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Stormwater Control Plan

**STORMWATER CONTROL PLAN
FOR A REGULATED PROJECT
ELLMAN FAMILY WINERY
3286 SILVERADO TRAIL
NAPA COUNTY, CA
APN 039-610-001**

Prepared For:

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**May 2019 - Revised
September 2018 - Revised
June 2018 - Revised
March 2017
Job No. 15-12**

**BARTELT
ENGINEERING**

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- Impervious Area Exhibit Pre-Project Conditions
- Impervious Area Exhibit Post-Project Conditions
- Stormwater Control Plan - Drainage Management Area Exhibit (included in Ellman Family Winery Use Permit Drawings)

This Stormwater Control Plan was prepared using the Bay Area Stormwater Agencies Association (BASMAA) template dated July 11, 2014.

1. PROJECT DATA

TABLE 1: PROJECT DATA	
Project Name/Number	Ellman Family Winery
Application Submittal Date	May 2019 - Revised
Project Location	APN: 039-610-001
Project Phase No.	N/A
Project Type and Description	Use Permit Application - Winery
Total Project Site Area (acres)	2.45± acres
Total Parcel Area (acres)	13.52± acres
Total New and Replaced Impervious Surface Area (Onsite)	37,311± SF
Total Pre-Project Impervious Surface Area	30,157± SF
Total Post-Project Impervious Surface Area	67,468± SF
Percent Parcel Imperviousness Before Construction	5.1%
Percent Parcel Imperviousness After Construction	11.5%

2. SETTING

2.1 Project Location and Description

The Ellman Family Winery project is located at 3286 Silverado Trail, Napa, CA 94558 approximately 4± miles north of Napa, California. The parcel (APN 039-610-001) is approximately 13.52± acres and is zoned AW (Agricultural Watershed). The proposed project will consist of one (1) phase and a disturbed area of approximately 2.45± acres. The disturbed area includes the proposed winery (production facility and hospitality building), driveway, access roads, parking areas, stormwater runoff treatment systems, and landscaping.

2.2 Existing Site Features and Conditions

The subject parcel is currently being developed with residential buildings, a driveway, a pool, and landscaping (under separate permit). Slopes on the parcel range between zero (0) and ten (10) percent. According to the NRCS Soil Report (included in the Use Permit application), the soil types found on the parcel and corresponding Hydraulic Soil Group (HSG) are listed below:

- Coombs gravelly loam (99.8% of parcel area, map symbol 123, HSG "C")
- Forward gravelly loam (0.2% of parcel area, map symbol 139, HSG "B")

2.3 Opportunities and Constraints for Stormwater Control

The terrain of the subject parcel is common to the area with a small rolling hill and dip mid-parcel, a stream, and another hill in the rear. The majority of the parcel consists of vineyards with a portion consisting of residential structures near Silverado Trail and a small pond in the middle of the parcel. The location of the proposed winery building is approximately in the middle of the subject parcel just east of the existing pond and can be seen on the Ellman Family Winery Use Permit Drawings prepared by Bartelt Engineering. The winery building and access driveway were placed in a location on the parcel that maintains existing drainage patterns yet allows for onsite stormwater control and treatment.

3. LOW IMPACT DEVELOPMENT DESIGN STRATEGIES

3.1 Optimization of Site Layout

3.1.1 Limitation of development envelope

Under the proposed design, portions of the existing vineyards would be removed to accommodate the proposed location for the winery building and impervious paved areas.

3.1.2 Preservation of natural drainage features

In general, a majority of the existing natural drainage features on this site will be maintained under the proposed conditions. Offsite run-on from the north will continue to flow across the property line with a portion entering the existing pond. Onsite runoff will flow to the south of the parcel or be retained within vineyards. A bioswale and a bioretention facility are proposed to slow down and retain onsite stormwater runoff from proposed impervious areas. The location of the "north" bioretention facility is proposed at a naturally low area just south of the north property line of the parcel where stormwater offsite run-on and onsite runoff already collects during storm events.

3.1.3 Setbacks from creeks, wetlands and riparian habitats

The proposed winery buildings, driveway, and wastewater system will be constructed outside of any Napa County setbacks set forth by the Zoning Code or the Conservation Regulations.

3.1.4 Minimization of imperviousness

Impervious area will increase as a result of the proposed project. Although the impervious area will increase, some areas that are typically paved (such as walkways and pathways) will utilize gravel or another similar material to the maximum extent possible.

3.1.5 Use of drainage as a design element

There are multiple elements proposed for this project that are designed to reduce stormwater runoff and promote infiltration. Gravel or another similar type of material will be utilized for walkways and pathways near the winery buildings. A bioswale and a bioretention facility will be implemented along with the proposed project to promote infiltration and slow down stormwater runoff. Stormwater that overtops the “north” bioretention basin will flow into the existing pond where it will be detained prior to being piped to the “south” infiltration basin. Collected runoff that exceeds the “south” infiltration basin’s capacity will ultimately discharge toward the neighboring parcel (APN 039-610-002) as overland sheet flow maintaining historical drainage patterns. The “south” basin is designed to promote overland sheet flow and infiltration but not provide stormwater treatment as defined by BASSMA guidelines.

3.2 Use of Permeable Pavements

The extent of areas with gravel (or another similar material) are shown on the Ellman Family Winery Use Permit Drawings prepared by Bartelt Engineering.

3.3 Dispersal of Runoff to Pervious Areas

All runoff is dispersed to pervious areas. These areas include landscaped areas, vineyards, a bioretention facility, infiltration basin, and a bioswale.

3.4 Stormwater Control Measures

This project will utilize a combination of self-treating areas, self-retaining areas, and a bioretention facility. See Section 4.1 below.

4. DOCUMENTATION OF DRAINAGE DESIGN

4.1 Descriptions of Each Drainage Management Area

4.1.1 Table of Drainage Management Areas

A table that provides the name, area, Drainage Management Area (DMA) type and surface type of every DMA for this project can be found on the Stormwater Control Plan Sheet of the Ellman Family Winery Use Permit Drawings.

4.1.2 Drainage Management Area Descriptions

The project will consist of numerous DMA types which include Self-Treating Areas, Self-Retaining Areas, Areas Draining to Self-Retaining Areas, and Areas Draining to Bioretention Facilities.

Self-Retaining Areas on this site consist of all areas starting with the prefix "SRA". The corresponding areas for these DMAs can be found in the table referenced in Section 4.1 above. Some of these areas will consist entirely of vineyard which help retain stormwater runoff because of the vegetation and high and low spots created that run parallel to and within the vineyard rows as a result of crop cultivation practices. Other Self-Retaining Areas include planter areas near the winery building and landscaped areas.

Areas Draining to Self-Retaining Areas on this site consist of all areas starting with the prefix "DSRA". These areas consist of roofs, pavement, and disturbed landscape areas that do not drain to a bioretention facility.

Self-Treating Areas on this site consist of all areas starting with the prefix "STA". These areas consist of landscaped or turf areas that do not drain to a Bioretention Facility, but rather drain off the disturbed area onto the onsite vineyard.

Areas Draining to Bioretention Facilities on this site consist of all areas starting with the prefix "DBRF". These areas consist of mostly roofs/pavement, but also include a few landscaped areas directly adjacent to the corresponding bioretention facility (prefix "BRF"). There is one (1) bioretention facility on the site labeled as BRF-A.

4.2 Tabulation and Sizing Calculations

4.2.1 Information Summary for Bioretention Facility Design

TABLE 4.2.1: INFORMATION SUMMARY FOR BIORETENTION FACILITY BRF-A	
Bioretention Facility Area (Square Feet)	900±
DBRF-A 1.1.1	6,245
DBRF-A 1.1.2	773
DBRF-A 1.2	12,165
DBRF-A 1.2.1.1	2,846
DBRF-A 1.2.2.1	5,040

4.2.2 Self-Treating Areas

TABLE 4.2.2 SELF TREATING AREAS	
DMA Name	Area (square feet)
STA-A	4,700

4.2.3 Self-Retaining Areas

TABLE 4.2.3 SELF-RETAINING AREAS		
DMA Name	Area (square feet)	Total Ratio of Impervious : Pervious (2:1 Maximum)
SRA-A	2,163	1.2:1
SRA-B	122	0:1
SRA-C	281	0:1
SRA-D	807	1.3:1
SRA-E	417	2:1
SRA-F	744	1.5:1
SRA-G	486	0:1
SRA-H	85	0.4:1
SRA-I	5,646	1.8:1
SRA-J	489	1.1:1
SRA-K	422	0.3:1
SRA-L	4,610	2:1

4.2.4 Areas Draining to Self-Retaining Areas

TABLE 4.2.4 AREAS DRAINING TO SELF-RETAINING AREAS					
DMA Name	Area (square feet)	Post-project surface type	Runoff factor	Receiving Self-Retaining DMAs	Receiving Self-Retaining DMA Area (square feet)
DSRA-A 1.1	1,115	Roof/Paving	1.0	SRA-A	2,163
DSRA-A 1.2	1,379	Roof/Paving	1.0		
DSRA-D 1	1,037	Roof/Paving	1.0	SRA-D	807
DSRA-E 1	832	Roof/Paving	1.0	SRA-E	417
DSRA-F 1	531	Roof/Paving	1.0	SRA-F	744
DSRA-F 2	531	Roof/Paving	1.0		
DSRA-H 1	26	Roof/Paving	1.0	SRA-H	85
DSRA-I 1.1	5,125	Roof/Paving	1.0	SRA-I	5,646
DSRA-I 1.2	5,034	Roof/Paving	1.0		
DSRA-J 1	266	Roof/Paving	1.0	SRA-J	489
DSRA-J 2	227	Roof/Paving	1.0		
DSRA-K 1	113	Roof/Paving	1.0	SRA-K	422
DSRA-L 1.1	3,476	Roof/Paving	1.0	SRA-L	4,610
DSRA-L 1.2	5,700	Roof/Paving	1.0		

4.2.5 Areas Draining to Bioretention Facilities

TABLE 4.2.5 FORMAT FOR TABULATING AREAS DRAINING TO BIORETENTION FACILITIES AND CALCULATING MINIMUM BIORETENTION FACILITY SIZE							
DMA Name	DMA Area (square feet)	Post-project surface type	DMA Runoff factor	DMA Area x runoff factor	Bioretention Facility "A" (BRF-A)		
					Ellman Family Winery		
DBRF-A 1.1.1	6,245	Landscape	0.1	625			
DBRF-A 1.1.2	773	Roof/Paving	1.0	773			
DBRF-A 1.2	12,165	Roof/Paving	1.0	12,165			
DBRF-A 1.2.1.1	2,846	Roof/Paving	1.0	2,846			
DBRF-A 1.2.2.1	5,040	Roof/Paving	1.0	5,040			
				-	IMP Sizing factor	Minimum IMP Size	Proposed IMP Size
				-			
Total (square feet) =				21,449	0.04	858	900

5. SOURCE CONTROL MEASURES

5.1 Site Activities and Potential Sources of Pollutants

5.1.1. Source Control Table

TABLE 5-1: SOURCE CONTROL TABLE		
Potential source of runoff pollutants	Permanent source control BMPs	Operational source control BMPs
Onsite storm drain inlets (unauthorized non-stormwater discharges and accidental spills or leaks)	<ul style="list-style-type: none"> All inlets marked with the words “No Dumping! Flows to Bay” or similar. 	<ul style="list-style-type: none"> <input type="checkbox"/> Maintain and periodically repaint or replace inlet markings <input type="checkbox"/> Provide stormwater pollution prevention information to new site owners, lessees, or operators <input type="checkbox"/> See applicable operational BMPs in Fact Sheet SC-44, “Drainage System Maintenance,” in the CASQA Stormwater Quality Handbooks at www.casqa.org/resources/bump-handbooks <input type="checkbox"/> Include the following in lease agreements: “Tenants shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains.”
Interior floor drain and elevator shaft sump pumps	<ul style="list-style-type: none"> Interior floor drains and sump pumps will be plumbed to sanitary sewer. 	<ul style="list-style-type: none"> <input type="checkbox"/> Inspect and maintain drains to prevent blockages and overflow.
Need for future indoor & structural pest control	<ul style="list-style-type: none"> Note building design features that discourage entry of pests. 	<ul style="list-style-type: none"> <input type="checkbox"/> Provide Integrated Pest Management information to owners, lessees, and operators.
Landscape/Outdoor pesticide use/building & grounds maintenance	<p>Final landscape plans will accomplish all of the following.</p> <ul style="list-style-type: none"> Preserve existing native trees, shrubs, and ground cover to maximum extent possible. Landscaping has been designed to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution. Landscaped areas are used to retain or detain stormwater. 	<ul style="list-style-type: none"> <input type="checkbox"/> Maintain landscaping using minimum or no pesticides. <input type="checkbox"/> See applicable operational BMPs in Fact Sheets SC-41, “Building and Grounds Maintenance,” in the CASQA Stormwater Quality Handbooks at: www.casqa.org/resources/bmp-handbooks <input type="checkbox"/> Provide IPM information to new owners, lessees, and operators.

	<ul style="list-style-type: none"> Plants within these areas will be tolerant of saturated soil conditions. The use of pest-resistant plants has been considered, especially adjacent to hardscape. To insure successful establishment, plants will be selected that are appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions. 	
Pools, spas, ponds, decorative fountains & other water features	<ul style="list-style-type: none"> Fountains and water feature connections will be made according to local requirements. 	<input type="checkbox"/> See applicable operational BMPs in Fact Sheet SC-72, "Fountain and Pool Maintenance," in the CASQA Stormwater Quality Handbooks at www.casqa.org/resources/bmp-handbooks The sanitary sewer operator must be notified and a clean out identified when pools are to be drained to the sanitary sewer.
Food service	<ul style="list-style-type: none"> Describe the location and features of the designated cleaning area. Describe the items to be cleaned in this facility and how it has been sized to ensure that the largest items can be accommodated. 	State maintenance schedule for grease interceptor.
Refuse areas	<ul style="list-style-type: none"> See plans for the location and features. Signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar. 	<input type="checkbox"/> State how the following will be implemented; Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquids or hazardous wastes. Post "no hazardous materials" signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available onsite. See Fact Sheet SC-34, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbooks at www.casqa.org/resources/bmp-handbooks
Industrial processes	<ul style="list-style-type: none"> All process activities to be performed indoors. No processes to drain to exterior or to storm drain systems. 	<input type="checkbox"/> See Fact Sheet SC-10, "Non-Stormwater Discharges" in the CASQA Stormwater Quality Handbooks at www.casqa.org/resources/bmp-handbooks

Fire sprinkler test water	<ul style="list-style-type: none"> • Fire sprinkler water will be disposed of in vineyard. 	<input type="checkbox"/> See note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.casqa.org/resources/bmp-handbooks
Condensate drain lines Roofing, gutters & trim	<ul style="list-style-type: none"> • Condensate drain lines discharge to landscaped areas since the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain system. • Any drainage sumps onsite shall feature a sediment sump to reduce the quantity of sediment in pumped water. 	<p>If architectural copper is used, implement the following BMPs for management of rinse water during installation:</p> <ul style="list-style-type: none"> <input type="checkbox"/> If possible, purchase copper materials that have been pre-patinated at the factory. <input type="checkbox"/> If patinated is done onsite, prevent rinse water from entering storm drains by discharging to landscaping or by collecting in a tank and hauling offsite. <input type="checkbox"/> Consider coating the copper materials with an impervious coating that prevents further corrosion and runoff. <p>Implement the following BMPs during routine maintenance:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Prevent rinse water from entering storm drains by discharging to landscaping or by collecting in a tank and hauling offsite.
Plazas, sidewalks & parking lots		<ul style="list-style-type: none"> <input 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 wash water containing any cleaning agent of degreaser and discharge to the sanitary sewer not to a storm drain.

5.2 Features, Materials, and Methods of Construction of Source Control BMPs

Several features were incorporated into the design of the project to minimize the potential for stormwater pollution and are listed below. Please refer to the Ellman Family Winery Use Permit Drawings prepared by Bartelt Engineering for detailed materials and methods of construction of source control BMPs.

6. **STORMWATER FACILITY MAINTENANCE**

6.1 Ownership and Responsibility for Maintenance in Perpetuity

The Owner agrees to implement the stormwater control strategy as outlined in this document and as shown in the plans prepared by Bartelt Engineering. The Owner accepts responsibility for the installation, operation, and maintenance of the stormwater treatment and flow-control facilities noted in this Stormwater Control Plan. The Owner agrees to undertake this responsibility until such time as the responsibility is formally transferred to a subsequent owner.

6.2 Summary of Maintenance Requirements for Each Stormwater Facility

The following activities shall be completed at least annually. The frequency should be adjusted in response to the needs of each particular facility.

Clean up. Remove any soil or debris blocking planter inlets or overflows. Remove trash that typically collects near inlets or gets caught in vegetation.

Prune or cut back plants for health and to ensure flow into inlets and across the surface of the facility. Remove and replant as necessary. When replanting, maintain the design surface elevation and minimize the introduction of soil.

Control weeds by manual methods and soil amendment. In response to problem areas or threatening invasions, corn gluten, white vinegar, vinegar-based products, or non-selective natural herbicides such as Burnout or Safer's Sharpshooter may be used.

Add mulch. Aged mulch, also called compost mulch, reduces the ability of weeds to establish, keeps soil moist and replenishes soil nutrients. Mulch is added from time to time as necessary to maintain a mulch layer thickness (some agencies require 3 inches). However, ensure the underlying soil surface beneath the mulch layer is a minimum 6 inches below the overflow elevation, consistently throughout the surface area of the facility. In particular, ensure that the top of the mulch layer is below the facility overflow, so that as the facility fills during a major storm, the entire surface becomes wetted before the overflow elevation is reached.

Check signage. Remove graffiti and replace if necessary.

Check irrigation, if any, to confirm it is adequate but not excessive.

Landscaping maintenance personnel should be aware of the following:

Do not add fertilizer to bioretention facilities. Compost tea, available from various nurseries and garden supply retailers, may be applied at a recommended rate of 5 gallons mixed with 15 gallons of water per acre, up to two weeks prior to planting and once per year between March and June. Do not apply when temperatures are below 50° F or above 90° F or when rain is forecast in the next 48 hours.

Do not use synthetic pesticides on bioretention facilities. Beneficial nematodes and non-toxic controls may be used. Acceptable natural pesticides include Safer® products and Neem oil.

Sidewalks will be swept clean of debris regularly.

7. CONSTRUCTION CHECKLIST

Please refer to the Construction General Permit (CGP) Stormwater Pollution Prevention Plan (SWPPP) prepared by Bartelt Engineering for all construction and post-construction BMPs. An Industrial General Permit (IGP) No Exposure Certificate (NEC) will be filed with the State Water Resources Control Board for the production (industrial) facility.

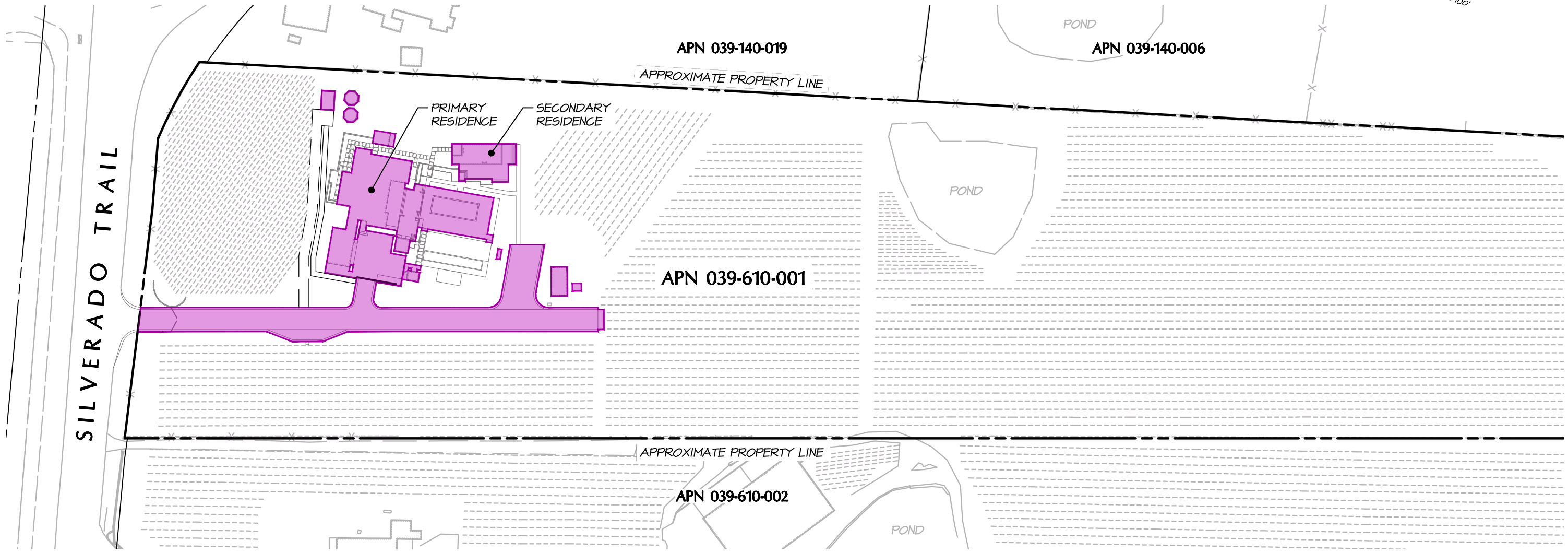
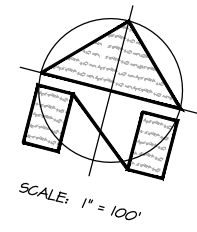
8. CERTIFICATIONS

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.

9. REFERENCES

United States Department of Agriculture, Natural Resources Conservation Service. Custom Soil Resource Report for Napa County, California.

<https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>



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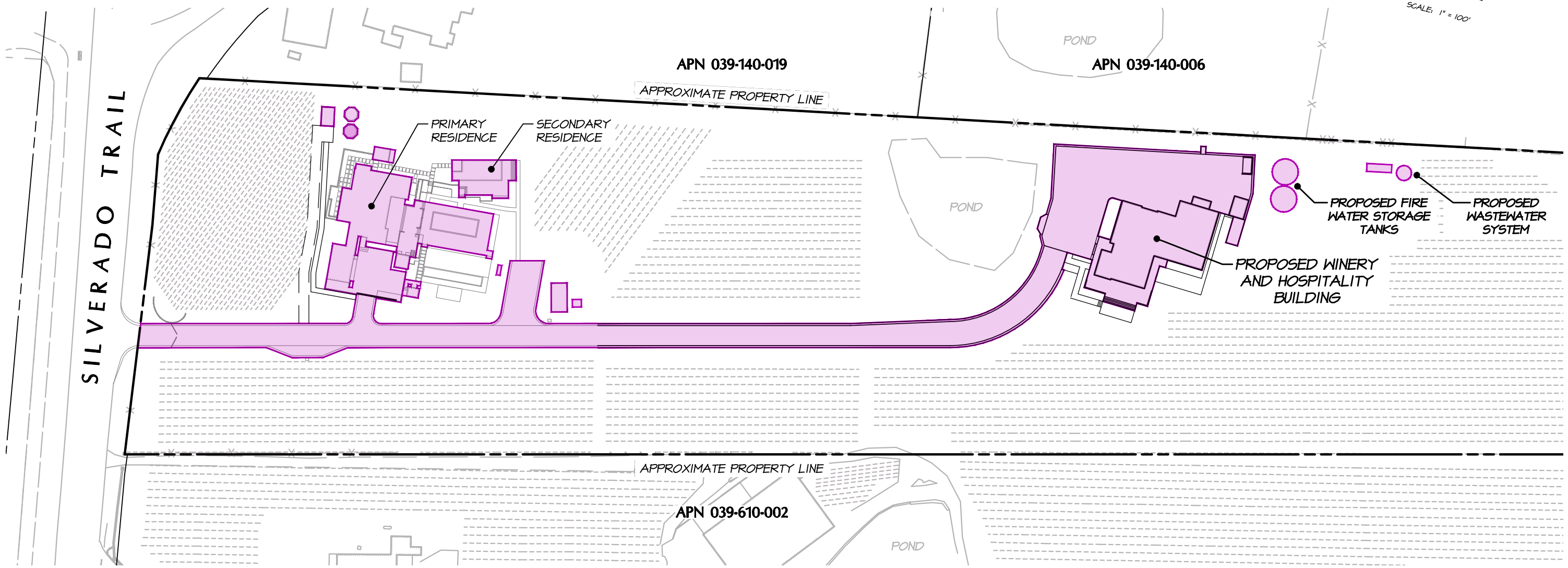
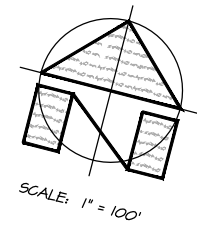
**IMPERVIOUS AREA EXHIBIT
 PRE-PROJECT CONDITIONS**

SCALE: 1" = 100'

LEGEND:

- EXISTING IMPERVIOUS AREA (30,157± SQ FT = 0.69± ACRES)
- PARCEL SIZE: 13.52± ACRES
- 0.69 ACRES / 13.52 ACRES = **5.1%**

Ellman Family Winery
 3286 Silverado Trail
 Napa, CA 94558
 APN 039-610-001
 Job No. 15-12
 May 2019
 Sheet 1 of 2



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**IMPERVIOUS AREA EXHIBIT
 POST-PROJECT CONDITIONS**

SCALE: 1" = 100'

LEGEND:

- PROPOSED IMPERVIOUS AREA (67,468± SQ FT = 1.55± ACRES)
- PARCEL SIZE = 13.52± ACRES
- 1.55 ACRES / 13.52 ACRES = 11.5%

Ellman Family Winery
 3286 Silverado Trail
 Napa, CA 94558
 APN 039-610-001
 Job No. 15-12
 May 2019
 Sheet 2 of 2



United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for Napa County, California

Ellman Family Estate, LLC



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

Custom Soil Resource Report

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

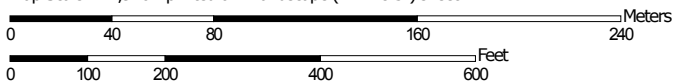
Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



Map Scale: 1:2,970 if printed on A landscape (11" x 8.5") sheet.




Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84




MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)




















Soils







 Soil Map Unit Polygons

 Soil Map Unit Lines


 Soil Map Unit Points

Special Point Features






-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features

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 10, Sep 25, 2017

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

Date(s) aerial images were photographed: Apr 17, 2015—Oct 18, 2016

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.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
123	Coombs gravelly loam, 2 to 5 percent slopes	13.4	99.9%
139	Forward silt loam, 5 to 39 percent slopes, MLRA 15	0.0	0.1%
Totals for Area of Interest		13.5	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

Custom Soil Resource Report

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Napa County, California

123—Coombs gravelly loam, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: hdkr
Elevation: 50 to 500 feet
Mean annual precipitation: 24 to 30 inches
Mean annual air temperature: 59 to 63 degrees F
Frost-free period: 220 to 260 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Coombs and similar soils: 85 percent
Minor components: 3 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Coombs

Setting

Landform: Terraces, alluvial fans
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from igneous rock and/or alluvium derived from sedimentary rock

Typical profile

H1 - 0 to 14 inches: gravelly loam
H2 - 14 to 54 inches: clay loam
H3 - 54 to 60 inches: very gravelly loamy fine sand

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 9.4 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Clear lake

Percent of map unit: 3 percent
Landform: Alluvial fans
Hydric soil rating: Yes

139—Forward silt loam, 5 to 39 percent slopes, MLRA 15

Map Unit Setting

National map unit symbol: 2xc9x
Elevation: 110 to 2,080 feet
Mean annual precipitation: 27 to 45 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 281 to 344 days
Farmland classification: Not prime farmland

Map Unit Composition

Forward and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Forward

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Rhyolitic residuum weathered from volcanic rock

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 6 inches: silt loam
BA - 6 to 12 inches: silt loam
Bw1 - 12 to 19 inches: silt loam
Bw2 - 19 to 28 inches: silt loam
Bw3 - 28 to 37 inches: gravelly silt loam
Cr - 37 to 51 inches: bedrock

Properties and qualities

Slope: 5 to 39 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high
(0.14 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None

Custom Soil Resource Report

Frequency of ponding: None

Salinity, maximum in profile: Nonsaline (0.2 to 0.5 mmhos/cm)

Sodium adsorption ratio, maximum in profile: 4.0

Available water storage in profile: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): 4e

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: C

Hydric soil rating: No

Minor Components

Aiken

Percent of map unit: 5 percent

Kidd

Percent of map unit: 5 percent

Boomer

Percent of map unit: 3 percent

Sobrante

Percent of map unit: 2 percent

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Erosion Factors

Soil Erosion Factors are soil properties and interpretations used in evaluating the soil for potential erosion. Example soil erosion factors can include K factor for the whole soil or on a rock free basis, T factor, wind erodibility group and wind erodibility index.

K Factor, Whole Soil

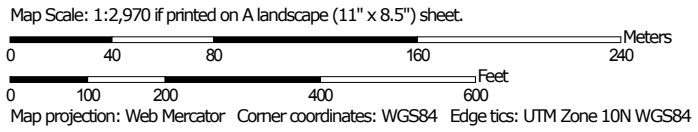
Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in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

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

Custom Soil Resource Report
Map—K Factor, Whole Soil




Soil Map may not be valid at this scale.


















MAP LEGEND

Area of Interest (AOI)







 Area of Interest (AOI)










Soils

Soil Rating Polygons
















-  .02
-  .05
-  .10
-  .15
-  .17
-  .20
-  .24
-  .28
-  .32
-  .37
-  .43
-  .49
-  .55
-  .64
-  Not rated or not available

Soil Rating Lines








-  .02
-  .05
-  .10
-  .15
-  .17
-  .20

-  .24
-  .28
-  .32
-  .37
-  .43
-  .49
-  .55
-  .64
-  Not rated or not available

Soil Rating Points

-  .02
-  .05
-  .10
-  .15
-  .17
-  .20
-  .24
-  .28
-  .32
-  .37
-  .43
-  .49
-  .55
-  .64
-  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 10, Sep 25, 2017

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

Date(s) aerial images were photographed: Apr 17, 2015—Oct 18, 2016

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.

Table—K Factor, Whole Soil

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
123	Coombs gravelly loam, 2 to 5 percent slopes	.20	13.4	99.9%
139	Forward silt loam, 5 to 39 percent slopes, MLRA 15		0.0	0.1%
Totals for Area of Interest			13.5	100.0%

Rating Options—K Factor, Whole Soil

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

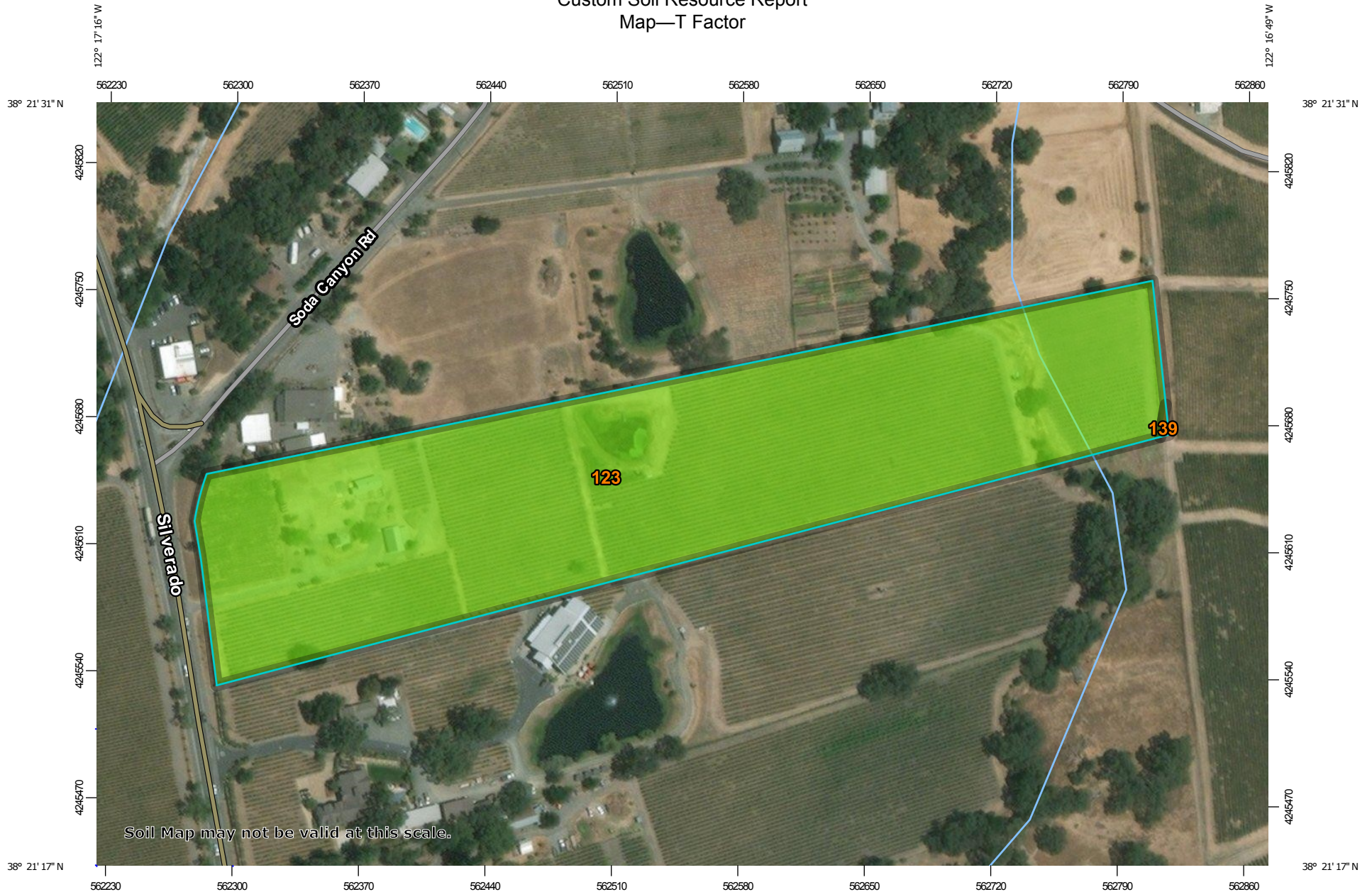
Tie-break Rule: Higher

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

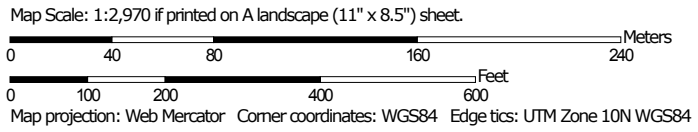
T Factor

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

Custom Soil Resource Report Map—T Factor




Soil Map may not be valid at this scale.






MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils





Soil Rating Polygons

-  1
-  2
-  3
-  4
-  5
-  Not rated or not available


Soil Rating Lines

-  1
-  2
-  3
-  4
-  5
-  Not rated or not available






Soil Rating Points

-  1
-  2
-  3
-  4
-  5
-  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)

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 Survey Area Data: Version 10, Sep 25, 2017

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

Date(s) aerial images were photographed: Apr 17, 2015—Oct 18, 2016

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.

Table—T Factor

Map unit symbol	Map unit name	Rating (tons per acre per year)	Acres in AOI	Percent of AOI
123	Coombs gravelly loam, 2 to 5 percent slopes	4	13.4	99.9%
139	Forward silt loam, 5 to 39 percent slopes, MLRA 15	3	0.0	0.1%
Totals for Area of Interest			13.5	100.0%

Rating Options—T Factor

Units of Measure: tons per acre per year

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Interpret Nulls as Zero: No

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

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.

Custom Soil Resource Report

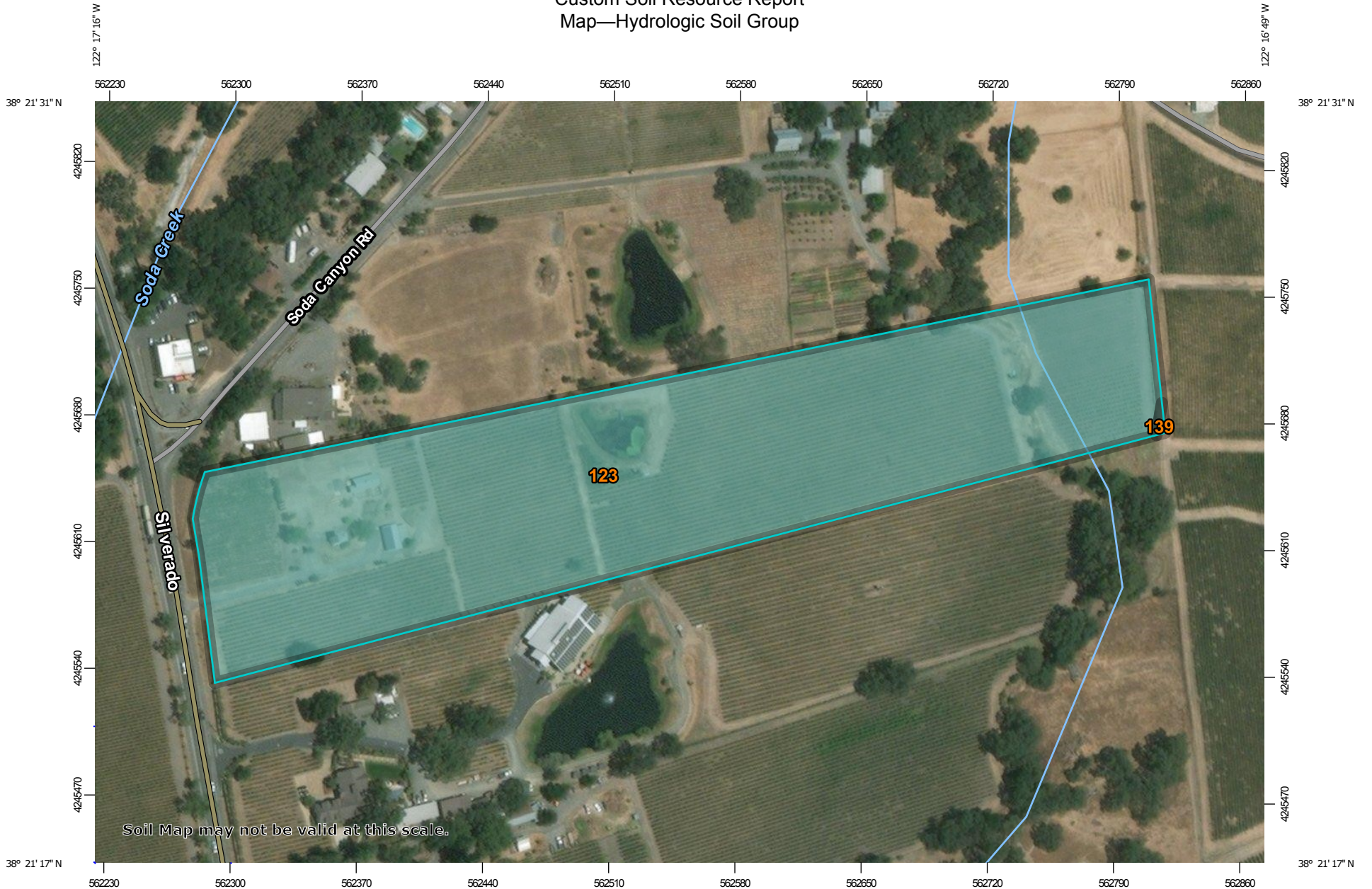
Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

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.

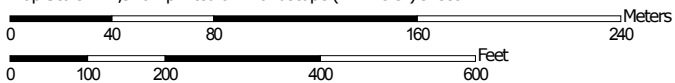
Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over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

Custom Soil Resource Report
Map—Hydrologic Soil Group




Map Scale: 1:2,970 if printed on A landscape (11" x 8.5") sheet.











Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

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


Water Features

-  Streams and Canals





Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

Background

-  Aerial Photography

Soils

-  C
-  C/D
-  D
-  Not rated or not available

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 10, Sep 25, 2017

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

Date(s) aerial images were photographed: Apr 17, 2015—Oct 18, 2016

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.

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
123	Coombs gravelly loam, 2 to 5 percent slopes	C	13.4	99.9%
139	Forward silt loam, 5 to 39 percent slopes, MLRA 15	C	0.0	0.1%
Totals for Area of Interest			13.5	100.0%

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

References

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- United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.
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- United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084>

Custom Soil Resource Report

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

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RECORDING REQUESTED BY and for the BENEFIT OF:

Napa County
Department of Planning, Building and
Environmental Services

1195 Third St., room 201
Napa, CA 94559

NO FEE DOCUMENT
Gov. Code § 27383

SPACE ABOVE THIS LINE RESERVED FOR RECORDER'S

**AGREEMENT FOR MAINTENANCE OF POST-CONSTRUCTION STORM WATER
RUNOFF BEST MANAGEMENT PRACTICES**
(Permit No. _____)

THIS AGREEMENT FOR MAINTENANCE OF POST-CONSTRUCTION STORM WATER BEST MANAGEMENT PRACTICES ("Agreement") is made by Ellman Family Winery, LLC (the "Owner") and Napa County, a political subdivision of the State of California (the "County"), effective this ____ day of _____, 20__.

RECITALS

A. As of May 20, 2004, discharges from the Napa County Storm Water Management Program's ("Program") Small Municipal Separate Storm Sewer Systems ("Small MS4s") are authorized by the State Water Resources Control Board's General Permit for Storm Water Discharges from Small MS4s, Water Quality Order No. 2003-0005—DWQ ("Phase II General Permit"). The Program, which is comprised of the City of Napa, Town of Yountville, City of Calistoga, City of St. Helena, and Napa County, is now covered under the Phase II General Permit. The Program must implement its Storm Water Management Plan ("SWMP") and comply with the requirements and prohibitions of the Phase II General Permit; and

B. Provision D.e.(4) of the Phase II General Permit requires the County to ensure adequate long-term maintenance of all required Post-Construction Storm Water Treatment Control(s), Hydromodification Control(s), and designated Source Control(s) Best Management Practices ("BMPs"); and

C. The Owner is the fee simple owner of certain real property located within Napa County, California (the "Property"), APN: 039-610-001, described in Exhibit "A" attached hereto and incorporated herein by reference. The County has approved Ellman Family Winery Use Permit (the "Project"). The Project is expressly conditioned upon (1) the Owner's compliance with the BMPs described in Exhibit "C" ("Maintenance Plan"), including the construction of those BMPs shown on Exhibit "B" (the "Site Plan"), both exhibits are attached hereto and incorporated herein by reference; and (2) the Owner's execution of an agreement with the County for the Owner to comply with and maintain those BMPs in perpetuity; and

D. The Owner has submitted a design for the construction of the BMPs shown on the Site Plan, which has been approved by the County; and

E. The Owner is obligated to construct such BMPs in accordance with the approved plans and specifications outlined by the California Stormwater Quality Association (CASQA) BMP Handbooks and the County; and

F. The Owner and County agree that the health, safety, and welfare of the citizens of Napa County require that all BMPs be properly maintained.

NOW, THEREFORE, in consideration of the benefits received and to be received by the Owner as a result of the County's approval of the Project, the Owner hereby agrees with the County as follows:

1. Affected Property: This Agreement affects the Property located within Napa County, California, as described in Exhibit "A."

2. Purpose: The BMPs are designed to remove pollutants from storm water runoff, preclude pollutants from being discharged to storm drain systems, and limit peak storm water runoff discharge rates from the Property. The purpose of this Agreement is to reflect the parties' rights and obligations concerning the maintenance of BMPs and compliance with all BMPs.

3. Owner's Obligations:

A. Performance and Maintenance Criteria. Owner, its successors and assigns, shall use its best efforts to diligently and adequately maintain in perpetuity the BMPs in a manner assuming peak performance at all times, and shall make such changes or modifications, subject to County's prior approval as may be reasonably necessary for the BMPs to continue to operate as designed and approved and to accomplish its intended purpose, in good repair, and in compliance with all applicable Federal, State, and County laws and regulations, including but not limited to the Napa County Storm Water Management Program (a copy of which is on file in the County's Department of Planning, Building and Environmental Services' Engineering Division) (collectively "Regulations"). The Owner shall be responsible for the costs incurred in operating, maintaining, repairing and replacing the BMPs and complying with the Regulations as conditioned by the County. Adequate maintenance is herein defined as maintenance that is necessary or convenient to ensure that the BMPs continue to operate as originally designed and approved and to accomplish their intended purpose. Owner shall not destroy or remove the BMPs nor modify any measure in any manner that would lessen its effectiveness.

B. Maintenance Plan. In addition to Owner's general obligations under Section (A), above, Owner shall, at its own cost, perform all maintenance specified in the Maintenance Plan and file the annual reports identified in Exhibit "D" attached hereto and made a part hereof.

4. Right of Entry: In addition to the rights provided by law, Owner, its successors and assigns, hereby grants permission to County, the Regional Water Quality Control Board ("Regional Board"), and the Napa County Mosquito Abatement District ("NCMAD"), their employees and agents, to enter upon the Property at reasonable times and in a reasonable manner to inspect, assess or observe the BMPs in order to ensure that the BMPs are being properly maintained and are continuing to perform in an adequate manner to protect water quality and the public health and safety. This includes the right to enter upon the Property when one or more of the identified agencies have a reasonable basis to believe that a violation of this Agreement, the County's storm water management program, guidelines, criteria, other written direction, or the Phase II General Permit, and any amendments or reissuances of this permit has occurred. The above-mentioned agencies are also authorized to enter the Property when necessary for abatement of a public nuisance or correction of a violation of the Storm Water Management Program, guideline, criteria or other written direction. Whenever possible, the County, Regional Board and the NCMAD shall provide reasonable notice to Owner before entering the Property.

5. Failure to Maintain: In the event the Owner, its successors or assigns, fails to maintain and repair the BMPs as required by this Agreement, after thirty (30) days written notice thereof, County may and is hereby authorized to cause, at the Owner's sole cost and expense, any and all maintenance to the BMPs necessary under the requirements specified in Exhibit "D". In addition to the actual costs of such maintenance, the Owner shall reimburse County for an additional fifteen percent (15%) thereof to cover costs of administration. All such actual and administrative costs shall accrue interest from the date incurred by County at the maximum rate authorized by law until paid in full. The notice provided herein shall be effective on the date sent by U.S. Mail, first class postage prepaid to the record owner of the

Property as shown on the most recent tax roll. If such costs are not paid within the time frame established by County, the unpaid costs shall be assessed against the Property. Said assessment shall be a lien against the Property and may be collected as ordinary taxes by County. The actions described in this section are in addition to and not in lieu of any and all legal remedies as provided by law, available to County as a result of Owner's failure to maintain the BMPs.

6. Retention of Records: For a time period of the most recent three (3) years, Owner shall maintain written documentation verifying any and all material(s) removed from the subject BMP, including identifying the material(s) removed, quantity, and manner and place of disposal thereof. Such documentation is subject to review by County from time to time upon request.

7. Pesticide and Herbicide Use: Application of any pesticides or herbicides by Owner to meet the obligations of this Agreement shall be minimal and in accordance with all applicable Federal, State, and County laws and regulations and in accordance with any restrictions imposed upon such use or application by Napa County.

8. Security: The County may require the Owner, its successors or assigns, from time to time, to post security in a form, amount, and for a time period satisfactory to County to guarantee performance of the obligations stated herein. Should the Owner, its successors or assigns, fail to perform the obligations under this Agreement, the County may, in the case of a cash bond, act for the Owner, its successors and assigns, using the proceeds from such cash bond, or in the case of a surety bond, require the surety to perform the obligations of this Agreement.

9. Indemnification: The Owner, its successors or assigns, shall indemnify, release, hold harmless, and defend the County from and against any and all claims, demands, suits, liabilities, fines, losses, damages, fines, and payments, including reasonable attorney's fees, claimed or made against the County that are alleged or proven to result or arise from the design, construction, presence, existence, location, operation, or maintenance of the Storm Water Source Controls, Treatment Measures and Baseline Hydromodification Management Measures, covered under the Phase II General Permit, by Owner or County but excluding claims adjudicated to be caused by the sole negligence or willful misconduct of County.

10. Recordation: This Agreement shall be recorded in the Office of the Recorder, Napa County, California, at the expense of the Owner, and shall constitute notice of the obligations herein set forth, which shall run with the land and shall be binding upon all of the successors and assigns in title to the Property. The Owner agrees that whenever the Property is sold, conveyed or otherwise transferred, the Property shall be subject to this Agreement, which shall apply to and bind all present and subsequent owners of the Property or part thereof.

11. Notices: All notices and other communications required or permitted to be given under this Agreement, including any notice of change of address, shall be in writing and given by personal delivery, or deposited with the United States Postal Service, postage prepaid, addressed to the parties intended to be notified. Notice shall be deemed given as of the date of personal delivery, or if mailed, upon the date of deposit with the United States Postal Services. Notice shall be given as follows, except that notice also may be given to the Owner at the address listed herein of this Agreement and to its successors or assigns, at the address(es) shown on the records for the Property maintained by the Assessor, Napa County, California:

TO COUNTY: Director of Planning, Building and Environmental Services
1195 Third Street, Room 210
Napa, CA 94559

TO OWNER: Ellman Family Winery, LLC c/o Lance Ellman
2830 NE 29th Street
Ft. Lauderdale, FL 33306

12. Maintenance Responsibility: This Agreement shall serve as the signed statement by the Owner accepting responsibility for compliance with the operation and maintenance of BMPs as set forth in this Agreement until the responsibility is legally transferred to another entity. Before the Property is legally transferred to another entity, the Owner shall at a minimum provide to the County at least one of the following:

A. A signed statement from the project proponent accepting responsibility for the operation and maintenance (O&M) of structural control measure(s) until such responsibility is legally transferred to another entity; or

B. Written conditions in the sales or lease agreements or deed for the Project requiring the buyer or lessee to assume responsibility for the O&M of the installed source control(s), treatment system(s), and hydromodification control(s) (if any) until such responsibility is legally transferred to another entity; or

C. Written text in project deeds, or conditions, covenants and restrictions ("CC&Rs") for multi-unit residential projects that require the homeowners' association or, if there is no association, each individual owner to assume responsibility for the O&M of the installed source control(s), treatment system(s), hydromodification control(s) (if any) until such responsibility is legally transferred to another entity; or

D. Any other legally enforceable agreement or mechanism, satisfactory to Napa County Counsel, such as recordation in the property deed, that assigns the O&M responsibility for the installed source control(s), treatment system(s), hydromodification control(s) (if any) to the project owner(s) or the County.

13. General Provisions:

A. Headings. The heading titles for each paragraph of this Agreement are included only as a guide to the contents and are not to be considered as controlling, enlarging, or restricting the interpretation of the Agreement.

B. Severability. If any term of this Agreement (including any phrase, provision, covenant, or condition) is held by a court of competent jurisdiction to be invalid or unenforceable, the Agreement shall be construed as not containing that term, and the remainder of this Agreement shall remain in full force and effect; provided, however, this paragraph shall not be applied to the extent that it would result in a frustration of the parties' intent under this Agreement.

C. Governing Law, Jurisdiction, and Venue. The interpretation, validity, and enforcement of this Agreement shall be governed and interpreted in accordance with the laws of the State of California. Any suit, claim, or legal proceeding of any kind related to this Agreement shall be filed and heard in a court of competent jurisdiction in the County of Napa.

D. Attorney's Fees. In the event any legal action is commenced to enforce or interpret this Agreement, the prevailing party is entitled to reasonable attorney's fees, costs, and expenses incurred, whether or not such action proceeds to judgment.

E. Modifications and Rescission. This Agreement may not be modified orally or in any manner other than by an instrument in writing executed by the County and Owner at the time of modification or rescission.

F. Waivers. Waiver of a breach or default under this Agreement shall not constitute a continuing waiver or a waiver of a subsequent breach of the same or any other provision of this Agreement.

G. Time. Time is of the essence in carrying out the duties hereunder.

H. Entire Agreement. This Agreement, including all documents incorporated herein by reference, comprises the entire integrated understanding between the parties concerning the services described herein. This Agreement supersedes all prior negotiations, agreements, and understandings regarding this matter, whether written or oral. The documents incorporated by reference into this Agreement are complementary; what is called for in one is binding as if called for in all.

I. Each Parties' Role in Drafting the Agreement. Each party to this Agreement has had an opportunity to review the Agreement, confer with legal counsel regarding the meaning of the Agreement, and negotiate revisions to the Agreement. Accordingly, neither party shall rely upon Civil Code Section 1654 in order to interpret any uncertainty in the meaning of the Agreement.

J. Signatures. The individuals executing this Agreement represent and warrant that they have the right, power, legal capacity, and authority to enter into and to execute this Agreement on behalf of the respective legal entities of the Owner and the County.

IN WITNESS WHEREOF, the parties have duly executed this Agreement the day and year first above written.

<p>NAPA COUNTY, A political subdivision of the State of California</p> <hr/> <p>David Morrison, Director Planning, Building, and Environmental Services Department</p> <p style="text-align: center;">“COUNTY”</p>	<p>DECLARANT</p> <hr/> <p>[Printed Name & Title]</p> <hr/> <p>[Owner Signature]</p> <p style="text-align: center;">“OWNER”</p>
<p style="text-align: center;">APPROVED AS TO FORM Office of County Counsel</p> <p>By: _____ Deputy County Counsel</p> <p>Date: _____</p>	

NEW ACKNOWLEDGMENT EFFECTIVE 01/01/2015

Civil Code 1189(a)

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of _____

On _____ before me, *(here insert the name and title of officer)*, personally appeared _____, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.
I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.
Witness my hand and official seal.

Notary's Signature _____ [Seal]

NEW JURAT LANGUAGE EFFECTIVE 01/01/2015

Government Code 8202(a)

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of _____

Subscribed and sworn to (or affirmed) before me on this _____ day of _____, _____, by _____, proved to me on the basis of satisfactory evidence to be the person(s) who appeared before me.

Notary's Signature _____ [Seal]

Exhibit A

Legal Description of Property

3286 Silverado Trl
Napa CA 94558



Property Information

Owner(s)	Ellman Family Estate Llc	Parcel #	039-610-001-000
Property	3286 Silverado Trl Napa, CA 94558	Map Coord	
Mailing Addr	2830 NE 29th St Fort Lauderdale , FL 33306	Census Tract	201401
		County	Napa
		Owner Phone	
Legal	LOT 8 FELIZ RANCH SUB 1R/M37.		
Lot Number	8	Tract Number	
Block		Subdivision	Feliz Ranch

Characteristics

Use	Vineyard	Year Built	1900	Sq. Feet	1444
Zoning		Lot Size	13.52 / 588931	# of units	
Bedrooms	1	Bathrooms	1.00	Fireplace	1
#Rooms	3	Quality	Fair	Heating	
Pool/Spa	Y	Air		Style	
Stories		Improvements		Parking	
Flood		Gross Area	1444	Garage Area	
Basement					
Area					

Attributes

Other

Property Sale Information

Sale Date	05/27/2015	\$/Sq. Ft.	\$3,601.11	2nd Mtg.	
Sale Price	\$5,200,000.00	1st Loan		Prior Sale Amt.	\$450,000.00
Doc No.	000000013872	Loan Type		Prior Sale Dt.	04/23/1997
Doc Type	Grant Deed	Xfer Date	06/02/2015	Prior Doc No.	0000009364
Seller	Knubis Jess & Gabriela	Lender		Prior Doc Type	

***\$/Sq. Ft. is a calculation of Sales Price divided by Sq. Feet**

Tax Information

Imp Value	\$456,433.00	Exemption	
Land Value	\$555,600.00	Tax Year/Area	2014/072076
Total Value	\$1,012,033.00	Tax Value	\$1,012,033.00
Tax Amount	\$11,079.60	Improved	45%

Information compiled from various sources and is deemed reliable but not guaranteed.

Exhibit B

List of and Legible Reduced-Scale Copy of the Site Plan Showing Location and Type of Source Control(s), Treatment Control(s) and Hydromodification Control(s)
Best Management Practices (BMPs)

-Ellman Family Winery Stormwater Control Plan

Exhibit C

Maintenance Plan for Post Construction Storm Water Source Control(s), Treatment Control(s), and Hydromodification Control(s) Best Management Practices

I. Owner's General Responsibilities:

It shall be the responsibility of the Owner to maintain the Treatment Control(s), Hydromodification Control(s), and designated Source Control(s) (if any) Best Management Practices ("BMPs") identified in Exhibit "B" and to perform the following non-structural Best Management Practices:

A. Inlet Labels. Provide concrete stamping, or equivalent, of all stormwater conveyance system inlets and catch basins within the project area with prohibitive language (e.g. "No Dumping-Drains to XXXX River/Creek/Lake"). Signage shall identify the receiving water the drain discharges to and including a message in Spanish.

B. Private Street and Parking Lot Sweeping. A sweeping program shall be implemented that at a minimum provides for sweeping immediately prior to October 15th, and once monthly. Sweep, collect, and dispose of debris and trash in a proper container. Do not sweep debris onto County streets or into catch basins. Use dry methods of sweeping and vacuuming to clean streets rather than hosing, pressure washing, or steam cleaning. If water is used for cleaning, collect wash water and dispose of as a hazardous waste or place on site where it can evaporate. Perform street cleaning during dry weather if possible. All oil captured shall be removed and disposed of in accordance with all applicable Federal, State, and County laws and regulations. Catch basins shall be cleaned every six (6) to twelve (12) months, or whenever the sump is half full.

C. Irrigation. Efficient irrigation, appropriate landscape design, and proper maintenance shall be implemented to reduce excess irrigation runoff, promote surface filtration, and minimize use of fertilizers, herbicides, and pesticides.

II. General Performance and Maintenance Criteria:

The Owner shall use its best efforts to diligently and adequately maintain all source control(s), treatment control(s), and hydromodification control(s) (if any) BMPs in perpetuity in such a manner assuming peak performance at all times and shall make such modifications, subject to Napa County ("County") prior approval, as may be necessary for the source control(s), treatment control(s), and hydromodification control(s) (if any) BMPs to continue to operate as designed and approved, to accomplish their intended purpose and in compliance with all applicable Federal, State, and County laws and regulations, including, but not limited to, the Napa County Storm Water Management Program, a copy of which is on file at the County's Department of Planning, Building and Environmental Services' Engineering Division (collectively "Regulations"), as the same may be amended, revised, or replaced from time to time. Adequate maintenance is herein defined as maintenance that is necessary or convenient to ensure that the drainage improvements continue to operate as originally designed and approved and to accomplish their intended purpose. Neither the Owner nor any successors or assigns shall destroy, modify, or remove any source control(s), treatment control(s), and hydromodification control(s) (if any) in any manner that would lessen its effectiveness. The Owner shall be responsible for the costs incurred in operating, maintaining, repairing, and replacing the source control(s), treatment control(s), and hydromodification control(s) (if any) and performing all non-structural BMPs identified above.

III. Specific Requirements:

In addition to the Owner's general responsibilities set forth above, the Owner shall implement an Operations and Maintenance Program for the stormwater treatment and baseline hydromodification management structural control measures defined herein.

A. Infiltration Systems Maintenance. Those Treatment Control BMPs where water enters the ground and moves downward through the unsaturated soil zone. Infiltration Treatment Control BMPs include, but is not limited to: Infiltration trench, infiltration basin, and retention/irrigation systems. Regular maintenance is critical to the successful operation of infiltration systems. Recommended operations and maintenance guidelines shall specifically include the following:

1. Infiltration. Observe drain time for the design storm after completion or modification of the facility to confirm that the desired drain time has been obtained.

2. Inspection. Schedule semiannual inspections for the beginning and end of the wet season, October 15th through April 1st, to identify potential problems such as erosion of side slopes and inverts, standing water, trash and debris and sediment accumulation.

3. Trash/Debris Management. Remove accumulated trash and debris in the infiltration facility at the start and end of the wet season.

4. Vegetation Management. Trim vegetation at the beginning and end of the wet season to prevent establishment of woody vegetation and for aesthetic and vector reasons.

5. Sediment Management. Remove accumulated sediment and re-grade when the accumulated sediment volume exceeds 10% of the infiltration facility.

6. Erosion Control. If erosion is occurring, re-vegetate immediately and stabilize with erosion control mulch or mat until vegetation cover is established.

7. Soil Development. To avoid reversing soil development, scarification or other disturbance should only be performed when there are actual signs of clogging, rather than on a routine basis. Always remove deposited sediment before scarification, and use a hand guided rotary tiller, if possible, or a disc harrow pulled by a very light tractor.

8. Vector Control. The Owner shall retain responsibility to ensure that facilities do not harbor vectors or otherwise create a nuisance, and shall immediately abate any nuisance caused by the facility. A licensed individual or contractor shall be engaged to apply vector pesticide and/or larvicide as necessary. Coordination with the Napa County Mosquito Abatement District is encouraged.

9. Safety. Adopt and enforce a confined space entry plan, if applicable, which meets all requirements of federal, state, and local laws and regulations. Maintenance personnel shall use confined space entry procedures when applicable. The facility shall not be entered, except by a person properly trained, equipped, and qualified to enter a confined space, as identified by local Occupational Safety and Health Administration (OSHA) regulations. All persons should watch for and avoid contact with overhead power lines when inspecting the facility with long sampling devices.

10. Access. Maintain ingress/egress routes in a manner that allows efficient inspection and maintenance to the facility.

B. Retention/Detention System Maintenance. Those treatment control BMPs where the stormwater is captured and retain runoff temporarily and release it to receiving water at predevelopment flow rates or released through evapotranspire runoff to the atmosphere. Retention/Detention treatment control BMPs include, but are not limited to: wet ponds, constructed wetlands, and detention basins. Recommended operations and maintenance guidelines shall specifically include the following:

1. Inspection. Schedule semiannual inspections for the beginning and end of the wet season, October 15th through April 1st, to identify potential problems such as erosion of side slopes and invert, standing water, trash and debris and sediment accumulation.

2. Trash/Debris Management. Remove accumulated trash and debris in the retention/detention facility and around stormwater conveyance systems during the semiannual inspections. The frequency of this activity may be altered to meet specific site conditions.

3. Vegetation Management. Trim vegetation at the beginning and end of the wet season to prevent establishment of woody vegetation and for aesthetic and vector reasons.

4. Sediment Management. Remove accumulated sediment and re-grade about every 5-7 years or when the accumulated sediment volume exceeds 10% of the retention/detention facility volume. Inspect the basin each year for accumulated sediment volume.

5. Vector Control. The Owner shall retain responsibility to ensure that facilities do not harbor vectors or otherwise create a nuisance, and shall immediately abate any nuisance caused by the facility. A licensed individual or contractor shall be engaged to apply vector pesticide and/or larvicide as necessary. Coordination with the Napa County Mosquito Abatement District is encouraged.

6. Safety. Adopt and enforce a confined space entry plan, if applicable, which meets all requirements of federal, state, and local laws and regulations. Maintenance personnel shall use confined space entry procedures when applicable. The facility shall not be entered, except by a person properly trained, equipped, and qualified to enter a confined space, as identified by local Occupational Safety and Health Administration (OSHA) regulations. All persons should watch for and avoid contact with overhead power lines when inspecting the facility with long sampling devices.

7. Access. Maintain ingress/egress routes, including emergent and perimeter shoreline vegetation to facilitate vector surveillance and control activities and efficient inspection and maintenance to the facility.

C. Biofiltration System Maintenance. Those treatment control BMPs where stormwater is designed to transport shallow depths of runoff slowly over vegetation. Biofiltration treatment control BMPs include, but are not limited to: Vegetated swales, vegetated buffer strips, and bioretention. Recommended operations and maintenance guidelines shall specifically include the following:

1. Inspection. Schedule a minimum of biannual inspections for erosion, damage to vegetation, and sediment and debris accumulation preferably at the end of the wet season to schedule summer maintenance and before major fall runoff to be sure the biofiltration facility is ready for winter. However, additional inspection after periods of heavy runoff is desirable.

2. Vegetation Management. Grass height and mowing frequency may not have a large impact on pollutant removal. Consequently, mowing may only be necessary once or twice a year for safety or aesthetics or to suppress weeds and woody vegetation.

3. Trash/Debris Management. The need for litter removal is determined through periodic inspections, but litter should always be removed prior to mowing.

4. Sediment Management. Sediment accumulating near culverts and in channels should be removed when it builds up to 3 inches at any spot, or cover vegetation.

5. Vector Control. The Owner shall retain responsibility to ensure that facilities do not harbor vectors or otherwise create a nuisance, and shall immediately abate any nuisance caused by the facility. A licensed individual or contractor shall be engaged to apply vector pesticide and/or larvicide as necessary. Coordination with the Napa County Mosquito Abatement District is encouraged.

D. Filtration System Maintenance. Those Treatment Control BMPs where stormwater is designed to be filtered through a multi-chambered system which include a pretreatment settling basin and a filter bed filled with sand or other absorptive filtering media. Filtration treatment control BMPs include, but are

not limited to any media filtering device. Recommended operations and maintenance guidelines shall specifically include the following:

1. Inspection. Schedule semiannual inspections for standing water, sediment, trash and debris, and to identify potential problems.

2. Trash/Debris Management. Remove accumulated trash and debris in the sedimentation basin, from the riser pipe, and the filter bed during routine inspections.

3. Filter Performance. Inspect the facility once during the wet season after a large rain event to determine whether the facility is draining completely within 72 hours.

4. Sediment Management. Remove accumulated sediment in the sedimentation basin every 5-7 years or when the accumulated sediment volume exceeds 10% of the retention/detention facility volume.

5. Vector Control. The Owner shall retain responsibility to ensure that facilities do not harbor vectors or otherwise create a nuisance, and shall immediately abate any nuisance caused by the facility. A licensed individual or contractor shall be engaged to apply vector pesticide and/or larvicide as necessary. Coordination with the Napa County Mosquito Abatement District is encouraged.

6. Safety. Maintenance of filtration BMPs involves handling of potentially hazardous material (oil and/or oil sorbent material), which requires special disposal. Additionally, maintenance may involve entry into the filtration BMP underground. Therefore the maintenance operator must be trained in handling and disposal of hazardous waste, and must also be certified for confined space entry if the maintenance will require entry into the filtration BMP. Therefore it is recommended that private BMP owners obtain a maintenance contract with a qualified contractor to provide inspection and maintenance.

E. Vault Separator Maintenance. With respect to any vault separator shown on Exhibit B, if applicable, the Owner shall inspect and maintain the vault separator as follows:

1. Inspection. Schedule two inspections during the first wet season of operation for sediment build-up, accumulated petroleum products, and floating debris. Following the first wet season schedule annual inspections for accumulated sediment, debris and petroleum products.

2. Constituent Management. Vault separator units should be inspected every six months and cleaned when the sediment level reaches 15% of total storage volume and following a spill event. Remove accumulated material with an educator truck on an annual basis or more frequent as needed. It may be necessary to remove and dispose the floatables separately due to the presence of petroleum products.

2. Safety. Do not enter the Vault separator treatment chamber unless properly trained, equipped and qualified to enter a confined space as identified by local OSHA. Watch for and avoid contact with overhead power lines when inspecting the unit with long sampling devices (e.g. Sludge Judge) Vault separator is designed so inspection of the unit can be preformed from grade (i.e. inspect for obstructions, etc.) Qualified personal may enter the upper by-pass chamber and use the insert as a platform to remove obstructions, sewer flushes, or camera surveys. Be aware that the insert may be slippery. Be aware that some units do not have a safety grate over the outlet riser pipe.

3. Vector Control. The Owner shall perform all actions necessary to inhibit the creation of a mosquito nuisance and shall mitigate any mosquito nuisance that develops due to standing water in the vault separator. A licensed individual or contractor shall be engaged to apply a mosquito pesticide and/or larvicide as necessary. Coordination with the Napa County Mosquito Abatement District is encouraged.

IV. General Inspection/Reporting Requirements:

A. Required Actions. In the event one or more of the treatment control(s) and/or hydromodification control(s) BMPs do not meet Performance and Maintenance Criteria described herein, the Owner shall take such corrective actions either identified in this Maintenance Plan, or as may be necessary or convenient, to ensure that they function as required. After taking the corrective action(s), the Owner shall conduct a follow up inspection to evaluate the action(s) taken. Photographs and video images shall be made of the condition of the Drainage Improvements and any corrective actions taken.

B. Inspection Report. A report of the inspection in the form of Exhibit D, as the same may be amended from time to time by the County, shall be submitted within fifteen (15) days after required inspections to:

Napa County Planning, Building and Environmental Services Department
Engineering Division
1195 Third Street, Room 210
Napa, CA 94559

V. Modifications:

Owner, at its sole expense, shall make such modifications to this Maintenance Plan as may be determined by the County to be reasonably necessary to ensure that the treatment control(s) and hydromodification control(s) (if any) continue to operate in accordance with the General Performance and Maintenance Criteria.

Exhibit D

Annual Report Template Form for Post-Construction Storm Water Source Control(s),
Treatment Control(s), and Hydromodification Control(s) Best Management Practices (BMPs)

Inspection Report -- BMPs

Napa County Planning, Building and Environmental Services Department
Engineering Division
1195 Third Street, Room 210
Napa, CA 94559

This inspection report is designed to document the inspection and maintenance conducted for the identified BMPs subject to the Maintenance for Post-Construction Storm Water Best Management Practices Agreement dated _____ 20____ between the County and the Owner during the annual reporting period indicated below. Please attach additional pages if necessary to complete any item identified below.

1. Property Information:

Property Address or APN: _____

Current Property Owner: _____

2. Contact Information:

Name of person to contact regarding this report: _____

Phone number and email address of contact person: _____

Address to which correspondence regarding this report should be directed:

3. Reporting Period:

This report documents the inspection and maintenance of the identified treatment measures during the time period from _____ to _____ .

4. BMP Information:

The following BMPs are located on the property identified above and are subject to the Maintenance Agreement:

Identifying Number of BMP	Type of BMP	Location of BMP on the Property
BRF-A	Bioretention Facility	See Stormwater Control Plan
BRF-B	Bioretention Facility	See Stormwater Control Plan

A. Underground Detention ("Facility")

MH Location	Depth of Sediment

Total amount of accumulated sediment removed from the underground detention system during the reporting period: _____ cubic yards.

The sediment was removed and disposed as follows: _____

Estimated storage capacity at time of inspection: _____

Describe condition of Underground Detention Inlets/Outlets and Overflow Structures:

B. Aboveground Detention

Depth of sediment in pond: _____

Total amount of cubic yards of accumulated sediment removed from the above ground detention system during the reporting period: _____

The sediment was removed and disposed as follows: _____

Was water standing in pond? YES NO If yes, describe what was done to eliminate standing water: _____

Are slopes stable? YES NO If no, describe measures taken to stabilize slopes:

What is height of vegetation: pond bottom: _____ pond sides _____

C. Vegetated Swale

Height of vegetation: _____ (note: cuttings should be collected and disposed of as yard waste)

Was vegetation damaged? YES NO If yes, describe damage and measures taken to repair damage: _____

Was swale clear of trash? YES NO

Was sediment present at a depth of over 3"? YES NO If yes, identify volume of sediment removed _____. Describe method of removal and identify disposal location: _____

Was there standing water in the swale? YES NO If yes, describe measures taken to eliminate standing water: _____

D. Bio-Retention

Were the trees and shrubs healthy? YES NO If no, what actions were taken to treat and/or replace vegetation: _____

Was erosion present? YES NO if yes, describe actions taken to repair: _____

Was there standing water in the bio-retention facility? YES NO If yes, describe measures taken to eliminate standing water: _____

Was the mulch in good condition? YES NO If no, provide date the mulch was replaced: _____ and volume of new mulch _____

Was sediment/debris built up at the inflow point or on top of the bio-retention facility? YES NO If yes, identify volume of sediment removed: _____ Describe method of removal and identify disposal location: _____

Was the under drain flowing freely? YES NO If no, describe measures taken to clear drain. _____

What was the pH of the soil? _____ if pH was not in the range of 5.5 and 6.5, identify actions taken to bring the soil pH within that range: _____

E. Wet Vault

MH Location	Depth of Sediment

Total amount of accumulated sediment removed from the underground detention system during the reporting period: _____ cubic yards.

The sediment was removed and disposed as follows: _____

Describe measures taken to control mosquito breeding: _____

Describe condition of hydrocarbon absorbing mats: _____

Date mats were replaced: _____

Was there contamination of liquid in permanent wet vault? YES NO

Date liquid was pumped out: _____

F. Other BMPs

Describe: _____

Condition: _____

Maintenance performed: _____

5. Photos/Video of BMPs:

Photo ID #	Date of Photo	Photo Taken by:	Remarks

6. Inspector Information:

Inspector Name and Title	Inspector's Employer and Address

7. Statement of BMP Condition:

Based on the inspections as documented above, is each BMP identified in this report located where required, maintained as required by the Maintenance Plan and does each BMP function as originally designed and approved and to accomplish its intended purpose? (Check yes or no.)

YES NO

If "No", describe each problem, proposed solution and schedule of correction: _____

8. Certification:

I hereby certify, under penalty of perjury, that the information presented in this report and attachments is true and complete:

(Signature of Property Owner or Other Responsible Party)

(Date)

(Type or Print Name)

(Company Name)

(Address)

Phone Number: _____

E-mail: _____