM, MAPPED BY WRA
- WETLAND, MAPPED BY WRA
- EXISTING RESERVOIR
- TOP OF BANK, MAPPED BY WRA
- EXISTING ROAD
- EXISTING BUILDING
- PROPOSED VINEYARD DEVELOPMENT AREA BY TRANSECT
- PROPOSED VINEYARD BLOCK BOUNDARY
- PROPOSED VINEROW DIRECTION
- USLE TRANSECT SEGMENT WITH SLOPE
- SOIL TYPE BOUNDARY

USDA SOIL CLASSIFICATIONS:

- BOOMER-FORWARD-FELTA COMPLEX, 30 TO 50 PERCENT SLOPES
- KIDDO LOAM, 15 TO 30 PERCENT SLOPES
- SOBRANTE LOAM, 30 TO 50 PERCENT SLOPES

REV. NO.	DESCRIPTION	BY	DATE
1	THIS DRAWING SUPERSEDES DRAWING 11910001U. INCORPORATED CHANGES BASED ON NAPA COUNTY COMMENTS. ADJUSTED PROPOSED VINEYARD CLEARING LIMITS AROUND HOUSE CONSTRUCTION. VINE ROW DIRECTIONS HAVE BEEN UPDATED.	RR	1-22-21

© 2021 PPI ENGINEERING, INC.



G1 FINANCIAL CORPORATION 1220 SODA CANYON ROAD			
TRACK I ECP SOIL LOSS ANALYSIS			
DESIGN ENGINEER: J. BUSHEY, C. CORSETTI			
SCALE: AS SHOWN	DRAWN BY: RR, JCJ	DATE: 1-22-21	SHEET: 1 OF: 1