

Preliminary Stormwater Control Plan  
For a Regulated Project  
Corona Station  
**Petaluma, CA**

November 26, 2018

Lomas Development, LLC

prepared by:

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### Attachments

Stormwater Control Plan Exhibit

## Appendices

This Stormwater Control Plan was prepared using the template dated July 11, 2014.



## I. Project Data

Table 1. Project Data Form

Project Name/Number	Corona Station
Application Submittal Date	November 29, 2018
Project Location	890 North McDowell Boulevard, Petaluma (APN 137-061-19)
Project Phase No.	NA
Project Type and Description	112 high density residential development with 67 small lot single family attached units, and 45 zero lot line single family detached units. Units are 3 story with tuck under parking.
Total Project Site Area (acres)	5.29 acres (excludes 1.27 AC. Remainder Land)
Total New and Replaced Impervious Surface Area	90,008 SF (excludes 1.27 AC. Remainder Land)
Total Pre-Project Impervious Surface Area	184,346 SF (80% assumed) (excludes 1.27 AC. Remainder Land)
Total Post-Project Impervious Surface Area	90,008 SF (excludes 1.27 AC. Remainder Land)

## II. Setting

### II.A. Project Location and Description

The site is located in the northeast section of Petaluma north of highway 101. It is located on the northeast corner of the intersection of North McDowell Boulevard and Corona Road. The site has operated as a commercial yard with several buildings including an office building, a warehouse/garage building, repair sheds, and other ancillary type structures. It continues to function as a truck yard, but all buildings have been recently removed and underlying soil remediated. The General Plan Land Use Designation is Mixed Use and the Zoning is Mixed Use 1B.



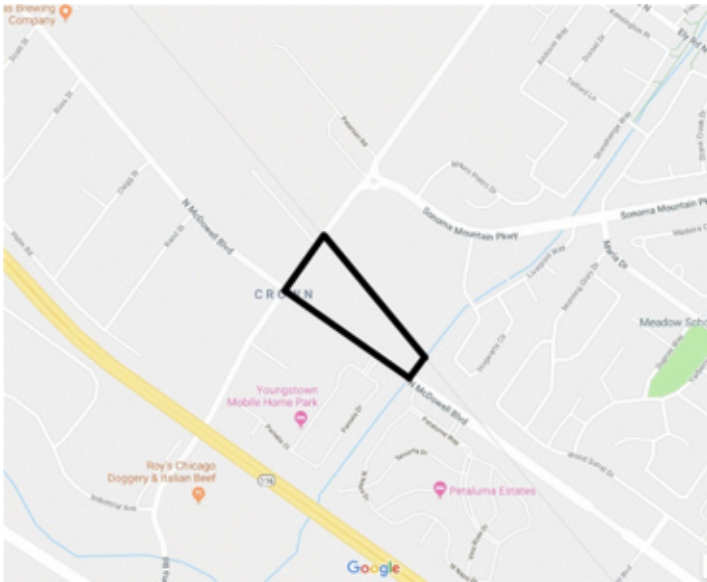


Figure 1: Location of Project

## II.B. Existing Site Features and Conditions

The site is trapezoidal in shape and generally flat. North McDowell Boulevard is located along the south boundary of the site, Corona Road is located along the west boundary, and a railroad right of way and adjacent proposed residential development is located along the north edge of the site, and Corona Creek is located along the short east edge of the site. Drainage from the site flows from the northwest corner on Corona Road toward the southeast corner on McDowell and Corona Creek. The site is mostly covered with compacted soil and aggregate and limited vegetative cover. Drainage sheet flows across the site into redwood boxes along McDowell and over the sidewalk into the adjacent curb and gutter and into the municipal storm drain system.



Figure 2: Existing Site Condition



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

Opportunities include the area along the easterly end of the site adjacent to Corona Creek. This area is lower and includes creek setbacks that can be used for stormwater treatment and serve as a project amenity. Constraints include the high density development designation that results in a large development footprint and limited areas for at grade treatment. The property has an overlay designation for a rail transit station. The western portion of the site have been set aside for development of this use. There is an existing public utility easement along McDowell that stormwater treatment areas will need to avoid. The site has previously been constrained with contaminated soil from prior use, but has since been remediated.

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

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

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

The property is a redevelopment site with compacted aggregate and dirt surfaces covering the majority of the site. These surfaces are considered impervious due to the extensive compaction from the type of use. Existing buildings and ancillary structures covered the remaining portion of the site. There is limited vegetation on the site. The proposed project will be divided into two separate residential areas that include three story attached residential buildings, and three story detached residential buildings. The residential units will include tuck under parking accessed by an alley at the rear of the units. At grade bioretention planters will treat roof and pavement runoff throughout the site, two driveways and adjacent rooftops will rely on linear precast stormfilter systems for treatment and a portion of the east edge of the project will be treated in a larger bioretention facility. Existing street improvements will be left in place with the exception of some sidewalk replacement and reconstructed curbs.

#### **III.A.2. Preservation of natural drainage features**

Corona Creek is located along the east boundary of the property. The creek will be preserved in the current condition.

#### **III.A.3. Setbacks from creeks, wetlands, and riparian habitats**

Corona Creek is located along the east boundary of the property. A 50 foot setback from the top of bank was established and all building structures will be kept out of the setback area. Stormwater treatment will be proposed within the setback area.

#### **III.A.4. Minimization of imperviousness**

The project is a high density residential development. The footprints and associated parking, driveways and walks help minimize imperviousness.

#### **III.A.5. Use of drainage as a design element**

The project incorporates bioretention areas as a drainage element. These facilities will collect runoff from the roofs and pavement surfaces. The runoff will routed into the existing municipal storm drain system located in North McDowell Boulevard.



### III.B. Use of Permeable Pavements

Conventional concrete or asphalt pavement will be used. The majority of the site will be covered by roofs and the buildings include tuck under parking. Permeable pavements are not proposed with this project.

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

The majority of roof runoff and pavement will be dispersed to pervious bioretention areas or landscape areas.

### III.D. Stormwater Control Measures

Runoff from the majority of the impervious areas on site, including roofs and paved areas will be routed to several bioretention facilities to be constructed on site (see Exhibit). The facilities will be designed and constructed to the criteria in the BASMAA Post Construction Manual (July 2014), including the following features:

- Each layer built flat and to the elevations specified in the plans. For areas where longitudinal slope exceeds 1%, check dams will be installed:
  - Bottom of Gravel Layer (BGL)
  - Top of Gravel Layer (TGL)
  - Top of Soil Layer (TSL)
  - Overflow Weir
  - Facility Rim
- 12 inches of Class 2 permeable, Caltrans specification 68-2.02F(3)
- 18 inches sand/compost mix meeting BASMAA specifications
- PVC SDR 35 pipe underdrain, installed with the invert at the top of the Class 2 permeable layer and connected to the overflow structure at that same elevation
- 6-inch-deep reservoir between top of soil elevation and overflow weir elevation
- 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.

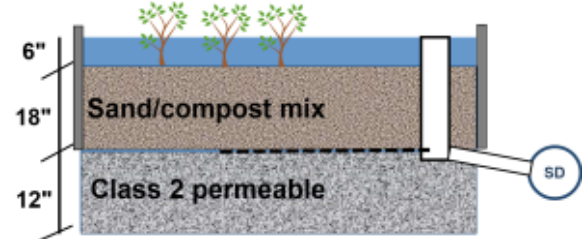


Figure 3. Bioretention Cross-Section (schematic)

Portions of roofs and pavement will be routed to a storm drain and linear precast stormfilter structure.

## IV. Documentation of Drainage Design

### IV.A. Descriptions of Each Drainage Management Area

#### IV.A.1. Drainage Management Areas



Table 2. Drainage management Areas (DMAs) as shown on the exhibit.

DMA Name	Surface Type	Area (square feet)
DMA1	Roof	4224
	Pavement	3544
	Landscape	118
	Treatment	383
DMA2	Roof	4224
	Pavement	1365
	Landscape	1560
	Treatment	626
DMA3	Roof	3168
	Pavement	3584
	Landscape	578
	Treatment	277
DMA4	Roof	2112
	Pavement	638
	Landscape	771
	Treatment	268
DMA5	Roof	2112
	Pavement	3506
	Landscape	591
	Treatment	268
DMA6	Roof	1056
	Pavement	674
	Landscape	1116
	Treatment	307
DMA7	Roof	0



	Pavement	1438
	Landscape	155
	Treatment	94
DMA8	Roof	0
	Pavement	6877
	Landscape	893
	Treatment	428
DMA9	Roof	2112
	Pavement	321
	Landscape	375
	Treatment	125
DMA10	Roof	2112
	Pavement	314
	Landscape	377
	Treatment	145
DMA11	Roof	8448
	Pavement	8980
	Landscape	2121
	Treatment	*LPS
DMA12	Roof	2112
	Pavement	326
	Landscape	370
	Treatment	140
DMA13	Roof	2112
	Pavement	318
	Landscape	374
	Treatment	144



DMA14	Roof	0
	Pavement	6929
	Landscape	1233
	Treatment	288
DMA15	Roof	0
	Pavement	3514
	Landscape	149
	Treatment	280
DMA16	Roof	1408
	Pavement	622
	Landscape	4343
	Treatment	293
DMA17	Roof	2816
	Pavement	2381
	Landscape	79
	Treatment	291
DMA18	Roof	1816
	Pavement	877
	Landscape	880
	Treatment	539
DMA19	Roof	2816
	Pavement	2376
	Landscape	79
	Treatment	291
DMA20	Roof	1523
	Pavement	643
	Landscape	3165



	Treatment	213
DMA21	Roof	3136
	Pavement	2779
	Landscape	767
	Treatment	258
DMA22	Roof	3053
	Pavement	912
	Landscape	1761
	Treatment	581
DMA23	Roof	3166
	Pavement	2773
	Landscape	772
	Treatment	258
DMA24	Roof	2577
	Pavement	7546
	Landscape	2206
	Treatment	648
DMA25	Roof	4801
	Pavement	6658
	Landscape	1927
	Treatment	*LPS
DMA26	Roof	2224
	Pavement	5895
	Landscape	1821
	Treatment	454
DMA27	Roof	11033
	Pavement	14218



	Landscape	11100
	Treatment	1209

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

**DMA 1**, totaling 7768 square feet of roof and pavement area and 501 square feet of landscape and treatment area. DMA 1 drains to the bioretention area identified as BIO 1. Runoff will enter the facility through rain water leaders and curb cuts.

**DMA 2**, totaling 5589 square feet of roof and pavement area and 2186 square feet of landscape and treatment area. DMA 2 drains to the bioretention area identified as BIO 2. Runoff will enter the facility through rain water leaders and curb cuts.

**DMA 3**, totaling 6752 square feet of roof and pavement area and 855 square feet of landscape and treatment area. DMA 3 drains to the bioretention area identified as BIO 3. Runoff will enter the facility through rain water leaders and curb cuts.

**DMA 4**, totaling 2750 square feet of roof and pavement area and 1039 square feet of landscape and treatment area. DMA 4 drains to the bioretention area identified as BIO 4. Runoff will enter the facility through rain water leaders and curb cuts.

**DMA 5**, totaling 5618 square feet of roof and pavement area and 859 square feet of landscape and treatment area. DMA 5 drains to the bioretention area identified as BIO 5. Runoff will enter the facility through rain water leaders and curb cuts.

**DMA 6**, totaling 1730 square feet of roof and pavement area and 1423 square feet of landscape and treatment area. DMA 6 drains to the bioretention area identified as BIO 6. Runoff will enter the facility through rain water leaders and curb cuts.

**DMA 7**, totaling 1438 square feet of pavement area and 249 square feet of landscape and treatment area. DMA 7 drains to the bioretention area identified as BIO 7. Runoff will enter the facility through curb cuts.

**DMA 8**, totaling 6877 square feet of pavement area and 1321 square feet of landscape and treatment area. DMA 8 drains to the bioretention area identified as BIO 8. Runoff will enter the facility through curb cuts.

**DMA 9**, totaling 2433 square feet of roof and pavement area and 500 square feet of landscape and treatment area. DMA 9 drains to the bioretention area identified as BIO 9. Runoff will enter the facility through rain water leaders and curb cuts.

**DMA 10**, totaling 2426 square feet of roof and pavement area and 522 square feet of landscape and treatment area. DMA 10 drains to the bioretention area identified as BIO 10. Runoff will enter the facility through rain water leaders and curb cuts.

**DMA 11**, totaling 17428 square feet of roof and pavement area and 2121 square feet of landscape and treatment area. DMA 11 drains to the linear precast stormfilter identified as BIO 11. Runoff will enter the facility through rain water leaders and storm drain inlets.

**DMA 12**, totaling 2438 square feet of roof and pavement area and 510 square feet of landscape and treatment area. DMA 12 drains to the bioretention area identified as BIO 12. Runoff will enter the facility through rain water leaders and curb inlets.



**DMA 13**, totaling 2430 square feet of roof and pavement area and 518 square feet of landscape and treatment area. DMA 13 drains to the bioretention area identified as BIO 13. Runoff will enter the facility through rain water leaders and curb inlets.

**DMA 14**, totaling 6929 square feet of pavement area and 1521 square feet of landscape and treatment area. DMA 14 drains to the bioretention area identified as BIO 14. Runoff will enter the facility through curb inlets.

**DMA 15**, totaling 3514 square feet of pavement area and 429 square feet of landscape and treatment area. DMA 15 drains to the bioretention area identified as BIO 15. Runoff will enter the facility through curb inlets.

**DMA 16**, totaling 2030 square feet of roof and pavement area and 4639 square feet of landscape and treatment area. DMA 16 drains to the bioretention area identified as BIO 16. Runoff will enter the facility through rain water leaders and curb inlets.

**DMA 17**, totaling 5197 square feet of roof and pavement area and 370 square feet of landscape and treatment area. DMA 17 drains to the bioretention area identified as BIO 17. Runoff will enter the facility through rain water leaders and curb inlets.

**DMA 18**, totaling 2693 square feet of roof and pavement area and 1419 square feet of landscape and treatment area. DMA 18 drains to the bioretention area identified as BIO 18. Runoff will enter the facility through rain water leaders and curb inlets.

**DMA 19**, totaling 5192 square feet of roof and pavement area and 370 square feet of landscape and treatment area. DMA 19 drains to the bioretention area identified as BIO 19. Runoff will enter the facility through rain water leaders and curb inlets.

**DMA 20**, totaling 2166 square feet of roof and pavement area and 3378 square feet of landscape and treatment area. DMA 20 drains to the bioretention area identified as BIO 20. Runoff will enter the facility through rain water leaders and curb inlets.

**DMA 21**, totaling 5915 square feet of roof and pavement area and 1025 square feet of landscape and treatment area. DMA 21 drains to the bioretention area identified as BIO 21. Runoff will enter the facility through rain water leaders and curb inlets.

**DMA 22**, totaling 3965 square feet of roof and pavement area and 2342 square feet of landscape and treatment area. DMA 22 drains to the bioretention area identified as BIO 22. Runoff will enter the facility through rain water leaders and curb inlets.

**DMA 23**, totaling 5939 square feet of roof and pavement area and 1030 square feet of landscape and treatment area. DMA 23 drains to the bioretention area identified as BIO 23. Runoff will enter the facility through rain water leaders and curb inlets.

**DMA 24**, totaling 10123 square feet of roof and pavement area and 2854 square feet of landscape and treatment area. DMA 24 drains to the bioretention area identified as BIO 24. Runoff will enter the facility through rain water leaders and curb inlets.

**DMA 25**, totaling 11459 square feet of roof and pavement area and 1927 square feet of landscape and treatment area. DMA 25 drains to the linear precast stormfilter identified as BIO 25. Runoff will enter the facility through rain water leaders and storm drain inlets.

**DMA 26**, totaling 8119 square feet of roof and pavement area and 2275 square feet of landscape and treatment area. DMA 26 drains to the bioretention area identified as BIO 26. Runoff will enter the facility through rain water leaders and curb inlets.



**DMA 27**, totaling 25251 square feet of roof and pavement area and 12309 square feet of landscape and treatment area. DMA 27 drains to the bioretention area identified as BIO 27. Runoff will enter the facility through rain water leaders and curb inlets.

**NT1**, totaling 4476 square feet of roof, pavement, and landscape area. NT1 roof and pavement drain into landscape areas. Runoff will flow across the sidewalk and into a curb and gutter.

**NT2**, totaling 3135 square feet of roof, pavement, and landscape area. NT2 roof and pavement drain into landscape areas. Runoff will flow across the sidewalk and into a curb and gutter.

**NT3**, totaling 9545 square feet of roof, pavement, and landscape area. NT3 roof and pavement drain into landscape areas. Runoff will flow across the sidewalk and into a curb and gutter.

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

##### IV.B.1. Information Summary for Bioretention Facility Design

Total Project Area (Square Feet)	212,658 [should be consistent with Table 1]
DMA1	8,269
DMA2	7,775
DMA3	7,607
DMA4	3,789
DMA5	6,477
DMA6	3,153
DMA7	1,687
DMA8	8,198
DMA9	2,933
DMA10	2,948
DMA11	1,9549
DMA12	2,948
DMA13	2,948
DMA14	8,450
DMA15	3,943
DMA16	6,666
DMA17	5,567
DMA18	4,112







	DMA AREA (SF)	SURFACE TYPE	DMA RUNOFF FACTOR	RUNOFF FACTOR	BIO AREA 2		
DMA 2	4224	ROOF	1.0	4224	IMP SIZING FACTOR	MIN. IMP SIZE (SF)	PRO. IMP SIZE (SF)
	1365	PAVEMENT	1.0	1365			
	1560	LANDSCAPE	0.1	156			
TOTAL>				5745	0.04	230	626

DMA NAME	DMA AREA (SF)	POST-PROJECT SURFACE TYPE	DMA RUNOFF FACTOR	DMA AREA X RUNOFF FACTOR	IMP NAME		
					BIO AREA 3		
DMA 3	3168	ROOF	1.0	3168	IMP SIZING FACTOR	MIN. IMP SIZE (SF)	PRO. IMP SIZE (SF)
	3584	PAVEMENT	1.0	3584			
	578	LANDSCAPE	0.1	58			
TOTAL>				6810	0.04	272	277

DMA NAME	DMA AREA (SF)	POST-PROJECT SURFACE TYPE	DMA RUNOFF FACTOR	DMA AREA X RUNOFF FACTOR	IMP NAME		
					BIO AREA 4		
DMA 4	2112	ROOF	1.0	2112	IMP SIZING FACTOR	MIN. IMP SIZE (SF)	PRO. IMP SIZE (SF)
	638	PAVEMENT	1.0	638			
	771	LANDSCAPE	0.1	77			
TOTAL>				2827	0.04	113	268

DMA NAME	DMA AREA (SF)	POST-PROJECT SURFACE TYPE	DMA RUNOFF FACTOR	DMA AREA X RUNOFF FACTOR	IMP NAME		
					BIO AREA 5		



DMA 5	2112	ROOF	1.0	2112	IMP SIZING FACTOR	MIN. IMP SIZE (SF)	PRO. IMP SIZE (SF)
	3506	PAVEMENT	1.0	3506			
	591	LANDSCAPE	0.1	59			
TOTAL>				5677	0.04	227	268

DMA NAME	DMA AREA (SF)	POST- PROJECT SURFACE TYPE	DMA RUNOFF FACTOR	DMA AREA X RUNOFF FACTOR	IMP NAME		
					BIO AREA 6		
DMA 6	1056	ROOF	1.0	1056	IMP SIZING FACTOR	MIN. IMP SIZE (SF)	PRO. IMP SIZE (SF)
	674	PAVEMENT	1.0	674			
	1116	LANDSCAPE	0.1	112			
TOTAL>				1842	0.04	74	307

DMA NAME	DMA AREA (SF)	POST- PROJECT SURFACE TYPE	DMA RUNOFF FACTOR	DMA AREA X RUNOFF FACTOR	IMP NAME		
					BIO AREA 7		
DMA 7	0	ROOF	1.0	0	IMP SIZING FACTOR	MIN. IMP SIZE (SF)	PRO. IMP SIZE (SF)
	1438	PAVEMENT	1.0	1438			
	155	LANDSCAPE	0.1	16			
TOTAL>				1454	0.04	58	94

DMA NAME	DMA AREA (SF)	POST- PROJECT SURFACE TYPE	DMA RUNOFF FACTOR	DMA AREA X RUNOFF FACTOR	IMP NAME		
					BIO AREA 8		
DMA 8	0	ROOF	1.0	0		MIN. IMP	PRO. IMP
	6877	PAVEMENT	1.0	6877			



	893	LANDSCAPE	0.1	89	IMP SIZING FACTOR	SIZE (SF)	SIZE (SF)
TOTAL>				6966	0.04	279	428

DMA NAME	DMA AREA (SF)	POST- PROJECT SURFACE TYPE	DMA RUNOFF FACTOR	DMA AREA X RUNOFF FACTOR	IMP NAME		
					BIO AREA 9		
DMA 9	2112	ROOF	1.0	2112	IMP SIZING FACTOR	MIN. IMP SIZE (SF)	PRO. IMP SIZE (SF)
	321	PAVEMENT	1.0	321			
	375	LANDSCAPE	0.1	38			
TOTAL>				2471	0.04	99	125

DMA NAME	DMA AREA (SF)	POST- PROJECT SURFACE TYPE	DMA RUNOFF FACTOR	DMA AREA X RUNOFF FACTOR	IMP NAME		
					BIO AREA 10		
DMA 10	2112	ROOF	1.0	2112	IMP SIZING FACTOR	MIN. IMP SIZE (SF)	PRO. IMP SIZE (SF)
	314	PAVEMENT	1.0	314			
	377	LANDSCAPE	0.1	38			
TOTAL>				2464	0.04	99	145

DMA NAME	DMA AREA (SF)	POST- PROJECT SURFACE TYPE	DMA RUNOFF FACTOR	DMA AREA X RUNOFF FACTOR	IMP NAME		
					BIO AREA 11		
DMA 11	8448	ROOF	1.0	84448	IMP SIZING FACTOR	MIN. IMP SIZE (SF)	PRO. IMP SIZE (SF)
	8980	PAVEMENT	1.0	8980			
	2821	LANDSCAPE	0.1	282			



TOTAL>	17710	0.04	708	LPS
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DMA NAME	DMA AREA (SF)	POST-PROJECT SURFACE TYPE	DMA RUNOFF FACTOR	DMA AREA X RUNOFF FACTOR	IMP NAME		
					BIO AREA 12		
DMA 12	2112	ROOF	1.0	2112	IMP SIZING FACTOR	MIN. IMP SIZE (SF)	PRO. IMP SIZE (SF)
	326	PAVEMENT	1.0	326			
	370	LANDSCAPE	0.1	37			
TOTAL>				2475	0.04	99	140

DMA NAME	DMA AREA (SF)	POST-PROJECT SURFACE TYPE	DMA RUNOFF FACTOR	DMA AREA X RUNOFF FACTOR	IMP NAME		
					BIO AREA 13		
DMA 13	2112	ROOF	1.0	2112	IMP SIZING FACTOR	MIN. IMP SIZE (SF)	PRO. IMP SIZE (SF)
	318	PAVEMENT	1.0	318			
	374	LANDSCAPE	0.1	37			
TOTAL>				2467	0.04	99	144

DMA NAME	DMA AREA (SF)	POST-PROJECT SURFACE TYPE	DMA RUNOFF FACTOR	DMA AREA X RUNOFF FACTOR	IMP NAME		
					BIO AREA 14		
DMA 14	0	ROOF	1.0	0	IMP SIZING FACTOR	MIN. IMP SIZE (SF)	PRO. IMP SIZE (SF)
	6929	PAVEMENT	1.0	6929			
	1233	LANDSCAPE	0.1	123			
TOTAL>				7052	0.04	282	288



DMA NAME	DMA AREA (SF)	POST-PROJECT SURFACE TYPE	DMA RUNOFF FACTOR	DMA AREA X RUNOFF FACTOR	IMP NAME		
					BIO AREA 15		
DMA 15	0	ROOF	1.0	0	IMP SIZING FACTOR	MIN. IMP SIZE (SF)	PRO. IMP SIZE (SF)
	3514	PAVEMENT	1.0	3514			
	149	LANDSCAPE	0.1	15			
TOTAL>				3529	0.04	141	280

DMA NAME	DMA AREA (SF)	POST-PROJECT SURFACE TYPE	DMA RUNOFF FACTOR	DMA AREA X RUNOFF FACTOR	IMP NAME		
					BIO AREA 16		
DMA 16	1408	ROOF	1.0	1408	IMP SIZING FACTOR	MIN. IMP SIZE (SF)	PRO. IMP SIZE (SF)
	622	PAVEMENT	1.0	622			
	4343	LANDSCAPE	0.1	434			
TOTAL>				2464	0.04	99	293

DMA NAME	DMA AREA (SF)	POST-PROJECT SURFACE TYPE	DMA RUNOFF FACTOR	DMA AREA X RUNOFF FACTOR	IMP NAME		
					BIO AREA 17		
DMA 17	2816	ROOF	1.0	2816	IMP SIZING FACTOR	MIN. IMP SIZE (SF)	PRO. IMP SIZE (SF)
	2381	PAVEMENT	1.0	2381			
	79	LANDSCAPE	0.1	8			
TOTAL>				5205	0.04	208	291

DMA NAME		POST-PROJECT		DMA AREA X	IMP NAME
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	DMA AREA (SF)	SURFACE TYPE	DMA RUNOFF FACTOR	RUNOFF FACTOR	BIO AREA 18		
DMA 18	2816	ROOF	1.0	2816	IMP SIZING FACTOR	MIN. IMP SIZE (SF)	PRO. IMP SIZE (SF)
	877	PAVEMENT	1.0	877			
	880	LANDSCAPE	0.1	88			
TOTAL>				3781	0.04	151	539

DMA NAME	DMA AREA (SF)	POST-PROJECT SURFACE TYPE	DMA RUNOFF FACTOR	DMA AREA X RUNOFF FACTOR	IMP NAME		
DMA 19	2816	ROOF	1.0	2816	IMP SIZING FACTOR	MIN. IMP SIZE (SF)	PRO. IMP SIZE (SF)
	2376	PAVEMENT	1.0	2376			
	79	LANDSCAPE	0.1	8			
TOTAL>				5200	0.04	208	291

DMA NAME	DMA AREA (SF)	POST-PROJECT SURFACE TYPE	DMA RUNOFF FACTOR	DMA AREA X RUNOFF FACTOR	IMP NAME		
DMA 20	1523	ROOF	1.0	1523	IMP SIZING FACTOR	MIN. IMP SIZE (SF)	PRO. IMP SIZE (SF)
	643	PAVEMENT	1.0	643			
	3165	LANDSCAPE	0.1	317			
TOTAL>				2483	0.04	99	213

DMA NAME	DMA AREA (SF)	POST-PROJECT SURFACE TYPE	DMA RUNOFF FACTOR	DMA AREA X RUNOFF FACTOR	IMP NAME		
					BIO AREA 21		



DMA 21	3136	ROOF	1.0	3136	IMP SIZING FACTOR	MIN. IMP SIZE (SF)	PRO. IMP SIZE (SF)
	2779	PAVEMENT	1.0	2779			
	767	LANDSCAPE	0.1	77			
TOTAL>				5992	0.04	240	258

DMA NAME	DMA AREA (SF)	POST- PROJECT SURFACE TYPE	DMA RUNOFF FACTOR	DMA AREA X RUNOFF FACTOR	IMP NAME		
					BIO AREA 22		
DMA 22	3053	ROOF	1.0	3053	IMP SIZING FACTOR	MIN. IMP SIZE (SF)	PRO. IMP SIZE (SF)
	912	PAVEMENT	1.0	912			
	1761	LANDSCAPE	0.1	176			
TOTAL>				4141	0.04	166	581

DMA NAME	DMA AREA (SF)	POST- PROJECT SURFACE TYPE	DMA RUNOFF FACTOR	DMA AREA X RUNOFF FACTOR	IMP NAME		
					BIO AREA 23		
DMA 23	3166	ROOF	1.0	3166	IMP SIZING FACTOR	MIN. IMP SIZE (SF)	PRO. IMP SIZE (SF)
	2773	PAVEMENT	1.0	2773			
	772	LANDSCAPE	0.1	77			
TOTAL>				6016	0.04	241	258

DMA NAME	DMA AREA (SF)	POST- PROJECT SURFACE TYPE	DMA RUNOFF FACTOR	DMA AREA X RUNOFF FACTOR	IMP NAME		
					BIO AREA 24		
DMA 24	2577	ROOF	1.0	2577		MIN. IMP	PRO. IMP
	7546	PAVEMENT	1.0	7546			



	2206	LANDSCAPE	0.1	220	IMP SIZING FACTOR	SIZE (SF)	SIZE (SF)
TOTAL>				10343	0.04	414	648

DMA NAME	DMA AREA (SF)	POST- PROJECT SURFACE TYPE	DMA RUNOFF FACTOR	DMA AREA X RUNOFF FACTOR	IMP NAME		
					BIO AREA 25		
DMA 25	4801	ROOF	1.0	4801	IMP SIZING FACTOR	MIN. IMP SIZE (SF)	PRO. IMP SIZE (SF)
	6658	PAVEMENT	1.0	6658			
	1927	LANDSCAPE	0.1	193			
TOTAL>				11652	0.04	466	LPS

DMA NAME	DMA AREA (SF)	POST- PROJECT SURFACE TYPE	DMA RUNOFF FACTOR	DMA AREA X RUNOFF FACTOR	IMP NAME		
					BIO AREA 26		
DMA 26	2224	ROOF	1.0	2224	IMP SIZING FACTOR	MIN. IMP SIZE (SF)	PRO. IMP SIZE (SF)
	5895	PAVEMENT	1.0	5895			
	1821	LANDSCAPE	0.1	182			
TOTAL>				8301	0.04	332	454

DMA NAME	DMA AREA (SF)	POST- PROJECT SURFACE TYPE	DMA RUNOFF FACTOR	DMA AREA X RUNOFF FACTOR	IMP NAME		
					BIO AREA 27		
DMA 27	11033	ROOF	1.0	11033	IMP SIZING FACTOR	MIN. IMP SIZE (SF)	PRO. IMP SIZE (SF)
	14218	PAVEMENT	1.0	14218			
	11100	LANDSCAPE	0.1	1110			



TOTAL>	26361	0.04	1054	1209
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## 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 drain inlets.
- Landscape/Outdoor Pesticide/Building and Ground Maintenance.
- Plazas, sidewalks, and parking lots.

### V.B. Source Control Table

Table 3. Pollutant Sources and Source Control Measures

Potential source of runoff pollutants	Permanent source control BMPs	Operational source control BMPs
On-site storm drain inlets	All inlets will be marked with "No Dumping! Flows to Local Waterways" or similar.	Markings will be regularly inspected and repainted or replaced as needed.
Landscape/Outdoor Pesticide/Building and Ground Maintenance	Existing mature trees to be retained. Landscaping will minimize irrigation and runoff and be selected for pest resistance, and will minimize the need for fertilizers and pesticides. Plants will be selected appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	Landscaping will be maintained using minimum or no pesticides.  IPM information will be provided to new owners, lessees, and operators.
Plazas, sidewalks, and parking lots	Permeable pavement will be used for driveway aprons and walks.	Plazas, sidewalks, and parking lots will be swept regularly to prevent accumulation of litter and debris.  Debris will be collected from pressure washing to prevent entry into the storm drain.  Washwater containing any cleaning agent will be



		collected and discharged to the sanitary sewer.  Trash receptacles to be emptied regularly.
--	--	---

### **V.C. 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. Refer to the project improvement plans for detailed materials and methods of construction of source control BMP's.

## **VI. Stormwater Facility Maintenance**

### **VI.A. Ownership and Responsibility for Maintenance in Perpetuity**

Maintenance of stormwater facilities will be the responsibility of the property owners and will be performed as part of routine maintenance of buildings, grounds, and landscaping. The applicant has reviewed the Stormwater Control Plans and Documents and commits to execute any necessary agreements prior to completion of construction. 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

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

The bioretention facilities will be maintained on the following schedule at a minimum. Details of maintenance responsibilities and procedures will be included in the Project Covenants, Conditions, and Restrictions (CCR's).

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 ponding.

- 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.

Prior to the Start of the Rainy Season: In September or 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.

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 Checklist

Refer to project improvement plans for all construction and post-construction BMP's. The site has less than 1-acre of disturbed area and does not have a separate SWPPP.

Table 4. Construction Checklist Table to be incorporated in Construction Drawings




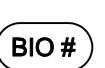





Stormwater Control Plan Page #	Source Control or Treatment Control Measure	See Plan Sheet #s
Exhibit	Each DMA drains to corresponding Bioretention Area; facility is designed as specified.	C4.1, C4.2
Exhibit	All Bioretention Area overflows are marked with "No Dumping" message	C4.5

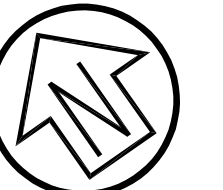
## VIII. Certifications

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*.

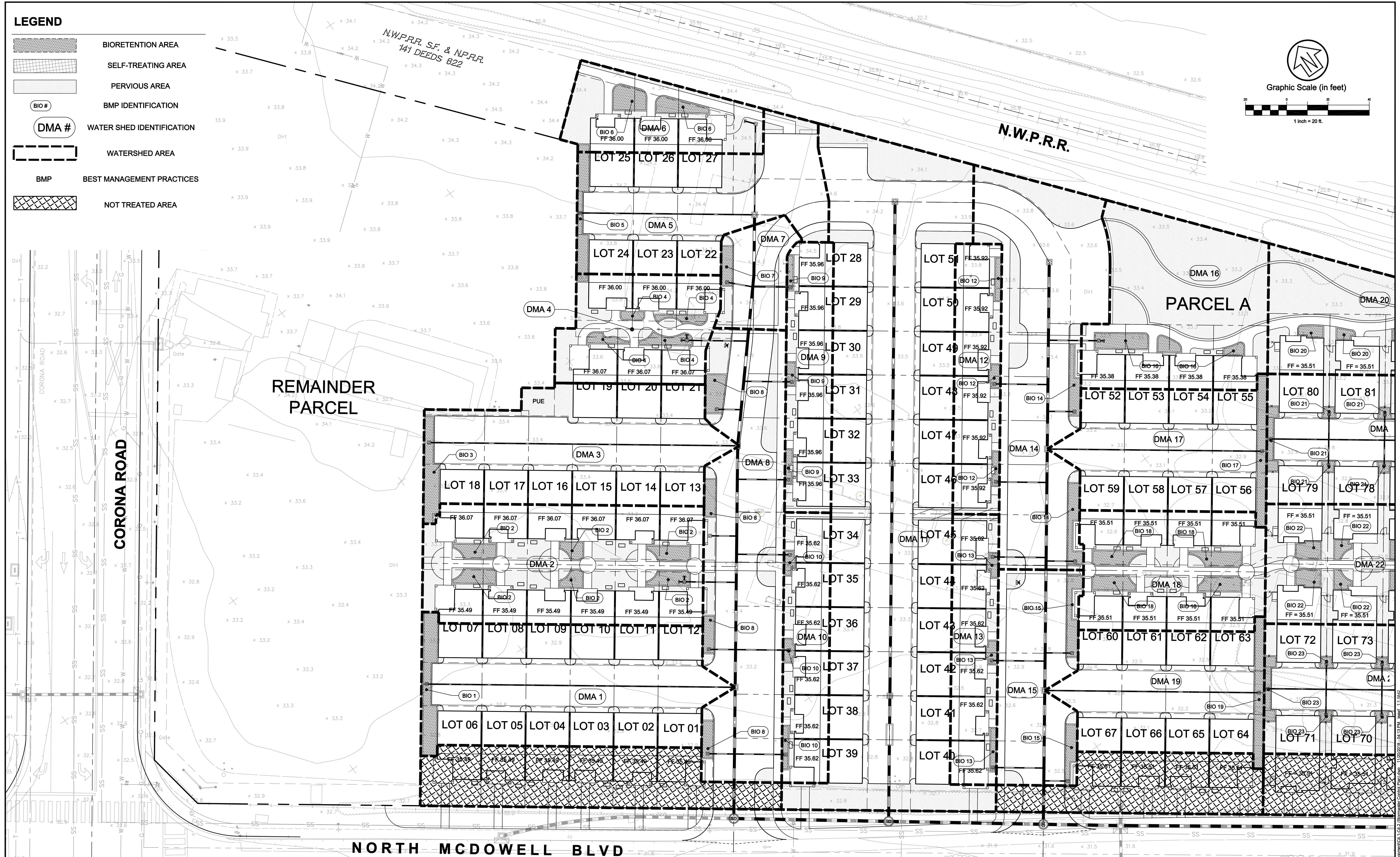
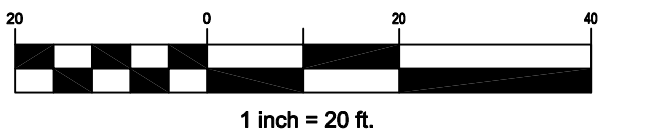


LEGEND

-  BIORETENTION AREA
-  SELF-TREATING AREA
-  PERVIOUS AREA
-  BMP IDENTIFICATION
-  WATER SHED IDENTIFICATION
-  WATERSHED AREA
-  BMP
-  BEST MANAGEMENT PRACTICES
-  NOT TREATED AREA



Graphic Scale (in feet)



Rev	Date	Description	Designed	Drawn	Checked
-	11/26/2018	INITIAL CITY SUBMITTAL	SAS	SAS	WFL

CSW | ST2

CSW/Stuber-Stroeh Engineering Group, Inc.  
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Land Planning | Construction Management  
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http://www.cswst2.com © 2018

City  
County  
State

Petaluma  
Sonoma  
California

CORONA STATION DEVELOPMENT  
PRELIMINARY STORMWATER CONTROL PLAN  
LOMAS PARTNERS, LLC - APN 137-061-19

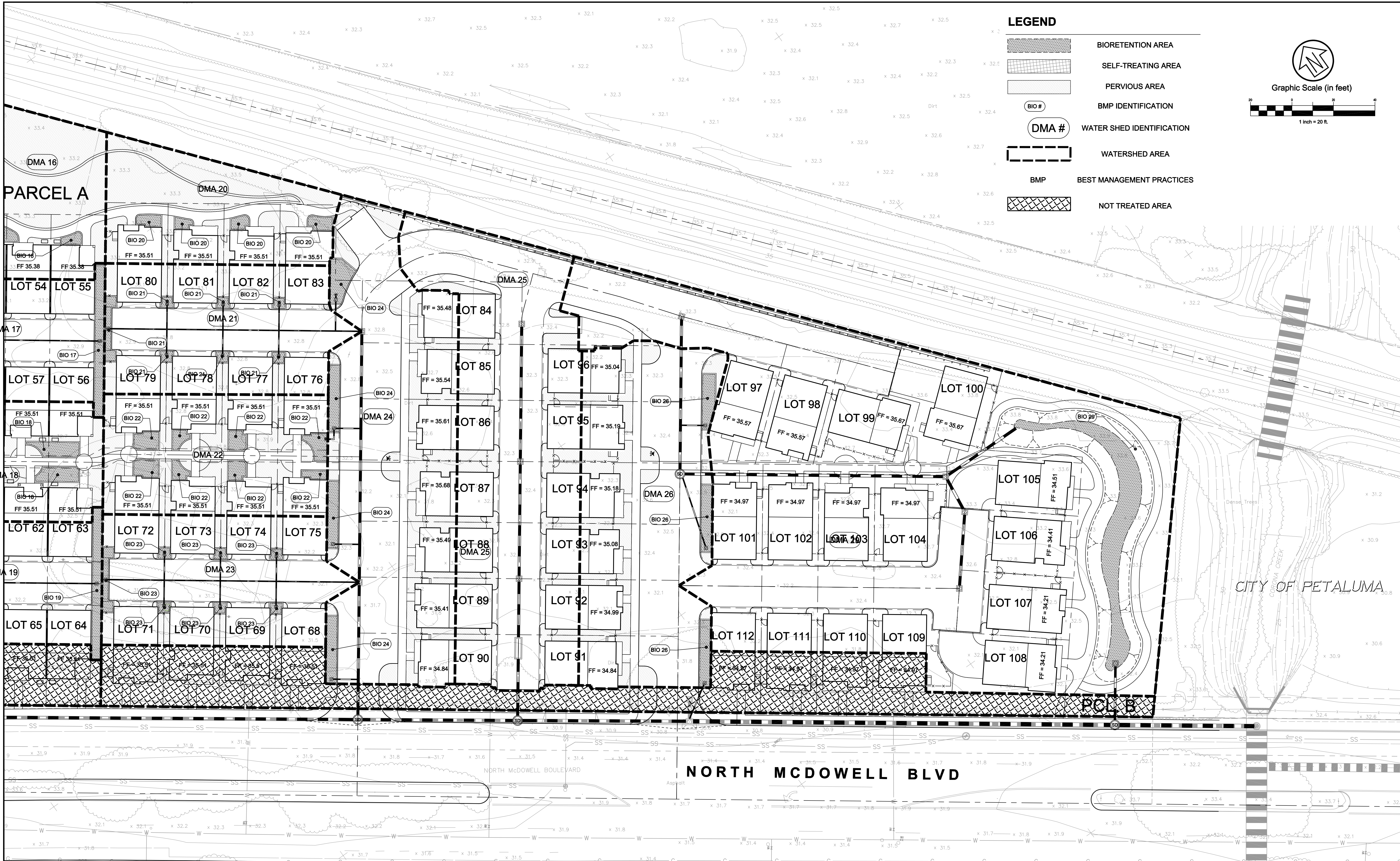
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C4.1

Scale: 1" = 20'  
Date: 11/26/2018  
Project Number: 5.1498.01  
Plan File: D-5517-08





Rev	Date	Description	Designed	Drawn	Checked
-	11/26/2018	INITIAL CITY SUBMITTAL	SAS	SAS	WFL

**CSW** | **ST2**

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City

Petaluma

County

Sonoma

State

California

**CORONA STATION DEVELOPMENT**  
**PRELIMINARY STORMWATER CONTROL PLAN**  
**LOMAS PARTNERS, LLC - APN 137-061-19**

Prepared Under the Direction of:

**C4.2**

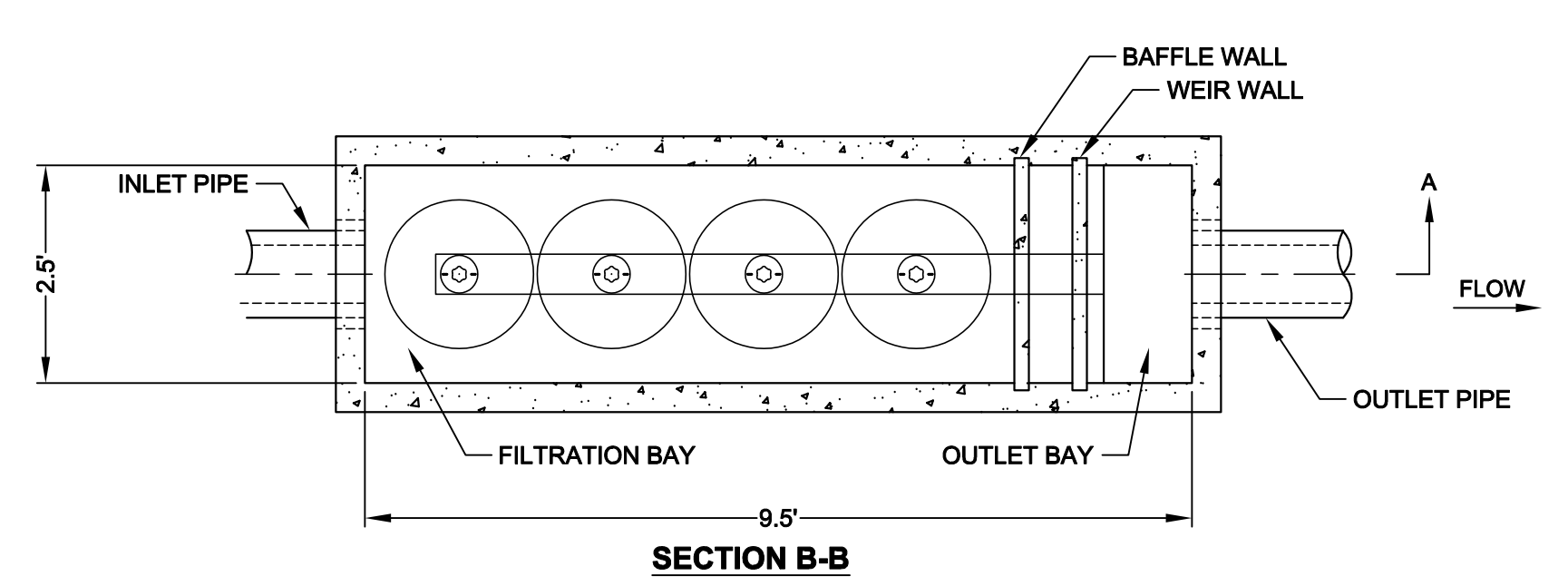
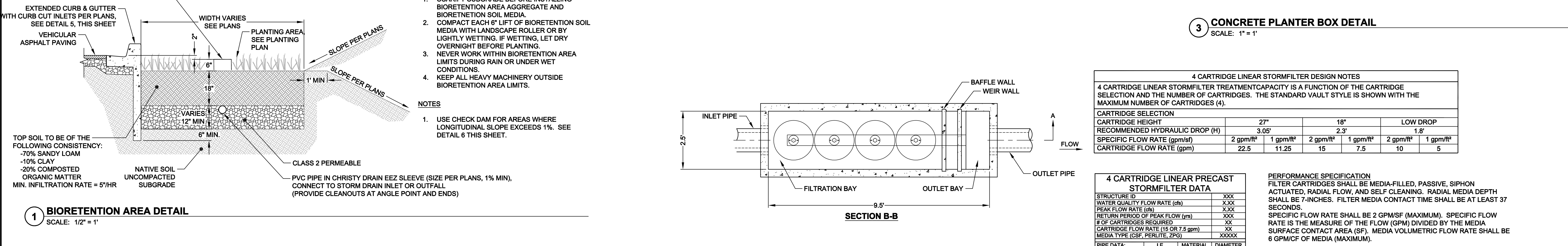
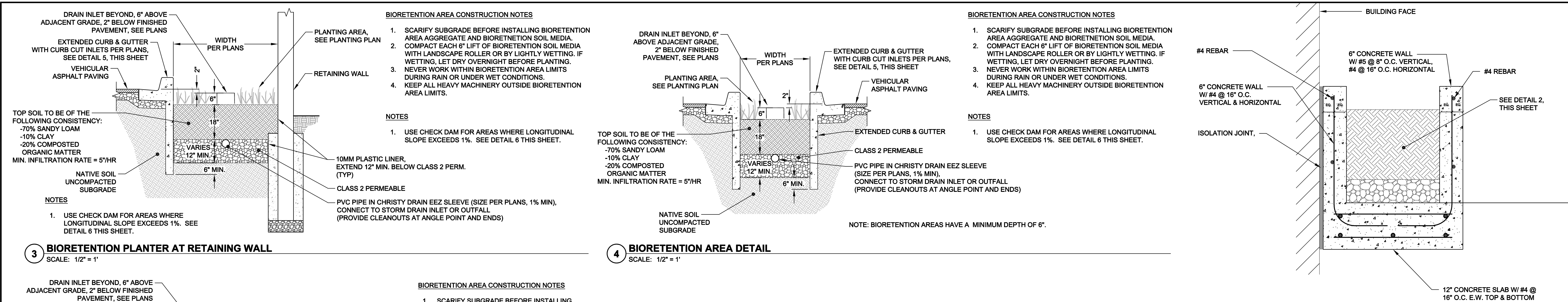
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Date: 11/26/2018

Project Number: 5.1498.01

Plan File: D-5517-09





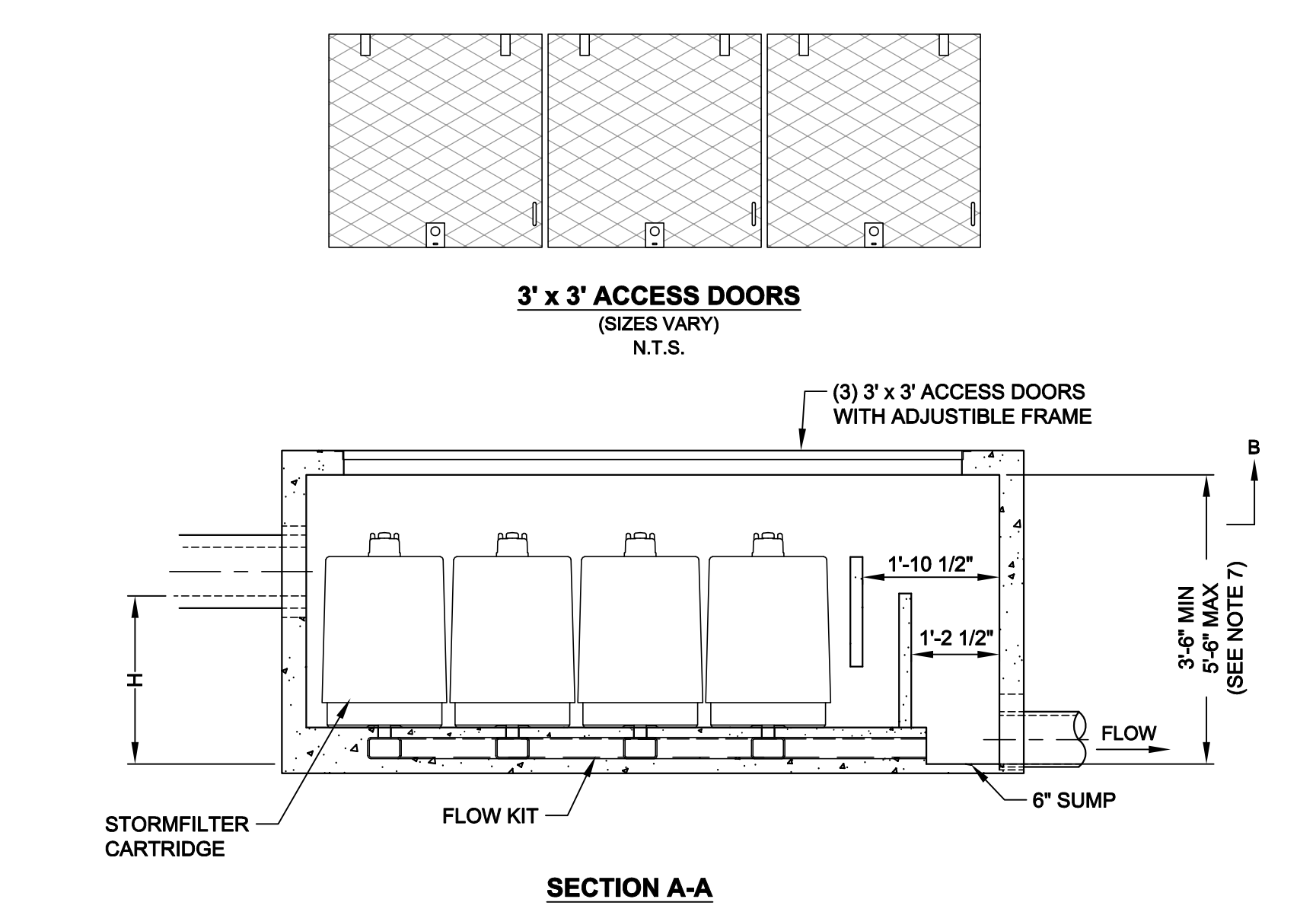
4 CARTRIDGE LINEAR STORMFILTER DESIGN NOTES						
4 CARTRIDGE LINEAR STORMFILTER TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE SELECTION AND THE NUMBER OF CARTRIDGES. THE STANDARD VAULT STYLE IS SHOWN WITH THE MAXIMUM NUMBER OF CARTRIDGES (4).						
CARTRIDGE SELECTION						
CARTRIDGE HEIGHT	27"	18"	LOW DROP			
RECOMMENDED HYDRAULIC DROP (H)	3.05'	2.3'	1.8'			
SPECIFIC FLOW RATE (gpm/sf)	2 gpm/ft²	1 gpm/ft²	2 gpm/ft²	1 gpm/ft²	2 gpm/ft²	1 gpm/ft²
CARTRIDGE FLOW RATE (gpm)	22.5	11.25	15	7.5	10	5

4 CARTRIDGE LINEAR PRECAST STORMFILTER DATA			
STRUCTURE ID			XXX
WATER QUALITY FLOW RATE (cfs)			XXX
PEAK FLOW RATE (cfs)			XXX
RETURN PERIOD OF PEAK FLOW (yrs)			XXX
# OF CARTRIDGES REQUIRED			XX
CARTRIDGE FLOW RATE (15 OR 7.5 gpm)			XX
MEDIA TYPE (CSF, PERLITE, ZPG)			XXXXXX
PIPE DATA:			
INLET PIPE #1	XXXXXX	XXX	XX"
INLET PIPE #2	XXXXXX	XXX	XX"
OUTLET PIPE	XXXXXX	XXX	XX"
RIM			
<div><div>XXXXXX</div><div>FLOW →</div></div>			
LADDER		YES/NO	
ANTI-FLOTATION BALLAST	WIDTH	HEIGHT	
	XX"	XX"	
NOTES/SPECIAL REQUIREMENTS:			

**PERFORMANCE SPECIFICATION**  
FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF-CLEANING. RADIAL MEDIA DEPTH SHALL BE 7-INCHES. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST 37 SECONDS.  
SPECIFIC FLOW RATE SHALL BE 2 GPM/SF (MAXIMUM). SPECIFIC FLOW RATE IS THE MEASURE OF THE FLOW (GPM) DIVIDED BY THE MEDIA SURFACE CONTACT AREA (SF). MEDIA VOLUMETRIC FLOW RATE SHALL BE 6 GPM/CF OF MEDIA (MAXIMUM).

**GENERAL NOTES**  
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.  
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.  
3. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. [www.ContechES.com](http://www.ContechES.com)  
4. STORMFILTER WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.  
5. STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 5' AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.

**INSTALLATION NOTES**  
1. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.  
2. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STORMFILTER STRUCTURE (LIFTING CLUTCHES PROVIDED).  
3. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL SECTIONS AND ASSEMBLE STRUCTURE.  
4. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH OUTLET PIPE INVERT WITH OUTLET BAY FLOOR.  
5. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.  
6. CONTRACTOR TO REMOVE THE TRANSFER HOLE COVER WHEN THE SYSTEM IS BROUGHT ONLINE.



Rev	Date	Description	Designed	Drawn	Checked	<div><div>CSW   ST2</div><div>CSW/Stuber-Stroeh Engineering Group, Inc. Civil &amp; Structural Engineers   Surveying &amp; Mapping   Environmental Planning Land Planning   Construction Management</div><div>45 Leveroni Court Novato, CA 94949</div><div>tel: 415.883.9850 fax: 415.883.9835</div><div><a href="http://www.cswst2.com">http://www.cswst2.com</a></div><div>© 2018</div></div>	City Petaluma County Sonoma State California	CORONA STATION DEVELOPMENT STORMWATER CONTROL TABLES LOMAS PARTNERS, LLC - APN 137-061-19	Prepared Under the Direction of:	Sheet
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					Scale: AS SHOWN					
					Date: 11/26/2018					
					Project Number: 5.1498.01					
					Plan File: D-5517-12					
-	11/26/2018	INITIAL CITY SUBMITTAL	SAS	SAS	WFL					