STORMWATER CONTROL PLAN FOR A REGULATED PROJECT

ZINFANDEL SUBDIVISION
1583 EL CENTRO AVENUE
NAPA, CALIFORNIA 94558

Prepared for:

Trinity Project, LLC

Project #4117017.0

September 15, 2023

1515 Fourth Street Napa, CA 94559 www.rsacivil.com 707.252.3301 v 707.252.4966 f

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TABLES

FIGURES

ATTACHMENTS

I. Project Data

Table 1. Project Data Form

Project Name/Number	Zinfandel Subdivision / PL19-0016 / 4117017.0
Application Submittal Date	
Project Location	1583 El Centro Avenue Napa, California 94558 APN: Pending, Adjusted Parcel 2 per 2019-0016141
Project Phase No.	Not Applicable
Project Type and Description	Construction of a 51-lot single family residential subdivision including streets, driveways, utilities bioretention facilities and detention ponds.
Total Project Site Area	9.7 acres
Total New and Replaced Impervious Surface Area	199,285 sq. ft (including El Centro Avenue half street frontage & Lassen Street frontage)
Total Pre-Project Impervious Surface Area	26,197 sq. ft (including El Centro Avenue half street frontage & Lassen Street frontage)
Total Post-Project Impervious Surface Area	199,285 sq. ft (including El Centro Avenue half street frontage and Lassen Street frontage)

II. Setting

II.A. Project Location and Description

This project involves the demolition of an existing residential house and barn with asphalt driveway. The site will be developed to a 51-lot single family residential subdivision with public roads. This development is located at 1583 El Centro Avenue in Napa, California as shown in Figure 1 below.

Figure 1. Vicinity Map

The proposed use is consistent with the current RS 4 zoning. The project will include the construction of 51 residential houses, connecting public roads and installation of new public utilities along with stormwater quality control bioretention and detention facilities.

Refer to Attachment 2 for the overall scope of the project.

II.B. Existing Site Features and Conditions

The project site is irregular in shape and is generally flat. The site is currently used as vineyards with a residential house that fronts El Centro Avenue. The site is bounded by El Centro Avenue to the north and residential developments with public roads to the east, west and south. See Figure 2 below for existing site conditions.

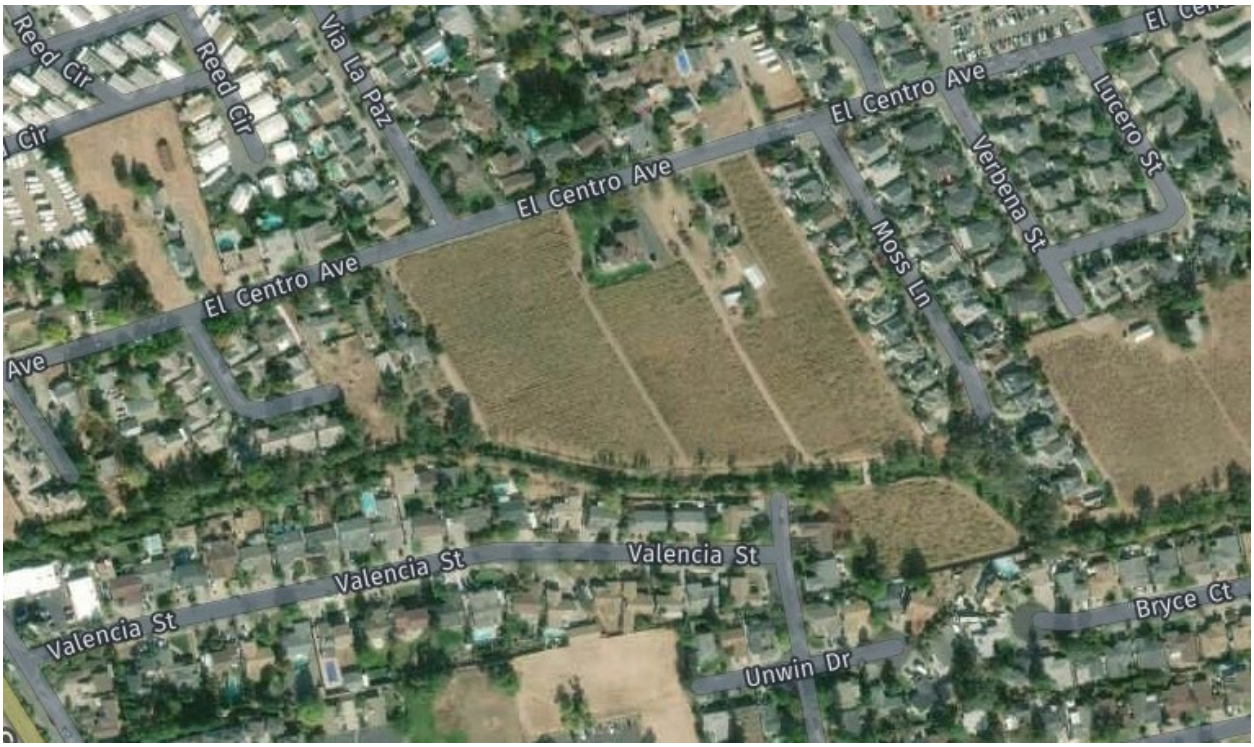


Figure 2. Existing Site Conditions

Mapping by the U.S. Conservation Service has classified soil over this project area as Clear Lake Clay (116) which is of the Hydraulic Soil Group D and Haire Loam (145) which is of the Hydraulic Soil Group D. Refer to Attachment 1 for Soils Map. Natural drainage from these parcels generally flows towards Salvador Channel. 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 this site are the availability of landscaped areas in the front and rear yards. Landscape areas on the parcels along Salvador Channel will be used as self-treating management areas since these

parcels will be predominantly pervious areas. Bioretention facilities will be installed to treat stormwater runoff prior to discharge from the site. Runoff will be conveyed to the bioretention facilities from roof downspouts and surface flows from the streets. Once in the bioretention basin, runoff will be treated via infiltration together with the pollutant retention capabilities of the plants in the facilities. These bioretention facilities will also be used for detention such that the proposed post-developed flow discharge from the development will be maintained at, or below pre-developed levels that will outfall to Salvador Channel. See Attachment 2 for locations of bioretention facilities.

Constraints will be the excavation of approximately 5,000 CY terrace along Salvador Channel to widen the channel laterally to mitigate development fill in the flood plain. In order to reduce the flood hazard to the development and other neighbors downstream, vegetation and native trees will be planted along this terrace to help prevent the land from eroding downstream. Additional channel restoration mitigation measures and plans approved by the City will be implemented to help reduce potential flood hazard.

III. Low Impact Development Design Strategies

III.A. Optimization of Site Layout

1. Limitation of development envelope
   The development of the houses will occur within the building setback lines per Section 17.08.030 of the City of Napa Municipal Code.
2. Preservation of natural drainage features
   Natural drainage consists of sheet flow over the ground surface that concentrates in man-made surface drainage elements such as ditches, gutters and onsite storm drain pipes. See constraints on Section II.C above.
3. Setbacks from creeks, wetlands, and riparian habitats
   Riparian setback from Salvador Channel to the maximum degree possible and at minimum as required by local ordinances.
4. Minimization of imperviousness
   Landscaping will be used in the front and rear yards. Impervious areas will be minimized 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. Grading and storm drain locations have been designed to direct runoff to bioretention facilities.

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.

III.D. Stormwater Control Measures

Runoff from the project site, including roof and paved areas, will be routed to four bioretention facilities (see Attachment 2). BRF #1 and #2 will also function as stormwater detention basins. All facilities are designed and will be constructed to the criteria in the BASMAA Post-Construction Manual (January 2019), including the following features (see Figure 3):

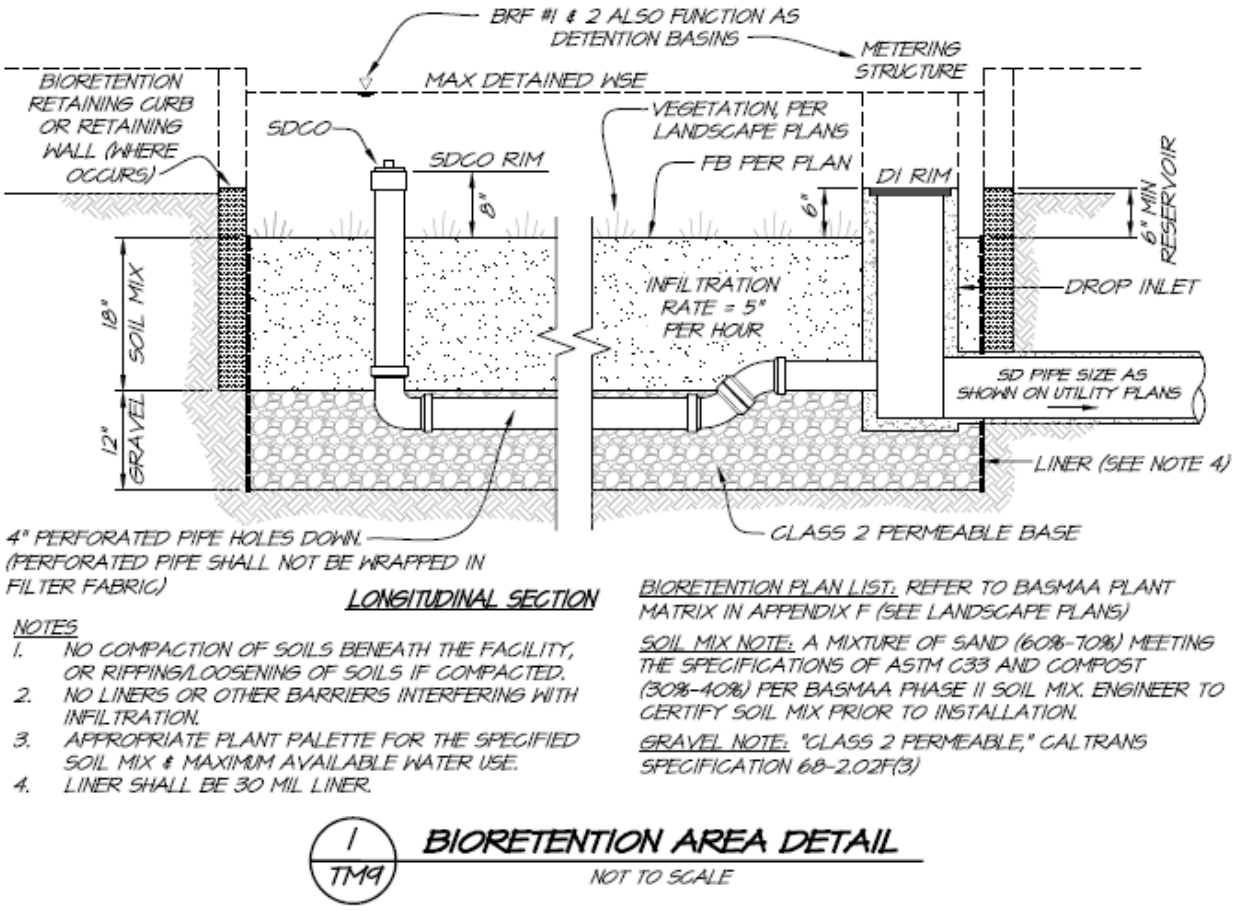


Figure 3. Bioretention Cross Section

- Surrounded by a concrete curb. Where adjacent to pavement, curbs will be thickened and an impermeable vertical cutoff wall will be included.
- Each layer built flat, level, and to elevations specified in the plans:
  - Bottom of Gravel Layer (BGL)
  - Top of Gravel Layer (TGL)
  - Top of Soil Layer (TSL)
  - Overflow Grate
  - Facility Rim
- 12 inches of Class 2 permeable, Caltrans specification 68-2.02F (3).

- 18 inches sand/compost mix meeting BASMAA specifications.
- 4-inch diameter PVC SDR 35 perforated pipe underdrain, installed with the invert at the top of the Class 2 permeable layer with holes facing down, and connected to the overflow structure at that same elevation.
- 6-inch-deep reservoir between top of soil elevation and overflow grate elevation.
- Concrete drop inlet with frame overflow structure, with grate set to specified elevation, connected to the on-site storm drain system.
- Vertical cutoff walls to protect adjacent pavement.
- Plantings selected for water conservation.
- Irrigation system on a separate zone, with drip emitters and "smart" irrigation controllers.
- Sign identifying the facility as a stormwater treatment facility.

Areas on the site which do not drain to a bioretention facility are the following (see Attachment 2 for reference):

- DMA 5 – The west portion of the private driveway along the Lassen Street frontage, totaling 700 square feet. Grading in this area must conform with existing street elevations. As a result, stormwater runoff from this DMA leaves the site untreated.
- DMA 6 – The southern flood terrace and maintenance path near lots 50-51, totaling 13,216 square feet. This DMA is considered as self-treating area (See Section 4.1 for BASMAA requirements for self-treating areas).
- DMA 7 – The northern flood terrace and access road near lots 2-19, totaling 45,697 square feet. This DMA is considered as self-treating area (See Section 4.1 for BASMAA requirements for self-treating areas).
- DMA 8 – The north portion of Lot 1, totaling 1,445 square feet. This DMA is considered as self-treating area (See Section 4.1 for BASMAA requirements for self-treating areas).
- DMA 9 – The north half street area of El Centro Avenue along Lot 1, totaling 3,734 square feet. Grading in this areas must conform with existing street elevations. As a result, stormwater runoff from this DMA leaves the site untreated.

The bioretention facilities that will collect and treat onsite stormwater will also function as Multi-Benefit Trash Treatment Systems in accordance with the State Water Board standards. They are designed to trap trash particles that are 5-mm and greater for the peak flow rate generated by the 1-year, 1-hour storm event from each drainage management area. The bioretention facilities will provide a 6" ponding reservoir per BASMAA requirements, which is sufficient depth such that the 1-year, 1-hour storm event will not reach the overflow elevations. Thus, all trash is captured at the surface of each bioretention facility. The overflow inlets have a grated lid for larger storm events.

IV. Documentation of Drainage Design

IV.A. Descriptions of Each Drainage Management Areas

IV.A.1. Drainage Management Areas

Table 2. Drainage Management Areas (DMAs) as shown on Attachment 2.

DMA Name	DMA_{perv} (Pervious Area, square feet)	DMA_{imp} (Impervious Area, square feet)	Pervious Pavers Area (square feet)	Total Area (square feet)	Bioretention Facility Name
1	129,479	161,020	--	298,293	BRF #1
2	13,038	13,866	--	27,627	BRF #2
3	8,587	14,637	--	23,876	BRF #3
4	1,713	4,400	--	6,306	BRF #4
5	54	646	--	700	Untreated
6	13,216	0	--	13,216	Self-Treating
7	44,209	1,488	--	45,697	Self-Treating
8	1,445	0	--	1,445	Self-Treating
9	506	3,228	--	3,734	Untreated

IV.A.2. Drainage Management Area Descriptions

DMA 1: Totaling 298,293 square feet, this DMA consists of Lots 2 to 19, 20 to 26, 29 to 46, 49, and portions of Lots 1, 27 to 28, 47, 48, and parcel A. It also includes Clementina Circle, a small portion of street of El Centro Avenue intersecting Clementina Circle along the project frontage. Runoff from the roof will drain out from downspouts to splash boxes that flows towards the street via landscape areas then along the street gutter toward the street catch basins then to a storm drain pipe that outfalls to BRF #1. This bioretention facility has a total treatment area of 7,794 square feet and will also function as a stormwater detention basin.

DMA 2: Totaling 27, 627 square feet, this DMA consists of Lots 50 to 51 and a large portion of the private driveway and parcel C. Runoff from the roof will drain out from downspouts to splash boxes that flows towards the street via landscape areas then along the driveway gutter toward the curb opening inlet adjacent to BRF #2. This bioretention facility has a total treatment area of 723 square feet and will also function as a stormwater detention basin.

DMA 3: Totaling 23,876 square feet, this DMA consists of portions of Lots 28, 47, 48 and APN 036-361-043 together with the half street frontage portion of El Centro Avenue along these areas. Runoff from the roof will drain out from downspouts to splash boxes that flows towards the street via landscape areas then along the street gutter toward the curb opening inlet adjacent to BRF #3. This bioretention facility has a total treatment area of 652 square feet.

DMA 4: Totaling 6,306 square feet, this DMA consists of a portion of Lot 27 together with the half street frontage portion of El Centro Avenue along this area. Runoff from the roof will drain from downspouts to splash boxes that flow toward the street via landscape areas then along the street gutter toward the curb opening inlet adjacent to BRF #4. This bioretention facility has a total treatment area of 193 square feet.

DMA 5: The west portion of the private driveway along the Lassen Street frontage, totaling 700 square feet, a small portion of parcel C. Grading in this area must conform with existing street elevations. As a result, stormwater runoff from this DMA leaves the site untreated.

DMA 6: The southern flood terrace and maintenance path near Lots 50 to 51, totaling 13,216 square feet, a portion of parcel C. This DMA is considered as self-treating area meeting the following BASMAA requirements: 1) There are no impervious areas or very small impervious area (5% or less) relative to the receiving pervious area; and, 2) Slopes are gentle enough to ensure runoff will be absorbed into the vegetation and soil.

DMA 7: The northern flood terrace and access road near Lots 2 to 19, totaling 45,697 square feet. This DMA is considered self-treating area meeting the following BASMAA requirements: 1) There are no impervious areas or very small impervious area (5% or less) relative to the receiving pervious area; and, 2) Slopes are gentle enough to ensure runoff will be absorbed into the vegetation and soil.

DMA 8: The north portion of Lot 1, totaling 1,445 square feet. This DMA is considered self-treating area meeting the following BASMAA requirements: 1) There are no impervious areas or very small impervious area (5% or less) relative to the receiving pervious area; and, 2) Slopes are gentle enough to ensure runoff will be absorbed into the vegetation and soil.

DMA 9: The north half street area of El Centro Avenue along Lot 1, totaling 3,734 square feet. Grading in these areas must conform with existing street elevations. As a result, stormwater runoff from this DMA leaves the site untreated.

IV.B. Tabulation and Sizing Calculations

Refer to Attachment 3 for Provision E.12 Sizing Calculator Spreadsheet.

V. Source Control Measures

V.A. Site activities and potential sources of pollutants

On-site activities that could potentially produce stormwater pollutants include:

- On-site storm drains
- Interior floor drains
- Pest control
- Landscaping
- Refuse areas
- Fire sprinkler test water
- Miscellaneous drain water
- Streets and sidewalks

V.B. Potential Pollutant Sources and Source Control Measures

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

Table 3. Potential Pollutant Sources and Source Control Measures

Potential Sources of Runoff Pollutants	Permanent Source Control BMPs	Operational Source Control BMPs
A. On-site storm drain inlets (unauthorized non-stormwater discharges and accidental spills or leaks)	☐ 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."
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.
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. ☐ 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.	☐ 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.
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.

Potential Sources of Runoff Pollutants	Permanent Source Control BMPs	Operational Source Control BMPs
		☐ 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"
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 rinse water 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.

VI. Stormwater Facility Maintenance

VI.A. Ownership and Responsibility for Maintenance in Perpetuity

Maintenance of stormwater facilities will be the responsibility of the property owner and will be performed by the owner's contractors or employees as part of routine maintenance of buildings, grounds and landscaping. The applicant will review the Post-Construction BMP Maintenance Agreement with the City of Napa regarding the maintenance of the stormwater facilities and commit to execute any necessary agreements prior to completion of construction. 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.

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

The bioretention/detention facilities will be maintained on the following schedule at a minimum. Details of maintenance responsibility and procedures will be included in an Operation and Maintenance Plan to be submitted for approval prior to the completion of construction.

At no time will synthetic pesticides or fertilizers be applied, nor will any soil amendments, other than aged compost mulch or sand/compost mix, be introduced.

Daily: The facilities will be examined for visible trash during regular policing of the site, and trash will be removed.

After Significant Rain Events: A significant rain event is one that produces approximately a half-inch or more rainfall in a 24-hour period. Within 24 hours after each such event, the following will be conducted:

- The surface of the facility will be observed to confirm there is no excessive ponding. All facilities are designed to pond up to a 6" reservoir for stormwater treatment, and BRF #1 & #2 are designed to further detain up to a 24-hour, 100-year rainfall event.
- Inlets will be inspected, and any accumulations of trash or debris will be removed.
- The surface of the mulch layer will be inspected for movement of material. Mulch will be replaced and raked smooth if needed.
- At BRF #1 & #2, the metering structure and orifice will be inspected, and any accumulations of debris or sediment will be removed.

Prior to the Start of the Rainy Season: In September of each year, the facility will be inspected to confirm there is no accumulation of debris that would block flow, and that growth and spread of plantings does not block inlets or the movement of runoff across the surface of the facility. At BRF #1 & #2, the metering structure and orifice will be inspected, and any accumulations of debris or sediment will be removed.

Annual Landscape Maintenance: In December – February of each year, vegetation will be cut back as needed, debris removed, and plants and mulch replaced as needed. The concrete work will be inspected for damage. The elevation of the top of soil and mulch layer will be confirmed to be consistent with the 6-inch reservoir depth.

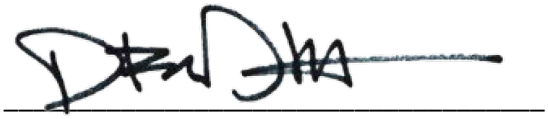
VII. Construction Plan E.12 Checklist

Table 4. Construction Plan E.12 Checklist

Stormwater Control Plan Page #	Source Control or Treatment Control Measure	See Plan
1	Bioretention Facilities	SCP Site Plan in Attachment 2

VIII. 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.



Preparer
Derek Dittman, PE

ATTACHMENT 1

SOIL CLASSIFICATION

122° 19' 2" W

122° 18' 43" W

38° 20' 10" N

38° 20' 0" N

Map Scale: 1:2,120 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 30 60 120 180

Feet
0 100 200 400 600

Map projection: Web Mercator Corner coordinates: 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

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Napa County, California
Survey Area Data: Version 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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
116	Clear Lake clay, drained, 0 to 2 percent slopes, MLRA 14	D	1.2	11.9%
145	Haire loam, 0 to 2 percent slopes	D	9.2	88.1%
Totals for Area of Interest			**10.5**	**100.0%**

Description

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

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

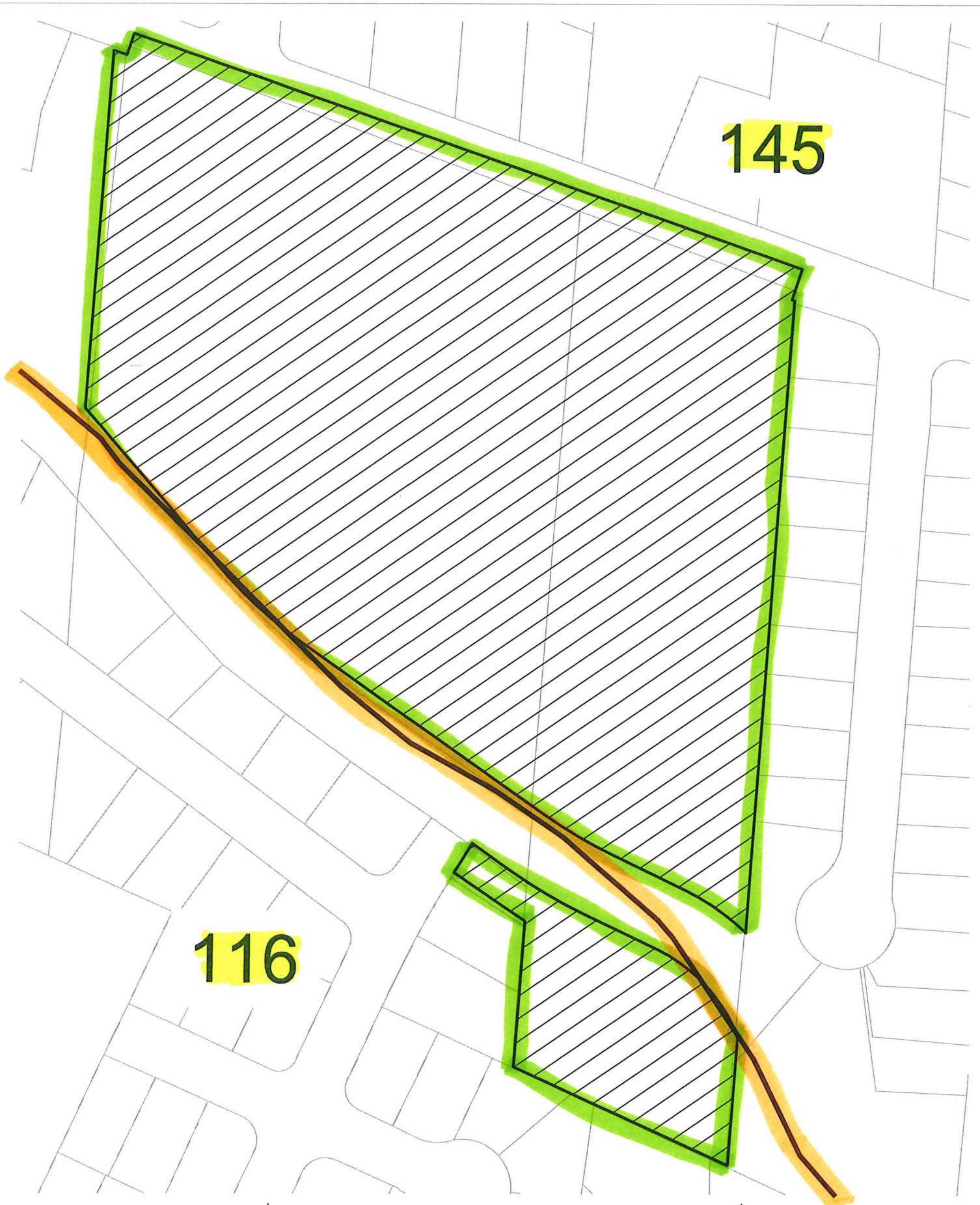
Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

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

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

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

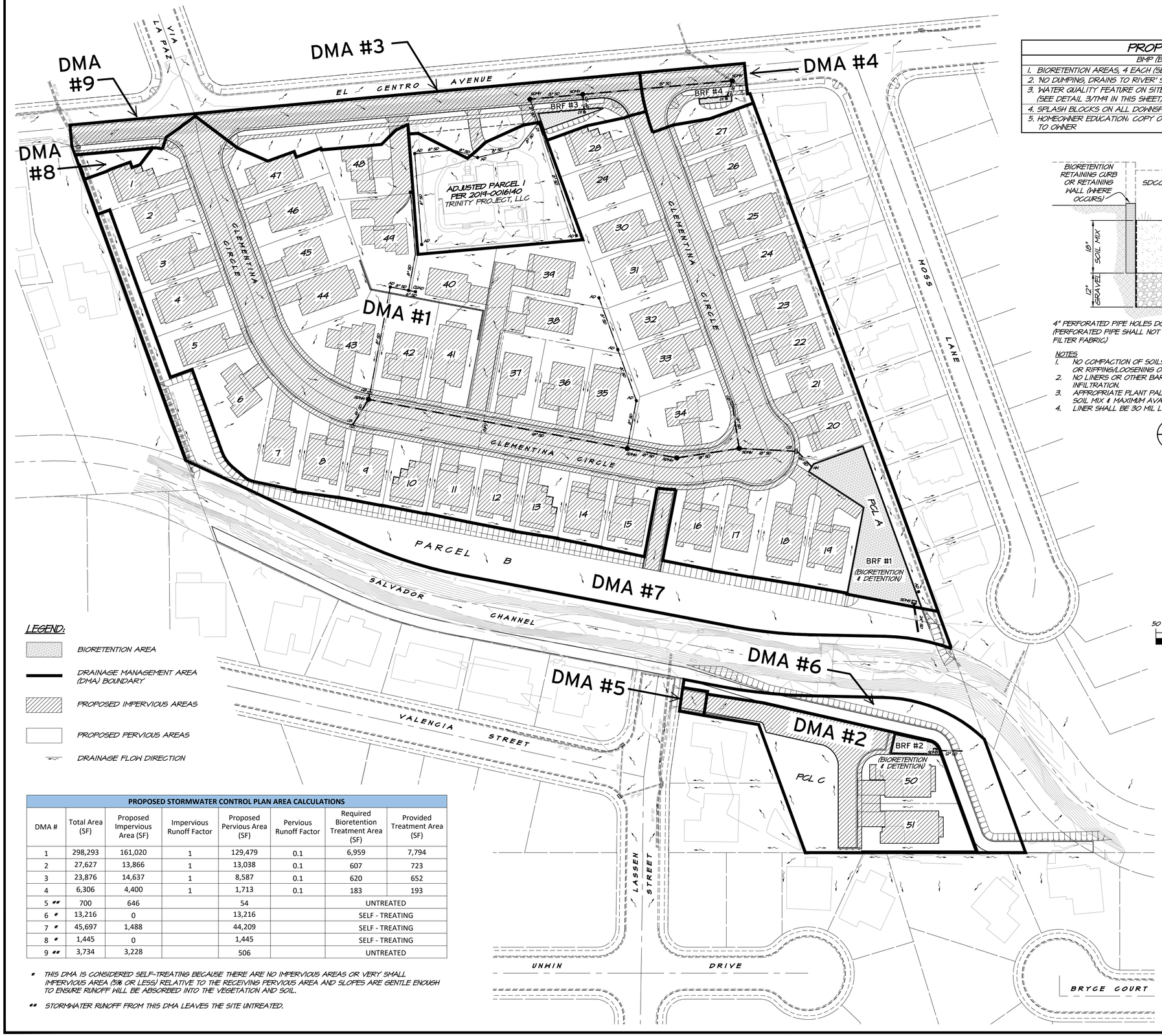
If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.



SCS SOIL CLASSIFICATION EXHIBIT
FOR PRELIMINARY
DETENTION SYSTEM CALCULATION

ATTACHMENT 2

STORMWATER CONTROL PLAN (SHEET TM9)



LEGEND:

- BIORETENTION AREA
- DRAINAGE MANAGEMENT AREA (DMA) BOUNDARY
- PROPOSED IMPERVIOUS AREAS
- PROPOSED PERVIOUS AREAS
- DRAINAGE FLOW DIRECTION

PROPOSED STORMWATER CONTROL PLAN AREA CALCULATIONS

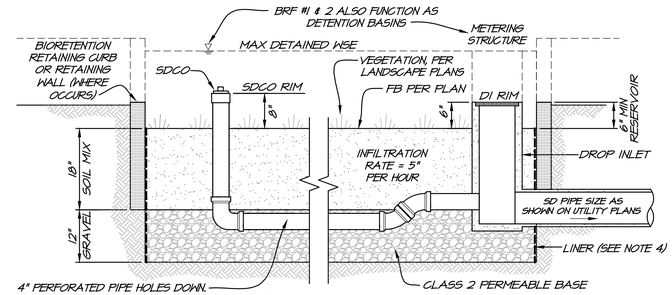
DMA #	Total Area (SF)	Proposed Impervious Area (SF)	Impervious Runoff Factor	Proposed Pervious Area (SF)	Pervious Runoff Factor	Required Bioretention Treatment Area (SF)	Provided Treatment Area (SF)
1	298,293	161,020	1	129,479	0.1	6,959	7,794
2	27,627	13,866	1	13,038	0.1	607	723
3	23,876	14,637	1	8,587	0.1	620	652
4	6,306	4,400	1	1,713	0.1	183	193
5 **	700	646		54		UNTREATED	
6 *	13,216	0		13,216		SELF - TREATING	
7 *	45,697	1,488		44,209		SELF - TREATING	
8 *	1,445	0		1,445		SELF - TREATING	
9 **	3,734	3,228		506		UNTREATED	

* THIS DMA IS CONSIDERED SELF-TREATING BECAUSE THERE ARE NO IMPERVIOUS AREAS OR VERY SMALL IMPERVIOUS AREA (5% OR LESS) RELATIVE TO THE RECEIVING PERVIOUS AREA AND SLOPES ARE GENTLE ENOUGH TO ENSURE RUNOFF WILL BE ABSORBED INTO THE VEGETATION AND SOIL.

** STORMWATER RUNOFF FROM THIS DMA LEAVES THE SITE UNTREATED.

PROPOSED POST CONSTRUCTION BMP's

BMP (BEST MANAGEMENT PRACTICES)	TREATMENT AREA
1. BIORETENTION AREAS, 4 EACH (SEE DETAIL 1/TM9 IN THIS SHEET)	SEE MAP FOR DMA
2. 'NO DUMPING, DRAINS TO RIVER' STAMPING ON ALL INLETS (SEE DETAIL 2/TM9 IN THIS SHEET)	ENTIRE PROJECT
3. 'WATER QUALITY FEATURE ON SITE' STAMPING ON ALL BIORETENTION INLETS (SEE DETAIL 3/TM9 IN THIS SHEET)	ENTIRE PROJECT
4. SPLASH BLOCKS ON ALL DOWNSPOUTS (SEE DETAIL 4/TM9 IN THIS SHEET)	ENTIRE PROJECT
5. HOMEOWNER EDUCATION: COPY OF SCP AND MAINTENANCE AGREEMENT TO BE PROVIDED TO OWNER	ENTIRE PROJECT



LONGITUDINAL SECTION

NOTES:
1. NO COMPACTION OF SOILS BENEATH THE FACILITY, OR RIPPING/LOOSENING OF SOILS IF COMPACTED.
2. NO LINERS OR OTHER BARRIERS INTERFERING WITH INFILTRATION.
3. APPROPRIATE PLANT PALETTE FOR THE SPECIFIED SOIL MIX & MAXIMUM AVAILABLE WATER USE.
4. LINER SHALL BE 30 MIL LINER.

BIORETENTION PLAN LIST: REFER TO BASMAA PLANT MATRIX IN APPENDIX F (SEE LANDSCAPE PLANS)

SOIL MIX NOTE: A MIXTURE OF SAND (60%-70%) MEETING THE SPECIFICATIONS OF ASTM C33 AND COMPOST (30%-40%) PER BASMAA PHASE II SOIL MIX. ENGINEER TO CERTIFY SOIL MIX PRIOR TO INSTALLATION.

GRAVEL NOTE: "CLASS 2 PERMEABLE" CALTRANS SPECIFICATION 68-2.02F(3)

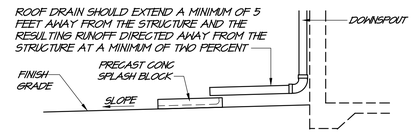
1/TM9 **BIORETENTION AREA DETAIL**
NOT TO SCALE

GRAPHIC SCALE
50 0 50 100
(IN FEET)
1 inch = 50 FT

2/TM9 **DROP INLET MARKER**
NOT TO SCALE

NOTES
1. EACH BIORETENTION FACILITY WITHIN THE CITY LIMITS SHALL BE MARKED WITH A "WATER QUALITY FEATURE ON SITE - DO NOT ALTER OR REMOVE" MARKER.
2. CONTRACTOR IS TO PURCHASE THESE MARKERS FROM THE PUBLIC WORKS DEPARTMENT LOCATED AT 1600 FIRST STREET.

3/TM9 **BIORETENTION FACILITY MARKER**
NOT TO SCALE



4/TM9 **SPLASH BLOCK DETAIL**
NOT TO SCALE

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	DATE	REVISIONS	BY	APPD

RSA+ CONSULTING CIVIL ENGINEERS + SURVEYORS +
1515 FOURTH STREET NAPA, CALIFORNIA 94559
OFFICE (707)252.3301
+ WWW.RSACIVIL.COM +

ZINFANDEL SUBDIVISION
STORMWATER CONTROL PLAN
NAPA
CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER
DEREK MASON DITMAN
No. 90885
Exp. 03.31.2024
CIVIL ENGINEER
STATE OF CALIFORNIA

DATE	JUNE 9, 2023
DRAWN	DEL
DESIGNED	RAY
CHECKED	DMD
JOB NO.	4117017.0

SHEET NO.
TM9
10 OF 11 SHEETS

ATTACHMENT 3

PROVISION E.12 SIZING CALCULATOR SPREADSHEET

Provision E.12 Sizing Calculator

See the instructions and the BASMAA Post-Construction Manual

Step 1: Enter Total Site Area	**Step 2:** List names of all DMAs and square footage of each	**Step 3:** If DMA is "Self-Treating" or "Self-Retaining," **copy** square footage to appropriate column		**Step 4:** If the DMA is "Drains to Self Retaining" or "Drains to Bioretention" enter runoff factor from Table 4-1		**Step 6:** For "Drains to Self-Retaining" DMAs, enter the **name of receiving DMA**	**Step 5:** Slide (move) number from this column to correct column (F or H-Q)							
Total Site Area:	420,894							**BIORETENTION FACILITIES**						
DMA Names	**Square Feet**	**Self-Treating**	**Self-Retaining**	**Runoff Factor**	**Untreated**	**Name of Receiving DMA**	**BRF #1**	**BRF #2**	**BRF #3**	**BRF #4**				
DMA-1_{perv}	129,479			0.1			12,948							
DMA-1_{imp}	161,020			1			161,020							
DMA-2_{perv}	13,038			0.1				1,304						
DMA-2_{imp}	13,866			1				13,866						
DMA-3_{perv}	8,587			0.1					859					
DMA-3_{imp}	14,637			1					14,637					
DMA-4_{perv}	1,713			0.1						171				
DMA-4_{imp}	4,400			1						4,400				
DMA-5_{perv}	54				54									
DMA-5_{imp}	646				646									
DMA-6_{perv}	13,216	13,216												
DMA-6_{imp}	0	0												
DMA-7_{perv}	44,209	44,209												
DMA-7_{imp}	1,488	1,488												
DMA-8_{perv}	1,445	1,445												
DMA-8_{imp}	0	0												
DMA-9_{perv}	506				506									
DMA-9_{imp}	3,228				3,228									
Total DMAs	**411,532**	**60,358**	**0**		**4,434**		**173,968**	**15,170**	**15,496**	**4,571**	**0**	**0**	**0**	**0**
						Sizing Factor	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**
						Minimum Size	**6,959**	**607**	**620**	**183**	**0**	**0**	**0**	**0**
Total Facilities	**9,362**	**Step 7:** Enter Facilty Footprints				**Footprint on Exhibit**	7,794	723	652	193	0	0	0	0
DMAs + Facilities	**420,894**						**OK**	**OK**	**OK**	**OK**	**OK**	**OK**	**OK**	**OK**
	OK	**Step 8:** Iterate sizes of facility footprints and DMAs until all footprints are at least the minimum **AND** DMAs + Facilities equals Total Site Area												
		Step 9: Check to make sure Areas Draining to each Receiving Self-Retaining Area do not exceed maximum 2:1 ratio.												
		Step 10: Check results on this spreadsheet are consistent with what is shown on the SCP Exhibit.												