

Appendix L.1

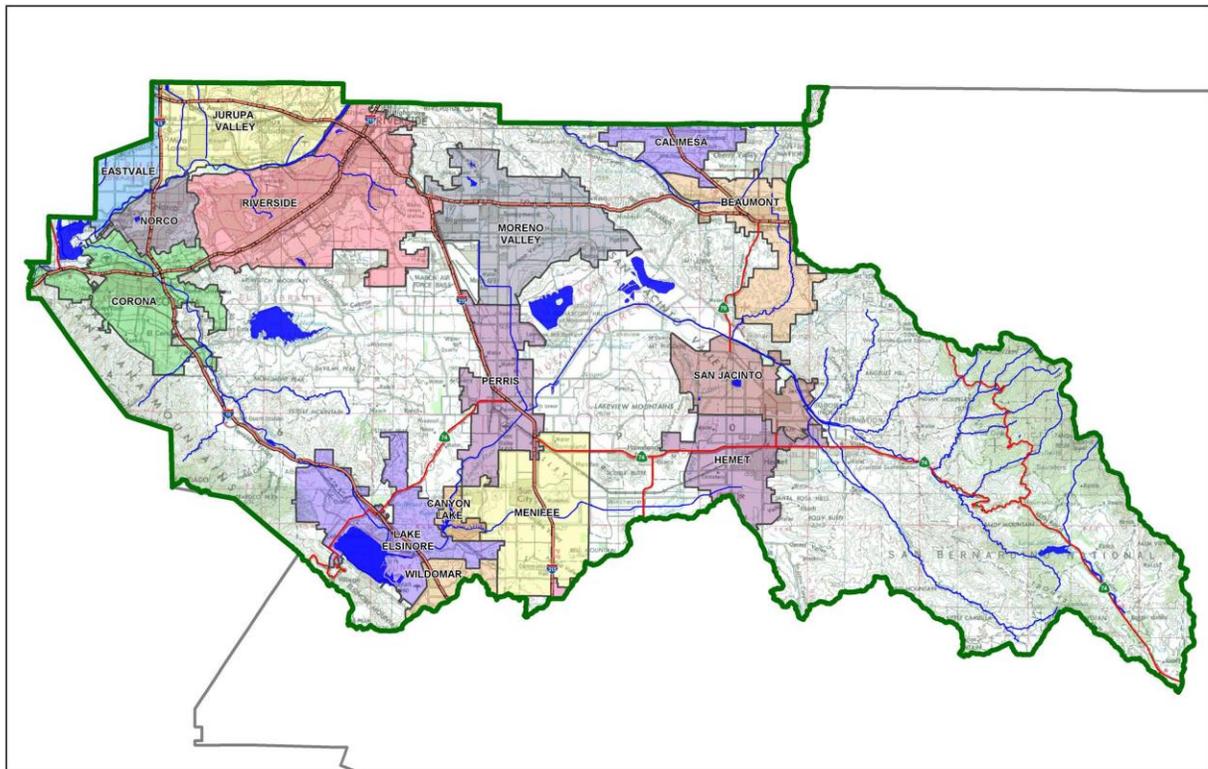
Project Specific Water Quality Management Plan

Project Specific Water Quality Management Plan

Project Title: McHolland Retail

Development No: Tentative Parcel Map 37779

Design Review/Case No: CUP



- Preliminary
- Final

Original Date Prepared: June 26, 2019

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*Prepared for Compliance with
Regional Board Order No. **R8-2010-0033***

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OWNER'S CERTIFICATION

This Project-Specific Water Quality Management Plan (WQMP) has been prepared for Rancho McHolland, LLC by Blaine A. Womer Civil Engineering for the Sage Stetson Hemet project.

This WQMP is intended to comply with the requirements of City of Hemet for Hemet Water Quality Ordinance (Municipal Code Section 14-471 et seq.) which includes the requirement for the preparation and implementation of a Project-Specific WQMP.

The undersigned, while owning the property/project described in the preceding paragraph, shall be responsible for the implementation and funding of this WQMP and will ensure that this WQMP is amended as appropriate to reflect up-to-date conditions on the site. In addition, the property owner accepts responsibility for interim operation and maintenance of Stormwater BMPs until such time as this responsibility is formally transferred to a subsequent owner. This WQMP will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party (or parties) having responsibility for implementing portions of this WQMP. At least one copy of this WQMP will be maintained at the project site or project office in perpetuity. The undersigned is authorized to certify and to approve implementation of this WQMP. The undersigned is aware that implementation of this WQMP is enforceable under City of Hemet Water Quality Ordinance (Municipal Code Section 14-471 et seq.).

"I, the undersigned, certify under penalty of law that the provisions of this WQMP have been reviewed and accepted and that the WQMP will be transferred to future successors in interest."

Pending Approval

Owner's Signature

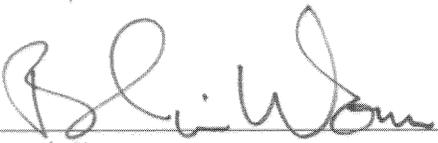
Date

Owner's Printed Name

Owner's Title/Position

PREPARER'S CERTIFICATION

"The selection, sizing and design of stormwater treatment and other stormwater quality and quantity control measures in this plan meet the requirements of Regional Water Quality Control Board Order No. **R8-2010-0033** and any subsequent amendments thereto."



Preparer's Signature

7/11/19

Date

Blaine Womer

Preparer's Printed Name

President

Preparer's Title/Position

Preparer's Licensure: RCE 46354

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Section A: Project and Site Information

PROJECT INFORMATION	
Type of Project:	Commercial
Planning Area:	
Community Name:	Hemet
Development Name:	McHolland Retail
PROJECT LOCATION	
Latitude & Longitude (DMS):	33°43'43"N; -117°00'18"W
Project Watershed and Sub-Watershed:	Watershed – Santa Ana River Sub-Watershed – San Jacinto Valley
APN(s):	Portion of 460-150-014
Map Book and Page No.:	Portion of Lot 1 of Gibbels Subdivision, MB 15/735
PROJECT CHARACTERISTICS	
Proposed or Potential Land Use(s)	Commercial
Proposed or Potential SIC Code(s)	5411, 5541, 7542
Area of Impervious Project Footprint (SF)	75,514 sf
Total Area of <u>proposed</u> Impervious Surfaces within the Project Limits (SF)/or Replacement	75,514 sf
Does the project consist of offsite road improvements?	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
Does the project propose to construct unpaved roads?	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
Is the project part of a larger common plan of development (phased project)?	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
EXISTING SITE CHARACTERISTICS	
Total area of <u>existing</u> Impervious Surfaces within the project limits (SF)	26,646 sf
Is the project located within any MSHCP Criteria Cell?	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
If so, identify the Cell number:	N/A
Are there any natural hydrologic features on the project site?	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
Is a Geotechnical Report attached?	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
If no Geotech. Report, list the NRCS soils type(s) present on the site (A, B, C and/or D)	N/A
What is the Water Quality Design Storm Depth for the project?	0.69

Narrative: The McHolland retail project is a proposed commercial development including a 7-11 convenience/ gas station and a Quick Quack car wash on approximately 2.3 acres located at the southeast corner of Sanderson Avenue and Stetson Avenue. The project is located just west of the existing McCrometer flow meter facility. Water quality mitigation for the retail will be accomplished through bioretention due to the low infiltration rates of the site soils. Self-retaining landscaping was utilized in landscape areas where practical.

A.1 Maps and Site Plans

Appendix 1 includes the following exhibits:

- Vicinity Map, A-1
- Regional Waters Map, A-2
- WQMP Site Plan, A-3

A.2 Identify Receiving Waters

Table A.1 Identification of Receiving Waters

Receiving Waters	EPA Approved 303(d) List Impairments	Designated Beneficial Uses	Proximity to RARE Beneficial Use
City of Hemet Storm Drain system	None	None	None
Salt Creek HU# 802.12	None	REC1-REC2-WARM-WILD	Not designated as RARE
Canyon Lake HU# 802.11 & 802.12	Pathogens, Nutrients	MUN-AGR-GWR-REC1-REC-2-WARM-WILD	Not designated as RARE
San Jacinto River, Reach 1 HU# 802.32 & 802.31	None	MUN-AGR-GWR-REC1-REC-2-WARM-WILD	Not designated as RARE
Lake Elsinore HU# 802.31	Nutrients, Organic Enrichment/ Low Dissolved Oxygen, Sedimentation/Siltation, Unknown Toxicity, PCBs	REC1-REC2-WARM-WILD	Not designated as RARE

A.3 Additional Permits/Approvals required for the Project:

Table A.2 Other Applicable Permits

Agency	Permit Required	
State Department of Fish and Game, 1602 Streambed Alteration Agreement	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
State Water Resources Control Board, Clean Water Act (CWA) Section 401 Water Quality Cert.	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
US Army Corps of Engineers, CWA Section 404 Permit	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
US Fish and Wildlife, Endangered Species Act Section 7 Biological Opinion	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
Statewide Construction General Permit Coverage	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N
Statewide Industrial General Permit Coverage	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
Western Riverside MSHCP Consistency Approval (e.g., JPR, DBESP)	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
Other (please list in the space below as required)	<input type="checkbox"/> Y	<input type="checkbox"/> N

Section B: Optimize Site Utilization (LID Principles)

Site Optimization

The following questions are based upon Section 3.2 of the WQMP Guidance Document. Review of the WQMP Guidance Document will help you determine how best to optimize your site and subsequently identify opportunities and/or constraints, and document compliance.

Did you identify and preserve existing drainage patterns? If so, how? If not, why?

Existing drainage patterns were honored through grading design as shown on the conceptual grading plan.

Did you identify and protect existing vegetation? If so, how? If not, why?

No existing vegetation to protect.

Did you identify and preserve natural infiltration capacity? If so, how? If not, why?

As explained in the narrative, the retail site does not have minimum infiltration capacity.

Did you identify and minimize impervious area? If so, how? If not, why?

To the greatest extent possible for a development of this type.

Did you identify and disperse runoff to adjacent pervious areas? If so, how? If not, why?

Not on the retail parcel due to low infiltration. Runoff is dispersed to bioretention facilities.

Section C: Delineate Drainage Management Areas (DMAs)

Table C.1 DMA Classifications

DMA Name or ID	Surface Type(s) ¹	Area (Sq. Ft.)	DMA Type
B/1	Landscape	1,916	Self-Retaining
B/2	Landscape	7,687	Self-Retaining
D/1	Roof	6,405	Drains to BMP
D/2	Asphalt	29,077	Drains to BMP
D/3	Concrete	1,429	Drains to BMP
D/4	Landscape	3,478	Drains to BMP
D/5	Roof	3,590	Drains to BMP
D/6	Asphalt	31,065	Drains to BMP
D/7	Concrete	3,071	Drains to BMP
D/8	Landscape	5,477	Drains to BMP

¹Reference Table 2-1 in the WQMP Guidance Document to populate this column

Table C.2 Type 'A', Self-Treating Areas

DMA Name or ID	Area (Sq. Ft.)	Stabilization Type	Irrigation Type (if any)
N/A			

Table C.3 Type 'B', Self-Retaining Areas

Self-Retaining Area				Type 'C' DMAs that are draining to the Self-Retaining Area		
DMA Name/ ID	Post-project surface type	Area (square feet)	Storm Depth (inches)	DMA Name / ID	[C] from Table C.4 = [C]	Required Retention Depth (inches)
		[A]	[B]			[D]
B/1	Landscaping	1,916	0.69			
B/2	Landscaping	7,687	0.69			

$$[D] = [B] + \frac{[B] \cdot [C]}{[A]}$$

Table C.4 Type 'C', Areas that Drain to Self-Retaining Areas

DMA					Receiving Self-Retaining DMA		
DMA Name/ ID	Area (square feet)	Post-project surface type	Runoff factor	Product	DMA name /ID	Area (square feet)	Ratio
	[A]		[B]	[C] = [A] x [B]		[D]	[C]/[D]
N/A							

Table C.5 Type 'D', Areas Draining to BMPs

DMA Name or ID	BMP Name or ID
D/1	Bioretention Basin No. 1
D/2	Bioretention Basin No. 1
D/3	Bioretention Basin No. 1
D/4	Bioretention Basin No. 1
D/5	Bioretention Basin No. 2
D/6	Bioretention Basin No. 2
D/7	Bioretention Basin No. 2
D/8	Bioretention Basin No. 2

Note: More than one drainage management area can drain to a single LID BMP, however, one drainage management area may not drain to more than one BMP.

Section D: Implement LID BMPs

D.1 Infiltration Applicability

Is there an approved downstream ‘Highest and Best Use’ for stormwater runoff (see discussion in Chapter 2.4.4 of the WQMP Guidance Document for further details)? Y N

Geotechnical Report

Is this project classified as a small project consistent with the requirements of Chapter 2 of the WQMP Guidance Document? Y N

Infiltration Feasibility

Table D.1 Infiltration Feasibility

Does the project site...	YES	NO
...have any DMAs with a seasonal high groundwater mark shallower than 10 feet? If Yes, list affected DMAs:		X
...have any DMAs located within 100 feet of a water supply well? If Yes, list affected DMAs:		X
...have any areas identified by the geotechnical report as posing a public safety risk where infiltration of stormwater could have a negative impact? If Yes, list affected DMAs:		X
...have measured in-situ infiltration rates of less than 1.6 inches / hour? If Yes, list affected DMAs:	X	
...have significant cut and/or fill conditions that would preclude in-situ testing of infiltration rates at the final infiltration surface? If Yes, list affected DMAs:		X
...geotechnical report identify other site-specific factors that would preclude effective and safe infiltration? Describe here:		X

If you answered “Yes” to any of the questions above for any DMA, Infiltration BMPs should not be used for those DMAs and you should proceed to the assessment for Harvest and Use below.

D.2 Harvest and Use Assessment

Please check what applies:

- Reclaimed water will be used for the non-potable water demands for the project.
- Downstream water rights may be impacted by Harvest and Use as approved by the Regional Board (verify with the Copermittee).
- The Design Capture Volume will be addressed using Infiltration Only BMPs. In such a case, Harvest and Use BMPs are still encouraged, but it would not be required if the Design Capture Volume will be infiltrated or evapotranspired.

If any of the above boxes have been checked, Harvest and Use BMPs need not be assessed for the site. If neither of the above criteria applies, follow the steps below to assess the feasibility of irrigation use, toilet use and other non-potable uses (e.g., industrial use).

Irrigation Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for Irrigation Use BMPs on your site:

Step 1: Identify the total area of irrigated landscape on the site, and the type of landscaping used.

Total Area of Irrigated Landscape: 0.42

Type of Landscaping (Conservation Design or Active Turf): Conservation design

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for irrigation use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: 1.71

Step 3: Cross reference the Design Storm depth for the project site (see Exhibit A of the WQMP Guidance Document) with the left column of Table 2-3 in Chapter 2 to determine the minimum area of Effective Irrigated Area per Tributary Impervious Area (EIATIA).

Enter your EIATIA factor: 1.27

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum irrigated area that would be required.

Minimum required irrigated area: 2.17

Step 5: Determine if harvesting stormwater runoff for irrigation use is feasible for the project by comparing the total area of irrigated landscape (Step 1) to the minimum required irrigated area (Step 4).

Minimum required irrigated area (Step 4)	Available Irrigated Landscape (Step 1)
2.17 Acres	0.47 Ac

Toilet Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for toilet flushing uses on your site:

Step 1: Identify the projected total number of daily toilet users during the wet season, and account for any periodic shut downs or other lapses in occupancy:

Projected Number of Daily Toilet Users: 8

Project Type: Commercial

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for toilet use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: 1.71

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-1 in Chapter 2 to determine the minimum number of toilet users per tributary impervious acre (TUTIA).

Enter your TUTIA factor: 148

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum number of toilet users that would be required.

Minimum number of toilet users: 253

Step 5: Determine if harvesting stormwater runoff for toilet flushing use is feasible for the project by comparing the Number of Daily Toilet Users (Step 1) to the minimum required number of toilet users (Step 4).

Minimum required Toilet Users (Step 4)	Projected number of toilet users (Step 1)
253	8

Other Non-Potable Use Feasibility

Are there other non-potable uses for stormwater runoff on the site (e.g. industrial use)? See Chapter 2 of the Guidance for further information. If yes, describe below. If no, write N/A.

N/A

Step 1: Identify the projected average daily non-potable demand, in gallons per day, during the wet season and accounting for any periodic shut downs or other lapses in occupancy or operation.

Average Daily Demand: Projected Average Daily Use (gpd)

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for the identified non-potable use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: Insert Area (Acres)

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-3 in Chapter 2 to determine the minimum demand for non-potable uses per tributary impervious acre.

Enter the factor from Table 2-3: Enter Value

Step 4: Multiply the unit value obtained from Step 4 by the total of impervious areas from Step 3 to develop the minimum number of gallons per day of non-potable use that would be required.

Minimum required use: Minimum use required (gpd)

Step 5: Determine if harvesting stormwater runoff for other non-potable use is feasible for the project by comparing the Number of Daily Toilet Users (Step 1) to the minimum required number of toilet users (Step 4).

Minimum required non-potable use (Step 4)	Projected average daily use (Step 1)
Minimum use required (gpd)	Projected Average Daily Use (gpd)

If Irrigation, Toilet and Other Use feasibility anticipated demands are less than the applicable minimum values, Harvest and Use BMPs are not required and you should proceed to utilize LID Bioretention and Biotreatment, unless a site-specific analysis has been completed that demonstrates technical infeasibility as noted in D.3 below.

D.3 Bioretention and Biotreatment Assessment

Other LID Bioretention and Biotreatment BMPs as described in Chapter 2.4.7 of the WQMP Guidance Document are feasible on nearly all development sites with sufficient advance planning.

Select one of the following:

- LID Bioretention/Biotreatment BMPs will be used for some or all DMAs of the project as noted below in Section D.4 (note the requirements of Section 3.4.2 in the WQMP Guidance Document).
- A site-specific analysis demonstrating the technical infeasibility of all LID BMPs has been performed and is included in Appendix 5. If you plan to submit an analysis demonstrating the technical infeasibility of LID BMPs, request a pre-submittal meeting with the Copermittee to discuss this option. Proceed to Section E to document your alternative compliance measures.

D.4 Feasibility Assessment Summaries

Table D.2 LID Prioritization Summary Matrix

DMA Name/ID	LID BMP Hierarchy				No LID (Alternative Compliance)
	1. Infiltration	2. Harvest and use	3. Bioretention	4. Biotreatment	
D/1	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D/2	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D/3	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D/4	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D/5	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D/6	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D/7	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D/8	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

D.5 LID BMP Sizing

Table D.3 DCV Calculations for LID BMPs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	<i>Bioretention Basin No. 1</i>		
	[A]		[B]	[C]	[A] x [C]			
D/1	6,405	Roof	1	.89	5,712.4	<i>Design Storm Depth (in)</i>	<i>Design Capture Volume, V_{BMP} (cubic feet)</i>	<i>Proposed Volume on Plans (cubic feet)</i>
D/2	29,077	Asphalt	1	.89	25,936.7			
D/3	1,429	Concrete	1	.89	1,274.7			
D/4	3,478	Landscape	.1	.11	384.2			
	40,388				33,308	.69	1915.2	4548

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document

[E] is obtained from Exhibit A in the WQMP Guidance Document

[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6

Table D.4 DCV Calculations for LID BMPs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I _f	DMA Runoff Factor	DMA Areas x Runoff Factor	Bioretention Basin No. 2		
	[A]		[B]	[C]	[A] x [C]			
D/5	3,590	Roof	1	.89	3,202.3	Design Storm Depth (in)	Design Capture Volume, V _{BMP} (cubic feet)	Proposed Volume on Plans (cubic feet)
D/6	31,065	Asphalt	1	.89	27,710			
D/7	3,071	Concrete	1	.89	2,739.3			
D/8	5,477	Landscape	.1	.11	605			
	43,203				34,256.6	.69	1969.8	4098

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document

[E] is obtained from Exhibit A in the WQMP Guidance Document

[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6

Section E: Alternative Compliance (LID Waiver Program)

LID BMPs are expected to be feasible on virtually all projects. Where LID BMPs have been demonstrated to be infeasible as documented in Section D, other Treatment Control BMPs must be used (subject to LID waiver approval by the Copermittee). Check one of the following Boxes:

- LID Principles and LID BMPs have been incorporated into the site design to fully address all Drainage Management Areas. No alternative compliance measures are required for this project and thus this Section is not required to be completed.

- Or -

- The following Drainage Management Areas are unable to be addressed using LID BMPs. A site-specific analysis demonstrating technical infeasibility of LID BMPs has been approved by the Co-Permittee and included in Appendix 5. Additionally, no downstream regional and/or sub-regional LID BMPs exist or are available for use by the project. The following alternative compliance measures on the following pages are being implemented to ensure that any pollutant loads expected to be discharged by not incorporating LID BMPs, are fully mitigated.

E.1 Identify Pollutants of Concern

Table E.1 Potential Pollutants by Land Use Type

Priority Project Categories and/or Project Features (check those that apply)	General Pollutant Categories							
	Bacterial Indicators	Metals	Nutrients	Pesticides	Toxic Organic Compounds	Sediments	Trash & Debris	Oil Grease &
<input type="checkbox"/> Detached Residential Development	P	N	P	P	N	P	P	P
<input type="checkbox"/> Attached Residential Development	P	N	P	P	N	P	P	P ⁽²⁾
<input checked="" type="checkbox"/> Commercial/Industrial Development	P ⁽³⁾	P	P ⁽¹⁾	P ⁽¹⁾	P ⁽⁵⁾	P ⁽¹⁾	P	P
<input type="checkbox"/> Automotive Repair Shops	N	P	N	N	P ^(4, 5)	N	P	P
<input type="checkbox"/> Restaurants (>5,000 ft ²)	P	N	N	N	N	N	P	P
<input type="checkbox"/> Hillside Development (>5,000 ft ²)	P	N	P	P	N	P	P	P
<input checked="" type="checkbox"/> Parking Lots (>5,000 ft ²)	P ⁽⁶⁾	P	P ⁽¹⁾	P ⁽¹⁾	P ⁽⁴⁾	P ⁽¹⁾	P	P
<input type="checkbox"/> Retail Gasoline Outlets	N	P	N	N	P	N	P	P
Project Priority Pollutant(s) of Concern	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

P = Potential

N = Not Potential

⁽¹⁾ A potential Pollutant if non-native landscaping exists or is proposed onsite; otherwise not expected

⁽²⁾ A potential Pollutant if the project includes uncovered parking areas; otherwise not expected

⁽³⁾ A potential Pollutant is land use involving animal waste

⁽⁴⁾ Specifically petroleum hydrocarbons

⁽⁵⁾ Specifically solvents

⁽⁶⁾ Bacterial indicators are routinely detected in pavement runoff

E.2 Stormwater Credits

Table E.2 Water Quality Credits

Qualifying Project Categories	Credit Percentage ²
N/A	
Total Credit Percentage¹	

¹Cannot Exceed 50%

²Obtain corresponding data from Table 3-8 in the WQMP Guidance Document

E.3 Sizing Criteria

Table E.3 Treatment Control BMP Sizing

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I _f	DMA Runoff Factor	DMA Area x Runoff Factor	Enter BMP Name / Identifier Here			
	[A]		[B]	[C]	[A] x [C]				
N/A									
						Design Storm Depth (in)	Minimum Design Capture Volume or Design Flow Rate (cubic feet or cfs)	Total Storm Water Credit % Reduction	Proposed Volume or Flow on Plans (cubic feet or cfs)
	$A_T = \Sigma[A]$				$\Sigma = [D]$	[E]	$[F] = \frac{[D] \times [E]}{[G]}$	$[F] \times (1-[H])$	[I]

[B], [C] is obtained as described in Section 2.3.1 from the WQMP Guidance Document

[E] is obtained from Exhibit A in the WQMP Guidance Document

[G] is for Flow-Based Treatment Control BMPs [G] = 43,560, for Volume-Based Control Treatment BMPs, [G] = 12

[H] is from the Total Credit Percentage as Calculated from Table E.2 above

[I] as obtained from a design procedure sheet from the BMP manufacturer and should be included in Appendix 6

E.4 Treatment Control BMP Selection

Table E.4 Treatment Control BMP Selection

Selected Treatment Control BMP Name or ID ¹	Priority Pollutant(s) of Concern to Mitigate ²	Removal Efficiency Percentage ³
N/A		

¹ Treatment Control BMPs must not be constructed within Receiving Waters. In addition, a proposed Treatment Control BMP may be listed more than once if they possess more than one qualifying pollutant removal efficiency.

² Cross Reference Table E.1 above to populate this column.

³ As documented in a Co-Permittee Approved Study and provided in Appendix 6.

Section F: Hydromodification

F.1 Hydrologic Conditions of Concern (HCOC) Analysis

HCOC EXEMPTION 1: The Priority Development Project disturbs less than one acre. The Copermitttee has the discretion to require a Project-Specific WQMP to address HCOCs on projects less than one acre on a case by case basis. The disturbed area calculation should include all disturbances associated with larger common plans of development.

Does the project qualify for this HCOC Exemption? Y N

If Yes, HCOC criteria do not apply.

HCOC EXEMPTION 2: The volume and time of concentration¹ of storm water runoff for the post-development condition is not significantly different from the pre-development condition for a 2-year return frequency storm (a difference of 5% or less is considered insignificant) using one of the following methods to calculate:

- Riverside County Hydrology Manual
- Technical Release 55 (TR-55): Urban Hydrology for Small Watersheds (NRCS 1986), or derivatives thereof, such as the Santa Barbara Urban Hydrograph Method
- Other methods acceptable to the Co-Permittee

Does the project qualify for this HCOC Exemption? Y N

If Yes, report results in Table F.1 below and provide your substantiated hydrologic analysis in Appendix 7.

Table F.1 Hydrologic Conditions of Concern Summary

	2 year – 24 hour		
	Pre-condition	Post-condition	% Difference
Time of Concentration			
Volume (Cubic Feet)			

¹ Time of concentration is defined as the time after the beginning of the rainfall when all portions of the drainage basin are contributing to flow at the outlet.

HCOC EXEMPTION 3: All downstream conveyance channels to an adequate sump (for example, Prado Dam, Lake Elsinore, Canyon Lake, Santa Ana River, or other lake, reservoir or naturally erosion resistant feature) that will receive runoff from the project are engineered and regularly maintained to ensure design flow capacity; no sensitive stream habitat areas will be adversely affected; or are not identified on the Co-Permittees Hydromodification Sensitivity Maps.

Does the project qualify for this HCOC Exemption? Y N

If Yes, HCOC criteria do not apply and note below which adequate sump applies to this HCOC qualifier:

F.2 HCOC Mitigation

If none of the above HCOC Exemption Criteria are applicable, HCOC criteria is considered mitigated if they meet one of the following conditions:

- a. Additional LID BMPS are implemented onsite or offsite to mitigate potential erosion or habitat impacts as a result of HCOCs. This can be conducted by an evaluation of site-specific conditions utilizing accepted professional methodologies published by entities such as the California Stormwater Quality Association (CASQA), the Southern California Coastal Water Research Project (SCCRWP), or other Co-Permittee approved methodologies for site-specific HCOC analysis.
- b. The project is developed consistent with an approved Watershed Action Plan that addresses HCOC in Receiving Waters.
- c. Mimicking the pre-development hydrograph with the post-development hydrograph, for a 2-year return frequency storm. Generally, the hydrologic conditions of concern are not significant, if the post-development hydrograph is no more than 10% greater than pre-development hydrograph. In cases where excess volume cannot be infiltrated or captured and reused, discharge from the site must be limited to a flow rate no greater than 110% of the pre-development 2-year peak flow.

Be sure to include all pertinent documentation used in your analysis of the items a, b or c in Appendix 7.

* HCOC exempt per WAP HCOC Applicability Map.

Section G: Source Control BMPs

Table G.1 Permanent and Operational Source Control Measures

Potential Sources of Runoff pollutants	Permanent Structural Source Control BMPs	Operational Source Control BMPs
Onsite Storm Drain Inlets	Mark all inlets with “only rain down the drain” stencil.	Maintain and periodically repaint or replace inlet stencil. Provide Stormwater Pollution Prevention information to owners and operators. See SC44, Drainage System Maintenance.
Landscape/Outdoor Pesticide Use	<p>Design landscaping to 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.</p> <p>Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions.</p> <p>Consider using pest-resistant plants, especially adjacent to hardscape.</p> <p>To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency and plant interactions.</p>	<p>Maintain landscaping using minimum or no pesticides.</p> <p>Provide IPM information to new owners, lessees and operators.</p>
Refuse Areas	Signs will be posted on or near dumpsters with the words “Do not dump hazardous materials here” or similar.	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 pickup litter daily and clean up spills immediately. Keep spill control materials available

		onsite. See Fact Sheet SC-34, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbook.
Vehicle and Equipment Cleaning		Wash water from vehicles and equipment washing operations shall not be discharged to the storm drain
Fuel Dispensing Areas		The property owner shall dry sweep the fueling area routinely. See Fact Sheet SD-30, Fueling Areas.
Roofing, Gutters and Trim	Rooftop equipment with potential to produce pollutants shall be roofed and/or have secondary containment.	
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.

Section H: Construction Plan Checklist

Table H.1 Construction Plan Cross-reference

BMP No. or ID	BMP Identifier and Description	Corresponding Plan Sheet(s)
BRB No. 1	Bioretention Basin	Conceptual Grading Plan
BRB No. 2	Bioretention Basin	Conceptual Grading Plan

Section I: Operation, Maintenance and Funding

Maintenance Mechanism: Property Owners

Will the proposed BMPs be maintained by a Home Owners' Association (HOA) or Property Owners Association (POA)?

Y

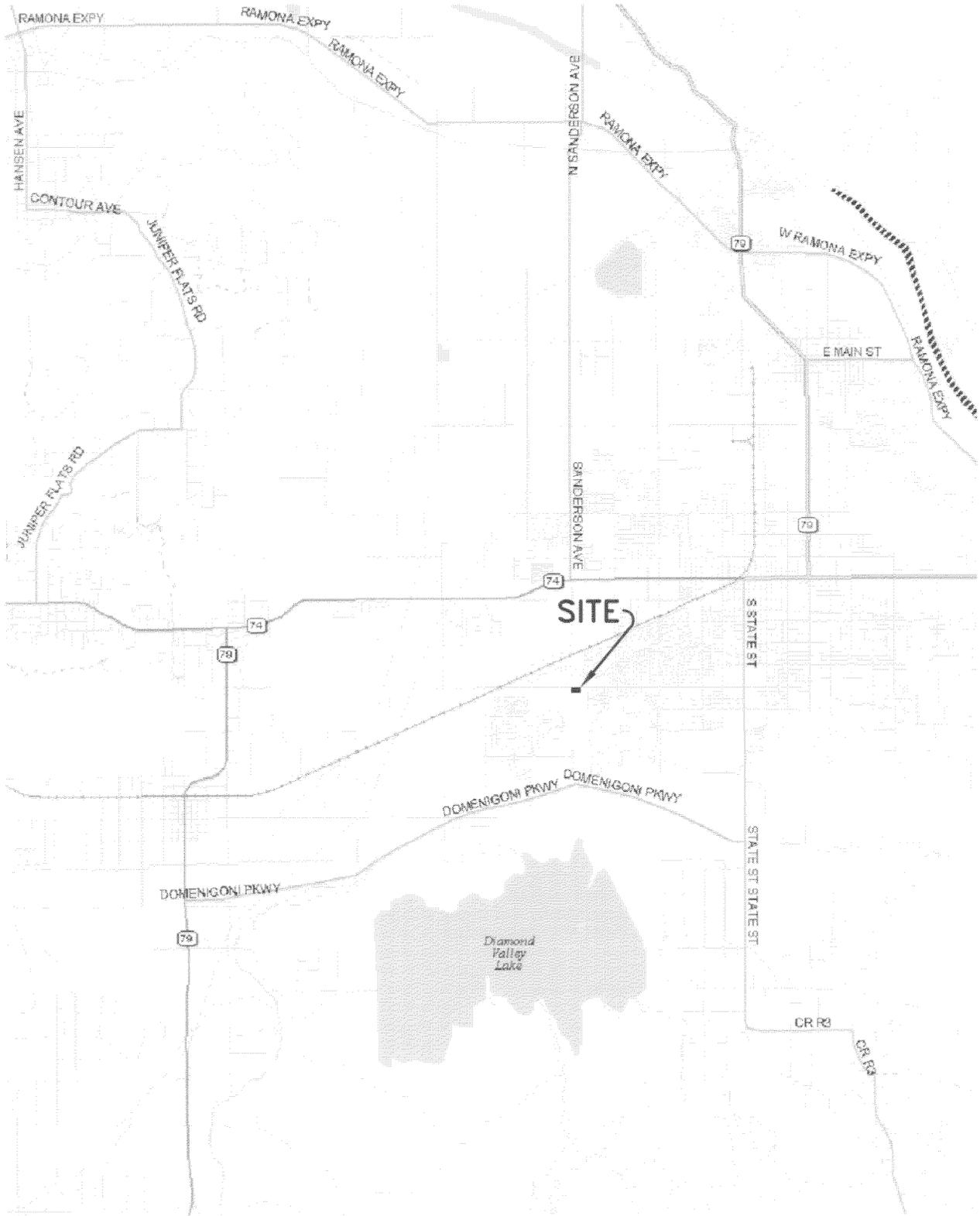
N

To be included in the Final WQMP

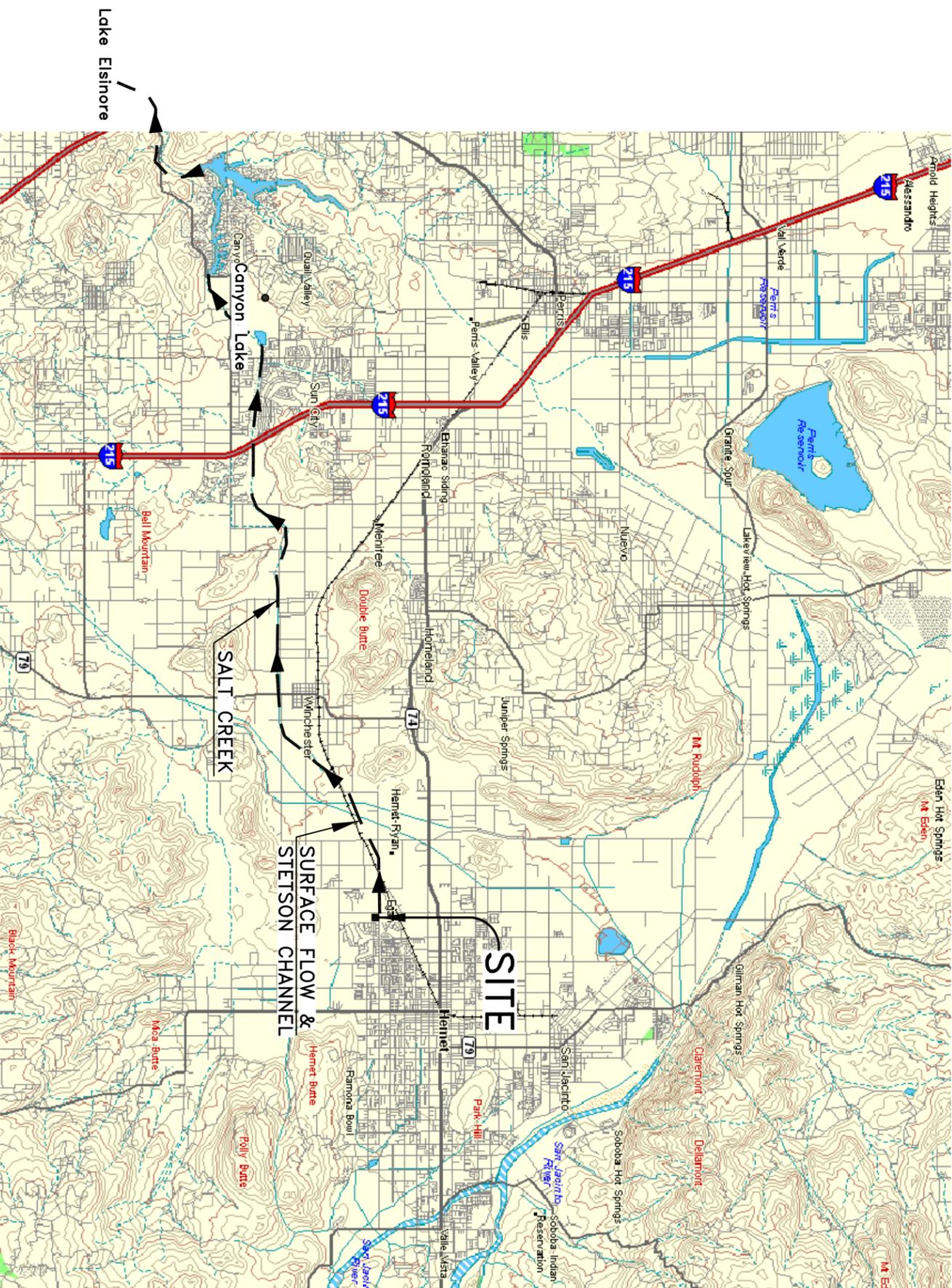
Appendix 1: Maps and Site Plans

Vicinity Map, Regional Waters Map and WQMP Site Plan

SAGE STETSON HEMET WQMP – EXHIBIT A.1



VICINITY MAP



WQMP EXHIBIT A.2
 REGIONAL WATERS MAP
SAGE STETSON HEMET
 CITY OF HEMET

R40-19-004
 6/26/2019

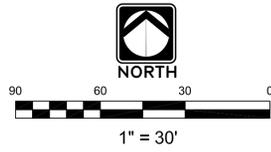


BLAINE A. WOMER
 CIVIL ENGINEERING

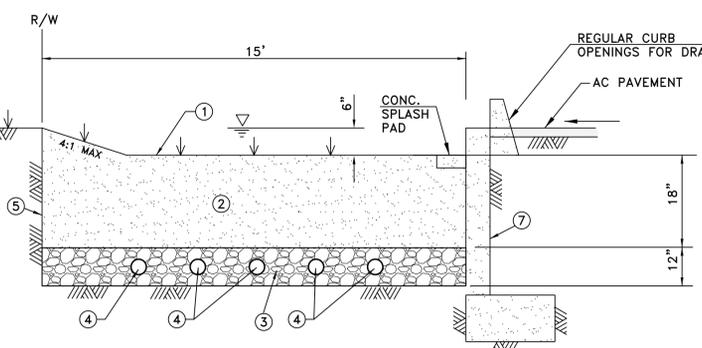
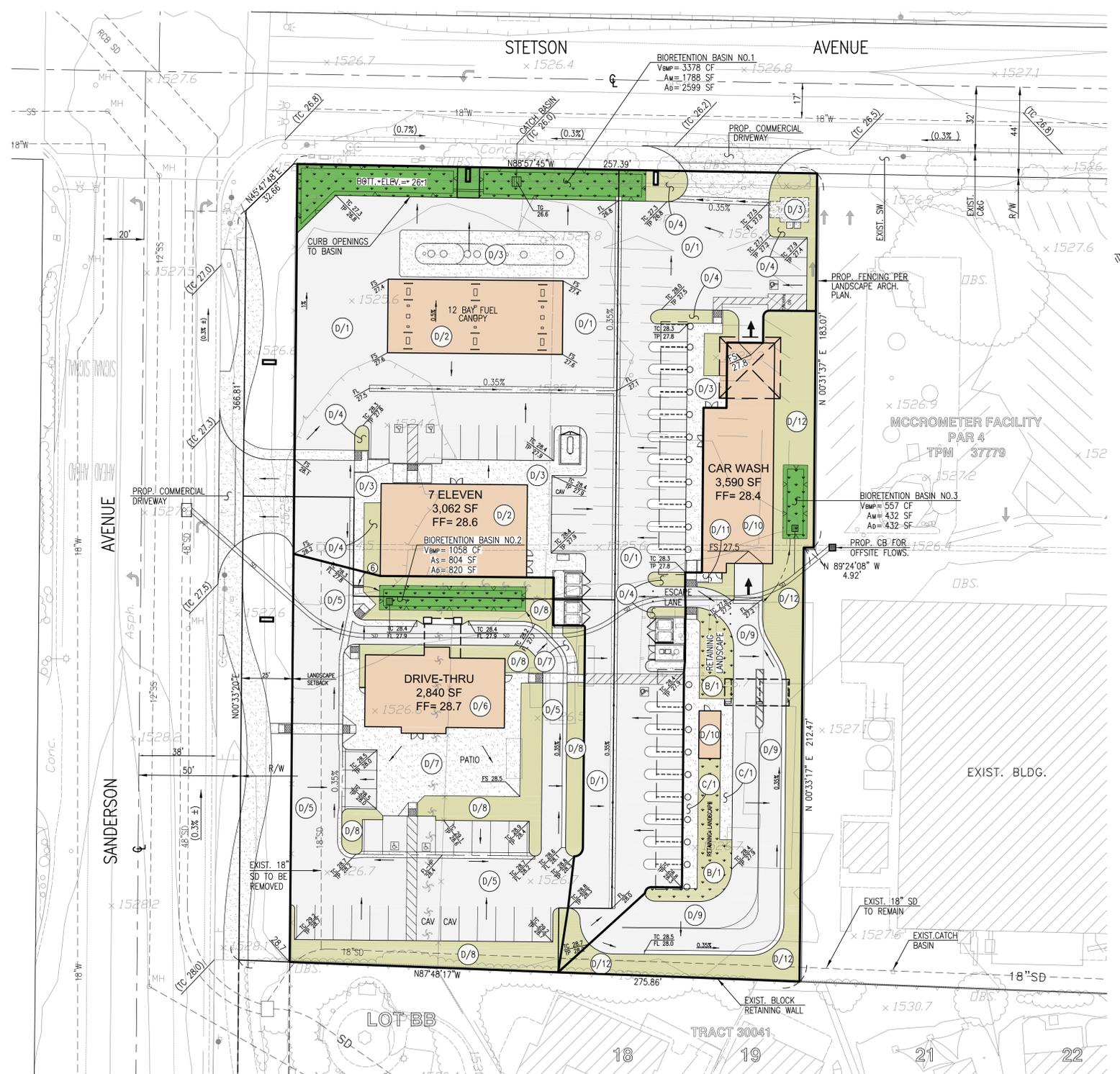
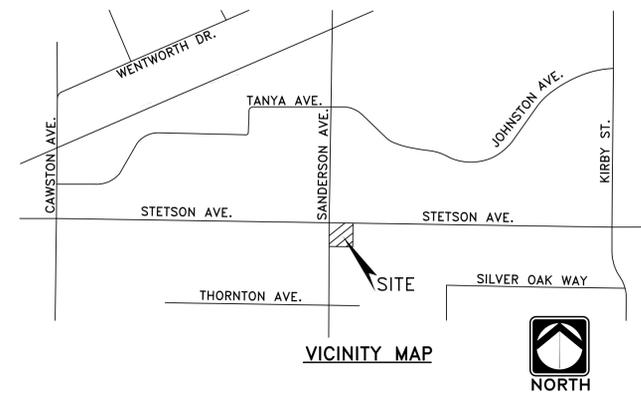
- PLANNING
- SURVEYING
- CIVIL ENGINEERING
- PUBLIC WORKS

Hemet, CA 92344, 41555 E Florida Ave., Suite G, Phone (951)258-1727, Fax (951)258-9347
 Park City, UT 84098, 5133 Cove Canyon Dr., #302, Phone (801)559-9755, Fax (801)261-2219

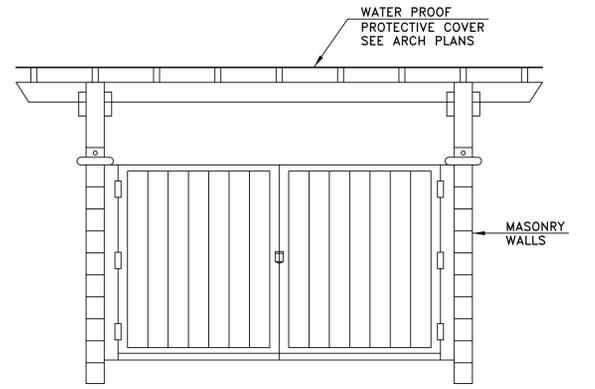
IN THE CITY OF HEMET WQMP SITE PLAN FOR SAGE STETSON HEMET



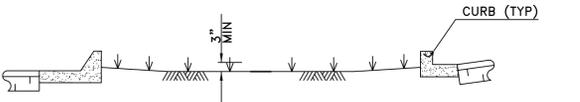
- LEGEND**
- INDICATES ASPHALT SURFACE
 - INDICATES LANDSCAPE SURFACE-SELF RETAINING
 - INDICATES LANDSCAPE SURFACE-DRAINS TO BMP
 - INDICATES CONCRETE SURFACE
 - INDICATES BUILDING ROOF - DRAINS TO BMP
 - INDICATES BIORETENTION BASIN
 - INDICATES DRAINAGE BOUNDARY



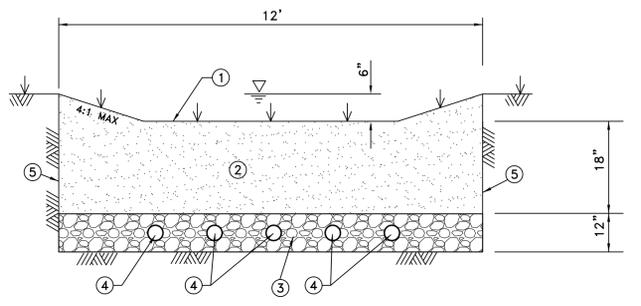
- NOTES**
- ① VEGETATIVE COVER—SPECIFICATION PER BIORETENTION FACT SHEET—WQMP.
 - ② ENGINEERED SOIL MEDIA—PER BIORETENTION FACT SHEET—WQMP
 - ③ 12" GRAVEL LAYER—SPECIFICATION PER BIORETENTION FACT SHEET—WQMP.
 - ④ 6" PERFORATED PIPE @ 5' O.C.
 - ⑤ ROOT BARRIER PANELS FROM SURFACE TO BASE OF ROCK PER NDS RP SERIES OR EQUAL.
 - ⑥ FILTER FABRIC, MIRAFI 500X OR EQUAL.
 - ⑦ RETAINING WALL



BIORETENTION BASIN SECTION - BASIN NO. 1
N.T.S.



TYPICAL SELF RETAINING LANDSCAPE SECTION
N.T.S.



- NOTES**
- ① VEGETATIVE COVER—SPECIFICATION PER BIORETENTION FACT SHEET—WQMP.
 - ② ENGINEERED SOIL MEDIA—PER BIORETENTION FACT SHEET—WQMP
 - ③ 12" GRAVEL LAYER—SPECIFICATION PER BIORETENTION FACT SHEET—WQMP.
 - ④ 6" PERFORATED PIPE @ 5' O.C.
 - ⑤ ROOT BARRIER PANELS FROM SURFACE TO BASE OF ROCK PER NDS RP SERIES OR EQUAL.
 - ⑥ FILTER FABRIC, MIRAFI 500X OR EQUAL.

BIORETENTION BASIN SECTION - BASIN NOS. 2 & 3
N.T.S.

DMA SUMMARY			
IDENTIFIER	AREA(SF)	PROPOSED SURFACE	TREATMENT
B/1	1,717	LANDSCAPE	SELF-RETAINING
C/1	1,296	CONCRETE	DRAINS TO SELF-RETAINING
D/1	34,170	ASPHALT	DRAINS TO BRB NO. 1
D/2	6,158	ROOF	DRAINS TO BRB NO. 1
D/3	4,838	CONCRETE	DRAINS TO BRB NO. 1
D/4	2,080	LANDSCAPE	DRAINS TO BRB NO. 1
D/5	13,711	ASPHALT	DRAINS TO BRB NO. 2
D/6	2,480	ROOF	DRAINS TO BRB NO. 2
D/7	3,418	CONCRETE	DRAINS TO BRB NO. 2
D/8	4,972	LANDSCAPE	DRAINS TO BRB NO. 2
D/9	6,299	ASPHALT	DRAINS TO BRB NO. 3
D/10	3,840	ROOF	DRAINS TO BRB NO. 3
D/11	99	CONCRETE	DRAINS TO BRB NO. 3
D/12	5,184	LANDSCAPE	DRAINS TO BRB NO. 3

Underground Service Alert
Call: TOLL FREE 811
TWO WORKING DAYS BEFORE YOU DIG

REVISIONS:				APPROVED:	
NO.	DATE:	BY:			
DESIGNED BY:			DRAWN BY:		
CHECKED BY:					



BLAINE A. WOMER
CIVIL ENGINEERING
PLANNING
SURVEYING
CIVIL ENGINEERING
PUBLIC WORKS

PREPARED UNDER THE SUPERVISION OF:
DATE: _____
SCALE: _____ BENCHMARK: _____
DATE: _____

APPROVED BY:
ROBERT VESTAL, PE
DATE: _____



City of Hemet
PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION
510 E. Florida Ave.
HEMET, CA 92543
(951) 785-2360

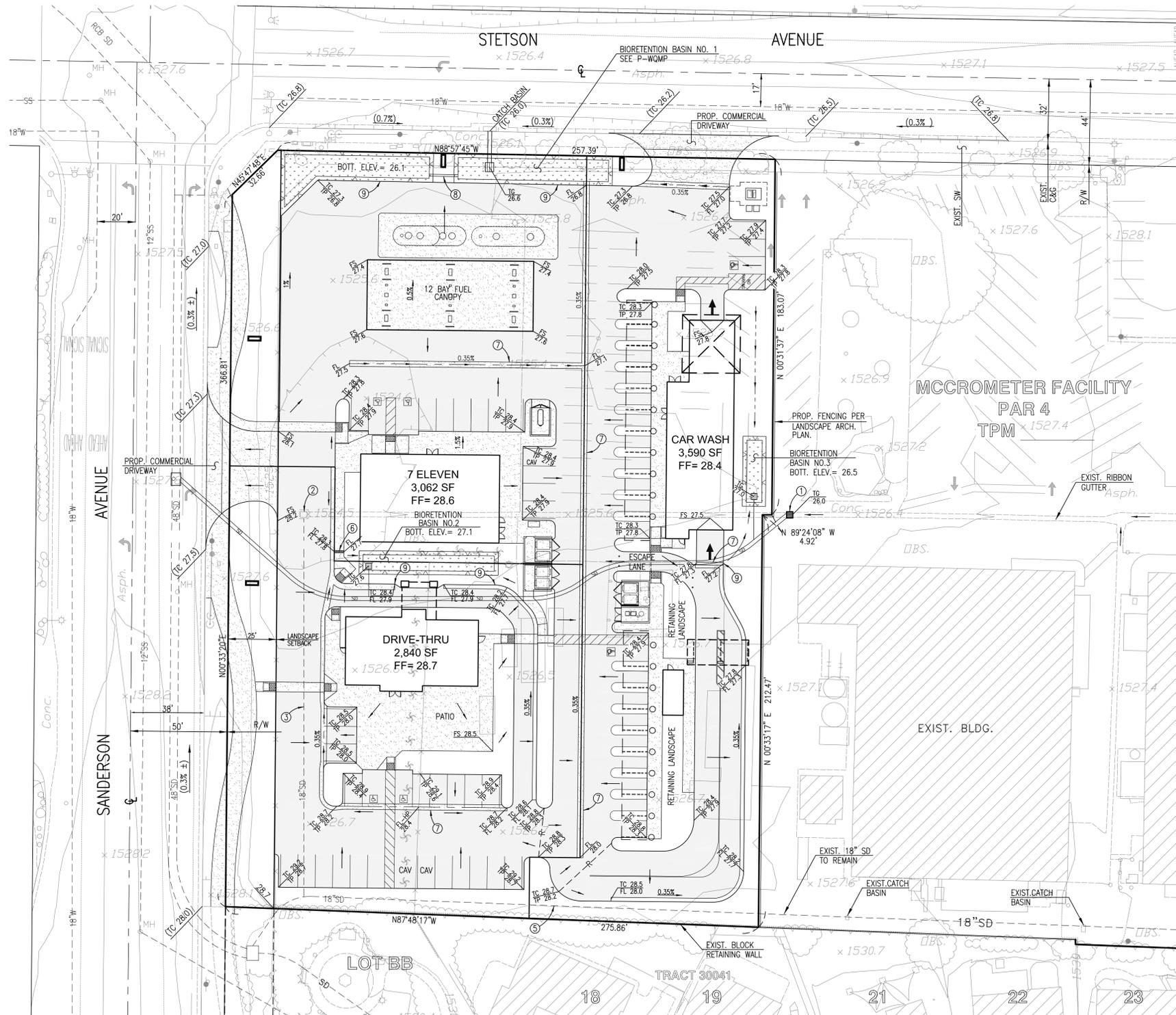
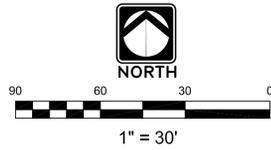
City of Hemet
SAGE STETSON HEMET
WQMP SITE PLAN
EXHIBIT A-3

1
OF 1 SHEETS
FILE NO. _____

Appendix 2: Construction Plans

Grading and Drainage Plans

IN THE CITY OF HEMET
CONCEPTUAL GRADING PLAN
 FOR
SAGE STETSON HEMET CUP



KEY NOTES

1. NEW CATCH BASIN.
2. EXIST. CATCH BASIN TO BE REMOVED.
3. EXIST. STORM DRAIN TO BE REMOVED.
4. NEW STORM DRAIN.
5. EXIST. STORM DRAIN TO REMAIN.
6. NEW UNDER SIDEWALK DRAIN.
7. NEW CONCRETE RIBBON GUTTER.
8. BIORETENTION BASIN CONNECTOR PIPES.
9. CURB OPENINGS FOR DRAINAGE.

LEGEND

- CONCRETE SURFACE
- ASPHALT CONCRETE SURFACE
- FF FINISHED FLOOR ELEVATION
- TC TOP OF CURB ELEVATION
- TP TOP OF PAVEMENT ELEVATION
- FL FLOW LINE ELEVATION
- FS FINISHED SURFACE ELEVATION
- TG TOP OF GRATE ELEVATION
- MONUMENT SIGN.
- PROPOSED STORM DRAIN
- DRAINAGE RIDGE LINE
- BIORETENTION BASIN

Underground Service Alert

Call: TOLL FREE
 811
 TWO WORKING DAYS BEFORE YOU DIG

REVISIONS:			APPROVED:
NO.	DATE:	BY:	
DESIGNED BY:	DRAWN BY:	CHECKED BY:	



BLAINE A. WOMER
 CIVIL ENGINEERING

PLANNING
 SURVEYING
 CIVIL ENGINEERING
 PUBLIC WORKS

W.D.

PREPARED UNDER THE SUPERVISION OF:

APPROVED BY:

DATE: _____

SCALE: _____ BENCHMARK: _____

DATE: _____

APPROVED BY:

ROBERT VESTAL, PE

DATE: _____

City of Hemet
 PUBLIC WORKS DEPARTMENT
 ENGINEERING DIVISION

510 E. Florida Ave.
 HEMET, CA 92543
 (951) 765-2360

City of Hemet

SAGE STETSON HEMET
 CONCEPTUAL GRADING PLAN
 CUP _____

W.O. _____ F.N. _____

Appendix 3: Soils Information

Geotechnical Study and Other Infiltration Testing Data



Sladden Engineering

45090 Golf Center Parkway, Suite F, Indio, CA. 92201 (760) 863-0713 Fax (760) 863-0847
6782 Stanton Avenue, Suite C, Buena Park, CA. 90621 (714) 523-0952 Fax (714) 523-1369
450 Egan Avenue, Beaumont, CA. 92223 (951) 845-7743 Fax (951) 845-8863
800 E. Florida Avenue, Hemet, CA. 92543 (951) 766-8777 Fax (951) 766-8778

October 16, 2017

Project No. 644-17063
17-10-094

Rancho McHolland, LLC
38011 Stone Meadow Drive
Murrieta, California 92562

Attn: Mr. Mark Cooper

Project: Proposed Commercial Development
APN 460-150-014
Hemet, California

Subject: Infiltration Testing for On-Site Storm Water Management

As requested, we have performed infiltration testing on the subject site to evaluate the infiltration potential of the near surface soil to assist in storm water retention system design. It is our understanding that on-site storm water retention infiltration may be required for the subject project. The infiltration rates determined should be useful in the assessment of on-site storm water retention needs. The approximate test locations are indicated on the attached Test Location Plan (Figure 1).

Infiltration testing was performed on October 4, 2017 utilizing double ring infiltrometers. Testing was performed at depths of approximately three (3) feet below the existing ground surface. Testing was performed in general accordance with the *Standard Test Method for Infiltration Rate of Soils in Field Using Double-Ring Infiltrometer* (ASTM D-3385).

Testing indicated infiltration rates of approximately 1.2 and 1.1 inches per hour (in/hour) for test locations DR-1 and DR-2, respectively.

The rates determined represent the ultimate field rates and an appropriate safety factor should be incorporated into design to account for long-term saturation and potential "silting" of the surface soil. The safety factor should be determined with consideration to other factors considered in the storm water retention system design (specifically storm water volume estimates) and the safety factors associated with the related design components.

October 16, 2017

-2-

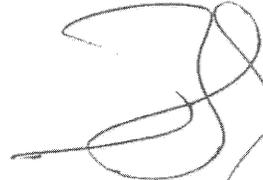
Project No. 644-17063
17-10-094

If you have any questions regarding this memo or the testing summarized herein, please contact the undersigned.

Respectfully submitted,
SLADDEN ENGINEERING



Matthew J. Cohrt
Principal Geologist



Brett L. Anderson
Principal Engineer



Copies: 4 / Addressee



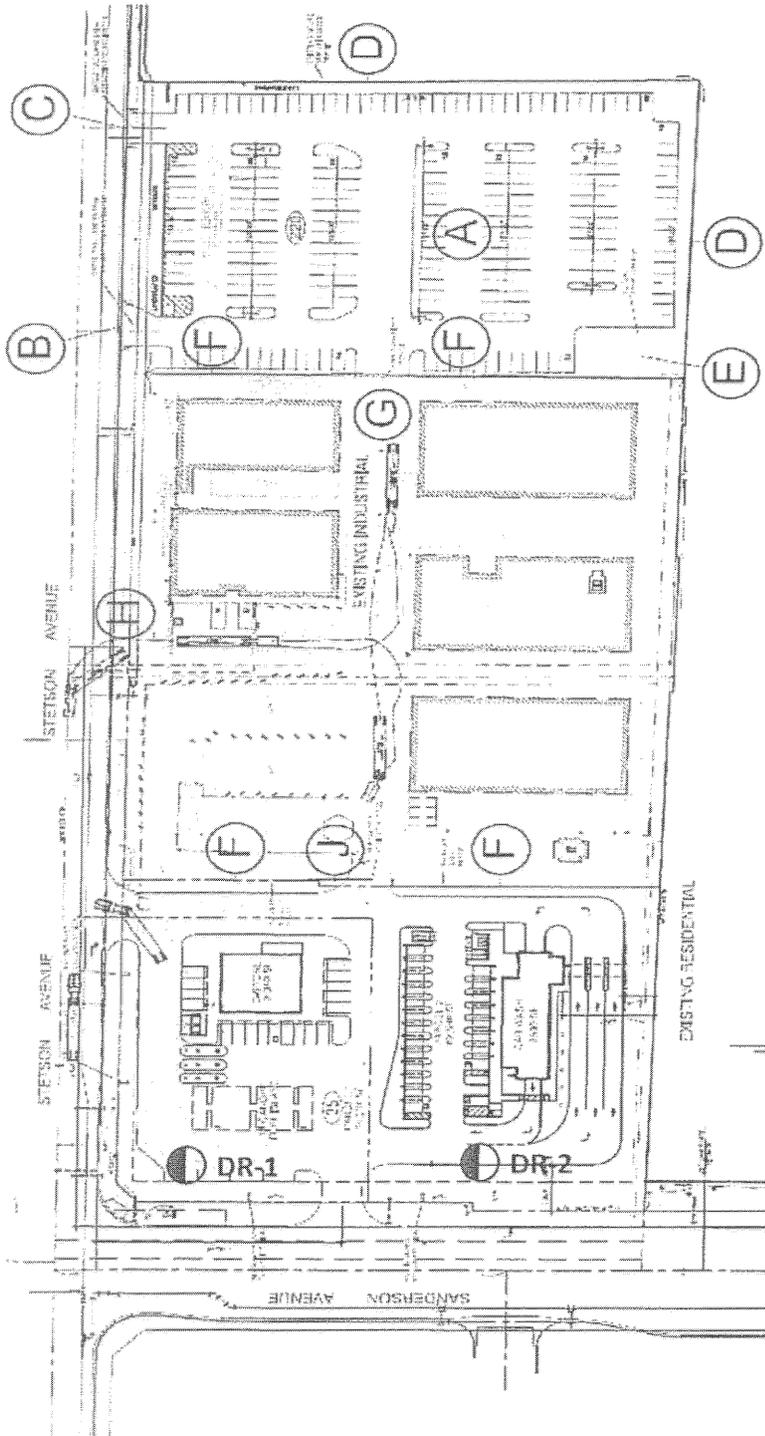
Sladden Engineering

TEST LOCATION PLAN

Project Number:	644-17063
Report Number:	17-10-094
Date:	October 16, 2017

FIGURE

1



KEY NOTES

- (A) 220 STALL, PAVED & STRIPED PARKING LOT
- (B) GATED, 2 LANE ENTRY- TRANSPONDER ACTIVATED
- (C) GATED, 2 LANE EXIT- ELECTRIC EYE ACTIVATED
- (D) EXISTING SOUND WALL IN GOOD REPAIR
- (E) FUTURE DEVELOPMENT AREA
- (F) SOLID BAR, STEEL FENCING
- (G) PEDESTRIAN GATE
- (H) EXISTING McCROMETER TRUCK INGRESS/EGRESS TO REMAIN
- (J) TUBULAR STEEL GATE- EMERGENCY VEHICLE ACCESS ONLY

CONCEPTUAL SITE PLAN
SCHEME No. 11
DATE: 10/16/17



PAGE PLAZA PARTNERS, LLC
1000 W. BROADWAY
SUITE 100
DALLAS, TX 75201

McHOLLAND RETAIL
HEMET, CALIFORNIA



DOUBLE INFILTRATION RATE CALCULATIONS

INNER RING

Job No. 644-17063
 Test Hole DR-1
 Depth (Fl.) 3.0
 Project: McCrometer

Interval Number	Initial Water(cm)	Final Water(cm)	Con. Factor (cm to in)	Water (in)	Area Mar. (in ²)	Volume (in ³)	Area IR (in ²)	Time (min)	Time (hr)	Vir (in/hr)
1	47.0	8.0	0.39	15.4	8.9	137.3	113.1	60	1.00	1.2
2	46.7	8.3	0.39	15.1	8.9	135.2	113.1	60	1.00	1.2
3	46.9	8.3	0.39	15.2	8.9	135.9	113.1	60	1.00	1.2
4	47.0	8.3	0.39	15.2	8.9	136.2	113.1	60	1.00	1.2
5	45.2	7.5	0.39	14.8	8.9	132.7	113.1	60	1.00	1.2
6	45.0	6.5	0.39	15.2	8.9	135.5	113.1	60	1.00	1.2
7										
8										
9										
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30										

AVERAGE RATE* = 1.2 (in/hr)

Appendix 4: Historical Site Conditions

Phase I Environmental Site Assessment or Other Information on Past Site Use

Not Available At This Time

Appendix 5: LID Infeasibility

LID Technical Infeasibility Analysis

Not Applicable

Appendix 6: BMP Design Details

BMP Sizing, Design Details and other Supporting Documentation

Bioretention Facility - Design Procedure	BMP ID BRB NO. 1	Legend:	Required Entries
			Calculated Cells

Company Name: WOMER ENGINEERING Date: 6/25/19
 Designed by: B. WOMER County/City Case No.: _____

Design Volume

Enter the area tributary to this feature $A_T = \underline{1.08}$ acres

Enter V_{BMP} determined from Section 2.1 of this Handbook $V_{BMP} = \underline{2,330}$ ft³

Type of Bioretention Facility Design

- Side slopes required (parallel to parking spaces or adjacent to walkways)
 No side slopes required (perpendicular to parking space or Planter Boxes)

Bioretention Facility Surface Area

Depth of Soil Filter Media Layer $d_S = \underline{1.5}$ ft

Top Width of Bioretention Facility, excluding curb $w_T = \underline{15.0}$ ft

Total Effective Depth, d_E
 $d_E = (0.3) \times d_S + (0.4) \times 1 - (0.7/w_T) + 0.5$ $d_E = \underline{1.30}$ ft

Minimum Surface Area, A_m
 $A_M (ft^2) = \frac{V_{BMP} (ft^3)}{d_E (ft)}$ $A_M = \underline{1,788}$ ft²

Proposed Surface Area $A = \underline{2,599}$ ft²

Bioretention Facility Properties

Side Slopes in Bioretention Facility $z = \underline{4}$:1

Diameter of Underdrain 6 inches

Longitudinal Slope of Site (3% maximum) 0 %

6" Check Dam Spacing 0 feet

Describe Vegetation: Natural Grasses

Notes: _____

Bioretention Facility - Design Procedure	BMP ID BRB NO. 2	Legend:	Required Entries
			Calculated Cells

Company Name:	WOMER ENGINEERING	Date:	6/25/19
Designed by:	B. WOMER	County/City Case No.:	

Design Volume

Enter the area tributary to this feature $A_T = 0.56$ acres

Enter V_{BMP} determined from Section 2.1 of this Handbook $V_{BMP} = 1,038$ ft³

Type of Bioretention Facility Design

- Side slopes required (parallel to parking spaces or adjacent to walkways)
 No side slopes required (perpendicular to parking space or Planter Boxes)

Bioretention Facility Surface Area

Depth of Soil Filter Media Layer $d_S = 1.5$ ft

Top Width of Bioretention Facility, excluding curb $w_T = 12.0$ ft

Total Effective Depth, d_E
 $d_E = (0.3) \times d_S + (0.4) \times 1 - (0.7/w_T) + 0.5$ $d_E = 1.29$ ft

Minimum Surface Area, A_M
 $A_M (\text{ft}^2) = \frac{V_{BMP} (\text{ft}^3)}{d_E (\text{ft})}$ $A_M = 804$ ft²

Proposed Surface Area $A = 820$ ft²

Bioretention Facility Properties

Side Slopes in Bioretention Facility $z = 4 : 1$

Diameter of Underdrain 6 inches

Longitudinal Slope of Site (3% maximum) 0 %

6" Check Dam Spacing 0 feet

Describe Vegetation: Natural Grasses

Notes:

Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

Legend:



Required Entries

Calculated Cells

(Note this worksheet shall only be used in conjunction with BMP designs from the LID BMP Design Handbook)

Company Name WOMER ENGINEERING

Date 6/25/19

Designed by B. WOMER

Case No _____

Company Project Number/Name _____

MCHOLLAND RETAIL

BMP Identification

BMP NAME / ID BIORETENTION BASIN NO. 3

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth,
from the Isohyetal Map in Handbook Appendix E

$D_{85} =$ 0.69 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_e	DMA Runoff Factor	DMA Areas x Runoff Factor	Design Storm Depth (in)	Design Capture Volume, V_{BMP} (cubic feet)	Proposed Volume on Plans (cubic feet)
D\9	6299	Concrete or Asphalt	1	0.89	5618.7			
D\10	3840	Roofs	1	0.89	3425.3			
D\11	99	Concrete or Asphalt	1	0.89	88.3			
D\12	5184	Ornamental Landscaping	0.1	0.11	572.6			
15422		Total			9704.9	0.69	558	560

Notes:

Bioretention Facility - Design Procedure	BMP ID	Legend:	Required Entries
	BRB NO. 3		Calculated Cells

Company Name:	WOMER ENGINEERING	Date:	6/25/19
Designed by:	B. WOMER	County/City Case No.:	

Design Volume

Enter the area tributary to this feature A_T = 0.35 acres

Enter V_{BMP} determined from Section 2.1 of this Handbook V_{BMP} = 558 ft³

Type of Bioretention Facility Design

- Side slopes required (parallel to parking spaces or adjacent to walkways)
- No side slopes required (perpendicular to parking space or Planter Boxes)

Bioretention Facility Surface Area

Depth of Soil Filter Media Layer d_S = 1.5 ft

Top Width of Bioretention Facility, excluding curb w_T = 12.0 ft

Total Effective Depth, d_E
 $d_E = (0.3) \times d_S + (0.4) \times 1 - (0.7/w_T) + 0.5$ d_E = 1.29 ft

Minimum Surface Area, A_m
 $A_M (ft^2) = \frac{V_{BMP} (ft^3)}{d_E (ft)}$ A_M = 432 ft²

Proposed Surface Area A = 432 ft²

Bioretention Facility Properties

Side Slopes in Bioretention Facility z = 4 :1

Diameter of Underdrain 6 inches

Longitudinal Slope of Site (3% maximum) 0 %

6" Check Dam Spacing 0 feet

Describe Vegetation: Natural Grasses

Notes: _____

Appendix 7: Hydromodification

Supporting Detail Relating to Hydrologic Conditions of Concern

Not Applicable

Appendix 8: Source Control

Pollutant Sources/Source Control Checklist

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

How to use this worksheet (also see instructions in Section G of the WQMP Template):

1. Review Column 1 and identify which of these potential sources of stormwater pollutants apply to your site. Check each box that applies.
2. Review Column 2 and incorporate all of the corresponding applicable BMPs in your WQMP Exhibit.
3. Review Columns 3 and 4 and incorporate all of the corresponding applicable permanent controls and operational BMPs in your WQMP. Use the format shown in Table G.1 on page 23 of this WQMP Template. Describe your specific BMPs in an accompanying narrative, and explain any special conditions or situations that required omitting BMPs or substituting alternative BMPs for those shown here.

IF THESE SOURCES WILL BE ON THE PROJECT SITE THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE			
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative	
<input checked="" type="checkbox"/> A. On-site storm drain inlets	<input checked="" type="checkbox"/> Locations of inlets.	<input checked="" type="checkbox"/> Mark all inlets with the words “Only Rain Down the Storm Drain” or similar. Catch Basin Markers may be available from the Riverside County Flood Control and Water Conservation District, call 951.955.1200 to verify.	<input checked="" type="checkbox"/> Maintain and periodically repaint or replace inlet markings.	<input checked="" type="checkbox"/> Provide stormwater pollution prevention information to new site owners, lessees, or operators.
<input type="checkbox"/> B. Interior floor drains and elevator shaft sump pumps	<input type="checkbox"/>	<input type="checkbox"/> State that interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer.	<input type="checkbox"/> Include the following in lease agreements: “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.”	<input type="checkbox"/> See applicable operational BMPs in Fact Sheet SC-44, “Drainage System Maintenance,” in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
<input type="checkbox"/> C. Interior parking garages	<input type="checkbox"/>	<input type="checkbox"/> State that parking garage floor drains will be plumbed to the sanitary sewer.	<input type="checkbox"/> Inspect and maintain drains to prevent blockages and overflow.	<input type="checkbox"/> Inspect and maintain drains to prevent blockages and overflow.

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE			
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative	
<input type="checkbox"/> D1. Need for future indoor & structural pest control <input checked="" type="checkbox"/> D2. Landscape/ Outdoor Pesticide Use	<input type="checkbox"/> Show locations of native trees or areas of shrubs and ground cover to be undisturbed and retained. <input checked="" type="checkbox"/> Show self-retaining landscape areas, if any. <input checked="" type="checkbox"/> Show stormwater treatment and hydrograph modification management BMPs. (See instructions in Chapter 3, Step 5 and guidance in Chapter 5.)	<input type="checkbox"/> Note building design features that discourage entry of pests. <input type="checkbox"/> State that final landscape plans will accomplish all of the following: <input checked="" type="checkbox"/> Preserve existing native trees, shrubs, and ground cover to the maximum extent possible. <input checked="" type="checkbox"/> Design landscaping to 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. <input checked="" type="checkbox"/> Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions. <input type="checkbox"/> Consider using pest-resistant plants, especially adjacent to hardscape. <p>To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.</p>	<input type="checkbox"/> Provide Integrated Pest Management information to owners, lessees, and operators. <input checked="" type="checkbox"/> Maintain landscaping using minimum or no pesticides. <input checked="" type="checkbox"/> See applicable operational BMPs in “What you should know for....Landscape and Gardening” at http://rcflood.org/stormwater/Error! Hyperlink reference not valid . <input checked="" type="checkbox"/> Provide IPM information to new owners, lessees and operators.	

STORM WATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE			
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative	
<input type="checkbox"/> E. Pools, spas, ponds, decorative fountains, and other water features.	<input type="checkbox"/> Show location of water feature and a sanitary sewer cleanout in an accessible area within 10 feet. (Exception: Public pools must be plumbed according to County Department of Environmental Health Guidelines.)	If the Co-Permittee requires, pools to be plumbed to the sanitary sewer, place a note on the plans and state in the narrative that this connection will be made according to local requirements.	<input type="checkbox"/> See applicable operational BMPs in "Guidelines for Maintaining Your Swimming Pool, Jacuzzi and Garden Fountain" at http://rcfflood.org/stormwater/	
<input type="checkbox"/> F. Food service	<input type="checkbox"/> For restaurants, grocery stores, and other food service operations, show location (indoors or in a covered area outdoors) of a floor sink or other area for cleaning floor mats, containers, and equipment.	<input type="checkbox"/> Describe the location and features of the designated cleaning area.	<input type="checkbox"/> See the brochure, "The Food Service Industry Best Management Practices for Restaurants, Grocery Stores, Delicatessens and Bakeries" at http://rcfflood.org/stormwater/ Provide this brochure to new site owners, lessees, and operators.	
<input checked="" type="checkbox"/> G. Refuse areas	<input type="checkbox"/> On the drawing, show a note that this drain will be connected to a grease interceptor before discharging to the sanitary sewer.	<input type="checkbox"/> Describe the location and features of the designated cleaning area.	<input checked="" type="checkbox"/> State how the following will be implemented: 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. Keep spill control materials available on-site. See Fact Sheet SC-34, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com	
	<input checked="" type="checkbox"/> Show where site refuse and recycled materials will be handled and stored for pickup. See local municipal requirements for sizes and other details of refuse areas.	<input checked="" type="checkbox"/> State how site refuse will be handled and provide supporting detail to what is shown on plans.		
	<input checked="" type="checkbox"/> If dumpsters or other receptacles are outdoors, show how the designated area will be covered, graded, and paved to prevent runoff and show locations of berms to prevent runoff from the area.	<input checked="" type="checkbox"/> State that signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.		
	<input type="checkbox"/> Any drains from dumpsters, compactors, and tallow bin areas shall be connected to a grease removal device before discharge to sanitary sewer.			

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE			
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative	
<input type="checkbox"/> H. Industrial processes.	<input type="checkbox"/> Show process area.	<input type="checkbox"/> If industrial processes are to be located on site, state: "All process activities to be performed indoors. No processes to drain to exterior or to storm drain system."	<input type="checkbox"/> See Fact Sheet SC-10, "Non-Stormwater Discharges" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com See the brochure "Industrial & Commercial Facilities Best Management Practices for Industrial, Commercial Facilities" at http://rcfhlood.org/stormwater/	

STORMWATER POLLUTANT SOURCES / SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
<input type="checkbox"/> 1. Outdoor storage of equipment or materials. (See rows J and K for source control measures for vehicle cleaning, repair, and maintenance.)	<input type="checkbox"/> Show any outdoor storage areas, including how materials will be covered. Show how areas will be graded and bermed to prevent run-on or run-off from area. <input type="checkbox"/> Storage of non-hazardous liquids shall be covered by a roof and/or drain to the sanitary sewer system, and be contained by berms, dikes, liners, or vaults. <input type="checkbox"/> Storage of hazardous materials and wastes must be in compliance with the local hazardous materials ordinance and a Hazardous Materials Management Plan for the site.	Include a detailed description of materials to be stored, storage areas, and structural features to prevent pollutants from entering storm drains. Where appropriate, reference documentation of compliance with the requirements of Hazardous Materials Programs for: <ul style="list-style-type: none"> ▪ Hazardous Waste Generation ▪ Hazardous Materials Release Response and Inventory ▪ California Accidental Release (CalARP) ▪ Aboveground Storage Tank ▪ Uniform Fire Code Article 80 Section 103(b) & (c) 1991 ▪ Underground Storage Tank www.cchealth.org/groups/hazmat	<input type="checkbox"/> See the Fact Sheets SC-31, "Outdoor Liquid Container Storage" and SC-33, "Outdoor Storage of Raw Materials" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE			
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative	
<p><input checked="" type="checkbox"/> J. Vehicle and Equipment Cleaning</p>	<p><input checked="" type="checkbox"/> Show on drawings as appropriate:</p> <p>(1) Commercial/industrial facilities having vehicle/equipment cleaning needs shall either provide a covered, bermed area for washing activities or discourage vehicle/equipment washing by removing hose bibs and installing signs prohibiting such uses.</p> <p>(2) Multi-dwelling complexes shall have a paved, bermed, and covered car wash area (unless car washing is prohibited on-site and hoses are provided with an automatic shut-off to discourage such use).</p> <p>(3) Washing areas for cars, vehicles, and equipment shall be paved, designed to prevent run-on to or runoff from the area, and plumbed to drain to the sanitary sewer.</p> <p>(4) Commercial car wash facilities shall be designed such that no runoff from the facility is discharged to the storm drain system. Wastewater from the facility shall discharge to the sanitary sewer, or a wastewater reclamation system shall be installed.</p>	<p><input type="checkbox"/> If a car wash area is not provided, describe any measures taken to discourage on-site car washing and explain how these will be enforced.</p>	<p><input checked="" type="checkbox"/> Describe operational measures to implement the following (if applicable):</p> <p>Wastewater from vehicle and equipment washing operations shall not be discharged to the storm drain system. Refer to "Outdoor Cleaning Activities and Professional Mobile Service Providers" for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at http://rcfllood.org/stormwater/</p> <p><input type="checkbox"/> Car dealerships and similar may rinse cars with water only.</p>	

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE ... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE

<p align="center">1</p> <p>Potential Sources of Runoff Pollutants</p>	<p align="center">2</p> <p>Permanent Controls—Show on WQMP Drawings</p>	<p align="center">3</p> <p>Permanent Controls—List in WQMP Table and Narrative</p>	<p align="center">4</p> <p>Operational BMPs—Include in WQMP Table and Narrative</p>
<p><input type="checkbox"/> K. Vehicle/Equipment Repair and Maintenance</p>	<p><input type="checkbox"/> Accommodate all vehicle equipment repair and maintenance indoors. Or designate an outdoor work area and design the area to prevent run-on and runoff of stormwater.</p> <p><input type="checkbox"/> Show secondary containment for exterior work areas where motor oil, brake fluid, gasoline, diesel fuel, radiator fluid, acid-containing batteries or other hazardous materials or hazardous wastes are used or stored. Drains shall not be installed within the secondary containment areas.</p> <p><input type="checkbox"/> Add a note on the plans that states either (1) there are no floor drains, or (2) floor drains are connected to wastewater pretreatment systems prior to discharge to the sanitary sewer and an industrial waste discharge permit will be obtained.</p>	<p><input type="checkbox"/> State that no vehicle repair or maintenance will be done outdoors, or else describe the required features of the outdoor work area.</p> <p><input type="checkbox"/> State that there are no floor drains or if there are floor drains, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.</p> <p><input type="checkbox"/> State that there are no tanks, containers or sinks to be used for parts cleaning or rinsing or, if there are, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.</p>	<p><input type="checkbox"/> In the Stormwater Control Plan, note that all of the following restrictions apply to use the site:</p> <p><input type="checkbox"/> No person shall dispose of, nor permit the disposal, directly or indirectly of vehicle fluids, hazardous materials, or rinsewater from parts cleaning into storm drains.</p> <p><input type="checkbox"/> No vehicle fluid removal shall be performed outside a building, nor on asphalt or ground surfaces, whether inside or outside a building, except in such a manner as to ensure that any spilled fluid will be in an area of secondary containment. Leaking vehicle fluids shall be contained or drained from the vehicle immediately.</p> <p><input type="checkbox"/> No person shall leave unattended drip parts or other open containers containing vehicle fluid, unless such containers are in use or in an area of secondary containment.</p> <p>Refer to "Automotive Maintenance & Car Care Best Management Practices for Auto Body Shops, Auto Repair Shops, Car Dealerships, Gas Stations and Fleet Service Operations". Brochure can be found at http://rcflood.org/stormwater/</p> <p>Refer to Outdoor Cleaning Activities and Professional Mobile Service Providers for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at http://rcflood.org/stormwater/</p>

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE			
<p align="center">1</p> <p>Potential Sources of Runoff Pollutants</p> <p><input checked="" type="checkbox"/> L. Fuel Dispensing Areas</p>	<p align="center">2</p> <p>Permanent Controls—Show on WQMP Drawings</p> <p><input type="checkbox"/> Fueling areas⁶ shall have impermeable floors (i.e., portland cement concrete or equivalent smooth impervious surface) that are: a) graded at the minimum slope necessary to prevent ponding; and b) separated from the rest of the site by a grade break that prevents run-on of stormwater to the maximum extent practicable.</p> <p><input checked="" type="checkbox"/> Fueling areas shall be covered by a canopy that extends a minimum of ten feet in each direction from each pump. [Alternative: The fueling area must be covered and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area¹.] The canopy [or cover] shall not drain onto the fueling area.</p>	<p align="center">3</p> <p>Permanent Controls—List in WQMP Table and Narrative</p>	<p align="center">4</p> <p>Operational BMPs—Include in WQMP Table and Narrative</p> <p><input checked="" type="checkbox"/> The property owner shall dry sweep the fueling area routinely.</p> <p><input checked="" type="checkbox"/> See the Fact Sheet SD-30, "Fueling Areas" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com</p>	

⁶ The fueling area shall be defined as the area extending a minimum of 6.5 feet from the corner of each fuel dispenser or the length at which the hose and nozzle assembly may be operated plus a minimum of one foot, whichever is greater.

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
<input type="checkbox"/> M. Loading Docks	<input type="checkbox"/> Show a preliminary design for the loading dock area, including roofing and drainage. Loading docks shall be covered and/or graded to minimize run-on to and runoff from the loading area. Roof downspouts shall be positioned to direct stormwater away from the loading area. Water from loading dock areas shall be drained to the sanitary sewer, or diverted and collected for ultimate discharge to the sanitary sewer. <input type="checkbox"/> Loading dock areas draining directly to the sanitary sewer shall be equipped with a spill control valve or equivalent device, which shall be kept closed during periods of operation. <input type="checkbox"/> Provide a roof overhang over the loading area or install door skirts (cowling) at each bay that enclose the end of the trailer.		<input type="checkbox"/> Move loaded and unloaded items indoors as soon as possible. <input type="checkbox"/> See Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

STORM WATER POLLUTANT SOURCES / SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
<input type="checkbox"/> N. Fire Sprinkler Test Water <input type="checkbox"/> O. Miscellaneous Drain or Wash Water or Other Sources <input type="checkbox"/> Boiler drain lines <input type="checkbox"/> Condensate drain lines <input type="checkbox"/> Rooftop equipment <input type="checkbox"/> Drainage sumps <input checked="" type="checkbox"/> Roofing, gutters, and trim. <input type="checkbox"/> Other sources		<input type="checkbox"/> Provide a means to drain fire sprinkler test water to the sanitary sewer. <input type="checkbox"/> Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system. <input type="checkbox"/> 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. <input checked="" type="checkbox"/> Rooftop equipment with potential to produce pollutants shall be roofed and/or have secondary containment. <input type="checkbox"/> Any drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water. <input type="checkbox"/> Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff. <input type="checkbox"/> Include controls for other sources as specified by local reviewer.	<input type="checkbox"/> See the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE			
<p align="center">1</p> <p>Potential Sources of Runoff Pollutants</p> <p><input checked="" type="checkbox"/> P. Plazas, sidewalks, and parking lots.</p>	<p align="center">2</p> <p>Permanent Controls—Show on WQMP Drawings</p>	<p align="center">3</p> <p>Permanent Controls—List in WQMP Table and Narrative</p>	<p align="center">4</p> <p>Operational BMPs—Include in WQMP Table and Narrative</p> <p><input checked="" type="checkbox"/> 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 washwater containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain.</p>	

Appendix 9: O&M

Operation and Maintenance Plan and Documentation of Finance, Maintenance and Recording Mechanisms

To be included in the Final WQMP

Appendix 10: Educational Materials

BMP Fact Sheets, Maintenance Guidelines and Other End-User BMP Information

To be included in the Final WQMP