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Stormwater Control Plan

Sleeping Giant Winery P15-00284
Planning Commission Hearing September 7, 2016

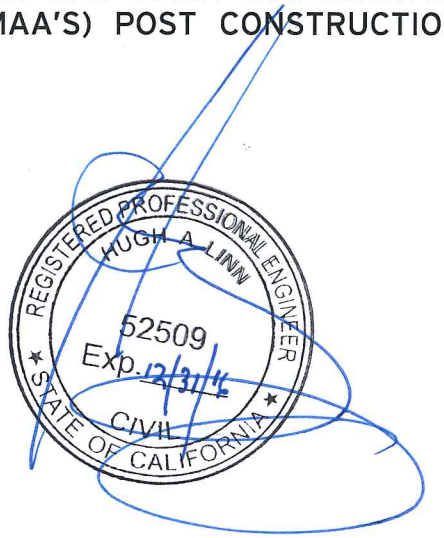
STORMWATER CONTROL PLAN FOR A REGULATED PROJECT

Prepared for

SLEEPING GIANT WINERY
NAPA, CA

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

Prepared for:
Chris Dearden
P.O. Box 4363
Napa, CA 94558



RSA+ Project No. 4115030.0

August 25, 2015

1515 Fourth Street, Napa, CA 94559 www.rsacivil.com (707) 252-3301 v. (707) 252-4966 f.

Table of Contents

TABLES

ATTACHMENTS

I. Project Data

Table 1. Project Data Form

Project Name/Number	Sleeping Giant Winery (4115030.0)
Application Submittal Date	August, 2015
Project Location	2258 Las Amigas Road Napa, California 94558 APN: 047-290-031
Project Phase No.	N/A
Project Type and Description	New Winery
Total Project Site Area (acres)	1.3 Acres
Total New and Replaced Impervious Surface Area	42,210 sq. ft
Total Pre-Project Impervious Surface Area	0 sq. ft
Total Post-Project Impervious Surface Area	42,210 sq. ft

II. Setting

II.A. Project Location and Description

The Sleeping Giant Winery is located at 2258 Las Amigas Road, Napa, California 94558. Refer to Attachment 1 for Vicinity Map. The APN is 047-290-031. The parcel has an area of 11.4 +/- acres. The parcel has an existing house and vineyard. The neighboring parcels are existing residences and vineyards. The project will include the construction of a new winery building, parking area and landscaped areas. Refer to Attachment 2 for Drainage Management Areas Exhibit, Bioretention Facility Cross-section and Bioretention Construction Inspection Checklist.

The proposed area to be disturbed is greater than 1 acre, so this project will require a Stormwater Pollution Prevention Plan and A Notice of Intent (NOI). The project's expected SWPPP risk level is 2, medium. Refer to Risk Level Assessment in Attachment 3.

II.B. Existing Site Features and Conditions

The existing site is currently used for the cultivation of vineyard and a residence. The new winery will be located in the northeast corner of the property near the existing house, which is to remain. Access to the winery is off of Las Amigas Road. Features of the site include the existing residence, and a water tower. The site is bounded by the Las Amigas Road and AW zoned properties.

The predominant soil type in the project area is Hare Loam, which is of the Hydraulic Soil Group D. Refer to Attachment 1 for Soils Map. The project area is relatively flat with gentle slopes to draining toward the southwest. Stormwater is ultimately conveyed to the Napa River.

II.C. Opportunities and Constraints for Stormwater Control

Stormwater treatment facilities have been integrated into the planning, design, construction, operation, and maintenance of the proposed development. The following potential opportunities and constraints were considered in determining the best stormwater control design for this development.

Opportunities for the site include landscaped areas and vineyard areas. Bioretention Facilities will be installed in these locations to treat stormwater runoff prior to discharge from the site. Runoff will be conveyed to Bioretention Facilities via surface flows and trench drains.

Constraints include the site location and existing grades.

III. Low Impact Development Design Strategies

III.A. Optimization of Site Layout

1. Limitation of development envelope

   The shallow slopes of the site make the chosen areas suitable for development.

2. Preservation of natural drainage features

   Bioretention Facilities will be installed to treat and retain storm water before it enters the natural drainage of the site. Vineyard will also be used to retain stormwater runoff from impervious surfaces.

3. Setbacks from creeks, wetlands, and riparian habitats

   No riparian setbacks exist on the property.

4. Minimization of imperviousness

   Walkways and parking areas are designed to the minimum widths necessary without compromising public safety and a walkable environment. Landscaped areas are used instead of decorative impervious areas. Existing trees will be preserved to the maximum extent practicable.

5. Use of drainage as a design element

   Bioretention Facilities are incorporated into the aesthetic landscape design of the site.

III.B. Use of Permeable Pavements

Permeable pavements are not in the scope of this project.

III.C. Dispersal of Runoff to Pervious Areas

Stormwater runoff will be directed to landscaped areas to the maximum extent practicable.

III.D. Stormwater Control Measures

Bioretention Facilities have been incorporated as a stromwater control measures. The Bioretention Facilities will collect and treat onsite stormwater. Refer to Attachment 3 for Bioretention Facility Cross-section and Bioretention Construction Inspection Checklist.

IV. Documentation of Drainage

IV.A Drainage Management Areas

Table 2. Drainage Management Areas

DMA Name	Impervious Area (square feet)	Pervious Area (square feet)	Total Area (square feet)
DMA-1	10,907	22,881	33,788
DMA-2	1,501	0	1,501
DMA-3	2,727	402	3,129
DMA-4	14,977	910	15,887
DMA-5	5,038	17,427	22,455
DMA-6	5,726	23,494	29,220

Drainage Management Area Descriptions

DMA 1, totaling 33,788 square feet, consists of the portion of the patio that wraps around the southern and western sides of the winery building and the majority of the winery roof. Stormwater sheet flows to and bubbles up southwest to the self-retaining area in the vineyards.

DMA 2, totaling 1,501 square feet, consists of the hardscape northwest of the crush pad and a portion of the tanks north of the winery. Drainage from this area is conveyed northwest via a swale along the back edge of the winery. Bioretention Facility 2 is northwest of DMA 2 and has an area of 70 square feet.

DMA 3, totaling 3,129 square feet, consists of the hardscape northeast of the crush pad, a portion of the tanks and a small vegetative area beside the tanks north of the winery. It drains northeast via a swale to Bioretention Facility 3. Bioretention Facility 3 is on the east side of the crush pad and has an area of 240 square feet.

DMA 4, totaling 15,887 square feet, consists of the parking area and incorporated landscaped areas as well as the east portion of the winery roof, the landscaped vineyard area and surrounding pathways in the southwest corner of the site. It drains northeast to Bioretention Facility 4. Bioretention Facility 4 is located west of the employee parking area and has an area of 663 square feet.

DMA 5, totaling 22,455 square feet, consists of the north portion of the driveway. Drainage from this area sheet flows off of the paved surfaces to the self-retaining vineyard area east of the driveway.

DMA 6, totaling 29,220 square feet, consists of the portion of the proposed driveway that drains to the reservoir east of the proposed site. Drainage from this area sheet flows off of the paved surfaces to the east to the self-retaining area in the vineyard to the west of the driveway.

IV.B. Tabulation and Sizing Calculations

Table 3. Information Summary for Bioretention Facility Design

DMA	Total Project Area (Square Feet)
DMA-2	1,704
DMA-3	3,129
DMA-4	15,887

Table 4. Self-Treating Areas

This site does not contain any Self-Treating Areas.

Table 5. Self-Retaining Areas

DMA Name	Area (square feet)
DMA-1	33,788
DMA-5	22,455
DMA-6	29,220

Table 6. Areas Draining to Self-Retaining Areas

DMA Name	Area (square feet)	Post-project surface type	Runoff factor	Product (Area x runoff factor)[A]	Receiving self-retaining DMA	Receiving self-retaining DMA Area (square feet) [B]	Ratio [A]/[B]
$DMA\text{-}1_{imp}$	10,907	Paved	1	10,907	$DMA\text{-}1_{perv}$	22,881	48%
$DMA\text{-}5_{imp}$	5,038	Paved	1	5,038	$DMA\text{-}5_{perv}$	17,427	29%
$DMA\text{-}6_{imp}$	5,726	Paved	1	5,726	$DMA\text{-}6_{perv}$	23,268	24%

Table 7. Areas Draining to Bioretention Facilities

DMA Name	DMA Area (Square Feet)	Post-project surface type	DMA Runoff factor	DMA Area × runoff factor	Facility Name		
					Bioretention Facility 3		
DMA-2	0	Pervious	0.10	0	Sizing Factor	Minimum Facility size	Proposed Facility Size
	1,501	Impervious	1	1,501			
Total>				1,501	0.04	60	70
DMA Name	DMA Area (Square Feet)	Post-project surface type	DMA Runoff factor	DMA Area × runoff factor	Facility Name		
					Bioretention Facility 4		
DMA-3	402	Pervious	0.10	40	Sizing Factor	Minimum Facility size	Proposed Facility Size
	2,727	Impervious	1	2,727			
Total>				2,767	0.04	111	240
DMA Name	DMA Area (Square Feet)	Post-project surface type	DMA Runoff factor	DMA Area × runoff factor	Facility Name		
					Bioretention Facility 5		
DMA-4	910	Pervious	0.10	91	Sizing Factor	Minimum Facility size	Proposed Facility Size
	14,977	Impervious	1	14,977			
Total>				15,068	0.04	603	663

V. Source Control Measures

V.A. Site activities and potential sources of pollutants

The site activities and potential sources of pollutants for the St. Helena Montessori School project are listed in table 8, below

Table 8. Control Table

Potential Sources of Runoff Pollutants	Permanent Source Control BMPs	Operational Source Control BMPs
A. On-site storm drain inlets (unauthorized non-stormwater discharges and accidental spills or leaks)	▪ Mark all inlets with the words "No Dumping! Flows to River" or similar.	▪ Maintain and periodically repaint or replace inlet markings. ▪ Provide stormwater pollution prevention information to new site owners, lessees, or operators. ▪ See applicable operational BMPs in Fact Sheet SC-74, "Drainage System Maintenance." ▪ Include the following in lease agreements: "Tenant 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."
B. Interior floor drains and elevator shaft sump pumps	▪ Interior floor drains and elevator shaft sump pumps will be plumbed to the sanitary sewer.	▪ Inspect and maintain drains to prevent blockages and overflow.
C. Interior parking garages	N/A	N/A
D_1. Need for future indoor & structural pest control	▪ Building design shall incorporate features that discourage entry of pests.	▪ Provide Integrated Pest Management information to owners, lessees, and operators.
D_2. Landscape / outdoor pesticide use / building and grounds maintenance	▪ Final landscape plans will accomplish all of the following: ▪ Preserve existing native trees, shrubs, and ground cover to the maximum extent possible. ▪ 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. ▪ Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions.	▪ Maintain landscaping using minimum or no pesticides. ▪ See applicable operational BMPs in Fact Sheet SC-41, "Building and Grounds Maintenance." ▪ Provide IPM information to new owners, lessees and operators.

Potential Sources of Runoff Pollutants	Permanent Source Control BMPs	Operational Source Control BMPs
	▪ Use pest-resistant plants, especially adjacent to hardscape. ▪ To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	
E. Pools, spas, ponds, decorative fountains, and other water features	▪ If the local municipality requires pools to be plumbed to the sanitary sewer, place a note on the plans and state in the narrative that this connection will be made according to local requirements	▪ Do not discharge to a street or storm drain when draining; discharge to the sanitary sewer only if permitted to do so. If water is dechlorinated with a neutralizing chemical or by allowing chlorine to dissipate for a few days, the water may be recycled /reused by draining it gradually onto a landscaped area.
F. Food service	N/A	N/A
G. Refuse areas	▪ Refuse areas shall be paved with an impervious surface, designed not to allow run-on from adjoining areas, and screened to prevent off-site transport of trash. ▪ Refuse areas shall contain a roof to minimize direct precipitation. ▪ No drain connections shall be made to the Refuse area.	▪ Provide adequate number of receptacles. ▪ Inspect receptacles regularly; repair or replace leaky receptacles. ▪ Keep receptacles covered. ▪ Prohibit/prevent dumping of liquid or hazardous wastes. ▪ Post "no hazardous materials" signs. ▪ Inspect and pick up litter daily and clean up spills immediately. ▪ Keep spill control materials available on-site. ▪ Clean by dry-sweeping only, or with wet/dry vacuum. ▪ See Fact Sheet SC-34, "Waste Handling and Disposal"
H. Industrial processes	▪ All process activities to be performed indoors. No processes to drain to exterior or to storm drain system	▪ Industrial discharge will be mitigated to the winery process wastewater system and will not be discharged to storm drains
I. Outdoor Storage of Equipment or Materials	N/A	N/A
J. Vehicle / equipment cleaning	N/A	N/A
K. Vehicle / equipment repair and maintenance	N/A	N/A
L. Fuel dispensing areas	N/A	N/A
M. Loading docks	▪ Loading areas covered and drained to process	▪ Move loaded and unloaded items indoors as soon as possible

Potential Sources of Runoff Pollutants	Permanent Source Control BMPs	Operational Source Control BMPs
	wastewater drains in the covered crush pad area	
N. Fire sprinkler test water	▪ Fire sprinkler test water shall be discharged to the sanitary sewer.	▪ See the note in Fact Sheet SC-41, "Building and Grounds Maintenance"
O. Miscellaneous drain or wash water or other sources • Boiler drain lines • Condensate drain lines • Rooftop equipment • Drainage sumps • Roofing, gutters, and trim • Other sources	▪ Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain. ▪ Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain system. ▪ Rooftop equipment with potential to produce pollutants shall be roofed and/or have secondary containment. ▪ Any drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water.	▪ If architectural copper is used, implement the following BMPs for management of rinsewater during installation: ▪ If possible, purchase copper materials that have been pre-patinated at the factory. ▪ If patination is done on-site, prevent rinse water from entering storm drains by discharging to landscaping or by collecting in a tank and hauling off-site. ▪ Consider coating the copper materials with an impervious coating that prevents further corrosion and runoff. ▪ Implement the following BMPs during routine maintenance: ▪ Prevent rinse water from entering storm drains by discharging to landscaping or by collecting in a tank and hauling off-site.
P. Plazas, sidewalks, and parking lots		▪ 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 or degreaser and discharge to the sanitary sewer not to a storm drain.

V.C. Features, Materials, and Methods of Construction of Source Control BMPs

Source control BMPs will be designed and implemented per construction specifications and CASQA BMP fact sheets.

VI. Stormwater Facility Maintenance

VI.A. Ownership and Responsibility for Maintenance in Perpetuity

The applicant accepts responsibility for interim operation and maintenance of stormwater treatment and flow-control facilities until such time as this responsibility is formally transferred to a subsequent owner.

An Operations & Maintenance Plan has been prepared for this project. The owner shall execute a Post-Construction BMP Maintenance Agreement with the City of Napa upon request.

VI.B. Summary of Maintenance Requirements for Each Stormwater Facility

The site consists of three Bioretention Facilities. The Bioretention Facilities requires as needed maintenance for any damage that may occur. Semi-annual inspections are required for possible erosion, damaged vegetation, debris, and health of any tress or shrubs. These inspections usually occur at the beginning of the wet season and end of the wet season. Any dead or diseased vegetation should be removed and replaced during the inspection. An annual inspection is required to complete the annual report for each Bioretention Facility. During this inspection mulch may be added, and tree stakes and wires replaced. Refer to the Operation & Maintenance Plan for a full description of required inspections and maintenance requirements.

VII. Construction Checklist

Table 9. Construction Checklist

Stormwater Control Plan Page #	Source Control or Treatment Control Measure	Sheet
5	Bioretention Facilities	DMA/L1
6	A. On-site storm drain inlets	UP 3
6	B. Interior floor drains and elevator shaft sump pumps	A2.0
6	D1. Need for Future indoor & structural pest control	
6	D2. Landscape/ outdoor pesticide use/ building and ground maintenance	L1
7	G. Refuse areas	UP 3
7	N. Fire sprinkler test water	UP 3
7	O. Miscellaneous drain or wash	UP sheets
8	P. Plazas, sidewalks, and parking lots	UP sheets

VIII. Certifications

The design of stormwater treatment facilities and other stormwater pollution control measures in this plan are in accordance with the current edition of the BASMAA Post-Construction Manual, dated July 14, 2014.

ATTACHMENT 1

VICINITY MAP, FIRMETTE, SOILS MAP

DEARDEN PROPERTY
VICINITY MAP
NAPA COUNTY CALIFORNIA

VICINITY MAP

SCALE: 1" = 3000'

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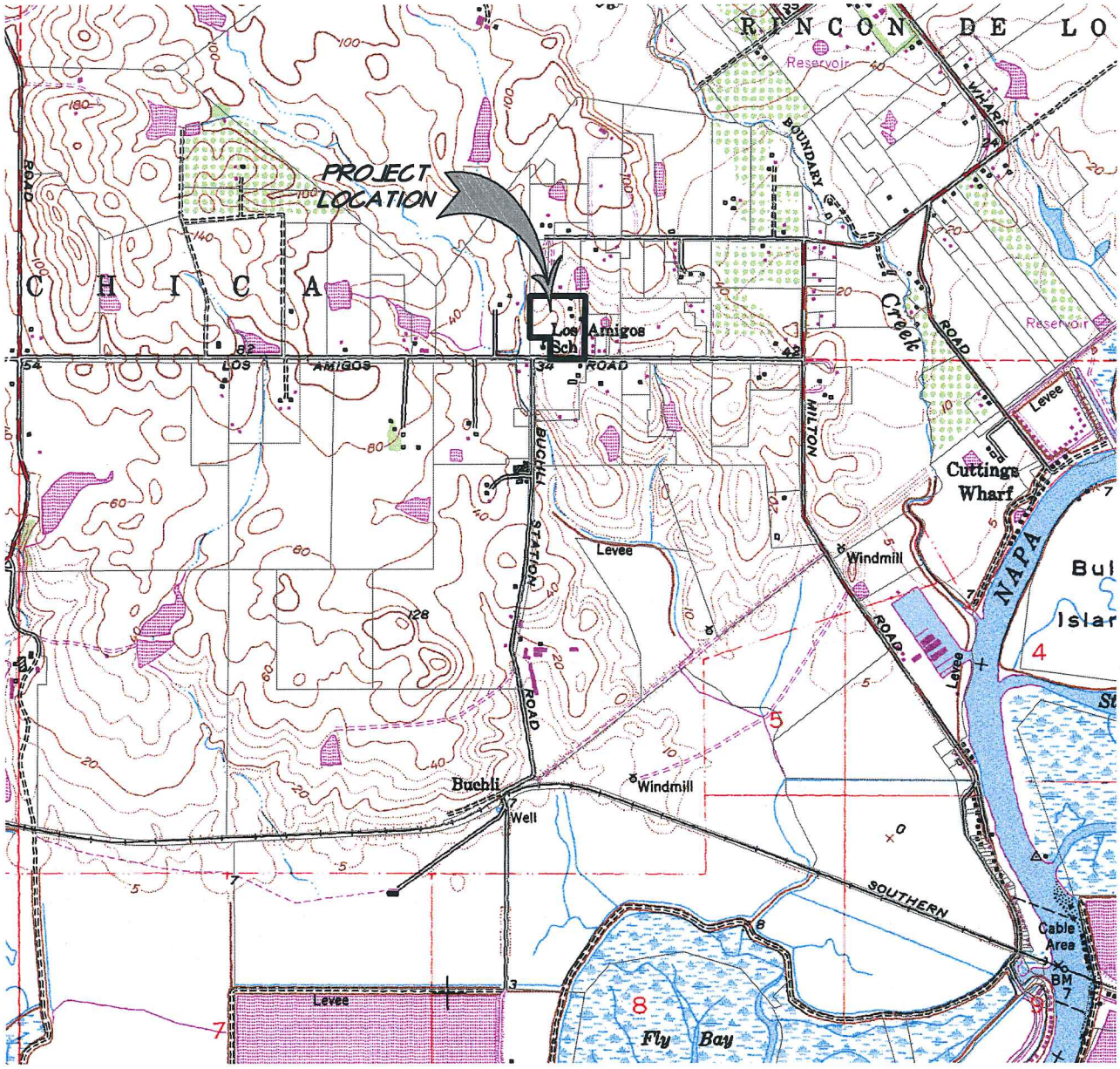
MAY 8, 2015 4115030.0 Exh-Vic Map.dwg

SLEEPING GIANT WINERY
USGS QUAD MAP



SCALE: 1"=2000'

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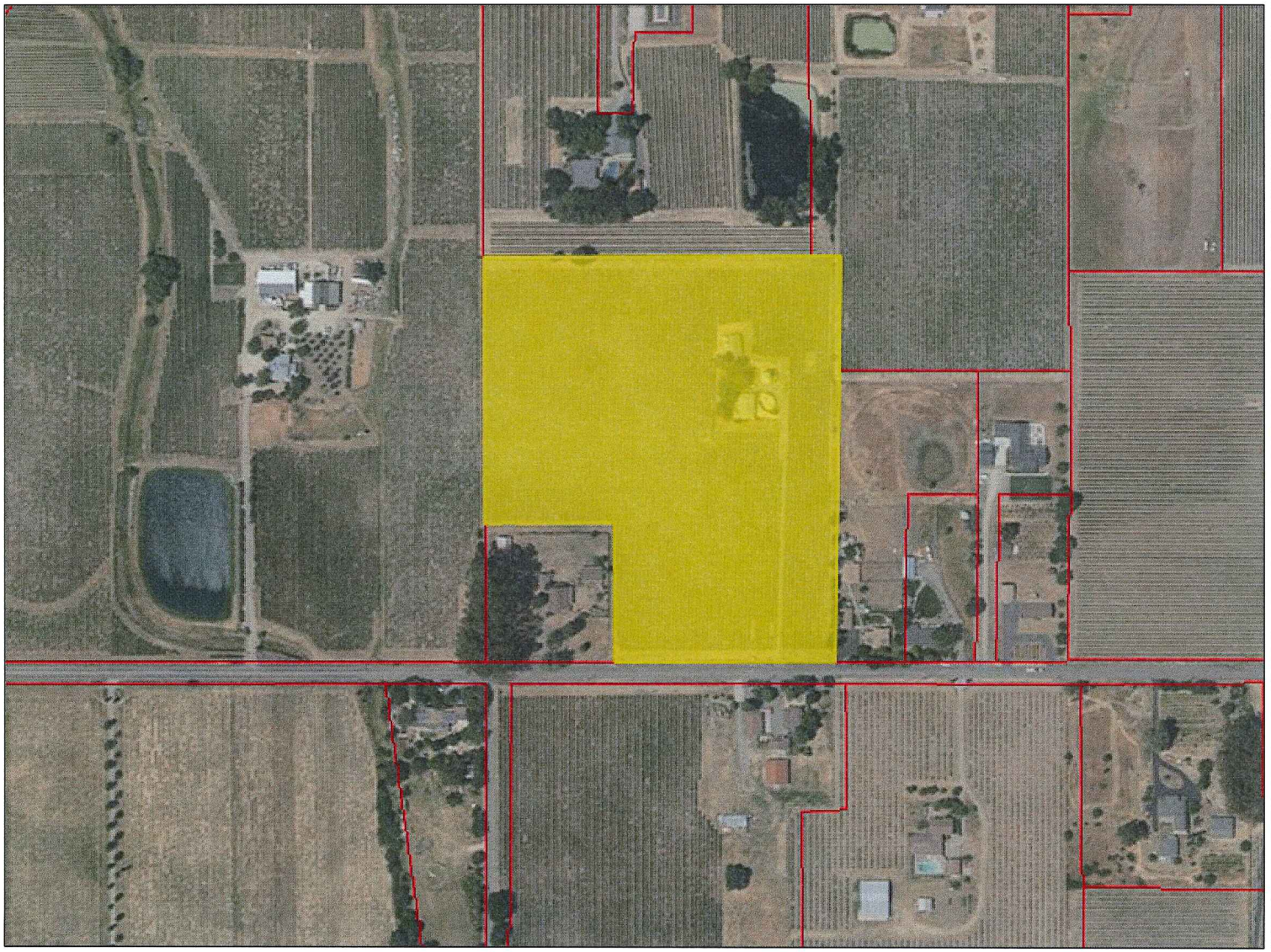
JULY 1, 2015 4115030.0 USGSM

County of Napa GIS



Legend

- Parcels
- County Boundary

752.2 0 376.08 752.2 Feet

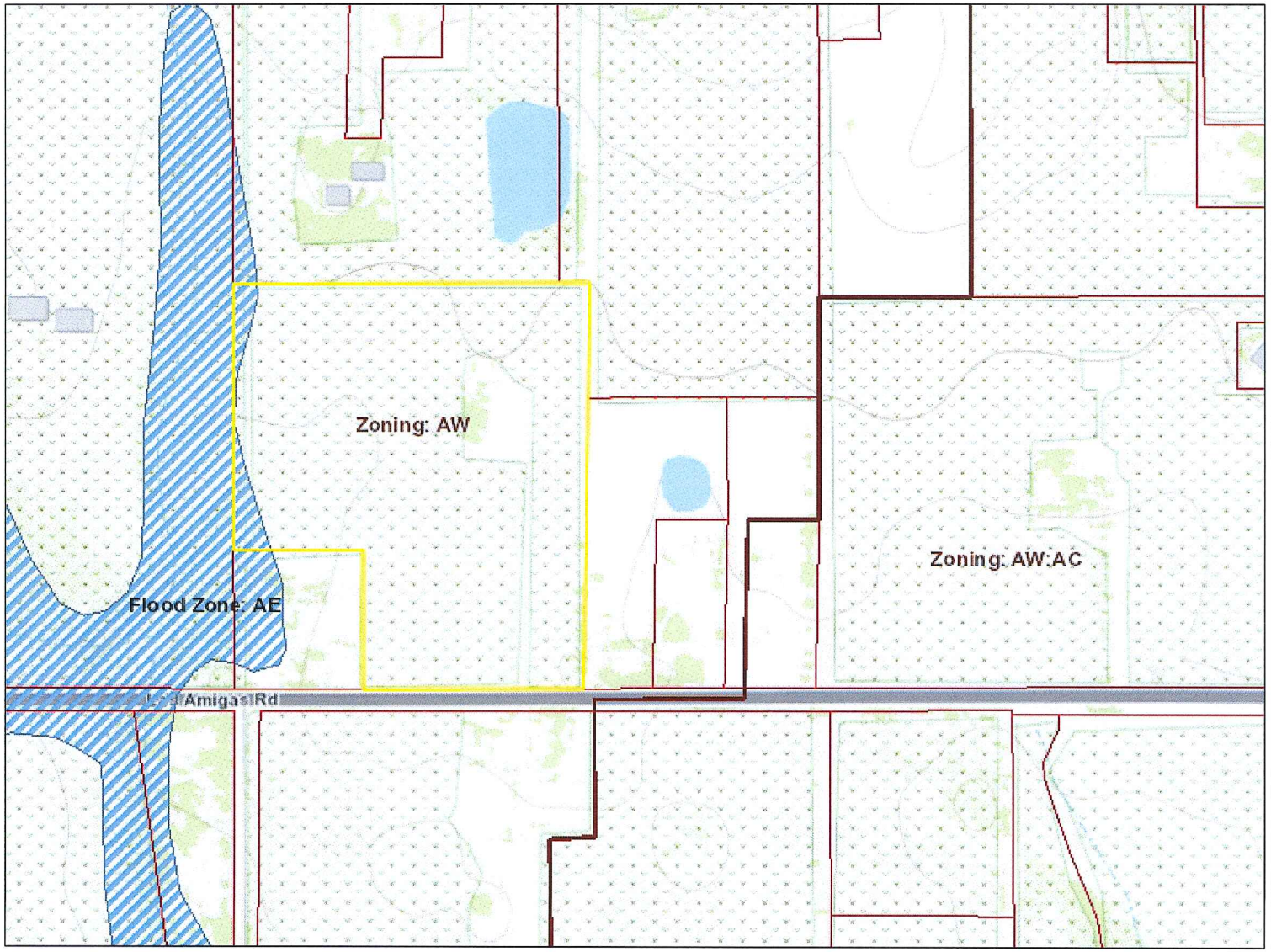
Disclaimer: This map was prepared for informational purposes only.
No liability is assumed for the accuracy of the data delineated hereon.

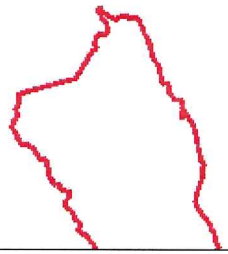
This map was printed on 7/1/2015

Notes

Sleeping Giant Winery Aerial Photo

County of Napa GIS





Legend

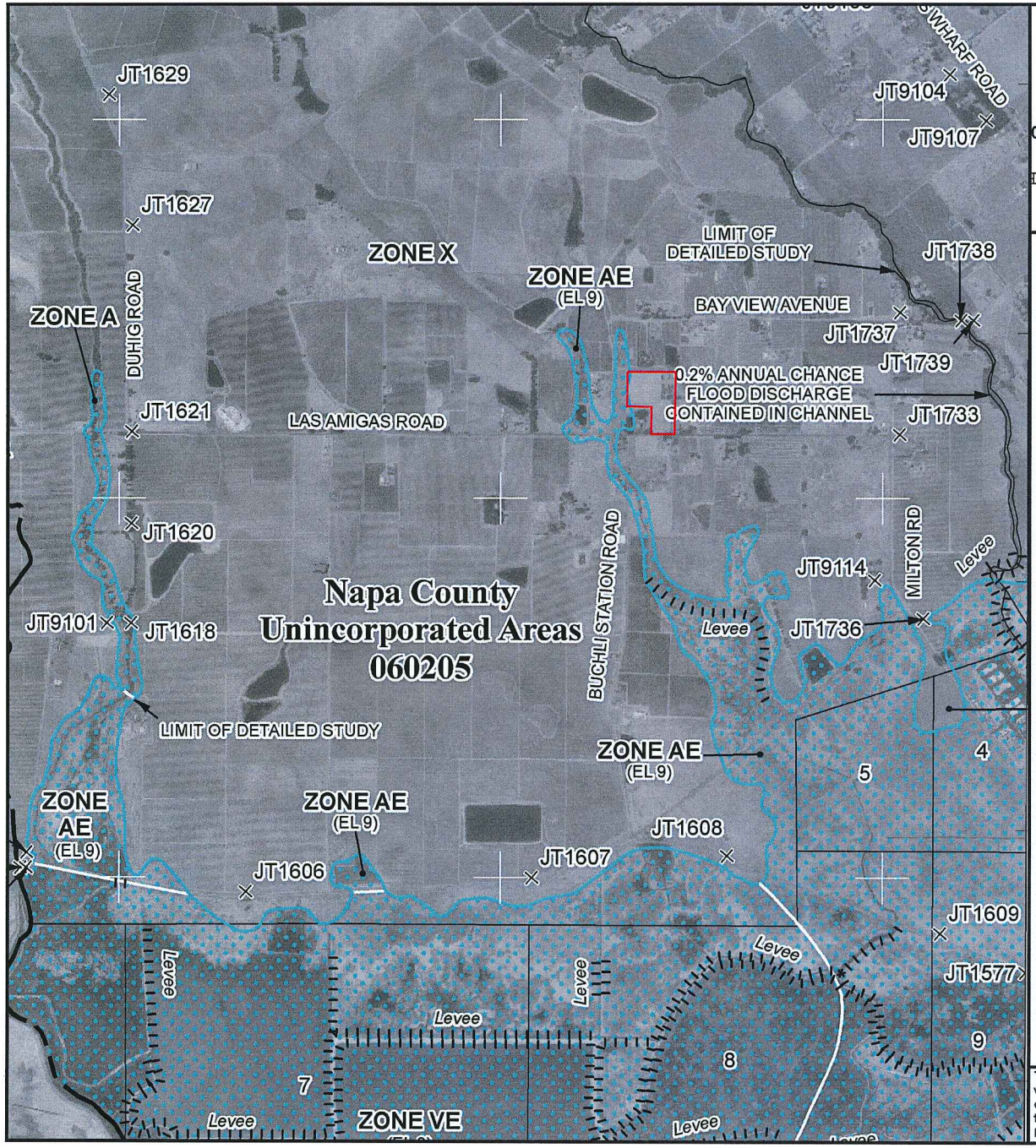
- Zoning
- Parcels
- Flood Zones
  - 100 Years
  - 500 Years
- County Boundary

751.0 0 375.51 751.0 Feet

Disclaimer: This map was prepared for informational purposes only.
No liability is assumed for the accuracy of the data delineated hereon.

This map was printed on 4/22/2015

Notes



MAP SCALE 1" = 2000'

000 0 2000 4000

FEET

METER

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0625E

FIRM

FLOOD INSURANCE RATE MAP

NAPA COUNTY, CALIFORNIA
AND INCORPORATED AREAS

PANEL 625 OF 650

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
AMERICAN CANYON, CITY OF	060755	0625	E
NAPA COUNTY	060205	0625	E

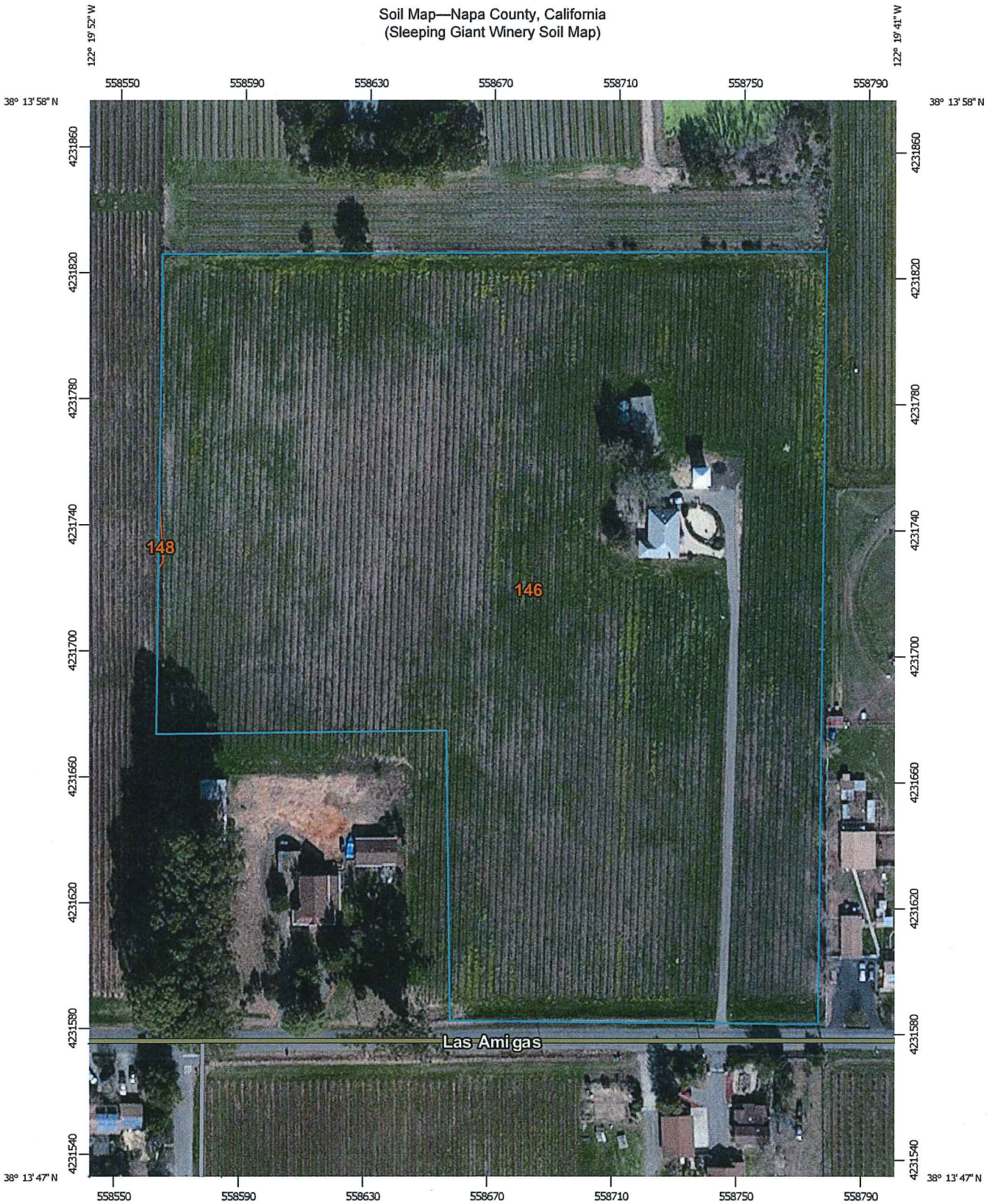
Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
06055C0625E

EFFECTIVE DATE
SEPTEMBER 26, 2008

Federal Emergency Management Agency

Soil Map—Napa County, California
(Sleeping Giant Winery Soil Map)



Map Scale: 1:1,670 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 20 40 80 120

Feet
0 50 100 200 300

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: http://websoilsurvey.nrcs.usda.gov
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 7, Sep 25, 2014

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

Date(s) aerial images were photographed: Feb 4, 2012—Feb 17, 2012

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

Napa County, California (CA055)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
146	Haire loam, 2 to 9 percent slopes	10.8	100.0%
148	Haire clay loam, 2 to 9 percent slopes	0.0	0.0%
Totals for Area of Interest		**10.8**	**100.0%**

ATTACHMENT 2

DRAINAGE MANAGEMENT AREAS EXHIBIT
BIORETENTION FACILITY CROSS-SECTION
BIORETENTION CONSTRUCTION INSPECTION CHECKLIST

SLEEPING GIANT WINERY
DRAINAGE MANAGEMENT EXHIBIT

LEGEND	
BRF	BIORETENTION FACILITY

DRAINAGE MANAGEMENT AREAS		
DMA	IMPERVIOUS	PERVIOUS
1	10,907 SF	22,881 SF
2	1,501 SF	0 SF
3	2,727 SF	402 SF
4	14,977 SF	910 SF
5	5,038 SF	17,427 SF
6	5,726 SF	23,494 SF

GRAPHIC SCALE

100 0 100 200

(IN FEET)
1 inch = 100 FT

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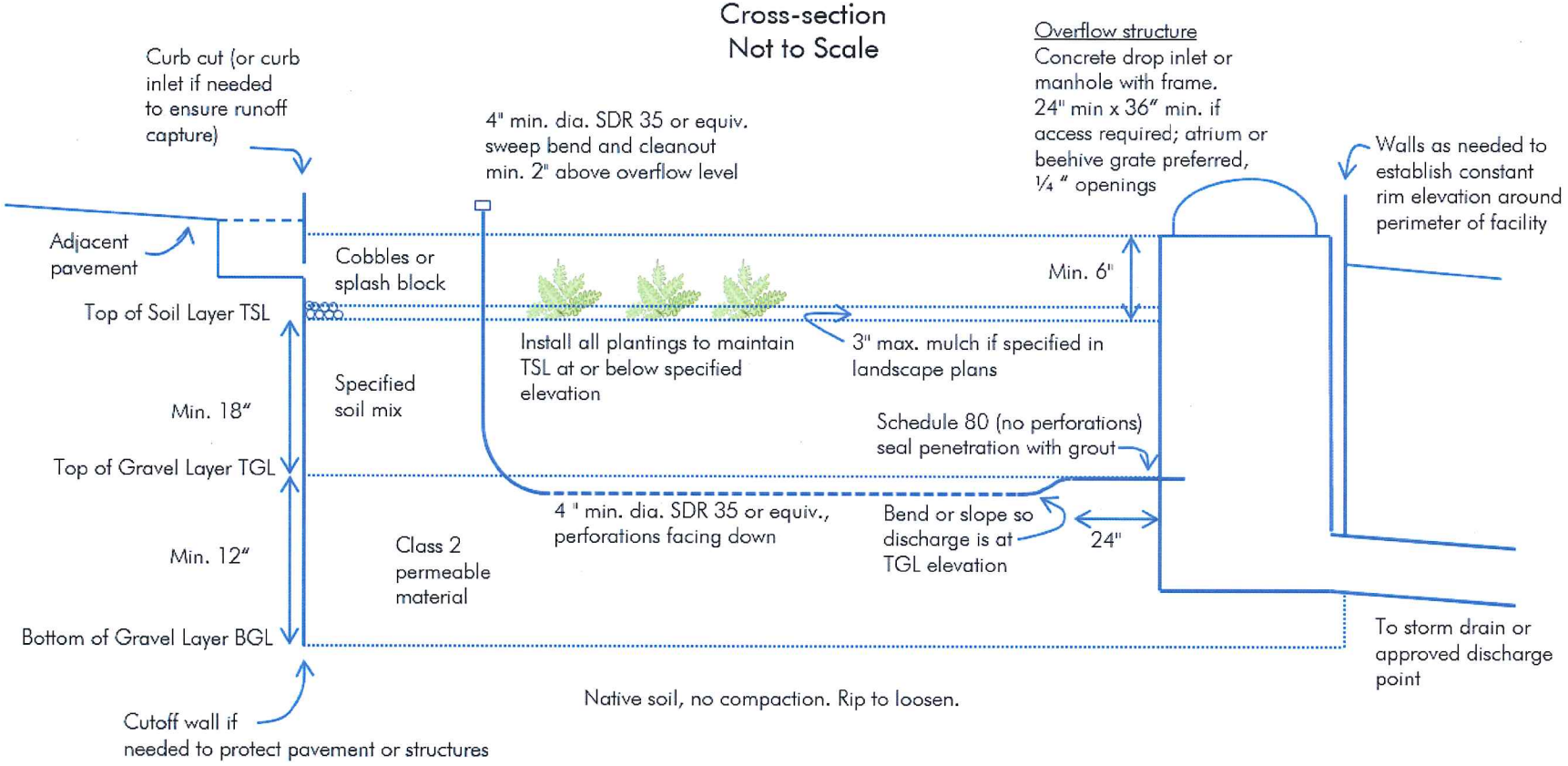
Bioretention Facility

Cross-section
Not to Scale



Allowed variations for special site conditions:

- Facilities located within 10 feet of structures or other potential geotechnical hazards may incorporate an impervious cutoff wall
- Facilities with documented high concentrations of pollutants in underlying soil or groundwater, facilities where infiltration could contribute to a geotechnical hazard, and facilities located on elevated plazas or other structures may incorporate an impervious liner between the native soil and the BGL and locate the underdrain discharge at the BGL (flow-through planter configuration).
- Facilities located in areas of high groundwater, highly infiltrative soils, or where connection of the underdrain to a surface drain or subsurface storm drain are infeasible may omit the underdrain.

Notes:

- No liner, no filter fabric, no landscape cloth.
- Maintain BGL. TGL, TSL throughout facility area at elevations to be specified in plan.
- Class 2 perm layer may extend below and underneath drop inlet.
- Elevation of underdrain discharge is at top of gravel layer.
- See Chapter 4 for instructions on facility sizing and additional specifications.

Appendix B. Bioretention Construction Inspection Checklist

Layout (to be confirmed prior to beginning excavation)

- ❒ Square footage of the facility meets or exceeds minimum shown in Stormwater Control Plan
- ❒ Site grading and grade breaks are consistent with the boundaries of the tributary Drainage Management Area(s) (DMAs) shown in the Stormwater Control Plan
- ❒ Inlet elevation of the facility is low enough to receive drainage from the entire tributary DMA
- ❒ Locations and elevations of overland flow or piping, including roof leaders, from impervious areas to the facility have been laid out and any conflicts resolved
- ❒ Rim elevation of the facility is laid out to be level all the way around, or elevations are consistent with a detailed cross-section showing location and height of interior dams
- ❒ Locations for vaults, utility boxes, and light standards have been identified so that they will not conflict with the facility
- ❒ Facility is protected as needed from construction-phase runoff and sediment

Excavation (to be confirmed prior to backfilling or pipe installation)

- ❒ Excavation conducted with materials and techniques to minimize compaction of soils within the facility area
- ❒ Excavation is to accurate area and depth
- ❒ Slopes or side walls protect from sloughing of native soils into the facility
- ❒ Moisture barrier, if specified, has been added to protect adjacent pavement or structures.
- ❒ Native soils at bottom of excavation are ripped or loosened to promote infiltration

Overflow or Surface Connection to Storm Drainage

(to be confirmed prior to backfilling with any materials)

- ❒ Overflow is at specified elevation
- ❒ No knockouts or side inlets are in overflow riser
- ❒ Overflow location selected to minimize surface flow velocity (near, but offset from, inlet recommended)
- ❒ Grating excludes mulch and litter (beehive or atrium-style grates with ¼" openings recommended)
- ❒ Overflow is connected to storm drain via appropriately sized piping

Underground connection to storm drain/outlet orifice

(to be confirmed prior to backfilling with any materials)

- ❒ Perforated pipe underdrain (PVC SDR 35 or approved equivalent) is installed with holes facing down
- ❒ Perforated pipe is connected to storm drain at specified elevation (typ. bottom of soil elevation)
- ❒ Cleanouts are in accessible locations and connected via sweep bends

Drain Rock/Subdrain (to be confirmed prior to installation of soil mix)

- ❒ Rock is installed as specified, 12" min. depth. Class 2 permeable, Caltrans specification 68-2.02F(3) recommended
- ❒ Rock is smoothed to a consistent top elevation. Depth and top elevation are as shown in plans
- ❒ Slopes or side walls protect from sloughing of native soils into the facility
- ❒ No filter fabric is placed between the subdrain and soil mix layers

Soil Mix

- ❒ Soil mix is as specified.
- ❒ Mix installed in lifts not exceeding 12"
- ❒ Mix is not compacted during installation but may be thoroughly wetted to encourage consolidation
- ❒ Mix is smoothed to a consistent top elevation. Depth of mix (18" min.) and top elevation are as shown in plans, accounting for depth of mulch to follow and required reservoir depth

Irrigation

- ❒ Irrigation system is installed so it can be controlled separately from other landscaped areas. Smart irrigation controllers and drip emitters are recommended and may be required by local code or ordinance.
- ❒ Spray heads, if any, are positioned to avoid direct spray into outlet structures

Planting

- ❒ Plants are installed consistent with approved planting plan, consistent with site water allowance
- ❒ Any trees and large shrubs are staked securely
- ❒ No fertilizer is added; compost tea may be used
- ❒ No native soil or clayey material are imported into the facility with plantings
- ❒ 1"-2" mulch may be applied following planting; mulch selected to avoid floating
- ❒ Final elevation of soil mix maintained following planting
- ❒ Curb openings are free of obstructions

Final Engineering Inspection

- ❒ Drainage Management Area(s) are free of construction sediment and landscaped areas are stabilized
- ❒ Inlets are installed to provide smooth entry of runoff from adjoining pavement, have sufficient reveal (drop from the adjoining pavement to the top of the mulch or soil mix, and are not blocked
- ❒ Inflows from roof leaders and pipes are connected and operable
- ❒ Temporary flow diversions are removed
- ❒ Rock or other energy dissipation at piped or surface inlets is adequate
- ❒ Overflow outlets are configured to allow the facility to flood and fill to near rim before overflow
- ❒ Plantings are healthy and becoming established
- ❒ Irrigation is operable
- ❒ Facility drains rapidly; no surface ponding is evident
- ❒ Any accumulated construction debris, trash, or sediment is removed from facility
- ❒ Permanent signage is installed and is visible to site users and maintenance personnel

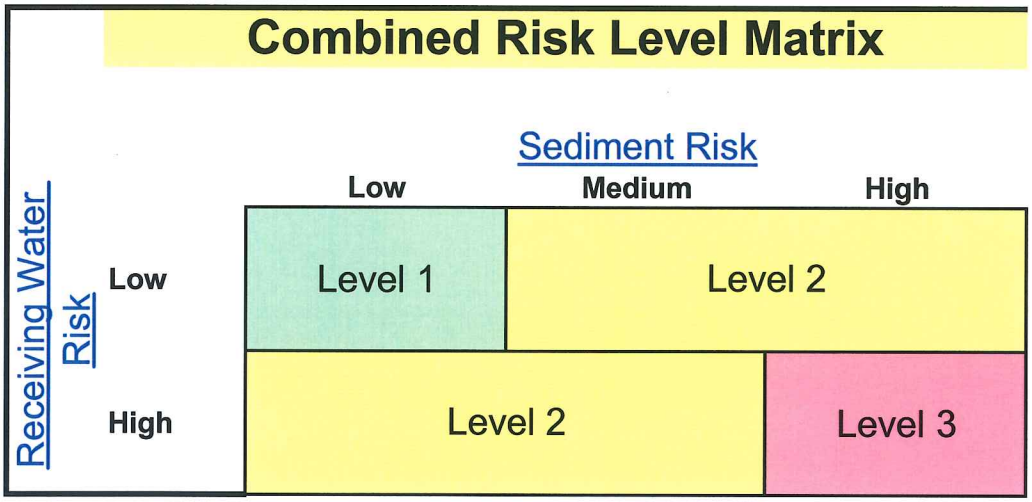
ATTACHMENT 3

SWPPP RISK LEVEL ASSESSMENT

	A	B	C
1	**Sediment Risk Factor Worksheet**		**Entry**
2	**A) R Factor**		
3	Analyses of data indicated that when factors other than rainfall are held constant, soil loss is directly proportional to a rainfall factor composed of total storm kinetic energy (E) times the maximum 30-min intensity (I30) (Wischmeier and Smith, 1958). The numerical value of R is the average annual sum of EI30 for storm events during a rainfall record of at least 22 years. "Isoerodent" maps were developed based on R values calculated for more than 1000 locations in the Western U.S. Refer to the link below to determine the R factor for the project site.		
4	http://cfpub.epa.gov/npdes/stormwater/LEW/lewCalculator.cfm		
5	**R Factor Value**		139
6	**B) K Factor (weighted average, by area, for all site soils)**		
7	The soil-erodibility factor K represents: (1) susceptibility of soil or surface material to erosion, (2) transportability of the sediment, and (3) the amount and rate of runoff given a particular rainfall input, as measured under a standard condition. Fine-textured soils that are high in clay have low K values (about 0.05 to 0.15) because the particles are resistant to detachment. Coarse-textured soils, such as sandy soils, also have low K values (about 0.05 to 0.2) because of high infiltration resulting in low runoff even though these particles are easily detached. Medium-textured soils, such as a silt loam, have moderate K values (about 0.25 to 0.45) because they are moderately susceptible to particle detachment and they produce runoff at moderate rates. Soils having a high silt content are especially susceptible to erosion and have high K values, which can exceed 0.45 and can be as large as 0.65. Silt-size particles are easily detached and tend to crust, producing high rates and large volumes of runoff. Use Site-specific data must be submitted.		
8	Site-specific K factor guidance		
9	**K Factor Value**		0.32
10	**C) LS Factor (weighted average, by area, for all slopes)**		
11	The effect of topography on erosion is accounted for by the LS factor, which combines the effects of a hillslope-length factor, L, and a hillslope-gradient factor, S. Generally speaking, as hillslope length and/or hillslope gradient increase, soil loss increases. As hillslope length increases, total soil loss and soil loss per unit area increase due to the progressive accumulation of runoff in the downslope direction. As the hillslope gradient increases, the velocity and erosivity of runoff increases. Use the LS table located in separate tab of this spreadsheet to determine LS factors. Estimate the weighted LS for the site prior to construction.		
12	LS Table		
13	**LS Factor Value**		0.66
14			
15	**Watershed Erosion Estimate (=RxKxLS) in tons/acre**		29.4
16	**Site Sediment Risk Factor**		**Medium**
17	Low Sediment Risk: < 15 tons/acre		
18	Medium Sediment Risk: >=15 and <75 tons/acre		
19	High Sediment Risk: >= 75 tons/acre		
20			

Receiving Water (RW) Risk Factor Worksheet	Entry	Score
A. Watershed Characteristics	**yes/no**	
A.1. Does the disturbed area discharge (either directly or indirectly) to a **303(d)-listed waterbody impaired by sediment** (For help with impaired waterbodies please visit the link below) or has a **USEPA approved TMDL implementation plan for sediment**?:	**Yes**	**High**
http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml		
OR		
A.2. Does the disturbed area discharge to a waterbody with designated beneficial uses of SPAWN & COLD & MIGRATORY? (For help please review the appropriate Regional Board Basin Plan)		
http://www.waterboards.ca.gov/waterboards_map.shtml		

Combined Risk Level Matrix



Project Sediment Risk:	**Medium**
Project RW Risk:	**High**
Project Combined Risk:	**Level 2**