Preliminary Stormwater Control Plan for Regulated Projects For

Kortum Ranch Subdivision

500 Kortum Canyon Road Calistoga, CA APN 011-290-007, 038, 039, 011-310-023

> JN 21105 July 10th, 2023

Prepared For:
Kortum Ranch, LLC
500 Kortum Canyon Road
Calistoga, CA
inot@kortumranch.com
(707) 339-6559

PRELIMINARY

Timothy L. Schram, RCE 67890 My license expires 6/31/2025

Prepared by:



1220 N. Dutton Ave., Santa Rosa, CA 95401 P. (707) 541-2300 F. (707) 541-2301

Website: www.adobeinc.com

Prepared By: Df
Checked By:

Table of Contents

I.	Project Data Form1
II.	Project Setting
	b. Existing Site Features and Conditions
	c. Opportunities and Constraints for Stormwater Control
III.	Low Impact Development Design Strategies2
	a. Optimization of Site Layout
IV.	Documentation of Drainage Design2
	a. Drainage Management Area Descriptions
	b. Areas Draining to Bioretention Facilities
v.	Source Control Measures
VI.	Stormwater Facility Maintenance
VII.	Construction Checklist4
VIII.	Certifications4
	Appendices
Appe	ndix A: Vicinity Map5
Appe	ndix B: Stormwater Control Plan & BMP Typical Detail6
Appei	ndix C: Soil Analysis7

Stormwater Control Plan for Regulated Project For Kortum Ranch Subdivision 500 Kortum Canyon Rd, Calistoga, California

I. Project Data Form

Project Name	Kortum Ranch Subdivision	
Application Submittal Date		
Project Location	500 Kortum Canyon Rd, Calistoga,	
-	CA	
Project Phase No.	N/A	
Project Type and Description	Preliminary Regulated Project	
Total Project Site Area 30.75 acres		
Total New and Replaced Impervious Area	43,430 SF (1.00 acres)	
Total Pre-Project Impervious Surface Area	N/A	
Total Post-Project Impervious Surface Area	43,430 SF (1.00 acres)	

II. Project Setting

A. Nature and Purpose of the Project

The Kortum Ranch Subdivision is located at 500 Kortum Canyon Road, in Calistoga southwest of Highway 128. The project proposes to subdivide 3-lots into a 22-lot subdivision for residential use. The tentative map is predicated on the resultant parcels being approved through a lot line adjustment between APN 011-310-023 & 011-290-007.

Zoning Table

APN#	Proposed	General Plan
011-310-023	RR-H	RR-H
011-290-007	RR-H	RR-H
011-290-038	RR-H	RR-H
011-290-039	RR-H	RR-H

RR-H = Rural Residential - Hillside

B. Existing Site Features and Conditions

The site previously had multiple residences, stockpiles, defunct car storage, construction material storage, and various other unpermitted activities. The Kortum Ranch, LLC has cleaned and cleared all previous structures, cars, and construction material in the past year. There are currently gravel access roads and building pads that will be utilized in the proposed improved subdivision. Within the site also exist several man-made check dams (to remain) along the major flow paths of Kortum Canyon Road and Terrace Drive.

The site is on a northerly facing hillside above the City of Calistoga with gentle to steep slopes ranging throughout the site. In areas where there are no proposed improvements existing slopes exceed 50%. The entire site historically drains to the north toward Foothill Blvd. (Highway 128). Several discharge points are observed through site topography, with

three distinctive major discharge points being of concern; the first outfall being into an existing ~224' long roadside swale along the northerly end of Kortum Canyon Road, that abuts Foothill Blvd, outfalling into an existing 36" culvert under Foothill Blvd; the second being a subtle valley south of APN's 011-310-027, 011-300-020, and 011-300-024 with a large percentage of runoff flowing to those respective parcels, this will be mitigated through the inclusion of a new bioretention site directly above dissipating such flows; the third discharge point flows from an existing 30" stromdrain with an unknown outfall on either Terrace Drive or Foothill Blvd, further site investigation is necessary. There are no blue line streams on the property.

The soil types in the project area are Forward Silt Loam (140), Hydrologic Soil Type C, see **Appendix C**.

C. Opportunities and Constraints for Stormwater Control

Bioretention facilities have the ability to be incorporated into the early stages of design and will more easily be integrated into the existing aesthetics. Areas shown and discussed in this report are for potential future development, final design and location of the bioretention facilities will be determined as these parcels are being developed.

As the future buildout is TBD, an analysis of the proposed lots and their potential footprint has been implied. In order to produce a feasible square footage requirement for individual lot bioretention facilities we assumed 60% of the implied buildable area is to be impervious, thereafter, 4% of that 60% impervious area square footage has been designated as the preliminary required bioretention footprint, as to incorporate within future site design. See **Table 1. Approximate Bioretention Area Sizing**

III. Low Impact Development Design Strategies

A. Optimization of Site Layout

Proposed improvements will be placed as close to existing grade as possible to minimize total site grading and preserve existing vegetation to the maximum extent practicable. The depth for each bioretention facility is shown on the Stormwater Control Plan Exhibit, as well as the Preliminary Grading Plan.

Documentation of Drainage Design

A. Description of Drainage Management Areas

DMA-1 totaling 21,690 SF drains to IMP-1 via roof down spouts. IMP-1 has a total area of 880 SF.

DMA-2 totaling 6,825 SF drains to IMP-2 via overland flow. IMP-2 has a total area of 340 SF.

DMA-3 totaling 16,820 SF drains to IMP-3 via overland flow. IMP-3 has a total area of 645 SF.

*See Table 1. Approximate Bioretention Area Sizing for individual lot potential requirements

B. Areas Draining to Bioretention Facilities

Bioretention

Sizing: IMP-1

		Post- Project	Runoff	Runoff Area x	Facility Name		
DMA Name	Area (SF) ¹	Surface Type	Factor	Runoff Factor Bioretention Facility		ility	
	20,810.00	Roof/ Paving	1.0	20,810.00) C .	D 1
DMA-	-	Landscape Areas	0.1	-	Sizing Factor	Minimum Facility Size (SF) ¹	Proposed Facility Size (SF) ¹
	-	Permeable Pavers	0.2	-		Size (Sr)	Size (SF)
Total >				20,810.00	0.04	832	880

Sized Correctly =	TRUE
Area Oversized (SF)	
=	48

Bioretention

Sizing: IMP-2

	Sizing.	11V11 -2					
		Post- Project	Runoff Factor	Area x Runoff Factor	Facility Name		
DMA Name	Area (SF) ¹	Surface Type				Bioretention F	acility
		Roof/					
	6,485.00	Paving	1.0	6,485.00		Minimum	Duamagad
DMA-		Landscape			Sizing		Proposed Facility Size (SF) ¹
2	-	Areas	0.1	-	Factor	(SF) ¹	
		Permeable				(51)	(51')
	-	Pavers	0.2	-			
Total							
>				6485	0.04	259	340

Sized Correctly =	TRUE
Area Oversized (SF)	
=	81

Bioretention

Sizing: IMP-3

		Post- Project	Runoff Area x	Facility Name Bioretention Facility			
DMA Name	Area (SF) ¹	Surface Type	Factor Runoff Factor				
DMA-3	16,135.00	Roof/ Paving Landscape Areas Permeable Pavers	1.00 0.10 0.20	16,135.00	Sizing Factor	Minimum Facility Size (SF) ¹	Proposed Facility Size (SF) ¹
Total >				16135	0.04	645	685

Sized Correctly =	TRUE
Aron Oversized (SF) -	40
Area Oversized (SF) =	40

<u>Table 1. ApproximateBioretention Area Sizing</u>
Kortum Ranch Road Calistoga, California

7/3/2023 Date:

Lot Number	Potential Build-Out (SF)	Acres	Impervious Area 60% of Build-Out (SF)	Bioretention = 4% of Imp. (SF)
Lot 1	13,601	0.31	8,161	326
Lot 2	21,533	0.49	12,920	517
Lot 3	10,035	0.23	6,021	241
Lot 4	16,005	0.37	9,603	384
Lot 5	9,290	0.21	5,574	223
Lot 6	5,387	0.12	3,232	129
Lot 7	10,430	0.24	6,258	250
Lot 8	7,172	0.16	4,303	172
Lot 9	6,612	0.15	3,967	159
Lot 10	6,080	0.14	3,648	146
Lot 11	10,563	0.24	6,338	254
Lot 12	10,043	0.23	6,026	241
Lot 13	11,535	0.26	6,921	277
Lot 14	24,630	0.57	14,778	591
Lot 15	34,236	0.79	20,542	822
Lot 16	23,253	0.53	13,952	558
Lot 17	17,196	0.39	10,318	413
Lot 18	11,945	0.27	7,167	287
Lot 19	10,300	0.24	6,180	247
Lot 20	8,792	0.20	5,275	211
Lot 21	11,628	0.27	6,977	279
Lot 22	10,380	0.24	6,228	249
Total	280,266	6.67	174,388	6,976

IV. Stormwater Facility Maintenance

The applicant (owner) will be required to follow the recorded Operation and Maintenance Plan and to accept responsibility for interim operation and maintenance of stormwater treatment and flow-control facilities. An Operation and Maintenance Plan will be provided with the Final Stormwater Control Plan accompanying the Subdivision Construction Documents.

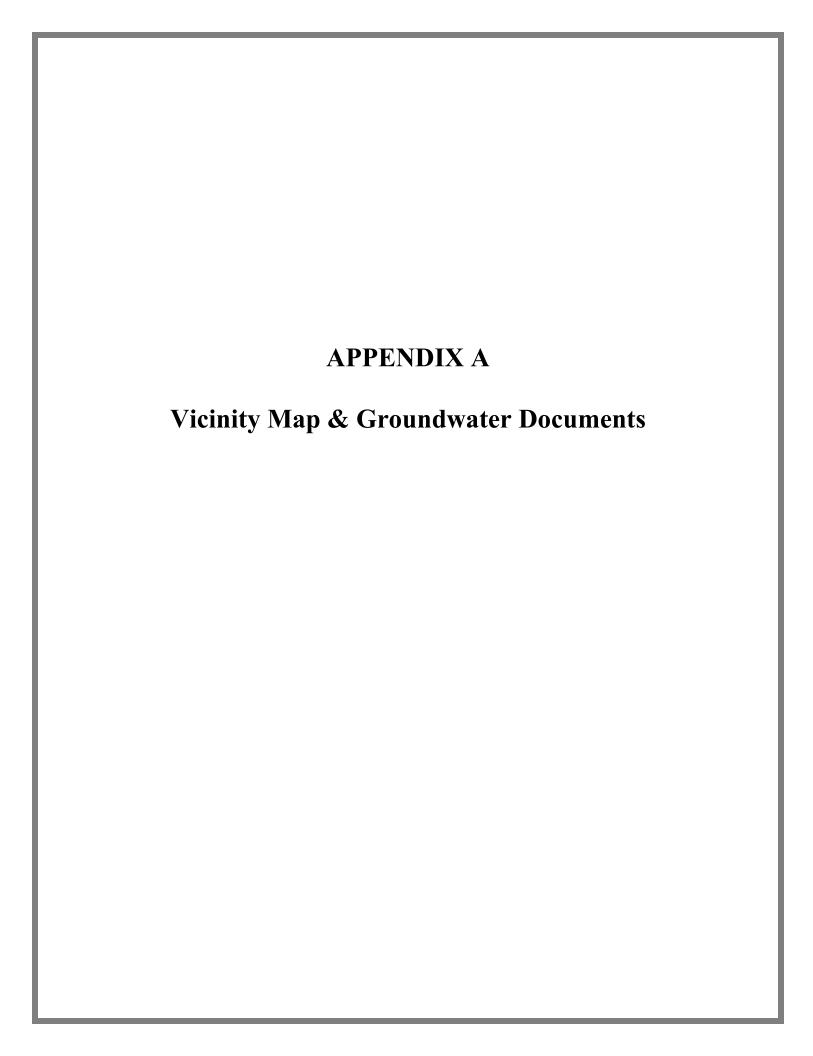
Some maintenance requirements for the landscape areas and Bioretention facilities will include general cleanup to remove any trash and debris that has collected, prune plants to maintain the design surface elevation, control weeds using manual methods or natural herbicides, add mulch as needed.

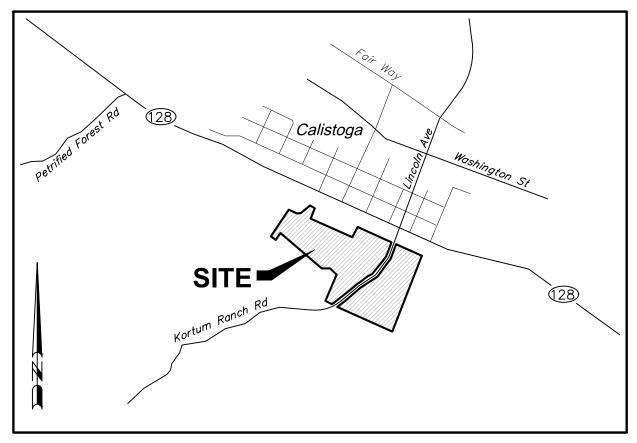
V. Construction Checklist

Construction and BMP details have been provided on the Preliminary Improvement Plans and the Stormwater Control Plan, see **Appendix B.**

VI. 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 dated January 2019.





VICINITY MAP

NOT TO SCALE

VICINITY MAP

KORTUM RANCH LLC 1531 Foothill Blvd, Calistoga, CA APN 011-290-038, 039 & 011-290-007 & 011-310-009, 023

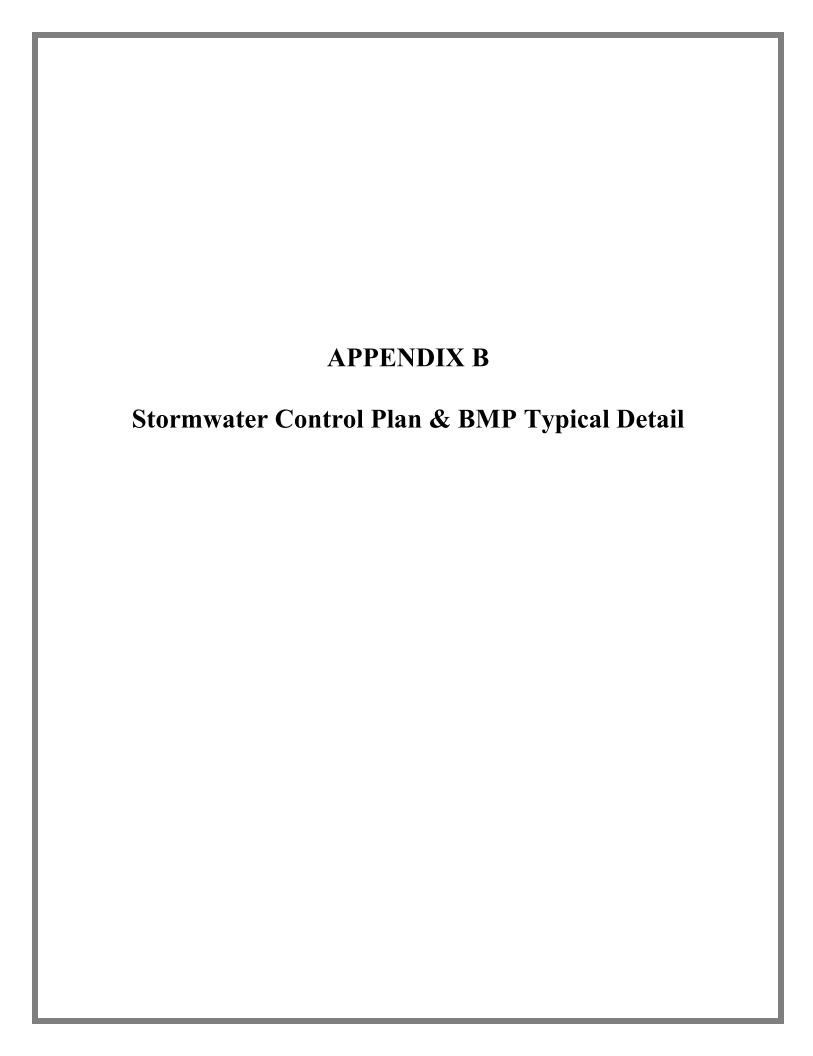


adobe associates, inc. civil engineering I land surveying I wastewater

1220 N. Dutton Ave., Santa Rosa, CA 95401 P. (707) 541-2300 F. (707) 541-2301 Website: www.adobeinc.com

"A Service You Can Count On!"

File:T:\2021 PROJECTS\21105\DWG\ADOBE-DESIGN\TENTATIVE MAP\DRANAGE\21105-STORM WATER CONTROL PLAN.DWG,4/13/2022 12:55:18 PM.Zachary Ruiz



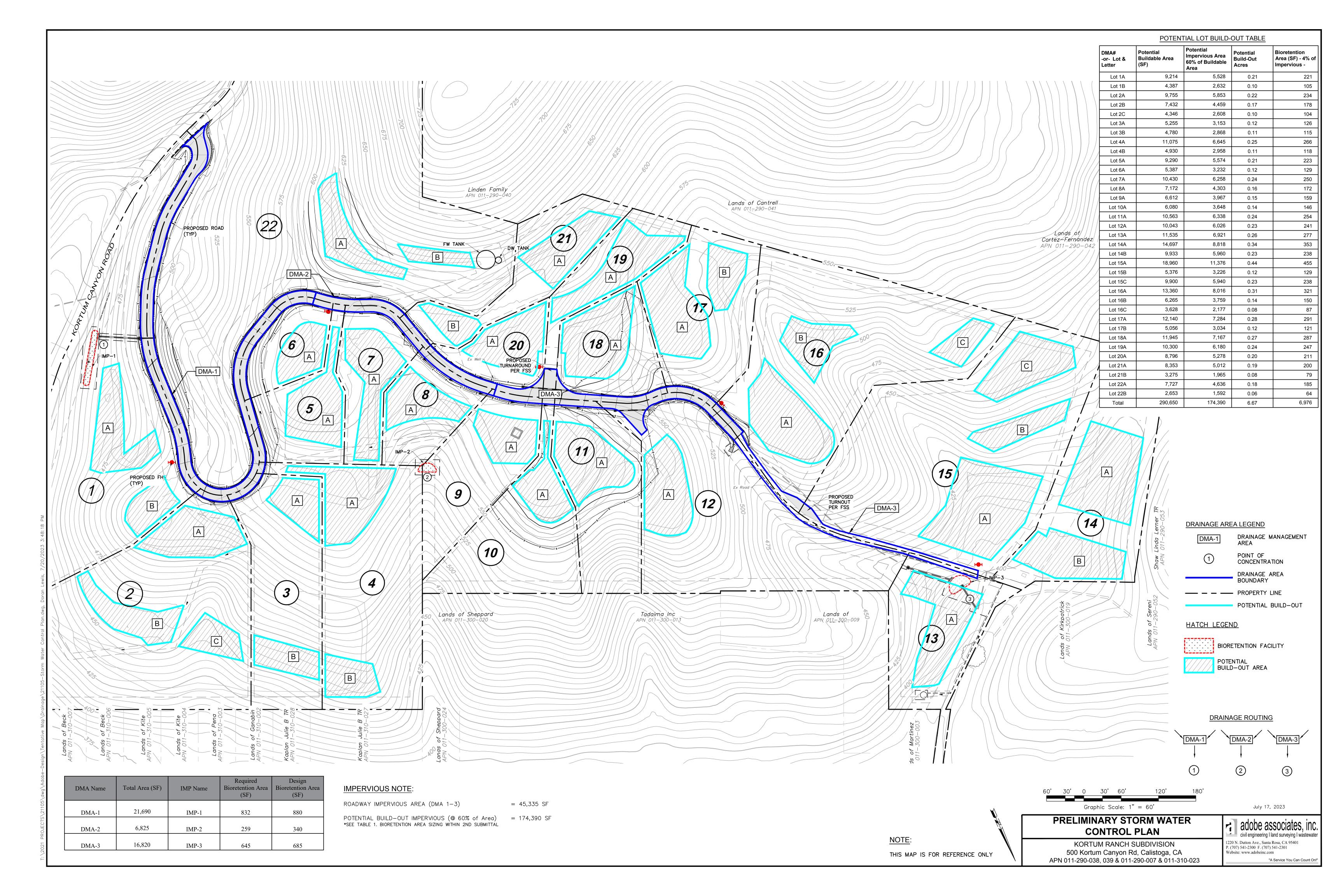
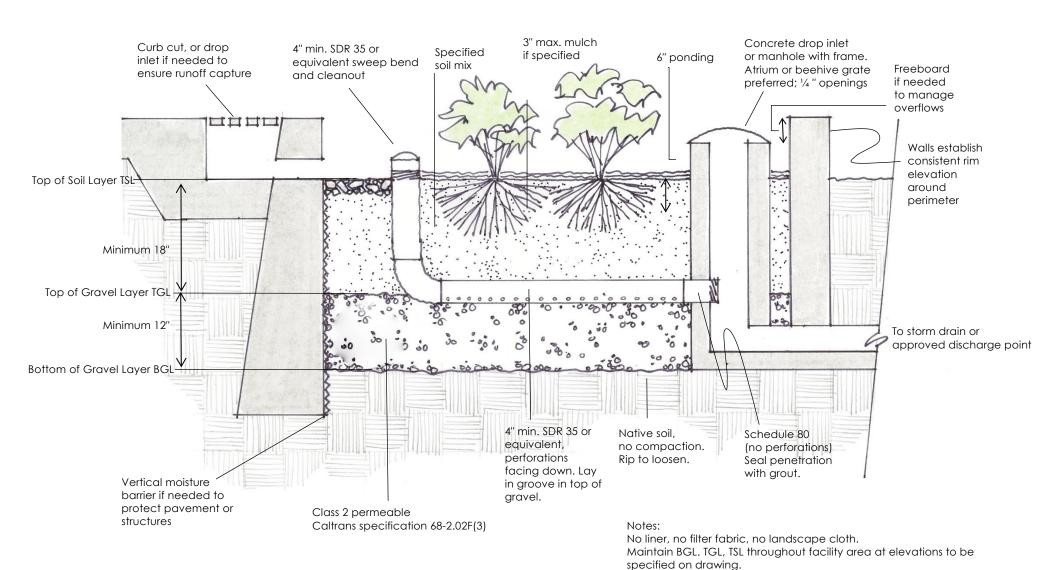
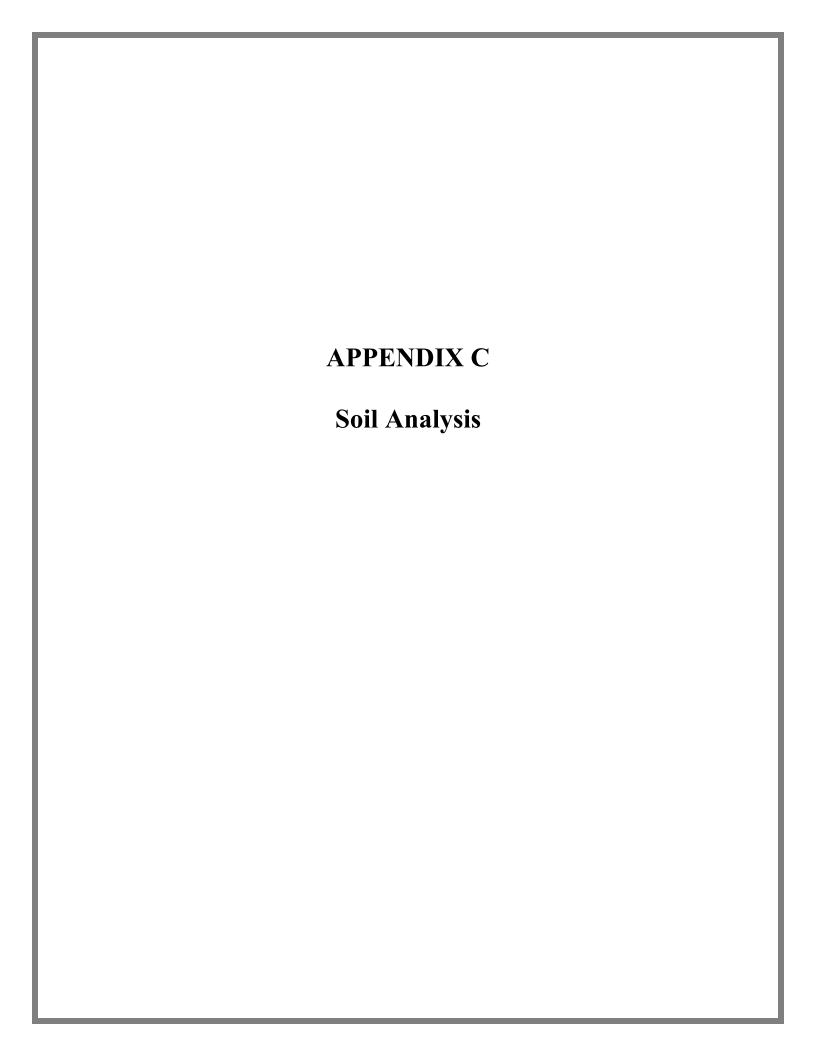


Figure 4-5. Bioretention Facility

Cross-section Not to Scale



Elevation of perforated pipe underdrain is atop gravel layer. See text for soil mix specification, planting and irrigation guidance.





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



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.



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

(o)

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

å

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

00

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 14, Sep 9, 2021

Soil map units are labeled (as space allows) for map scales 1:50.000 or larger.

Date(s) aerial images were photographed: Jul 2, 2019—Jul 5, 2019

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
103	Bale loam, 0 to 2 percent slopes	4.4	5.3%
105	Bale clay loam, 2 to 5 percent slopes	2.6	3.2%
140	Forward silt loam, 12 to 57 percent slopes, MLRA 15	73.6	89.7%
141	Forward-Kidd complex, 11 to 60 percent slopes, MLRA 15	1.4	1.8%
Totals for Area of Interest	1	82.1	100.0%

Napa County, California

103—Bale loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hdk3

Elevation: 20 to 400 feet

Mean annual precipitation: 25 to 35 inches Mean annual air temperature: 57 to 61 degrees F

Frost-free period: 220 to 270 days

Farmland classification: Prime farmland if irrigated

Map Unit Composition

Bale and similar soils: 85 percent Minor components: 3 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bale

Setting

Landform: Alluvial fans, flood plains

Landform position (two-dimensional): Footslope, toeslope Landform position (three-dimensional): Base slope, talf

Down-slope shape: Linear Across-slope shape: Linear

Parent material: Alluvium derived from rhyolite and/or alluvium derived from

igneous rock

Typical profile

H1 - 0 to 24 inches: loam

H2 - 24 to 60 inches: stratified gravelly sandy loam to loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches Drainage class: Somewhat poorly drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high

(0.57 to 1.98 in/hr)

Depth to water table: About 48 to 72 inches

Frequency of flooding: Rare Frequency of ponding: None

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm) Available water supply, 0 to 60 inches: Moderate (about 7.2 inches)

Interpretive groups

Land capability classification (irrigated): 2w Land capability classification (nonirrigated): 3w

Hydrologic Soil Group: B

Ecological site: R014XG918CA - Loamy Fan

Hydric soil rating: No

Minor Components

Clear lake

Percent of map unit: 3 percent

Landform: Alluvial fans Hydric soil rating: Yes

105—Bale clay loam, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: hdk5

Elevation: 20 to 400 feet

Mean annual precipitation: 25 to 35 inches Mean annual air temperature: 57 to 61 degrees F

Frost-free period: 220 to 270 days

Farmland classification: Prime farmland if irrigated

Map Unit Composition

Bale and similar soils: 85 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bale

Setting

Landform: Flood plains, terraces

Landform position (two-dimensional): Toeslope, footslope

Landform position (three-dimensional): Tread, talf

Down-slope shape: Linear Across-slope shape: Linear

Parent material: Alluvium derived from rhyolite and/or alluvium derived from

igneous rock

Typical profile

H1 - 0 to 24 inches: clay loam

H2 - 24 to 60 inches: stratified gravelly sandy loam to loam

Properties and qualities

Slope: 2 to 5 percent

Depth to restrictive feature: More than 80 inches Drainage class: Somewhat poorly drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high

(0.57 to 1.98 in/hr)

Depth to water table: About 48 to 72 inches

Frequency of flooding: Rare Frequency of ponding: None

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm) Available water supply, 0 to 60 inches: Moderate (about 7.2 inches)

Interpretive groups

Land capability classification (irrigated): 2w Land capability classification (nonirrigated): 3w

Hydrologic Soil Group: B

Ecological site: R014XG907CA - Loamy Bottom

Hydric soil rating: No

140—Forward silt loam, 12 to 57 percent slopes, MLRA 15

Map Unit Setting

National map unit symbol: 2xc9y Elevation: 310 to 2,370 feet

Mean annual precipitation: 33 to 56 inches Mean annual air temperature: 57 to 61 degrees F

Frost-free period: 260 to 338 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: 12 to 57 percent

Depth to restrictive feature: 20 to 40 inches to paralithic bedrock

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 Frequency of ponding: None

Maximum salinity: Nonsaline (0.2 to 0.5 mmhos/cm)

Sodium adsorption ratio, maximum: 4.0

Available water supply, 0 to 60 inches: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): 7e Land capability classification (nonirrigated): 7e

Custom Soil Resource Report

Hydrologic Soil Group: C

Ecological site: R015XY009CA - Hills 20-40"ppt

Hydric soil rating: No

Minor Components

Boomer

Percent of map unit: 5 percent

Aiken

Percent of map unit: 5 percent

Kidd

Percent of map unit: 3 percent

Sobrante

Percent of map unit: 2 percent

141—Forward-Kidd complex, 11 to 60 percent slopes, MLRA 15

Map Unit Setting

National map unit symbol: 2y0fr Elevation: 240 to 2,410 feet

Mean annual precipitation: 27 to 49 inches
Mean annual air temperature: 57 to 61 degrees F

Frost-free period: 262 to 343 days

Farmland classification: Not prime farmland

Map Unit Composition

Forward and similar soils: 50 percent Kidd and similar soils: 40 percent Minor components: 10 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: Concave Across-slope shape: Concave

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

Custom Soil Resource Report

Properties and qualities

Slope: 11 to 60 percent

Depth to restrictive feature: 20 to 40 inches to paralithic bedrock

Drainage class: Well drained Runoff class: Medium

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 Frequency of ponding: None

Maximum salinity: Nonsaline (0.2 to 0.5 mmhos/cm)

Sodium adsorption ratio, maximum: 4.0

Available water supply, 0 to 60 inches: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: C

Ecological site: R015XD130CA - STEEP SHALLOW LOAMY UPLANDS

Hydric soil rating: No

Description of Kidd

Setting

Landform: Hillslopes

Landform position (two-dimensional): Backslope Landform position (three-dimensional): Side slope

Down-slope shape: Convex Across-slope shape: Convex

Parent material: Residuum weathered from rhyolite

Typical profile

A - 0 to 4 inches: gravelly loam Bw1 - 4 to 10 inches: loam Bw2 - 10 to 14 inches: loam R - 14 to 25 inches: bedrock

Properties and qualities

Slope: 11 to 60 percent

Depth to restrictive feature: 5 to 20 inches to lithic bedrock

Drainage class: Well drained Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to

moderately high (0.14 to 1.42 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Maximum salinity: Nonsaline (0.2 to 0.5 mmhos/cm)

Sodium adsorption ratio, maximum: 2.0

Available water supply, 0 to 60 inches: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: D

Ecological site: R015XD131CA - VERY SHALLOW

Custom Soil Resource Report

Hydric soil rating: No

Minor Components

Aiken

Percent of map unit: 5 percent Hydric soil rating: No

Toomes

Percent of map unit: 3 percent

Rock outcrop

Percent of map unit: 2 percent