Preliminary Water Quality Management Plan (PWQMP)

For compliance with Santa Ana Regional Water Quality Control Board

Order Number R8-2010-0036 (NPDES Permit No. CAS618036)

for

Project Name:	**Merrill Commerce Center Specific Plan**
Ontario Project #:	**TBD**
Project Description:	**Industrial Project**
Applicant Name:	**Prologis, Attn: Thomas Donahue**
Applicant Address:	**3546 Concours Street, Suite 100, Ontario, CA 91764**
Project Address:	**Bounded by Grove Ave to the west, Eucalyptus Ave to the north, Carpenter Ave to the east, and Merrill Ave to the south**
Size of Development:	**388 acres**

Submittal Date: September 17, 2019

Preliminary Water Quality Management Plan (PWQMP)

1. Introduction

The Preliminary Water Quality Management Plan (PWQMP) is a planning tool to improve integration of required water quality elements, stormwater management, water conservation, rainwater harvesting and re-use, and flood management in land use planning and the City's development process. The Preliminary WQMP will assist project applicants and planners in properly designing and laying out project sites so that water quality may be incorporated in the most effective manner and at the lowest cost for the developer.

The San Bernardino County Municipal Separate Storm Sewer System Permit (MS4 Permit) requires project-specific Water Quality Management plans (WQMP) to be prepared for all priority new development and significant redevelopment projects listed in Section 2 of this document. The MS4 Permit stipulates that the City of Ontario require priority project applicants to submit a Preliminary project-specific WQMP, as early as possible, during the environmental review or planning phase of a development project and that the Preliminary WQMP be approved prior to the issuance of land use entitlement.

2. Priority Projects (requiring a Preliminary WQMP)

Land Use entitlement shall not be issued for any of the listed projects, below, until a Preliminary WQMP has been approved by the City's Engineering Department. For construction projects not going through entitlement, a Preliminary and Final project-specific WQMP shall be approved, prior to the issuance of construction permits:

Check the appropriate project category below, for this project:

Check below	**Project Categories**
	1. All significant re-development projects. Significant re-development is defined as the addition or replacement of 5,000 or more square feet of impervious surface on an already developed site subject to discretionary approval of the Permittee. Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of the facility, or emergency redevelopment activity required to protect public health and safety. Where redevelopment results in an increase of less than fifty percent of the impervious surfaces of a previously existing developed site, and the existing development was not subject to WQMP requirements, the numeric sizing criteria discussed below applies only to the addition or replacement, and not to the entire developed site. Where redevelopment results in an increase of fifty percent or more of the impervious surfaces of a previously existing developed site, the numeric sizing criteria applies to the entire development (new and existing).

Check below	Project Categories
X	2. New development projects that create 10,000 square feet or more of impervious surface (collectively over the entire project site) including commercial, industrial, residential housing subdivisions (i.e., detached single family home subdivisions, multi-family attached subdivisions or townhomes, condominiums, apartments, etc.), mixed-use, and public projects. This category includes development projects on public and private land, which fall under the planning and building authority of the permitting agency.
	3. Automotive repair shops (with SIC codes 5013, 5014, 5541, 7532- 7534, 7536-7539).
	4. Restaurants and Food Service Establishments where the land area of development is 5,000 square feet or more.
	5. Developments of 2,500 square feet of impervious surface or more adjacent to (within 200 feet) or discharging directly into environmentally sensitive areas (ESA's) such as areas designated in the Ocean Plan as areas of special biological significance or waterbodies listed on the CWA Section 303(d) list of impaired waters.
X	6. Parking lots of 5,000 square feet or more exposed to storm water. Parking lot is defined as land area or facility for the temporary storage of motor vehicles.
	7. Retail Gasoline Outlets (RGOs) that are either 5,000 sq ft or more, or have a projected average daily traffic of 100 or more vehicles per day.
	8. *This project is not covered under any of the categories listed above.

* If the development is not covered under any of the project categories listed in Section 2, the project is not required to design and install Site Design/LID BMPs or Treatment Control BMPs to treat the design storm event (Design Capture Volume) described in Section 4.

3. Preliminary WQMP Objectives

Through a combination of Site Design/LID BMPs (where feasible), Source Control, and/or Treatment Control BMPs, project-specific WQMPs shall address all identified pollutants and hydrologic conditions of concern from new development and significant re-development projects for the categories of projects (priority projects) listed in Section 2. Under each type of BMP, listed below, please indicate which BMPs are planned to be implemented and included in the Final WQMP for the project:

A. Site Design/LID (Low Impact Design) for Reducing Stormwater Runoff:

The MS4 Permit requires each priority development project to infiltrate, harvest and use, evapotranspire, or bio-treat the runoff from a 2-yr, 24-hour storm event (Design Capture Volume). If site conditions do not permit infiltration, harvest and use, evapotranspiration, and/or bio-treatment of the entire Design Capture Volume, at the project site, Site Design/LID techniques are required to be implemented to the Maximum Extent Practicable, at the project site, and the remainder of the DCV shall be infiltrated, harvested, bio-treated or treated by alternative measures.

Project applicants shall submit a Preliminary WQMP that documents the LID/Site Design BMPs, proposed for the project. Please indicate, in the table below, which Site Design/LID BMPs will be utilized on this project to accomplish this requirement:

Site Design/LID Practice	Planned	Not Planned
Provide at least the minimum effective area required for LID BMPs, to comply with the WQMP (see Table 3-1 below).		X
Grade parking lot areas/drive aisles/roof drains to sheet flow runoff into landscaped swales, via curb cuts or zero-face curbs or otherwise disconnect direct drainage from MS4.	X	
Design landscaped areas as swales and grade to accept runoff from building roofs, parking lots and project roadways.	X	
Install surface retention basins or infiltration trenches to receive impervious area runoff.	X	
Install pervious pavement in parking stalls, alleys, driveways, gutters, walkways, trails or patios.		X
Install underground stormwater retention chambers where downstream landscaped areas are limited.	X	
Install approved Stormwater Drywells in detention areas.		X
Construct streets, sidewalks, and parking lot stalls to the minimum widths necessary.	X	
Install on-site Biotreatment basins/trenches with underdrains, where soil type is poorly draining.		X
Install “Engineered Soil” to increase uptake/soil storage capacity and/or evapotranspiration.		X
Install Rainwater Harvesting/Use Equipment.		X
Utilize approved off-site retention/infiltration, biotreatment or proprietary treatment, where it is infeasible to install, on-site.		X

Table 3-1 Minimum Effective Area[1] Required for LID BMPs (surface + subsurface facilities) for Project WQMP to Demonstrate Infeasibility[2] (% of site)

Project Type	New Development	Re-Development
SF/MF Residential < 7 du/ac	10%	5%
SF/MF Residential < 7 - 18 du/ac	7%	3.5%
SF/MF Residential > 18 du/ac	5%	2.5%

Mixed Use, Commercial/Industrial w/FAR< 1.0	10%	5%
Mixed Use, Commercial/Industrial w/FAR 1.0-2.0	7%	3.5%
Mixed Use, Commercial/Industrial w/FAR> 2.0	5%	2.5%
Podium (parking under > 75% of project)	3%	1.5%
Zoning allowing development to property lines	2%	1%
Transit Oriented Development[3]	5%	2.5%
Parking	5%	2.5%

[1] "Effective area" is defined as land area which 1) is suitable for a retention/infiltration BMP (based on infeasibility criteria) and 2) is located down-gradient from building roof or paved areas, so that it may receive gravity flow runoff.

[2] Criteria only required if the project WQMP seeks to demonstrate that the full DCV cannot be feasibly managed on-site.

[3] Transit oriented development is defined as a project with development center within one half mile of a mass transit center.

Key: du/ac = dwelling units/acre, FAR = Floor Area Ratio = ratio of gross floor area of building to gross lot area, MF = Multi Family, SF = Single Family

B. Source Control BMPs – The following BMPs are designed to control stormwater pollutants and runoff water at the location where it is generated. Please indicate which of the listed BMPs are planned to be implemented for the project:

Source Control BMPs	Planned	Not Planned
Minimize non-stormwater site runoff through efficient irrigation system design and controllers.	X	
Minimize trash and debris in storm runoff through a regular parking lot, storage yard and roadway sweeping program.	X	
Provide proper covers/roofs and secondary containment for outside material storage & work areas.		X
Provide solid roofs over all trash enclosures.	X	
Site Owner(s)/Property Manager/HOA or POA will be familiar with the project WQMP and stormwater BMPs.	X	
Owner or HOA or POA to provide Education/Training of site occupants and employees on stormwater BMPs.	X	
Install stormwater placards/stenciled messages with a "No Dumping" message on all on-site/off-site storm drain inlets.	X	
Provide contained equipment/vehicle wash rack areas that discharge to sanitary sewer.		X

C. Treatment Control BMPs – The following BMPs are designed to control stormwater pollutants where it is not feasible to install on-site Site Design/LID BMPs, with the requisite capacity to treat the Design Capture Volume for identified Pollutants of Concern or where pretreatment of stormwater runoff is required, ahead of infiltration BMPs. Please indicate which of the listed BMPs are planned to be implemented for the project:

Treatment Control BMP	Planned	Not Planned
Gravity Separator devices for pretreatment of sediment, trash/litter or Oil & Grease	X	
Proprietary Biofiltration vaults/devices		X
Media Cartridge Filtration Vaults		X
Proprietary Filter Inserts for on-site storm drain inlets or retention basin/trench overflow drains		X
Regional Treatment facilities are installed or are planned for installation, off-site, and provide a superior level of treatment or clear advantage to on-site treatment BMPs		X

4. Volume-based calculation (approximate) for sizing on-site or off-site Stormwater Retention/Infiltration, Harvest & Re-Use or Biotreatment facilities

1) Calculate the "Watershed Imperviousness Ratio", i, which is equal to the percent of impervious area in the BMP Drainage Area divided by 100.

2) Calculate the composite runoff coefficient C_{BMP} for the Drainage Area above using the following equation:

$$\mathbf{C_{BMP} = 0.858i^3 - 0.78i^2 + 0.774i + 0.04}$$

where: $\mathbf{C_{BMP}}$ = composite runoff coefficient; and,

i = watershed imperviousness ratio.

3) Determine the area-averaged "6-hour Mean Storm Rainfall", P_6, for the Drainage Area. This is calculated by multiplying the area averaged 2-year 1-hour value (0.55"-0.6") by the appropriate regression coefficient from Table 1 (1.4807). The 2-yr, 1-hr value for southern Ontario is approximately to 0.5" (P_6 = 0.5*1.4807 = 0.74 and northern Ontario is approximately 0.6" in/hr (P_6 = 0.6*1.4807 = 0.89).

4) Determine the appropriate drawdown time. Use the regression constant a = 1.582 for 24 hours and a = 1.963 for 48 hours. *Note: Regression constants are provided for both 24 hour and 48 hour drawdown times; however, 48 hour drawdown times should be used in most areas of California. Drawdown times in excess of 48 hours should be used with caution as vector breeding can be a problem after water has stood in excess of 72 hours. (Use of the 24 hour drawdown time should be limited to drainage areas with coarse soils (Class 'A' soils, that readily drain.)*

5) Calculate the "Maximized Detention Volume", P_0, using the following equation:

$$P_0 = a \cdot C_{BMP} \cdot P_6$$

where: P_0 = Maximized Detention Volume, in inches

a = 1.582 for 24 hour and a = 1.963 for 48 hour drawdown,

C_{BMP} = composite runoff coefficient; and,

P_6 = 6-hour Mean Storm Rainfall, in inches

6) Calculate the "Target Capture Volume", V_0, using the following equation:

$$V_0 = (P_0 \cdot A) / 12$$

where: V_0 = Target Capture Volume, in acre-feet

P_0 = Maximized Detention Volume, in inches; and,

A = BMP Drainage Area, in acres

Project Volume-based calculation (approximate) for planned on-site or off-site Stormwater Retention/Infiltration, Harvest & Re-Use or Biotreatment facilities:

Variable	Factor/Formula	Area A Result	Area B Result	Area C Result	Area D Result	Area E Result	Area F Result
Ratio of impervious surface/total site surface	(i)	0.90	0.90	0.90	0.90	0.90	0.90
C_{BMP}= runoff coefficient	$0.858i^3 - 0.78i^2 + 0.774i + 0.04$ =	0.7303	0.7303	0.7303	0.7303	0.7303	0.7303
P_6	**P_6 = 2-yr,1-hr depth*1.4807 =	0.8366	0.8366	0.8366	0.8366	0.8366	0.8366
Detention Volume-acre inches	P_0 = a * C_{BMP} * P_6 =	1.1993	1.1993	1.1993	1.1993	1.1993	1.1993
Drawdown rate of basin/trench (a)	1.582 for 24-hr drawdown or 1.963 for 48-hr drawdown =	1.963	1.963	1.963	1.963	1.963	1.963
Project Total Area (ac)	(A)	68.05	80	79.96	76.93	66.03	17
Design Capture Volume, cu. ft. (DCV)	V_0 = [(P_0 * A)/12]*43560 =	296252	348276	348101	334911	287458	74009
Water Volume infiltrated in first 3 hrs of storm	Vol= in/hr/12 x ft^2 of infiltration area x 3 hrs	43200	48000	48000	46200	43200	54559

Retention/treatment Volume provided, cu. ft.	Retention capacity of basins, trenches, underground system or biotreatment proposed	562766	625296	625296	601847	562766	178935

**For P_6 value, use site coordinates and NOAA website to determine project's average 2-yr, 1-hr rainfall depth, at: http://hdsc.nws.noaa.gov/hdsc/pfds/sa/sca_pfds.html .

5. Hydrologic Conditions of Concern (HCOC) and use of the on-line San Bernardino County HCOC Map for determining necessary mitigation steps necessary if there are HCOCs downstream of a project:

Project applicants may access the on-line HCOC Map at: http://sbcounty.permitrack.com/WAP/ . The map will indicate any hydrology concerns with downstream waterways that are hydraulically connected to the project and will indicate if there are any approved regional projects downstream that could be utilized for off-site mitigation of HCOCs. Please indicate here if the project will or will not be able to retain/infilter, harvest and use or biotreat and detain the DCV, on-site, as calculated in Section 4 and if there are HCOCs identified downstream of the project:

Retain or Harvest/Use the DCV on site?	Yes	**X**	No	
Biotreat the DCV but not infilter the runoff?	Yes		No	X
HCOCs identified downstream of site?	Yes	**X**	No	

If the entire DCV will not be retained on site, the DCV is biotreated but not infiltered or additional detention capacity is needed to address identified HCOCs, downstream of the site, please list here, what additional mitigation measures will be utilized (on-site or off-site) to address HCOCs (see Section 4.2.1-4.2.3 of the SB County WQMP Technical Guidance):

_____

_____

_____

_____

6. Site Plan and Conceptual Grading/Drainage Plan requirements for submission with the Preliminary WQMP:

Provide a Site Plan and Conceptual Grading/Drainage Plan along with this Preliminary WQMP, which conceptually shows the proposed locations of buildings, homes, parking lots, parks, new paved roadways, landscaped areas, drainage patterns and drainage sub-areas, methods of conveyance, proposed retention/infiltration, harvest & use or biotreatment facilities that are planned for installation. Where it is determined to be infeasible to capture and detain design storm runoff volumes, on-site, please include other design features, as

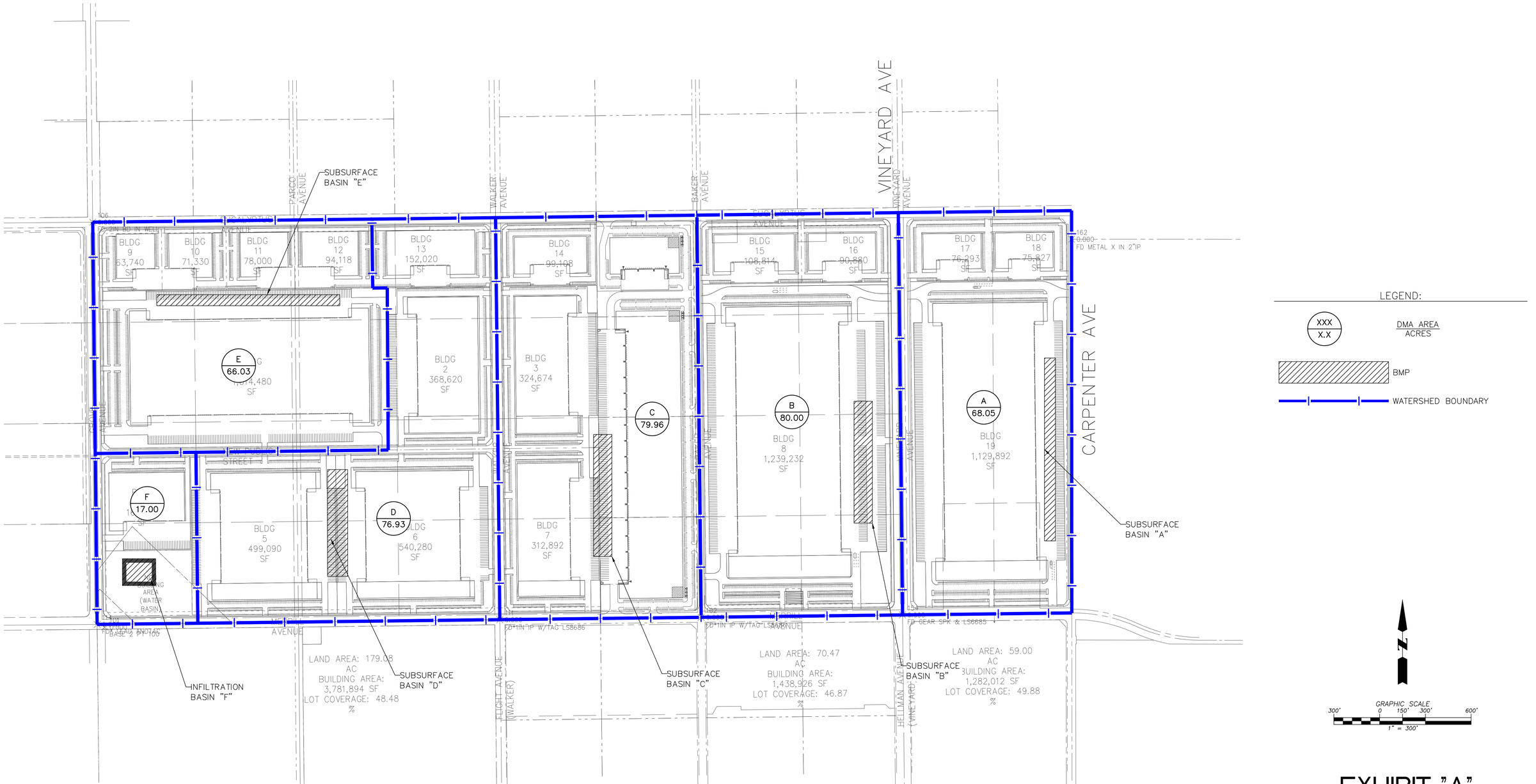
described in Section 3, above. Include numbered or lettered notes on the Site Plan with a legend detailing other BMPs, as described in Section 3.

The project site will capture the DCV generated from the project site via sheet flow and subsurface storm drain. Flows will then discharge into one of five subsurface systems, or into the proposed infiltration basin. The DCV will then be treated via infiltration either in the subsurface systems or the infiltration basin. The subsurface systems and infiltration basin will not allow flows to discharge below the depth of the DCV. The majority of the project site is not included in an area identified as “HCOC Exempt Areas” on the Stormwater Facility Mapping Tool, with the exception of the most easterly portion of the project site, therefore the table in Section V indicates that “HCOCs identified downstream of site”. However, once the project constructs the necessary master drainage plan facilities required for the project site, the project will no longer be subject to addressing HCOCs since all facilities downstream of the project will be designed for the tributary peak 100-year flow rate generated by the project site. This will be discussed in more detail in the final WQMP. The storm drain improvements will be designed so that all flows will be conveyed to the subsurface systems or infiltration basin. Flows in excess of the required Design Capture Volume will be conveyed via outlet pipes from the BMPs to the Master Drainage Plan facilities surrounding the project site. The BMPs have been sized to accommodate the Design Capture Volume, while allowing peak flows to bypass. The site plan depicts the location of the proposed BMPs and the tributary DMA areas.

BORBA II

IN THE CITY OF ONTARIO, COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA

WQMP SITE PLAN



LEGEND:

XXX / X.X — DMA AREA / ACRES

BMP

WATERSHED BOUNDARY

Building sizes, locations, and orientations are illustrative only. No building footprints would be entitled under the EIR Project or as part of the Specific Plan approval.

EXHIBIT "A"

JLC Engineering & Consulting, Inc.
41660 IVY STREET, SUITE A
MURRIETA, CA 92562
PH. 951.304.9552 FAX 951.304.3568

BORBA II

WQMP SITE PLAN

Drawing Name: G:\265.08.19\Engineering\WQMP\Appendix 1 - Maps & Site Plan\Prelim WQMP Exhibit.dwg
Last Opened: Sep 16, 2019 - 3:19pm by jsarver