Annual Reporting for FY 2016-2017

Regional Supplement for New Development and Redevelopment

San Francisco Bay Area Municipal Regional Stormwater Permit

B A S M A A

Bay Area Stormwater Management Agencies Association

September 2017

Alameda Countywide
Clean Water Program

Contra Costa
Clean Water Program

Fairfield-Suisun
Urban Runoff
Management Program

Marin County
Stormwater Pollution
Prevention Program

Napa County
Stormwater Pollution
Prevention Program

San Mateo Countywide
Water Pollution
Prevention Program

Santa Clara Valley
Urban Runoff Pollution
Prevention Program

Sonoma County
Water Agency

Vallejo Sanitation
and Flood
Control District

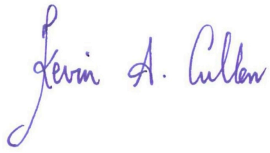
BASMAA

To Whom It May Concern:

We certify under penalty of law that this document was prepared under our direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on our inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of our knowledge and belief, true, accurate, and complete. We are aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

James Scanlin, Alameda Countywide Clean Water Program

Adele Ho, Contra Costa Clean Water Program



Kevin Cullen, Fairfield-Suisun Urban Runoff Management Program

Matthew Fabry, San Mateo Countywide Water Pollution Prevention Program

Adam Olivieri, Santa Clara Valley Urban Runoff Pollution Prevention Program

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Stormwater Management

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Table of Contents Page

MRP Regional Supplement for New Development and Redevelopment
Annual Reporting for FY 2016-2017

LIST OF ATTACHMENTS:

C.3.j.i.(2)(g) Green Infrastructure Facility Sizing Analysis

Scope of Work

C.3.j.iii. Participate in Processes to Promote Green Infrastructure

Scope of Work – *Urban Greening Bay Area*

BASMAA comments to California Natural Resources Agency on *Vibrant Communities and Landscapes, A Vision for California in 2050* (October 28, 2016)

BASMAA comments to Metropolitan Transportation Commission (MTC) and Association of Bay Area Governments (ABAG) on *Plan Bay Area 2040* (June 1, 2017)

BASMAA comments to California Natural Resources Agency on *Safeguarding California Plan: 2017 Update – California's Climate Adaptation Strategy* (June 23, 2017)

INTRODUCTION

This Regional Supplement has been prepared to report on regionally implemented activities complying with portions of the Municipal Regional Stormwater Permit (MRP), issued to 76 municipalities and special districts (Permittees) by the San Francisco Bay Regional Water Quality Control Board (Water Board). The Regional Supplement covers new development and redevelopment activities related to the following MRP provisions:

- C.3.c.i.(2)(c)(ii) Model Biotreatment Soil Media Specifications,
- C.3.j.i.(2)(g) Green Infrastructure Facility Sizing Analysis, and
- C.3.j.iii. Participate in Processes to Promote Green Infrastructure.

These regionally implemented activities are conducted under the auspices of the Bay Area Stormwater Management Agencies Association (BASMAA), a 501(c)(3) non-profit organization comprised of the municipal stormwater programs in the San Francisco Bay Area. Most of the 2017 annual reporting requirements of the specific MRP Provisions covered in this Supplement are completely met by BASMAA Regional Project activities, except where otherwise noted herein or by Permittees in their reports. Scopes, budgets and contracting or in-kind project implementation mechanisms for BASMAA Regional Projects follow BASMAA's Operational Policies and Procedures as approved by the BASMAA Board of Directors. MRP Permittees, through their program representatives on the Board of Directors and its committees, collaboratively authorize and participate in BASMAA Regional Projects or Regional Tasks. Depending on the Regional Project or Task, either all BASMAA members or Phase I programs that are subject to the MRP share regional costs.

Low Impact Development

C.3.c.i.(2)(c)(ii) Model Biotreatment Soil Media Specifications

This provision requires:

> *Biotreatment (or bioretention) systems shall be designed to have a surface area no smaller than what is required to accommodate a 5 inches/hour stormwater runoff surface loading rate, infiltrate runoff through biotreatment soil media at a minimum of 5 inches per hour, and maximize infiltration to the native soil during the life of the Regulated Project. The soil media for biotreatment (or bioretention) systems shall be designed to sustain healthy, vigorous plant growth and maximize stormwater runoff retention and pollutant removal.*
>
> *Permittees shall ensure that Regulated Projects use biotreatment soil media that meet the minimum specifications set forth in Attachment L of the previous permit (Order No. R2-2009-0074), dated November 28, 2011. Permittees may collectively (on an all-Permittee scale or countywide scale) develop and adopt revisions to the soil media minimum specifications, subject to the Executive Officer's approval.*

In 2015, the biotreatment soil media (BSM) specification had been in use Bay Area-wide for 5 years and in that time Permittees had identified several components of the soil

specification for which review was warranted. In August 2015, the BASMAA Development Committee formed a Work Group on behalf of the Permittees to re-evaluate the soil specification. The Work Group took a two-step approach: first, immediately propose minor modifications to the current soil specification to ensure suppliers can deliver material that complies with the specification, and second, convene a soil specification "roundtable" (similar to the 2010 roundtable used to reach consensus on the MRP 1.0 Attachment L specification). The newly convened soil specification roundtable would investigate the need for alternative specifications that might enhance the performance of bioretention facilities under varying microclimates and drought conditions and with diverse planting palettes, including trees.

The BASMAA Soil Specifications Work Group met several times, reviewed the specification, researched and made proposed changes, and vetted the proposed changes with the Development Committee and Permittees. In its January 2016 meeting, the BASMAA Board of Directors approved the transmittal of Revised Model Biotreatment Soil Media Specifications to the Regional Water Board. The revised specifications were transmitted to the Regional Water Board on February 5, 2016 and the Regional Water Board Executive Officer approved the revised specifications on April 18, 2016.

The BASMAA Soil Specifications Work Group also initiated a Roundtable project to start to address remaining issues. BASMAA engaged consultant assistance in February 2016 to prepare research and design considerations for updating the BASMAA Biotreatment Soil Media Specifications to incorporate considerations regarding trees in bioretention areas. The major project tasks included a literature review and the Roundtable, which was conducted in June 2016. The project also resulted in three products:

- *Biotreatment Soil Media and Specification: Current Research on Trees and Water Quality Treatment; Literature Review* – This report: 1) examines potential changes to the BSM and to the design of bioretention systems for the benefit of trees, 2) examines concerns with the performance of the current Biotreatment Soil Media specification, 3) addresses changes to the mix and the design of bioretention that could reduce pollutant leaching and flushing and correct identified problems, 4) provides a review of the available literature and municipal specifications for BSM, and 5) incorporates numerous interviews of experts and stakeholders involved in BSM.

- *Biotreatment Soil and Tree Roundtable Summary; Improvements for the Health of Trees* – This report provides a summary of the discussion, identifies action items from the Roundtable and a summary of the Roundtable evaluation survey responses.

- *Bioretention Design for Tree Health: Literature Review* – This report focuses on how to enhance the soil volume for trees in bioretention – one of the most important factors effecting urban tree health and is relatively limited in bioretention systems as they are currently designed.

The last product is a direct result of a recommended action item from the June 2016 Roundtable.

Biotreatment Soil Media – Tree Design Work Group

In FY 16-17, the Development Committee started to follow-up the previous work above. The Committee considered developing new designs for bioretention areas with trees, changes to the BSM specification to better promote healthy trees, and convening a work group to discuss potential additional changes to the BSM specification. The Committee was most interested in looking at new designs for bioretention areas with trees and formed the BSM Tree Design Work Group to follow up this aspect of the previous work. The Work Group convened and met three times in FY 16-17, focusing its attention on reviewing information and examples of new designs for bioretention areas with trees. In FY 17-18, the Work Group will review additional examples of tree-specific treatment measure designs, discuss soil and maintenance issues, and develop recommendations for design and maintenance of stormwater tree systems.

Green Infrastructure Planning and Implementation

C.3.j.i.(2)(g) Green Infrastructure Facility Sizing Analysis

MRP Provision C.3.j.i.(2)(g) states that Green Infrastructure Plans should include requirements that stormwater treatment facilities "*be designed to meet the treatment and hydromodification sizing requirements in Provisions C.3.c. and C.3.d.*" The Provision further states that for street projects that are not Regulated Projects:

> *… Permittees may collectively propose a single approach with their Green Infrastructure Plans for how to proceed should project constraints preclude fully meeting the C.3.d. sizing requirements. The single approach can include different options to address specific issues or scenarios. That is, the approach shall identify the specific constraints that would preclude meeting the sizing requirements and the design approach(es) to take in that situation. The approach should also consider whether a broad effort to incorporate Hydromodification controls into green infrastructure, even where not otherwise required, could significantly improve creek health and whether such implementation may be appropriate, plus all other information, as appropriate (e.g., how to account for load reduction for the PCBs or mercury TMDLs).*

MRP Provision C.3.d. contains sizing criteria. These include the option to size facilities to treat at least 80% of the total runoff over the life of the project, using local rainfall data.

Provision C.3.c.i. states that LID treatment measures are harvesting and use, infiltration, evapotranspiration, and biotreatment (bioretention). Bioretention systems shall be designed to have a surface area no smaller than what is required to accommodate a 5 inches/hour stormwater runoff surface loading rate.

In FY 16-17, the BASMAA Development Committee initiated a project to address provision C.3.j.i.(2)(g). This project uses continuous simulation modeling to evaluate

relationships of facility size to facility performance to develop an approach for implementing green infrastructure projects when there are constraints on facility size.

The project includes the following technical tasks (scope of work attached):

- Adapt existing continuous simulation models that simulate bioretention performance.
- Compile and update long-term hourly rainfall records at six Bay Area locations.
- Run continuous simulations and evaluate outputs to address questions.
- Present the outputs in the form of charts and equations.
- Document the work in a brief technical memo.

The project was initiated in March 2017 and by the end of FY 16-17, the BASMAA Development Committee had received and discussed the initial results and analysis of the model simulations across the six selected rain gauges and a range of bioretention sizing factors, and considered and agreed upon some additional analyses to run. The project is expected to be completed by the end of 2017. During FY 17-18, the Development Committee will develop regional guidance on how to use the modeling results to size GI measures under specific design scenarios and constraints.

C.3.j.iii. Participation in Processes to Promote Green Infrastructure

This provision requires:

> *(1) The Permittees shall, individually or collectively, track processes, assemble and submit information, and provide informational materials and presentations as needed to assist relevant regional, State, and federal agencies to plan, design, and fund incorporation of green infrastructure measures into local infrastructure projects, including transportation projects. Issues to be addressed include coordinating the timing of funding from different sources, changes to standard designs and design criteria, ranking and prioritizing projects for funding, and implementation of cooperative in-lieu programs.*

The BASMAA activities described in this section provide compliance for MRP Permittees with this provision.

Grant – Urban Greening Bay Area

Urban Greening Bay Area is a large-scale, grant-funded effort to re-envision Bay Area urban landscapes to develop stormwater-friendly dense, green urban infrastructure that addresses challenges associated with climate change, infiltrates or captures stormwater and pollutants near their sources, and in turn, promotes improved water quality in San Francisco Bay. *Urban Greening Bay Area* is funded by an EPA Water Quality Improvement Fund grant awarded to the Association of Bay Area Governments (ABAG), a joint powers agency acting on behalf of the San Francisco Estuary Partnership (SFEP), a program of ABAG. The term of the *Urban Greening Bay Area* grant project is July 1, 2015 to June 30, 2018.

BASMAA is one of the subrecipients of the grant and is taking the lead on two of the grant project tasks (see attached scope of work) – a Regional Green Infrastructure

Roundtable process and a Design Charrette, both of which are scheduled to be implemented between May 2016 and May 2018.

The Regional Roundtable is a two-year process, with work groups as needed, to identify and develop a list of recommendations for integrating green infrastructure and stormwater management funding and investments with future climate change and transportation investments within the region. The Roundtable includes convening meetings with local, regional, and state stakeholders, agencies, elected officials, and staff to produce draft and final task reports that identify and recommend possible legislative fixes, agency agreements, consolidated funding mechanisms, and other means and actions as appropriate. The Roundtable uses innovative participatory processes that include key experts, regulators, decision-makers, and other stakeholders to share information, solicit and discuss ideas and solutions, and to identify next steps (i.e., a roadmap), which will be summarized in the draft and final task reports.

The Design Charrette task involves coordinating with the cities of Sunnyvale and San Mateo to conduct a Bay Area design charrette to develop cost-effective and innovative "typical" designs for integrating green infrastructure with bicycle and pedestrian improvements at roadway intersections. The overall goal of developing standardized, transferable designs is to make progress in addressing the high cost of design, implementation, operations, and maintenance that inhibits the widespread use of green infrastructure and LID features.

During FY 16-17, BASMAA's accomplishments on the *Urban Greening Bay Area* project included:

1. Establishing Advisory Committees of high-level stakeholders for both the Regional Roundtable and Design Charrette tasks.
2. Planning, organizing, and convening two Regional Roundtable meetings on March 28 and May 23, 2017 with key agency stakeholders, interested environmental / policy organizations, and technical experts.
3. Coordinating with San Mateo and Sunnyvale staffs to identify, tour, and select intersections in those cities for construction of the demonstration projects.
4. Soliciting contractors and engineering/landscape architecture design firms to identify individuals interested in participating in the Design Charrette with the goal to have representation from individuals throughout the design, construction, and operations and maintenance phases of projects.
5. Planning, organizing, and hosting the Design Charrette event on November 1, 2016, at which participants were educated on the overall goals and desired outcomes of the process, and developed, discussed, and evaluated various design alternatives to identify the most cost-effective integrated solution. The charrette utilized actual intersection locations in San Mateo and Sunnyvale that are as representative as possible of the common features of road segments that make up intersections found throughout Bay Area cities. Charrette participants were solicited by BASMAA and included multiple representatives, including contractors, engineers, landscape architects, plant specialists, and city

transportation engineers and planners, and design, construction management, and operations and maintenance staff. Final designs will be constructed at the San Mateo and Sunnyvale locations to verify costs and serve as demonstration projects for other agencies throughout the Bay Area.

Work products of the Urban Greening Bay Area grant are posted at: http://www.sfestuary.org/urban-greening-bay-area/#planning. The Planning section includes documents related to the Regional Roundtable and the Implementation section includes documents related to the Design Charrette.

Participation and Comments

Participation

In addition to the *Urban Greening Bay Area* grant efforts described above, Matt Fabry (SMCWPPP Manager, BASMAA Board member and current Board Chair) participated in events and made presentations and comments "…*to assist relevant regional, State, and federal agencies to plan, design, and fund incorporation of green infrastructure measures into local infrastructure projects*…" Participation in events like the two listed below helps to build on the foundation for the *Urban Greening Bay Area* grant project by raising awareness of regional issues and securing commitments from various agencies to support and participate in the project, thus benefitting all Permittees.

a. Coastal Conservancy's Green Infrastructure: Leadership Conversation; "Integration: Greening, Housing and Transportation" panelist (December 2016)
b. Stanford's Water in the West Program; "Innovative Water Financing Roundtable" participant (June 2017)

Comments

BASMAA submitted comments to the following agencies regarding the listed documents (attached).

BASMAA comments to California Natural Resources Agency on *Vibrant Communities and Landscapes, A Vision for California in 2050* (October 28, 2016)

BASMAA comments to Metropolitan Transportation Commission (MTC) and Association of Bay Area Governments (ABAG) on *Plan Bay Area 2040* (June 1, 2017)

BASMAA comments to California Natural Resources Agency on *Safeguarding California Plan: 2017 Update – California's Climate Adaptation Strategy* (June 23, 2017)

ATTACHMENT

C.3.j.i.(2)(g) Green Infrastructure Facility Sizing Analysis

Scope of Work

Section 2: Proposed Scope of Work

The following scope of work converts the approach section above into detailed scoping language. The level of detail included here should streamline the development of contract documents. Please note: Dubin Environmental does not plan to include a separate project management task, because our streamlined approach minimizes administrative costs.

Task 1. Setup Green Stormwater Model

During the scoping phase of the project, the BASMAA project team and Dubin Environmental will determine whether to a) adapt the existing SWMM model or b) develop an HSPF model for this analysis.

The model will be setup calculate runoff from a uniform one-acre impervious area and a representative pervious pre-project area (e.g., scrub land). The model will include a bioretention facility with the following initial configuration:

- Sizing factor = 0.04
- Surface reservoir depth = 6 inches
- Bioretention media depth = 18 inches
- Underdrain located at the top of the gravel layer

Dubin Environmental will adapt our existing VBA-based Excel model setup spreadsheet to generate model input files across a range of sizing factors, surface reservoir depths, infiltration rates, etc., in an automated manner.

Task 2. Compile Long-Term Rainfall Records

Dubin Environmental will identify long-term rain gauges within the BASMAA area that have 20+ years of hourly rainfall data. The primary source of long-term rainfall data will be the National Centers for Environmental Information (NCEI; formerly the National Climate Data Center). Next, the available stations will be organized into a table that lists a) 1-year, 1-hour depth, b) 1-year, 24-hour depth, c) annual rainfall depth and d) data quality/percentage of missing data.

The gauge locations, storm depths and data quality will be plotted in GIS and provided to the BASMAA project team along with a recommendation on the gauges to use in this analysis. We will ensure the recommended gauges span the range of storm depths experienced in the BASMAA service area.

After finalizing the list of gauges, the data will be downloaded from NCEI and reviewed (e.g., identify missing data, suspiciously large depths) and formatted for the selected hydrology model. If any of the recommended gauges have problematic data, we can use the table/GIS map to select a replacement station for the analysis.

Task 3. Perform Model Simulations and Evaluate Results

Long-term model simulations will be run to calculate the treatment percentage for bioretention in different configurations. The model simulations will be conducted using six different rain gauges that represent the variation in climate across the BASMAA area. The model results will be post-processed and evaluated using Matlab scripts and similar tools to determine the bioretention performance. For select simulations, the bioretention inputs, outputs and water moisture content will be plotted for large storm events as a QA/QC step to ensure water is moving into and through the bioretention as intended.

The following table (also shown lists the simulations and how the results will be used.

No.	Question	What Varies?	Number of Simulations
1	What is the minimum sizing factor to treat 80% of annual runoff? How does it vary by rain gauge?	Sizing factor Rain gauge	N/A – answered in No. 2
2	How does treatment percentage vary with sizing factor?	Sizing factor Rain gauge	~ 120 (6 rain gauges; SF = 0.02 to 0.06)
3	How do the bioretention configuration, infiltration rate and incoming pollutant loading affect the overall performance?	Sizing factor Rain gauge Reservoir depth Infiltration rate Pollutant load	~480 (6 rain gauges; 2 reservoir depths; 4 infiltration rates; 2 pollutant loads; 5 sizing factors)

Task 4. Present Results for BASMAA Development Committee

The modeling results will be characterized using a combination of tables, graphics and equations, based on BASMAA and Dubin Environmental discussions at the start of the project. The purpose of the presentation materials will be to identify relationships among the items that were varied during the modeling analysis. Examples include:

- Relationship between rainfall and sizing factor that will be expressed either graphically or with a regression equation
- Sensitivity analysis results, such as a) how infiltration rate affects the annual treatment percentage, b) whether using a 12-inch deep surface reservoir instead of a 6-inch deep surface reservoir can significantly reduce the sizing factor needed to

Task 5. Prepare Summary Report

The modeling approach, key assumptions and results will be summarized in a draft technical report for BASMAA review. BASMAA project team comments will be incorporated and then the final technical report will be issued. The report will be prepared for a broad audience. Beyond the technical findings, the report will use tables and graphics to demonstrate how the results can be used to design and implement bioretention systems that meet the Provision C.3.d water quality treatment standard.

The report will summarize key findings and will contain graphics, tables, equations and nomographs needed for the green stormwater sizing criteria. If appropriate, the report will contain sections that can be copied directly to BASMAA members' stormwater manuals.

Deliverables

- Table and map with candidate and recommended long-term rain gauges for the modeling analysis
- Modeling results showing a) bioretention sizing factors for treating 80 percent of annual runoff, b) sensitivity analysis relating sizing factor, rain gauge, reservoir depth, infiltration rate and influent pollutant characteristics to annual treatment percentages.
- Summary tables and graphics that can be used to describe the bioretention sizing criteria and sensitivity analysis results; the results will be incorporated into a PowerPoint presentation and presented to the BASMAA project team.
- Draft and final technical report that summarizes the modeling approach, key assumptions and results.

Assumptions

- The BASMAA project team will collaboratively develop examples and mockups showing how the modeling results can be presented
- The BASMAA project team will advise on how to format the results presentation to streamline its incorporation in BASMAA members' manuals and policies.

ATTACHMENT

C.3.j.iii. Participate in Processes to Promote Green Infrastructure

Scope of Work – *Urban Greening Bay Area*

B A S M A A

Urban Greening Bay Area
Scope of Work

Introduction: The Bay Area Stormwater Management Agencies Association (BASMAA) is contracting with the Association of Bay Area Governments (ABAG)/San Francisco Estuary Partnership (SFEP) to manage and execute the Green Infrastructure Roundtable and Design Charrette elements of the Urban Greening Bay Area project funded by the US EPA's San Francisco Bay Water Quality Improvement Fund 2015 grant program.

Task 1 – Task Management
Subcontract with qualified consultants to assist with the performance of the listed tasks. Coordinate with SFEP, consultants, and partner cities (San Mateo and Sunnyvale) to ensure the tasks are completed on time and on budget. Submit quarterly reports and invoices, information for administrative and financial reports prepared by SFEP (e.g., FFR, MBE/WBE utilization, progress reports, final report), and deliverables as completed.

Task 1. Deliverables
A. Quarterly Reports and Invoices
B. Information for administrative and financial reports

Task 2 – Regional Roundtable
Organize and staff a two year Green Infrastructure Roundtable process, with work groups as needed, to identify and develop a list of recommendations for integrating green infrastructure and stormwater management funding and investments with future climate change and transportation investments within the region. The Roundtable will include convening up to 12 meetings with local, regional, and state stakeholders, agencies, elected officials, and staff to produce draft and final task reports that will identify and recommend possible legislative fixes, agency agreements, consolidated funding mechanisms, and other means and actions as appropriate. The Roundtable is envisioned as a two year effort using innovative participatory processes that will include key experts, regulators, decision-makers, and other stakeholders to share information, solicit and discuss ideas and solutions, and to identify next steps (i.e., a roadmap), which will be summarized in the draft and final task reports.

Task 2a: Planning. Build a task team of BASMAA, SFEP, US EPA, the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB), and municipal representatives, as appropriate, to further identify goals, desired outcomes, meeting formats, schedule, and Roundtable participants. Prepare a project briefing sheet, including statement of purpose and summary of tasks and schedule, fact sheets, or other outreach information to help introduce the task to key stakeholders and encourage participation. Conduct informational interviews as an initial step to assist in designing the Roundtable process, and prepare interview summaries. Prepare a Draft and Final Roundtable Strategy that describes the approach and plan for conducting Task 2.

In addition to the task team, an advisory team may be established of high-level stakeholders that may be key to achieving task goals (see Task 2c). Schedule meeting locations and dates. Identify and subcontract with partners and technical experts, as appropriate. Develop a list of key experts, regulators, decision-makers, and other stakeholders to invite to the various Roundtable meetings and send out invitations.

Task 2b: Roundtable Meetings. Convene up to 12 meetings with key agency stakeholders, interested environmental/policy organizations, and technical experts. The meeting presentations and discussions will be summarized in the draft and final task reports that will serve as a roadmap for needed next steps to integrate green infrastructure and stormwater management funding and programs with future climate change and transportation investments in the Bay Area. The goals of the meetings are to:

- Educate participants on the drivers for a long-term distributed green infrastructure approach for meeting stormwater regulatory requirements;
- Illustrate the challenges in funding such an approach strictly from a stormwater perspective; with a particular emphasis to:
    - Quantify the numerous green infrastructure benefits beyond water quality improvement;
    - Demonstrate the ways green infrastructure can be effectively integrated with active transportation investments intended to achieve greenhouse gas emission reductions and climate change adaptation;
    - Highlight the current barriers and challenges to such an integrated approach from the perspective of planning, design and implementation; and,
    - Develop recommendations on how to effectively integrate green infrastructure with these future transportation and stormwater management infrastructure investments.

Task 2c: Expert Input. Identify key experts knowledgeable about green infrastructure, stormwater management, and climate change and transportation funding and investments. Work with experts on quantification of benefits and innovative finance, including identification of tools. Solicit experts to participate in appropriate Roundtable meetings/forums to apply their expertise and help problem solve particular issues key to achieving task goals.

Task 2d: Roundtable Report. Draft a comprehensive report on Task 2, including a roadmap for integrating green infrastructure and stormwater management funding and programs with future climate change and transportation investments in the Bay Area. The roadmap will identify key policies, documents, legislation, agencies, and specific actions needed to effectively integrate and fund green infrastructure and stormwater management with transportation programs and funding mechanisms. The intended audience includes entities that play a role in implementing solutions, and is expected to include the State legislature, the Metropolitan Transportation Commission, ABAG, the Strategic Growth Council, the Department of Water Resources, the State Water Resources Control Board and SFBRWQCB, county congestion management agencies, and municipal stormwater management agencies and associations.

Task 2. Deliverables

A. Outreach Information
B. Interview Summaries
C. Draft and Final Roundtable Strategy
    - Outline
    - Draft Strategy
    - Final Strategy
D. Meeting Agendas, Meeting Summaries, and Lists of Meeting Attendees
E. Draft and Final Roundtable Report (i.e., roadmap)
    - Outline
    - 1st Draft Report
    - 2nd Draft Report
    - Final Report

Task 3 – Design Charrette

Coordinate with the cities of Sunnyvale and San Mateo to conduct a Bay Area design charrette to develop cost-effective and innovative "standard" designs for integrating green infrastructure with bicycle and pedestrian improvements at roadway intersections. The overall goal of developing standardized, transferable designs is to make progress in addressing the high cost of design, implementation, operations, and maintenance that inhibits the widespread use of green infrastructure and LID features. The charrette will utilize actual intersection locations in San Mateo and Sunnyvale that are as representative as possible of the common features of road segments that make up intersections found throughout Bay Area cities. Charrette participants will be solicited by BASMAA and will include multiple representatives, including contractors, engineers, landscape architects, plant specialists, and city transportation engineers and planners, and design, construction management, and operations and maintenance staff. Final designs will be constructed at the San Mateo and Sunnyvale locations to verify costs and serve as demonstration projects for other agencies throughout the Bay Area.

Task 3a: Charrette Pre-Coordination. Convene advisory committee of SFEP, BASMAA, US EPA, and San Mateo/Sunnyvale representatives. Purpose of the committee will be to provide advice on design of the charrette. The grant Project Team may serve as the advisory committee on this task.

Task 3b: Site Identification. Coordinate with San Mateo and Sunnyvale staffs to identify intersections in those cities with common features of road segments with a focus on characterizing typical stormwater management and active transportation scenarios, such as parallel vs. angled parking, pedestrian bulbouts, storm drain inlet locations, presence or absence of bike lanes, etc. Estimate the relative frequency of occurrence of the road segment features in Bay Area cities. Summarize the results of this task in a technical memorandum.

Task 3c: Call for Charrette Participants. Issue a Request for Qualifications (RFQ) from contractors and engineering/landscape architecture design firms identifying individuals interested in participating in the design charrette and providing statements of qualifications (SOQs).

Task 3d: Select Charrette Panel. Grantee representatives will perform an SOQ review process that may include interviews to select a diverse design panel that will participate in the design charrette, with the goal to have representation from individuals throughout the design, construction, and operations and maintenance phases of projects.

Task 3e: Site Visits/Information Compilation. Convene charrette participants to tour the San Mateo and Sunnyvale site locations and identify necessary design information to be provided by cities to enable the charrette to proceed. Cities will then compile the necessary information.

Task 3f: Design Charrette. Host a design charrette event, at which participants will be educated on the overall goals and desired outcomes of the process, the group will develop, discuss, and evaluate various design alternatives to identify the most cost-effective integrated solution. Outputs will be transferable design details that can be used by all agencies.

Task 3g: Final Designs Support. Provide outputs and relevant related information from Task 3f to San Mateo and Sunnyvale. Cities will work with the design charrette team to finalize the designs to 100% designs with necessary plans, specifications, and cost estimates in preparation for bidding.

Task 3h: Bidding and Construction. San Mateo and Sunnyvale will initiate and manage bid processes for the final designs, award contracts to winning bidders, issue notices-to-proceed, and manage construction.

Task 3i: Charrette Summary. BASMAA and SFEP will develop an electronic summary for web posting of the charrette results, final designs, photos of constructed projects, and lessons learned. Package and distribute designs and standard details to Bay Area municipal and regional governments to support future planning and implementation efforts.

Task 3j: Outreach. BASMAA and SFEP will perform outreach to generate interest and participation in the charrette, generate press coverage of the process, final designs, and constructed projects, as well as post-charrette debriefs, potentially through conference or other meeting presentations.

Task 3. Deliverables

A. Site Identification Technical Memorandum
B. Information Compilations
C. Design Details
D. Charrette Summary
    - Draft Summary
    - Final Summary
E. Outreach Presentation

ATTACHMENT

C.3.j.iii. Participate in Processes to Promote Green Infrastructure

BASMAA comments to California Natural Resources Agency on
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Sonoma County Water Agency

Vallejo Sanitation and Flood Control District

B A S M A A

October 28, 2016

California Natural Resources Agency
ca.50m@opr.ca.gov

Subject: Comments on draft "Vibrant Communities and Landscapes: A Vision for California in 2050"

Dear California Natural Resources Agency:

On behalf of the Bay Area Stormwater Management Agencies Association (BASMAA)[1] thank you for the opportunity to provide comments on the draft "Vibrant Communities and Landscapes: A Vision for California in 2050". Our general comments below are followed by specific comments and recommended changes to the draft document.

General Comments

The current document focuses on two main issues: achieving greenhouse gas emission reductions and supporting future population growth. BASMAA recommends broadening the document's focus beyond these two issues to equally address the State's focus on achieving its water quality goals, building resilience to climate change, and building resilience to drought. To truly create vibrant communities and landscapes, a vision cannot be singularly driven by greenhouse gas emission reduction goals. BASMAA believes integration of multiple State priorities is key to cost-effectively achieving overall objectives. This requires breaking down silos, such as those between climate change mitigation and adaptation and transportation and water.

BASMAA is primarily focused on urban runoff pollution reduction issues as mandated by the State and Regional Water Boards in municipal stormwater permits. While this may seem far removed from climate change goals, BASMAA believes there are significant connections between these issues, including the magnitude of the challenge, pollutant/emission sources, and solutions to the problems.

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[1] BASMAA is a 501(c)(3) non-profit organization comprised of the municipal stormwater programs in the San Francisco Bay Area representing 100 agencies, including 85 cities and towns, 8 counties, and 7 special districts. BASMAA focuses on regional challenges and opportunities to improve the quality of stormwater flowing to our local creeks, the Delta, San Francisco Bay, and the Pacific Ocean. The members of BASMAA are responsible for complying with the requirements of municipal separate storm sewer system (MS4) National Pollutant Discharge Elimination System (NPDES) permits issued by the San Francisco Bay Regional Water Quality Control Board (Regional Water Board).

Firstly, there is a connection between the primary source of greenhouse gas emissions and water quality problems, namely transportation. Outside of the Water Boards, the State appears singularly focused on one negative environmental impact of transportation – pollutant discharges to the air – while ignoring the other pollutant discharges to water. Transportation is a major contributor to water quality impairments. In addition to vehicle-generated pollutants such as copper from brake pads, zinc from tires, and hydrocarbons from tail-pipe emissions, roadways carry a host of other pollutants that flow directly to gutters from adjacent land uses, including trash and litter, pesticides and fertilizers, and bacteria from animal waste. These pollutants are carried by roadways into underground drainage systems that discharge directly to creeks, rivers, bays, and the ocean without any form of treatment. The Water Boards have imposed, via municipal stormwater permits, multi-billion dollar mandates on local agencies to reduce these pollutants in urban runoff to prevent ongoing impairment of state waterways.

Secondly, the primary solution to our urban runoff problems – treatment via green infrastructure – will also build resiliency to climate change and drought. Green infrastructure – currently categorized by the State as a "working land" – utilizes natural systems to capture, infiltrate, and treat stormwater runoff. Green infrastructure solutions include green streets and roofs, rain gardens and bioretention areas, as well as larger stormwater retention systems. These approaches simultaneously build climate change resiliency by managing flood risk through runoff reduction, build resiliency to drought via groundwater recharge, reduce urban heat island effects, lower building energy demands, improve coastal resiliency, and reduce energy needed to manage water.[2]

Specific Comments and Recommended Changes

Given the direct connections between air and water quality problems and solutions, BASMAA recommends the following revisions to the draft document:

1. Correct spelling of "Foreword"
2. Page 1, second paragraph: modify as follows:

California has long been a leader in protecting the environment. California is committed to:

- ~~r~~Reducing its greenhouse gas (GHG) emissions (40 and 80 percent below 1990 levels by 2030 and 2050, respectively); ~~, and~~
- ~~r~~Reducing pollution impacting waterbodies
- Increasing resiliency to climate change
- Increasing resiliency to drought

At the same time, the State's population is projected to grow to 50 million residents by 2050. As the State acts to achieve these emission~~,~~ and pollutant reductions, build resiliency, ~~-~~and support future growth, California has the opportunity to realize critical

[2] US EPA, Green Infrastructure and Climate Change: Collaborating to Improve Community Resiliency, August 2016 (EPA 832-R-16-004)

benefits in public health, water quality, natural resource, economic, equity, and resiliency outcomes through thoughtful and comprehensive policy implementation. Realizing this potential requires an integrated vision for how the State develops communities, preserves and protects its landscapes, and ensures that all Californians have equitable access to housing, health care, jobs, nature, and opportunity. This document provides a vision for this future that forms a common foundation for actions related to land use across State agencies and programs.

Under Vision:

- Development and conservation investments and decisions focus on building social equity and supporting thriving and healthy communities with improved access to and supply of affordable housing, clean waterways and reliable, safe drinking water supplies, transportation alternatives, open space and outdoor recreational opportunities, affordable healthy foods, living-wage jobs, social support, and economic and educational opportunities;
- The land base, including natural, working, and developed areas, is a foundational element of the State's strategy to meet GHG emission and water quality pollutant reduction targets. This importance is further recognized in other land, energy, water, and climate change policy documents and decisions, including State, local, and regional planning and investments;
- Land is protected, managed, and developed in a manner that maximizes resilient carbon storage, food security, water quality improvement, and other ecological, economic, and health objectives. Natural and working lands are used to build resilience in natural, built, and social systems, protect waterways, and provide buffers against changing climate conditions that will allow for flexible adaptation pathways;
- New development and infrastructure are built primarily in locations with existing infrastructure, services, and amenities (i.e., previously-developed locations), rather than greenfield locations; and
- The value of ecosystem services conferred by natural systems (including green infrastructure) are accounted for and included in State, local, and regional planning and investment decisions, resulting in protection of these services and California's globally significant biodiversity.

Under Actions:

State, local, and regional governments need to work together to achieve this shared vision and to encourage land use, water quality, and transportation decisions that minimize GHG emissions, protect the environment, and build resiliency to climate change and drought. While recognizing its focus on urban development and transportation, the State will build on framework and governance structure established by Senate Bill (SB) 375 to achieve deeper GHG emission reductions, maximize the investments required for water quality protection to also provide for climate change and drought resiliency, and will integrate the protection, conservation, and management of natural and working lands.

A number of current and emerging State planning, ~~and~~ policy, and regulatory efforts provide the opportunity to articulate and implement this vision, and provide State leadership through work with local and regional partners. These include the Climate Change Scoping Plan, the Regional Transportation Plan Guidelines, Stormwater Resource Plan Guidelines, municipal stormwater permits, the Sustainable Freight Action Plan, updated General Plan Guidelines, implementation of AB 2087 for regional conservation planning, the State Wildlife Action Plan, the Water Action Plan, and implementation of SB 743 guidelines and other updates to the California Environmental Quality Act.

The State will prioritize the following actions to support regional and local governments and to maximize GHG emission reductions and achieve water quality pollutant reduction through the conservation and protection of natural and working lands, integration of green infrastructure with climate change and transportation investments, reductions in vehicle miles traveled, and direct emission reductions associated with compact development patterns:

- **Develop performance metrics for environmental, health, and equity outcomes associated with stronger land use policies:** Working with local and regional governments, the State will develop systems to measure the environmental, health, and equity impacts of land use, infrastructure, and development policies and programs and will allow all levels of governments to maximize benefits, avoid harm, and measure and track the results. Furthermore, the State will continue to direct resources, infrastructure, services, jobs, training, and technical assistance to communities facing historical disadvantage to improve resource availability, access to services, and quality of life.
- **Establish land conservation targets:** The State will develop quantitative and achievable goals to protect and limit the conversion of the State's most productive farmland, rangeland, and forests, as well as the natural and working lands most critical to preserving California's biodiversity and the ability for Californians to adapt to climate impacts, alongside complementary policies to focus new development in currently developed areas, reduce conflicts among adjacent land uses, and minimize risks to existing land uses and public health and safety. The State will also prioritize increasing working lands in the form of green infrastructure by integrating planned water quality, climate change, and transportation investments.
- **Update regional greenhouse gas reduction targets to achieve 2030 and 2050 greenhouse gas emission reduction targets:** The State will work with local and regional governments to develop stronger GHG emission reduction targets for regional sustainable community strategies under SB 375 and identify opportunities to strengthen implementation success.
- **Develop policies and processes for infrastructure siting that are consistent with the State's conservation, development, and population health goals:** The State will develop supportive policies and tools to help private and public sector partners, including local and regional agencies, to identify sites for infrastructure projects, including renewable energy projects and stormwater capture, retention, and

treatment ,-that are consistent with and support the State's conservation, development, water quality, and climate change goals. The State will continue and strengthen policies that facilitate substantial increases in the proportion of investments in transit, active transportation, stormwater treatment, fix-it-first maintenance of existing infrastructure, and shared mobility infrastructure, as well as increasing and integrating natural and green infrastructure in developed areas, including tree planting, parklets, stormwater capture, retention, infiltration, and treatment via green infrastructure and other means, and other strategies.

- **Explore and develop financing, regulatory, and other tools to support more efficient and more equitable development:** The State will evaluate and develop financing mechanisms, incentives, guidelines, and other tools to substantially accelerate more efficient and equitable development outcomes. This includes: reducing barriers to housing development in infill areas; promoting infill development and necessary infrastructure in existing communities; reducing barriers to funding stormwater capture and treatment projects; and implementing strategies to ensure that long-time residents can stay in place as neighborhoods improve.
- **Explore and develop financing, regulatory, and other tools to promote land protection and carbon-oriented land management practices:** The State will examine, evaluate, and develop financial or regulatory compliance incentives to private landowners to promote both permanent and temporary conservation and management for carbon sequestration.
- **Explore and develop financing, regulatory, and other tools to support integrated implementation of green infrastructure with climate change and transportation investments to achieve water quality and resilience goals:** The State will examine, evaluate, and develop financial or regulatory compliance incentives to support local agencies meet state and federal mandates to achieve water quality goals that simultaneously build resilience to climate change impacts and drought.
- **Support transportation policies such as priced express lanes, reduced parking requirements for development, and transit commuter incentives that promote infill development and reduce vehicle miles traveled:** The State will implement road user and parking pricing policies and coordinate these policies with programs to avoid adverse impacts on low-income drivers and with infrastructure investments as described above. Further, the State will invest in technology to improve transportation system efficiency that provide choices that enable people and goods to reach destinations quickly and cleanly.

Benefits of the California 2050 Vision

Research, analysis, and implementation demonstrate the myriad benefits to the State's residents, local and regional governments, and the economy that can result from an integrated approach to land use. These include, among others:

- **Tangible, short- and long-term benefits for disadvantaged communities:** Focusing on infill and compact development patterns and coordinated investments to

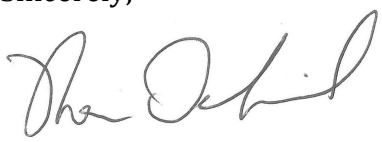
expand low-cost and low-carbon transportation options, and reduce air and water quality pollutants -encourages investment in existing and underserved communities, reduces household costs, helps alleviate pollution burdens in the highest-impacted communities, and increases access to economic opportunities.

- **Improved public health:** More compact development patterns, access to parks and green space, and abundant recreational options provide opportunities for active transportation and exercise. Increases in these activities help provide respiratory and cardiovascular health benefits and reduce the burden of chronic diseases such as diabetes, certain types of cancers, and dementia, while improving mental health. Integrating green infrastructure with active transportation investments will increase green space, manage stormwater runoff, and create safer and more appealing built environments. Furthermore, an integrated conservation and development strategy will contribute to significant air quality benefits, which improve respiratory and cardiovascular health.
- **Resilience to the impacts of climate change:** Protection of natural systems, expansion of transportation options, implementation of stormwater management via green infrastructure, and compact development patterns can reduce exposure to the risks of a changing climate, especially in disadvantaged communities. Protected and managed natural and working systems can mitigate impacts of floods, protect water quality and supply, enhance food security, and protect against other climate impacts. Compact development patterns and integrated transportation and green infrastructure reduce pressures on natural systems, reduce pollution to waterways, and also result in lower water and energy use, ~~both~~all of which contribute to greater resilience.
- **Maintenance of California's global economic leadership:** California's natural resources alongside its urban environments form the very fabric of what attracts businesses and residents to the State and fosters California's leadership in the global economy. Taking an integrated approach to creating attractive living, working, and recreational environments will help the State to remain competitive.
- **Monetary savings for residents, businesses, and governments resulting from lower transportation and energy costs:** More compact development patterns save local municipalities – as well as the State - money by reducing the long-term costs of providing services and infrastructure to low density development. Multi-modal transportation choices enable the efficient movement of people and goods.
- **Promotion of urban-rural connectivity in all regions:** Recognizing the climate change benefits of functioning natural systems and sustainable working lands is necessary for making fully informed land use and resource management decisions, and can serve to drive investment and jobs to rural communities, support urban-rural cohesion, and bolster the economic value of rural lands.
- **Promotion of a sustainable balance between conservation and development across each ecoregion:** Full consideration of conservation and development goals across regions provides an opportunity to integrate economic and community

development goals alongside the ecosystem service co-benefits of protecting and managing our natural and working lands and waters.

Thank you again for the opportunity to comment on the draft Vibrant Communities and Landscapes: A Vision for California in 2050". If you have any questions, please contact Matt Fabry, BASMAA Director at 650-599-1419 / mfabry@smcgov.org or Geoff Brosseau, BASMAA Executive Director at 650-365-8620 / geoff@brosseau.us

Sincerely,



Tom Dalziel, Chair
Bay Area Stormwater Management Agencies Association

cc: BASMAA Board of Directors and BASMAA Development Committee

ATTACHMENT

C.3.j.iii. Participate in Processes to Promote Green Infrastructure

BASMAA comments to Metropolitan Transportation Commission (MTC) and Association of Bay Area Governments (ABAG) on *Plan Bay Area 2040*

Alameda Countywide Clean Water Program

Contra Costa Clean Water Program

Fairfield-Suisun Urban Runoff Management Program

Marin County Stormwater Pollution Prevention Program

Napa County Stormwater Pollution Prevention Program

San Mateo Countywide Water Pollution Prevention Program

Santa Clara Valley Urban Runoff Pollution Prevention Program

Sonoma County Water Agency

Vallejo Sanitation and Flood Control District

B A S M A A

June 1, 2017

Metropolitan Transportation Commission (MTC)
Association of Bay Area Governments (ABAG)

Subject: Comments on Draft Plan Bay Area 2040

MTC-ABAG:

On behalf of the Bay Area Stormwater Management Agencies Association (BASMAA), thank you for the opportunity to provide comments on Draft Plan Bay Area 2040. BASMAA is a 501(c)(3) non-profit organization comprised of the municipal stormwater programs in the San Francisco Bay Area representing 100 agencies, including 85 cities and towns, 8 counties, and 7 special districts. BASMAA focuses on regional challenges and opportunities to improve the quality of stormwater flowing to our local creeks, the Delta, San Francisco Bay, and the Pacific Ocean.

We are focusing our comments on the Resilience portion of the Action Plan.

New Resilience Action
First and foremost we recommend that Plan Bay Area 2040 include a wholly new Resilience Action:

> **Shift the focus on Complete Streets to Sustainable Streets:** Move communities from the current focus on Complete Streets that address active transportation issues to Sustainable Streets that also incorporate green infrastructure for stormwater management – thereby reducing runoff from urbanized areas, mitigating flooding, improving water quality, recharging groundwater, reducing urban heat island impacts, improving aesthetics, reducing greenhouse gas emissions, and mitigating the effects of climate change.
>
> Partners: BARC, MTC/ABAG, RWQCB, Caltrans, local jurisdictions
> Timeline: 1- 4 Years

The new Resilience Action would take advantage of the many natural linkages between stormwater quality management, transportation planning, greenhouse gas reductions, and climate change mitigation strategies. It would also build on the ABAG / San Francisco Estuary Partnership *Urban Greening Bay Area* project (http://www.sfestuary.org/our-projects/water-quality-improvement/greenplanning/). *Urban Greening Bay Area* includes a Regional Roundtable series of working meetings where local, regional, state, and federal agencies, elected / appointed officials, and private sector and non-profit partners are developing policy solutions to integrate transportation, climate, and water quality investments.

Other Comments
Significant green infrastructure implementation is required by the Regional Water Quality Control Board throughout much of the Bay Area to achieve long-term water quality improvement in San Francisco Bay, and these projects will directly benefit climate change adaptation efforts. The Resilience Action Plan should build on and coordinate with those efforts.

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BASMAA recommends the Resilience Action Plan define resilience to include management of stormwater runoff to address flooding and water quality concerns. The Action Plan should specifically reference stormwater management and green infrastructure implementation. Municipalities are doing significant work on stormwater planning and management, including developing countywide stormwater resource plans and local green infrastructure plans that will help with flood control, groundwater recharge, and water quality improvement.

The Resilience Action Plan should consider inclusion of the Regional Water Quality Control Board as a partner along with local agencies and stormwater and flood control agencies and associations.

The Resilience Action Plan should also recognize, coordinate with, and build on the Comprehensive Conservation and Management Plan for San Francisco Bay (the Estuary Blueprint) and include the San Francisco Estuary Partnership as a partner. In addition:

1) Under "Develop a regional governance strategy for climate adaptation projects," change language to not be specific to sea level rise, but keep more broad as climate change adaptation. Climate change impacts may be experienced sooner in the context of more intense precipitation events, so regional governance is also applicable to addressing managing climate change-induced flooding that may not be directly related to sea level rise. Heat island issues are another example. Adaptation overall in the Bay Area requires a regional governance strategy.

2) Under "Expand the region's network of natural infrastructure," revise to include language specific to improving water quality, recharging groundwater, and reducing urban heat islands. Leverage existing initiatives should also include countywide stormwater resource and green infrastructure planning.

3) Under "Establish the Regional Advance Mitigation Program," this should include improving water quality in addition to regional biological conservation priorities. Infrastructure projects will require stormwater management actions, and advance mitigation programs should work with local agencies to identify locations for green infrastructure implementation to mitigate water quality impacts of infrastructure projects.

Thank you again for the opportunity to comment. If you have any questions, please contact me at 650-599-1419 or our Executive Director, Geoff Brosseau at 650-365-8620.

Sincerely,

Matt Fabry, Chair
Bay Area Stormwater Management Agencies Association

cc: Bruce Wolfe, Executive Officer, San Francisco Bay Regional Water Board
Tom Mumley, Assistant Executive Officer, San Francisco Bay Regional Water Board
Keith Lichten, Watershed Management, San Francisco Bay Regional Water Board
BASMAA Board of Directors

ATTACHMENT

C.3.j.iii. Participate in Processes to Promote Green Infrastructure

BASMAA comments to California Natural Resources Agency on
Safeguarding California Plan: 2017 Update – California's Climate Adaptation Strategy

Alameda Countywide Clean Water Program

Contra Costa Clean Water Program

Fairfield-Suisun Urban Runoff Management Program

Marin County Stormwater Pollution Prevention Program

Napa County Stormwater Pollution Prevention Program

San Mateo Countywide Water Pollution Prevention Program

Santa Clara Valley Urban Runoff Pollution Prevention Program

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Vallejo Sanitation and Flood Control District

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June 23, 2017

California Natural Resources Agency

Subject: Comments on Draft *Safeguarding California Plan: 2017 Update – California's Climate Adaptation Strategy*

California Natural Resources Agency:

On behalf of the Bay Area Stormwater Management Agencies Association (BASMAA), thank you for the opportunity to provide comments on the Draft *Safeguarding California Plan: 2017 Update* (Update). BASMAA is a 501(c)(3) non-profit organization comprised of the municipal stormwater programs in the San Francisco Bay Area representing 100 agencies, including 85 cities and towns, 8 counties, and 7 special districts. BASMAA focuses on regional challenges and opportunities to improve the quality of stormwater flowing to our local creeks, the Delta, San Francisco Bay, and the Pacific Ocean.

Stormwater agencies throughout California are increasingly mandated by the State and Regional Water Boards to develop and implement stormwater management plans to achieve long-term water quality goals. This will require significant investment in green infrastructure and other approaches to capture, treat, and infiltrate stormwater runoff. We believe this work will play a significant role in supporting climate change resilience and should be appropriately addressed in the Update. As such, we appreciate the inclusion of Recommendation W-8, "Utilize low-impact development and other methods in state and regional storm water permits to restore the natural hydrograph." However, **we have some specific suggestions on how Recommendation W-8 could be improved**.

First of all, stormwater management and efforts to support implementation of green infrastructure solutions are being supported by more state agencies than just the State and Regional Water Boards. For example, the Department of Water Resources administers the Integrated Regional Water Management program and associated bond funds. Similarly, the Strategic Growth Council and State Coastal Conservancy have been on the forefront of efforts to integrate green infrastructure with other state priorities. We **recommend this section be revised to address programs and efforts that are already or will be implemented by all relevant state agencies**, not just the State and Regional Water Boards.

Secondly, we **recommend the Update make a strong connection between the Transportation and Water sectors in regard to stormwater management**. Currently, the Transportation recommendations seem focused on impacts to transportation infrastructure as a result of climate change and not on the role transportation infrastructure plays in both causing and adapting to climate change impacts related to stormwater runoff, flooding, and increased temperature.

Transportation infrastructure makes up a significant amount of the impervious surfaces in urbanized areas, with streets and parking lots often constituting 25-50% of urbanized land areas. As such, transportation infrastructure is a major contributor

to stormwater runoff and associated pollutants, as well as to urban heat islands. This will become a bigger issue with climate change as runoff may increase under more intense storms and heat islands get worse with increasing temperatures.

Transportation systems serve as the primary surface conveyance system for stormwater runoff and therefore represent a key opportunity to capture and manage stormwater before it enters underground drainage systems or receiving water bodies. Incorporating green stormwater infrastructure in roadways – such as through stormwater curb extensions, sidewalk infiltration planters, street trees, and rain gardens that capture, infiltrate, and treat runoff – creates "Green Streets" that improve water quality, reduce urban flooding, recharge groundwater, mitigate urban heat islands, and enhance the bicycle and pedestrian environment.

There is an existing statewide priority to implement "Complete Streets" to better accommodate bicycles, pedestrians, and transit and reduce greenhouse gas emissions by reducing vehicle miles traveled. Combining Green Streets and Complete Streets creates "Sustainable Streets" that are truly multi-benefit and essential to climate change resiliency in urbanized areas. As such, BASMAA **recommends revising Transportation Recommendation T-4 to include a new "Next Step" that specifically supports implementation of Sustainable Streets** as part of the State's Active Transportation Program and other relevant programs, such as the Natural Resources Agency's recent Urban Greening program. **We also recommend a partner recommendation in the Water section under Recommendation W-8**, with appropriate connections between the two to highlight the inter-related nature of these two sectors.

Similarly, **BASMAA recommends that the Plan recognize as an Ongoing Action in both the Water and Transportation sections** the Association of Bay Area Governments (ABAG) / San Francisco Estuary Partnership *Urban Greening Bay Area* project (http://www.sfestuary.org/our-projects/water-quality-improvement/greenplanning/). *Urban Greening Bay Area* includes a Regional Roundtable series of working meetings where local, regional, state, and federal agencies, elected / appointed officials, and private sector and non-profit partners are developing policy solutions to integrate transportation, climate, and water quality investments.

BASMAA also recommends the following changes to the Changing Climate Conditions Metrics section of Appendix B:

- Include metrics regarding increased urban flooding incidences caused by increased stormwater runoff volume and/or intensity
- Include a metric related to disaster funds distributed to local agencies for flood-related impacts due to increased stormwater runoff volume and/or intensity

BASMAA recommends the following changes to the Resilience Outcomes Metrics Appendix:

- Add a metric related to acreage of impervious area managed by downstream green infrastructure or volume of stormwater managed by green infrastructure – over time, municipalities will be managing more and more runoff to achieve water quality goals that should also be tracked in regard to climate resilience
- Incorporate Green Infrastructure Plans, Stormwater Resource Plans, and Watershed Management Plans in metrics related to planning documents addressing climate resiliency issues
- Change metric related to "Complete Streets features" built into transportation infrastructure projects to "Sustainable Streets features," recognizing the importance and need to incorporate green infrastructure in these improvements to provide enhanced climate change resilience.

Thank you again for the opportunity to comment. If you have any questions, please contact me at 650-599-1419 or our Executive Director, Geoff Brosseau at 650-365-8620.

Sincerely,

Matt Fabry, Chair
Bay Area Stormwater Management Agencies Association

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Tom Mumley, Assistant Executive Officer, San Francisco Bay Regional Water Board
Keith Lichten, Watershed Management, San Francisco Bay Regional Water Board
Julie Alvis, Deputy Assistant Secretary, California Natural Resources Agency representative to Urban Greening Bay Area, Sustainable Streets Roundtable
BASMAA Board of Directors