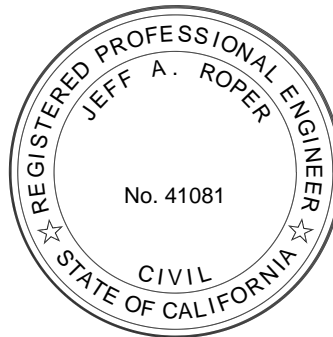


Preliminary Stormwater Control Plan  
for  
New Housing Development  
4627 Scotts Valley Drive  
Scotts Valley, CA  
APN 022-082-34 & 35

Owner:  
Larry Abitbol  
5005 Ironwood Drive  
Soquel, CA 95073

Prepared by:  
Roper Engineering  
64 Penny Lane, Suite A  
Watsonville, CA 95076  
(831) 724-5300



A handwritten signature in black ink that reads "Jeff Roper".

Job No. 15020  
December 3, 2018  
Revised January 3, 2018

## **I. Project Data:**

Project Name:	New Housing Development for Larry Abitbol
Application Submittal Date:	
Address:	4627 Scotts Valley Drive, Scotts Valley
APN:	022-082-34 & 35
Project Phase:	N/A
Project Type & Description:	19 unit residential apartment complex consisting of two buildings, a 3 story and a 2 story.
Project Tier:	Tier 4

## **II. Setting:**

### **II.A. Project Location & Description**

Site is located at 4627 Scotts Valley Drive. Currently the property consists of 2 parcels. These parcels will be combined into one with this development. Planned land use is residential. The current zoning is CS-Commercial Service. The requested zoning is RVH-Residential Very High Density. Minimum setbacks provided are 20' front, 17.5' side and 46'± rear. Open space is provided throughout the project as shown on the site plan. The project will be built in one phase. 19 residential units are proposed. Required parking is 42 spaces. Provide parking is 40 spaces. Shared parking with Water District is 9 spaces. The neighborhood character is commercial and residential.

### **II.B. Existing Site Features & Conditions**

The existing site consists of two parcels with a total combined size of 0.93 acres (40,480 sf). The majority of the parcel is rectangular fronting on Scotts Valley drive with a narrow strip in the rear with frontage on Civic Center Drive. The property slopes towards Scotts Valley Drive. The site currently consists of a parking lot that was developed for the Seagate Technology project across Scotts Valley Drive on Disc Drive. Since the full site has been previously developed, there are no natural areas. There are existing landscaped strips along the boundary lines and between the parking spaces. Site is drained by a storm drain system that connects to the City of Scotts Valley storm drains in Scotts Valley Drive.

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

Due to the site being previously developed, there are no natural areas on the site. The project will be providing landscaping along the perimeter as well as around the buildings. Due to the steepness of the site, bioretention is not feasible along the side or rear property lines. Bioretention is possible along the site frontage at the low side of the project. Due to anticipated high ground water, the proposed bioretention areas will be underlain with 12" of permeable material with a 4" perforated pipe at the top.

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

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

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

The entire site has been previously developed. The proposed development will also encompass the entire site. Landscaping will be provided along the boundaries of the project as well as around the proposed buildings.

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

No natural drainage features existing on the site due to the previous development. The site is drained by use of storm drain pipes.

##### **III.A.3. Setback from creeks, wetlands & riparian areas**

No creeks, wetlands or riparian areas exist on the site or in the vicinity.

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

Imperviousness has been minimized with the use of permeable pavers for some of the parking spaces. Landscaping is also provided throughout the project.

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

The bioretention facilities on each site of the entrance driveway off Scotts Valley Drive will be landscaped to provide design elements at the entrance.

#### **III.B. Use of Permeable Pavements**

Permeable pavers are proposed for the parking spaces that don't exceed 5% slope.

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

Site drainage will be collected and dispersed in the bioretention facilities at the low side of the project along the Scotts Valley Drive frontage.

#### **III.D. Stormwater Control Measures**

##### **Tier 2 – Water Quality Treatment Facility**

Water quality treatment will be accomplished with the bioretention facilities along the Scotts Valley Drive frontage.

##### **Tier 3 – Runoff Retention Facility**

Runoff retention will be accomplished with the bioretention facilities along the Scotts Valley Drive frontage.

#### Tier 4 – Flow Control Facility

Flow control will be provided with the detention pipe along the Scotts Valley Drive.

### IV. Documentation of the Drainage Design

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

A Drainage Management Area Plan is included in Attachment B to accompany the descriptions herein.

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

DMA Name	Surface Type	Area (square feet)
DMA1	Roof	7543
DMA2	Concrete/Asphalt	21985
DMA3	Landscaping	4319
DMA4	Permeable Pavers	2295
SCM1	Bioretention Facility	1237

##### IV.A.2

DMA1, totaling 7543 square feet consists of the roof areas of the two buildings and drains to bioretention facility SCM1.

DMA2, totaling 21985 square feet consists of concrete and asphalt in the parking lot, walkways and patios, and drains to the bioretention facility SCM1.

DMA3, totaling 4319 square feet consists of the landscaping throughout the project and is self-treating.

DMA4, totaling 2295 square feet consists of the permeable paver parking spaces and is self-treating.

SCM1, totaling 1237 square feet consists of the bioretention facilities and treats the drainage from DMA 1 & DMA2.

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

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

Total Project Area	35379 square feet
Design Storm Depth	95 <sup>th</sup> Percentile 24-hour rainfall depth = 2.6"
Applicable Requirements	Tier 4

Design calculations are included in Attachment C. Design Calculations include Hydrologic Calculations, Stormwater BMP Facility Sizing, and Hydraulic Calculations.

IV.B.2. Self-Treating Areas

DMA Name	Surface Type	Area (square feet)
DMA3	Landscaping	4319
DMA4	Permeable Pavers	2295

IV.B.3. Self-Retaining Areas

None

IV.B.4. Areas Draining to Self-Retaining Areas

None

IV.B.5. Areas Draining to Bioretention Facilities

DMA Name	DMA Area (sq ft)	Post-Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor	SCM Name		
					SCM1 Bioretention Facility		
					SCM Rough Sizing Factor	Minimum SCM Size	Proposed SCM Size
DMA1	7543	Roof	1.0	7543	0.04	1181	1237
DMA 2	21985	Conc/AC	1.0	21985			
Total				29528			

**V. Design of BMP Facilities**

Details for BMP facility construction is included on the preliminary civil plans.

**VI. Source Control Measures**

VI.A. Site activities and potential sources of pollutants

See Source Control Table below.

VI.B. Source Control Table

Potential source of runoff pollutants	Permanent source control BMPs	Operational source control BMPs
Onsite storm drain inlets	Mark all inlets with the words "No Dumping! Flows to Bay"	Maintain and replace inlet markings.
Refuse areas	Post sign "Do not dump hazardous materials here"	Provide adequate number of receptacles. Inspect regularly.
Patios, sidewalks & parking lots		Sweep patios, sidewalks & parking lots

**VII. Stormwater Facility Maintenance**

VII.A. Ownership and Responsibility for Maintenance in Perpetuity

Owners shall commit to execute any necessary agreements and accept responsibility for operation and maintenance of facilities until that responsibility is formally transferred.

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

Recommended BMP Maintenance		
BMP	Action	Frequency
Catch Basins & Outlet Structures	Inspect Inlets, outlets, grates & covers	Prior to rainy season, monthly during rainy season & after heavy rains
	Repair of above	As needed
	Sediment removal	As needed
Permeable Pavers	Inspect at surface	Prior to rainy season, monthly during rainy season & after heavy rains
	Sediment removal & rock replenishment	As needed
Curb Drains & Downspout Drains	Inspection	Prior to rainy season, monthly during rainy season & after heavy rains
	Flushing, sediment removal	As needed
Bioretention Facilities	Inspection	Prior to rainy season, monthly during rainy season & after heavy rains
	Maintenance	As needed
Entire Storm Drain System	Perform inspection	Prior to rainy season
	Maintenance	As needed

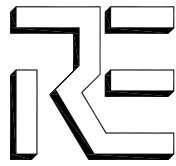
## **VIII. Certifications**

The preliminary design of stormwater treatment facilities and other stormwater pollution control measures in this plan are in accordance with the current edition of city of Scotts Valley Stormwater Technical Guide.

CLIENT:  
ABITBOL

LOCATION:  
4627 SCOTTS VALLEY DR

EXISTING IMPERVIOUS  
AREAS

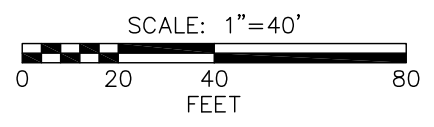
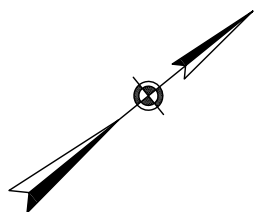
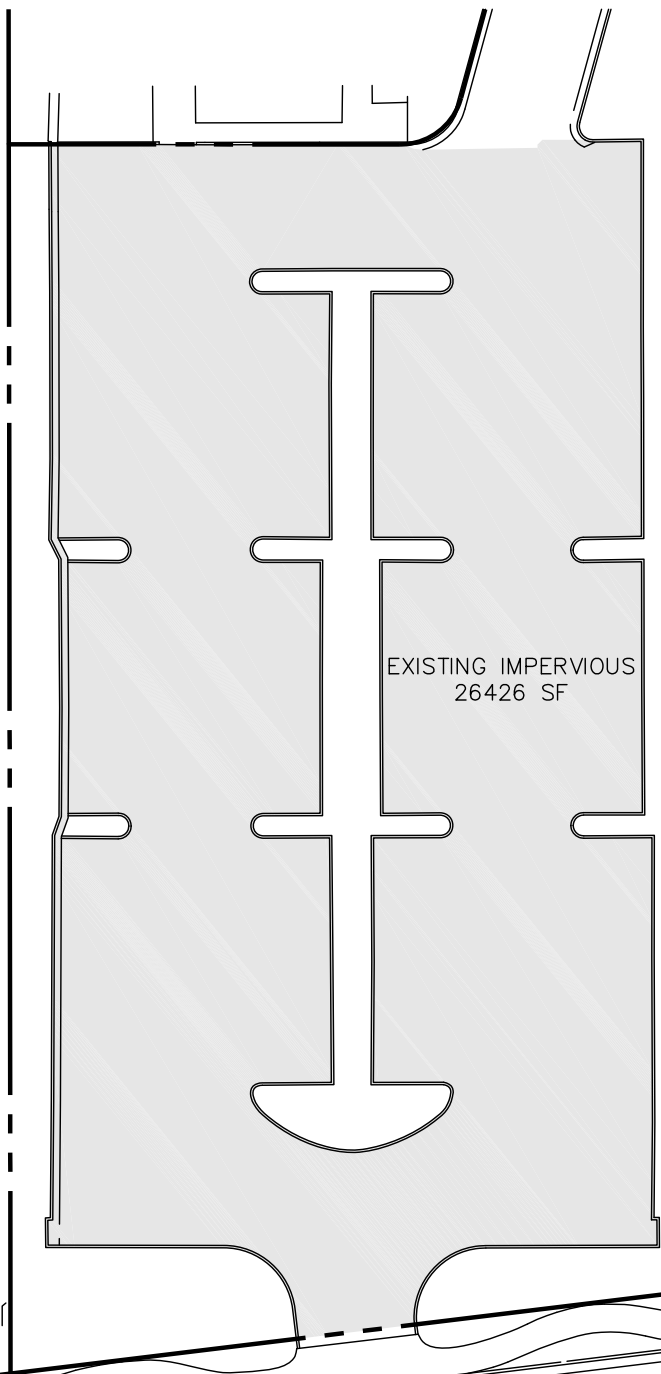


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JOB NO.:  
15020

DATE:  
JAN. 3, 2018

SHEET:  
1 OF 2



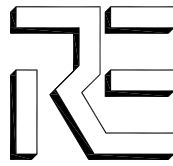
 EXISTING IMPERVIOUS 26,426 SF



CLIENT:  
ABITBOL

LOCATION:  
4627 SCOTTS VALLEY DR

PROPOSED IMPERVIOUS  
AREAS

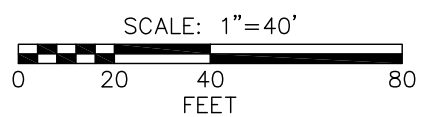
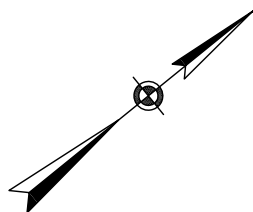
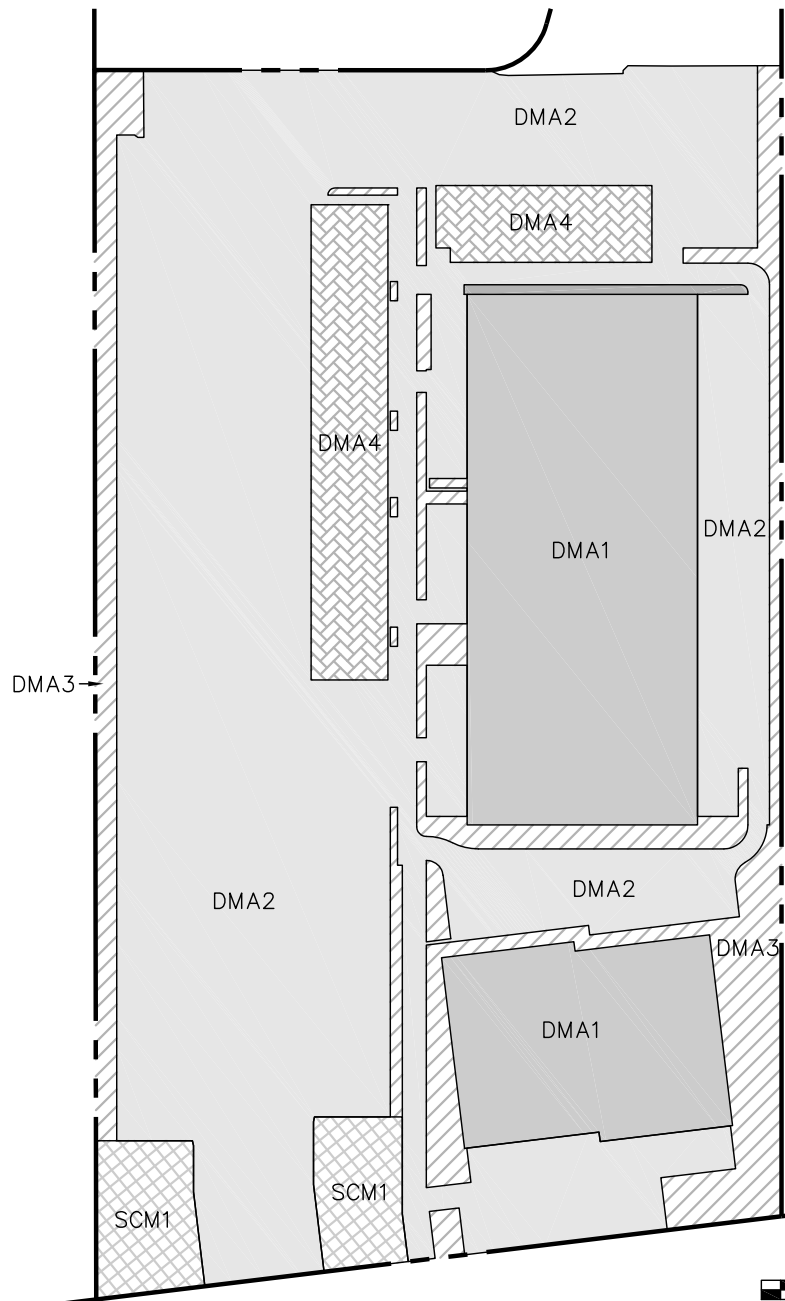


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**DRAINAGE MANAGEMENT AREAS**

	DMA1 – ROOFS	7,543 SF
	DMA2 – CONC & ASPHALT	21,985 SF
	DMA3 – LANDSCAPING	4,319 SF
	DMA4 – PERMEABLE PAVERS	2,295 SF
	SCM1 – BIORETENTION FACILITIES	1,237 SF

TOTAL DRAINAGE AREA 35,379 SF

# Central Coast Region Stormwater Control Measure Sizing Calculator

Version: 2/26/2014

## 1. Project Information

Project name:	Housing Development for Larry Abitbol
Project location:	4627 Scotts Valley Drive, Scotts Valley
Tier 2/Tier 3:	Tier 3 - Retention
Design rainfall depth (in):	2.6
<b>Total project area (ft2):</b>	35379
Total new impervious area (ft2):	3102
Total replaced impervious in a USA (ft2):	0
Total replaced impervious not in a USA (ft2):	26426
Total pervious/landscape area (ft2):	6614

## 2. DMA Characterization

Name	DMA Type	Area (ft2)	Surface Type	New, Replaced?	Connection
DMA1a	Drains to SCM	4441	Roof	Replaced	SCM1
DMA1b	Drains to SCM	3102	Roof	New	SCM1
DMA2	Drains to SCM	21985	Concrete or asphalt	Replaced	SCM1
DMA3	Self-Treating	4319			
DMA4	Self-Treating	2295			

### DMA Summary Area

Total project impervious area (ft2):	29528
New impervious area (ft2):	3102
Replaced impervious within a USA (ft2):	0
Replaced impervious not in a USA (ft2):	26426
Total pervious/landscape area (ft2):	0

## 3. SCM Characterization

Name	SCM Type	Safety Factor	SCM Soil Type	Infiltr. Rate (in/hr)	Area (ft2)
SCM1	Bioretention	1	Site-Specific	4.17	1237

## 4. Run SBUH Model

## 5. SCM Minimum Sizing Requirements

SCM Name	Min. Required Storage Vol. (ft3)	Depth Below Underdrain (ft)	Drain Time (hours)
SCM1	597	1.21	0.0

## 6. Self-Retaining Area Sizing Checks

Self-Retaining DMA Name	Self-Retaining DMA Area (ft2)	Tributary DMA Name	Tributary DMA Area (ft2)	Tributary / SRA Area Ratio

**RUNOFF DETENTION BY THE MODIFIED RATIONAL METHOD**

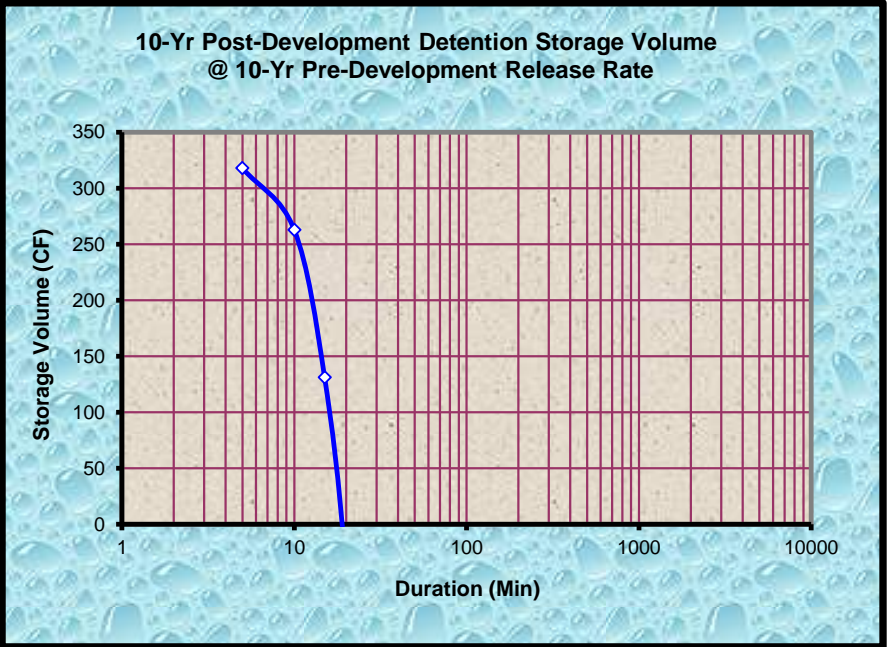
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Site Location P60 Isoleth:	1.80	Fig. SWM-2 in County Design Criteria
Rational Coefficients Cpre:	0.74	See note # 2
Cpost:	0.81	See note # 2
Impervious Area:	35379 ft <sup>2</sup>	See note # 2 and # 4

**STRUCTURE DIMENSIONS FOR DETENTION**

318	ft <sup>3</sup> storage volume calculated			
100	% void space assumed			
318	ft <sup>3</sup> excavated volume needed			
Structure Ratios	Length	Width*	Depth*	*For pipe, use the square root of the sectional area
	128.00	1.77	1.77	
Dimen. (ft)	118.47	1.64	1.64	

10 - YEAR DESIGN STORM				DETENTION @ 15 MIN.	
Storm Duration (min)	10 - Year Intensity (in/hr)	10 - Yr. Release Qpre (cfs)	10 - Year Qpost (cfs)	Detention Rate To Storage (cfs)	Specified Storage Volume (cf)
1440	0.34	0.204	0.223	-1.009	-109012
1200	0.36	0.219	0.240	-0.993	-89347
960	0.39	0.239	0.262	-0.971	-69890
720	0.44	0.268	0.293	-0.939	-50720
480	0.52	0.314	0.344	-0.888	-31984
360	0.58	0.352	0.385	-0.847	-22872
240	0.68	0.413	0.452	-0.780	-14046
180	0.76	0.463	0.506	-0.726	-9801
120	0.90	0.543	0.594	-0.638	-5744
90	1.00	0.608	0.666	-0.567	-3826
60	1.18	0.714	0.781	-0.451	-2032
45	1.32	0.799	0.875	-0.358	-1207
30	1.55	0.938	1.026	-0.206	-463
20	1.82	1.100	1.204	-0.028	-42
15	2.03	<b>1.232</b>	1.349	0.117	131
10	2.39	1.446	1.583	0.350	263
5	3.14	1.901	<b>2.080</b>	0.848	<b>318</b>



**Notes & Limitations on Use:**

- 1) The modified rational method, and therefore the standard calculations are applicable in watersheds up to 20 acres in size.
- 2) Required detention volume determinations shall be based on all net new impervious area both on and off-site, resulting from the proposed project. Pervious areas shall not be included in detention volume sizing; an exception may be made for incidental pervious areas less than 10% of the total area.
- 3) Gravel packed detention chambers shall specify on the plans, aggregate that is washed, angular, and uniformly graded (of single size), assuring void space not less than 35%.
- 4) A map showing boundaries of both regulated impervious areas and actual drainage areas routed to the hydraulic control structure of the detention facility is to be provided, clearly distinguishing between the two areas, and noting the square footage.
- 5) The EPA defines a class V injection well as any bored, drilled, or driven shaft, or dug hole that is deeper than its widest surface dimension, or an improved sinkhole, or a subsurface fluid distribution system. Such storm water drainage wells are "authorized by rule". For more information on these rules, contact the EPA. A web site link is provided from the County DPW Stormwater Management web page.
- 6) Refer to the County of Santa Cruz Design Criteria, for complete method criteria.