

## **Appendix E. Stormwater Control Plan**

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# STORMWATER CONTROL PLAN FOR A REGULATED PROJECT

THE GRANGE CAMPGROUND  
SILVERADO TRAIL  
NAPA, CALIFORNIA 94558

THIS REPORT WAS PREPARED IN CONJUNCTION WITH THE INSTRUCTIONS, CRITERIA, AND MINIMUM REQUIREMENTS IN THE BAY AREA STORMWATER MANAGEMENT AGENCIES ASSOCIATION'S (BASMAA'S) POST CONSTRUCTION MANUAL.

Prepared for:

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Project #4122075.0

November 22, 2023

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Figure 1. Vicinity Map

Figure 2. Existing Site Conditions

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1. Soil Classification

2. Stormwater Control Plan Exhibit

## I. Project Data

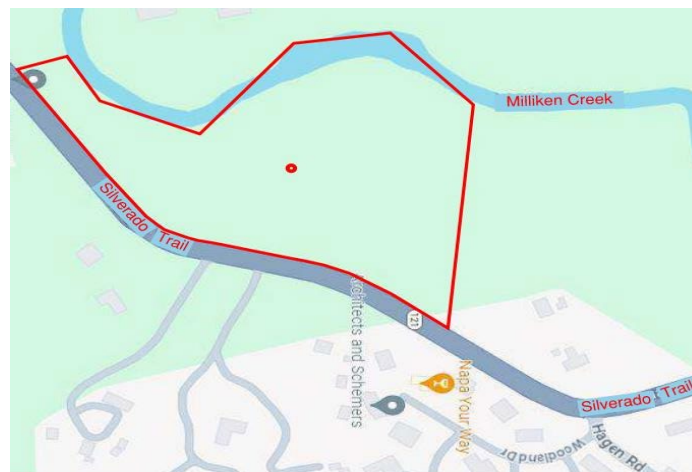
**Table 1.** Project Data Form

Project Name/Number	The Grange Campground / 4122075.0
Application Submittal Date	November 22, 2023
Project Location	Silverado Trail Napa, California 94558 APN: 052-010-011
Project Phase No.	Not Applicable
Project Type and Description	Construction of commercial campground with permanent buildings, movable recreational units and activity spaces, sidewalk, driveway, parking lot areas, two-way drive aisle and private utilities.
Total Project Site Area	12.5± acres
Total New and Replaced Impervious Surface Area	135,560 sq. ft.
Total Pre-Project Impervious Surface Area	-
Total Post-Project Impervious Surface Area	135,560 sq. ft.

## II. Setting

### II.A. Project Location and Description

The Grange Campground project is located at Silverado Trail in Napa, California, as shown in Figure 1 below. The APN is 052-010-011. The parcel has a total area of 11.6± acres. The neighboring parcels include single family homes. This project involves the construction of main building, meeting room, pool, offices, parking area, sidewalk, driveway, two-way drive aisle, and installation of private utilities.

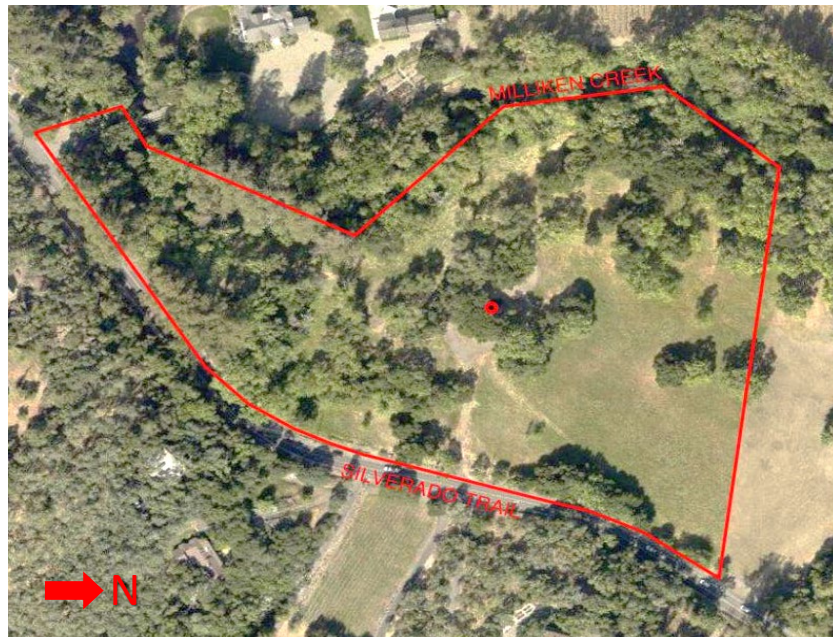


**Figure 1.** Vicinity Map

The proposed use is to apply for a Zoning Text Amendment to allow camping or glamping and other ancillary uses on the property. Refer to Attachment 2 for the overall scope of the project.

## **II.B. Existing Site Features and Conditions**

The parcel is currently undeveloped. The parcel is bounded by Milliken Creek to the west, Silverado trail to the east and south, and residential parcel to the north. See Figure 2 below for existing site conditions.



**Figure 2.** Existing Site Conditions

Mapping by the U.S. Conservation Service has classified soil within this project area as Hambricht Rock-Outcrop complex which is of the Hydraulic Soil group D, and Yolo Loam, which is of the Hydraulic Soil Group B. The whole site drains to Milliken Creek, located at the western portion of the parcel. Stormwater is ultimately conveyed to the Napa River.

## **II.C. Opportunities and Constraints for Stormwater Control**

The following potential opportunities and constraints were considered in determining the best stormwater control design for this development.

Opportunities for this site are the availability of vegetated areas in the site. Runoff will be conveyed to vegetated areas from roof downspouts, and surface flows, if any remain after infiltration from the parking lot areas and drive aisle.

Constraints for this site include the parcel shape, topography, wetlands, and blue-line creek setbacks.

## **III. Low Impact Development Design Strategies**

### **III.A. Optimization of Site Layout**

#### **1. Limitation of development envelope**

Building envelopes are proposed, which will limit the development area of the site.

2. Preservation of natural drainage features

Natural drainage consists of sheet flow over the ground surface that concentrates in man-made surface drainage elements such as ditches, gutters, and onsite storm drain pipe. See constraints on Section II.C above.

3. Setbacks from creeks, wetlands, and riparian habitats

The development will comply with structural creek setbacks as required by City of Napa Municipal Code.

4. Minimization of imperviousness

Landscaping will be used in the front, and most of the existing native trees and vegetation will be preserved on the property. Impervious areas will be minimized to the maximum extent practicable. Parking areas, drive aisle and pathways are proposed as pervious materials.

5. Use of drainage as a design element

Drainage is incorporated but not on aesthetic design of the site.

**III.B. Use of Permeable Pavements**

Permeable paving is proposed in parking area and pathways.

**III.C. Dispersal of Runoff to Pervious Areas**

Stormwater runoff will be directed to landscaped areas.

**III.D. Stormwater Control Measures**

Self-retaining areas have been incorporated as stormwater control measures. These DMAs meet the following BASMAA requirements:

- The pervious area is relatively flat and landscaped.
- The ratio of impervious areas to pervious areas is less than 2:1 ratio.
- Area is graded into a concave cross-section so that the first inch of rainfall is detained.

**IV. Documentation of Drainage Design**

**IV.A. Description of Drainage Management Area**

**IV.A.1. Drainage Management Area**

**Table 2.** Drainage Management Area (DMA) as shown on Attachment 2.

DMA #	Proposed Impervious Area (SF)	Proposed Pervious Area (SF)	Total Area (SF)
1	135,560	373,369	508,929

#### IV.A.2. Drainage Management Area Description

**DMA 1:** Totaling 508,929 square feet, this DMA consists of permanent buildings, driveway, parking lot areas, sidewalk, movable camping trailers and flatwork, drive-aisle, and vegetation areas. Run-off from this area will be directed to vegetation/landscaped area via surface flow. This DMA is considered self-retaining. The exhibit included with this SCP shows that the parking areas and pathways can be impervious, and the 2:1 retaining ratio is still far exceeded. The natural topography of the site perimeters will not be modified, so the site will retain much of the water as it does currently. The drainage patterns are to remain.

Very little areas on the site will be permanent impervious areas. The majority of the storm events will not leave the site and will be retained on the large flat site. If required during construction documents additional hydrologic analysis can be performed to determine if additional detention is needed. The site has ample areas to integrate either above ground basins or below ground storage should it be required.

#### IV.B. Tabulation and Sizing Calculations

Refer to Attachment 2 for tabulation on the exhibit.

### V. Source Control Measures

#### V.A. Site activities and potential sources of pollutants

On-site activities that could potentially produce stormwater pollutants are listed in Table 3 below:

#### V.B. Potential Pollutant Sources and Source Control Measures

The site activities and potential sources of pollutants for the Capitola Subdivision project are listed in Table 3, below.

**Table 3.** Potential Pollutant Sources and Source Control Measures

Potential Sources of Runoff Pollutants	Permanent Source Control BMPs	Operational Source Control BMPs
A. On-site storm drain inlets (unauthorized non-stormwater discharges and accidental spills or leaks)	N/A	N/A
B. Interior floor drains and elevator shaft sump pumps	N/A	N/A
C. Interior parking garages	N/A	N/A
D <sub>1</sub> . Need for future indoor & structural pest control	N/A	N/A
D <sub>2</sub> . Landscape / outdoor pesticide use / building and grounds maintenance	<p>Final landscape plans will accomplish all of the following:</p> <ul style="list-style-type: none"> <li>☑ Preserve existing native trees, shrubs, and ground cover to the maximum extent possible.</li> <li>☑ Minimize irrigation and runoff, to promote surface</li> </ul>	<ul style="list-style-type: none"> <li>☑ Maintain landscaping using minimum or no pesticides.</li> <li>☑ See applicable operational BMPs in Fact Sheet SC-41, "Building and Grounds Maintenance."</li> </ul>



Potential Sources of Runoff Pollutants	Permanent Source Control BMPs	Operational Source Control BMPs
	<p>infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution.</p> <ul style="list-style-type: none"> <li>✓ Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions.</li> <li>✓ Use pest-resistant plants, especially adjacent to hardscape.</li> <li>✓ To ensure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Provide IPM information to new owners, lessees and operators.</li> </ul>
E. Pools, spas, ponds, decorative fountains, and other water features	<ul style="list-style-type: none"> <li>✓ If the local municipality requires pools to be plumbed to the sanitary sewer, place a note on the plans and state in the narrative that this connection will be made according to local requirements.</li> </ul>	<ul style="list-style-type: none"> <li>✓ See applicable operational BMPs in Fact Sheet SC-72, "Fountain and Pool Maintenance," in the CASQA Stormwater Quality Handbooks at <a href="http://www.casqa.org/resources/bmphandbooks">www.casqa.org/resources/bmphandbooks</a></li> <li>✓ The sanitary sewer operator must be notified and a clean out identified when pools are to be drained to the sanitary sewer.</li> </ul>
F. Food service	N/A	N/A
G. Refuse areas	<ul style="list-style-type: none"> <li>✓ State how site refuse will be handled and provide supporting detail to what is shown on plans.</li> <li>✓ State that signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.</li> </ul>	<p>State how the following will be implemented:</p> <ul style="list-style-type: none"> <li>✓ Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post "no hazardous materials" signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbooks at <a href="http://www.casqa.org/resources/bmphandbooks">www.casqa.org/resources/bmphandbooks</a></li> </ul>
H. Industrial processes.	N/A	N/A
I. Outdoor storage of equipment or materials. (See rows J and K for source control measures for vehicle cleaning, repair, and maintenance.)	N/A	N/A
J. Vehicle and Equipment Cleaning	N/A	N/A



Potential Sources of Runoff Pollutants	Permanent BMPs	Source Control	Operational Source Control BMPs
K. Vehicle/Equipment Repair and maintenance		N/A	N/A
L. Fuel Dispensing Areas		N/A	N/A
M. Loading Docks		N/A	N/A
N. Fire Sprinkler Test Water		N/A	N/A
O. Miscellaneous drain or wash water or other sources <ul style="list-style-type: none"> <li>• Boiler drain lines</li> <li>• Condensate drain lines</li> <li>• Rooftop equipment</li> <li>• Drainage sumps</li> <li>• Roofing, gutters, and trim</li> <li>• Other sources</li> </ul>		N/A	N/A
P. Plazas, sidewalks, and parking lots			<input checked="" type="checkbox"/> Sweep plazas, sidewalks, and parking lots regularly to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect washwater containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain.

## VI. Construction Checklist

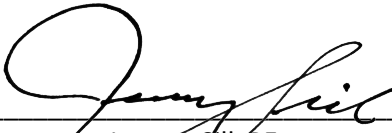
**Table 4.** Construction Plan E.12 Checklist

Stormwater Control Plan Page #	Source Control or Treatment Control Measure	See Plan
5	Self-Retaining Areas and other water features	SCP Site Plan in Attachment 2



## VII. Certification

The preliminary design of stormwater treatment facilities and other stormwater pollution control measures in this plan are in accordance with the current edition of the BASMAA Post-Construction Manual, dated January 2019.



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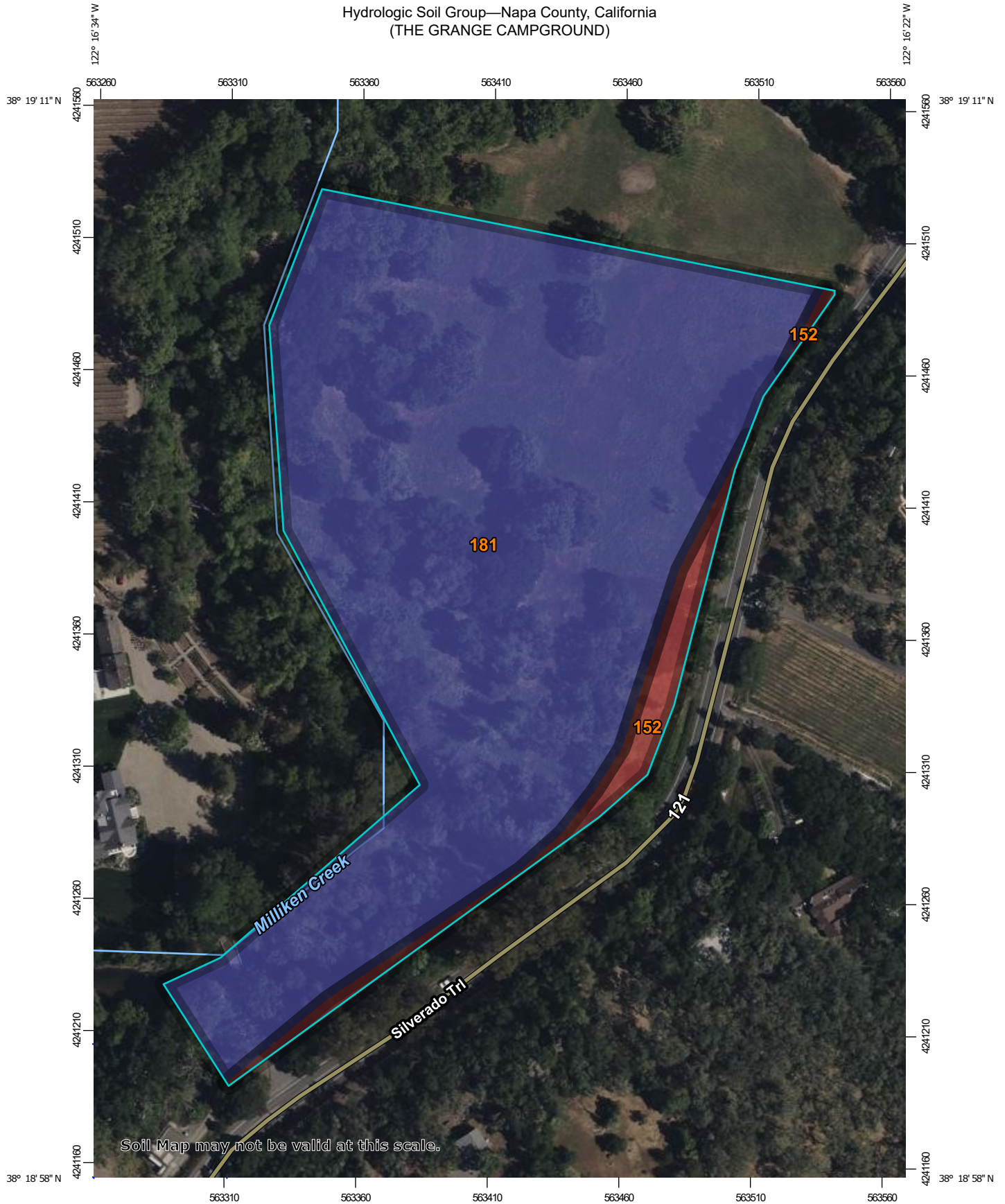
Preparer: Jeremy Sill, PE



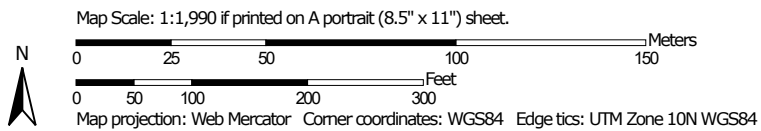
ATTACHMENT 1

SOIL CLASSIFICATION

# Hydrologic Soil Group—Napa County, California (THE GRANGE CAMPGROUND)



Soil Map may not be valid at this scale.



**Natural Resources  
Conservation Service**


Web Soil Survey  
National Cooperative Soil Survey

11/21/2023  
Page 1 of 4

Hydrologic Soil Group—Napa County, California  
(THE GRANGE CAMPGROUND)

## MAP LEGEND

### Area of Interest (AOI)









 Area of Interest (AOI)

### Soils

#### Soil Rating Polygons





 A  
 A/D  
 B  
 B/D  
 C  
 C/D  
 D  
 Not rated or not available

#### Soil Rating Lines


 A  
 A/D  
 B  
 B/D  
 C  
 C/D  
 D  
 Not rated or not available

#### Soil Rating Points






 A  
 A/D  
 B  
 B/D

 C  
 C/D  
 D  
 Not rated or not available


### Water Features

 Streams and Canals

### Transportation

 Rails  
 Interstate Highways  
 US Routes  
 Major Roads  
 Local Roads

### Background

 Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL:  
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Napa County, California  
 Survey Area Data: Version 16, Sep 11, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 26, 2022—Apr 25, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
152	Hambricht rock-Outcrop complex, 30 to 75 percent slopes	D	0.5	5.2%
181	Yolo loam, 0 to 10 percent slopes, moist, MLRA 14	B	9.5	94.8%
<b>Totals for Area of Interest</b>			<b>10.0</b>	<b>100.0%</b>

## Description

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

*Aggregation Method:* Dominant Condition

*Component Percent Cutoff:* None Specified

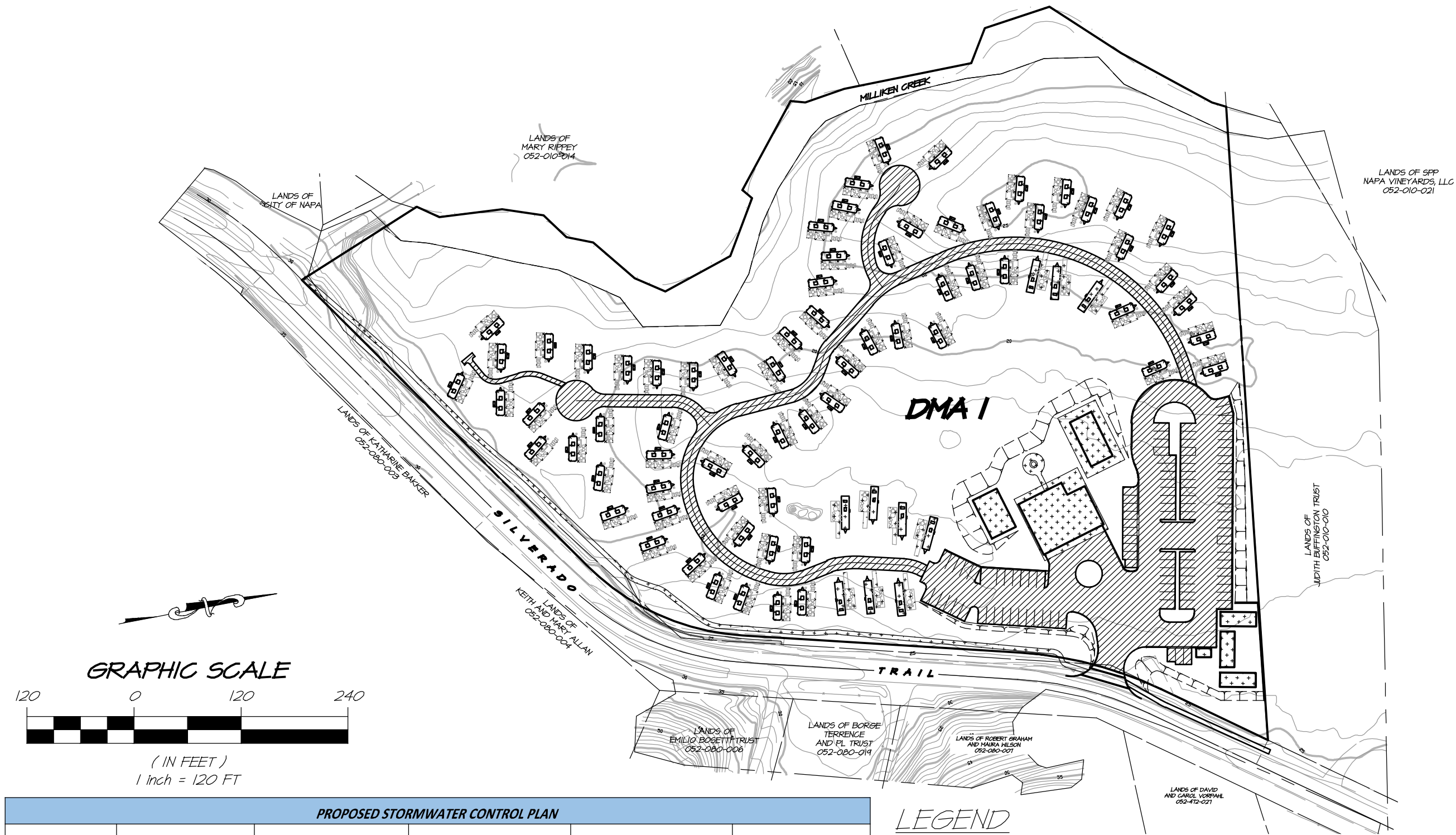
*Tie-break Rule:* Higher



ATTACHMENT 2

STORMWATER CONTROL PLAN EXHIBIT

THE GRANGE CAMPGROUND  
STORMWATER CONTROL PLAN EXHIBIT  
NAPA CALIFORNIA



PROPOSED STORMWATER CONTROL PLAN					
DMA	Total Impervious Area (SF)	Runoff Factor (Landscaped Area)	Total Pervious Area Required (SF)	Total RPA (Receiving Pervious Area in SF)	Ratio IMP:PERV [2:1 Max]
1	135,560	0.1	13,556	373,369	0.36:1

\* PARKING AREAS & ON-SITE PATHWAYS SHOWN AS IMPERVIOUS OR PERVIOUS ARE BEING CALCULATED AS IMPERVIOUS TO BE CONSERVATIVE

LEGEND

- IMPERVIOUS AREA
- PARKING AREAS & PATHWAY (IMPERVIOUS OR PERVIOUS)\*
- PERVIOUS AREA

**RSA<sup>+</sup>**

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