EXHIBIT G

HYDROLOGIC ANALYSIS, REVISION 4
CHAPPELLET VINEYARD
PROPOSED NEW VINEYARD DEVELOPMENT
1531 SAGE CANYON ROAD
ST. HELENA, CA
APN 032-010-076, 032-010-094
SEPTEMBER 25, 2021

The following analysis evaluates a proposed, approximately 43.6-acre vineyard development (37.3 net vine acres) located on two assessor's parcels totaling approximately 577.5 acres, in the area known as Pritchard Hill, southeast of Lake Hennessey and north of Rector Reservoir in Napa County, California, to determine the proposal's potential effects on runoff and/or peak storm flow. This analysis was prepared by David Steiner, CPESC, CPSWQ, at the request of, and in consultation with, Mr. Mike Muelrath, PE, of Applied Civil Engineering. The analysis employs the basic methodology of USDA Technical Release 55, as modeled in Version 1.00.10 of WinTR55 "Small Watershed Hydrology", a Windows-based application. The reader's attention is drawn to accompanying printouts of the analysis—both pre-project and post-project—including storm data, curve number analyses, times of concentration, and summaries of hydrograph peaks and peak times. The accompanying maps were drawn on an aerial/topographic base map provided by Applied Civil Engineering.

Watersheds 1, 2 and 3, encompassing proposed vineyard Blocks A, B, and the northern half of Block C, drain northwesterly via two unnamed blueline streams to Lake Hennessey, whose overflow drains via Conn Creek to the Napa River. Watersheds 4, 5, 6, and 7, encompassing proposed Blocks D and E, plus the southern half of Block C, drain southerly via three unnamed blueline streams to Rector Reservoir, whose overflow drains via Rector Creek to the Napa River. As the five proposed vineyard blocks straddle the ridgetop between the drainage basins of the two municipal reservoirs, and are spread out across the relatively large acreage, it would be impossible to combine these basins for modeling as a single (or even two) large watersheds(s) without buffering or masking potential hydrologic impacts of the relatively small, proposed development areas. For this reason the area has been divided into, and modeled as, seven discrete watershed areas. The same rationale has led to use of an unnamed blueline stream as the western boundary of Watershed 1, and part of the northwestern boundary of Watershed 3, choosing to ignore the flow from that stream's right bank. The proposal will not alter the excluded watershed areas. While this option compromises the validity of the model's outputs for in-stream hydraulics and *total* flow, it takes into account any potential effects (possible flow increases) from the project area—the objective of the analysis.

The precipitation data for the modeled **24-hour storms** of 2, 5, 10, 25, 50, and 100-year return intervals were taken from the median of each event's range of likely depths, as per NOAA Atlas 14. A printout of the NOAA website's database page also accompanies this analysis. Peak flow calculations for this location were derived from these values, using the appropriate "CA-1" distribution curve, implicit in the recent (2013) updates of the Atlas.

The watersheds include riparian areas, mixed woodland, chaparral or brushland, grassland, existing and developing vineyards, and small areas of rock outcrop with little or no topsoil or vegetation. One winery with a residence with landscaping and outbuildings, with access via asphalt and gravel driveways, complete the area's land use picture. Pre- and post-project runoff curve numbers (**CN**) are assigned based on hydrologic soil group (**HSG**), land use,

and hydrologic condition. Estimates of land use, cover, and hydrologic condition were based on examination of imagery from Google, the "OnXHunt" GPS application, and evaluations made during field visits on March 20, March 25, June 19, June 25 and August 10, 2019. HSG designations are derived from the USDA Web Soil Survey.

The pre- and post-project Curve Number analyses include a number of factors and circumstances that may benefit from elucidation:

- The role of wildfires bears mention in the context of determining this site's land uses and hydrologic condition. Periodic (1913, 1954, 1977, 1981[1]) fires in the area have limited both the buildup of understory organic residue (duff) and the extent and stature of tree species (coast live oak, California bay laurel, etc.) throughout the seven watersheds. Much of the area designated "brush-weeds-grass" was therefore evaluated as in fair hydrologic condition (<75% cover). In general, areas designated "woods" or "woods-grass" are in good condition. Prior to and during the 2017 Tubbs and Atlas Peak wildfires, the applicant and a neighboring winery owner jointly cleared brush to create a broad firebreak, running southeasterly from Block C to Block E, at the southern boundary with a neighboring vineyard. The *de facto* dirt road in this firebreak was conceived as an emergency escape route to the south, via Soda Canyon Road. The clearing was winterized effectively, and has been characterized as "rangeland" in good condition, for purposes of the analysis.
- Existing vineyards within the watersheds are mostly characterized as being in "good" hydrologic condition, but those few acres that appear to be subject to annual tillage are entered as "fair." As vineyards are not included among WinTR-55's land use alternatives, the application's "custom CN" field is used to enter selections from a California-specific table found in the NRCS Engineering Field Handbook.[2] This table's guidance calls for vineyard Curve Numbers equivalent to those of "annual grass." (The vineyard area in "fair" condition is entered under the application's "open space" field, with identical Curve Numbers. Data for all proposed vineyards are entered as "good" hydrologic condition in the post-project modeling, to reflect the specifications of the Erosion Control Plan. CN printouts have been edited as pdf documents, where necessary to reflect the actual land uses.
- West of proposed Block B, in Watershed 2, is a fairly large area under development as vineyard. It is characterized as bare ground or "fallow", per its condition during site visits and current satellite imagery, and assigned a Curve Number as such. This area will not be affected by the current proposal. Post-project modeling projects neither the presumably improved condition of the neighboring development (as it is completed and winterized) nor the effect of that improvement on the watershed's weighted CN and peak flow.

Times of Concentration (Tc) for each of the six watersheds were determined by plotting flowpaths from the hydrologically most remote point to a designated outlet, or point of interest. The flowpaths include sheet flow, shallow concentrated flow and channel flow. Each component's data entered into the model as slope length, gradient, Manning's "N" (roughness) factor, with additional characteristics—cross-sectional area and wetted perimeter, or a known velocity— required for channel flow. In some cases a flowpath's on-the-ground sequence may differ from that of the application. (For example, channel flow may disperse into shallow concentrated or even sheet flow over an alluvial fan, only to re-concentrate into channel flow

downstream or downhill.) As total Tc determinations are additive, the order in which Tc data are entered is unimportant.

Summary of the Results of Initial Analysis: (Please see accompanying WinTR-55 printouts for complete report.)

• Watershed 1:	Pre-project 100-year peak flow:	28.68 cfs
	Post-project 100-year peak flow:	29.18 cfs
	Increase	.50 cfs
	Pre-project 2-year peak flow:	7.60 cfs
	Post-project 2-year peak flow:	8.00 cfs
	Increase	.40 cfs
• Watershed 2:	Pre-project 100-year peak flow:	30.18 cfs
	Post-project 100-year peak flow:	30.61 cfs
	Increase	.43 cfs
	Pre-project 2-year peak flow:	10.54 cfs
	Post-project 2-year peak flow:	10.94 cfs
	Increase	.50 cfs
• Watershed 3:	Pre-project 100-year peak flow:	29.94 cfs
	Post-project 100-year peak flow:	29.94 cfs
	Increase	0
	Pre-project 2-year peak flow:	9.25 cfs
	Post-project 2-year peak flow:	9.25 cfs
	Increase	0
• Watershed 4:`	Pre-project 100-year peak flow	25.04 cfs
	Post project 100-year peak flow:	25.49 cfs
	Increase	.45 cfs
	Pre-project 2-year peak flow	7.75 cfs
	Post project 2-year peak flow:	8.09 cfs
	Increase	.34 cfs
• Watershed 5:	Pre-project 100-year peak flow:	29.83 cfs
	Post-project 100-year peak flow	30.80 cfs
	Increase:	.97 cfs
	Pre-project 2-year peak flow:	9.22 cfs
	Post-project 2-year peak flow	9.66 cfs
	Increase:	.44 cfs
• Watershed 6:	Pre-project 100-year peak flow:	8.93 cfs

	Post-project 100-year peak flow	9.08 cfs
	Increase:	.15 cfs
	Pre-project 2-year peak flow:	2.75 cfs
	Post-project 2-year peak flow	2.88 cfs
	Increase:	.13 cfs
• Watershed 7:	Pre-project 100-year peak flow:	10.07 cfs
	Post-project 100-year peak flow:	10.25 cfs
	Increase	.18 cfs
	Pre-project 2-year peak flow:	3.11 cfs
	Post-project 2-year peak flow:	3.25 cfs
	Increase	.08 cfs

As the above summary indicates, small peak flow increases will be generated in proposed Blocks 1, 2, 4, 5, 6, and 7, as initially proposed. The accompanying addendum describes and analyzes the effect of additional, proposed project infrastructure designed to eliminate these increases.

ADDENDUM: CHAPPELLET VINEYARDS HYDROLOGIC ANALYSIS
STORAGE VOLUME REQUIRED TO MITIGATE PREDICTED PEAK FLOW INCREASES
WATERSHEDS 1, 2, 4, 5, 6, and 7. (NO INCREASE PREDICTED IN WS 3.)
REVISED, SEPTEMBER 25, 2021

Watershed 1

- A manually-entered Tc increase of .033 hours brings the post-project, 100-year peak of WS-1 (29.18 cfs) to parity with the pre-project peak (28.68 cfs).
- Sub WS 1-A will generate a 100-year peak of 2.07 cfs.
- .033 hours x 3600 seconds/hour = 118.8 seconds
- 126 seconds x 2.07 cfs = 246 cubic feet of required storage volume

- A manually-entered Tc increase of .102 hours brings the post-project, 2-year peak of WS-1 (8.00 cfs) to parity with the pre-project peak (7.60 cfs).
- Sub WS 1-A will generate a 2-year peak of 0.64 cfs.
- .102 hours x 3600 seconds/hour = 367.2 seconds
- 367.2 seconds x 0.64 cfs = 235 cubic feet of required storage volume

REQUIRED STORAGE VOLUME (PER 100-YEAR PEAK) IS 246 CUBIC FEET
Intermediary 5-, 10-, 25-, and 50-year storms will require storage volumes in proportion to the respective depths and peaks; mitigation of the biggest (i.e., 100-year) storms will require the most storage volume.

Watershed 2

- A manually-entered Tc increase of .019 hours brings the post-project, 100-year peak of WS 2 (30.61 cfs) to parity with the pre-project peak (30.18 cfs).
- Sub-WS 2-A will generate a 100-year peak of 4.45 cfs.
- .019 hours x 3600 seconds/hour = 68.4 seconds
- 68.4 seconds x 4.45 cfs = 304.8 cubic feet of required storage volume

- A manually-entered Tc increase of .041 hours brings the post-project, 2-year peak of WS 2 (10.94 cfs) to parity with the pre-project peak (10.54 cfs).
- Sub-WS 2-A will generate a 2-year peak of 1.45 cfs.
- .041 hours x 3600 seconds/hour = 147.6 seconds
- 147.6 seconds x 1.45 cfs = 214 cubic feet of required storage volume

REQUIRED STORAGE VOLUME (PER 100-YEAR PEAK) IS 304.8 CUBIC FEET
Intermediary 5-, 10-, 25-, and 50-year storms will require storage volumes in proportion to the respective depths and peaks; mitigation of the biggest (i.e., 100-year) storms will require the most storage volume.

Watershed 4

- A manually-entered Tc increase of .021 hours brings the post-project, 100-year peak of WS 4 (25.49 cfs) to parity with the pre-project peak (25.04 cfs).
- Sub-WS 4-A will generate a 100-year peak of 12.07 cfs.
- .021 hours x 3600 seconds/hour = 75.6 seconds

- 75.6 seconds x 12.07 cfs = 912.5 cubic feet of required storage volume

- A manually-entered Tc increase of .050. hours brings the post-project, 2-year peak of WS 4 (8.09 cfs) to parity with the pre-project peak (7.75 cfs).
- Sub-WS 4-A will generate a 2-year peak of 3.83 cfs.
- .050. hours x 3600 seconds/hour = 180 seconds
- 180 seconds x 3.83 cfs = 689.4 cubic feet of required storage volume

REQUIRED STORAGE VOLUME (PER 100-YEAR PEAK) IS 912.5 CUBIC FEET
Intermediary 5-, 10-, 25-, and 50-year storms will require storage volumes in proportion to the respective depths and peaks; mitigation of the biggest (i.e., 100-year) storms will require the most storage volume.

Watershed 5

- A manually-entered Tc increase of .059 hours (to Sub-Area 5B) brings the post-project, 100-year peak of WS 5 (30.80 cfs) to parity with the pre-project peak (29.83 cfs).
- Sub-WS 5-B-1 will generate a 100-year peak of 9.51 cfs
- .059 hours x 3600 seconds/hour = 212.4 seconds
- 212.4 seconds x 9.51 cfs =
- 2020 cubic feet of required storage volume

- A manually-entered Tc increase of .146 hours (to sub-WS 5B) brings the post-project, 2-year peak of WS 5 (9.66 cfs) to parity with the pre-project peak (9.22 cfs).
- Sub-WS 5-B-1 will generate a 2-year peak of 3.17 cfs.
- .146 hours x 3600 seconds/hour = 525.6 seconds
- 525.6 seconds x 3.17 cfs =
- 1666 cubic feet of required storage volume

REQUIRED STORAGE VOLUME (PER 100-YEAR PEAK) IS 2020 CUBIC FEET.
Intermediary 5-, 10-, 25-, and 50-year storms will require storage volumes in proportion to the respective depths and peaks; mitigation of the biggest (i.e., 100-year) storms will require the most storage volume.

Watershed 6

- A manually-entered .029 hour increase in the post-project Tc of WS 6 is required to bring post-project, 100-year peak flow (9.08 cfs) to parity with pre-project level (8.93 cfs).
- 100-year peak of sub-WS 6-A is 3.04 cfs
- .029 hr x 3600 seconds/hour = 104.4 seconds
- 104.4 seconds x 3.04 cfs = 317.4 cubic feet required storage volume

- A manually-entered .073 hour increase in the post-project Tc of WS 6 is required to bring post-project, 2-year peak flow (2.88 cfs) to parity with pre-project level (2.75 cfs).
- 2-year peak of sub-WS 6-A is 0.99 cfs
- .073 hr x 3600 seconds/hour = 262.8 seconds
- 262.8 seconds x 0.99 cfs = 260.2 cubic feet required storage volume

REQUIRED STORAGE VOLUME (PER 100-YEAR PEAK) IS 317.4 CUBIC FEET.
Intermediary 5-, 10-, 25-, and 50-year storms will require storage volumes in proportion to

the respective depths and peaks; mitigation of the biggest (i.e., 100-year) storms will require the most storage volume.

Watershed 7

- A manually-entered Tc increase of .021 hours brings the post-project, 100-year peak of WS 7 (10.25 cfs) to parity with the pre-project peak (10.07 cfs).
- Sub-WS 7-A will generate a 100-year peak of 1.09 cfs
- .060 hours x 3600 seconds/hour = 75.6 seconds
  75.6 seconds x 1.09 cfs =
- 82.4 cubic feet of required storage volume

- A manually-entered Tc increase of .052 hours brings the post-project, 2-year peak of WS 7 (3.25 cfs) to parity with the pre-project peak (3.11 cfs).
- Sub-WS 7-A will generate a 2-year peak of 0.37 cfs
- .052 hours x 3600 seconds/hour = 187.2 seconds
  187.2 seconds x .37 cfs =
- 69.3 cubic feet of required storage volume

REQUIRED STORAGE VOLUME (PER 100-YEAR PEAK) IS 82.4 CUBIC FEET. Intermediary 5-, 10-, 25-, and 50-year storms will require storage volumes in proportion to the respective depths and peaks; mitigation of the biggest (i.e., 100-year) storms will require the most storage volume.

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Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 2-Yr (cfs)	(hr)	5-Yr (cfs)	(hr)	10-Yr (cfs)	(hr)	25-Yr (cfs)	(hr)	50-Yr (cfs)	(hr)	100-Yr (cfs)	(hr)
SUBAREAS												
south	3.03	12.13	4.72	12.13	6.13	12.13	8.05	12.13	9.51	12.13	10.95	12.13
north	5.19	12.12	8.10	12.12	10.51	12.12	13.80	12.12	16.30	12.12	18.76	12.12
REACHES												
Reach 1	3.03	12.13	4.72	12.13	6.13	12.13	8.05	12.13	9.51	12.13	10.95	12.13
Down	3.02	12.16	4.72	12.16	6.13	12.16	8.04	12.15	9.50	12.15	10.95	12.15
Reach 2	3.02	12.16	4.72	12.16	6.13	12.16	8.04	12.15	9.50	12.15	10.95	12.15
Down	3.02	12.18	4.72	12.18	6.13	12.17	8.04	12.18	9.50	12.17	10.94	12.17
OUTLET	8.00		12.50		16.26		21.40		25.32		29.18	

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Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
3.99	5.06	5.9	7.01	7.84	8.65	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type CA-1
Dimensionless Unit Hydrograph: <standard>

Reach Summary Table

Reach Identifier	Receiving Reach Identifier	Reach Length (ft)	Routing Method
Reach 1	Reach 2	550	CHANNEL
Reach 2	Outlet	550	CHANNEL

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Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
south							
SHEET	100	0.0960	0.150				0.078
SHALLOW	267	0.1890	0.050				0.011
SHALLOW	478	0.1930	0.050				0.019
CHANNEL	360					3.400	0.029
					Time of Concentration		.137
north							
SHEET	100	0.1000	0.150				0.077
SHALLOW	900	0.2500	0.050				0.031
					Time of Concentration		.108

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Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
south	Gravel (w/ right-of-way)		C	.23	89
	Dirt (w/ right-of-way)		C	.13	87
	User defined urban (Click button or		C	2.83	75
	User defined urban (Click button or		D	.86	81
	Pasture, grassland or range	(good)	C	1.83	74
	Brush - brush, weed, grass mix	(good)	C	2.05	65
	Woods - grass combination	(good)	C	1.36	72
	Woods	(good)	C	1.31	70
	Woods	(good)	D	1.24	77
	Total Area / Weighted Curve Number			11.84	73
north	Gravel (w/ right-of-way)		C	.07	89
	User defined urban (Click button or		C	4.97	75
	User defined urban (Click button or		D	.24	81
	Pasture, grassland or range	(good)	C	.77	74
	Brush - brush, weed, grass mix	(fair)	D	1.1	77
	Brush - brush, weed, grass mix	(good)	C	1.75	65
	Woods - grass combination	(good)	C	4.74	72
	Woods	(good)	C	4.69	70
	Woods	(good)	D	1.46	77
	Total Area / Weighted Curve Number			19.79	73

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County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
south	Gravel (w/ right-of-way)		C	.23	89
	Dirt (w/ right-of-way)		C	.13	87
	Vineyard (annual grass)	(good)	C	2.83	75
	Vineyard (annual grass)	(good)	D	.86	81
	Pasture, grassland or range	(good)	C	1.83	74
	Brush - brush, weed, grass mix	(good)	C	2.05	65
	Woods - grass combination	(good)	C	1.36	72
	Woods	(good)	C	1.31	70
	Woods	(good)	D	1.24	77
	Total Area / Weighted Curve Number			11.84	73
north	Gravel (w/ right-of-way)		C	.07	89
	Vineyard (annual grass)	(good)	C	4.97	75
	Vineyard (annual grass)	(good)	D	.24	81
	Pasture, grassland or range	(good)	C	.77	74
	Brush - brush, weed, grass mix	(fair)	D	1.1	77
	Brush - brush, weed, grass mix	(good)	C	1.75	65
	Woods - grass combination	(good)	C	4.74	72
	Woods	(good)	C	4.69	70
	Woods	(good)	D	1.46	77
	Total Area / Weighted Curve Number			19.79	73

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Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 2-Yr (cfs)	(hr)	5-Yr (cfs)	(hr)	10-Yr (cfs)	(hr)	25-Yr (cfs)	(hr)	50-Yr (cfs)	(hr)	100-Yr (cfs)	(hr)
SUBAREAS												
south	3.03	12.13	4.72	12.13	6.13	12.13	8.05	12.13	9.51	12.13	10.95	12.13
north	4.67	12.12	7.48	12.12	9.83	12.12	13.06	12.12	15.53	12.12	17.98	12.12
REACHES												
Reach 1	3.03	12.13	4.72	12.13	6.13	12.13	8.05	12.13	9.51	12.13	10.95	12.13
Down	3.02	12.16	4.72	12.16	6.13	12.16	8.04	12.15	9.50	12.15	10.95	12.15
Reach 2	7.61	12.13	12.07	12.13	15.80	12.13	20.91	12.13	24.83	12.13	28.70	12.13
Down	7.60	12.15	12.06	12.14	15.79	12.14	20.91	12.15	24.82	12.14	28.68	12.14
OUTLET	7.60		12.06		15.79		20.91		24.82		28.68	

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
3.99	5.06	5.9	7.01	7.84	8.65	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type CA-1
Dimensionless Unit Hydrograph: <standard>

Reach Summary Table

Reach Identifier	Receiving Reach Identifier	Reach Length (ft)	Routing Method
Reach 1	Reach 2	550	CHANNEL
Reach 2	Outlet	550	CHANNEL

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Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
south							
SHEET	100	0.0960	0.150				0.078
SHALLOW	267	0.1890	0.050				0.011
SHALLOW	478	0.1930	0.050				0.019
CHANNEL	360					3.400	0.029
					Time of Concentration		.137
north							
SHEET	100	0.1000	0.150				0.077
SHALLOW	900	0.2500	0.050				0.031
					Time of Concentration		.108

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Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
south	Gravel (w/ right-of-way)		C	.23	89
	Dirt (w/ right-of-way)		C	.13	87
	User defined urban (Click button or		C	2.02	75
	User defined urban (Click button or		D	.02	81
	Pasture, grassland or range	(good)	C	1.83	74
	Brush - brush, weed, grass mix	(fair)	C	.35	70
	Brush - brush, weed, grass mix	(good)	C	2.33	65
	Woods - grass combination	(good)	C	1.36	72
	Woods	(good)	C	1.49	70
	Woods	(good)	D	2.08	77
	Total Area / Weighted Curve Number			11.84	73
				=====	==
north	Gravel (w/ right-of-way)		C	.07	89
	User defined urban (Click button or		D	.06	81
	Pasture, grassland or range	(good)	C	2.17	74
	Brush - brush, weed, grass mix	(fair)	C	.35	70
	Brush - brush, weed, grass mix	(fair)	D	1.1	77
	Brush - brush, weed, grass mix	(good)	C	3.57	65
	Woods - grass combination	(good)	C	5.54	72
	Woods	(good)	C	5.21	70
	Woods	(good)	D	1.72	77
	Total Area / Weighted Curve Number			19.79	71
				=====	==

Chappellet
Watershed 1, pre project - split, rev 5
County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
south	Gravel (w/ right-of-way)		C	.23	89
	Dirt (w/ right-of-way)		C	.13	87
	Vineyard (annual grass)	(good)	C	2.02	75
	Vineyard (annual grass)	(good)	D	.02	81
	Pasture, grassland or range	(good)	C	1.83	74
	Brush - brush, weed, grass mix	(fair)	C	.35	70
	Brush - brush, weed, grass mix	(good)	C	2.33	65
	Woods - grass combination	(good)	C	1.36	72
	Woods	(good)	C	1.49	70
	Woods	(good)	D	2.08	77
	Total Area / Weighted Curve Number			11.84	73
north	Gravel (w/ right-of-way)		C	.07	89
	Vineyard (annual grass)	(good)	D	.06	81
	Pasture, grassland or range	(good)	C	2.17	74
	Brush - brush, weed, grass mix	(fair)	C	.35	70
	Brush - brush, weed, grass mix	(fair)	D	1.1	77
	Brush - brush, weed, grass mix	(good)	C	3.57	65
	Woods - grass combination	(good)	C	5.54	72
	Woods	(good)	C	5.21	70
	Woods	(good)	D	1.72	77
	Total Area / Weighted Curve Number			19.79	71

DAS-MM Chappellet

Watershed 1, post project - split, rev 5, Tc inc 100

County, California

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 2-Yr (cfs)	(hr)	5-Yr (cfs)	(hr)	10-Yr (cfs)	(hr)	25-Yr (cfs)	(hr)	50-Yr (cfs)	(hr)	100-Yr (cfs)	(hr)
SUBAREAS												
south	2.94	12.15	4.59	12.16	5.96	12.15	7.82	12.15	9.25	12.15	10.65	12.15
north	5.19	12.12	8.10	12.12	10.51	12.12	13.80	12.12	16.30	12.12	18.76	12.12
REACHES												
Reach 1	2.94	12.15	4.59	12.16	5.96	12.15	7.82	12.15	9.25	12.15	10.65	12.15
Down	2.94	12.17	4.58	12.18	5.95	12.17	7.82	12.17	9.24	12.16	10.64	12.16
Reach 2	2.94	12.17	4.58	12.18	5.95	12.17	7.82	12.17	9.24	12.16	10.64	12.16
Down	2.93	12.19	4.58	12.20	5.95	12.20	7.81	12.19	9.24	12.18	10.64	12.18
OUTLET	7.85		12.28		15.97		21.03		24.88		28.68	

Watershed 1, post project - split, rev 5, Tc inc 100
County, California

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
3.99	5.06	5.9	7.01	7.84	8.65	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type CA-1
Dimensionless Unit Hydrograph: <standard>

Reach Summary Table

Reach Identifier	Receiving Reach Identifier	Reach Length (ft)	Routing Method
Reach 1	Reach 2	550	CHANNEL
Reach 2	Outlet	550	CHANNEL

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
south							
SHEET	100	0.0960	0.150				0.078
SHALLOW	267	0.1890	0.050				0.011
SHALLOW	478	0.1930	0.050				0.019
CHANNEL	360					3.400	0.029
CHANNEL	240					2.000	0.033
					Time of Concentration		.17
north							
SHEET	100	0.1000	0.150				0.077
SHALLOW	900	0.2500	0.050				0.031
					Time of Concentration		.108

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
south							
SHEET	100	0.0960	0.150				0.078
SHALLOW	267	0.1890	0.050				0.011
SHALLOW	478	0.1930	0.050				0.019
CHANNEL	360					3.400	0.029
CHANNEL	240		MANUAL ENTRY				0.033
					Time of Concentration		.17
north							
SHEET	100	0.1000	0.150				0.077
SHALLOW	900	0.2500	0.050				0.031
					Time of Concentration		.108

Watershed 1, post project - split, rev 5, Tc inc 100
County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
south	Gravel (w/ right-of-way)		C	.23	89
	Dirt (w/ right-of-way)		C	.13	87
	User defined urban (Click button or		C	2.83	75
	User defined urban (Click button or		D	.86	81
	Pasture, grassland or range	(good)	C	1.83	74
	Brush - brush, weed, grass mix	(good)	C	2.05	65
	Woods - grass combination	(good)	C	1.36	72
	Woods	(good)	C	1.31	70
	Woods	(good)	D	1.24	77
	Total Area / Weighted Curve Number			11.84	73
north	Gravel (w/ right-of-way)		C	.07	89
	User defined urban (Click button or		C	4.97	75
	User defined urban (Click button or		D	.24	81
	Pasture, grassland or range	(good)	C	.77	74
	Brush - brush, weed, grass mix	(fair)	D	1.1	77
	Brush - brush, weed, grass mix	(good)	C	1.75	65
	Woods - grass combination	(good)	C	4.74	72
	Woods	(good)	C	4.69	70
	Woods	(good)	D	1.46	77
	Total Area / Weighted Curve Number			19.79	73

Watershed 1, post project - split, rev 5, Tc inc 100
County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
south	Gravel (w/ right-of-way)		C	.23	89
	Dirt (w/ right-of-way)		C	.13	87
	Vineyard (annual grass)	(good)	C	2.83	75
	Vineyard (annual grass)	(good)	D	.86	81
	Pasture, grassland or range	(good)	C	1.83	74
	Brush - brush, weed, grass mix	(good)	C	2.05	65
	Woods - grass combination	(good)	C	1.36	72
	Woods	(good)	C	1.31	70
	Woods	(good)	D	1.24	77
	Total Area / Weighted Curve Number			11.84	73
north	Gravel (w/ right-of-way)		C	.07	89
	Vineyard (annual grass)	(good)	C	4.97	75
	Vineyard (annual grass)	(good)	D	.24	81
	Pasture, grassland or range	(good)	C	.77	74
	Brush - brush, weed, grass mix	(fair)	D	1.1	77
	Brush - brush, weed, grass mix	(good)	C	1.75	65
	Woods - grass combination	(good)	C	4.74	72
	Woods	(good)	C	4.69	70
	Woods	(good)	D	1.46	77
	Total Area / Weighted Curve Number			19.79	73

DAS-MM Chappellet

Watershed 1, post project - split, rev 5, Tc inc 2

County, California

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period					
	2-Yr (cfs)	5-Yr (cfs)	10-Yr (cfs)	25-Yr (cfs)	50-Yr (cfs)	100-Yr (cfs)
	(hr)	(hr)	(hr)	(hr)	(hr)	(hr)
SUBAREAS						
south	2.78	4.35	5.65	7.42	8.77	10.10
	12.19	12.18	12.19	12.18	12.19	12.19
north	5.19	8.10	10.51	13.80	16.30	18.76
	12.12	12.12	12.12	12.12	12.12	12.12
REACHES						
Reach 1	2.78	4.35	5.65	7.42	8.77	10.10
	12.19	12.18	12.19	12.18	12.19	12.19
Down	2.78	4.35	5.64	7.42	8.77	10.10
	12.21	12.21	12.20	12.21	12.20	12.21
Reach 2	2.78	4.35	5.64	7.42	8.77	10.10
	12.21	12.21	12.20	12.21	12.20	12.21
Down	2.78	4.35	5.64	7.41	8.77	10.10
	12.24	12.23	12.23	12.23	12.22	12.22
OUTLET	7.60	11.89	15.47	20.37	24.11	27.80

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
3.99	5.06	5.9	7.01	7.84	8.65	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type CA-1
Dimensionless Unit Hydrograph: <standard>

Reach Summary Table

Reach Identifier	Receiving Reach Identifier	Reach Length (ft)	Routing Method
Reach 1	Reach 2	550	CHANNEL
Reach 2	Outlet	550	CHANNEL

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
south							
SHEET	100	0.0960	0.150				0.078
SHALLOW	267	0.1890	0.050				0.011
SHALLOW	478	0.1930	0.050				0.019
CHANNEL	360					3.400	0.029
CHANNEL	735					2.000	0.102
					Time of Concentration		.239
north							
SHEET	100	0.1000	0.150				0.077
SHALLOW	900	0.2500	0.050				0.031
					Time of Concentration		.108

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Chappellet
Watershed 1, post project - split, rev 5, Tc inc 2
County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
south							
SHEET	100	0.0960	0.150				0.078
SHALLOW	267	0.1890	0.050				0.011
SHALLOW	478	0.1930	0.050				0.019
CHANNEL	360					3.400	0.029
CHANNEL	735	MANUAL ENTRY					0.102
					Time of Concentration		.239
north							
SHEET	100	0.1000	0.150				0.077
SHALLOW	900	0.2500	0.050				0.031
					Time of Concentration		.108

Chappellet
Watershed 1, post project - split, rev 5, Tc inc 2
County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
south	Gravel (w/ right-of-way)		C	.23	89
	Dirt (w/ right-of-way)		C	.13	87
	User defined urban (Click button or		C	2.83	75
	User defined urban (Click button or		D	.86	81
	Pasture, grassland or range	(good)	C	1.83	74
	Brush - brush, weed, grass mix	(good)	C	2.05	65
	Woods - grass combination	(good)	C	1.36	72
	Woods	(good)	C	1.31	70
	Woods	(good)	D	1.24	77
	Total Area / Weighted Curve Number			11.84	73
north	Gravel (w/ right-of-way)		C	.07	89
	User defined urban (Click button or		C	4.97	75
	User defined urban (Click button or		D	.24	81
	Pasture, grassland or range	(good)	C	.77	74
	Brush - brush, weed, grass mix	(fair)	D	1.1	77
	Brush - brush, weed, grass mix	(good)	C	1.75	65
	Woods - grass combination	(good)	C	4.74	72
	Woods	(good)	C	4.69	70
	Woods	(good)	D	1.46	77
	Total Area / Weighted Curve Number			19.79	73

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
south	Gravel (w/ right-of-way)		C	.23	89
	Dirt (w/ right-of-way)		C	.13	87
	Vineyard (annual grass)	(good)	C	2.83	75
	Vineyard (annual grass)	(good)	D	.86	81
	Pasture, grassland or range	(good)	C	1.83	74
	Brush - brush, weed, grass mix	(good)	C	2.05	65
	Woods - grass combination	(good)	C	1.36	72
	Woods	(good)	C	1.31	70
	Woods	(good)	D	1.24	77
	Total Area / Weighted Curve Number			11.84	73
north	Gravel (w/ right-of-way)		C	.07	89
	Vineyard (annual grass)	(good)	C	4.97	75
	Vineyard (annual grass)	(good)	D	.24	81
	Pasture, grassland or range	(good)	C	.77	74
	Brush - brush, weed, grass mix	(fair)	D	1.1	77
	Brush - brush, weed, grass mix	(good)	C	1.75	65
	Woods - grass combination	(good)	C	4.74	72
	Woods	(good)	C	4.69	70
	Woods	(good)	D	1.46	77
	Total Area / Weighted Curve Number			19.79	73

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Chappellet
Sub-Watershed 1-A, post-project
Napa County, California

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 2-Yr (cfs)	(hr)	5-Yr (cfs)	(hr)	10-Yr (cfs)	(hr)	25-Yr (cfs)	(hr)	50-Yr (cfs)	(hr)	100-Yr (cfs)	(hr)
SUBAREAS												
main	0.64	12.12	0.95	12.12	1.21	12.12	1.55	12.12	1.81	12.12	2.07	12.12
REACHES												
OUTLET	0.64		0.95		1.21		1.55		1.81		2.07	

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Chappellet
Sub-Watershed 1-A, post-project
Napa County, California

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
3.99	5.06	5.9	7.01	7.84	8.65	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type CA-1
Dimensionless Unit Hydrograph: <standard>

Chappellet
Sub-Watershed 1-A, post-project
Napa County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
main							
SHEET	100	0.0960	0.150				0.078
SHALLOW	267	0.1890	0.050				0.011
						Time of Concentration	0.1

DAS

Chappellet
Sub-Watershed 1-A, post-project
Napa County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
main	User defined urban (Click button or		C	.8	75
	User defined urban (Click button or		D	.5	81
	Woods	(good)	D	.7	77
	Total Area / Weighted Curve Number			2	77
				=	==

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Chappellet
Sub-Watershed 1-A, post-project
Napa County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
main	Vineyard (annual grass)	(good)	C	.8	75
	Vineyard (annual grass)	(good)	D	.5	81
	Woods	(good)	D	.7	77
	Total Area / Weighted Curve Number			2	77
				=	==

DAS

Chappellet
Watershed 2, pre-project, rev
County, California

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period					
	2-Yr (cfs)	5-Yr (cfs)	10-Yr (cfs)	25-Yr (cfs)	50-Yr (cfs)	100-Yr (cfs)
	(hr)	(hr)	(hr)	(hr)	(hr)	(hr)
SUBAREAS						
main	10.54	15.00	18.54	23.24	26.76	30.18
	12.16	12.16	12.16	12.15	12.16	12.15
REACHES						
OUTLET	10.54	15.00	18.54	23.24	26.76	30.18

Chappellet
Watershed 2, pre-project, rev
County, California

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
3.99	5.06	5.9	7.01	7.84	8.65	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type CA-1
Dimensionless Unit Hydrograph: <standard>

Chappellet
Watershed 2, pre-project, rev
County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
main							
SHEET	100	0.0360	0.150				0.116
SHALLOW	370	0.1150	0.050				0.019
SHALLOW	379	0.2110	0.050				0.014
CHANNEL	956	0.1340	0.055	4.50	8.00	6.809	0.039
					Time of Concentration		0.188

Chappellet
Watershed 2, pre-project, rev
County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
main	User defined urban (Click button or		D	.9	81
	Fallow Bare soil		D	8.2	94
	Pasture, grassland or range	(good)	D	9.4	80
	Brush - brush, weed, grass mix	(good)	D	2	73
	Woods	(good)	C	.8	70
	Woods	(good)	D	7.8	77
	Total Area / Weighted Curve Number			29.1	82

DAS

Chappellet
Watershed 2, pre-project, rev
County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
main	Vineyard (annual grass)	(good)	D	.9	81
	Fallow Bare soil		D	8.2	94
	Pasture, grassland or range	(good)	D	9.4	80
	Brush - brush, weed, grass mix	(good)	D	2	73
	Woods	(good)	C	.8	70
	Woods	(good)	D	7.8	77
	Total Area / Weighted Curve Number			29.1	82

DAS

Chappellet
Watershed 2, post-project, rev
County, California

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period					
	2-Yr (cfs)	5-Yr (cfs)	10-Yr (cfs)	25-Yr (cfs)	50-Yr (cfs)	100-Yr (cfs)
	(hr)	(hr)	(hr)	(hr)	(hr)	(hr)
SUBAREAS						
main	10.94	15.42	18.97	23.67	27.18	30.61
	12.16	12.16	12.16	12.16	12.15	12.15
REACHES						
OUTLET	10.94	15.42	18.97	23.67	27.18	30.61

DAS

Chappellet
Watershed 2, post-project, rev
County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
main							
SHEET	100	0.0360	0.150				0.116
SHALLOW	370	0.1150	0.050				0.019
SHALLOW	379	0.2110	0.050				0.014
CHANNEL	956	0.1340	0.055	4.50	8.00	6.809	0.039
					Time of Concentration		.188

Chappellet
Watershed 2, post-project, rev
County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
main	User defined urban (Click button or		C	.9	75
	User defined urban (Click button or		D	6.2	81
	Fallow Bare soil		D	8.2	94
	Pasture, grassland or range	(good)	D	5.3	80
	Brush - brush, weed, grass mix	(good)	D	1.4	73
	Woods	(good)	D	7.1	77
	Total Area / Weighted Curve Number			29.1	83

DAS

Chappellet
Watershed 2, post-project, rev
County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
main	Vineyard (annual grass)	(good)	C	.9	75
	Vineyard (annual grass)	(good)	D	6.2	81
	Fallow Bare soil		D	8.2	94
	Pasture, grassland or range	(good)	D	5.3	80
	Brush - brush, weed, grass mix	(good)	D	1.4	73
	Woods	(good)	D	7.1	77
	Total Area / Weighted Curve Number			29.1	83

DAS Chappellet

Watershed 2, post-project, rev, Tc inc for 100 yr storm

Napa County, California

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 2-Yr (cfs)	(hr)	5-Yr (cfs)	(hr)	10-Yr (cfs)	(hr)	25-Yr (cfs)	(hr)	50-Yr (cfs)	(hr)	100-Yr (cfs)	(hr)
SUBAREAS												
main	10.78	12.17	15.20	12.17	18.69	12.16	23.34	12.16	26.81	12.17	30.17	12.17
REACHES												
OUTLET	10.78		15.20		18.69		23.34		26.81		30.17	

Watershed 2, post-project, rev, Tc inc for 100 yr storm
Napa County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
main							
SHEET	100	0.0360	0.150				0.116
SHALLOW	370	0.1150	0.050				0.019
SHALLOW	379	0.2110	0.050				0.014
CHANNEL	956	0.0625	0.055	4.50	8.00	4.579	0.058
					Time of Concentration		.207

DAS

Chappellet
Watershed 2, post-project, rev, Tc inc for 100 yr storm
Napa County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
main							
SHEET	100	0.0360	0.150				0.116
SHALLOW	370	0.1150	0.050				0.019
SHALLOW	379	0.2110	0.050				0.014
CHANNEL	956	0.0625		MANUAL ENTRY			0.058
						Time of Concentration	.207

DAS

Chappellet

Watershed 2, post-project, rev 2, Tc inc for 2 yr storm

Napa County, California

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 2-Yr (cfs)	(hr)	5-Yr (cfs)	(hr)	10-Yr (cfs)	(hr)	25-Yr (cfs)	(hr)	50-Yr (cfs)	(hr)	100-Yr (cfs)	(hr)
SUBAREAS												
main	10.54	12.19	14.85	12.18	18.29	12.18	22.83	12.19	26.22	12.18	29.52	12.19
REACHES												
OUTLET	10.54		14.85		18.29		22.83		26.22		29.52	

Watershed 2, post-project, rev 2, Tc inc for 2 yr storm
Napa County, California

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
3.99	5.06	5.9	7.01	7.84	8.65	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type CA-1
Dimensionless Unit Hydrograph: <standard>

DAS Chappellet

Watershed 2, post-project, rev 2, Tc inc for 2 yr storm

Napa County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
main	User defined urban (Click button or		C	.9	75
	User defined urban (Click button or		D	6.2	81
	Fallow Bare soil		D	8.2	94
	Pasture, grassland or range	(good)	D	5.3	80
	Brush - brush, weed, grass mix	(good)	D	1.4	73
	Woods	(good)	D	7.1	77
	Total Area / Weighted Curve Number			29.1	83

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Watershed 2, post-project, rev 2, Tc inc for 2 yr storm

Napa County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
main	Vineyard (annual grass)	(good)	C	.9	75
	Vineyard (annual grass)	(good)	D	6.2	81
	Fallow Bare soil		D	8.2	94
	Pasture, grassland or range	(good)	D	5.3	80
	Brush - brush, weed, grass mix	(good)	D	1.4	73
	Woods	(good)	D	7.1	77
	Total Area / Weighted Curve Number			29.1	83

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
main							
SHEET	100	0.0360	0.150				0.116
SHALLOW	370	0.1150	0.050				0.019
SHALLOW	379	0.2110	0.050				0.014
CHANNEL	956	0.1340	0.055	4.50	8.00	6.809	0.039
CHANNEL	180					1.000	0.050
					Time of Concentration		.238

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Chappellet
Watershed 2, post-project, rev 2, Tc inc for 2 yr storm
Napa County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
main							
SHEET	100	0.0360	0.150				0.116
SHALLOW	370	0.1150	0.050				0.019
SHALLOW	379	0.2110	0.050				0.014
CHANNEL	956	0.1340	0.055	4.50	8.00	6.809	0.039
CHANNEL	180	**MANUAL ENTRY**				1.000	0.050
					Time of Concentration		.238

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Chappellet
Sub-watershed 2-A, post-project
County, California

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 2-Yr (cfs)	(hr)	5-Yr (cfs)	(hr)	10-Yr (cfs)	(hr)	25-Yr (cfs)	(hr)	50-Yr (cfs)	(hr)	100-Yr (cfs)	(hr)
SUBAREAS												
main	1.45	12.13	2.12	12.14	2.65	12.13	3.37	12.14	3.92	12.13	4.45	12.14
REACHES												
OUTLET	1.45		2.12		2.65		3.37		3.92		4.45	

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Chappellet
Sub-watershed 2-A, post-project
County, California

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
3.99	5.06	5.9	7.01	7.84	8.65	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type CA-1
Dimensionless Unit Hydrograph: <standard>

DAS

Chappellet
Sub-watershed 2-A, post-project
County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
main							
SHEET	100	0.0360	0.150				0.116
SHALLOW	440	0.1320	0.050				0.021
					Time of Concentration		.137

Chappellet
Sub-watershed 2-A, post-project
County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
main	User defined urban (Click button or	C	.8	75
	User defined urban (Click button or	D	3.1	81
	Brush - brush, weed, grass mix (good)	D	.4	73
	Total Area / Weighted Curve Number		4.3	79

DAS

Chappellet
Sub-watershed 2-A, post-project
County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
main	Vineyard (annual grass)	(good)	C	.8	75
	Vineyard (annual grass)	(good)	D	3.1	81
	Brush - brush, weed, grass mix	(good)	D	.4	73
	Total Area / Weighted Curve Number			4.3	79

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Chappellet
Watershed 3, pre-project, rev 2
Napa County, California

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period					
	2-Yr (cfs) (hr)	5-Yr (cfs) (hr)	10-Yr (cfs) (hr)	25-Yr (cfs) (hr)	50-Yr (cfs) (hr)	100-Yr (cfs) (hr)
SUBAREAS						
main	9.26 12.14	13.82 12.14	17.51 12.14	22.51 12.14	26.26 12.14	29.96 12.14
REACHES						
Reach 3	9.26 12.14	13.82 12.14	17.51 12.14	22.51 12.14	26.26 12.14	29.96 12.14
Down	9.25 12.15	13.80 12.15	17.51 12.16	22.50 12.15	26.25 12.16	29.94 12.15
OUTLET	9.25	13.80	17.51	22.50	26.25	29.94

Chappellet
Watershed 3, pre-project, rev 2
Napa County, California

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
3.99	5.06	5.9	7.01	7.84	8.65	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type CA-1
Dimensionless Unit Hydrograph: <standard>

DAS

Chappellet
Watershed 3, pre-project, rev 2
Napa County, California

Reach Summary Table

Reach Identifier	Receiving Reach Identifier	Reach Length (ft)	Routing Method
Reach 3	Outlet	410	CHANNEL

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Watershed 3, pre-project, rev 2
Napa County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
main							
SHEET	100	0.2100	0.150				0.057
SHALLOW	1180	0.2160	0.050				0.044
SHALLOW	1005	0.1090	0.050				0.052
						Time of Concentration	.153

Chappellet
Watershed 3, pre-project, rev 2
Napa County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
main	Paved; open ditches (w/right-of-way)		C	.1	92
	Paved; open ditches (w/right-of-way)		D	.3	93
	Gravel (w/ right-of-way)		C	.2	89
	Gravel (w/ right-of-way)		D	.3	91
	Dirt (w/ right-of-way)		C	.1	87
	User defined urban (Click button or		C	.1	75
	User defined urban (Click button or		D	1.2	81
	Fallow Bare soil		C	.5	91
	Pasture, grassland or range	(good)	C	3.1	74
	Brush - brush, weed, grass mix	(fair)	C	4.1	70
	Brush - brush, weed, grass mix	(fair)	D	17.4	77
	Woods	(good)	D	2.7	77
	Farmsteads		C	.1	82
	Farmsteads		D	.2	86
	Total Area / Weighted Curve Number			30.4	77

DAS

Chappellet
Watershed 3, pre-project, rev 2
Napa County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
main	Paved; open ditches (w/right-of-way)		C	.1	92
	Paved; open ditches (w/right-of-way)		D	.3	93
	Gravel (w/ right-of-way)		C	.2	89
	Gravel (w/ right-of-way)		D	.3	91
	Dirt (w/ right-of-way)		C	.1	87
	Vineyard (annual grass)	(good)	C	.1	75
	Vineyard (annual grass)	(good)	D	1.2	81
	Fallow Bare soil		C	.5	91
	Pasture, grassland or range	(good)	C	3.1	74
	Brush - brush, weed, grass mix	(fair)	C	4.1	70
	Brush - brush, weed, grass mix	(fair)	D	17.4	77
	Woods	(good)	D	2.7	77
	Farmsteads		C	.1	82
	Farmsteads		D	.2	86
	Total Area / Weighted Curve Number			30.4	77

DAS

Chappellet
Watershed 3, post-project, rev 2
Napa County, California

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period					
	2-Yr (cfs)	5-Yr (cfs)	10-Yr (cfs)	25-Yr (cfs)	50-Yr (cfs)	100-Yr (cfs)
	(hr)	(hr)	(hr)	(hr)	(hr)	(hr)
SUBAREAS						
main	9.26	13.82	17.51	22.51	26.26	29.96
	12.14	12.14	12.14	12.14	12.14	12.14
REACHES						
Reach 3	9.26	13.82	17.51	22.51	26.26	29.96
	12.14	12.14	12.14	12.14	12.14	12.14
Down	9.25	13.80	17.51	22.50	26.25	29.94
	12.15	12.15	12.16	12.15	12.16	12.15
OUTLET	9.25	13.80	17.51	22.50	26.25	29.94

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Chappellet
Watershed 3, post-project, rev 2
Napa County, California

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
3.99	5.06	5.9	7.01	7.84	8.65	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type CA-1
Dimensionless Unit Hydrograph: <standard>

DAS

Chappellet
Watershed 3, post-project, rev 2
Napa County, California

Reach Summary Table

Reach Identifier	Receiving Reach Identifier	Reach Length (ft)	Routing Method
Reach 3	Outlet	410	CHANNEL

Chappellet
Watershed 3, post-project, rev 2
Napa County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
main							
SHEET	100	0.2100	0.150				0.057
SHALLOW	1180	0.2160	0.050				0.044
SHALLOW	1005	0.1090	0.050				0.052
						Time of Concentration	.153

Chappellet
Watershed 3, post-project, rev 2
Napa County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
main	Paved; open ditches (w/right-of-way)		C	.1	92
	Paved; open ditches (w/right-of-way)		D	.3	93
	Gravel (w/ right-of-way)		C	.2	89
	Gravel (w/ right-of-way)		D	.1	91
	User defined urban (Click button or		C	3.5	75
	User defined urban (Click button or		D	3.3	81
	Pasture, grassland or range	(good)	C	.7	74
	Brush - brush, weed, grass mix	(fair)	C	3	70
	Brush - brush, weed, grass mix	(fair)	D	16.2	77
	Woods	(good)	D	2.7	77
	Farmsteads		C	.1	82
	Farmsteads		D	.2	86
	Total Area / Weighted Curve Number			30.4	77

DAS

Chappellet
Watershed 3, post-project, rev 2
Napa County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
main	Paved; open ditches (w/right-of-way)		C	.1	92
	Paved; open ditches (w/right-of-way)		D	.3	93
	Gravel (w/ right-of-way)		C	.2	89
	Gravel (w/ right-of-way)		D	.1	91
	Vineyard (annual grass)	(good)	C	3.5	75
	Vineyard (annual grass)	(good)	D	3.3	81
	Pasture, grassland or range	(good)	C	.7	74
	Brush - brush, weed, grass mix	(fair)	C	3	70
	Brush - brush, weed, grass mix	(fair)	D	16.2	77
	Woods	(good)	D	2.7	77
	Farmsteads		C	.1	82
	Farmsteads		D	.2	86
	Total Area / Weighted Curve Number			30.4	77

DAS

Chappellet
Watershed 4, pre-project, rev 2
Napa County, California

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 2-Yr (cfs)	(hr)	5-Yr (cfs)	(hr)	10-Yr (cfs)	(hr)	25-Yr (cfs)	(hr)	50-Yr (cfs)	(hr)	100-Yr (cfs)	(hr)
SUBAREAS												
main	7.75	12.14	11.56	12.14	14.66	12.14	18.82	12.14	21.96	12.13	25.04	12.14
REACHES												
OUTLET	7.75		11.56		14.66		18.82		21.96		25.04	

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Chappellet
Watershed 4, pre-project, rev 2
Napa County, California

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
3.99	5.06	5.9	7.01	7.84	8.65	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type CA-1
Dimensionless Unit Hydrograph: <standard>

DAS

Chappellet
Watershed 4, pre-project, rev 2
Napa County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
main							
SHEET	100	0.1230	0.150				0.071
SHALLOW	350	0.1800	0.050				0.014
SHALLOW	1080	0.1710	0.050				0.045
CHANNEL	597	0.1770	0.040	4.50	6.00	12.756	0.013
					Time of Concentration		.143

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Chappellet
Watershed 4, pre-project, rev 2
Napa County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
main	Paved; open ditches (w/right-of-way)		D	.2	93
	Dirt (w/ right-of-way)		C	.1	87
	Dirt (w/ right-of-way)		D	.1	89
	User defined urban (Click button or		D	.2	81
	Fallow Bare soil		D	.1	94
	Pasture, grassland or range	(good)	C	.9	74
	Pasture, grassland or range	(good)	D	3.6	80
	Brush - brush, weed, grass mix	(fair)	C	2.1	70
	Brush - brush, weed, grass mix	(fair)	D	14.3	77
	Woods	(good)	D	3.1	77
	Farmsteads		D	.5	86
	Total Area / Weighted Curve Number			25.2	77
				====	==

DAS

Chappellet
Watershed 4, pre-project, rev 2
Napa County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
main	Paved; open ditches (w/right-of-way)		D	.2	93
	Dirt (w/ right-of-way)		C	.1	87
	Dirt (w/ right-of-way)		D	.1	89
	Vineyard (nnual grass)	(good)	D	.2	81
	Fallow Bare soil		D	.1	94
	Pasture, grassland or range	(good)	C	.9	74
	Pasture, grassland or range	(good)	D	3.6	80
	Brush - brush, weed, grass mix	(fair)	C	2.1	70
	Brush - brush, weed, grass mix	(fair)	D	14.3	77
	Woods	(good)	D	3.1	77
	Farmsteads		D	.5	86
	Total Area / Weighted Curve Number			25.2	77
				====	==

DAS

Chappellet
Watershed 4, post-project, rev 2
Napa County, California

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 2-Yr (cfs)	(hr)	5-Yr (cfs)	(hr)	10-Yr (cfs)	(hr)	25-Yr (cfs)	(hr)	50-Yr (cfs)	(hr)	100-Yr (cfs)	(hr)
SUBAREAS												
main	8.09	12.14	11.94	12.14	15.07	12.14	19.26	12.14	22.41	12.14	25.49	12.14
REACHES												
OUTLET	8.09		11.94		15.07		19.26		22.41		25.49	

Chappellet
Watershed 4, post-project, rev 2
Napa County, California

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
3.99	5.06	5.9	7.01	7.84	8.65	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type CA-1
Dimensionless Unit Hydrograph: <standard>

DAS

Chappellet
Watershed 4, post-project, rev 2
Napa County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
main							
SHEET	100	0.1230	0.150				0.071
SHALLOW	350	0.1800	0.050				0.014
SHALLOW	1080	0.1710	0.050				0.045
CHANNEL	597	0.1770	0.040	4.50	6.00	12.756	0.013
					Time of Concentration		.143

DAS

Chappellet
Watershed 4, post-project, rev 2
Napa County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
main	Paved; open ditches (w/right-of-way)		D	.2	93
	Gravel (w/ right-of-way)		D	.3	91
	User defined urban (Click button or		C	2.7	75
	User defined urban (Click button or		D	5.3	81
	Pasture, grassland or range	(good)	C	.2	74
	Pasture, grassland or range	(good)	D	1.7	80
	Brush - brush, weed, grass mix	(fair)	C	.2	70
	Brush - brush, weed, grass mix	(fair)	D	11.1	77
	Woods	(good)	D	3	77
	Farmsteads		D	.5	86
	Total Area / Weighted Curve Number			25.2	78
				====	==

DAS

Chappellet
Watershed 4, post-project, rev 2
Napa County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
main	Paved; open ditches (w/right-of-way)		D	.2	93
	Gravel (w/ right-of-way)		D	.3	91
	Vineyard (annual grass)	(good)	C	2.7	75
	Vineyard (annual grass)	(good)	D	5.3	81
	Pasture, grassland or range	(good)	C	.2	74
	Pasture, grassland or range	(good)	D	1.7	80
	Brush - brush, weed, grass mix	(fair)	C	.2	70
	Brush - brush, weed, grass mix	(fair)	D	11.1	77
	Woods	(good)	D	3	77
	Farmsteads		D	.5	86
	Total Area / Weighted Curve Number			25.2	78

DAS

Chappellet
Watershed 4, post-project, rev 2, Tc inc 100
Napa County, California

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 2-Yr (cfs)	(hr)	5-Yr (cfs)	(hr)	10-Yr (cfs)	(hr)	25-Yr (cfs)	(hr)	50-Yr (cfs)	(hr)	100-Yr (cfs)	(hr)
SUBAREAS												
main	7.94	12.15	11.73	12.15	14.79	12.15	18.91	12.15	22.01	12.15	25.04	12.15
REACHES												
OUTLET	7.94		11.73		14.79		18.91		22.01		25.04	

Chappellet
Watershed 4, post-project, rev 2, Tc inc 100
Napa County, California

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
3.99	5.06	5.9	7.01	7.84	8.65	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type CA-1
Dimensionless Unit Hydrograph: <standard>

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
main							
SHEET	100	0.1230	0.150				0.071
SHALLOW	350	0.1800	0.050				0.014
SHALLOW	1080	0.1710	0.050				0.045
CHANNEL	597	0.1770	0.040	4.50	6.00	12.756	0.013
CHANNEL	200					2.700	0.021
					Time of Concentration		.164

Chappellet
Watershed 4, post-project, rev 2, Tc inc 100
Napa County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
main							
SHEET	100	0.1230	0.150				0.071
SHALLOW	350	0.1800	0.050				0.014
SHALLOW	1080	0.1710	0.050				0.045
CHANNEL	597	0.1770	0.040	4.50	6.00	12.756	0.013
CHANNEL	200	MANUAL ENTRY					0.021
					Time of Concentration		.164

DAS

Chappellet
Watershed 4, post-project, rev 2, Tc inc 100
Napa County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
main	Paved; open ditches (w/right-of-way)		D	.2	93
	Gravel (w/ right-of-way)		D	.3	91
	User defined urban (Click button or		C	2.7	75
	User defined urban (Click button or		D	5.3	81
	Pasture, grassland or range	(good)	C	.2	74
	Pasture, grassland or range	(good)	D	1.7	80
	Brush - brush, weed, grass mix	(fair)	C	.2	70
	Brush - brush, weed, grass mix	(fair)	D	11.1	77
	Woods	(good)	D	3	77
	Farmsteads		D	.5	86
	Total Area / Weighted Curve Number			25.2	78
				====	==

DAS

Chappellet
Watershed 4, post-project, rev 2, Tc inc 100
Napa County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
main	Paved; open ditches (w/right-of-way)		D	.2	93
	Gravel (w/ right-of-way)		D	.3	91
	Vineyard (annual grass)	(good)	C	2.7	75
	Vineyard (annual grass)	(good)	D	5.3	81
	Pasture, grassland or range	(good)	C	.2	74
	Pasture, grassland or range	(good)	D	1.7	80
	Brush - brush, weed, grass mix	(fair)	C	.2	70
	Brush - brush, weed, grass mix	(fair)	D	11.1	77
	Woods	(good)	D	3	77
	Farmsteads		D	.5	86
	Total Area / Weighted Curve Number			25.2	78

DAS

Chappellet
Watershed 4, post-project, rev 2, Tc inc 2
Napa County, California

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 2-Yr (cfs)	(hr)	5-Yr (cfs)	(hr)	10-Yr (cfs)	(hr)	25-Yr (cfs)	(hr)	50-Yr (cfs)	(hr)	100-Yr (cfs)	(hr)
SUBAREAS												
main	7.75	12.16	11.45	12.16	14.44	12.17	18.46	12.16	21.49	12.16	24.46	12.16
REACHES												
OUTLET	7.75		11.45		14.44		18.46		21.49		24.46	

Chappellet
Watershed 4, post-project, rev 2, Tc inc 2
Napa County, California

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
3.99	5.06	5.9	7.01	7.84	8.65	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type CA-1
Dimensionless Unit Hydrograph: <standard>

DAS

Chappellet
Watershed 4, post-project, rev 2, Tc inc 2
Napa County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
main	Paved; open ditches (w/right-of-way)		D	.2	93
	Gravel (w/ right-of-way)		D	.3	91
	User defined urban (Click button or		C	2.7	75
	User defined urban (Click button or		D	5.3	81
	Pasture, grassland or range	(good)	C	.2	74
	Pasture, grassland or range	(good)	D	1.7	80
	Brush - brush, weed, grass mix	(fair)	C	.2	70
	Brush - brush, weed, grass mix	(fair)	D	11.1	77
	Woods	(good)	D	3	77
	Farmsteads		D	.5	86
	Total Area / Weighted Curve Number			25.2	78

DAS

Chappellet
Watershed 4, post-project, rev 2, Tc inc 2
Napa County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
main	Paved; open ditches (w/right-of-way)		D	.2	93
	Gravel (w/ right-of-way)		D	.3	91
	Vineyard (annual grass)	(good)	C	2.7	75
	Vineyard (annual grass)	(good)	D	5.3	81
	Pasture, grassland or range	(good)	C	.2	74
	Pasture, grassland or range	(good)	D	1.7	80
	Brush - brush, weed, grass mix	(fair)	C	.2	70
	Brush - brush, weed, grass mix	(fair)	D	11.1	77
	Woods	(good)	D	3	77
	Farmsteads		D	.5	86
	Total Area / Weighted Curve Number			25.2	78
				====	==

DAS

Chappellet
Watershed 4, post-project, rev 2, Tc inc 2
Napa County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
main							
SHEET	100	0.1230	0.150				0.071
SHALLOW	350	0.1800	0.050				0.014
SHALLOW	1080	0.1710	0.050				0.045
CHANNEL	597	0.1770	0.040	4.50	6.00	12.756	0.013
CHANNEL	200					1.120	0.050
					Time of Concentration		.193

DAS

Chappellet
Watershed 4, post-project, rev 2, Tc inc 2
Napa County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
main							
SHEET	100	0.1230	0.150				0.071
SHALLOW	350	0.1800	0.050				0.014
SHALLOW	1080	0.1710	0.050				0.045
CHANNEL	597	0.1770	0.040	4.50	6.00	12.756	0.013
CHANNEL	200	MANUAL ENTRY					0.050
						Time of Concentration	.193

DAS

Chappellet
Sub-Watershed 4-A, post-project, rev 2
Napa County, California

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 2-Yr (cfs)	(hr)	5-Yr (cfs)	(hr)	10-Yr (cfs)	(hr)	25-Yr (cfs)	(hr)	50-Yr (cfs)	(hr)	100-Yr (cfs)	(hr)
SUBAREAS												
main	3.83	12.13	5.66	12.13	7.13	12.13	9.11	12.13	10.61	12.13	12.07	12.13
REACHES												
OUTLET	3.83		5.66		7.13		9.11		10.61		12.07	

DAS

Chappellet
Sub-Watershed 4-A, post-project, rev 2
Napa County, California

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
3.99	5.06	5.9	7.01	7.84	8.65	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type CA-1
Dimensionless Unit Hydrograph: <standard>

Chappellet
Sub-Watershed 4-A, post-project, rev 2
Napa County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
main							
SHEET	100	0.1230	0.150				0.071
SHALLOW	350	0.1800	0.050				0.014
SHALLOW	1080	0.1710	0.050				0.045
						Time of Concentration	.13

DAS

Chappellet
Sub-Watershed 4-A, post-project, rev 2
Napa County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
main	Gravel (w/ right-of-way)		D	.2	91
	User defined urban (Click button or		C	2	75
	User defined urban (Click button or		D	4.3	81
	Pasture, grassland or range	(good)	C	.2	74
	Pasture, grassland or range	(good)	D	.7	80
	Brush - brush, weed, grass mix	(fair)	C	.1	70
	Brush - brush, weed, grass mix	(fair)	D	3.2	77
	Woods	(good)	D	1.1	77
	Total Area / Weighted Curve Number			11.8	78

DAS

Chappellet
Sub-Watershed 4-A, post-project, rev 2
Napa County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
main	Gravel (w/ right-of-way)		D	.2	91
	Vineyard (annual grass)	(good)	C	2	75
	Vineyard (annual grass)	(good)	D	4.3	81
	Pasture, grassland or range	(good)	C	.2	74
	Pasture, grassland or range	(good)	D	.7	80
	Brush - brush, weed, grass mix	(fair)	C	.1	70
	Brush - brush, weed, grass mix	(fair)	D	3.2	77
	Woods	(good)	D	1.1	77
	Total Area / Weighted Curve Number			11.8	78

DAS

Chappellet
Watershed 5, pre-project, rev 3
County, California

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 2-Yr (cfs)	(hr)	5-Yr (cfs)	(hr)	10-Yr (cfs)	(hr)	25-Yr (cfs)	(hr)	50-Yr (cfs)	(hr)	100-Yr (cfs)	(hr)
SUBAREAS												
B	4.08	12.14	6.08	12.15	7.71	12.14	9.91	12.15	11.57	12.14	13.19	12.15
A	5.20	12.12	7.76	12.12	9.84	12.12	12.63	12.12	14.74	12.12	16.81	12.12
REACHES												
Reach A	9.22	12.13	13.76	12.12	17.45	12.12	22.41	12.13	26.16	12.12	29.84	12.12
Down	9.22	12.14	13.76	12.14	17.45	12.14	22.40	12.14	26.15	12.14	29.83	12.14
OUTLET	9.22		13.76		17.45		22.40		26.15		29.83	

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Chappellet
Watershed 5, pre-project, rev 3
County, California

Reach Summary Table

Reach Identifier	Receiving Reach Identifier	Reach Length (ft)	Routing Method
Reach A	Outlet	720	CHANNEL

DAS

Chappellet
Watershed 5, pre-project, rev 3
County, California

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
3.99	5.06	5.9	7.01	7.84	8.65	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type CA-1
Dimensionless Unit Hydrograph: <standard>

DAS

Chappellet
Watershed 5, pre-project, rev 3
County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
B							
SHEET	100	0.0640	0.150				0.092
SHALLOW	1023	0.2150	0.050				0.038
SHALLOW	638	0.2160	0.050				0.024
					Time of Concentration		.154
A							
SHEET	100	0.1950	0.150				0.059
SHALLOW	1018	0.2070	0.050				0.039
					Time of Concentration		0.1

DAS

Chappellet
Watershed 5, pre-project, rev 3
County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
B	Dirt (w/ right-of-way)		D	.2	89
	User defined urban (Click button or		D	.5	81
	Pasture, grassland or range	(good)	D	.7	80
	Brush - brush, weed, grass mix	(fair)	D	6.4	77
	Woods	(good)	D	5.6	77
	Total Area / Weighted Curve Number			13.4	77
				====	==
A	Dirt (w/ right-of-way)		D	.1	89
	Pasture, grassland or range	(good)	D	.8	80
	Brush - brush, weed, grass mix	(fair)	D	11	77
	Woods	(good)	D	4.4	77
	Total Area / Weighted Curve Number			16.3	77
				====	==

Chappellet
Watershed 5, pre-project, rev 3
County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
B	Dirt (w/ right-of-way)		D	.2	89
	Vineyard (annual grass)	(good)	D	.5	81
	Pasture, grassland or range	(good)	D	.7	80
	Brush - brush, weed, grass mix	(fair)	D	6.4	77
	Woods	(good)	D	5.6	77
	Total Area / Weighted Curve Number			13.4	77
A	Dirt (w/ right-of-way)		D	.1	89
	Pasture, grassland or range	(good)	D	.8	80
	Brush - brush, weed, grass mix	(fair)	D	11	77
	Woods	(good)	D	4.4	77
	Total Area / Weighted Curve Number			16.3	77

DAS

Chappellet
Watershed 5, post-project, rev 3
County, California

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 2-Yr (cfs)	(hr)	5-Yr (cfs)	(hr)	10-Yr (cfs)	(hr)	25-Yr (cfs)	(hr)	50-Yr (cfs)	(hr)	100-Yr (cfs)	(hr)
SUBAREAS												
B	4.62	12.14	6.70	12.14	8.36	12.14	10.58	12.14	12.25	12.14	13.88	12.14
A	5.43	12.12	8.02	12.12	10.11	12.12	12.92	12.12	15.03	12.12	17.10	12.12
REACHES												
Reach A	10.00	12.13	14.63	12.13	18.36	12.12	23.36	12.13	27.13	12.13	30.81	12.13
Down	9.99	12.14	14.62	12.14	18.36	12.14	23.36	12.14	27.13	12.14	30.80	12.14
OUTLET	9.99		14.62		18.36		23.36		27.13		30.80	

Chappellet
Watershed 5, post-project, rev 3
County, California

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
3.99	5.06	5.9	7.01	7.84	8.65	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type CA-1
Dimensionless Unit Hydrograph: <standard>

Chappellet
Watershed 5, post-project, rev 3
County, California

Reach Summary Table

Reach Identifier	Receiving Reach Identifier	Reach Length (ft)	Routing Method
Reach A	Outlet	720	CHANNEL

DAS

Chappellet
Watershed 5, post-project, rev 3
County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
B							
SHEET	100	0.0640	0.150				0.092
SHALLOW	1023	0.2150	0.050				0.038
SHALLOW	638	0.2160	0.050				0.024
					Time of Concentration		.154
A							
SHEET	100	0.1950	0.150				0.059
SHALLOW	1018	0.2070	0.050				0.039
					Time of Concentration		0.1

Chappellet
Watershed 5, post-project, rev 3
County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
B	Gravel (w/ right-of-way)		D	.2	91
	Dirt (w/ right-of-way)		D	.1	89
	User defined urban (Click button or		D	8.1	81
	Pasture, grassland or range	(good)	D	.2	80
	Brush - brush, weed, grass mix	(fair)	D	2.4	77
	Woods	(good)	D	2.4	77
	Total Area / Weighted Curve Number			13.4	80
				====	==
A	Gravel (w/ right-of-way)		D	.2	91
	User defined urban (Click button or		D	1.8	81
	Pasture, grassland or range	(good)	D	.4	80
	Brush - brush, weed, grass mix	(fair)	D	10.2	77
	Woods	(good)	D	3.7	77
	Total Area / Weighted Curve Number			16.3	78
				====	==

Chappellet
Watershed 5, post-project, rev 3
County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
B	Gravel (w/ right-of-way)		D	.2	91
	Dirt (w/ right-of-way)		D	.1	89
	Vineyard (annual grass)	(good)	D	8.1	81
	Pasture, grassland or range	(good)	D	.2	80
	Brush - brush, weed, grass mix	(fair)	D	2.4	77
	Woods	(good)	D	2.4	77
	Total Area / Weighted Curve Number			13.4	80
A	Gravel (w/ right-of-way)		D	.2	91
	Vineyard (annual grass)	(good)	D	1.8	81
	Pasture, grassland or range	(good)	D	.4	80
	Brush - brush, weed, grass mix	(fair)	D	10.2	77
	Woods	(good)	D	3.7	77
	Total Area / Weighted Curve Number			16.3	78

DAS

Chappellet
Watershed 5, post-project, rev 3, inc 100
County, California

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 2-Yr (cfs)	(hr)	5-Yr (cfs)	(hr)	10-Yr (cfs)	(hr)	25-Yr (cfs)	(hr)	50-Yr (cfs)	(hr)	100-Yr (cfs)	(hr)
SUBAREAS												
B	4.41	12.17	6.39	12.17	7.98	12.17	10.09	12.18	11.69	12.17	13.24	12.17
A	5.43	12.12	8.02	12.12	10.11	12.12	12.92	12.12	15.03	12.12	17.10	12.12
REACHES												
Reach A	9.66	12.13	14.15	12.13	17.77	12.13	22.62	12.13	26.27	12.13	29.83	12.13
Down	9.66	12.15	14.14	12.14	17.77	12.14	22.61	12.14	26.26	12.14	29.82	12.14
OUTLET	9.66		14.14		17.77		22.61		26.26		29.82	

DAS

Chappellet
Watershed 5, post-project, rev 3, inc 100
County, California

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
3.99	5.06	5.9	7.01	7.84	8.65	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type CA-1
Dimensionless Unit Hydrograph: <standard>

DAS

Chappellet
Watershed 5, post-project, rev 3, inc 100
County, California

Reach Summary Table

Reach Identifier	Receiving Reach Identifier	Reach Length (ft)	Routing Method
Reach A	Outlet	720	CHANNEL

Chappellet
Watershed 5, post-project, rev 3, inc 100
County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
B							
SHEET	100	0.0640	0.150				0.092
SHALLOW	1023	0.2150	0.050				0.038
SHALLOW	638	0.2160	0.050				0.024
CHANNEL	212					1.000	0.059
					Time of Concentration		.213
A							
SHEET	100	0.1950	0.150				0.059
SHALLOW	1018	0.2070	0.050				0.039
					Time of Concentration		0.100

DAS

Chappellet
Watershed 5, post-project, rev 3, inc 100
County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
B							
SHEET	100	0.0640	0.150				0.092
SHALLOW	1023	0.2150	0.050				0.038
SHALLOW	638	0.2160	0.050				0.024
CHANNEL	212	MANUAL ENTRY					0.059
						Time of Concentration	.213
A							
SHEET	100	0.1950	0.150				0.059
SHALLOW	1018	0.2070	0.050				0.039
						Time of Concentration	0.100

DAS

Chappellet
Watershed 5, post-project, rev 3, inc 100
County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
B	Gravel (w/ right-of-way)		D	.2	91
	Dirt (w/ right-of-way)		D	.1	89
	User defined urban (Click button or		D	8.1	81
	Pasture, grassland or range	(good)	D	.2	80
	Brush - brush, weed, grass mix	(fair)	D	2.4	77
	Woods	(good)	D	2.4	77
	Total Area / Weighted Curve Number			13.4	80
				====	==
A	Gravel (w/ right-of-way)		D	.2	91
	User defined urban (Click button or		D	1.8	81
	Pasture, grassland or range	(good)	D	.4	80
	Brush - brush, weed, grass mix	(fair)	D	10.2	77
	Woods	(good)	D	3.7	77
	Total Area / Weighted Curve Number			16.3	78
				====	==

DAS

Chappellet
Watershed 5, post-project, rev 3, inc 100
County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
B	Gravel (w/ right-of-way)		D	.2	91
	Dirt (w/ right-of-way)		D	.1	89
	Vineyard (annual grass)	(good)	D	8.1	81
	Pasture, grassland or range	(good)	D	.2	80
	Brush - brush, weed, grass mix	(fair)	D	2.4	77
	Woods	(good)	D	2.4	77
	Total Area / Weighted Curve Number			13.4	80
A	Gravel (w/ right-of-way)		D	.2	91
	Vineyard (annual grass)	(good)	D	1.8	81
	Pasture, grassland or range	(good)	D	.4	80
	Brush - brush, weed, grass mix	(fair)	D	10.2	77
	Woods	(good)	D	3.7	77
	Total Area / Weighted Curve Number			16.3	78

DAS Chappellet
Watershed 5, post-project, rev 3, inc 2
County, California

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 2-Yr (cfs)	(hr)	5-Yr (cfs)	(hr)	10-Yr (cfs)	(hr)	25-Yr (cfs)	(hr)	50-Yr (cfs)	(hr)	100-Yr (cfs)	(hr)
SUBAREAS												
B	4.16	12.22	6.03	12.22	7.53	12.23	9.54	12.21	11.04	12.23	12.51	12.21
A	5.43	12.12	8.02	12.12	10.11	12.12	12.92	12.12	15.03	12.12	17.10	12.12
REACHES												
Reach A	9.22	12.13	13.53	12.13	17.00	12.13	21.65	12.13	25.15	12.13	28.57	12.13
Down	9.22	12.15	13.52	12.14	16.99	12.14	21.64	12.14	25.14	12.14	28.56	12.14
OUTLET	9.22		13.52		16.99		21.64		25.14		28.56	

DAS

Chappellet
Watershed 5, post-project, rev 3, inc 2
County, California

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
3.99	5.06	5.9	7.01	7.84	8.65	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type CA-1
Dimensionless Unit Hydrograph: <standard>

DAS

Chappellet
Watershed 5, post-project, rev 3, inc 2
County, California

Reach Summary Table

Reach Identifier	Receiving Reach Identifier	Reach Length (ft)	Routing Method
Reach A	Outlet	720	CHANNEL

Chappellet
Watershed 5, post-project, rev 3, inc 2
County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
B							
SHEET	100	0.0640	0.150				0.092
SHALLOW	1023	0.2150	0.050				0.038
SHALLOW	638	0.2160	0.050				0.024
CHANNEL	525					1.000	0.146
					Time of Concentration		.3
A							
SHEET	100	0.1950	0.150				0.059
SHALLOW	1018	0.2070	0.050				0.039
					Time of Concentration		0.100

DAS

Chappellet
Watershed 5, post-project, rev 3, inc 2
County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
B							
SHEET	100	0.0640	0.150				0.092
SHALLOW	1023	0.2150	0.050				0.038
SHALLOW	638	0.2160	0.050				0.024
CHANNEL	525	MANUAL ENTRY					0.146
						Time of Concentration	.3
A							
SHEET	100	0.1950	0.150				0.059
SHALLOW	1018	0.2070	0.050				0.039
						Time of Concentration	0.100

DAS

Chappellet
Watershed 5, post-project, rev 3, inc 2
County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
B	Gravel (w/ right-of-way)		D	.2	91
	Dirt (w/ right-of-way)		D	.1	89
	User defined urban (Click button or		D	8.1	81
	Pasture, grassland or range	(good)	D	.2	80
	Brush - brush, weed, grass mix	(fair)	D	2.4	77
	Woods	(good)	D	2.4	77
	Total Area / Weighted Curve Number			13.4	80
				====	==
A	Gravel (w/ right-of-way)		D	.2	91
	User defined urban (Click button or		D	1.8	81
	Pasture, grassland or range	(good)	D	.4	80
	Brush - brush, weed, grass mix	(fair)	D	10.2	77
	Woods	(good)	D	3.7	77
	Total Area / Weighted Curve Number			16.3	78
				====	==

DAS

Chappellet
Watershed 5, post-project, rev 3, inc 2
County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
B	Gravel (w/ right-of-way)		D	.2	91
	Dirt (w/ right-of-way)		D	.1	89
	Vineyard (annual grass)	(good)	D	8.1	81
	Pasture, grassland or range	(good)	D	.2	80
	Brush - brush, weed, grass mix	(fair)	D	2.4	77
	Woods	(good)	D	2.4	77
	Total Area / Weighted Curve Number			13.4	80
A	Gravel (w/ right-of-way)		D	.2	91
	Vineyard (annual grass)	(good)	D	1.8	81
	Pasture, grassland or range	(good)	D	.4	80
	Brush - brush, weed, grass mix	(fair)	D	10.2	77
	Woods	(good)	D	3.7	77
	Total Area / Weighted Curve Number			16.3	78

DAS

Chappellet
Sub-watershed 5B-1 post-project, rev
County, California

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period					
	2-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr
	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
	(hr)	(hr)	(hr)	(hr)	(hr)	(hr)
SUBAREAS						
Upper east	3.17	4.59	5.73	7.26	8.40	9.51
	12.13	12.13	12.13	12.13	12.13	12.13
REACHES						
OUTLET	3.17	4.59	5.73	7.26	8.40	9.51

DAS

Chappellet
Sub-watershed 5B-1 post-project, rev
County, California

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
3.99	5.06	5.9	7.01	7.84	8.65	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type CA-1
Dimensionless Unit Hydrograph: <standard>

DAS

Chappellet
Sub-watershed 5B-1 post-project, rev
County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Upper east							
SHEET	100	0.0640	0.150				0.092
SHALLOW	1023	0.2150	0.050				0.038
						Time of Concentration	.13

DAS

Chappellet
Sub-watershed 5B-1 post-project, rev
County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Upper east	Gravel (w/ right-of-way)	D	.1	91
	User defined urban (Click button or	D	6.7	81
	Woods (good)	D	2.2	77
	Total Area / Weighted Curve Number		9	80
			=	==

Chappellet
Sub-watershed 5B-1 post-project, rev
County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Upper east	Gravel (w/ right-of-way)		D	.1	91
	Vineyard (annual grass)	(good)	D	6.7	81
	Woods	(good)	D	2.2	77
	Total Area / Weighted Curve Number			9	80
				=	==

DAS

Chappellet
Watershed 6, new, pre-project
County, California

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 2-Yr (cfs)	(hr)	5-Yr (cfs)	(hr)	10-Yr (cfs)	(hr)	25-Yr (cfs)	(hr)	50-Yr (cfs)	(hr)	100-Yr (cfs)	(hr)
SUBAREAS												
Main	2.75	12.20	4.11	12.20	5.22	12.20	6.70	12.20	7.83	12.20	8.93	12.19
REACHES												
OUTLET	2.75		4.11		5.22		6.70		7.83		8.93	

DAS

Chappellet
Watershed 6, new, pre-project
County, California

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
3.99	5.06	5.9	7.01	7.84	8.65	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type CA-1
Dimensionless Unit Hydrograph: <standard>

Chappellet
Watershed 6, new, pre-project
County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Main							
SHEET	100	0.0080	0.150				0.211
SHALLOW	620	0.0870	0.050				0.036
SHALLOW	70	0.1700	0.050				0.003
CHANNEL	421	0.1640	0.055	12.00	6.00	16.706	0.007
					Time of Concentration		.257

DAS

Chappellet
Watershed 6, new, pre-project
County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Main	Brush - brush, weed, grass mix	(fair)	D	3.2	77
	Woods	(good)	D	6.6	77
	Total Area / Weighted Curve Number			9.8	77

DAS

Chappellet
Watershed 6, new, post-project
County, California

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 2-Yr (cfs)	(hr)	5-Yr (cfs)	(hr)	10-Yr (cfs)	(hr)	25-Yr (cfs)	(hr)	50-Yr (cfs)	(hr)	100-Yr (cfs)	(hr)
SUBAREAS												
Main	2.88	12.20	4.25	12.20	5.36	12.19	6.86	12.20	7.98	12.20	9.08	12.19
REACHES												
OUTLET	2.88		4.25		5.36		6.86		7.98		9.08	

DAS

Chappellet
Watershed 6, new, post-project
County, California

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
3.99	5.06	5.9	7.01	7.84	8.65	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type CA-1
Dimensionless Unit Hydrograph: <standard>

DAS

Chappellet
Watershed 6, new, post-project
County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Main							
SHEET	100	0.0080	0.150				0.211
SHALLOW	620	0.0870	0.050				0.036
SHALLOW	70	0.1700	0.050				0.003
CHANNEL	421	0.1640	0.055	12.00	6.00	16.706	0.007
						Time of Concentration	.257

Chappellet
Watershed 6, new, post-project
County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Main	User defined urban (Click button or		D	3.2	81
	Brush - brush, weed, grass mix	(fair)	D	1.8	77
	Woods	(good)	D	4.8	77
	Total Area / Weighted Curve Number			9.8	78

DAS

Chappellet
Watershed 6, new, post-project
County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Main	Vineyard (annual grass)	(good)	D	3.2	81
	Brush - brush, weed, grass mix	(fair)	D	1.8	77
	Woods	(good)	D	4.8	77
	Total Area / Weighted Curve Number			9.8	78

DAS Chappellet
Watershed 6, new, post-project, inc 100
County, California

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 2-Yr (cfs)	(hr)	5-Yr (cfs)	(hr)	10-Yr (cfs)	(hr)	25-Yr (cfs)	(hr)	50-Yr (cfs)	(hr)	100-Yr (cfs)	(hr)
SUBAREAS												
Main	2.82	12.22	4.17	12.21	5.27	12.22	6.74	12.21	7.84	12.22	8.93	12.21
REACHES												
OUTLET	2.82		4.17		5.27		6.74		7.84		8.93	

DAS Chappellet

Watershed 6, new, post-project, inc 100

County, California

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
3.99	5.06	5.9	7.01	7.84	8.65	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type CA-1
Dimensionless Unit Hydrograph: <standard>

Chappellet
Watershed 6, new, post-project, inc 100
County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Main							
SHEET	100	0.0080	0.150				0.211
SHALLOW	620	0.0870	0.050				0.036
SHALLOW	70	0.1700	0.050				0.003
CHANNEL	421	0.1640	0.055	12.00	6.00	16.706	0.007
CHANNEL	450	0.0100	0.055	12.00	6.00	4.310	0.029
					Time of Concentration		.286

Chappellet
Watershed 6, new, post-project, inc 100
County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Main							
SHEET	100	0.0080	0.150				0.211
SHALLOW	620	0.0870	0.050				0.036
SHALLOW	70	0.1700	0.050				0.003
CHANNEL	421	0.1640	0.055	12.00	6.00	16.706	0.007
CHANNEL	450	0.0100	MANUAL ENTRY				0.029
					Time of Concentration		.286

DAS

Chappellet
Watershed 6, new, post-project, inc 100
County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Main	User defined urban (Click button or		D	3.2	81
	Brush - brush, weed, grass mix	(fair)	D	1.8	77
	Woods	(good)	D	4.8	77
	Total Area / Weighted Curve Number			9.8	78

DAS

Chappellet
Watershed 6, new, post-project, inc 100
County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Main	Vineyard (annual grass)	(good)	D	3.2	81
	Brush - brush, weed, grass mix	(fair)	D	1.8	77
	Woods	(good)	D	4.8	77
	Total Area / Weighted Curve Number			9.8	78

DAS

Chappellet
Watershed 6, new, post-project, inc 2
County, California

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 2-Yr (cfs)	(hr)	5-Yr (cfs)	(hr)	10-Yr (cfs)	(hr)	25-Yr (cfs)	(hr)	50-Yr (cfs)	(hr)	100-Yr (cfs)	(hr)
SUBAREAS												
Main	2.75	12.24	4.07	12.24	5.14	12.24	6.57	12.24	7.65	12.23	8.70	12.23
REACHES												
OUTLET	2.75		4.07		5.14		6.57		7.65		8.70	

Chappellet
Watershed 6, new, post-project, inc 2
County, California

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
3.99	5.06	5.9	7.01	7.84	8.65	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type CA-1
Dimensionless Unit Hydrograph: <standard>

DAS

Chappellet
Watershed 6, new, post-project, inc 2
County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Main							
SHEET	100	0.0080	0.150				0.211
SHALLOW	620	0.0870	0.050				0.036
SHALLOW	70	0.1700	0.050				0.003
CHANNEL	421	0.1640	0.055	12.00	6.00	16.706	0.007
CHANNEL	500					1.900	0.073
					Time of Concentration		.33

Chappellet
Watershed 6, new, post-project, inc 2
County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Main	User defined urban (Click button or		D	3.2	81
	Brush - brush, weed, grass mix	(fair)	D	1.8	77
	Woods	(good)	D	4.8	77
	Total Area / Weighted Curve Number			9.8	78

DAS

Chappellet
Watershed 6, new, post-project, inc 2
County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Main	Vineyard (annual grass)	(good)	D	3.2	81
	Brush - brush, weed, grass mix	(fair)	D	1.8	77
	Woods	(good)	D	4.8	77
	Total Area / Weighted Curve Number			9.8	78

DAS

Chappellet
Sub-watershed 6-A, post, rev 2
County, California

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 2-Yr (cfs)	(hr)	5-Yr (cfs)	(hr)	10-Yr (cfs)	(hr)	25-Yr (cfs)	(hr)	50-Yr (cfs)	(hr)	100-Yr (cfs)	(hr)
SUBAREAS												
main	0.99	12.20	1.44	12.18	1.81	12.20	2.30	12.18	2.68	12.19	3.04	12.19
REACHES												
OUTLET	0.99		1.44		1.81		2.30		2.68		3.04	

DAS

Chappellet
Sub-watershed 6-A, post, rev 2
County, California

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
3.99	5.06	5.9	7.01	7.84	8.65	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type CA-1
Dimensionless Unit Hydrograph: <standard>

Chappellet
Sub-watershed 6-A, post, rev 2
County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
main							
SHEET	100	0.0080	0.150				0.211
SHALLOW	620	0.0870	0.050				0.036
					Time of Concentration		.247

Chappellet
Sub-watershed 6-A, post, rev 2
County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
main	User defined urban (Click button or		D	1.2	81
	Brush - brush, weed, grass mix	(fair)	D	1.6	77
	Woods	(good)	D	.4	77
	Total Area / Weighted Curve Number			3.2	79

DAS

Chappellet
Sub-watershed 6-A, post, rev 2
County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
main	Vineyard (annual grass)	(good)	D	1.2	81
	Brush - brush, weed, grass mix	(fair)	D	1.6	77
	Woods	(good)	D	.4	77
	Total Area / Weighted Curve Number			3.2	79

DAS

Chappellet
Watershed 7, pre-project
County, California

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period					
	2-Yr (cfs)	5-Yr (cfs)	10-Yr (cfs)	25-Yr (cfs)	50-Yr (cfs)	100-Yr (cfs)
	(hr)	(hr)	(hr)	(hr)	(hr)	(hr)
SUBAREAS						
Main	3.11	4.65	5.89	7.57	8.83	10.07
	12.14	12.14	12.13	12.14	12.13	12.13
REACHES						
OUTLET	3.11	4.65	5.89	7.57	8.83	10.07

Chappellet
Watershed 7, pre-project
County, California

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
3.99	5.06	5.9	7.01	7.84	8.65	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type CA-1
Dimensionless Unit Hydrograph: <standard>

DAS

Chappellet
Watershed 7, pre-project
County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Main							
SHEET	100	0.0500	0.150				0.101
SHALLOW	260	0.1270	0.050				0.013
SHALLOW	360	0.2780	0.050				0.012
CHANNEL	730	0.1300	0.055	12.00	6.00	15.598	0.013
					Time of Concentration		.139

DAS

Chappellet
Watershed 7, pre-project
County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Main	Dirt (w/ right-of-way)		D	.04	89
	Brush - brush, weed, grass mix	(fair)	D	5.36	77
	Woods	(good)	D	4.7	77
	Total Area / Weighted Curve Number			10.1	77

DAS

Chappellet
Watershed 7, post-project
County, California

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 2-Yr (cfs)	(hr)	5-Yr (cfs)	(hr)	10-Yr (cfs)	(hr)	25-Yr (cfs)	(hr)	50-Yr (cfs)	(hr)	100-Yr (cfs)	(hr)
SUBAREAS												
Main	3.25	12.14	4.80	12.13	6.06	12.14	7.74	12.13	9.01	12.13	10.25	12.14
REACHES												
OUTLET	3.25		4.80		6.06		7.74		9.01		10.25	

Chappellet
Watershed 7, post-project
County, California

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
3.99	5.06	5.9	7.01	7.84	8.65	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type CA-1
Dimensionless Unit Hydrograph: <standard>

DAS

Chappellet
Watershed 7, post-project
County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Main							
SHEET	100	0.0500	0.150				0.101
SHALLOW	260	0.1270	0.050				0.013
SHALLOW	360	0.2780	0.050				0.012
CHANNEL	730	0.1300	0.055	12.00	6.00	15.598	0.013
					Time of Concentration		.139

DAS

Chappellet
Watershed 7, post-project
County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Main	Dirt (w/ right-of-way)		D	.04	89
	User defined urban (Click button or		D	2.3	81
	Brush - brush, weed, grass mix	(fair)	D	4.86	77
	Woods	(good)	D	2.9	77
	Total Area / Weighted Curve Number			10.1	78

DAS

Chappellet
Watershed 7, post-project, Tc inc 100
County, California

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 2-Yr (cfs)	(hr)	5-Yr (cfs)	(hr)	10-Yr (cfs)	(hr)	25-Yr (cfs)	(hr)	50-Yr (cfs)	(hr)	100-Yr (cfs)	(hr)
SUBAREAS												
Main	3.19	12.15	4.72	12.15	5.95	12.14	7.60	12.15	8.85	12.15	10.07	12.14
REACHES												
OUTLET	3.19		4.72		5.95		7.60		8.85		10.07	

DAS

Chappellet
Watershed 7, post-project, Tc inc 100
County, California

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
3.99	5.06	5.9	7.01	7.84	8.65	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type CA-1
Dimensionless Unit Hydrograph: <standard>

Chappellet
Watershed 7, post-project, Tc inc 100
County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Main							
SHEET	100	0.0500	0.150				0.101
SHALLOW	260	0.1270	0.050				0.013
SHALLOW	360	0.2780	0.050				0.012
CHANNEL	730	0.1300	0.055	12.00	6.00	15.598	0.013
CHANNEL	325	0.0100	0.055	12.00	6.00	4.299	0.021
						Time of Concentration	.16

DAS

Chappellet
Watershed 7, post-project, Tc inc 100
County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Main							
SHEET	100	0.0500	0.150				0.101
SHALLOW	260	0.1270	0.050				0.013
SHALLOW	360	0.2780	0.050				0.012
CHANNEL	730	0.1300	0.055	12.00	6.00	15.598	0.013
CHANNEL	325	MANUAL ENTRY					0.021
						Time of Concentration	.16

Chappellet
Watershed 7, post-project, Tc inc 100
County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Main	Dirt (w/ right-of-way)		D	.04	89
	User defined urban (Click button or		D	2.3	81
	Brush - brush, weed, grass mix	(fair)	D	4.86	77
	Woods	(good)	D	2.9	77
	Total Area / Weighted Curve Number			10.1	78

Chappellet
Watershed 7, post-project, Tc inc 100
County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Main	Dirt (w/ right-of-way)		D	.04	89
	Vineyard (annual grass)	(good)	D	2.3	81
	Brush - brush, weed, grass mix	(fair)	D	4.86	77
	Woods	(good)	D	2.9	77
	Total Area / Weighted Curve Number			10.1	78

DAS

Chappellet
Watershed 7, post-project, Tc inc 2
County, California

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 2-Yr (cfs)	(hr)	5-Yr (cfs)	(hr)	10-Yr (cfs)	(hr)	25-Yr (cfs)	(hr)	50-Yr (cfs)	(hr)	100-Yr (cfs)	(hr)
SUBAREAS												
Main	3.11	12.16	4.59	12.17	5.80	12.16	7.41	12.17	8.63	12.16	9.81	12.16
REACHES												
OUTLET	3.11		4.59		5.80		7.41		8.63		9.81	

DAS

Chappellet
Watershed 7, post-project, Tc inc 2
County, California

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
3.99	5.06	5.9	7.01	7.84	8.65	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type CA-1
Dimensionless Unit Hydrograph: <standard>

DAS

Chappellet
Watershed 7, post-project, Tc inc 2
County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Main							
SHEET	100	0.0500	0.150				0.101
SHALLOW	260	0.1270	0.050				0.013
SHALLOW	360	0.2780	0.050				0.012
CHANNEL	730	0.1300	0.055	12.00	6.00	15.598	0.013
CHANNEL	325					1.750	0.052
					Time of Concentration		.191

Chappellet
Watershed 7, post-project, Tc inc 2
County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Main							
SHEET	100	0.0500	0.150				0.101
SHALLOW	260	0.1270	0.050				0.013
SHALLOW	360	0.2780	0.050				0.012
CHANNEL	730	0.1300	0.055	12.00	6.00	15.598	0.013
CHANNEL	325	MANUAL ENTRY					0.052
						Time of Concentration	.191

DAS

Chappellet
Watershed 7, post-project, Tc inc 2
County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Main	Dirt (w/ right-of-way)		D	.04	89
	User defined urban (Click button or		D	2.3	81
	Brush - brush, weed, grass mix	(fair)	D	4.86	77
	Woods	(good)	D	2.9	77
	Total Area / Weighted Curve Number			10.1	78

DAS

Chappellet
Watershed 7, post-project, Tc inc 2
County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Main	Dirt (w/ right-of-way)		D	.04	89
	Vineyard (annual grass0	(good)	D	2.3	81
	Brush - brush, weed, grass mix	(fair)	D	4.86	77
	Woods	(good)	D	2.9	77
	Total Area / Weighted Curve Number			10.1	78

DAS

Chappellet
Sub-Watershed 7A, post-project
County, California

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 2-Yr (cfs)	(hr)	5-Yr (cfs)	(hr)	10-Yr (cfs)	(hr)	25-Yr (cfs)	(hr)	50-Yr (cfs)	(hr)	100-Yr (cfs)	(hr)
SUBAREAS												
Main	0.37	12.13	0.53	12.12	0.66	12.13	0.83	12.12	0.96	12.12	1.09	12.12
REACHES												
OUTLET	0.37		0.53		0.66		0.83		0.96		1.09	

DAS

Chappellet
Sub-Watershed 7A, post-project
County, California

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	-Yr (in)
3.99	5.06	5.9	7.01	7.84	8.65	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type CA-1
Dimensionless Unit Hydrograph: <standard>

Chappellet
Sub-Watershed 7A, post-project
County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Main							
SHEET	100	0.0500	0.150				0.101
SHALLOW	260	0.1270	0.050				0.013
						Time of Concentration	.114

DAS

Chappellet
Sub-Watershed 7A, post-project
County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Main	User defined urban (Click button or	D	1	81
	Total Area / Weighted Curve Number		1	81
			=	==

Chappellet
Sub-Watershed 7A, post-project
County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Main	Vineyard (annual grass) (good)	D	1	81
	Click button or Total Area / Weighted Curve Number		1 =	81 ==

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: Precipitation depth | Units: English | Time series type: Partial duration

Select location

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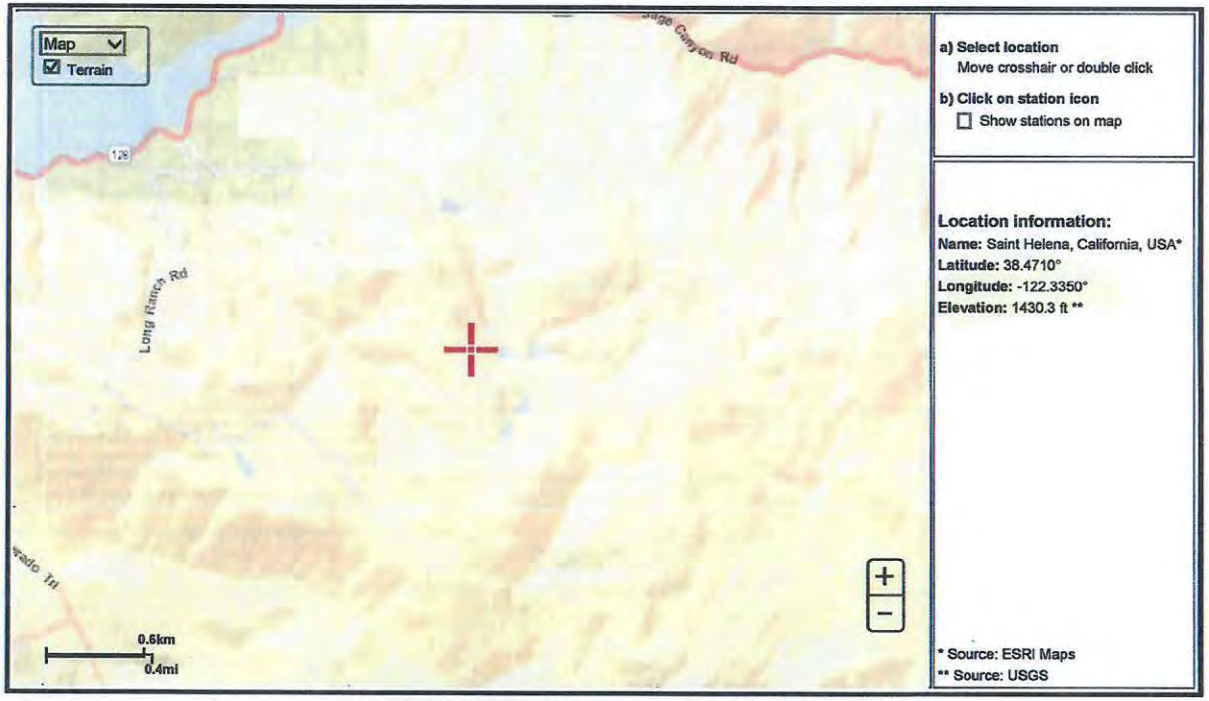

POINT PRECIPITATION FREQUENCY (PF) ESTIMATES
WITH 90% CONFIDENCE INTERVALS AND SUPPLEMENTARY INFORMATION
NOAA Atlas 14, Volume 6, Version 2

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	0.144 (0.126-0.163)	0.175 (0.156-0.199)	0.217 (0.193-0.248)	0.252 (0.222-0.290)	0.301 (0.255-0.360)	0.340 (0.281-0.417)	0.381 (0.306-0.480)	0.424 (0.330-0.552)	0.486 (0.360-0.662)	0.536 (0.382-0.759)
10-min	0.206 (0.183-0.233)	0.251 (0.223-0.285)	0.312 (0.276-0.355)	0.362 (0.318-0.416)	0.432 (0.365-0.517)	0.488 (0.402-0.597)	0.546 (0.438-0.688)	0.608 (0.472-0.791)	0.696 (0.516-0.949)	0.768 (0.547-1.09)
15-min	0.249 (0.221-0.282)	0.304 (0.270-0.345)	0.377 (0.334-0.429)	0.438 (0.384-0.504)	0.522 (0.441-0.625)	0.590 (0.486-0.722)	0.660 (0.530-0.832)	0.735 (0.571-0.956)	0.842 (0.624-1.15)	0.928 (0.662-1.32)
30-min	0.361 (0.321-0.409)	0.440 (0.391-0.500)	0.546 (0.484-0.623)	0.634 (0.557-0.730)	0.758 (0.640-0.906)	0.855 (0.705-1.05)	0.957 (0.768-1.21)	1.07 (0.828-1.39)	1.22 (0.905-1.66)	1.35 (0.960-1.91)
60-min	0.530 (0.472-0.602)	0.647 (0.575-0.735)	0.803 (0.711-0.915)	0.932 (0.818-1.07)	1.11 (0.940-1.33)	1.26 (1.04-1.54)	1.41 (1.13-1.77)	1.57 (1.22-2.04)	1.79 (1.33-2.44)	1.98 (1.41-2.80)
2-hr	0.806 (0.717-0.915)	0.985 (0.876-1.12)	1.22 (1.08-1.39)	1.41 (1.24-1.62)	1.67 (1.41-2.00)	1.87 (1.54-2.29)	2.08 (1.67-2.62)	2.29 (1.78-2.98)	2.58 (1.91-3.52)	2.81 (2.00-3.98)
3-hr	1.04 (0.923-1.18)	1.27 (1.13-1.44)	1.57 (1.39-1.79)	1.81 (1.59-2.08)	2.14 (1.81-2.56)	2.39 (1.97-2.93)	2.64 (2.12-3.33)	2.90 (2.25-3.77)	3.25 (2.41-4.43)	3.52 (2.51-4.98)
6-hr	1.57 (1.40-1.78)	1.93 (1.72-2.19)	2.39 (2.12-2.72)	2.76 (2.42-3.17)	3.24 (2.74-3.88)	3.61 (2.98-4.42)	3.98 (3.19-5.01)	4.35 (3.38-5.65)	4.84 (3.59-6.60)	5.21 (3.72-7.39)
12-hr	2.24 (1.99-2.54)	2.79 (2.48-3.17)	3.49 (3.09-3.97)	4.04 (3.55-4.65)	4.77 (4.03-5.70)	5.32 (4.38-6.51)	5.86 (4.70-7.37)	6.40 (4.97-8.32)	7.11 (5.27-9.69)	7.65 (5.46-10.8)
24-hr	3.15 (2.83-3.57)	3.99 (3.58-4.53)	5.06 (4.53-5.75)	5.90 (5.25-6.76)	7.01 (6.07-8.25)	7.84 (6.67-9.39)	8.65 (7.22-10.6)	9.47 (7.73-11.9)	10.6 (8.31-13.7)	11.4 (8.70-15.2)
2-day	4.14 (3.72-4.70)	5.28 (4.75-6.00)	6.74 (6.04-7.67)	7.90 (7.04-9.05)	9.43 (8.17-11.1)	10.6 (9.00-12.7)	11.7 (9.77-14.3)	12.9 (10.5-16.1)	14.4 (11.3-18.6)	15.5 (11.9-20.7)
3-day	4.83 (4.34-5.48)	6.18 (5.56-7.02)	7.91 (7.09-9.01)	9.29 (8.27-10.6)	11.1 (9.63-13.1)	12.5 (10.6-15.0)	13.8 (11.6-16.9)	15.2 (12.4-19.0)	17.0 (13.4-22.1)	18.4 (14.1-24.6)
4-day	5.37 (4.83-6.09)	6.88 (6.19-7.82)	8.82 (7.91-10.0)	10.4 (9.22-11.9)	12.4 (10.7-14.6)	13.9 (11.9-16.7)	15.4 (12.9-18.9)	17.0 (13.8-21.2)	19.0 (14.9-24.6)	20.5 (15.7-27.4)
7-day	6.62 (5.95-7.51)	8.50 (7.63-9.65)	10.9 (9.74-12.4)	12.7 (11.3-14.6)	15.2 (13.2-17.9)	17.0 (14.5-20.4)	18.8 (15.7-23.0)	20.6 (16.8-25.8)	23.0 (18.1-29.7)	24.7 (18.9-33.0)
10-day	7.46 (6.71-8.47)	9.58 (8.61-10.9)	12.2 (11.0-13.9)	14.3 (12.7-16.4)	17.0 (14.7-20.0)	19.0 (16.2-22.8)	21.0 (17.5-25.6)	22.9 (18.7-28.7)	25.4 (20.0-32.9)	27.3 (20.9-36.4)
20-day	9.77 (8.79-11.1)	12.6 (11.3-14.3)	16.0 (14.3-18.2)	18.6 (16.6-21.4)	22.0 (19.1-25.9)	24.5 (20.8-29.3)	26.8 (22.4-32.8)	29.1 (23.7-36.4)	32.1 (25.3-41.5)	34.2 (26.2-45.6)
30-day	11.8 (10.6-13.4)	15.2 (13.6-17.2)	19.2 (17.3-21.9)	22.3 (19.9-25.6)	26.3 (22.7-30.9)	29.0 (24.7-34.8)	31.7 (26.5-38.8)	34.3 (28.0-42.9)	37.6 (29.6-48.7)	39.9 (30.6-53.3)
45-day	14.4 (13.0-16.3)	18.3 (16.5-20.8)	23.1 (20.7-26.3)	26.7 (23.8-30.6)	31.1 (27.0-36.7)	34.3 (29.2-41.1)	37.3 (31.1-45.6)	40.1 (32.7-50.2)	43.7 (34.4-56.6)	46.3 (35.4-61.7)
60-day	17.2 (15.5-19.5)	21.7 (19.5-24.7)	27.1 (24.3-30.9)	31.2 (27.7-35.7)	36.2 (31.3-42.6)	39.7 (33.8-47.5)	42.9 (35.8-52.5)	46.1 (37.6-57.6)	49.9 (39.3-64.7)	52.7 (40.3-70.3)

[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: Precipitation frequency estimates Submit

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  - AASHTO Group Classification (Surface)
  - AASHTO Group Index
  - Depth to a Selected Soil Restrictive Layer
  - Depth to Any Soil Restrictive Layer
  - Drainage Class
  - Frost Action
  - Frost-Free Days
  - **Hydrologic Soil Group**

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Map ☑

Table ☑

Description of Rating ☑

Rating Options ☑

☐ Detailed Description

Advanced Options

Aggregation Method: Dominant Condition

Component Percent Cutoff:

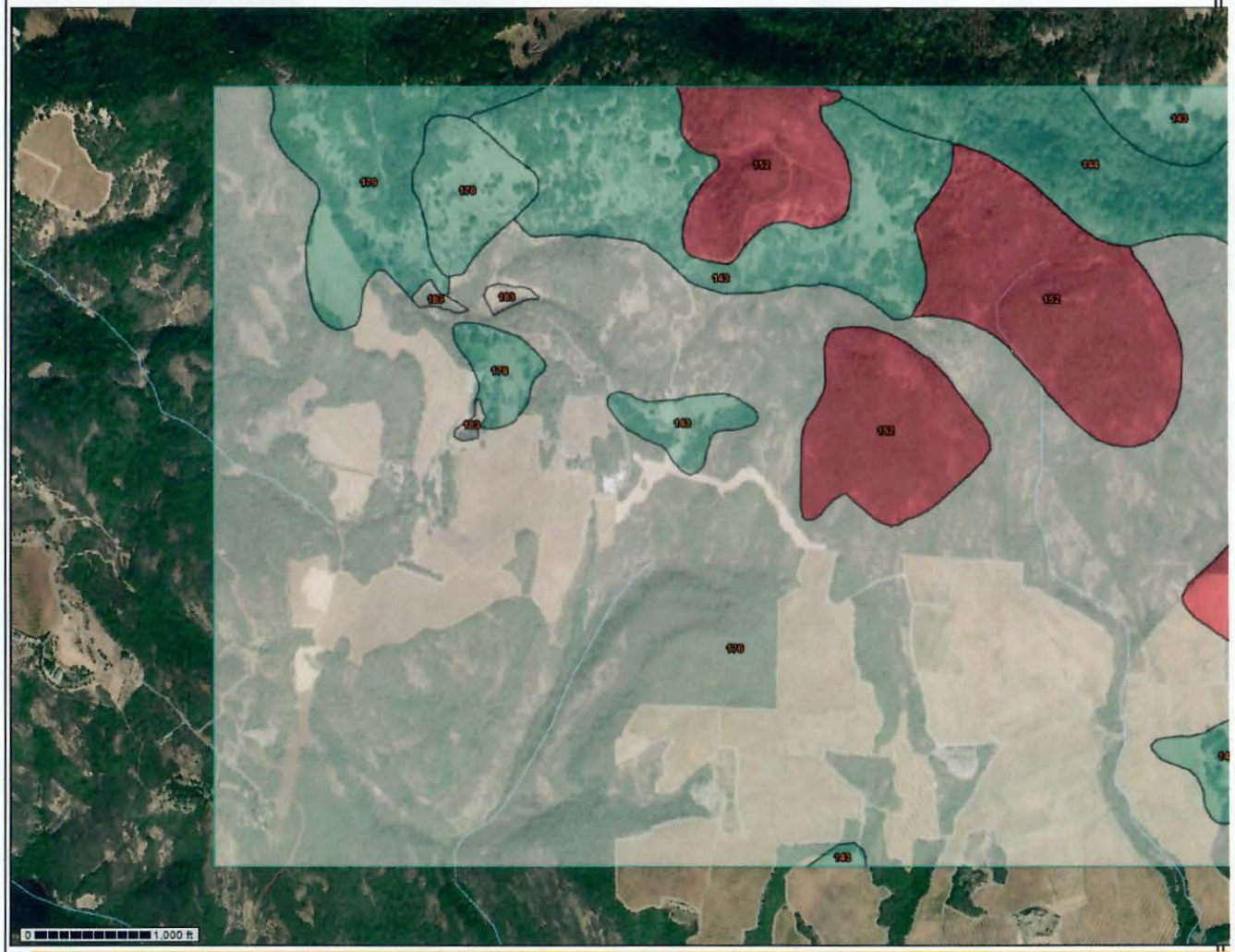
Tie-break Rule: ○ Lower ◉ Higher

View Description | View Rating

- Map Unit Name
- Parent Material Name
- Representative Slope

Map — Hydrologic Soil Group

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 tha 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 sho that could have been shown at a more detailed scale.

- Soil Slippage Potential
- Unified Soil Classification (Surface)
- Water Features

Tables — Hydrologic Soil Group — 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	Acres in AOI	Percent of AOI
143	Guenoc-Rock outcrop complex, 5 to 30 percent slopes	C	134.8	8.8%
144	Guenoc-Rock outcrop complex, 30 to 75 percent slopes	C	80.4	5.3%
152	Hambright rock-Outcrop complex, 30 to 75 percent slopes	D	198.3	13.0%
176	Rock outcrop-Hambright complex, 50 to 75 percent slopes	D	1,021.5	67.1%
178	Sobrante loam, 5 to 30 percent slopes	C	32.2	2.1%
179	Sobrante loam, 30 to 50 percent slopes	C	52.3	3.4%
183	Water		4.1	0.3%
Totals for Area of Interest			**1,523.4**	**100.0%**

Description — Hydrologic Soil Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options — Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: *None Specified*

Tie-break Rule: Higher

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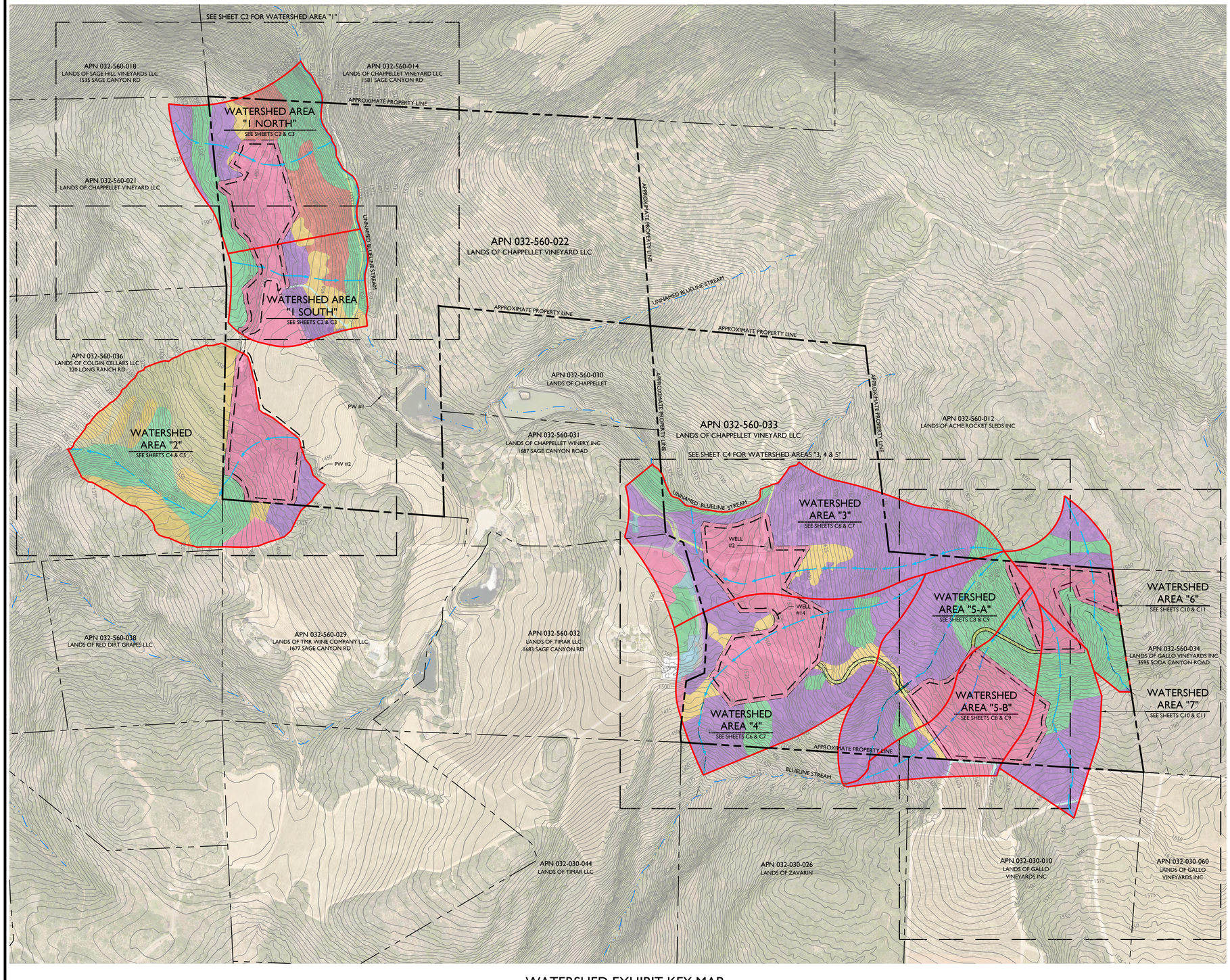
WATERSHED EXHIBITS



WATERSHED EXHIBIT KEY MAP

SCALE: 1" = 300'

SCALE: 1" = 300'

0 300' 600'

SHEET INDEX:

NOTES:

1. FADED BACKGROUND REPRESENTS EXISTING TOPOGRAPHIC FEATURES. TOPOGRAPHIC INFORMATION WAS TAKEN FROM THE NAPA COUNTY GEOGRAPHIC INFORMATION SYSTEM DATABASE. APPLIED CIVIL ENGINEERING INCORPORATED ASSUMES NO LIABILITY REGARDING THE ACCURACY OR COMPLETENESS OF THE TOPOGRAPHIC INFORMATION.
2. AERIAL PHOTOGRAPHS WERE OBTAINED FROM THE NAPA COUNTY GEOGRAPHIC INFORMATION SYSTEM (GIS) DATABASE, TAKEN APRIL TO JUNE 2018 AND MAY NOT REPRESENT CURRENT CONDITIONS.
3. CONTOUR INTERVAL: FIVE (5) FEET, HIGHLIGHTED EVERY TWENTY FIVE (25) FEET.
4. BENCHMARK: NAVD 88
5. THE PROPERTY LINES SHOWN ON THESE PLANS DO NOT REPRESENT A BOUNDARY SURVEY. THEY ARE APPROXIMATE AND ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY.

LEGEND:

- APPROXIMATE PROPERTY LINE
- SOIL TYPE BOUNDARY
- BLUELINE STREAM
- WATERS OF THE US
- NEW VINEYARD AVENUE
- NEW VINEYARD BLOCK
- EXISTING FENCE
- WATERSHED AREAS
- SUB-WATERSHED AREAS

SOILS TYPE LEGEND:

TYPE	DESCRIPTION
143	GUENOC-ROCK OUTCROP COMPLEX, 5 TO 30 PERCENT SLOPES
152	HAMBRIGHT ROCK-OUTCROP COMPLEX, 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
183	NO DESCRIPTION

SOIL TYPE BOUNDARIES SHOWN ON THIS MAP ARE BASED ON THE NAPA COUNTY GEOGRAPHIC INFORMATION SYSTEM DATA.

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CHAPPELLET VINEYARD LLC

WATERSHED EXHIBITS
WATERSHED EXHIBIT KEY MAP

PREPARED UNDER THE DIRECTION OF:

REGISTERED PROFESSIONAL ENGINEER
MICHAEL R. MUELRATH
NO. 67435
Exp. 12/31/2020
9/24/2021
CIVIL
STATE OF CALIFORNIA

DRAWN BY: PowerCAD

CHECKED BY: MRM

DATE: SEPTEMBER 24, 2021

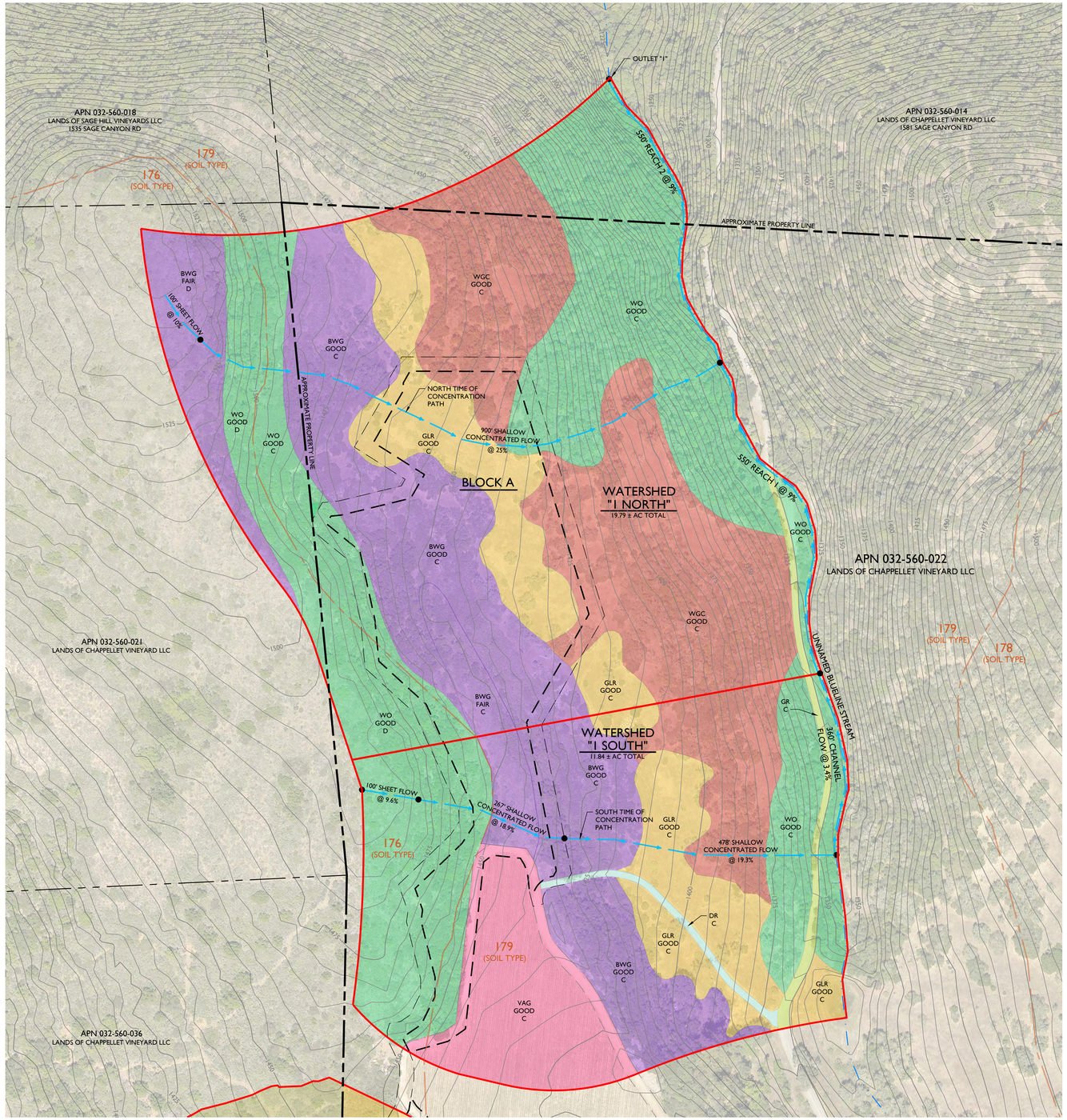
REVISIONS:	BY:
6/30/2020 PERMIT SUBMITTAL	YMS
1 9/24/2021 REVISION #1	YMS

JOB NUMBER: 17-141

FILE: 17-141EXH-WTRSHD.DWG

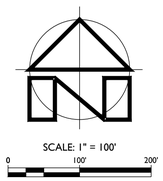
ORIGINAL SIZE: 24" X 36"

SHEET NUMBER: C1 OF 11



WATERSHED AREA 1 - EXISTING CONDITIONS

SCALE: 1" = 100'



LEGEND:

- APPROXIMATE PROPERTY LINE
- SOIL TYPE BOUNDARY
- BLUELINE STREAM
- WATERS OF THE US
- NEW VINEYARD AVENUE
- NEW VINEYARD BLOCK
- WATERSHED AREAS
- TIME OF CONCENTRATED FLOW PATH

SOILS TYPE LEGEND:

TYPE	HSG	DESCRIPTION
176	D	ROCK OUTCROP-HAMBRIGHT COMPLEX, 50 TO 75 PERCENT SLOPES
178	C	SOBRANTE LOAM, 5 TO 30 PERCENT SLOPES
179	C	SOBRANTE LOAM, 30 TO 50 PERCENT SLOPES

SOIL TYPE BOUNDARIES SHOWN ON THIS MAP ARE BASED ON THE NAPA COUNTY GEOGRAPHIC INFORMATION SYSTEM DATA.

WATERSHED AREA "1 NORTH" SUMMARY

PLAN SYMBOL	LAND USE DESCRIPTION	HYDROLOGIC CONDITION	HYDROLOGIC SOIL GROUP	CURVE NUMBER (CN)	PRE-PROJECT (ACRES)	REMOVED (ACRES)	POST-PROJECT
GR-C	GRAVEL ROADS	N/A	C	89	0.07 ± AC	0	0.07 ± AC
GLR-GOOD-C	GRASSLAND, RANGE	GOOD	C	74	2.17 ± AC	1.4 ± AC	0.77 ± AC
BWG-FAIR-C	BRUSH, WEEDS, GRASS	FAIR	C	70	0.35 ± AC	0.35 ± AC	0
BWG-FAIR-D	BRUSH, WEEDS, GRASS	FAIR	D	77	1.1 ± AC	0	1.1 ± AC
BWG-GOOD-C	BRUSH, WEEDS, GRASS	GOOD	C	65	3.57 ± AC	1.82 ± AC	1.75 ± AC
WO-GOOD-C	WOODS	GOOD	C	70	5.21 ± AC	0.52 ± AC	4.69 ± AC
WO-GOOD-D	WOODS	GOOD	D	77	1.72 ± AC	0.26 ± AC	1.46 ± AC
WGC-GOOD-C	WOODS - GRASS COMBO	GOOD	C	72	5.54 ± AC	0.8 ± AC	4.74 ± AC
VAG-GOOD-D	VINEYARD - ANNUAL GRASS (PRE)	GOOD	D	81	0.06 ± AC	-	-
VAG-GOOD-C	VINEYARD - ANNUAL GRASS (POST)	GOOD	C	75	-	-	4.97 ± AC
VAG-GOOD-D	VINEYARD - ANNUAL GRASS (POST)	GOOD	D	81	-	-	0.24 ± AC
				TOTAL	19.79 ± AC	5.15 ± AC	19.79 ± AC

WATERSHED AREA "1 SOUTH" SUMMARY

PLAN SYMBOL	LAND USE DESCRIPTION	HYDROLOGIC CONDITION	HYDROLOGIC SOIL GROUP	CURVE NUMBER (CN)	PRE-PROJECT (ACRES)	REMOVED (ACRES)	POST-PROJECT
GR-C	GRAVEL ROADS	N/A	C	89	0.23 ± AC	0	0.23 ± AC
DR-C	DIRT ROADS	N/A	C	87	0.13 ± AC	0	0.13 ± AC
GLR-GOOD-C	GRASSLAND, RANGE	GOOD	C	74	1.83 ± AC	0	1.83 ± AC
BWG-FAIR-C	BRUSH, WEEDS, GRASS	FAIR	C	70	0.35 ± AC	0.35 ± AC	0
BWG-GOOD-C	BRUSH, WEEDS, GRASS	GOOD	C	65	2.33 ± AC	0.28 ± AC	2.05 ± AC
WO-GOOD-C	WOODS	GOOD	C	70	1.49 ± AC	0.18 ± AC	1.31 ± AC
WO-GOOD-D	WOODS	GOOD	D	77	2.08 ± AC	0.84 ± AC	1.24 ± AC
WGC-GOOD-C	WOODS - GRASS COMBO	GOOD	C	72	1.36 ± AC	0	1.36 ± AC
VAG-GOOD-C	VINEYARD - ANNUAL GRASS (PRE)	GOOD	C	75	2.02 ± AC	-	-
VAG-GOOD-D	VINEYARD - ANNUAL GRASS (PRE)	GOOD	D	81	0.02 ± AC	-	-
VAG-GOOD-C	VINEYARD - ANNUAL GRASS (POST)	GOOD	C	75	-	-	2.83 ± AC
VAG-GOOD-D	VINEYARD - ANNUAL GRASS (POST)	GOOD	D	81	-	-	0.86 ± AC
				TOTAL	11.84 ± AC	1.65 ± AC	11.84 ± AC

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CHAPPELLET VINEYARD LLC

WATERSHED EXHIBITS

WATERSHED AREA 1 - EXISTING CONDITIONS

PREPARED UNDER THE DIRECTION OF:

REGISTERED PROFESSIONAL ENGINEER
MICHAEL R. MUELRATH
MRM
NO. 67435
Exp. 12/31/2020
9/24/2021
CIVIL
STATE OF CALIFORNIA

DRAWN BY: PowerCAD

CHECKED BY: MRM

DATE: SEPTEMBER 24, 2021

REVISIONS:	BY:
6/30/2020 PERMIT SUBMITTAL	YMS
1 9/24/2021 REVISION #1	YMS

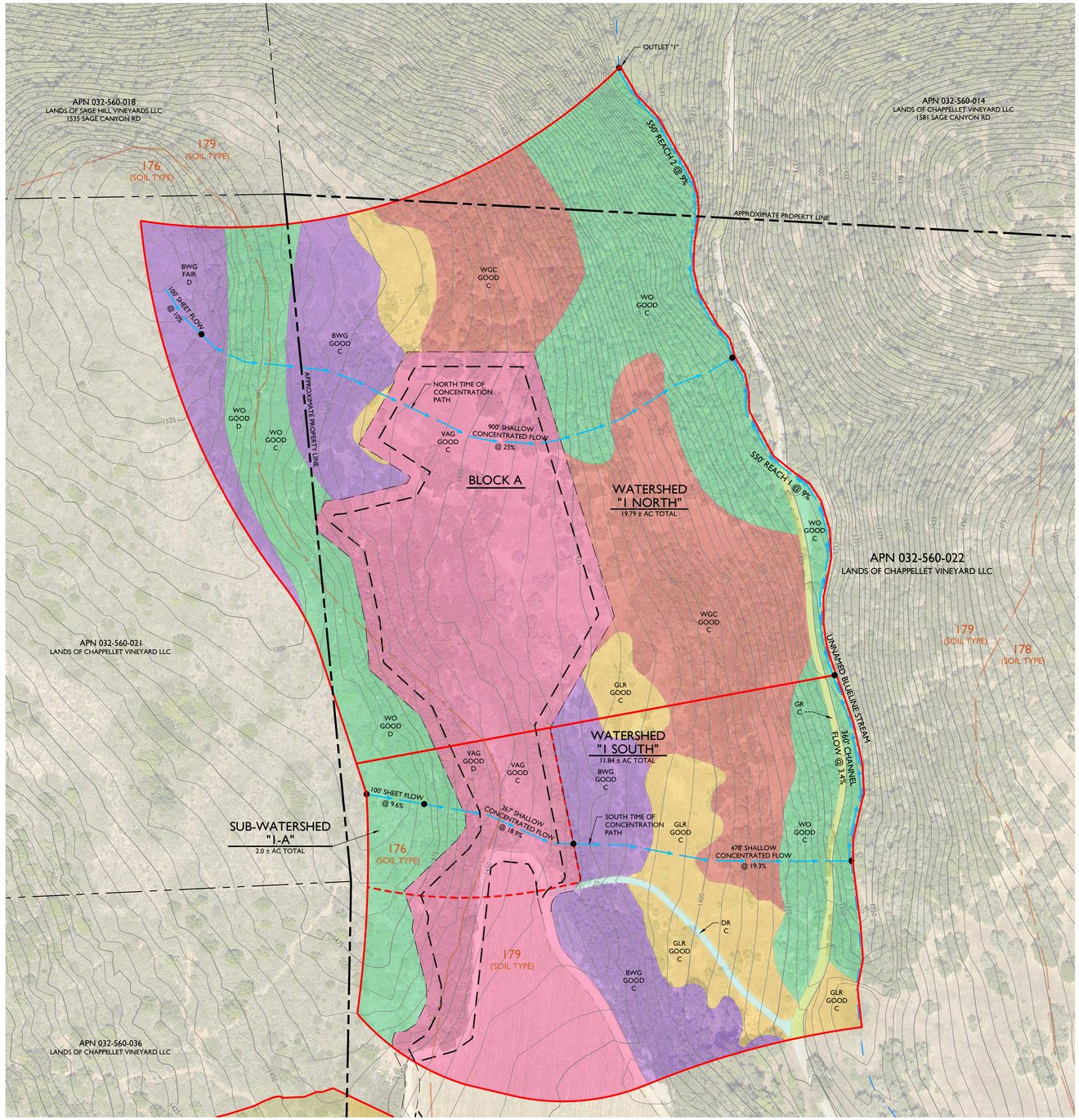
JOB NUMBER: 17-141

FILE: 17-141EXH-WTRSHD.DWG

ORIGINAL SIZE: 24" X 36"

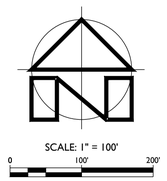
SHEET NUMBER: C2

OF 11



WATERSHED AREA 1 - PROPOSED CONDITIONS

SCALE: 1" = 100'



LEGEND:

- APPROXIMATE PROPERTY LINE
- SOIL TYPE BOUNDARY
- BLUELINE STREAM
- WATERS OF THE US
- NEW VINEYARD AVENUE
- NEW VINEYARD BLOCK
- WATERSHED AREAS
- SUB-WATERSHED AREAS
- TIME OF CONCENTRATED FLOW PATH

SOILS TYPE LEGEND:

TYPE	HSG	DESCRIPTION
176	D	ROCK OUTCROP-HAMBRIGHT COMPLEX, 50 TO 75 PERCENT SLOPES
178	C	SOBRANTE LOAM, 5 TO 30 PERCENT SLOPES
179	C	SOBRANTE LOAM, 30 TO 50 PERCENT SLOPES

SOIL TYPE BOUNDARIES SHOWN ON THIS MAP ARE BASED ON THE NAPA COUNTY GEOGRAPHIC INFORMATION SYSTEM DATA.

WATERSHED AREA "1 NORTH" SUMMARY

PLAN SYMBOL	LAND USE DESCRIPTION	HYDROLOGIC CONDITION	HYDROLOGIC SOIL GROUP	CURVE NUMBER (CN)	PRE-PROJECT (ACRES)	REMOVED (ACRES)	POST-PROJECT
GR-C	GRAVEL ROADS	N/A	C	89	0.07 ± AC	0	0.07 ± AC
GLR-GOOD-C	GRASSLAND, RANGE	GOOD	C	74	2.17 ± AC	1.4 ± AC	0.77 ± AC
BWG-FAIR-C	BRUSH, WEEDS, GRASS	FAIR	C	70	0.35 ± AC	0.35 ± AC	0
BWG-FAIR-D	BRUSH, WEEDS, GRASS	FAIR	D	77	1.1 ± AC	0	1.1 ± AC
BWG-GOOD-C	BRUSH, WEEDS, GRASS	GOOD	C	65	3.57 ± AC	1.82 ± AC	1.75 ± AC
WO-GOOD-C	WOODS	GOOD	C	70	5.21 ± AC	0.52 ± AC	4.69 ± AC
WO-GOOD-D	WOODS	GOOD	D	77	1.72 ± AC	0.26 ± AC	1.46 ± AC
WGC-GOOD-C	WOODS - GRASS COMBO	GOOD	C	72	5.54 ± AC	0.8 ± AC	4.74 ± AC
VAG-GOOD-D	VINEYARD - ANNUAL GRASS (PRE)	GOOD	D	81	0.06 ± AC	-	-
VAG-GOOD-C	VINEYARD - ANNUAL GRASS (POST)	GOOD	C	75	-	-	4.97 ± AC
VAG-GOOD-D	VINEYARD - ANNUAL GRASS (POST)	GOOD	D	81	-	-	0.24 ± AC
				TOTAL	19.79 ± AC	5.15 ± AC	19.79 ± AC

WATERSHED AREA "1 SOUTH" SUMMARY

PLAN SYMBOL	LAND USE DESCRIPTION	HYDROLOGIC CONDITION	HYDROLOGIC SOIL GROUP	CURVE NUMBER (CN)	PRE-PROJECT (ACRES)	REMOVED (ACRES)	POST-PROJECT
GR-C	GRAVEL ROADS	N/A	C	89	0.23 ± AC	0	0.23 ± AC
DR-C	DIRT ROADS	N/A	C	87	0.13 ± AC	0	0.13 ± AC
GLR-GOOD-C	GRASSLAND, RANGE	GOOD	C	74	1.83 ± AC	0	1.83 ± AC
BWG-FAIR-C	BRUSH, WEEDS, GRASS	FAIR	C	70	0.35 ± AC	0.35 ± AC	0
BWG-GOOD-C	BRUSH, WEEDS, GRASS	GOOD	C	65	2.33 ± AC	0.28 ± AC	2.05 ± AC
WO-GOOD-C	WOODS	GOOD	C	70	1.49 ± AC	0.18 ± AC	1.31 ± AC
WO-GOOD-D	WOODS	GOOD	D	77	2.08 ± AC	0.84 ± AC	1.24 ± AC
WGC-GOOD-C	WOODS - GRASS COMBO	GOOD	C	72	1.36 ± AC	0	1.36 ± AC
VAG-GOOD-C	VINEYARD - ANNUAL GRASS (PRE)	GOOD	C	75	2.02 ± AC	-	-
VAG-GOOD-D	VINEYARD - ANNUAL GRASS (PRE)	GOOD	D	81	0.02 ± AC	-	-
VAG-GOOD-C	VINEYARD - ANNUAL GRASS (POST)	GOOD	C	75	-	-	2.83 ± AC
VAG-GOOD-D	VINEYARD - ANNUAL GRASS (POST)	GOOD	D	81	-	-	0.86 ± AC
				TOTAL	11.84 ± AC	1.65 ± AC	11.84 ± AC

SUB-WATERSHED AREA "1-A" SUMMARY

PLAN SYMBOL	LAND USE DESCRIPTION	HYDROLOGIC CONDITION	HYDROLOGIC SOIL GROUP	CURVE NUMBER (CN)	POST-PROJECT
WO-GOOD-D	WOODS	GOOD	D	77	0.7 ± AC
VAG-GOOD-C	VINEYARD - ANNUAL GRASS	GOOD	C	75	0.8 ± AC
VAG-GOOD-D	VINEYARD - ANNUAL GRASS	GOOD	D	81	0.5 ± AC
			TOTALS		2.0 ± AC

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CHAPPELLET VINEYARD LLC

WATERSHED EXHIBITS

WATERSHED AREA 1 - PROPOSED CONDITIONS

PREPARED UNDER THE DIRECTION OF:

REGISTERED PROFESSIONAL ENGINEER
MITCHELL R. MUELRATH
MRM
NO. 67435
Exp. 12/31/2020
9/24/2021
CIVIL
STATE OF CALIFORNIA

DRAWN BY: PowerCAD

CHECKED BY: MRM

DATE: SEPTEMBER 24, 2021

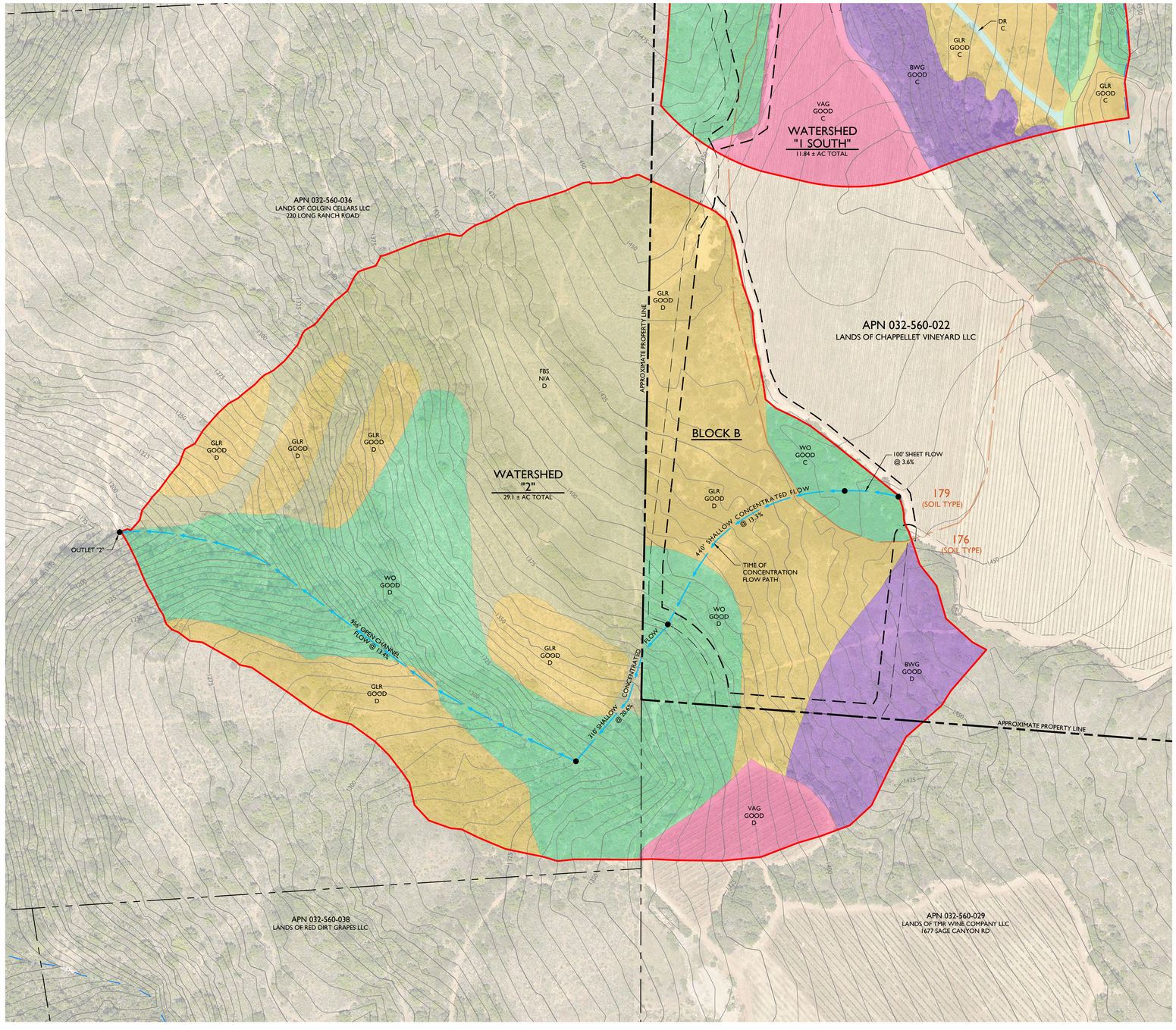
REVISIONS:	BY:
6/30/2020 PERMIT SUBMITTAL	YMS
1 9/24/2021 REVISION #1	YMS

JOB NUMBER: 17-141

FILE: 17-141EXH-WTRSHD.DWG

ORIGINAL SIZE: 24" X 36"

SHEET NUMBER: C3 OF 11



SCALE: 1" = 100'

0 100' 200'

WATERSHED AREA 2 - EXISTING CONDITIONS

SCALE: 1" = 100'

WATERSHED AREA "2" SUMMARY

PLAN SYMBOL	LAND USE DESCRIPTION	HYDROLOGIC CONDITION	HYDROLOGIC SOIL GROUP	CURVE NUMBER (CN)	PRE-PROJECT (ACRES)	REMOVED (ACRES)	POST-PROJECT
FBS-NA-D	FALLOW, BARE SOIL	N/A	D	94	8.2 ± AC	0	8.2 ± AC
GLR-GOOD-D	GRASSLAND, RANGE	GOOD	D	80	9.4 ± AC	4.1 ± AC	5.3 ± AC
WO-GOOD-C	WOODS	GOOD	C	70	0.8 ± AC	0.8 ± AC	0
WO-GOOD-D	WOODS	GOOD	D	77	7.8 ± AC	0.7 ± AC	7.1 ± AC
BWG-GOOD-D	BRUSH, WEEDS, GRASS	GOOD	D	73	2.0 ± AC	0.6 ± AC	1.4 ± AC
VAG-GOOD-D	VINEYARD - ANNUAL GRASS (PRE)	GOOD	D	81	0.9 ± AC	0	6.2 ± AC
VAG-GOOD-C	VINEYARD - ANNUAL GRASS (POST)	GOOD	C	75	-	-	0.9 ± AC
				TOTAL	29.1 ± AC	6.2 ± AC	29.1 ± AC

LEGEND:

- APPROXIMATE PROPERTY LINE
- SOIL TYPE BOUNDARY
- BLUELINE STREAM
- WATERS OF THE US
- NEW VINEYARD AVENUE
- NEW VINEYARD BLOCK
- WATERSHED AREAS
- TIME OF CONCENTRATED FLOW PATH

SOILS TYPE LEGEND:

TYPE	HSG	DESCRIPTION
176	D	ROCK OUTCROP-HAMBRIGHT COMPLEX, 50 TO 75 PERCENT SLOPES
179	C	SOBRANTE LOAM, 30 TO 50 PERCENT SLOPES

SOIL TYPE BOUNDARIES SHOWN ON THIS MAP ARE BASED ON THE NAPA COUNTY GEOGRAPHIC INFORMATION SYSTEM DATA.

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CHAPPELLET VINEYARD LLC

WATERSHED EXHIBITS
WATERSHED AREA 2 - EXISTING CONDITIONS

PREPARED UNDER THE DIRECTION OF:

REGISTERED PROFESSIONAL ENGINEER
MICHAEL R. MUELRATH
MRM
NO. 67435
Exp. 12/31/2020
9/24/2021
CIVIL
STATE OF CALIFORNIA

DRAWN BY: PowerCAD

CHECKED BY: MRM

DATE: SEPTEMBER 24, 2021

REVISIONS:	BY:
6/30/2020 PERMIT SUBMITTAL	YMS
1 9/24/2021 REVISION #1	YMS

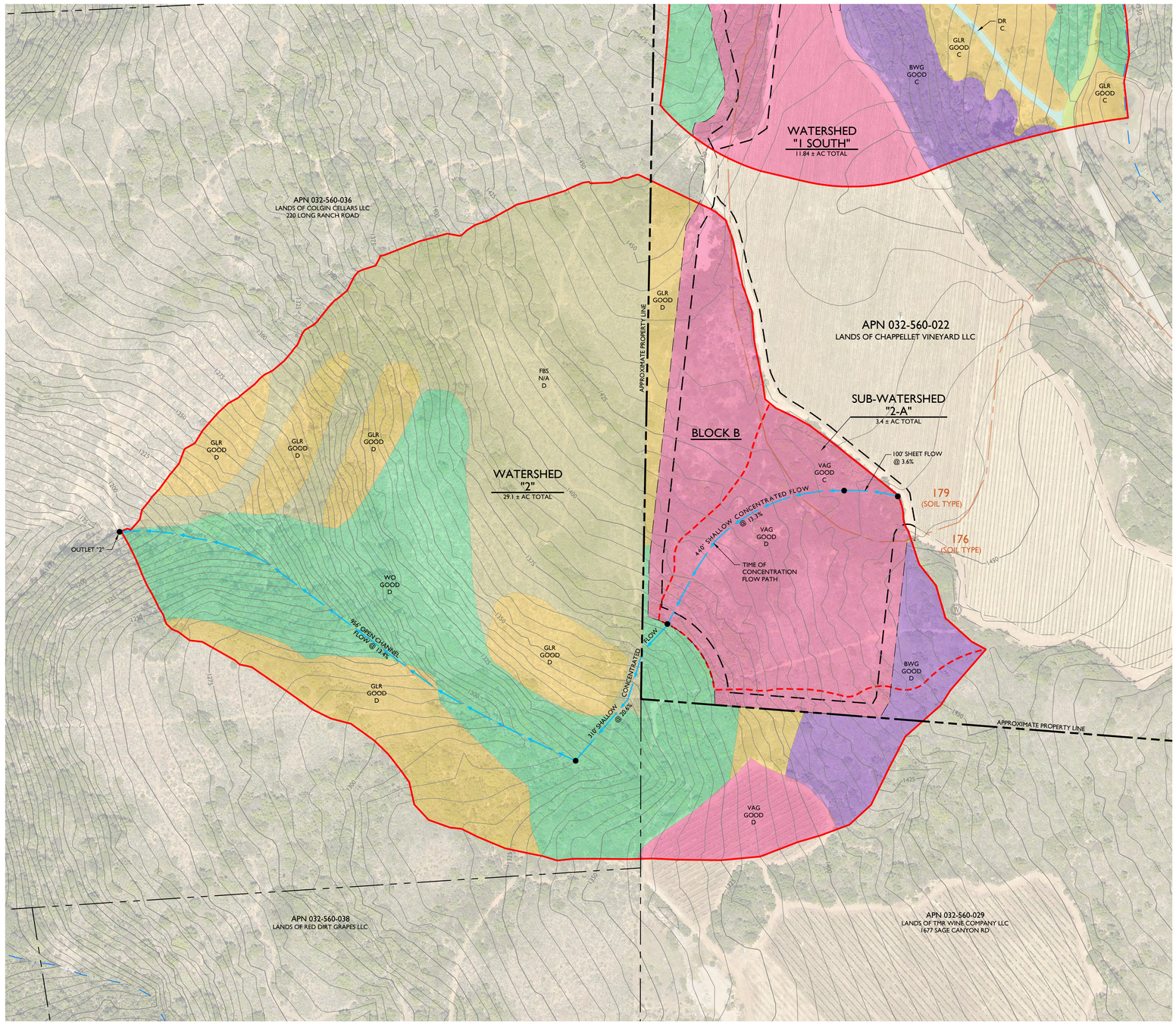
JOB NUMBER: 17-141

FILE: 17-141EXH-WTRSHD.DWG

ORIGINAL SIZE: 24" X 36"

SHEET NUMBER: C4

OF 11



SCALE: 1" = 100'

0 100' 200'

WATERSHED AREA 2 - PROPOSED CONDITIONS

SCALE: 1" = 100'

WATERSHED AREA "2" SUMMARY

PLAN SYMBOL	LAND USE DESCRIPTION	HYDROLOGIC CONDITION	HYDROLOGIC SOIL GROUP	CURVE NUMBER (CN)	PRE-PROJECT (ACRES)	REMOVED (ACRES)	POST-PROJECT
FBS-NA-D	FALLOW, BARE SOIL	N/A	D	94	8.2 ± AC	0	8.2 ± AC
GLR-GOOD-D	GRASSLAND, RANGE	GOOD	D	80	9.4 ± AC	4.1 ± AC	5.3 ± AC
WO-GOOD-C	WOODS	GOOD	C	70	0.8 ± AC	0.8 ± AC	0
WO-GOOD-D	WOODS	GOOD	D	77	7.8 ± AC	0.7 ± AC	7.1 ± AC
BWG-GOOD-D	BRUSH, WEEDS, GRASS	GOOD	D	73	2.0 ± AC	0.6 ± AC	1.4 ± AC
VAG-GOOD-D	VINEYARD - ANNUAL GRASS (PRE)	GOOD	D	81	0.9 ± AC	0	6.2 ± AC
VAG-GOOD-C	VINEYARD - ANNUAL GRASS (POST)	GOOD	C	75	-	-	0.9 ± AC
				TOTAL	29.1 ± AC	6.2 ± AC	29.1 ± AC

SUB-WATERSHED AREA "2-A" SUMMARY

PLAN SYMBOL	LAND USE DESCRIPTION	HYDROLOGIC CONDITION	HYDROLOGIC SOIL GROUP	CURVE NUMBER (CN)	POST-PROJECT (ACRES)
BWG-GOOD-D	BRUSH, WEEDS, GRASS	GOOD	D	72	##########
VAG-GOOD-C	VINEYARD - ANNUAL GRASS	GOOD	C	75	##########
VAG-GOOD-D	VINEYARD - ANNUAL GRASS	GOOD	D	81	##########
			TOTALS		##########

LEGEND:

- APPROXIMATE PROPERTY LINE
- SOIL TYPE BOUNDARY
- BLUELINE STREAM
- WATERS OF THE US
- NEW VINEYARD AVENUE
- NEW VINEYARD BLOCK
- WATERSHED AREAS
- SUB-WATERSHED AREAS
- TIME OF CONCENTRATED FLOW PATH

SOILS TYPE LEGEND:

TYPE	HSG	DESCRIPTION
176	D	ROCK OUTCROP-HAMBRIGHT COMPLEX, 50 TO 75 PERCENT SLOPES
179	C	SOBRANTE LOAM, 30 TO 50 PERCENT SLOPES

SOIL TYPE BOUNDARIES SHOWN ON THIS MAP ARE BASED ON THE NAPA COUNTY GEOGRAPHIC INFORMATION SYSTEM DATA.

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CHAPPELLET VINEYARD LLC

WATERSHED EXHIBITS
WATERSHED AREA 2 - PROPOSED CONDITIONS

PREPARED UNDER THE DIRECTION OF:

REGISTERED PROFESSIONAL ENGINEER
MICHAEL R. MUELRATH
MRM
NO. 67435
Exp. 12/31/2020
9/24/2021
CIVIL
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1 9/24/2021 REVISION #1	YMS

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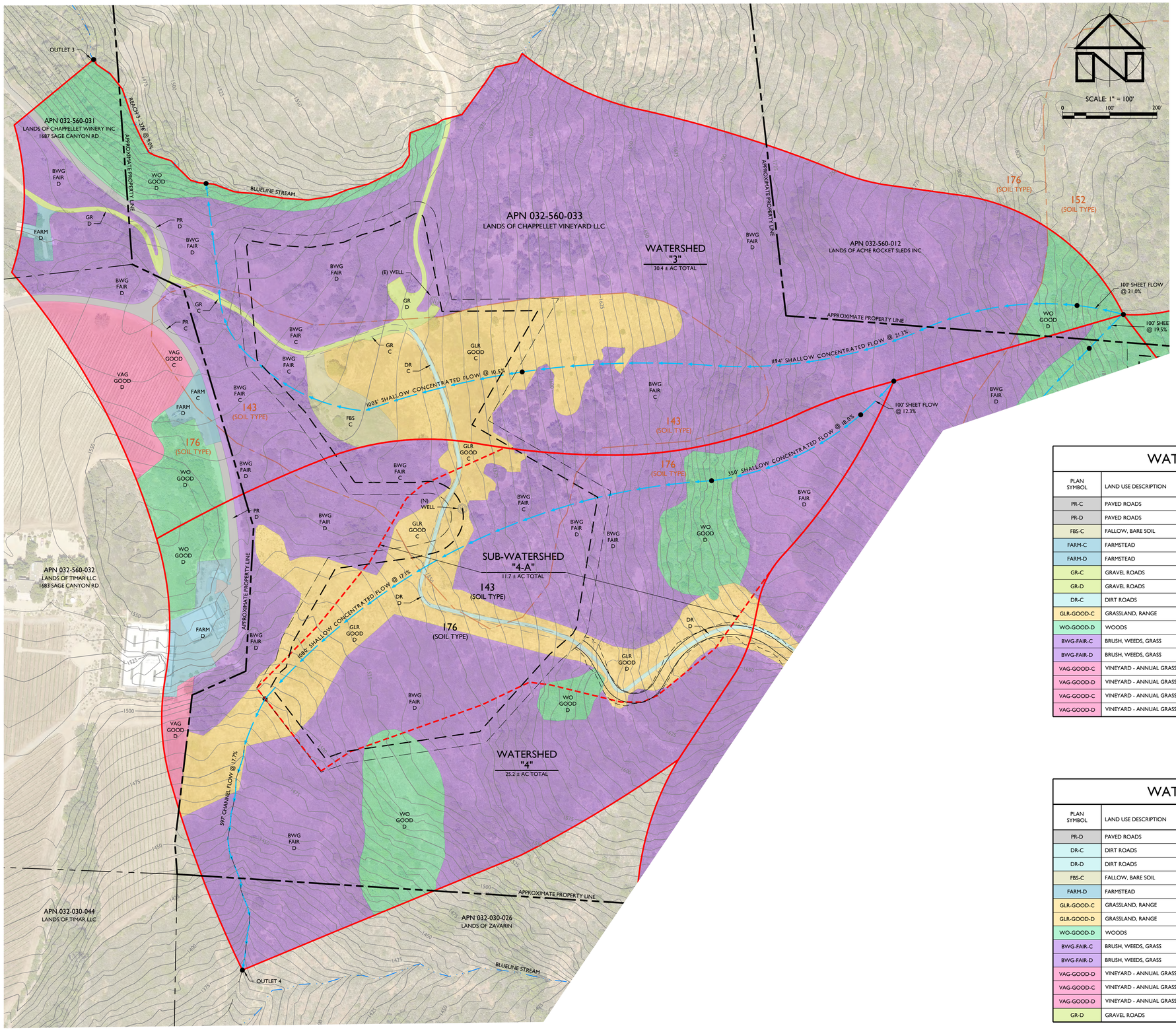
FILE: 17-141EXH-WTRSHD.DWG

ORIGINAL SIZE: 24" X 36"

SHEET NUMBER: C5 OF 11



LEGEND:

- APPROXIMATE PROPERTY LINE
- SOIL TYPE BOUNDARY
- BLUELINE STREAM
- WATERS OF THE US
- NEW VINEYARD AVENUE
- NEW VINEYARD BLOCK
- WATERSHED AREAS
- TIME OF CONCENTRATED FLOW PATH

SOILS TYPE LEGEND:

TYPE	HSG	DESCRIPTION
143	C	GUENOC-ROCK OUTCROP COMPLEX, 5 TO 30 PERCENT SLOPES
152	D	HAMBRIGHT ROCK-OUTCROP COMPLEX, 30 TO 75 PERCENT SLOPES
176	D	ROCK OUTCROP-HAMBRIGHT COMPLEX, 50 TO 75 PERCENT SLOPES
178	C	SOBRANTE LOAM, 5 TO 30 PERCENT SLOPES
179	C	SOBRANTE LOAM, 30 TO 50 PERCENT SLOPES
183	N/A	WATER

SOIL TYPE BOUNDARIES SHOWN ON THIS MAP ARE BASED ON THE NAPA COUNTY GEOGRAPHIC INFORMATION SYSTEM DATA.

WATERSHED AREA "3" SUMMARY

PLAN SYMBOL	LAND USE DESCRIPTION	HYDROLOGIC CONDITION	HYDROLOGIC SOIL GROUP	CURVE NUMBER (CN)	PRE-PROJECT (ACRES)	REMOVED (ACRES)	POST-PROJECT
PR-C	PAVED ROADS	N/A	C	92	0.1 ± AC	0	0.1 ± AC
PR-D	PAVED ROADS	N/A	D	93	0.3 ± AC	0	0.3 ± AC
FBS-C	FALLOW, BARE SOIL	N/A	C	91	0.5 ± AC	0.5 ± AC	0
FARM-C	FARMSTEAD	N/A	C	82	0.1 ± AC	0	0.1 ± AC
FARM-D	FARMSTEAD	N/A	D	86	0.2 ± AC	0	0.2 ± AC
GR-C	GRAVEL ROADS	N/A	C	89	0.2 ± AC	0.1 ± AC	0.2 ± AC
GR-D	GRAVEL ROADS	N/A	D	91	0.3 ± AC	0.2 ± AC	0.1 ± AC
DR-C	DIRT ROADS	N/A	C	87	0.1 ± AC	0.1 ± AC	0
GLR-GOOD-C	GRASSLAND, RANGE	GOOD	C	74	3.1 ± AC	2.4 ± AC	0.7 ± AC
WO-GOOD-D	WOODS	GOOD	D	77	2.7 ± AC	0	2.7 ± AC
BWG-FAIR-C	BRUSH, WEEDS, GRASS	FAIR	C	70	4.1 ± AC	1.1 ± AC	3.0 ± AC
BWG-FAIR-D	BRUSH, WEEDS, GRASS	FAIR	D	77	17.4 ± AC	1.2 ± AC	16.2 ± AC
VAG-GOOD-C	VINEYARD - ANNUAL GRASS (PRE)	GOOD	C	75	0.1 ± AC	0	0.1 ± AC
VAG-GOOD-D	VINEYARD - ANNUAL GRASS (PRE)	GOOD	D	81	1.2 ± AC	0	1.2 ± AC
VAG-GOOD-C	VINEYARD - ANNUAL GRASS (POST)	GOOD	C	75	-	-	3.4 ± AC
VAG-GOOD-D	VINEYARD - ANNUAL GRASS (POST)	GOOD	D	81	-	-	2.1 ± AC
				TOTALS	30.4 ± AC	5.6 ± AC	30.4 ± AC

WATERSHED AREA "4" SUMMARY

PLAN SYMBOL	LAND USE DESCRIPTION	HYDROLOGIC CONDITION	HYDROLOGIC SOIL GROUP	CURVE NUMBER (CN)	PRE-PROJECT (ACRES)	REMOVED (ACRES)	POST-PROJECT
PR-D	PAVED ROADS	N/A	D	93	0.2 ± AC	0	0.2 ± AC
DR-C	DIRT ROADS	N/A	C	87	0.1 ± AC	0.1 ± AC	0
DR-D	DIRT ROADS	N/A	D	89	0.1 ± AC	0.1 ± AC	0
FBS-C	FALLOW, BARE SOIL	N/A	D	91	0.1 ± AC	0.03 ± AC	0
FARM-D	FARMSTEAD	N/A	D	86	0.5 ± AC	0	0.5 ± AC
GLR-GOOD-C	GRASSLAND, RANGE	GOOD	C	74	0.9 ± AC	0.7 ± AC	0.2 ± AC
GLR-GOOD-D	GRASSLAND, RANGE	GOOD	D	80	3.6 ± AC	1.9 ± AC	1.7 ± AC
WO-GOOD-D	WOODS	GOOD	D	77	3.1 ± AC	0.1 ± AC	3.0 ± AC
BWG-FAIR-C	BRUSH, WEEDS, GRASS	FAIR	C	70	2.1 ± AC	1.9 ± AC	0.2 ± AC
BWG-FAIR-D	BRUSH, WEEDS, GRASS	FAIR	D	77	14.3 ± AC	3.2 ± AC	11.1 ± AC
VAG-GOOD-D	VINEYARD - ANNUAL GRASS (PRE)	GOOD	D	81	0.2 ± AC	0	0.2 ± AC
VAG-GOOD-C	VINEYARD - ANNUAL GRASS (POST)	GOOD	C	75	-	-	2.7 ± AC
VAG-GOOD-D	VINEYARD - ANNUAL GRASS (POST)	GOOD	D	81	-	-	5.1 ± AC
GR-D	GRAVEL ROADS	N/A	D	91	-	-	0.3 ± AC
				TOTALS	25.2 ± AC	8.0 ± AC	25.2 ± AC

WATERSHED AREAS 3 & 4 - EXISTING CONDITIONS

SCALE: 1" = 100'

APPLIED CIVIL ENGINEERING INCORPORATED
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CHAPPELLET VINEYARD LLC

WATERSHED EXHIBITS
WATERSHED AREAS 3 & 4 - EXISTING CONDITIONS

PREPARED UNDER THE DIRECTION OF:

REGISTERED PROFESSIONAL ENGINEER
MICHAEL R. MUELRATH
NO. 67435
Exp. 12/31/2020
9/24/2021
CIVIL
STATE OF CALIFORNIA

DRAWN BY: PowerCAD

CHECKED BY: MRM

DATE: SEPTEMBER 24, 2021

REVISIONS:	BY:
6/30/2020 PERMIT SUBMITTAL	YMS
1 9/24/2021 REVISION #1	YMS

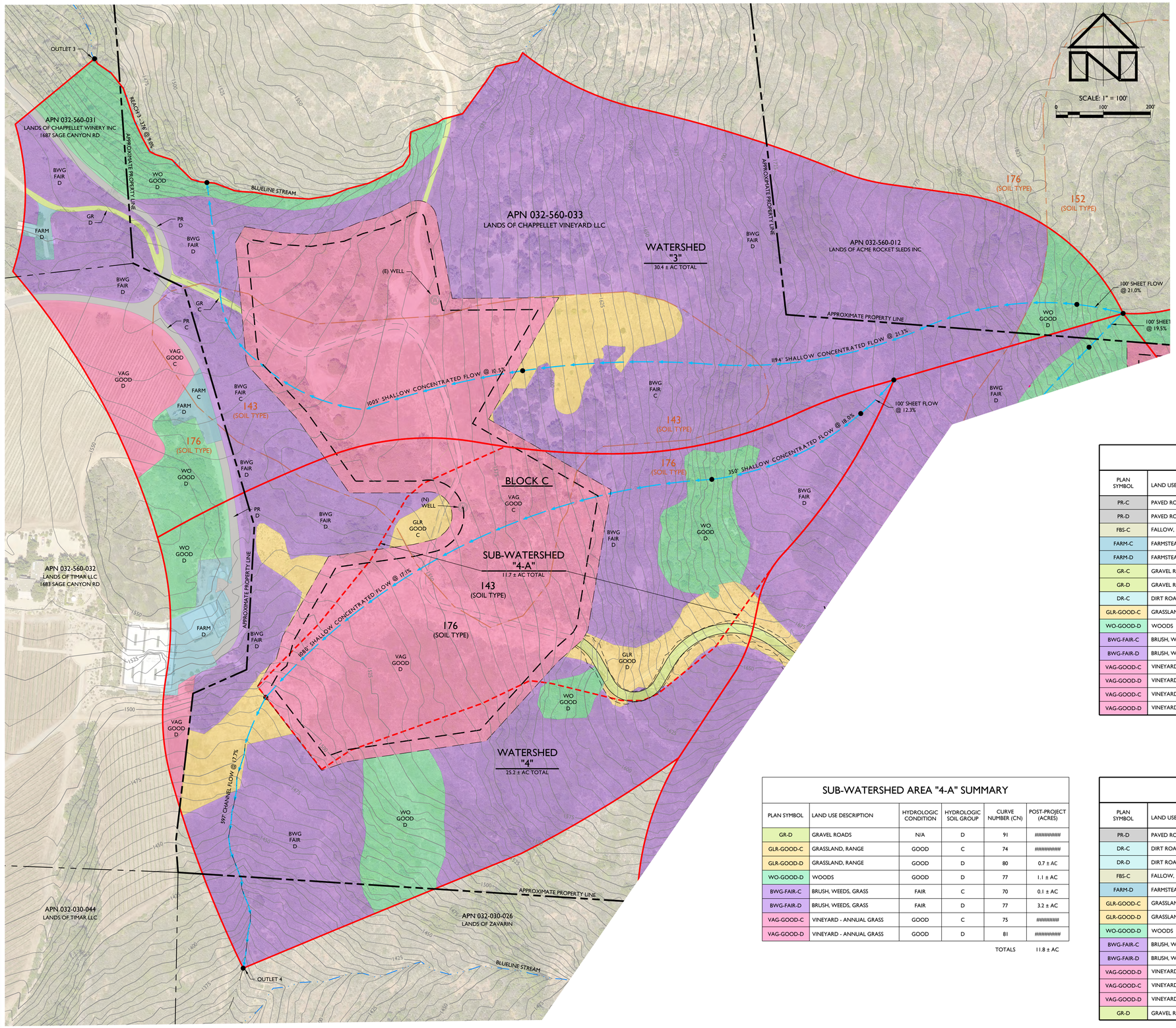
JOB NUMBER: 17-141

FILE: 17-141EXH-WTRSHD.DWG

ORIGINAL SIZE: 24" X 36"

SHEET NUMBER: C6

OF 11



LEGEND:

- APPROXIMATE PROPERTY LINE
- SOIL TYPE BOUNDARY
- BLUELINE STREAM
- WATERS OF THE US
- NEW VINEYARD AVENUE
- NEW VINEYARD BLOCK
- WATERSHED AREAS
- SUB-WATERSHED AREAS
- TIME OF CONCENTRATED FLOW PATH

SOILS TYPE LEGEND:

TYPE	HSG	DESCRIPTION
143	C	GUENOC-ROCK OUTCROP COMPLEX, 5 TO 30 PERCENT SLOPES
152	D	HAMBRIGHT ROCK-OUTCROP COMPLEX, 30 TO 75 PERCENT SLOPES
176	D	ROCK OUTCROP-HAMBRIGHT COMPLEX, 50 TO 75 PERCENT SLOPES
178	C	SOBRANTE LOAM, 5 TO 30 PERCENT SLOPES
179	C	SOBRANTE LOAM, 30 TO 50 PERCENT SLOPES
183	N/A	WATER

SOIL TYPE BOUNDARIES SHOWN ON THIS MAP ARE BASED ON THE NAPA COUNTY GEOGRAPHIC INFORMATION SYSTEM DATA.

WATERSHED AREA "3" SUMMARY

PLAN SYMBOL	LAND USE DESCRIPTION	HYDROLOGIC CONDITION	HYDROLOGIC SOIL GROUP	CURVE NUMBER (CN)	PRE-PROJECT (ACRES)	REMOVED (ACRES)	POST-PROJECT
PR-C	PAVED ROADS	N/A	C	92	0.1 ± AC	0	0.1 ± AC
PR-D	PAVED ROADS	N/A	D	93	0.3 ± AC	0	0.3 ± AC
FBS-C	FALLOW, BARE SOIL	N/A	C	91	0.5 ± AC	0.5 ± AC	0
FARM-C	FARMSTEAD	N/A	C	82	0.1 ± AC	0	0.1 ± AC
FARM-D	FARMSTEAD	N/A	D	86	0.2 ± AC	0	0.2 ± AC
GR-C	GRAVEL ROADS	N/A	C	89	0.2 ± AC	0.1 ± AC	0.2 ± AC
GR-D	GRAVEL ROADS	N/A	D	91	0.3 ± AC	0.2 ± AC	0.1 ± AC
DR-C	DIRT ROADS	N/A	C	87	0.1 ± AC	0.1 ± AC	0
GLR-GOOD-C	GRASSLAND, RANGE	GOOD	C	74	3.1 ± AC	2.4 ± AC	0.7 ± AC
WO-GOOD-D	WOODS	GOOD	D	77	2.7 ± AC	0	2.7 ± AC
BWG-FAIR-C	BRUSH, WEEDS, GRASS	FAIR	C	70	4.1 ± AC	1.1 ± AC	3.0 ± AC
BWG-FAIR-D	BRUSH, WEEDS, GRASS	FAIR	D	77	17.4 ± AC	1.2 ± AC	16.2 ± AC
VAG-GOOD-C	VINEYARD - ANNUAL GRASS (PRE)	GOOD	C	75	0.1 ± AC	0	0.1 ± AC
VAG-GOOD-D	VINEYARD - ANNUAL GRASS (PRE)	GOOD	D	81	1.2 ± AC	0	1.2 ± AC
VAG-GOOD-C	VINEYARD - ANNUAL GRASS (POST)	GOOD	C	75	-	-	3.4 ± AC
VAG-GOOD-D	VINEYARD - ANNUAL GRASS (POST)	GOOD	D	81	-	-	2.1 ± AC
				TOTALS	30.4 ± AC	5.6 ± AC	30.4 ± AC

SUB-WATERSHED AREA "4-A" SUMMARY

PLAN SYMBOL	LAND USE DESCRIPTION	HYDROLOGIC CONDITION	HYDROLOGIC SOIL GROUP	CURVE NUMBER (CN)	POST-PROJECT (ACRES)
GR-D	GRAVEL ROADS	N/A	D	91	##########
GLR-GOOD-C	GRASSLAND, RANGE	GOOD	C	74	##########
GLR-GOOD-D	GRASSLAND, RANGE	GOOD	D	80	0.7 ± AC
WO-GOOD-D	WOODS	GOOD	D	77	1.1 ± AC
BWG-FAIR-C	BRUSH, WEEDS, GRASS	FAIR	C	70	0.1 ± AC
BWG-FAIR-D	BRUSH, WEEDS, GRASS	FAIR	D	77	3.2 ± AC
VAG-GOOD-C	VINEYARD - ANNUAL GRASS	GOOD	C	75	##########
VAG-GOOD-D	VINEYARD - ANNUAL GRASS	GOOD	D	81	##########
			TOTALS		11.8 ± AC

WATERSHED AREA "4" SUMMARY

PLAN SYMBOL	LAND USE DESCRIPTION	HYDROLOGIC CONDITION	HYDROLOGIC SOIL GROUP	CURVE NUMBER (CN)	PRE-PROJECT (ACRES)	REMOVED (ACRES)	POST-PROJECT
PR-D	PAVED ROADS	N/A	D	93	0.2 ± AC	0	0.2 ± AC
DR-C	DIRT ROADS	N/A	C	87	0.1 ± AC	0.1 ± AC	0
DR-D	DIRT ROADS	N/A	D	89	0.1 ± AC	0.1 ± AC	0
FBS-C	FALLOW, BARE SOIL	N/A	D	91	0.1 ± AC	0.03 ± AC	0
FARM-D	FARMSTEAD	N/A	D	86	0.5 ± AC	0	0.5 ± AC
GLR-GOOD-C	GRASSLAND, RANGE	GOOD	C	74	0.9 ± AC	0.7 ± AC	0.2 ± AC
GLR-GOOD-D	GRASSLAND, RANGE	GOOD	D	80	3.6 ± AC	1.9 ± AC	1.7 ± AC
WO-GOOD-D	WOODS	GOOD	D	77	3.1 ± AC	0.1 ± AC	3.0 ± AC
BWG-FAIR-C	BRUSH, WEEDS, GRASS	FAIR	C	70	2.1 ± AC	1.9 ± AC	0.2 ± AC
BWG-FAIR-D	BRUSH, WEEDS, GRASS	FAIR	D	77	14.3 ± AC	3.2 ± AC	11.1 ± AC
VAG-GOOD-D	VINEYARD - ANNUAL GRASS (PRE)	GOOD	D	81	0.2 ± AC	0	0.2 ± AC
VAG-GOOD-C	VINEYARD - ANNUAL GRASS (POST)	GOOD	C	75	-	-	2.7 ± AC
VAG-GOOD-D	VINEYARD - ANNUAL GRASS (POST)	GOOD	D	81	-	-	5.1 ± AC
GR-D	GRAVEL ROADS	N/A	D	91	-	-	0.3 ± AC
				TOTALS	25.2 ± AC	8.0 ± AC	25.2 ± AC

WATERSHED AREAS 3 & 4 - PROPOSED CONDITIONS

SCALE: 1" = 100'

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CHAPPELLET VINEYARD LLC

WATERSHED EXHIBITS
WATERSHED AREAS 3 & 4 - PROPOSED CONDITIONS

PREPARED UNDER THE DIRECTION OF:

REGISTERED PROFESSIONAL ENGINEER
MICHAEL R. MUETHERTH
NO. 67435
Exp. 12/31/2020
9/24/2021
CIVIL
STATE OF CALIFORNIA

DRAWN BY: PowerCAD

CHECKED BY: MRM

DATE: SEPTEMBER 24, 2021

REVISIONS: BY:
6/30/2020 YMS
PERMIT SUBMITTAL

1 9/24/2021 YMS
REVISION #1

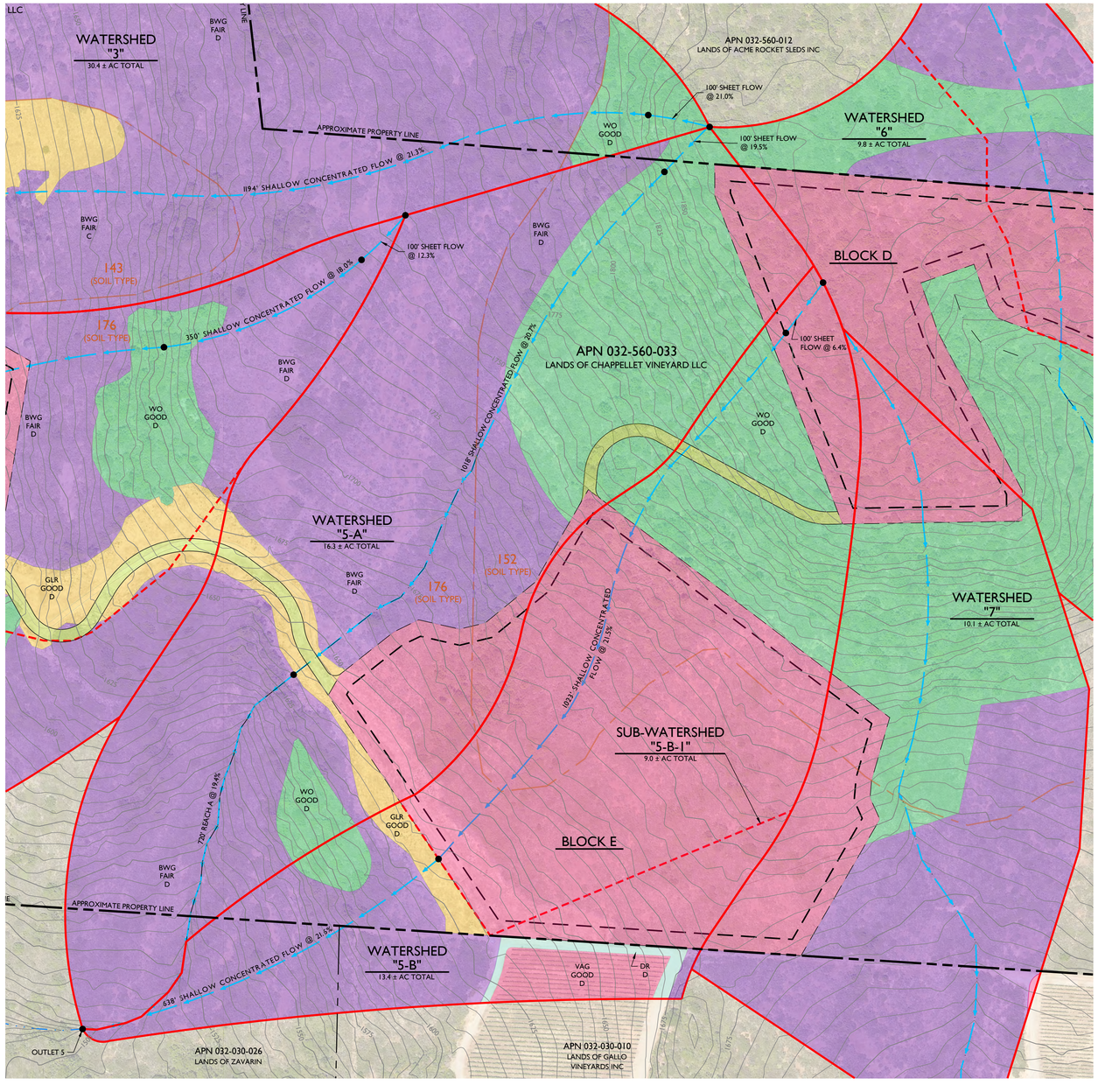
JOB NUMBER: 17-141

FILE: 17-141EXH-WTRSHD.DWG

ORIGINAL SIZE: 24" X 36"

SHEET NUMBER: C7

OF 11



SCALE: 1" = 100'

0 100' 200'

WATERSHED AREA 5 - PROPOSED CONDITIONS

SCALE: 1" = 100'

LEGEND:

- APPROXIMATE PROPERTY LINE
- SOIL TYPE BOUNDARY
- BLUELINE STREAM
- WATERS OF THE US
- NEW VINEYARD AVENUE
- NEW VINEYARD BLOCK
- WATERSHED AREAS
- SUB-WATERSHED AREAS
- TIME OF CONCENTRATED FLOW PATH

SOILS TYPE LEGEND:

TYPE	HSG	DESCRIPTION
143	C	GUENOC-ROCK OUTCROP COMPLEX, 5 TO 30 PERCENT SLOPES
152	D	HAMBRIGHT ROCK-OUTCROP COMPLEX, 30 TO 75 PERCENT SLOPES
176	D	ROCK OUTCROP-HAMBRIGHT COMPLEX, 50 TO 75 PERCENT SLOPES
178	C	SOBRANTE LOAM, 5 TO 30 PERCENT SLOPES
179	C	SOBRANTE LOAM, 30 TO 50 PERCENT SLOPES
183	N/A	WATER

SOIL TYPE BOUNDARIES SHOWN ON THIS MAP ARE BASED ON THE NAPA COUNTY GEOGRAPHIC INFORMATION SYSTEM DATA.

WATERSHED AREA "5-A" SUMMARY

PLAN SYMBOL	LAND USE DESCRIPTION	HYDROLOGIC CONDITION	HYDROLOGIC SOIL GROUP	CURVE NUMBER (CN)	PRE-PROJECT (ACRES)	REMOVED (ACRES)	POST-PROJECT
DR-D	DIRT ROADS	N/A	D	89	0.1 ± AC	0.1 ± AC	0
GLR-GOOD-D	GRASSLAND, RANGE	GOOD	D	80	0.8 ± AC	0.4 ± AC	0.4 ± AC
WO-GOOD-D	WOODS	GOOD	D	77	4.4 ± AC	0.7 ± AC	3.7 ± AC
BWG-FAIR-D	BRUSH, WEEDS, GRASS	FAIR	D	77	11.0 ± AC	0.8 ± AC	10.2 ± AC
VAG-GOOD-D	VINEYARD - ANNUAL GRASS (PRE)	GOOD	D	81	0	0	0
VAG-GOOD-D	VINEYARD - ANNUAL GRASS (POST)	GOOD	D	81	-	-	1.8 ± AC
GR-D	GRAVEL ROADS	N/A	D	91	-	-	0.2 ± AC
				TOTALS	16.3 ± AC	2.0 ± AC	16.3 ± AC

WATERSHED AREA "5-B" SUMMARY

PLAN SYMBOL	LAND USE DESCRIPTION	HYDROLOGIC CONDITION	HYDROLOGIC SOIL GROUP	CURVE NUMBER (CN)	PRE-PROJECT (ACRES)	REMOVED (ACRES)	POST-PROJECT
DR-D	DIRT ROADS	N/A	D	89	0.2 ± AC	0.1 ± AC	0.1 ± AC
GLR-GOOD-D	GRASSLAND, RANGE	GOOD	D	80	0.7 ± AC	0.5 ± AC	0.2 ± AC
WO-GOOD-D	WOODS	GOOD	D	77	5.6 ± AC	3.2 ± AC	2.4 ± AC
BWG-FAIR-D	BRUSH, WEEDS, GRASS	FAIR	D	77	6.4 ± AC	4.0 ± AC	2.4 ± AC
VAG-GOOD-D	VINEYARD - ANNUAL GRASS (PRE)	GOOD	D	81	0.5 ± AC	0	0.5 ± AC
VAG-GOOD-D	VINEYARD - ANNUAL GRASS (POST)	GOOD	D	81	-	-	7.6 ± AC
GR-D	GRAVEL ROADS	N/A	D	91	-	-	0.2 ± AC
				TOTALS	13.4 ± AC	7.8 ± AC	13.4 ± AC

SUB-WATERSHED AREA "5-B-1" SUMMARY

PLAN SYMBOL	LAND USE DESCRIPTION	HYDROLOGIC CONDITION	HYDROLOGIC SOIL GROUP	CURVE NUMBER (CN)	POST-PROJECT (ACRES)
GR-D	GRAVEL ROADS	N/A	D	91	0.1 ± AC
WO-GOOD-D	WOODS	GOOD	D	77	2.2 ± AC
VAG-GOOD-D	VINEYARD - ANNUAL GRASS	GOOD	D	81	6.7 ± AC
			TOTALS		9.0 ± AC

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CHAPPELLET VINEYARD LLC

WATERSHED EXHIBITS
WATERSHED AREA 5 - PROPOSED CONDITIONS

PREPARED UNDER THE DIRECTION OF:

REGISTERED PROFESSIONAL ENGINEER
MICHAEL R. MUEGENBURG
NO. 67435
Exp. 12/31/2020
9/24/2021
CIVIL
STATE OF CALIFORNIA

DRAWN BY: PowerCAD

CHECKED BY: MRM

DATE: SEPTEMBER 24, 2021

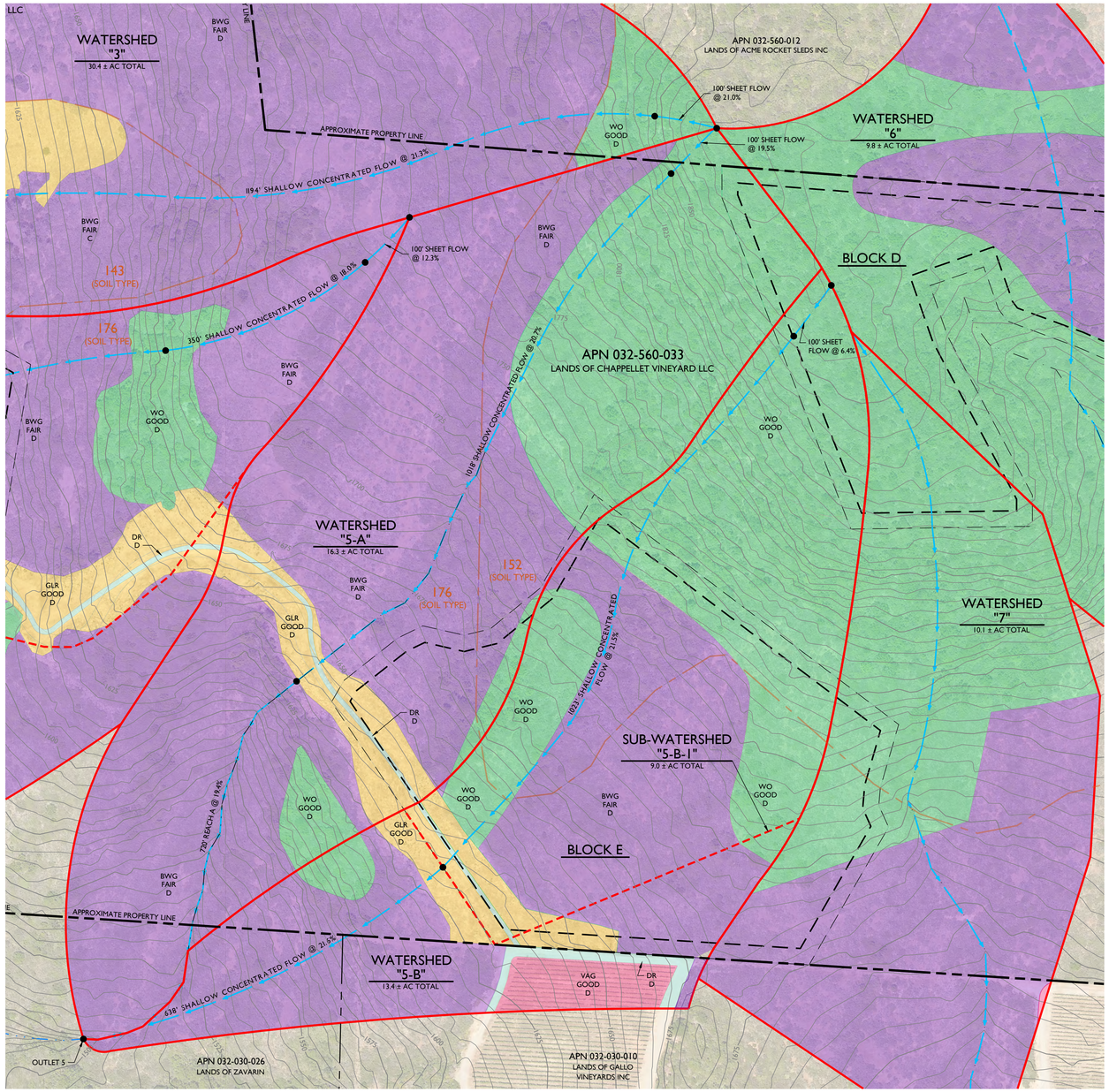
REVISIONS:	BY:
6/30/2020 PERMIT SUBMITTAL	YMS
1 9/24/2021 REVISION #1	YMS

JOB NUMBER: 17-141

FILE: 17-141EXH-WTRSHD.DWG

ORIGINAL SIZE: 24" X 36"

SHEET NUMBER: C9 OF 11



WATERSHED AREA 5 - EXISTING CONDITIONS

SCALE: 1" = 100'

SCALE: 1" = 100'

0 100' 200'

LEGEND:

- APPROXIMATE PROPERTY LINE
- SOIL TYPE BOUNDARY
- BLUELINE STREAM
- WATERS OF THE US
- NEW VINEYARD AVENUE
- NEW VINEYARD BLOCK
- WATERSHED AREAS
- TIME OF CONCENTRATED FLOW PATH

SOILS TYPE LEGEND:

TYPE	HSG	DESCRIPTION
143	C	GUENOC-ROCK OUTCROP COMPLEX, 5 TO 30 PERCENT SLOPES
152	D	HAMBRIGHT ROCK-OUTCROP COMPLEX, 30 TO 75 PERCENT SLOPES
176	D	ROCK OUTCROP-HAMBRIGHT COMPLEX, 50 TO 75 PERCENT SLOPES
178	C	SOBRANTE LOAM, 5 TO 30 PERCENT SLOPES
179	C	SOBRANTE LOAM, 30 TO 50 PERCENT SLOPES
183	N/A	WATER

SOIL TYPE BOUNDARIES SHOWN ON THIS MAP ARE BASED ON THE NAPA COUNTY GEOGRAPHIC INFORMATION SYSTEM DATA.

WATERSHED AREA "5-A" SUMMARY

PLAN SYMBOL	LAND USE DESCRIPTION	HYDROLOGIC CONDITION	HYDROLOGIC SOIL GROUP	CURVE NUMBER (CN)	PRE-PROJECT (ACRES)	REMOVED (ACRES)	POST-PROJECT
DR-D	DIRT ROADS	N/A	D	89	0.1 ± AC	0.1 ± AC	0
GLR-GOOD-D	GRASSLAND, RANGE	GOOD	D	80	0.8 ± AC	0.4 ± AC	0.4 ± AC
WO-GOOD-D	WOODS	GOOD	D	77	4.4 ± AC	0.7 ± AC	3.7 ± AC
BWG-FAIR-D	BRUSH, WEEDS, GRASS	FAIR	D	77	11.0 ± AC	0.8 ± AC	10.2 ± AC
VAG-GOOD-D	VINEYARD - ANNUAL GRASS (PRE)	GOOD	D	81	0	0	0
VAG-GOOD-D	VINEYARD - ANNUAL GRASS (POST)	GOOD	D	81	-	-	1.8 ± AC
GR-D	GRAVEL ROADS	N/A	D	91	-	-	0.2 ± AC
				TOTALS	16.3 ± AC	2.0 ± AC	16.3 ± AC

WATERSHED AREA "5-B" SUMMARY

PLAN SYMBOL	LAND USE DESCRIPTION	HYDROLOGIC CONDITION	HYDROLOGIC SOIL GROUP	CURVE NUMBER (CN)	PRE-PROJECT (ACRES)	REMOVED (ACRES)	POST-PROJECT
DR-D	DIRT ROADS	N/A	D	89	0.2 ± AC	0.1 ± AC	0.1 ± AC
GLR-GOOD-D	GRASSLAND, RANGE	GOOD	D	80	0.7 ± AC	0.5 ± AC	0.2 ± AC
WO-GOOD-D	WOODS	GOOD	D	77	5.6 ± AC	3.2 ± AC	2.4 ± AC
BWG-FAIR-D	BRUSH, WEEDS, GRASS	FAIR	D	77	6.4 ± AC	4.0 ± AC	2.4 ± AC
VAG-GOOD-D	VINEYARD - ANNUAL GRASS (PRE)	GOOD	D	81	0.5 ± AC	0	0.5 ± AC
VAG-GOOD-D	VINEYARD - ANNUAL GRASS (POST)	GOOD	D	81	-	-	7.6 ± AC
GR-D	GRAVEL ROADS	N/A	D	91	-	-	0.2 ± AC
				TOTALS	13.4 ± AC	7.8 ± AC	13.4 ± AC

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CHAPPELLET VINEYARD LLC

WATERSHED EXHIBITS
WATERSHED AREA 5 - EXISTING CONDITIONS

PREPARED UNDER THE DIRECTION OF:

REGISTERED PROFESSIONAL ENGINEER
MICHAEL R. MUELRATH
NO. 67435
Exp. 12/31/2020
9/24/2021
CIVIL
STATE OF CALIFORNIA

DRAWN BY: PowerCAD

CHECKED BY: MRM

DATE: SEPTEMBER 24, 2021

REVISIONS: BY:
6/30/2020 YMS
PERMIT SUBMITTAL
1 9/24/2021 YMS
REVISION #1

JOB NUMBER: 17-141

FILE: 17-141EXH-WTRSHD.DWG

ORIGINAL SIZE: 24" X 36"

SHEET NUMBER: C8

OF 11

WATERSHED AREA "6" SUMMARY

PLAN SYMBOL	LAND USE DESCRIPTION	HYDROLOGIC CONDITION	HYDROLOGIC SOIL GROUP	CURVE NUMBER (CN)	PRE-PROJECT (ACRES)	REMOVED (ACRES)	POST-PROJECT
WO-GOOD-D	WOODS	GOOD	D	77	6.6 ± AC	1.8 ± AC	4.8 ± AC
BWG-FAIR-D	BRUSH, WEEDS, GRASS	FAIR	D	77	3.2 ± AC	1.4 ± AC	1.8 ± AC
VAG-GOOD-D	VINEYARD - ANNUAL GRASS (POST)	GOOD	D	81	-	-	3.2 ± AC
				TOTALS	9.8 ± AC	3.2 ± AC	9.8 ± AC

WATERSHED AREA "7" SUMMARY

PLAN SYMBOL	LAND USE DESCRIPTION	HYDROLOGIC CONDITION	HYDROLOGIC SOIL GROUP	CURVE NUMBER (CN)	PRE-PROJECT (ACRES)	REMOVED (ACRES)	POST-PROJECT
DR-D	DIRT ROADS	N/A	D	89	0.04 ± AC	0	0.04 ± AC
WO-GOOD-D	WOODS	GOOD	D	77	4.7 ± AC	1.8 ± AC	2.9 ± AC
BWG-FAIR-D	BRUSH, WEEDS, GRASS	FAIR	D	77	5.36 ± AC	0.5 ± AC	4.86 ± AC
VAG-GOOD-D	VINEYARD - ANNUAL GRASS	GOOD	D	81	-	-	2.3 ± AC
				TOTALS	10.1 ± AC	2.3 ± AC	10.1 ± AC

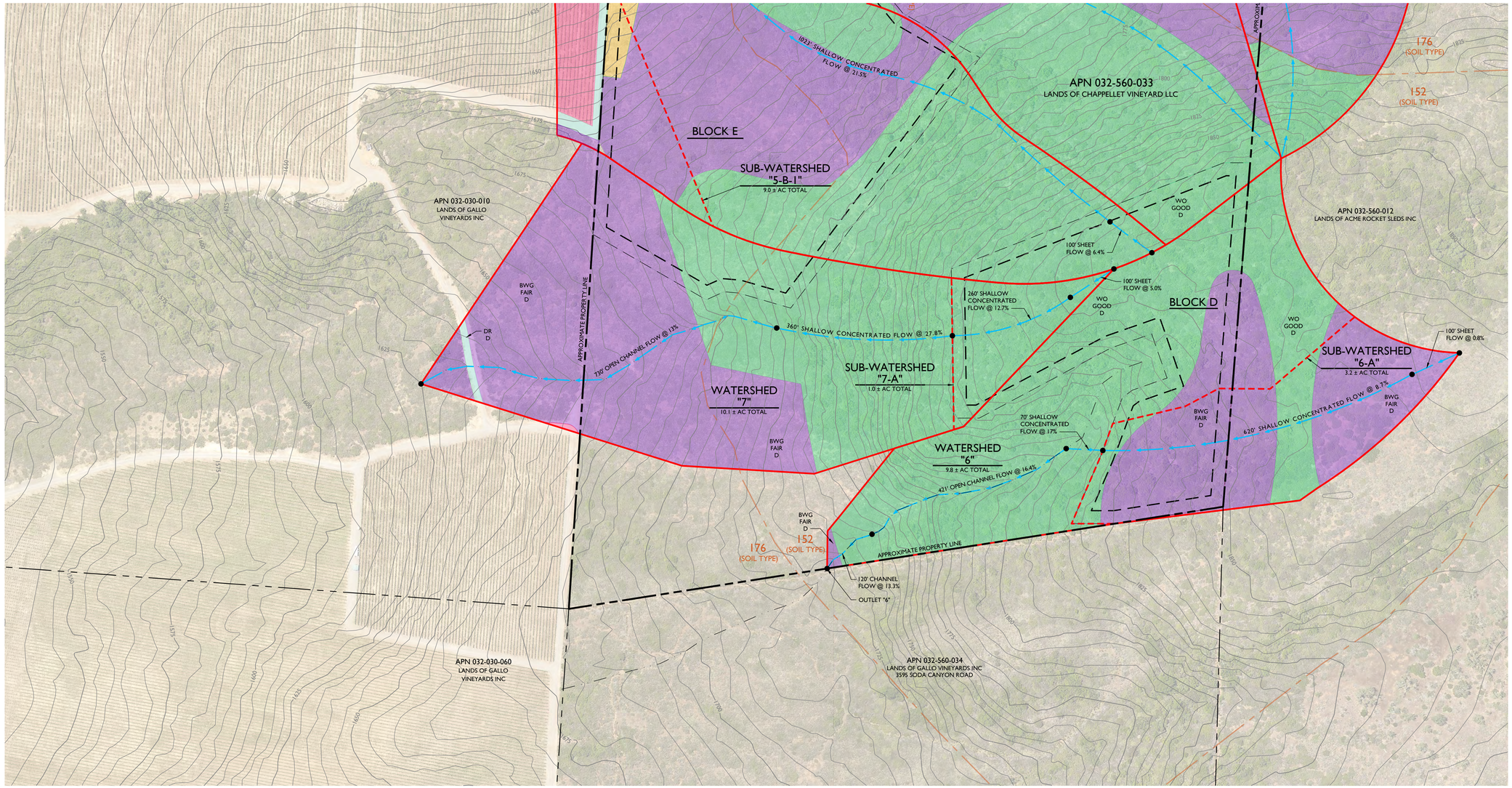
LEGEND:

- APPROXIMATE PROPERTY LINE
- SOIL TYPE BOUNDARY
- BLUELINE STREAM
- WATERS OF THE US
- NEW VINEYARD AVENUE
- NEW VINEYARD BLOCK
- WATERSHED AREAS
- TIME OF CONCENTRATED FLOW PATH

SOILS TYPE LEGEND:

TYPE	HSG	DESCRIPTION
143	C	GUENOC-ROCK OUTCROP COMPLEX, 5 TO 30 PERCENT SLOPES
152	D	HAMBRIGHT ROCK-OUTCROP COMPLEX, 30 TO 75 PERCENT SLOPES
176	D	ROCK OUTCROP-HAMBRIGHT COMPLEX, 50 TO 75 PERCENT SLOPES
178	C	SOBRANTE LOAM, 5 TO 30 PERCENT SLOPES
179	C	SOBRANTE LOAM, 30 TO 50 PERCENT SLOPES
183	N/A	WATER

SOIL TYPE BOUNDARIES SHOWN ON THIS MAP ARE BASED ON THE NAPA COUNTY GEOGRAPHIC INFORMATION SYSTEM DATA.



SCALE: 1" = 100'

0 100' 200'

WATERSHED AREAS 6 & 7 - EXISTING CONDITIONS

SCALE: 1" = 100'

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WATERSHED EXHIBITS

WATERSHED AREAS 6 & 7 - EXISTING CONDITIONS

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9/24/2021
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STATE OF CALIFORNIA

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6/30/2020 PERMIT SUBMITTAL	YMS
1 9/24/2021 REVISION #1	YMS

JOB NUMBER: 17-141

FILE: 17-141EXH-WTRSHD.DWG

ORIGINAL SIZE: 24" X 36"

SHEET NUMBER: C10 OF 11

WATERSHED AREA "6" SUMMARY

PLAN SYMBOL	LAND USE DESCRIPTION	HYDROLOGIC CONDITION	HYDROLOGIC SOIL GROUP	CURVE NUMBER (CN)	PRE-PROJECT (ACRES)	REMOVED (ACRES)	POST-PROJECT
WO-GOOD-D	WOODS	GOOD	D	77	6.6 ± AC	1.8 ± AC	4.8 ± AC
BWG-FAIR-D	BRUSH, WEEDS, GRASS	FAIR	D	77	3.2 ± AC	1.4 ± AC	1.8 ± AC
VAG-GOOD-D	VINEYARD - ANNUAL GRASS (POST)	GOOD	D	81	-	-	3.2 ± AC
				TOTALS	9.8 ± AC	3.2 ± AC	9.8 ± AC

WATERSHED AREA "6-A" SUMMARY

PLAN SYMBOL	LAND USE DESCRIPTION	HYDROLOGIC CONDITION	HYDROLOGIC SOIL GROUP	CURVE NUMBER (CN)	POST-PROJECT
WO-GOOD-D	WOODS	GOOD	D	77	0.4 ± AC
BWG-FAIR-D	BRUSH, WEEDS, GRASS	FAIR	D	77	1.6 ± AC
VAG-GOOD-D	VINEYARD - ANNUAL GRASS	GOOD	D	81	1.2 ± AC
				TOTALS	3.2 ± AC

WATERSHED AREA "7" SUMMARY

PLAN SYMBOL	LAND USE DESCRIPTION	HYDROLOGIC CONDITION	HYDROLOGIC SOIL GROUP	CURVE NUMBER (CN)	PRE-PROJECT (ACRES)	REMOVED (ACRES)	POST-PROJECT
DR-D	DIRT ROADS	N/A	D	89	0.04 ± AC	0	0.04 ± AC
WO-GOOD-D	WOODS	GOOD	D	77	4.7 ± AC	1.8 ± AC	2.9 ± AC
BWG-FAIR-D	BRUSH, WEEDS, GRASS	FAIR	D	77	5.36 ± AC	0.5 ± AC	4.86 ± AC
VAG-GOOD-D	VINEYARD - ANNUAL GRASS	GOOD	D	81	-	-	2.3 ± AC
				TOTALS	10.1 ± AC	2.3 ± AC	10.1 ± AC

WATERSHED AREA "7-A" SUMMARY

PLAN SYMBOL	LAND USE DESCRIPTION	HYDROLOGIC CONDITION	HYDROLOGIC SOIL GROUP	CURVE NUMBER (CN)	POST-PROJECT
VAG-GOOD-D	VINEYARD - ANNUAL GRASS	GOOD	D	81	1.0 ± AC
				TOTALS	1.0 ± AC

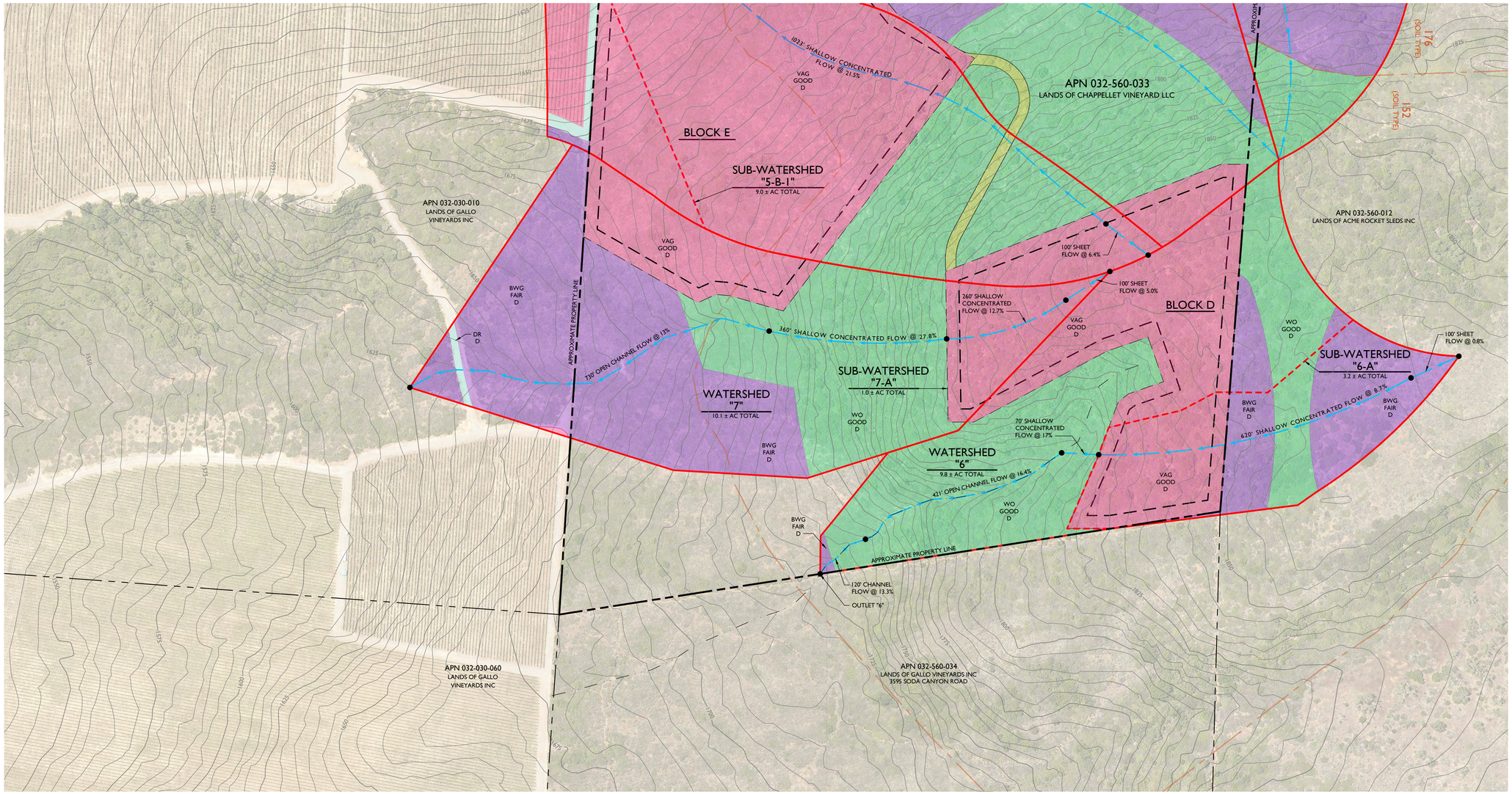
LEGEND:

- APPROXIMATE PROPERTY LINE
- SOIL TYPE BOUNDARY
- BLUELINE STREAM
- WATERS OF THE US
- NEW VINEYARD AVENUE
- NEW VINEYARD BLOCK
- WATERSHED AREAS
- SUB-WATERSHED AREAS
- TIME OF CONCENTRATED FLOW PATH

SOILS TYPE LEGEND:

TYPE	HSG	DESCRIPTION
143	C	GUENOC-ROCK OUTCROP COMPLEX, 5 TO 30 PERCENT SLOPES
152	D	HAMBRIGHT ROCK-OUTCROP COMPLEX, 30 TO 75 PERCENT SLOPES
176	D	ROCK OUTCROP-HAMBRIGHT COMPLEX, 50 TO 75 PERCENT SLOPES
178	C	SOBRANTE LOAM, 5 TO 30 PERCENT SLOPES
179	C	SOBRANTE LOAM, 30 TO 50 PERCENT SLOPES
183	N/A	WATER

SOIL TYPE BOUNDARIES SHOWN ON THIS MAP ARE BASED ON THE NAPA COUNTY GEOGRAPHIC INFORMATION SYSTEM DATA.



SCALE: 1" = 100'

0 100' 200'

WATERSHED AREAS 6 & 7 - PROPOSED CONDITIONS

SCALE: 1" = 100'

APPLIED CIVIL ENGINEERING INCORPORATED
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www.appliedcivil.com

CHAPPELLET VINEYARD LLC

WATERSHED EXHIBITS

WATERSHED AREAS 6 & 7 - PROPOSED CONDITIONS

PREPARED UNDER THE DIRECTION OF:

REGISTERED PROFESSIONAL ENGINEER
MICHAEL R. MUELRATH
NO. 67435
Exp. 12/31/2020
9/24/2021
CIVIL
STATE OF CALIFORNIA

DRAWN BY: PowerCAD

CHECKED BY: MRM

DATE: SEPTEMBER 24, 2021

REVISIONS:	BY:
6/30/2020 PERMIT SUBMITTAL	YMS
1 9/24/2021 REVISION #1	YMS

JOB NUMBER: 17-141

FILE: 17-141EXH-WTRSHD.DWG

ORIGINAL SIZE: 24" X 36"

SHEET NUMBER: C11 OF 11