

Appendix J: **Stormwater Control Plan**

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STORMWATER CONTROL PLAN
for
Cleaveland & Crescent Multifamily Development

August 24, 2018

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Attachments

Attachment 1 – Vicinity Map

Attachment 2 –Impervious Surfacing Exhibit

Attachment 3 - Stormwater Control Plan Exhibit

Attachment 4 - IMP Sizing Calculator Output

This Stormwater Control Plan was prepared using the template dated February 2018.

I. PROJECT DATA

Table 1. Project Data

Project Name/Number	Cleaveland & Crescent
Application Submittal Date	8/27/2018
Project Location	85 Cleaveland Road, Pleasant Hill, CA APN 150-210-059-2
Name of Developer	GEMDALE 85 Cleaveland Road LLC
Project Phase No.	NA
Project Type and Description	Multifamily residential development of approximately 215 total units
Project Watershed	Walnut Creek
Total Project Site Area (acres)	2.33
Total Area of Land Disturbed (acres)	2.33
Total New Impervious Surface Area (sq. ft.)	0
Total Replaced Impervious Surface Area	81,652
Total Pre-Project Impervious Surface Area	101,303
Total Post-Project Impervious Surface Area	81,652
50% Rule[*]	Applies
Project Density	92 DU/acre (215 units/2.33 acres)
Applicable Special Project Categories [Complete even if all treatment is LID]	C – 55% LID credit 25% - Priority Development Area - Reso 25-11 20% - Density >60 DU/AC 10% - < 10%-grade surface parking
Percent LID and non-LID treatment	100% LID
HM Compliance [†]	[Exempt – new + replaced impervious surfacing is less than existing impervious surfacing]

[*50% rule applies if:

Total Replaced Impervious Surface Area > 0.5 x Pre-Project Impervious Surface Area]

[†HM required (unless project meets one of the exemptions on *Guidebook* p. 9) if:

(Total New Impervious Surface Area + Total Replaced Impervious Surface Area) ≥ 1 acre]

II. SETTING

II.A. Project Location and Description

The Project is proposed on an approximately 2.33-acre parcel located at 85 Cleaveland Road, between Crescent Plaza and Boyd Road, in the City of Pleasant Hill (“Project Site”). The Project Site is currently designated as Mixed Use under the City’s General Plan and lies within the Downtown Pleasant Hill Specific Plan (“DSP”) area. The DSP also serves as the zoning for the Project Site under the current Planned Unit Development (“PUD”) DSP designation. Immediately surrounding lands consist of residential and commercial uses, including lands zoned PUD DSP, PUD 726, and PUD 347.

The proposed Project involves replacing an existing office building on an underutilized infill site with a multifamily residential development of with approximately 215 total units along with amenities that are desirable to serve the residents and market. The residential development will include underground parking as well as a leasing office, resident club house, fitness center, resort-style pool, and roof deck.

Local access is provided by Contra Costa Boulevard, which lies approximately 500 feet east of the Project Site. The Project Site is bounded by single family residential development to the north, a movie theater to the north and east, multifamily residential development to the south, and Cleaveland Road to the west. Additional residential uses lie across Cleaveland Road from the Project Site. It lies within easy walking distance (less than a quarter mile) from downtown Pleasant Hill and approximately one mile from the Pleasant Hill BART station.

II.B. Existing Site Features and Conditions

The Project Site is currently improved with a two-story building containing 38,694 square feet of office space and a parking lot with 168 spaces, along with associated driveways and landscaping. The rectangular parcel is generally flat, gently sloping from the southeast to the northeast corners with a maximum elevation around 59.0 and a minimum elevation of 56.5.

Per the geotechnical investigation conducted in late 2017, the proposed project site is generally underlain by approximately 0 to 3 feet of fill consisting of clayey silt, silty sand, and silts. Beneath the fill is stiff to hard silty clay, sandy clay, and sandy silt down to about 20 feet below ground surface (bgs). Silty clay, clayey silt, and fat clay are located from 20 feet to the maximum depth explored of 50 feet bgs. Groundwater was encountered generally between 13 to 16 feet bgs.

Drainage for the existing site is collected in a series of on-site catch basins and conveyed to a 12-inch drainage line that runs north to Crescent Plaza through a 10-foot wide non-exclusive private drainage easement. At Crescent Plaza, the 12” private drainage line ties into a 12-inch main at a manhole located along the Crescent Plaza frontage. Drainage from the Project Site will continue to be routed through this drainage easement, as no drainage facilities are currently located in Cleaveland Road near the project site.

II.C. Opportunities and Constraints for Stormwater Control

Constraints include low-permeability soils (hydrologic soil group D), high intensity land use, and generally flat terrain. Disposal of runoff to deep infiltration is not feasible on this site due to the low permeability of the clay soils and the objective of creating high-density infill housing limits opportunities to reduce site imperviousness. The storm drain main in Crescent Plaza is approximately 6 feet deep; however, runoff from the site is only able to be discharged at one location along the northerly parcel boundary, which requires long pipe runs to route drainage around the proposed building.

III. LOW IMPACT DEVELOPMENT DESIGN STRATEGIES

III.A. Optimization of Site Layout

[In a narrative, address the points in each of the subheadings to the level of detail appropriate for your project. Subheadings may be used or omitted.]

III.A.1. Limitation of development envelope

The proposed development's objective of providing multifamily housing presents a challenge to limiting the development envelope; however, a building has been located a minimum of 9' away from parcel boundaries to provide space of flow-through planters to provide treatment for roof drainage.

III.A.2. Minimization of imperviousness

Impervious surfacing has been minimized around the perimeter of the building where feasible.

III.A.3. Use of drainage as a design element

Bioswales and flow-through planters will be provided around the perimeter of the building to provide stormwater treatment as well as enhance the visual appeal of the project.

III.B. Use of Permeable Pavements

Permeable pavement was considered for the project; however, it was ultimately ruled out due to the increased cost of construction and minimal stormwater benefit. Although there is minimal on-site paving, on-site drive aisles must withstand fire truck loading and would need to have a subdrain system to compensate for the type D soils.

III.C. Dispersal of Runoff to Pervious Areas

Landscaped areas around the perimeter of the site will be used to treat runoff from impervious surfacing and roof drainage.

III.D. Bioretention or other Integrated Management Practices

Bioretention areas and flow-through planters have been selected to provide stormwater treatment. Planters will be integrated around the building perimeter to treat roof drainage as well as runoff from the access drive aisles. Bioretention facilities are proposed where space allows.

IV. DOCUMENTATION OF DRAINAGE DESIGN

IV.A. Descriptions of each Drainage Management Area

IV.A.1. Table of Drainage Management Areas

Table 1. Drainage Management Areas

<i>DMA Name</i>	<i>Area (SF)</i>	<i>Surface Type/Description</i>	<i>DMA Type/Drains to</i>	
DMA-1L	196	Landscaping	IMP-P1	Flow-through Planter
DMA-1R	2,688	Conventional Roof		
DMA-2R	4,430	Conventional Roof	IMP-P2	Flow-through Planter

<i>DMA Name</i>	<i>Area (SF)</i>	<i>Surface Type/Description</i>	<i>DMA Type/Drains to</i>	
DMA-3L	232	Landscaping	IMP-P3	Flow-through Planter
DMA-3R	2,442	Conventional Roof		
DMA-4L	397	Landscaping	IMP-P4	Flow-through Planter
DMA-4R	3,620	Conventional Roof		
DMA-5L	14	Landscaping	IMP-P5	Flow-through Planter
DMA-5R	1,528	Conventional Roof		
DMA-6L	17	Landscaping	IMP-96	Flow-through Planter
DMA-6R	1,990	Conventional Roof		
DMA-7L	62	Landscaping	IMP-P7	Flow-through Planter
DMA-7R	2,039	Conventional Roof		
DMA-8L	90	Landscaping	IMP-P8	Flow-through Planter
DMA-8R	2,224	Conventional Roof		
DMA-9R	2,787	Conventional Roof	IMP-P9	Flow-through Planter
DMA-10R	1,310	Conventional Roof	IMP-P10	Flow-through Planter
DMA-11L	34	Landscaping	IMP-P11	Flow-through Planter
DMA-11R	3,320	Conventional Roof		
DMA-12L	20	Landscaping	IMP-P12	Flow-through Planter
DMA-12R	3,416	Conventional Roof		
DMA-13R	2,809	Conventional Roof	IMP-P13	Flow-through Planter
DMA-14R	3,755	Conventional Roof	IMP-P14	Flow-through Planter
DMA-15L	43	Landscaping	IMP-P15	Flow-through Planter
DMA-15R	3,700	Conventional Roof		
DMA-16R	4,461	Conventional Roof	IMP-P16	Flow-through Planter
DMA-17L	237	Landscaping	IMP-P17	Flow-through Planter
DMA-17R	2,773	Conventional Roof		
DMA-18L	431	Landscaping	IMP-P18	Flow-through Planter
DMA-18R	1,919	Conventional Roof		
DMA-19L	322	Landscaping	IMP-P19	Flow-through Planter
DMA-19R	3,890	Conventional Roof		
DMA-20L	1,577	Landscaping	IMP-P20	Bioretention Area
DMA-20P	5,854	Asphalt/Concrete Paving		
DMA-21L	466	Landscaping	IMP-P21	Bioretention Area
DMA-21P	1,987	Asphalt/Concrete Paving		
DMA-22L	605	Landscaping	IMP-P22P	Bioretention Area
DMA-22P	1,750	Asphalt/Concrete Paving		
DMA-23L	1,038	Landscaping	IMP-P23	Bioretention Area
DMA-23P	2,806	Asphalt/Concrete Paving		
DMA-24L	1,703	Landscaping	IMP-P24	Bioretention Area
DMA-24P	1,769	Asphalt/Concrete Paving		

<i>DMA Name</i>	<i>Area (SF)</i>	<i>Surface Type/Description</i>	<i>DMA Type/Drains to</i>	
DMA-30C	5,458	Courtyard Surfacing	IMP-P30	Flow-through Planter
DMA-30L	2,220	Landscaping		
DMA-31C	2,673	Courtyard Surfacing	IMP-P31	Flow-through Planter
DMA-31L	459	Landscaping		
DMA-32C	2,819	Courtyard Surfacing	IMP-P32	Flow-through Planter
ST-40	884	Self-Treating	N/A	
ST-41	6,003	Self-Treating	N/A	
UT-50	1,435	Asphalt Surfacing	N/A	

Drainage Management Area Descriptions

DMA's with the suffix "R" indicate roof, "L" indicates landscaping, and "C" indicates concrete or asphalt surfacing.

DMA-1 through DMA-19, with areas as shown above, encompass the building roof and drain to flow-through planters with the around the perimeter of the building.

DMA-20 through DMA-24, with areas as shown above, include the vehicle access aisle that runs north of the building. These areas drain south to bioretention areas between the drive aisle and the building.

DMA-30 through DMA-32, with areas as shown above, include the at-grade building courtyard areas. Runoff from these areas will be collected and conveyed to treatment planters located outside the perimeter of the building, as there is insufficient vertical clearance to provide at-grade treatment planters in the courtyards. Due to the flat topography of the site, runoff from these drainage areas will need to be pumped in order to reach appropriate treatment facilities.

DMA ST-40, totaling 884 square feet, is the pool. This area is self-treating as no runoff will be discharged to the storm drain system from this DMA.

DMA ST-41, totaling 6,003 square feet, is also self-treating and includes landscaping along the perimeter of the site.

IV.B. Integrated Management Practice Descriptions

Runoff from impervious areas on the site, including roofs and paved areas, will be routed to flow-through planters or bioretention facilities as shown on the Stormwater Control Plan. Each of the facilities will be designed and constructed to the criteria in the Stormwater C.3 Guidebook, 7th Edition, including the following features:

- 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 the 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 Class 2 permeable, Caltrans specification 68-2.02F(3).
- 18 inches sand/compost mix meeting the specifications approved by the Regional Water Quality Control Board in April 2016.

- Minimum 4 in. dia. 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 storm drain in Main Street
- Vertical cutoff walls to protect adjacent pavement
- Plantings selected for suitability to climate and location, bioretention soil media (well-drained, low-fertility), and for water conservation
- Irrigation system on a separate zone, with drip emitters and “smart” irrigation controllers

IV.C. Tabulation and Sizing Calculations

All treatment areas are sized to meet or exceed the minimum treatment areas as calculated with Contra Costa County’s IMP Sizing Calculator. See Attachment 3 for output from the IMP Sizing Calculator.

V. SOURCE CONTROL MEASURES

V.A. Site activities and potential sources of pollutants

This residential project will create few potential sources of storm water pollutants. Sources to be controlled are:

- Potential dumping of wash water or other liquids into storm drain inlets.
- Need for future indoor or structural pest control.
- Fertilizers and pesticides used in landscape maintenance.
- Litter and debris on-site.

The table below lists potential pollutant sources on the development site and the corresponding source control measures specified in the Contra Costa Clean Water Program Stormwater C.3 Guidebook. All areas where these activities occur will drain to an IMP. To further reduce the potential for pollutants to enter runoff, permanent and operational BMPs will be implemented as described in below.

V.B. Source Control Table

Table 2. Source Controls

<i>Potential source of runoff pollutants</i>	<i>Permanent source control BMPs</i>	<i>Operational source control BMPs</i>
Inlets (overflow drains)	All inlets will be marked with “No Dumping! Flows to Local Waterways” or similar	<p>Markings will be regularly inspected and repainted or replaced as needed.</p> <p>Lessees will receive stormwater pollution prevention brochures. Lease agreements will include the following provision: “Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains.”</p>

Landscape maintenance	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.
Refuse area	Refuse and recycled materials will be handled within the building and/or parking structure. This area is to be equipped with a drain to a grease interceptor and then to the sanitary sewer.	All dumpsters will be posted with signs stating "Do not dump hazardous materials here" or similar.
Courtyards, patios, sidewalks, and parking lots		<p>Trash receptacles to be provided in plaza area and on drive-through and emptied daily. Site to be policed at least twice daily for trash.</p> <p>Plazas, sidewalks, and parking lots will be swept regularly.</p> <p>Debris and washwater from periodic pressure washing will be collected and disposed of to the sanitary sewer.</p>
Need for future indoor and structural pest control		Integrated Pest Management (IPM) information will be provided to new tenants.

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

There are no known conflicts between the storm water control BMPs and other Contra Costa County codes or other development requirements.

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 has reviewed Contra Costa County's standard agreement regarding the maintenance of stormwater facilities 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 that responsibility is formally transferred to a subsequent owner.

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

The flow-through IMP removes pollutants primarily by filtering runoff slowly through an active layer of soil. Routine maintenance is needed to insure that flow is unobstructed, that erosion is prevented, and that soils are held together by plant roots and are biologically active. The stormwater treatment facilities will be maintained on the following schedule at a minimum. Details of maintenance

responsibilities and procedures will be included in a Stormwater Facility Operation and Maintenance Plan to be submitted for approval as required in the conditions of approval.

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 the following:

- Inspect inlets for channels, exposure of soils, or other evidence of erosion. Clear any obstructions and remove any accumulation of sediment. Examine rock or other material used as a splash pad and replenish if necessary.
- Inspect outlets for erosion or plugging.
- Inspect inlets and clear any obstructions and remove any accumulation of sediment.
- Inspect pumps to ensure they are properly operating. Replace pump as necessary to make certain operation is as designed.
- Inspect soils for evidence of instability or erosion and correct as necessary.
- Observe soil at the bottom of the IMPs for uniform percolation throughout. If portions of the IMPs do not drain within 48 hours after the end of a storm, the soil should be tilled and replanted. Remove any debris or accumulations of sediment.
- Examine the vegetation to insure that it is healthy and dense enough to provide filtering and to protect soils from erosion. Replenish mulch as necessary, remove fallen leaves and debris, prune large shrubs or trees, and mow turf areas. Confirm that irrigation is adequate and not excessive. Replace dead plants and remove invasive vegetation.
- Abate any potential vectors by filling holes in the ground and by insuring that there are no areas where water stands longer than 48 hours following a storm. If mosquito larvae are present and persistent, contact the Contra Costa County Vector Control District for information and advice. Mosquito larvicides should be applied only when absolutely necessary and then only by a licensed individual or contractor.
-

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 C.3 CHECKLIST

Table 3. Construction Plan C.3 Checklist

<i>Stormwater Control Plan Page #</i>	<i>BMP Description</i>	<i>See Plan Sheet #s</i>
X and Exhibit	DMA 1 through DMA 19 – roof drainage will be directed to appropriate IMP	
X and exhibit	DMA 20 through DMA 24 – runoff from drive aisle is directed to appropriate treatment measure	
X and exhib	DMA 30 through DMA 31 – courtyard drainage is collected and conveyed, via pump, to appropriate treatment planter	

VIII. CERTIFICATIONS

The selection, sizing, and preliminary design of stormwater treatment and other control measures in this plan meet the requirements of Regional Water Quality Control Board Order R2-2015-0049.

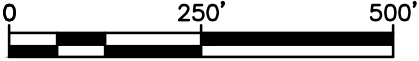
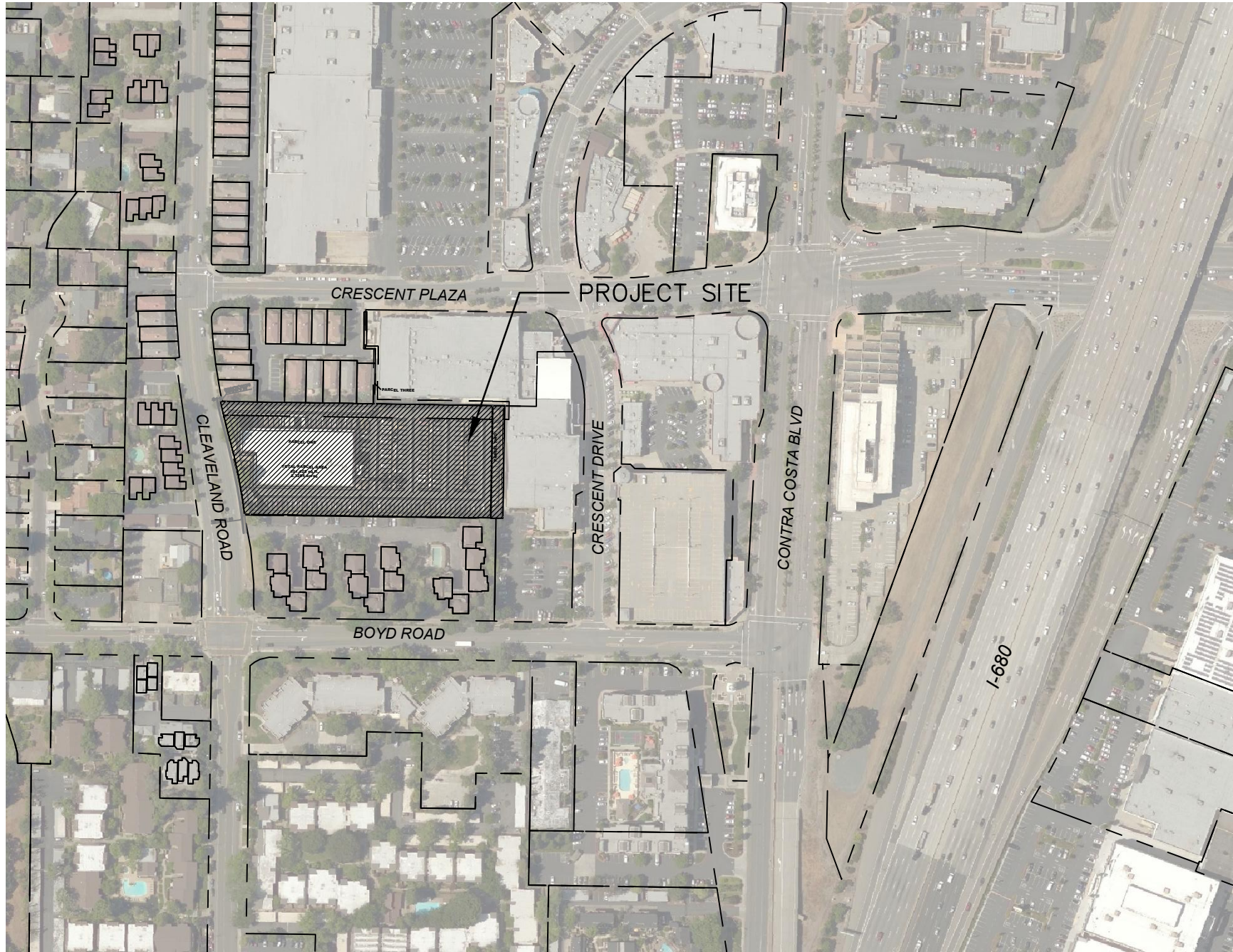
By

Kirsten M. H.

Kirsten Hanson



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VICINITY MAP

85 CLEVELAND ROAD
PLEASANT HILL, CA 94523



S A G E
Consulting Engineers, Inc.

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DATE	08/24/2018
SCALE	1" = 250'
PROJECT NO.	J0082
DRAWING NO.	EXH-1

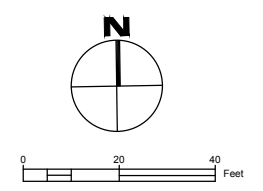
CLEVELAND ROAD

EXISTING
BUILDING

LEGEND:

- PROPERTY LINE
- ASPHALT AREA (IMPERVIOUS)
- CONCRETE AREA (IMPERVIOUS)
- EXISTING BUILDING AREA (IMPERVIOUS)
- LANDSCAPE AREA (PERVIOUS)

EXISTING AREAS	
IMPERVIOUS AREA	84,886 SF
IMPERVIOUS %	83.8 %
PERVIOUS AREA	16,417 SF
PERVIOUS %	16.2 %
TOTAL AREA	101,303 SF



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**IMPERVIOUS SURFACING EXHIBIT
ATTACHMENT 2**

85 CLEVELAND, PLEASANT HILL
8/24/2018

Attachment 4 - IMP Sizing Calculator Output

Project Name: 85 Cleaveland Road
Project Type: Treatment Only
APN: 150-210-059-2
Drainage Area: 103,550
Mean Annual Precipitation: 18.5

Self-Treating DMAs

DMA Name	Area (sq ft)
ST-40	884.0
ST-41	6,003.0

IV. Areas Draining to IMPs

IMP Name: IMP1

IMP Type: Flow-Through Planter

Soil Group: IMP1

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor	IMP Sizing			
DMA-1R	2,688	Conventional Roof	1.00	2,688	IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
DMA-1L	196	Landscape	0.10	20				
Total				2,708				
Area					0.040	1.000	108	120

IMP Name: IMP2

IMP Type: Flow-Through Planter

Soil Group: IMP2

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor	IMP Sizing			
DMA-2R	4,430	Conventional Roof	1.00	4,430	IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
Total				4,430				
Area					0.040	1.000	177	199

IMP Name: IMP3

IMP Type: Flow-Through Planter

Soil Group: IMP3

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor	IMP Sizing			
DMA-3R	2,442	Conventional Roof	1.00	2,442	IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
DMA-3L	232	Landscape	0.10	23				
Total				2,465				

Area	0.040	1.000	99	189
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IMP Name: IMP4

IMP Type: Flow-Through Planter

Soil Group: IMP4

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor	IMP Sizing			
DMA-4R	3,620	Conventional Roof	1.00	3,620	IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
DMA-4L	397	Landscape	0.10	40				
Total				3,660				
Area					0.040	1.000	146	193

IMP Name: IMP5

IMP Type: Flow-Through Planter

Soil Group: IMP5

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor	IMP Sizing			
DMA-5R	1,528	Conventional Roof	1.00	1,528	IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
DMA-5L	14	Landscape	0.10	1				
Total				1,529				
Area					0.040	1.000	61	102

IMP Name: IMP6

IMP Type: Flow-Through Planter

Soil Group: IMP6

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor	IMP Sizing			
DMA-6R	1,990	Conventional Roof	1.00	1,990	IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
DMA-6L	17	Landscape	0.10	2				
Total				1,992				
Area					0.040	1.000	80	138

IMP Name: IMP7

IMP Type: Flow-Through Planter

Soil Group: IMP7

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor	IMP Sizing			
DMA-7R	2,039	Conventional Roof	1.00	2,039	IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
DMA-7L	62	Landscape	0.10	6				
Total				2,045				
Area					0.040	1.000	82	91

IMP Name: IMP8

IMP Type: Flow-Through Planter

Soil Group: IMP8

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor	IMP Sizing			
DMA-8R	2,224	Conventional Roof	1.00	2,224	IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
DMA-8L	90	Landscape	0.10	9				
Total				2,233				
Area					0.040	1.000	89	92

IMP Name: IMP9

IMP Type: Flow-Through Planter

Soil Group: IMP9

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor	IMP Sizing			
DMA-9R	2,787	Conventional Roof	1.00	2,787	IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
Total				2,787				
Area					0.040	1.000	111	132

IMP Name: IMP10

IMP Type: Flow-Through Planter

Soil Group: IMP10

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor	IMP Sizing			
DMA-10R	1,310	Conventional Roof	1.00	1,310	IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
Total				1,310				
Area					0.040	1.000	52	173

IMP Name: IMP11

IMP Type: Flow-Through Planter

Soil Group: IMP11

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor	IMP Sizing			
DMA-11R	3,320	Concrete or Asphalt	1.00	3,320	IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
DMA-11L	34	Landscape	0.10	3				
Total				3,323				
Area					0.040	1.000	133	466

IMP Name: IMP12

IMP Type: Flow-Through Planter

Soil Group: IMP12

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor	IMP Sizing			
DMA-12R	3,416	Conventional Roof	1.00	3,416	IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
DMA-12L	20	Landscape	0.10	2				
Total				3,418				
				Area	0.040	1.000	137	151

IMP Name: IMP13**IMP Type: Flow-Through Planter****Soil Group: IMP13**

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor	IMP Sizing			
DMA-13R	2,809	Conventional Roof	1.00	2,809	IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
Total				2,809				
				Area	0.040	1.000	112	216

IMP Name: IMP14**IMP Type: Flow-Through Planter****Soil Group: IMP14**

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor	IMP Sizing			
DMA-14R	3,755	Conventional Roof	1.00	3,755	IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
Total				3,755				
				Area	0.040	1.000	150	205

IMP Name: IMP15**IMP Type: Flow-Through Planter****Soil Group: IMP15**

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor	IMP Sizing			
DMA-15R	3,700	Conventional Roof	1.00	3,700	IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
DMA-15L	43	Landscape	0.10	4				
Total				3,704				
				Area	0.040	1.000	148	190

IMP Name: IMP16**IMP Type: Flow-Through Planter****Soil Group: IMP16**

DMA Name	Area (sq ft)	Post Project	DMA Runoff	DMA Area x
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		Surface Type	Factor	Runoff Factor	IMP Sizing			
DMA-16R	4,461	Conventional Roof	1.00	4,461	IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
Total				4,461				
				Area				
					0.040	1.000	178	217

IMP Name: IMP17

IMP Type: Flow-Through Planter

Soil Group: IMP17

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor	IMP Sizing			
DMA-17R	2,773	Conventional Roof	1.00	2,773	IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
DMA-17L	237	Landscape	0.10	24				
Total				2,797				
				Area	0.040	1.000	112	136

IMP Name: IMP18

IMP Type: Flow-Through Planter

Soil Group: IMP18

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor	IMP Sizing			
DMA-18R	1,919	Conventional Roof	1.00	1,919	IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
DMA-18L	431	Landscape	0.10	43				
Total				1,962				
				Area	0.040	1.000	78	124

IMP Name: IMP19

IMP Type: Flow-Through Planter

Soil Group: IMP19

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor	IMP Sizing			
DMA-19R	3,890	Conventional Roof	1.00	3,890	IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
DMA-19L	322	Landscape	0.10	32				
Total				3,922				
				Area	0.040	1.000	157	183

IMP Name: IMP20

IMP Type: Flow-Through Planter

Soil Group: IMP20

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor	IMP Sizing
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DMA-20P	5,854	Conventional Roof	1.00	5,854	IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
DMA-20L	1,577	Landscape	0.10	158				
Total				6,012				
				Area	0.040	1.000	240	279

IMP Name: IMP21

IMP Type: Flow-Through Planter

Soil Group: IMP21

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor	IMP Sizing			
DMA-21P	1,987	Conventional Roof	1.00	1,987	IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
DMA-21L	466	Landscape	0.10	47				
Total				2,034				
				Area	0.040	1.000	81	119

IMP Name: IMP22

IMP Type: Flow-Through Planter

Soil Group: IMP22

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor	IMP Sizing			
DMA-22P	1,750	Conventional Roof	1.00	1,750	IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
DMA-22L	605	Landscape	0.10	61				
Total				1,811				
				Area	0.040	1.000	72	110

IMP Name: IMP23

IMP Type: Flow-Through Planter

Soil Group: IMP23

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor	IMP Sizing			
DMA-24P	2,806	Conventional Roof	1.00	2,806	IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
DMA-23L	1,038	Landscape	0.10	104				
Total				2,910				
				Area	0.040	1.000	116	207

IMP Name: IMP24

IMP Type: Flow-Through Planter

Soil Group: IMP24

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor	IMP Sizing	IMP Sizing Factor	Rain	Minimum	Proposed
DMA-24P	1,769	Concrete or	1.00	1,769	IMP Sizing				

		Asphalt			Factor	Adjustment Factor	Area or Volume	Area or Volume
DMA-24L	1,703	Landscape	0.10	170				
Total				1,939				
				Area	0.040	1.000	78	170

IMP Name: IMP30

IMP Type: Flow-Through Planter

Soil Group: IMP30

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor	IMP Sizing			
DMA-30C	5,458	Concrete or Asphalt	1.00	5,458	IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
DMA-30L	2,220	Landscape	0.10	222				
Total				5,680				
				Area	0.040	1.000	227	333

IMP Name: IMP31

IMP Type: Flow-Through Planter

Soil Group: IMP31

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor	IMP Sizing			
DMA-31C	2,673	Conventional Roof	1.00	2,673	IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
DMA-31L	459	Landscape	0.10	46				
Total				2,719				
				Area	0.040	1.000	109	167

IMP Name: IMP32

IMP Type: Flow-Through Planter

Soil Group: IMP32

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor	IMP Sizing			
DMA-32C	2,819	Concrete or Asphalt	1.00	2,819	IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
Total				2,819				
				Area	0.040	1.000	113	119