APPENDIX 1

Stormwater Control Plan for Regulated Projects

Stormwater Control Plan for Regulated Projects (≥ 5000 sq. ft.)

For Office Use Only
Application No._____
Received By: _____

Instructions
Based on the Stormwater Information Sheet in Humboldt LID Stormwater Manual – Part A, you have determined that your project is classified as a Regulated Project. Use this form to assist you in designing your project to comply with the MS4 General Permit post-construction requirements for Regulated Projects. This completed and signed Stormwater Control Plan for Regulated Projects including additional supporting documents as required, must be submitted with your project application to the applicable PBS department with project location jurisdiction.

A. Project Information and Description

Project Name: _____

Physical Site Address: _____

Assessor's Parcel Number: _____

Project Applicant: _____

Mailing Address: _____

Phone: _____

Email: _____

Name, email and address of project consultant, if any (e.g., engineer, architect, designer):

Name: _____

Firm: _____

Address: _____

Phone: _____

Email: _____

Type of Application/Project:
What type of application is this checklist accompanying?

☐ Grading Permit ☐ Use Permit ☐ Subdivision

☐ Building Permit ☐ Design Review ☐ Other (please specify) _____

Project Type and Description:	
Total Pre-Project Impervious Surface Area (square feet)	
Total New or Replaced Impervious Surface Area (square feet) **[Sum of impervious area that will be constructed as part of the project]**	
Total Post-Project Impervious Surface Area (square feet)	

This Regulated Projects Stormwater Control Plan provides guidelines and methods for assessing site conditions, determining runoff values for site DMAs, implementing site design measures with the goal of reducing stormwater runoff values from impervious surfaces, and determining the size of bioretention facilities (if required). Strategic use of site design measures may enable compliance without the need for bioretention facilities or equivalent.

Stormwater Control Plan for Regulated Projects (≥ 5000 sq. ft.)

B. Site Assessment (Opportunities and Constraints)

1. Soil Characteristics

I. Soil characterization method_____

II. Were infiltration rates assessed for the site? ☐ Yes ☐ No

If Yes, please attach soils testing report

2. Depth to Groundwater

I. What is the depth (below ground surface) to groundwater (in feet)?_____

II. How was this determined?_____

3. Existing Vegetation and Natural Areas

I. Are there any key natural vegetation areas, sensitive habitats, or mature trees on the site?

☐ Yes ☐ No

If yes, please draw and label these features on the existing conditions site plan map and attach to this document.

4. Drainage and Hydrograph

I. Are there any natural drainage or wet area features such as: natural ponds, springs, vernal pools, marshes, and wet meadows on the site or directly adjacent to the site?

☐ Yes ☐ No

If yes, consult with applicable PBS department staff with jurisdiction for project location as additional project area restrictions may apply.

5. Potential Contamination

I. Is the project site within or near to a registered contaminated site, according to the State Water Resources Control Board Geotracker Website (http://geotracker.waterboards.ca.gov/)?

☐ Yes ☐ No

If yes, please attach the applicable contaminated site report from the Geotracker website, and note the location of the contaminated site on the existing conditions site plan map. Please attach a description explaining how this contamination will affect your project design.

Stormwater Control Plan for Regulated Projects (≥ 5000 sq. ft.)

C. Project Layout Optimization

Optimizing the site layout can be done through the following methods:

1. Define the development envelope and protected areas, identifying areas that are most suitable for development and areas to be left undisturbed.
2. Concentrate development on portions of the site with less permeable soils and preserve areas that can promote infiltration.
3. Limit overall impervious coverage of the site from paving and roofs.
4. Set back development from creek, wetlands, and riparian habitats, to maximize vegetative buffer widths.
5. Preserve significant trees.
6. Conform the site layout along natural landforms.
7. Avoid excessive grading and disturbance of vegetation and soils.
8. Replicate the site's natural drainage patterns.
9. Detain and retain runoff throughout the site.

Based on the features included in the existing conditions site plan, please ensure your project site plan applies project layout optimization measures to the greatest extent practicable, while still meeting the objectives of your project.

Have you attached a short description of how site optimization techniques have been integrated into the project design?

☐ Yes ☐ No

D. Source Controls

Does your project contain potential pollutant-generating activities or sources?

☐ Yes ☐ No

If Yes, please complete the Source Control Worksheet (Appendix 7) and list and identify the source or treatment control measure and locations and include as an attachment to the SCP document.

Stormwater Control Plan for Regulated Projects (≥ 5000 sq. ft.)

E. Drainage Management Areas

On the project site plan please delineate and label all drainage management areas (refer to Sec. 6 of the manual).

For each Drainage Management Area identified on the project site plan, complete the Regulated Projects Runoff Worksheets (attached) to document runoff values, implementation of Site Design Measures, and bioretention facility sizing (if required). Every DMA within the project shall be listed in Worksheet 1(attached)

In accordance with section E.12 of the MS4 General Permit, Site Design Measures shall be implemented based on the objective of capturing (retaining) stormwater runoff from the 85th percentile 24-hour storm event, to the extent technically feasible. Any remaining runoff, from impervious DMAs, may then be directed to one or more bioretention facilities or equivalent. Projects over 1 acre must adhere to hydromodification standards if applicable. (refer to Sec. 5.8 of the manual).

F. Runoff Reduction Measures

Worksheet 1 provides a method for project applicants to document compliance with runoff reduction requirements through a site design methodology that directs stormwater runoff from impervious surface areas to pervious self-retaining areas for capture and infiltration (as detailed in LID Manual – Section 6.0). Using this methodology, all stormwater runoff from the 85th percentile 24-hour storm event for each DMA can be captured and retained on site and compliance with the MS4 General Permit runoff reduction requirements can be met.

Capturing stormwater runoff using the site design methodology where runoff from impervious surface areas is directed to pervious self-retaining areas is a convenient alternative for achieving compliance with the MS4 General Permit runoff reduction requirements, while avoiding the need for bioretention facilities. Worksheet 1 provides a simple calculation for determining if stormwater runoff reduction measures have been met using this design methodology.

Due to site constraints, not all projects or project DMAs may be able to achieve compliance with runoff reduction requirements by directing impervious surface stormwater runoff to pervious self-retaining areas. The project applicant will need to complete Worksheet 2 for each DMA (*6.0 Documenting Your Design*) that cannot meet compliance with runoff reduction measures as determined using Worksheet 1.

Worksheet 2 will be used to apply Site Design Measures in addition to any pervious self-retaining areas with the goal of reducing stormwater runoff values from impervious surfaces such that a no net stormwater runoff value (using the design storm) for each DMA is achieved. The worksheet process is an iterative exercise. If compliance cannot be met during the first iteration of calculations alter the site design measures to increase capturing capacity and rerun the calculator.

Site Design Measures include the following:

- ☐ 1. Tree Planting and Preservation
- ☐ 2. Rain Barrels or Cisterns
- ☐ 3. Impervious Area Disconnection
- ☐ 4. Soil Quality Improvement
- ☐ 5. Green Roof
- ☐ 6. PPPP (alternative engineered hardscapes)
- ☐ 7. Vegetated Swales
- ☐ 8. Stream Setbacks and Buffers
- ~~☐ 9. On-site Infiltration (trench, dry well, gallery, or system)~~

Multiple Site Design Measures may be applied to best meet site conditions in order to reduce stormwater runoff values from impervious surface areas.

After application of Site Design Measures, any remaining stormwater runoff from each DMA, must then be directed to one or more bioretention facilities or equivalent in accordance with Section 6.3 of the manual and the MS4 General Permit.

G. Bioretention Facility

Indicate whether a Bioretention Facility or equivalent is required for this project.

☐ Yes ☐ No

Stormwater Control Plan for Regulated Projects (≥ 5000 sq. ft.)

H. Operation and Maintenance in Perpetuity

Indicate whether an *Operation and Maintenance Plan* is accompanying this document, required for bioretention facilities or equivalent).

☐ Yes ☐ No

I. Signature and Certification:

This Stormwater Control Plan is required for all Regulated Projects. This document will be used by the plan checker to confirm that adequate stormwater control measures are being implemented on the project.

Indicate whether all supporting materials and worksheets are accompanying this document, Stormwater Control *Plan*

☐ Yes ☐ No

I, the below signed, confirm that I have accurately described my project to the best of my ability, and that I have not purposely omitted any detail affecting my project's classification for storm water regulation. I hereby certify that the site design measures and storm water flow treatment measures identified herein as being incorporated into my project have been designed in accordance with the Site Design Measure sheets or equivalent and are included in the final site plans submitted to the applicable Planning and/or Building Services Department with project location jurisdiction. I also hereby certify that my project meets the storm water runoff reduction criteria identified in the SCP, or as determined through other approved means.

_____ _____

Signature Date

_____

Print Name

I am the:

☐ Property Owner ☐ Contractor ☐ Applicant

≥

J. Checklist:

Items on Site Plan	Items within the SCP
☐ Site Boundary	☐ Narrative of site features and conditions that constrain or provide opportunity for stormwater control
☐ Soil types and areal extents. Test pit/infiltration test locations (if required)	☐ Narrative describing the use of runoff reduction measures (sec. F), building features, pavement selections, etc., that reduce runoff
☐ Environmentally-sensitive areas and areas to be preserved	☐ Completed Worksheet 1 self-retaining area
☐ Existing natural hydrological features (depressions, watercourses, wetlands, riparian areas, undisturbed natural areas)	☐ Completed Worksheet 2 site design runoff reduction measures for each DMA
☐ Existing and proposed sited drainage network and connections to MS4 conveyances off-site	☐ Treatment/Bioretention Operation and Maintenance Plan, including: inspection and , maintenance schedule, checklist and certification form and legally binding agreement
☐ Proposed site design measures used to reduce runoff	☐ Bioretention Checklist (if utilized)
☐ DMA delineation labeled with unique identifier	☐ Narrative describing (treatment/ baseline hydromodification)/bioretention facilities including the calculations and location of each facility.
☐ Proposed locations and footprints of improvements creating new, or replaced, impervious surfaces	☐ Source Control Worksheet (if required)
☐ Locations and footprints of bioretention (treatment/baseline hydromodification) facilities (if required)	☐ Soil percolation/infiltration testing documentation
☐ Areas of soil and/or groundwater contamination	
☐ Existing utilities and easements	
☐ Pollutant generation source areas, including loading docks, food service areas, refuse areas, outdoor processing and storage areas, vehicle cleaning facilities/areas, repair or maintenance areas, fuel dispensing area, equipment washing areas	

Worksheet 1: Must include all DMAs within the Project

Regulated Projects Worksheet 1 - Humboldt Low Impact Development Stormwater Manual				
DMA Name	Total Post Project Impervious Surface Area (square feet)	Pervious Self-Retaining Area[1] (square feet)	Ratio of Impervious Surface Area to Self-Retaining Pervious Surface Area	Does Ratio Achieve 3.5 : 1 ratio or better of Impervious Surface Area to Self-Retaining Pervious Surface Area (Yes or No)[2]
Example A	500	150	3.3 : 1	YES
Example B	500	100	5.0 : 1	NO

1: Self-Retaining Areas where impervious surface runoff is directed to the Pervious Self-Retaining Area in accordance with Humboldt LID Manual - Part C, Section 6.0

2: If "Yes", Ratio of Impervious Surface Area to Self-Retaining Pervious Surface Area is equal to 3.5:1 or better (1.3:1 or better in the Shelter Cove MS4 area), then compliance with runoff reduction measures have been met for DMA.
If "No", Ratio of Impervious Surface Area to Self-Retaining Pervious Surface Area does not achieve 3.5:1 or better (1.3:1 in Shelter Cove), then compliance with runoff reduction measures have not been met for DMA (Complete Worksheet 2).

Worksheet 2: (Use one Worksheet for each DMA as applicable)

Regulated Projects Worksheet 2
Humboldt Low Impact Development Stormwater Manual

Project Information						*Formulas/Notes*
DMA Name:						
Total Post-Project Impervious Surface Area (square feet)			A		square feet	
24 hour - 85th Percentile Design Storm			B		inch	**B** = Select Design Storm Value (0.65-inch Humboldt Bay Area, 1.3-inch Shelter Cove)
Impervious Surface Runoff Value (Potential Stormwater Runoff due to impervious surface area and design storm value)			C		Gallons per 24 hours	**C = A x B x 0.083 x 7.48**
Pervious Self-Retaining Area (SRA) Credit (if applicable, if none enter 0)						
Self-Retaining Area (square feet)			SRA Credit		square feet	SRA Credit = Self-Retaining Area x Multiplier. Select **Multiplier** (3.5 Humboldt Bay Area, 1.3 Shelter Cove)
Site Design Measure Credits						
Tree Planting and Preservation						
New Trees		# of trees				
100 square feet per deciduous tree	D		E		square feet	E = D x 100
200 square feet per evergreen tree	F		G		square feet	G = F x 200
Existing Trees (Credit for 50% of existing canopy area)		Canopy diameter (feet)				
Tree #1	H_1		J_1		square feet	$J_1 = 3.14 \times (H_1/2)^2 \times 0.50$
Tree #2	H_2		J_2		square feet	$J_2 = 3.14 \times (H_2/2)^2 \times 0.50$
Tree #3	H_3		J_3		square feet	$J_3 = 3.14 \times (H_3/2)^2 \times 0.50$
Rain Barrel or Cisterns (55 gallon minimum)						
Square foot credit per gallon based on 24-hour, 85th Percentile Design Storm	K					**K** = Select square foot credit per gallon (2.48 Humboldt Bay Area, 1.24 Shelter Cove)
		Gallons				
Rain Barrels	L		M		square feet	M = L x K
Cisterns	N		O		square feet	O = N x K
~~**Infiltration Trench/Basin (55 gallon minimum - 21 ft^{3**})**~~		~~cubic feet~~				
~~volume(ft^3) = length x width x depth~~	~~P~~		~~Q~~		~~square feet~~	~~Q = P x R x K x 7.48~~
~~porosity (approximate %)~~	~~R~~	~~35%~~				
~~**Subsurface Infiltrators (55 gallon minimum)**~~						
~~Proprietary units vary, insert estimated storage in ft^3~~	~~S~~		~~T~~		~~square feet~~	~~T = S x 7.48~~
Impervious Area Disconnection Credit per square foot of impervious area feeding into pervious area			U		square feet	U = Enter square foot value
Soil Quality Improvement						
Credit per square foot of soil quality improvement			V		square feet	V = Enter square foot value
Green Roof						
Credit per square foot of green roof installation			W		square feet	W = Enter square foot value
PPPP (Porous Asphalt, Pervious Concrete, Permeable Pavers)						
Credit per square foot of PPPP			X		square feet	X = Enter square foot value
Vegetated Swales						
Credit per square foot of vegetated swale			Y		square feet	Y = Enter square foot value
Stream Setbacks and Buffers						
Credit per square foot of stream setback and buffer#			Z		square feet	Z = Enter square foot value
Credits Total			AA		square feet	AA = SRA Credit + E + G + J_1 + J_2 + J_3 + M + O + Q + T + U + V + W + X + Y + Z
Post-Project Impervious Surface Area minus Site Design Measure Credits			BB		square feet	BB = A - AA
NEW Impervious Surface Runoff Value (Potential Stormwater Runoff due to impervious surface area and design storm after implementation of Site Design Measures)			CC		Gallons per 24 hours	CC = BB x B x 0.083 x 7.48
Percent reduction in Impervious Surface Runoff Value*			DD		%	DD = ((C - CC) / C) x %100

***If value for DD is not greater than or equal to %100 then bioretention is required for treating remaining runoff from impervious area indicated by value BB. Design and implement bioretention facility in accordance with Humboldt LID Stormwater Manual - Part C.**

****Infiltration Trench/Basin calculations are based on porosity (35%). Increased trench dimensions (volume) are required to meet 55 gallon minimum capacity.**

Green	Fill In [Enter Value]	Conversions Used:
Red	Calculated Value	1 inch = 0.083 feet
Black	Fixed Value/Selectable Value	1 cubic foot = 7.48 gallons
Regulated Projects Worksheet 2, Version 2.0 - June 29, 2016		# check with agency with project area jurisdiction for requirements