



City of San Pablo

Green Infrastructure Plan Framework

Order R2-2015-0049 Provision C.3.j.i.(1)

Adopted by City of San Pablo City Council: June, 5 2017

ACRONYMS

ABAG	Association of Bay Area Governments
BASMAA	Bay Area Stormwater Management Agencies Association
CCCWP	Contra Costa Clean Water Program
CCSWRP	Contra Costa Watersheds Stormwater Resource Plan
GIS	Geographic Information System
IRWMP	Integrated Regional Water Management Plan
MRP	Municipal Regional Stormwater Permit
MTC	Metropolitan Transportation Commission
NPDES	National Pollutant Discharge Elimination System
PCBs	Polychlorinated Biphenyls
RAA	Reasonable Assurance Analysis
TMDL	Total Maximum Daily Load

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Summary

To implement the Clean Water Act, and with direction from the California Regional Water Quality Control Board for the San Francisco Bay Region, Bay Area municipalities are incorporating green infrastructure into the development and renewal of the urban landscape.

Green infrastructure refers to the construction and retrofit of storm drainage to reduce runoff volumes, disperse runoff to vegetated areas, harvest and use runoff where feasible, promote infiltration and evapotranspiration, and use bioretention and other natural systems to detain and treat runoff before it reaches our creeks and the San Francisco Bay (the Bay). Green infrastructure facilities include, but are not limited to, pervious pavement, infiltration basins, bioretention facilities or “raingardens”, green roofs, and rainwater harvesting systems. Green infrastructure can be incorporated into construction on new and previously developed parcels, as well as new and rebuilt streets, roads, and other infrastructure within the public right-of-way.

This Framework outlines the tasks, schedule, and budget necessary for the City of San Pablo to develop a Green Infrastructure Plan (Plan). The Plan for the City of San Pablo is required by the San Francisco Bay Region Municipal Regional Stormwater NPDES Permit (MRP)¹, and must be submitted to the California Regional Water Quality Control Board for the San Francisco Bay Region by September 2019.

The Framework describes required elements of the Plan, including the following:

- Staff coordination and public outreach
- Mapped and prioritized areas for potential and planned projects
- Targets for the amount of impervious surface to be retrofit over time
- A system for tracking and mapping completed projects
- Guidelines for project design, and standard designs and specifications
- Requirements for sizing green infrastructure projects
- Integration with existing planning documents
- Methods and results for estimating the load reductions to be achieved
- Evaluation of funding options

Several of these elements will be developed collaboratively with other Contra Costa municipalities through the Contra Costa Clean Water Program (CCCWP) or regionally through the Bay Area Stormwater Management Agencies Association (BASMAA).

¹ Order R2-2015-0049.

Based on initial cost estimates, the City of San Pablo plans to include \$60,000 across FY 2018-2019 and FY 2019-2020 budgets to be expended on preparation of the Plan. This budget is only preliminary and is subject to Council approval.

1 • Purpose

1.1 Regulatory Requirements

The City of San Pablo is one of 76 Bay Area municipalities covered by the MRP issued by the California Regional Water Quality Control Board for the San Francisco Bay Region (Water Board).

Provision C.3.j.i. in the MRP requires that each Permittee prepare and submit a Green Infrastructure Plan. Required elements of the Plan are specified. The Plan is to be submitted with the Annual Report due September 30, 2019.

The provision further specifies that each Permittee prepare a framework that describes specific tasks and timeframes for development of the Plan. The City of San Pablo must approve the framework by June 30, 2017. This document fulfills that requirement.

Provisions C.11 and C.12 in the MRP requires Contra Costa Permittees (Contra Costa County and its 19 cities and towns) to reduce estimated PCB loading by 23 grams/year and estimated mercury loading by 9 grams/year using green infrastructure by June 30, 2020. Regionally, Permittees must also project the load reductions achieved via green infrastructure by 2020, 2030, and 2040, showing that collectively, reductions will amount to 3 kg/year PCBs and 10 kg/year mercury by 2040. The Plan will provide estimates of the reductions in the quantity of these pollutants based on implementation of the elements outlined in the Plan.

1.2 Purpose of the Green Infrastructure Plan

The City of San Pablo's Plan will guide a shift from conventional "collect and convey" storm drain infrastructure to more resilient, sustainable stormwater management that reduces runoff volumes, disperses runoff to vegetated areas, harvests and uses runoff where feasible, promotes infiltration and evapotranspiration, and uses natural processes to detain and treat runoff. Green infrastructure features and facilities include, but are not limited to, pervious pavement, infiltration basins, and bioretention facilities ("rain gardens"), green roofs, and rainwater harvesting systems.

As required by Provisions C.3.a. through C.3.i. in the MRP, these "Low Impact Development" practices are currently implemented on land development projects in the City of San Pablo. Specific methods and design criteria are spelled out in the CCCWP's *Stormwater C.3 Guidebook*, which the City of San Pablo has referenced in *San Pablo Municipal Code (SPMC) Chapter 8.40 – Stormwater Management and Discharge Control*.

The proposed Plan will detail how similar methods will be incorporated to retrofit existing storm drainage infrastructure using facilities constructed on public and private parcels and within the public right-of-way.

To prepare the Plan, the City of San Pablo will:

- Review planned capital projects to identify the potential to incorporate green infrastructure and low impact development drainage design.
- Identify and prioritize areas and projects within the City of San Pablo to implement additional green infrastructure projects.
- Coordinate within and between the City of San Pablo's departments to develop concepts for integrated projects that serve multiple objectives (e.g., multi-modal transportation, recreation, streetscape improvements, and parks, as well as green infrastructure).
- Document resources and a process for completing conceptual designs.
- Document a funding strategy for future projects, including a process to pursue funding and align project funding sources and schedules to successfully build integrated projects.
- Develop and implement a system to track green infrastructure projects, including land development projects subject to the Provision C.3.a. through C.3.i. requirements, and project future implementation.
- Evaluate and predict the resulting reductions in the quantity of pollutants—including PCBs, mercury, and trash—transported to creeks and the Bay/Delta.

1.3 Countywide and Regional Collaboration

Several of the elements required for preparation of City of San Pablo's Plan will be developed collaboratively through City of San Pablo's participation in the CCCWP and/or regionally through participation in BASMAA.

2 • Plan Elements and Approach

2.1 Interdepartmental Coordination and Community Outreach

To be successful, the Plan must engage a wide variety of stakeholders in plan, policy, and project concept development. Planned projects with multiple benefits may be proposed for streets, parks, schools or other public parcels. A successful green infrastructure planning team will include representatives from the municipal departments who plan and implement projects on these streets and parcels.

A successful planning approach will also include a robust plan for engagement of both municipal staff and the community members who live, work, and play near proposed green infrastructure projects.

2.1.1 Interdepartmental Coordination

The City of San Pablo has developed a strategy for engagement and education of municipal staff on the purposes and goals of green infrastructure, the required elements of the Plan, and the steps needed to develop and implement the Plan.

The City of San Pablo has also begun convening an interdepartmental committee to oversee and implement the process of preparing the Plan.

The City of San Pablo’s interdepartmental committee consists of the following departments and staff representatives:

Table 1. Interdepartmental Green Infrastructure Plan Committee

Staff	Department & Title
Ongoing Committee Members	
Amanda Booth	Public Works, Environmental Program Analyst
Elizabeth Dunn	Development Services, Planning
John Bothwell	Public Work, Maintenance Supervisor
Kevin McCourt	Public Works, Engineering Aide
Karineh Samkian	Public Works, Environmental Program Analyst
Charles Ching	City Manager’s Office, Assistance to the City Manager
As-Needed Committee Members	
Kelly Sessions	Finance Director, Finance
Barbara Hawkins	Public Works, Public Works Director

The interdepartmental committee met 2 times in FY 16/17 to discuss the required elements and development of City of San Pablo’s Plan.

2.1.2 Community Engagement and Outreach

The City of San Pablo will develop a comprehensive community engagement and education strategy in order to educate public stakeholders on green infrastructure benefits and requirements and to engage them in the development of City of San Pablo’s Plan. Such outreach will include general outreach, targeted outreach and

training for professionals involved in infrastructure planning and design. Targeted outreach and training is ongoing and will be coordinated countywide with the CCCWP.

2.2 Green Infrastructure Project Identification and Prioritization

The Plan must describe the mechanism(s) by which the City of San Pablo will identify, prioritize and map potential and planned green infrastructure projects on a drainage-area-specific basis. These include public and private projects that may be implemented over the long term, with milestones for implementation by 2020, 2030, and 2040.

The Plan must also contain the outputs resulting from the identification and prioritization mechanism(s) described above, including the prioritization criteria as well as the lists and maps of prioritized projects and timeframes for implementation.

The City of San Pablo will use the mechanisms listed in 2.2.1-2.2.3 to identify, prioritize, and map future green infrastructure projects.

2.2.1 Review of Capital Improvement Program Projects

The City of San Pablo must prepare and maintain a list of public and private green infrastructure projects planned for implementation during the permit term, and public projects that have potential for green infrastructure measures. The City of San Pablo has begun this process and an initial list was submitted with the FY 15-16 Annual Report.

The creation and maintenance of this list is supported by guidance developed by BASMAA: “Guidance for Identifying Green Infrastructure Potential in Municipal Capital Improvement Projects” (May 6, 2016). The BASMAA Guidance is attached to this document as Appendix A.

The Plan will document current implementation of this process within the City of San Pablo and will identify planned changes or needed improvements. Resultant project lists will be used to provide potential projects for incorporation into the Plan. The Plan will also include a program of work to complete prioritized projects identified through this process.

2.2.2 Tools and Processes for Project Identification and Prioritization in the City of San Pablo

City of San Pablo staff will develop a process and resources for identifying and pursuing additional opportunities to construct green infrastructure projects in the City of San Pablo on an ongoing basis. The process and resources will be documented in the Plan and will address how multi-objective projects will be identified through a collaborative interdepartmental planning process. Currently, plans for new private projects are routed to Public Works for review and comments. Public Works staff have been train to identify potential opportunities of green infrastructure during this review process. Additionally, Public Works can request a monthly report of private projects,

this can be created by running a report in the City's database, CRW. For public projects City staff track and review projects for green infrastructure opportunities through the Capital Improvement Project (CIP) list. In addition, projects are discussed at the weekly staff meetings.

2.2.3 Use of Contra Costa Watersheds Stormwater Resource Plan Tools and Project Lists

The Contra Costa Clean Water Program has obtained a planning grant from the State Water Resources Control Board to develop a Stormwater Resource Plan for Contra Costa County. The Contra Costa Watersheds Stormwater Resources Plan (CCSWRP) will support the development and implementation of green infrastructure plans within the County through identification of local and regional opportunities for green infrastructure projects and the development of tools for estimating pollutant load reductions over future timeframes. The CCSWRP will identify and prioritize multi-benefit projects using a metrics based approach for quantifying project benefits such as volume of stormwater infiltrated and/or treated and quantity of pollutants removed. The metrics-based analysis will be conducted using hydrologic and pollutant load reduction models coupled with GIS resources and other tools. Potential projects will also be assessed for additional benefits such as flood control, community greening, and habitat creation. The product of these analyses will be a map of opportunity areas for green infrastructure projects throughout the County and an initial prioritized list of potential projects. The tools, maps, and list of potential projects developed through this process will be available for incorporation into the City of San Pablo's Plan.

2.3 Evaluating Pollutant Load Reductions

The project prioritization criteria will consider opportunities to reduce loads of trash, mercury, PCBs, and other pollutants. It is anticipated that mercury and PCB pollutant load reductions will be evaluated for each project using the regionally developed Interim Accounting Methodology which is based on watershed locations and historic land uses. A draft of this regionally developed methodology was submitted to the Water Board in the 2016 Annual Report and was approved by the Water Board's Executive Officer in May of 2017. Furthermore, it is anticipated that a Reasonable Assurance Analysis (RAA) will be developed that the City of San Pablo has reviewed and approved in cooperation with both regional and countywide partners to demonstrate that reductions will be achieved in the time frame required by the Mercury TMDL (2006) and the PCBs TMDL (2008). The City of San Pablo's Plan will include a description of these two methodologies and the results of these methodologies will be incorporated into the planning process.

It is also anticipated that these two methodologies will be used to help develop and/or confirm targets for the amount of impervious surface, from both public and private projects, within City of San Pablo which will need to be converted or "retrofit" to drain to green infrastructure features, such as a vegetated area or stormwater treatment

facility, or converted to pervious surfaces, by the MRP's 2020, 2030, and 2040 milestones. The City of San Pablo's Plan will include these targets as well as a description of the analyses used to develop them.

2.4 Projecting Green Infrastructure Implementation

To develop the RAA and generate targets for green infrastructure implementation on public and private land, the Plan will include an estimate of the pace of future green infrastructure implementation on public and private parcels.

To estimate the pace of future implementation on private parcels, the City of San Pablo will participate in development of a consistent countywide or regional methodology for projecting private development in future decades. The projections will likely incorporate or adapt regional scenarios created by the Association of Bay Area Governments/Metropolitan Transportation Commission (ABAG/MTC) to estimate future implementation of green infrastructure in each municipality.

2.5 Completed Project Tracking System

The Plan will describe the City of San Pablo's process for tracking and mapping completed public and private projects and making the information available to the public.

Through the CCCWP, the City of San Pablo is participating in development of a GIS that will allow spatial tracking and representation (maps) of green infrastructure projects and associated tributary drainage areas. The database will be used for tracking and reporting public projects and Regulated Projects (MRP Provision C.3.b.) including Special Projects (MRP Provision C.3.e.) and may be used for tracking operation and maintenance verification inspections of installed stormwater treatment facilities (MRP Provision C.3.h.).

The City of San Pablo's Plan will include an update on this countywide/regional project and the City of San Pablo's status and plans for integrating this tool into its processes for implementing green infrastructure.

The project is currently underway, with cooperation and cost-sharing between the CCCWP and the Alameda Countywide Clean Water Program (ACCWP).

2.6 Design Guidance and Specifications for Green Infrastructure Projects

The Plan must include general design and construction guidelines, as well as standard specifications and details (or references to those documents) for incorporating green infrastructure components into projects within the City of San Pablo. These guidelines and specifications should address the different street and project types within the City of San Pablo, as defined by its land use and transportation characteristics, and allow projects to provide a range of functions and benefits, such as stormwater

management, bicycle and pedestrian mobility and safety, public green space, urban forestry, etc.

The City of San Pablo will collaborate with other Permittees, countywide and regionally, to compile, reference, and/or develop this design guidance. Questions to be addressed in the review and compilation period include:

- Does existing design guidance address local needs? Are there local conditions or characteristics that require different guidance?
- To what extent would additional guidance, if developed, address the needs of multiple projects? Or are the design issues presented by local green infrastructure projects so site-specific that designs must be developed individually for each project?

The results of this review, and the status of design guidance to be used in future projects, will be discussed and presented in the Plan. An initial list of currently available green infrastructure design guidance is listed in the CCCWP's *Stormwater C.3 Guidebook*.

2.7 Sizing Requirements for Green Infrastructure Projects

The City of San Pablo's Plan must include a requirement that projects be designed to meet the treatment and hydromodification sizing requirements in MRP Provisions C.3.c. and C.3.d. The Permittees may collectively propose an approach on how to proceed should project constraints in non-regulated right of way projects preclude fully meeting the C.3.d. sizing requirements.

A BASMAA project is currently underway to analyze hydrologic data and bioretention facility performance under different sizing scenarios. It is anticipated that this project will result in recommendations for sizing green infrastructure in non-regulated right of way projects. The City of San Pablo's Plan will describe the outcomes of BASMAA's efforts and how those outcomes have been incorporated into local planning and design practices. BASMAA's guidance may include criteria to assist Permittees to determine when higher-rate tree-box-type biofilters may be a more practical and effective mode of treatment than bioretention.

3 - Integration with Existing Plans and Policies

3.1 Updates to Planning Documents

The Plan must describe its relationship to other planning documents and efforts within the City of San Pablo and how those planning documents have been updated or modified, if needed, to support and incorporate the green infrastructure requirements. If any necessary updates or modifications have not been accomplished by the

completion of the Plan, the Plan must include a work plan and schedule to complete them.

The City of San Pablo has reviewed its existing municipal planning documents and identified which documents need to be updated or modified to support and/or be consistent with the Plan. A summary of the results of the municipal plan review and a schedule for updates or modifications is in Table 2.

The Plan will also describe a process or processes, including criteria, to ensure future planning documents are consistent with the Plan’s policies, processes, and tasks.

Table 2. Municipal Plans Requiring Updates to Support Green Infrastructure Implementation

Name of Plan Edit list below	Responsible Department/Staff	Last Updated	Next Projected Update
San Pablo General Plan	Development Services	2011	2026
San Pablo Ave. Specific Plan	Development Services	2011	2026
23 rd Street Specific Plan	Development Services	2007	2020
Bicycle & Pedestrian Master Plan	Development Services	2011	2017
Drainage Master Plan	Public Works	2017	As needed
Davis Park Master Plan	Community Services	2007	Unknown
Landscape Master Plan	Public Works	2017	As needed
Climate Action Plan	Public Works	2012	2020

3.2 Adoption of Policies, Ordinances and Other Legal Mechanisms

The City of San Pablo will review its existing policies, ordinances, and other legal mechanisms to identify which documents may need to be updated or modified to help implement the Plan. Legal mechanisms required to implement the Plan will be completed and adopted (if necessary) by September 30, 2019. However, planning and other documents will only be updated as/when the entire document is opened for significant amendments/updates.

Staff will also collaborate with other Permittees, countywide and regionally, to ensure policies, ordinances, and other legal mechanisms are consistent with those of other Permittees countywide and regionally, while being tailored to the specific needs and characteristics of City of San Pablo.

A summary of the results of an initial policy, ordinance, and legal mechanisms review and the schedule for actions is presented in Table 3 below.

Table 3. Policies, Ordinances, and Legal Mechanisms to be Reviewed

Policy, Ordinance or Mechanism	Potential Action and Timeframe
San Pablo Municipal Code (SPMC)	If required, the SPMC will be updated to include the legal authority of implement the various aspects of the Plan. Expected timeframe is June 2018 to July 2019.
Low Impact Development Operation and Maintenance Agreements	If required, the Operation and Maintenance Agreements will be updated to include the legal authority of implement the various aspects of the Plan. Expected timeframe is June 2018 to July 2019.
Contract Documents (i.e. Bid Packet, Front Ends, Specifications, etc.)	To be updated to include green infrastructure aspects. Expected timeframe is June 2018 to July 2019.

4 • Evaluation of Funding Options

The Plan must include an evaluation of funding options for design, construction, and long-term maintenance of prioritized green infrastructure projects, considering local, state and federal funding sources. The City of San Pablo will analyze possible funding options to raise additional revenue for the projects that will eventually be included in the Plan, including capital and operation and maintenance (O&M) costs of these projects. The evaluation for capital costs will include, but not be limited to: alternative compliance funds, grants – including transportation project grants, new taxes or other levies, existing resources, and other sources of funds.

5 • Budget, Task List, and Timeframes

5.1 Budget

The City of San Pablo plans to include \$60,000 across FY 2018-2019 and FY 2019-2020 budgets to be expended on preparation of the Plan. This budget is only preliminary and is subject to Council approval.

5.2 Tasks and Timeframes

The tasks identified in this Framework are shown in the table below.

Table 4. Green Infrastructure Planning Tasks, Roles, and Timeframes

#	Task Description (and reference to the specific sub-provision within Provision C.3.j. that is addressed by the task)	Lead			Estimated Timeframe for Completion	Resources and Notes The task list and schedule is a living document and will be refined over the course of the GI Plan development process.
		Local	CCCWP	BASMAA		
Tasks to complete July 1, 2017 – September 30, 2019						
1	Draft Green Infrastructure Plan (C.3.j.i.(2))					
A	Review and revise schedule for provision of resources to be provided countywide or regionally		●		Jul.-Aug. 2017	
B	Obtain consultant resources to assist with Plan preparation	●			May 2018	
C	Create a detailed schedule for completion and approval of the Green Infrastructure Plan, and for submittal with the 2019 Annual Report	●			Jul. 2017	
D	Prepare a Green Infrastructure Plan Template		●		Dec. 2017	The scope of this deliverable will be discussed with the CCCWP Development Committee in Spring 2017.
E	Draft the Green Infrastructure Plan	●			Jul. 2018 – Dec. 2019	The Green Infrastructure Plan will include locally originated elements and adaptation of resources produced countywide and regionally (see tasks below).
F	Circulate, obtain comments and revise the draft Plan	●			Jan. - Mar. 2019	
G	Council or Board action to approve the Green Infrastructure Plan and any policies required to implement the Plan	●			May 2019	
H	Submit the Green Infrastructure Plan	●			Sept. 2019	
2	Mechanism for Identifying and Prioritizing Projects					
A	Create or adopt a mechanism to locate, prioritize, and map areas for potential and planned public projects on a drainage-area-specific basis (C.3.j.i.(2)(a))		●		Oct. 2017*	*Tasks 4.4 in CCSWRP Scope of Work. It is currently anticipated that the quantitative methodologies for this analysis will be developed by Oct 2017.

#	Task Description (and reference to the specific sub-provision within Provision C.3.j. that is addressed by the task)	Lead			Estimated Timeframe for Completion	Resources and Notes The task list and schedule is a living document and will be refined over the course of the GI Plan development process.
		Local	CCCWP	BASMAA		
	B Identify targets for the amount of impervious surface to be retrofitted by 2020, 2030, and 2040 (C.3.j.i.(2)(c))	●	●		Dec. 2018	The task will be further discussed with the CCCWP Development Committee in 2017. It is assumed that the CCCWP will, at a minimum, provide guidance on the methodology to complete this task.
	C Identify and prioritize projects and/or areas for potential projects for implementation by 2020, 2030, and 2040, consistent with the Reasonable Assurance Analysis (C.3.j.i.(2)(b) and C.3.j.iv.(1))	●	●		Dec. 2018	The task will be further discussed with the CCCWP Development Committee in 2017. It is assumed that the CCCWP will, at a minimum, provide guidance on the methodology to complete this task.
3	Project Amount and Locations of Private Development (C.3.j.i.(2)(c))					
	A Identify or develop a methodology for projecting amount and locations of private development		●		Sep. 2017	CCCWP will coordinate with other countywide stormwater programs with the aim of making methodologies consistent regionally.
	B Apply methodology and revise/validate projections of private development based on local understanding and knowledge of development patterns	●			Dec. 2018	
4	List of Prioritized Projects (C.3.j.i.(2)(b))					
	A Develop list of project concepts and prioritize based on evaluation of multiple benefits		●		Jan. 2018*	*Task 4.5 in the CCSWRP Scope of Work. A draft project list for review is currently anticipated by Jan 2018.
	B Revise/validate project lists based on local knowledge	●			Jul.- Dec. 2018	
	C Identify projects, if any, that may be candidates for grant funding, including funding under Round 2 of the Prop. 1 Stormwater Grant Program	●			Feb.- Mar. 2018	And ongoing.
5	Early Implementation					
	A Prepare a program to complete prioritized projects produced from capital improvement program review (C.3.j.i.(2)(j))	●			Ongoing	A program of work should be produced following reporting of projects in Annual Report and in time for consideration in following year's budget.

City of San Pablo • Green Infrastructure Plan Framework

#	Task Description (and reference to the specific sub-provision within Provision C.3.j. that is addressed by the task)	Lead			Estimated Timeframe for Completion	Resources and Notes The task list and schedule is a living document and will be refined over the course of the GI Plan development process.
		Local	CCCWP	BASMAA		
B	Prepare a program of work for additional staff-identified Green Infrastructure projects	●			Ongoing	
C	Incorporate the lists of early implementation projects and additional staff-identified projects and associated programs into the Green Infrastructure Plan	●			Jan. 2019	
6	Supporting Elements and Associated Tasks					
A	Develop a model ordinance, policy or policies for Green Infrastructure Plan Implementation (C.3.j.i.(3))		●		Dec. 2018	The need for CCCWP assistance with this task, and the scope of any resulting deliverables, will be discussed with the CCCWP Development Committee in 2017 and 2018.
B	Review local ordinances, policies, and resolutions and determine if updates are needed to support implementation of Green Infrastructure. Document this review in the 2019 Annual Report (C.3.j.i.(5)(c))	●			Jul. - Dec. 2018	
C	Prepare an analysis of potential funding options for Green Infrastructure Projects (C.3.j.i.(2))		●		Dec. 2018	The scope of this deliverable will be further discussed with the CCCWP Development Committee in Spring 2017.
D	Analyze funding options for Green Infrastructure Projects and applicability to local conditions (C.3.j.i.(2)(k))	●			Ongoing	
E	Develop Green Infrastructure Design Guidelines for streetscapes and other public infrastructure (C.3.j.i.(2)(e))		●		Dec. 2018	The scope and schedule for this deliverable will be further discussed with the CCCWP Development Committee in Spring 2017.
F	Develop specifications and typical design details for Green Infrastructure (C.3.j.i.(2)(f))		●		Dec. 2018	The scope and schedule for this deliverable will be further discussed with the CCCWP Development Committee in Spring 2017.
G	Develop sizing criteria for Green Infrastructure facilities in non-Regulated right-of-way projects (C.3.j.i.(2)(g))			●	Sep. 2017	See BASMAA's December 2016 RFP to analyze hydrologic data and bioretention facility performance.
H	Develop regionally consistent methods to track and report implementation of green infrastructure measures, including load reductions achieved (C.3.j.iv.(1))			●	Dec. 2017	Being developed in cooperation with ACCWP.

#	Task Description (and reference to the specific sub-provision within Provision C.3.j. that is addressed by the task)	Lead			Estimated Timeframe for Completion	Resources and Notes The task list and schedule is a living document and will be refined over the course of the GI Plan development process.
		Local	CCCWP	BASMAA		
7	Update Planning Documents (C.3.j.i.(2)(h))					
A	Review planning documents and identify potentially needed updates	●			Apr. 2017	
B	Update planning documents.	●			As opened for amendment	The Plan will identify the updates that are required for each planning document. However, the identified plans will not be updated until the entire document is opened for amendment.
C	Identify remaining updates and reference in Green Infrastructure Plan (C.3.j.i.(2)(i))	●			March 2019	
8	Outreach and Education (C.3.j.i.(4))					
A	Participate in countywide and regional Green Infrastructure outreach and education efforts, including general outreach and targeted outreach and training for professionals involved in infrastructure planning and design (C.3.j.iii.)		●		Jan. 2016 – Jun. 2019	
B	Implement Green Infrastructure outreach and education in connection with planning, economic development and design of green infrastructure projects (C.3.j.i.(4)(a))	●			Jan. 2016 – Jun. 2019	And ongoing.
C	Develop a stakeholder education and engagement strategy/plan for Green Infrastructure Plan development, including outreach and education about the required Green Infrastructure Plan elements.	●			Dec. 2017	CCCWP to assist with content.
D	Incorporate Green Infrastructure outreach on municipal websites	●			Now – Jun. 2019	CCCWP to assist with content.
E	Provide updates to elected officials on Green Infrastructure requirements and methods of implementation (C.3.j.i.(4)(c))	●			Periodic	CCCWP to assist with content.

APPENDIX A

**BASMAA Development Committee:
Guidance for Identifying Green Infrastructure Potential in
Municipal Capital Improvement Program Projects May 6, 2016**

BASMAA Development Committee

Guidance for Identifying Green Infrastructure Potential
in Municipal Capital Improvement Program Projects
May 6, 2016

Background

In the recently reissued [Municipal Regional Stormwater Permit](#) (“MRP 2.0”), Provision C.3.j. requires Permittees to develop and implement Green Infrastructure Plans to reduce the adverse water quality impacts of urbanization on receiving waters over the long term. Provisions C.11 and C.12 require the Permittees to reduce discharges of Mercury and PCBs, and portion of these load reductions must be achieved by implementing Green Infrastructure. Specifically, Permittees collectively must implement Green Infrastructure to reduce mercury loading by 48 grams/year and PCB loading by 120 grams/year by 2020, and plan for substantially larger reductions in the following decades. Green Infrastructure on both public and private land will help to meet these load reduction requirements, improve water quality, and provide multiple other benefits as well. Implementation on private land is achieved by implementing stormwater requirements for new development and redevelopment (Provision C.3.a. through Provision C.3.i.). These requirements were carried forward, largely unchanged, from MRP 1.0.

MRP 2.0 defines Green Infrastructure as:

Infrastructure that uses vegetation, soils, and natural processes to manage water and create healthier urban environments. At the scale of a city or county, green infrastructure refers to the patchwork of natural areas that provides habitat, flood protection, cleaner air, and cleaner water. At the scale of a neighborhood or site, green infrastructure refers to stormwater management systems that mimic nature by soaking up and storing water.

In practical terms, most green infrastructure will take the form of diverting runoff from existing streets, roofs, and parking lots to one of two stormwater management strategies:

1. Dispersal to vegetated areas, where sufficient landscaped area is available and slopes are not too steep.
2. LID (bioretention and infiltration) facilities, built according to criteria similar to those currently required for regulated private development and redevelopment projects under Provision C.3.

In some cases, the use of tree-box-type biofilters may be appropriate¹. In other cases, where conditions are appropriate, existing impervious pavements may be removed and replaced with pervious pavements.

In MRP 2.0, Provision C.3.j. includes requirements for Green Infrastructure planning and implementation. Provision C.3.j. has two main elements to be implemented by municipalities:

1. Preparation of a Green Infrastructure Plan for the inclusion of LID drainage design into storm drain infrastructure on public and private land, including streets, roads, storm drains, etc.
2. Early implementation of green infrastructure projects (“no missed opportunities”),

This guidance addresses the second of these requirements. The intent of the “no missed opportunities” requirement is to ensure that no major infrastructure project is built without assessing the opportunity for incorporation of green infrastructure features.

Provision C.3.j.ii. requires that each Permittee prepare and maintain a list of green infrastructure projects, public and private, that are already planned for implementation during the permit term (not including C.3-regulated projects), and infrastructure projects planned for

¹ Standard proprietary tree-box-type biofilters are considered to be non-LID treatment and will only be allowed under certain circumstances. Guidance on use and sizing of these facilities will be provided in a separate document.

implementation during the permit term that have potential for green infrastructure measures. The list must be submitted with each Annual Report, including:

“... a summary of how each public infrastructure project with green infrastructure potential will include green infrastructure measures to the maximum extent practical during the permit term. For any public infrastructure project where implementation of green infrastructure measures is not practicable, submit a brief description for the project and the reasons green infrastructure measures were impracticable to implement”.

This requirement has no specified start date; “during the permit term” means beginning January 1, 2016 and before December 31, 2020. The first Annual Report submittal date will be September 30, 2016.

Note that this guidance primarily addresses the review of proposed or planned public projects for green infrastructure opportunities. The Permittee may also be aware of proposed or planned private projects, not subject to LID treatment requirements, that may have the opportunity to incorporate green infrastructure. These should be addressed in the same way as planned public projects, as described below.

Procedure for Review of Planned Public Projects and Annual Reporting

The municipality’s Capital Improvement Program (CIP) project list provides a good starting point for review of proposed public infrastructure projects. Review of other lists of public infrastructure projects, such as those proposed within separately funded special districts (e.g., lighting and landscape districts, maintenance districts, and community facilities districts), may also be appropriate. This section describes a two-part procedure for conducting the review.

Part 1 – Initial Screening

The first step in reviewing a CIP or other public project list is to screen out certain types of projects from further consideration. For example, some projects (e.g., interior remodels, traffic signal replacement) can be readily identified as having no green infrastructure potential. Other projects may appear on the list with only a title, and it may be too early to identify whether green infrastructure could be included. Still others have already progressed past the point where the design can reasonably be changed (this will vary from project to project, depending on available budget and schedule).

Some “projects” listed in a CIP may provide budget for multiple maintenance or minor construction projects throughout the jurisdiction or a portion of the jurisdiction, such as a tree planting program, curb and sidewalk repair/upgrade, or ADA curb/ramp compliance. It is recommended that these types of projects not be included in the review process described herein. The priority for incorporating green infrastructure into these types of projects needs to be assessed as part of the Permittees’ development of Green Infrastructure Plans, and standard details and specifications need to be developed and adopted. During this permit term, Permittees will evaluate select projects, project types, and/or groups of projects as case studies and develop an approach as part of Green Infrastructure planning.

The projects removed through the initial screening process do not need to be reported to the Water Board in the Permittee’s Annual Report. However, the process should be documented and records kept as to the reason the project was removed from further consideration. Note that projects that were determined to be too early to assess will need to be reassessed during the next fiscal year’s review.

The following categories of projects may be screened out of the review process in a given fiscal year:

1. **Projects with No Potential** - The project is identified in initial screening as having no green infrastructure potential based on the type of project. For example, the project does not include any exterior work. Attachment 1 provides a suggested list of such projects that Permittees may use as a model for their own internal process.

2. **Projects Too Early to Assess** – There is not yet enough information to assess the project for green infrastructure potential, or the project is not scheduled to begin design within the permit term (January 2016 – December 2020). If the project is scheduled to begin within the permit term, an assessment will be conducted if and when the project moves forward to conceptual design.
3. **Projects Too Late to Change** – The project is under construction or has moved to a stage of design in which changes cannot be made. The stage of design at which it is too late to incorporate green infrastructure measures varies with each project, so a “percent-complete” threshold has not been defined. Some projects may have funding tied to a particular conceptual design and changes cannot be made even early in the design process, while others may have adequate budget and time within the construction schedule to make changes late in the design process. Agencies will need to make judgments on a case-by-case basis.
4. **Projects Consisting of Maintenance or Minor Construction Work Orders** – The “project” includes budgets for multiple maintenance or minor construction work orders throughout the jurisdiction or a portion of the jurisdiction. These types of projects will not be individually reviewed for green infrastructure opportunity but will be considered as part of a municipality’s Green Infrastructure Plan.

Part 2 – Assessment of Green Infrastructure Potential

After the initial screening, the remaining projects either already include green infrastructure or will need to go through an assessment process to determine whether or not there is potential to incorporate green infrastructure. A recommended process for conducting the assessment is provided later in this guidance. As a result of the assessment, the project will fall into one of the following categories with associated annual reporting requirements. Attachment 2 provides the relevant pages of the FY 15-16 Annual Report template for reference.

- **Project is a C.3-regulated project and will include LID treatment.**

Reporting: Follow current C.3 guidance and report the project in Table C.3.b.iv.(2) of the Annual Report for the fiscal year in which the project is approved.

- **Project already includes green infrastructure and is funded.**

Reporting: List the project in “Table B-Planned Green Infrastructure Projects” in the Annual Report, indicate the planning or implementation status, and describe the green infrastructure measures to be included.

- **Project may have green infrastructure potential** pending further assessment of feasibility, incremental cost, and availability of funding.

Reporting: If the feasibility assessment is not complete and/or funding has not been identified, list the project in “Table A-Public Projects Reviewed for Green Infrastructure” in the Annual Report. In the “GI Included?” column, state either “TBD” (to be determined) if the assessment is not complete, or “Yes” if it has been determined that green infrastructure is feasible. In the rightmost column, describe the green infrastructure measures considered and/or proposed, and note the funding and other contingencies for inclusion of green infrastructure in the project. Once funding for the project has been identified, the project should be moved to “Table B-Planned Green Infrastructure Projects” in future Annual Reports.

- **Project does not have green infrastructure potential.** A project-specific assessment has been completed, and Green Infrastructure is impracticable.

Reporting: In the Annual Report, list the project in “Table A-Public Projects Reviewed for Green Infrastructure”. In the “GI Included?” column, state “No.” Briefly state the reasons for the determination in the rightmost column. Prepare more detailed documentation of the reasons for the determination and keep it in the project files.

Process for Assessing Green Infrastructure Potential of a Public Infrastructure Project

Initial Assessment of Green Infrastructure Potential

Consider opportunities that may be associated with:

- Alterations to roof drainage from existing buildings
- New or replaced pavement or drainage structures (including gutters, inlets, or pipes)
- Concrete work
- Landscaping, including tree planting
- Streetscape improvements and intersection improvements (other than signals)

Step 1: Information Collection/Reconnaissance

For projects that include alterations to building drainage, identify the locations of roof leaders and downspouts, and where they discharge or where they are connected to storm drains.

For street and landscape projects:

- Evaluate potential opportunities to substitute pervious pavements for impervious pavements.
- Identify and locate drainage structures, including storm drain inlets or catch basins.
- Identify and locate drainage pathways, including curb and gutter.

Identify landscaped areas and paved areas that are adjacent to, or down gradient from, roofs or pavement. These are potential facility locations. *If there are any such locations, continue to the next step.* Note that the project area boundaries may be, but are not required to be, expanded to include potential green infrastructure facilities.

Step 2: Preliminary Sizing and Drainage Analysis

Beginning with the potential LID facility locations that seem most feasible, identify possible pathways to direct drainage from roofs and/or pavement to potential LID facility locations—by sheet flow, valley gutters, trench drains, or (where gradients are steeper) via pipes, based on existing grades and drainage patterns. Where existing grades constrain natural drainage to potential facilities, the use of pumps may be considered (as a less preferable option).

Delineate (roughly) the drainage area tributary to each potential LID facility location. Typically, this requires site reconnaissance, which may or may not include the use of a level to measure relative elevations.

Use the following preliminary sizing factor (facility area/tributary area) for the potential facility location and determine which of the following could be constructed within the existing right-of-way or adjacent vacant land. Note that these sizing factors are guidelines (not strict rules, but targets):

- Sizing factor ≥ 0.5 for dispersal to landscape or pervious pavement² (i.e., a maximum 2:1 ratio of impervious area to pervious area)
- Sizing factor ≥ 0.04 for bioretention
- Sizing factor ≥ 0.004 (or less) for tree-box-type biofilters

For bioretention facilities requiring underdrains and tree-box-type biofilters, note if there are potential connections from the underdrain to the storm drain system (typically 2.0 feet below soil surface for bioretention facilities, and 3.5 feet below surface for tree-box-type biofilters).

² Note that pervious pavement systems are typically designed to infiltrate only the rain falling on the pervious pavement itself, with the allowance for small quantities of runoff from adjacent impervious areas. If significant runoff from adjacent areas is anticipated, preliminary sizing considerations should include evaluation of the depth of drain rock layer needed based on permeability of site soils.

If, in this step, you have confirmed there may be feasible potential facility locations, *continue to the next step.*

Step 3: Barriers and Conflicts

Note that barriers and conflicts do not necessarily mean implementation is infeasible; however, they need to be identified and taken into account in future decision-making, as they may affect cost or public acceptance of the project.

Note issues such as:

- Confirmed or potential conflicts with subsurface utilities
- Known or unknown issues with property ownership, or need for acquisition or easements
- Availability of water supply for irrigation, or lack thereof
- Extent to which green infrastructure is an “add on” vs. integrated with the rest of the project

Step 4: Project Budget and Schedule

Consider sources of funding that may be available for green infrastructure. It is recognized that lack of budget may be a serious constraint for the addition of green infrastructure in public projects. For example, acquisition of additional right-of-way or easements for roadway projects is not always possible. Short and long term maintenance costs also need to be considered, and jurisdictions may not have a funding source for landscape maintenance, especially along roadways. The objective of this process is to identify opportunities for green infrastructure, so that if and when funding becomes available, implementation may be possible.

Note any constraints on the project schedule, such as a regulatory mandate to complete the project by a specific date, grant requirements, etc., that could complicate aligning a separate funding stream for the green infrastructure element. Consider whether cost savings could be achieved by integrating the project with other planned projects, such as pedestrian or bicycle safety improvement projects, street beautification, etc., if the schedule allows.

Step 5: Assessment—Does the Project Have Green Infrastructure Potential?

Consider the ancillary benefits of green infrastructure, including opportunities for improving the quality of public spaces, providing parks and play areas, providing habitat, urban forestry, mitigating heat island effects, aesthetics, and other valuable enhancements to quality of life.

Based on the information above, would it make sense to include green infrastructure into this project—*if funding were available for the potential incremental costs of including green infrastructure in the project?* Identify any additional conditions that would have to be met for green infrastructure elements to be constructed consequent with the project.

Attachment 1

Examples of Projects with No Potential for Green Infrastructure

- Projects with no exterior work (e.g., interior remodels)
- Projects involving exterior building upgrades or equipment (e.g., HVAC, solar panels, window replacement, roof repairs and maintenance)
- Projects related to development and/or continued funding of municipal programs or related organizations
- Projects related to technical studies, mapping, aerial photography, surveying, database development/upgrades, monitoring, training, or update of standard specs and details
- Construction of new streetlights, traffic signals or communication facilities
- Minor bridge and culvert repairs/replacement
- Non-stormwater utility projects (e.g., sewer or water main repairs/replacement, utility undergrounding, treatment plant upgrades)
- Equipment purchase or maintenance (including vehicles, street or park furniture, equipment for sports fields and golf courses, etc.)
- Irrigation system installation, upgrades or repairs

Attachment 2

**Excerpts from the C.3 Section of the FY 15-16 Annual Report Template:
Tables for Reporting C.3-Regulated Projects and Green Infrastructure Projects**

Permittee Name: _____

C.3.b.iv.(2) ► Regulated Projects Reporting Table (part 1) – Projects Approved During the Fiscal Year Reporting Period

Project Name Project No.	Project Location ⁹ , Street Address	Name of Developer	Project Phase No. ¹⁰	Project Type & Description ¹¹	Project Watershed ¹²	Total Site Area (Acres)	Total Area of Land Disturbed (Acres)	Total New Impervious Surface Area (ft ²) ¹³	Total Replaced Impervious Surface Area (ft ²) ¹⁴	Total Pre-Project Impervious Surface Area ¹⁵ (ft ²)	Total Post-Project Impervious Surface Area ¹⁶ (ft ²)
Private Projects											
Public Projects											
Comments:											
Guidance: If necessary, provide any additional details or clarifications needed about listed projects in this box. Do not leave any cells blank.											

⁹Include cross streets

¹⁰If a project is being constructed in phases, indicate the phase number and use a separate row entry for each phase. If not, enter "NA".

¹¹Project Type is the type of development (i.e., new and/or redevelopment). Example descriptions of development are: 5-story office building, residential with 160 single-family homes with five 4-story buildings to contain 200 condominiums, 100 unit 2-story shopping mall, mixed use retail and residential development (apartments), industrial warehouse.

¹²State the watershed(s) in which the Regulated Project is located. Downstream watershed(s) may be included, but this is optional.

¹³All impervious surfaces added to any area of the site that was previously existing pervious surface.

¹⁴All impervious surfaces added to any area of the site that was previously existing impervious surface.

¹⁵For redevelopment projects, state the pre-project impervious surface area.

¹⁶For redevelopment projects, state the post-project impervious surface area.

Permittee Name: _____

C.3.b.iv.(2) ► Regulated Projects Reporting Table (part 2) – Projects Approved During the Fiscal Year Reporting Period (public projects)

Project Name Project No.	Approval Date ²⁹	Date Construction Scheduled to Begin	Source Control Measures ³⁰	Site Design Measures ³¹	Treatment Systems Approved ³²	Operation & Maintenance Responsibility Mechanism ³³	Hydraulic Sizing Criteria ³⁴	Alternative Compliance Measures ^{35/36}	Alternative Certification ³⁷	HM Controls ^{38/39}
Public Projects										
Comments: Guidance: If necessary, provide any additional details or clarifications needed about listed projects in this box. Note that MRP Provision C.3.c. contains specific requirements for LID site design and source control measures, as well as treatment measures, for <u>all</u> Regulated Projects. Entries in these columns should not be "None" or "NA". Do not leave any cells blank.										

²⁹For public projects, enter the plans and specifications approval date.

³⁰List source control measures approved for the project. Examples include: properly designed trash storage areas; storm drain stenciling or signage; efficient landscape irrigation systems; etc.

³¹List site design measures approved for the project. Examples include: minimize impervious surfaces; conserve natural areas, including existing trees or other vegetation, and soils; construct sidewalks, walkways, and/or patios with permeable surfaces, etc.

³²List all approved stormwater treatment system(s) to be installed onsite or at a joint stormwater treatment facility (e.g., flow through planter, bioretention facility, infiltration basin, etc.).

³³List the legal mechanism(s) (e.g., maintenance plan for O&M by public entity, etc...) that have been or will be used to assign responsibility for the maintenance of the post-construction stormwater treatment systems.

³⁴See Provision C.3.d.i. "Numeric Sizing Criteria for Stormwater Treatment Systems" for list of hydraulic sizing design criteria. Enter the corresponding provision number of the appropriate criterion (i.e., 1.a., 1.b., 2.a., 2.b., 2.c., or 3).

³⁵For Alternative Compliance at an offsite location in accordance with Provision C.3.e.i.(1), on a separate page, give a discussion of the alternative compliance site including the information specified in Provision C.3.b.v.(1)(m)(i) for the offsite project.

³⁶For Alternative Compliance by paying in-lieu fees in accordance with Provision C.3.e.i.(2), on a separate page, provide the information specified in Provision C.3.b.v.(1)(m)(ii) for the Regional Project.

³⁷Note whether a third party was used to certify the project design complies with Provision C.3.d.

³⁸If HM control is not required, state why not.

³⁹If HM control is required, state control method used (e.g., method to design and size device(s) or method(s) used to meet the HM Standard, and description of device(s) or method(s) used, such as detention basin(s), bioretention unit(s), regional detention basin, or in-stream control).

Permittee Name: _____

C.3.j.ii.(2) ► Table A - Public Projects Reviewed for Green Infrastructure

Project Name and Location ⁴³	Project Description	Status ⁴⁴	GI Included? ⁴⁵	Description of GI Measures Considered and/or Proposed or Why GI is Impracticable to Implement ⁴⁶
EXAMPLE: Storm drain retrofit, Stockton and Taylor	Installation of new storm drain to accommodate the 10-yr storm event	Beginning planning and design phase	TBD	Bioretention cells (i.e., linear bulb-outs) will be considered when street modification designs are incorporated

C.3.j.ii.(2) ► Table B - Planned Green Infrastructure Projects

Project Name and Location ⁴⁷	Project Description	Planning or Implementation Status	Green Infrastructure Measures Included
EXAMPLE: Martha Gardens Green Alleys Project	Retrofit of degraded pavement in urban alleyways lacking good drainage	Construction completed October 17, 2015	The project drains replaced concrete pavement and existing adjacent structures to a center strip of pervious pavement and underlying infiltration trench.

⁴³ List each public project that is going through your agency’s process for identifying projects with green infrastructure potential.

⁴⁴ Indicate status of project, such as: beginning design, under design (or X% design), projected completion date, completed final design date, etc.

⁴⁵ Enter “Yes” if project will include GI measures, “No” if GI measures are impracticable to implement, or “TBD” if this has not yet been determined.

⁴⁶ Provide a summary of how each public infrastructure project with green infrastructure potential will include green infrastructure measures to the maximum extent practicable during the permit term. If review of the project indicates that implementation of green infrastructure measures is not practicable, provide the reasons why green infrastructure measures are impracticable to implement.

⁴⁷ List each planned (and expected to be funded) public and private green infrastructure project that is not also a Regulated Project as defined in Provision C.3.b.ii. Note that funding for green infrastructure components may be anticipated but is not guaranteed to be available or sufficient.