

# C/CAG

## CITY/COUNTY ASSOCIATION OF GOVERNMENTS OF SAN MATEO COUNTY

*Atherton • Belmont • Brisbane • Burlingame • Colma • Daly City • East Palo Alto • Foster City • Half Moon Bay • Hillsborough • Menlo Park  
Millbrae • Pacifica • Portola Valley • Redwood City • San Bruno • San Carlos • San Mateo • San Mateo County • South San Francisco • Woodside*

### TASK ORDER FORM

**Date/Start Date:** July 1, 2016

**Consultant Name:** Larry Walker & Associates

**Contract:** Countywide Water Pollution Prevention Program Technical Support

**Task Order No.:** LWA-02

**Task Order Name:** Municipal Stormwater NPDES Permit Compliance Assistance

**Scope of Work:** Green Infrastructure, Mercury & PCBs, and Stormwater Resource Planning

**Deliverables:** See attached scope of work

**Budgeted Cost:** Per attached Fiscal Year 2016-17 scope of work, not to exceed \$632,025

**Completion Date:** June 30, 2017

*The parties indicated herein agree to execute this Task Order per the scope indicated above. No payment will be made for any work performed prior to the start date of this Task Order. Unless otherwise indicated, receipt of this executed Task Order is your Notice to Proceed with the work specified herein.*

C/CAG

LWA

\_\_\_\_\_  
Sandy Wong, Executive Director      Date

\_\_\_\_\_  
Date

## Scope of Services

---

	<b>Page</b>
<b>Scope of Services</b> .....	<b>2</b>
Task 5. Green Infrastructure Planning .....	2
Task 9. Mercury & PCBs Load Reduction.....	9
Task 10. Stormwater Resource Planning .....	13
<b>Schedule</b> .....	<b>15</b>
<b>Budget</b> .....	<b>18</b>

## Scope of Services

Services described in this document are limited to those that will be conducted in Fiscal Year (FY) 2016-2017.

### Task 5. Green Infrastructure Planning

Work on the Sub-Tasks 5.1 and 5.2 will continue in FY 2016-2017.

#### Sub-Task 5.1 Countywide approach to assist member agencies in developing Green Infrastructure Plans

This task will be the heart of the Green Infrastructure Planning effort with a focus on coordinating with the Task 10 development of the SRP and its web-based GIS tool, and the Sub-Task 9.6 determination of future goals for green infrastructure to meet TMDL pollutant load reductions. Coordination with these efforts both in terms of data-gathering and development of tools will help facilitate cost-effective and timely development of the frameworks and work plans for Green Infrastructure Plans this will be the focus of Sub-Task 5.1 effort during FY 15-16. In future years the work will expand to include annual reporting on green infrastructure implementation; development of guidelines, standard specifications and design details, and other elements related to achieving adoption of Green Infrastructure Plans; and the mercury and PCBs load reduction related efforts in Sub-Tasks 5.3, 5.4, and 5.5.

##### a) Support ongoing technical advisory committee

The LWA team will provide staff support for an ongoing technical advisory committee (TAC) of member agency representatives. Per the project schedule, support and/or participation in TAC meetings are expected to begin in the 2<sup>nd</sup> quarter of 2016 and continue to the 2<sup>nd</sup> quarter of 2018. Several of the TAC meetings will involve discussion of work products for multiple tasks. This work will include coordinating with C/CAG to prepare agendas, meeting minutes, PowerPoint presentations, handouts to supplement key elements of presentations, and draft and final work products as agenda attachments.

##### *Deliverables*

- Draft and final agendas, meeting minutes, presentations, work products, work schedules and other materials for TAC meetings (projected number of 9 meetings between May 2015 and May 2018).
- Up to four TAC meetings and support in determining TAC membership (FY 16-17).

##### b) Support development of frameworks or work plans for Green Infrastructure Planning

The development and approval of Green Infrastructure Plans is a key requirement of the MRP with the first major milestone being approval of frameworks or work plans for preparation of the Green Infrastructure Plans by each of C/CAG's member agencies by June 30, 2017. In FY 15-16, the LWA team will develop a draft annotated outline for the model framework or work plan to be used as a roadmap for each individual member agency. In the next fiscal year, the LWA team will prepare a draft and final model framework or work plan. Following C/CAG approval of the model framework or work plan, the LWA team will support each member agency prepare jurisdictional-specific frameworks or work plans for approval by officials from each agency, to the extent covered by the project budget.

The LWA team will also coordinate and collaborate with the BASMAA Development Committee, as appropriate, in the Committee's collaborative efforts to create a regional model for frameworks and

work plans. This effort will include review of materials prepared for the BASMAA Committee and attending selected Committee meetings.

The following steps will lead to the efficient and timely approval of the work plans or frameworks by the June 30, 2017 MRP deadline:

1. The LWA team will prepare an initial draft annotated outline for the frameworks or work plans for C/CAG staff review in FY15-16. This will be informed by related national and California best practices and information that may be developed by the BASMAA Development Committee.
2. Following C/CAG review and comments on the draft annotated outline, the LWA team will finalize the outline for development of the model framework or work plan by the end of FY 15-16.
3. In FY 16-17, the LWA team will prepare an initial draft model framework or work plan for review by C/CAG staff. Following C/CAG review and comments on the draft model framework or work plan, the LWA team will finalize the model framework or work plan.
4. The LWA team will coordinate with C/CAG staff to develop a format for a TAC workshop for member agency staff to present and receive comments on their progress in developing their frameworks or work plans. It is anticipated that each member agency will provide their draft documents and highlight key questions or issues to the LWA team prior to the workshop. In this way, the content of the workshop can be organized to address issues raised by multiple agencies.
5. The LWA team will work with C/CAG member agencies to develop focused background materials for use in preparation of staff reports and presentations to support review and approval of frameworks or work plans by commissions, boards, and councils.

### ***Deliverables***

- Draft annotated outline for framework or work plan. (FY 15-16)
- Final annotated outline for framework or work plan. (FY 15-16)
- Draft and final model framework or work plan. (begin work on draft in FY 15-16 and finish work in FY 16-17)
- Memorandum summarizing review of C/CAG member agency issues and draft agency frameworks and work plans. (FY 16-17)

### **c) Develop guidelines, standard specifications, and design details**

Work on this sub-task will begin in FY 16-17. Information on the regional efforts in development of these materials will be gathered through the LWA Team's work in Sub-Task 5.6 Coordination with C/CAG and BASMAA.

A core element of the preparation of Green Infrastructure Plans is a set of general guidelines and standard specifications, including typical design details, as described in section C.3.e.i.(2)(e) and (f) of MRP 2. 0. This set of documents is referred to as the San Mateo County Model Green Infrastructure Guidelines and Standards (Guidelines and Standards) in this scope of work. C/CAG's existing document, the San Mateo County Sustainable Green Streets and Parking Lots Design Guidebook (Guidebook), provides an excellent starting point for defining the elements of green infrastructure and their applicability to particular conditions in streets, parking lots, and private development/redevelopment sites. The Guidebook serves as a reference document that has been in use in San Mateo County since 2009. Recent efforts that will inform the development of work products for this task include the District of Columbia Transportation Department's 2014 Green Infrastructure Standards and the San Francisco PUC's Green Infrastructure Typical Details

resources from 2014, 2015, and 2016. In addition, this effort will coordinate as needed with the BASMAA Development Committee's work on regional approaches for guidelines, specifications, and details, as well as potential information developed through the ABAG grant funded BASMAA Green Infrastructure Design Charrette and test intersections sites, which include three project sites in the City of San Mateo.

Based on CD+A's direct experience in project design and construction, and observation of built projects throughout the Bay Area, particular issues to address through the guidelines and standards may include:

- Proper siting and detailing of green infrastructure to avoid pedestrian safety and disability related issues.
- Identifying potential soil and planting mix, establishment, and maintenance practices to support healthy tree and understory growth.
- The use of manufactured units for the construction of suspended sidewalk pavement.
- The design of green infrastructure systems to manage stormwater runoff from both private property and the public rights-of-way.
- The needs for interdepartmental staff training regarding coordinated and consistent plan review of private projects, scoping and design for public projects, provisions for public/private implementation and maintenance agreements, and operations and maintenance.

The following steps will lead to the efficient and timely development of a set of model guidelines and standard specifications, including typical design details that can be used by member agencies to meet the MRP Green Infrastructure Plan requirements for the 2019 Annual Report:

1. The LWA team will assemble model documents and prepare a summary memorandum of how these relate to the San Mateo Guidelines document as well as identify potential areas for additional guideline or standards development. As part of this memorandum, a draft annotated outline for the San Mateo County Model Green Infrastructure Guidelines and Standards will be provided. (FY 16/17)
2. The LWA team will organize and facilitate a TAC workshop to obtain input on content that would best serve the development of San Mateo County Model Green Infrastructure Guidelines and Standards, as well as format preferences, additional issues that should be addressed, and other preferences. (FY 16/17)
3. Based on the outcomes of the TAC workshop and discussions with C/CAG, the LWA team will prepare a draft final annotated outline for the San Mateo County Model Green Infrastructure Guidelines and Standards for TAC review and written comments. The LWA team will finalize the annotated outline to address comments received. (FY 16/17)
4. The LWA team will draft several sample sections of the guidelines, standard specifications, and standard details and provide to the TAC for review. (FY 16/17)
5. At a TAC meeting, the LWA team will facilitate a discussion of comments regarding the TAC review of the sample materials. The discussion will include identifying any refinements to the approach and content as defined in the final annotated outline. If needed, the annotated outline and format approach will be refined following the TAC meeting discussion. (FY 16/17)
6. The LWA team will draft the model guidelines and standards for C/CAG review and comment. The LWA team will review C/CAG comments and hold a meeting to finalize direction for preparing the TAC review copy of the guidelines and standards. (FY 16/17).
7. The LWA team will prepare a TAC review copy of the guidelines and standards. (FY 17/18)

8. The TAC will be provided with a review copy about one month prior to a TAC workshop for discussion and agreement on TAC requested changes to the draft. (FY 17-18)
9. A final comprehensive draft of the San Mateo County Model Green Infrastructure Guidelines and Standards will be prepared, incorporating TAC comments. (FY 17-18)
10. The LWA team will deploy the San Mateo County Model Green Infrastructure Guidelines and Standards on a web-based resource platform available to C/CAG members (similar to 21 Elements website). Following test deployment, the LWA team will meet with the TAC to obtain final comments on the utility of the resource platform and presentation of the model design guidelines and standard details and specifications. Based on input received from the TAC, the resource platform will be finalized and launched for public access. (FY 17-18)

### ***Deliverables***

#### ***FY 16-17***

- Draft and final model document summary memorandum and annotated outline for the San Mateo County Model Green Infrastructure Guidelines and Standards.
- Draft sample Model Guidelines and Standards.
- Refined annotated outline of Model Guidelines and Standards, if needed.
- Administrative review draft Model Guidelines and Standards.
- Meeting with C/CAG to discuss and resolver review.

#### ***FY 17-18***

- TAC review draft Model Guidelines and Standards.
- Final comprehensive San Mateo County Model Green Infrastructure Guidelines and Standards.
- Draft and final web-based resource platform.
- Develop model plan update materials and assist member agencies in prioritizing and mapping potential and planned green infrastructure projects

#### **d) Develop Model Plan Update Materials**

The LWA team will develop model text and other materials for member agency policy documents that can appropriately include green infrastructure policies, programs, and requirements, including (but not limited to): “General Plans, Specific Plans, Complete Streets Plans, Active Transportation Plans, Storm Drain Master Plans, Pavement Work Plans, Urban Forestry Plans and other plans that may affect the future alignment, configuration, or design of impervious surfaces,” as described in MRP 2.0 section C.3.e.i(2)(h). CD+A’s expertise in preparing Specific Plans and Complete Streets Plans, amending General Plans, and other land use, transportation, and infrastructure documents will help to facilitate their work on this task. The LWA team will develop model text and other materials for General Plans, Specific Plans, and other jurisdiction planning documents per requirements of MRP and best practices.

First, C/CAG member agencies will be asked to identify documents that exist or are planned for development during the period of the MRP that could include policies and references to the MRP’s green infrastructure and other related requirements. The LWA team will compile a list of documents and gather PDF files; this work is targeted for completion in FY 15-16.

Following review of the outline by C/CAG staff and the TAC, in FY 16-17, the team will develop initial draft model descriptive and policy language and other materials such as explanatory diagrams, tables describing green infrastructure typologies, etc., for review by C/CAG. The initial

draft will be updated based on C/CAG comments for distribution to the TAC. Following that review, a final draft of the materials will be prepared in FY 17-18.

In addition, the LWA Team will provide some focused input to member agencies that have current planning efforts that could use additional Green Infrastructure policy and goals language as the plans are being adopted. This currently includes:

- Planning documents related to the Half Moon Bay General Plan update.
- The Countywide Local Hazard Mitigation Plan.
- The Burlingame General Plan and Climate Action Plan updates.
- The Menlo Park zoning ordinance and design regulations update, General Plan update, and Green and Sustainable Building Regulation update.

### ***Deliverables***

- Review of model plan materials outline with C/CAG and TAC. (FY 16-17)
- Review the on-going planning documents mentioned above and provide draft language for further goals and policies related to implementing green infrastructure (FY 15-16 and FY 16-17)
- Develop initial draft model plan materials for C/CAG review. (FY 16-17)
- Prepare TAC review draft of model plan materials. (FY 16-17)
- Review TAC comments with C/CAG. (FY 16-17)
- Prepare final draft materials for TAC review. (FY 17-18)
- Review TAC comments with C/CAG. (FY 17-18)
- Prepare final model plan materials and post on the web for member agency use. (FY 17-18)

#### **e) Identify green infrastructure opportunities and prioritization**

MRP 2.0 provision C.3.e.i(2)(a) requires a Green Infrastructure Plan to include the identification of potential and planned green infrastructure projects, both public and private, on a drainage-area specific basis for implementation and assessment of potential load reductions by 2020, 2030, and 2040. Sub-Task 9.6 will result in drainage-area-level estimates of the amount of green infrastructure needed within each jurisdiction (in terms of treatment capacities) to meet these future load reduction goals. These results will be available for use in this task via access to the web-based GIS tool developed in Sub-Task 10.8 and updated in Sub-Task 9.6.

The LWA team will work with C/CAG member agencies to define the methods for moving from the long-term planning and estimating of performance of future green infrastructure through to the recording and modeling of actual construction and performance over time. The team will also work to establish prioritization criteria and identify priority projects. Therefore, it will be important to identify a methodology for bridging the long-range generalized planning with project identification using clear and documented assumptions. The result of this task will provide more-defined and scoped public capital improvement projects and private development proposals to meet future goals established for green infrastructure.

CD+A is aware through their work on the City of San Mateo Sustainable Streets project that there is an interest in gathering data that helps to establish the feasibility of green streets, such as the presence of on-street parking, parking utilization, presence of trees and other landscape, potential for road diets or other pavement reduction, etc. Information regarding any existing or planned green infrastructure projects will also be requested.

The following steps will lead to the efficient and timely development of a prioritized list and mapping of both public and private green infrastructure projects on a drainage-area-specific basis

that can be used by member agencies to meet the MRP Green Infrastructure Plan requirements for the 2019 Annual Report, as well as on-going local planning and further MRP-related efforts beyond 2020:

1. The LWA team will compile available GIS and other available information and mapping data. A supplemental data request to member agencies will be prepared to source additional local data. This will include:
  - a. A review products of Tasks 9 and 10 (available through the web-based GIS tool) efforts to gather and compile existing plans and GIS to characterize hydrology and opportunities for stormwater capture and infiltration, as well as projected green infrastructure treatment capacities to provide mercury and PCBs load reductions by 2020, 2030, and 2040. (FY 16-17)
  - b. Identification of potential regional (e.g., MTC), countywide, and local sources of GIS data describing and locating future transportation infrastructure projects. (FY 16-17)
  - c. Identification of areas in the county most likely to experience private investment in new, infill, and reuse development. CD+A have compiled PDA and some land use planning GIS data for San Mateo County jurisdictions through their work on PDA readiness studies for MTC. Data available for “pipeline” private development projects, housing element opportunity sites (already gathered through MTC PDA readiness efforts), and other future development opportunities identified by local agencies to enhance PDA mappings. (FY 16-17)
2. The LWA team will develop a draft memorandum summarizing the compiled data for review by the C/CAG and the TAC. This memorandum will also include an example data request list to guide member agencies in future efforts to identify the applicability and feasibility of various types of green infrastructure in the public rights-of-way. Based on input received from C/CAG and the TAC, a final memorandum will be developed. (FY 16-17)
3. The LWA team will prepare draft prioritization methodology and criteria memorandum, drawing from existing green streets/infrastructure policies and plans and modeling tools and screening approaches developed in Tasks 9 and 10 (potentially incorporating approaches developed within GreenPlan-IT, once completed). At a TAC meeting, the LWA team will facilitate a discussion regarding the methodology and criteria and receive feedback on potential refinements. Based on input received from the TAC, a final memorandum will be developed. Note that this memorandum may be revised further as the mapping of opportunities and priorities is performed. (FY 16-17)
4. The LWA team will prepare an initial mapping of existing and potential green infrastructure opportunities, and prioritize them based on the criteria and methodology developed in the previous step. This effort will be coordinated with the Sub-Task 5.3 identification of green infrastructure projects within the permit term. Resulting maps of project opportunities and priorities will be loaded into the web-based GIS tool to support member agency and TAC review and comment on the opportunities and priorities. Member agencies and the TAC will be asked to provide written comments on the project opportunities and priorities. Based on comments received, the LWA team will refine the mapping of opportunities and incorporate within the web-based GIS tool for final viewing by member agencies and the TAC. At a TAC meeting, the LWA team will facilitate a high-level review of agency comments and initial responses, focused on common themes. (FY 16-17)
5. The LWA team will develop refinements to the mapping of green infrastructure opportunities to present phased implementation to meet future goals for 2020, 2030, and 2040 timeframes, based on the prioritization. This effort will be coordinated with the work in Sub-

Task 5.4 to identify targets for impervious surface retrofits within these timeframes. The resulting maps will be loaded within the web-based GIS tool for TAC review. Member agencies and the TAC will be asked to provide written comments on the mapping and scheduled projects. Based on comments received, the LWA team will refine the mapping and incorporate within the web-based GIS tool for final viewing by member agencies and the TAC. (FY 17-18)

6. The LWA team will prepare final mapping data and finalize the prioritization criteria and methodology memorandum, and a memorandum describing how member agencies can use outputs to inform local planning (e.g., development review, further land use and infrastructure planning, capital planning and project development for transportation). (FY 17-18)

### **Deliverables**

- Draft and final memorandum summarizing compiled data (FY 16-17)
- Draft and final memorandum summarizing the prioritization methodology and criteria (FY 16-17)
- Draft and final green infrastructure opportunities and priorities mapping (FY 16-17)
- Draft and final revised green infrastructure opportunities and 2020, 2030, and 2040 project schedule maps. (FY 17-18)
- Final mapping GIS data, final prioritization criteria and methodology memorandum. (FY 17-18)

### **Sub-Task 5.2 Education and outreach materials**

The LWA team will use its knowledge, presentation, and graphic skills gained from the team's involvement in green streets, complete streets, and sustainable and green streets planning and design projects, which have included extensive public outreach. Specifically, CD+A prepared and delivered public outreach and education PowerPoint presentations for the green streets elements of the City of San Mateo's Sustainable Streets Plan. This background will help us to provide support to C/CAG in educating the public, agency staff, and elected officials on green infrastructure and LID planning, policy, design, and implementation. Examples of the wide range of potential work products that CD+A staff can produce or contribute to include the preparation of:

- PowerPoint presentations on green infrastructure related topics
- Handouts on specific topics or a series of coordinated educational booklets or flyers
- Presentation or handout text or graphic components
- Case studies and summaries of research results
- Individual tables, diagrams, 3D or other graphics

Under this task, C/CAG can take advantage of CD+A's experience in preparing graphics that convey complex spatial relationships or topics in an intuitive manner that is easy to grasp by a broad range of audiences. Graphics capabilities of CD+A staff include the preparation of:

- 3D Isometrics
- Computer generated photo simulations
- Hand drawn perspectives, sketches or vignettes
- Plan view drawings and diagrams
- AutoCAD drawings
- Flow charts

The budget for this task is based on an anticipated level of effort that may be needed to support C/CAG over the course of the Green Infrastructure Planning. No work would be undertaken in the task without prior approval from C/CAG.

### ***Deliverables***

- Draft and final educational and outreach materials (slides for PowerPoint presentations, individual or coordinated series of handouts, individual graphics, etc.).

#### **Sub-Task 5.6. C/CAG and BASMAA Coordination**

The LWA team will coordinate with C/CAG and BASMAA, attending meetings and participating in regional workgroups focused on C.11 and C.12 compliance efforts such as tracking measures, accounting for load reductions. Information regarding green infrastructure planning, such as: development of jurisdiction frameworks or work plans for Green Infrastructure Planning; development of guidelines, standard specifications, and design details; and other related information that may be developed through BASMAA activities during this fiscal year. The LWA team will provide briefings and advise to the C/CAG Program Manager, Stormwater and Technical Advisory Committees on the regional approaches.

#### **Sub-Task 5.7. Coordination of GI Documents**

No work is planned on this task in FY 16-17.

### **Task 9. Mercury & PCBs Load Reduction**

#### **Sub-Task 9.3 Determine/Confirm Mercury and PCBs Wasteload Allocations for San Mateo County, Required Reductions, and Sub-allocations for Permittees and Develop Alternate Approach if Appropriate**

This analysis will require both modeling and TMDL development experience, as it will require disassembling the original TMDL and calculation of allocations, comparison to modeled sediment and mercury and PCBs loads for Bayside San Mateo County, and recalculation of wasteload allocations and required reductions for the County portion of the Bay-Area-wide allocation. Team member Stephen Carter of Paradigm was the watershed modeling lead supporting EPA in development of the Los Angeles and Long Beach Harbors Toxics TMDLs, which is the only TMDL in California that rivals the San Francisco Bay TMDLs in terms of number of pollutants (including PCBs) and geographic scale. With this TMDL modeling experience and trust of the regulators, the LWA team will provide thoughtful interpretation of the San Francisco Bay TMDLs, engage Regional Water Board staff on assumptions to be used in the Reasonable Assurance Analysis (RAA), and perform an RAA that results in modeling processes and calculation of allocations and reductions for the County that are accepted by Regional Water Board and EPA staff. As discussions with Regional Water Board staff regarding the revision of the PCBs TMDL continue, this analysis will provide further evidence of the need to revise the TMDL and include more accurate approaches to recalculate allocations for all permittees.

Although the mercury and PCBs TMDLs were based on extensive science and research, the ultimate calculation of wasteload allocations and required reductions for stormwater runoff were relatively simple. The calculations will be revisited in the RAA to engage Regional Water Board staff on feasible goals for green infrastructure that are associated with hydrology, sediment transport, and concentrations of mercury and PCBs throughout the County.

The team will present C/CAG the results of analyses and key decision points, as well as inform C/CAG of discussions required with Regional Water Board staff to gain early buy-in on methods used to ensure acceptance of the RAA.

### **Sub-Task 9.4 Assist with the Development, Documentation, and Implementation of an Assessment/Tracking Methodology for Mercury and PCBs**

The LWA team will develop and implement an integrated green infrastructure and institutional source control BMP mercury and PCBs load reduction framework to track efforts and demonstrate anticipated compliance with load allocations established in Sub-Task 9.3. Expected and observed load reductions derived from institutional BMPs, also referred to as source controls or non-structural BMPs, will be developed based on available data and values from the literature and compiled in a straightforward and easily accessible spreadsheet tool. Relevant assumptions will be San Mateo County or Bay Area-specific factors where feasible and clearly stated with relevant references (e.g., potential regional guidance developed by BASMAA). An extensive discussion of the volume reduction reporting capabilities of the web-based Watershed Adaptive Management Program (WAMP) will have been completed in Sub-Task 10.4. The WAMP is a web-based platform that has been developed to allow C/CAG member agencies and the LWA team to predict runoff capture volumes for the 85th percentile storm, other critical storms, or annual volumes identify by selecting a project location and enter project characteristics (e.g., BMP type and size, drainage area characteristics, infiltration rate). The WAMP also provides storage of project information and runoff capture predictions for integration within the RAA and will allow for direct integration into the Sub-Task 9.4 tracking spreadsheet tool.

#### ***Deliverables***

- Mercury and PCBs load reduction spreadsheet tracking tool.
- WAMP green infrastructure volume reduction output.

### **Sub-Task 9.6. Develop Initial Phase of a Reasonable Assurance Analysis to Demonstrate How the County will Collectively Achieve the Load Reductions for Mercury and PCBs required via GI**

The modeling performed for the RAA will build off of the systems developed in Sub-Task 10.4, with key updates to meet specific needs of the RAA. The LWA team's approach will provide significant cost savings to C/CAG and ensure that efforts supporting the Stormwater Resource Plan provide a head start for the RAA and conserve budgets for both tasks. Once updated, the system will provide full capability to address all requirements of the RAA and this task, provide a system for cost-effective green infrastructure planning, and capitalize on efforts performed in other RAAs throughout California to provide defensible and approvable approaches for the interpretation and implementation of TMDLs.

The following is a summary steps to be taken to update the modeling system and perform the initial phase of the RAA.

**Step 1: Update of the Watershed Model (with focus on Bayside).** The HSPF model (based on BAHM) utilized for the Stormwater Resource Plan is limited to the simulation of hydrology, does not include simulation of sediment or mercury/PCBs sources or transport, and will require additional calibration to be defensible for the RAA. The BAHM model will be reconfigured within LSPC (recoded version of HSPF within C++) capable of simulating key sediment and pollutant transport processes required for the RAA. The converted model will take full advantage of all rainfall data available within the County as hourly input, GIS representing key land characteristics (including HRUs developed in Task 10.1), and subwatersheds throughout the County developed in Task 10.2. Original modeling parameters utilized within BAHM will serve as the starting point for performing updated calibrations for the RAA.

The model will be calibrated for hydrology and sediment loads based on available stream gage and water quality monitoring data. Based on local and regional studies of mercury and PCBs

concentrations and their potential association with suspended sediment, the LWA team will develop approaches within the model to simulate these pollutants as a function of modeled hydrology and sediment transport. Flow and sediment transport are key to the RAA as both provide mechanisms for either modeling mercury and PCBs directly, or as often performed for RAAs and development of TMDLs, assignment of typical water or sediment concentrations based on observed data (i.e., the method used in the San Francisco Bay mercury and PCBs TMDLs). Special steps will be taken to account for anomalously high or low mercury/PCBs concentrations observed through available monitoring studies so that the model can accurately simulate loads for these areas. The model will be calibrated to meet performance criteria that are common for TMDL development, were most recently required by the Los Angeles Regional Water Board for all RAAs performed in that region, and will be included within upcoming statewide guidance on RAAs.

**Step 2: Determine/Confirm Mercury and PCBs Wasteload Allocations for San Mateo County, Required Reductions, and Sub-allocations for Permittees.**

This step is under Sub-Task 9.3.

**Step 3: Develop Quantitative Relationship Between Green Infrastructure Implementation and Mercury and PCBs Load Reduction.** The RAA modeling system will be used to establish relationships between stormwater volumes, sediment loads, mercury and PCBs loads, and the overall amount of GI needed to achieve incremental reductions of mercury and PCBs loadings through stormwater capture. The RAA will establish a robust quantitative linkage between stormwater volumes controlled (and potentially sediment loads) at strategic locations throughout Bay-side subwatersheds and mercury and PCBs loads to demonstrate that TMDL wasteload allocations will be met. The RAA will also chart a course for cost-effective GI planning by optimizing those subwatersheds throughout the County where implementation should be emphasized to maximize load reductions with minimal costs.

The LWA team will tailor an RAA approach that will include different categories of GI and LID selected by C/CAG. For instance, with the MRP requirements for LID in new and redeveloped areas, it will be important for the RAA to take credit for any new and redevelopment projected to occur in the County. The LWA team will work with C/CAG to develop estimates of the rate of new and redevelopment that could occur and would be subject to low impact development (LID) or GI ordinances, as well as assumptions that could be incorporated for GI implementation resulting from public incentive programs. The RAA performed for the County will look into specific GI types that are determined to be the most cost-effective, and if chosen by C/CAG, specific results will be presented for each type of practice. These could include GI resulting from new and redevelopment, LID on publicly owned parcels, green streets, park retrofits with regional projects capturing runoff at the neighborhood scale, etc.

Based on the relative costs of the projects and opportunities identified throughout subwatersheds of the County, the LWA team will perform an optimization that identifies the most cost-effective combination and sizes of practices to achieve the volume or load reductions required. The SUSTAIN model will be used to automate the simulation of millions of scenarios, with each scenario representing a unique combination of GI practices identified as opportunities within each subwatershed throughout the County. Results of the optimization will be presented in a cost effectiveness curve (C-E curve) that depicts the most cost-effective practices to achieve increasing load reductions. Results of the RAA model optimizations (C-E curves) will be presented for each C/CAG member agency so that results can be assessed in terms of the stormwater controls selected to achieve the reduction target.

The RAA will also present results spatially and over time to guide the Green Infrastructure Plan and future implementation efforts. The LWA team will tailor approaches for the County to present interim reductions and associated GI treatment capacities and treated areas to meet interim and

final TMDL reductions for 2020, 2030, and 2040, as well as interim reductions required within the current permit term. The RAA results will be presented for each interim and final year in tabular form, which can be presented for each jurisdiction or subwatershed of the County. Similar tables will be developed that relate treatment capacities to the amount of treated areas, as required by the MRP.

Maps of treatment capacities and amount of treated areas within each subwatershed will be developed in GIS for inclusion within the web-based mapping tool developed within Task 10. This will provide direct access of model results to C/CAG as well as the technical team supporting the Green Infrastructure Planning.

**Step 4: Preparation of RAA Results for 2018 Annual Report and Green Infrastructure Planning.** A report will be developed that documents the data used and a full description of models and model input used in the RAA to establish the relationship between GI and PCBs load reduction. The LWA team will also update the WAMP for use by the technical team supporting the Green Infrastructure Plan to provide a tool for the quantification of stormwater capture associated with GI opportunities identified in Task 5. WAMP will be updated with the critical hydrologic condition used in the RAA to calculate the County's portion of the TMDL wasteload allocations, as well as updated GI types or design assumptions developed within the RAA or after the Stormwater Resource Plan is completed. The WAMP will enable C/CAG member agencies or the technical team supporting the Green Infrastructure Plan to perform volume reduction calculations for various GI types and sizes, based on methods that are consistent with the RAA. If C/CAG decides to provide Regional Water Board staff access to the WAMP (via weblink), this could also provide an important communication tool to explain ultimate outcomes of the RAA with Regional Water Board staff and gain buy-in on methods used.

#### ***Deliverables***

- Draft report summarizing results of initial phase of the RAA
- Final report summarizing results of initial phase of the RAA (incorporating C/CAG comments)
- Three meetings with C/CAG
- Updated web-based GIS tool with RAA results loaded
- Updated WAMP for use by C/CAG and the Green Infrastructure Plan

#### **Sub-Task 9.7 Develop a Building Demolition Management Program**

The LWA team will work closely with the BASMAA regional project currently being planned to assist municipalities by developing a model program to address PCBs loads in runoff resulting from demolition and remodeling projects. The LWA team will provide a liaison to the regional project to representing SMCWPPP permittees and providing updates and guidance to C/CAG and permittees on the impact of the regional approaches and program. The work on this subtask will include coordination with the work on subtask 9.4, where expected and observed load reductions for institutional BMPs, including the demolition program, will be developed based on available data.

#### ***Deliverables***

- Written and oral summaries for C/CAG on the BASMAA regional project

#### **Sub-Task 9.8 Develop an Assessment Methodology and Data Collection Program to Quantify PCBs Loads Reduced via the Above Program**

The LWA team will work closely with the BASMAA regional project currently being planned to assist municipalities by developing a model program to address PCBs loads in runoff resulting from

demolition and remodeling projects. The LWA team will provide a liaison to the regional project to representing SMCWPPP permittees and providing updates and guidance to C/CAG and permittees

### ***Deliverables***

- Written and oral summaries for C/CAG on the BASMAA regional project

### **Sub-Task 9.9. C/CAG and BASMAA Coordination**

The LWA team will coordinate with C/CAG and BASMAA, attending meetings and participating in regional workgroups focused on Green Infrastructure planning efforts. The LWA team will provide briefings and advise to the C/CAG Program Manager, Stormwater and Technical Advisory Committees on the regional approaches.

### **Task 10. Stormwater Resource Planning**

The Countywide Stormwater Resource Plan (SWRP) provides an opportunity for C/CAG to proactively plan for future requirements of the MRP (e.g., Reasonable Assurance Analyses, Green Infrastructure Plans) while providing essential information needed to explore funding needs and opportunities and Proposition 1 grants for project implementation. The efforts below will finalize the SWRP that is currently under development.

### **Sub-Task 10.7. Assist with Community Participation Process**

The LWA team will work with the C/CAG's public outreach consultant to communicate the goals and objectives for the SWRP and GI plan development process, identify key stakeholders, develop approaches for type, number, and timing of public meetings, and formulate approaches to address any potential barriers among the public or political decision makers.

### ***Deliverables***

- Technical SWRP and GI materials to support community outreach efforts
- As needed presentations for outreach meetings

### **Sub-Task 10.9. Prepare Stormwater Resource Plan**

Based on the products from the work completed in FY 2015-2016, the LWA team will develop the draft SWRP for C/CAG, member agency, and public stakeholder comments. A first draft SWRP will be delivered for C/CAG for internal review by member agencies. A second draft SRP will be delivered that incorporates C/CAG comments and is prepared for public/stakeholder comments. The final SRP will incorporate all comments received from the public/stakeholders, and any additional comments received from C/CAG.

### ***Deliverables***

- Draft I SWRP for C/CAG member agency review.
- Draft II SWRP for public/stakeholder review, incorporating C/CAG comments.
- Final SWRP

### **Sub-Task 10.10. Develop Proposition 1 Grant Application**

The LWA team will work with C/CAG member agencies to develop an approach for and competitive Proposition 1 Grant application for the project concepts developed through the work completed in FY 2015-2016, and which will be incorporated into the Countywide SWRP.

Prior to drafting the grant application, the LWA team will assist C/CAG staff in setting up an account with State Water Board's Financial Assistance Application Submittal Tool (FAAST) portal

and review the grant application forms to ensure that all required information or data has been produced as part of the SRP.

The LWA team will assist C/CAG present the project concepts and grant approach to the Regional Water Board staff (through the Stormwater Committee, or other appropriate forum) to gain their support of the grant applications.

The LWA team will draft a complete grant application for review by C/CAG staff, revise the application based upon the comments and finalize it for entry into the FFAST portal.

### ***Deliverables***

- Conceptual project approach for presentation to Regional Water Board
- Draft Proposition 1 grant application
- Final Proposition 1 grant application

### **Sub-Task 10.11. C/CAG and BASMAA Coordination**

The LWA team will coordinate with C/CAG and BASMAA, attending meetings, participate in workgroups, and provide briefings to the CCAG Stormwater and Technical Advisory Committees, and relevant BASMAA committees on the approach and development of the SMCWPPP Stormwater Resource Plan.

## Schedule

Following this page provides a schedule for the remainder of FY 2016-2017, which shows the overall duration of services as well as the duration of each task and sub-task. We have identified the windows for critical path activities and key milestones necessary to achieve C/CAG and MRP-related deadlines.

July 2016-December 2016

Task	Schedule Fiscal Year 2016-17 (July 2016-June 2017)	2016											
		July		August		September		October		November		December	
		1-15	16-31	1-15	16-31	1-15	16-30	1-15	16-30	1-15	16-30	1-15	16-31
<b>5</b>	<b>Green Infrastructure Planning</b>												
5.1	Develop coordinated approach for GI Plans												
	a. Support ongoing technical advisory committee			Prepare agenda	Meeting					Prepare agenda	Meeting		
	b. Support development of GI planning workplans	Prepare final outline				Initial draft model WP		Review w/ C/CAG & finalize draft WP		TAC prep & resolve comments		Revise model WP	Review w/ C/CAG
	c. Develop guidelines, standard specifications, and design details	Compile model documents & prepare draft annotated outline			Review w/ C/CAG & finalize initial materials					TAC Review	TAC workshop	Final Outline	Sample guidelines
	d. Develop model plan update materials	Review documents & outline model planning content (prepare draft text for current planning efforts)				Review w/ C/CAG & finalize draft		Member Agency Review		TAC Mtg. & resolve comments		plan update	
	e. Green Infrastructure Opportunities and Prioritization							Review existing data, prepare data request, & review w/C/CAG			Member Agency response to data request		Review data
5.2	Support outreach efforts on GI planning	Ongoing task support, as needed											
5.6	Coordination with CCAG and BASMAA	Ongoing task, as needed											
<b>9</b>	<b>Mercury and PCBs Load Reduction</b>												
9.3	Evaluate alternative PCBs load reduction allocation approach												
9.4	Develop, document, and implement an assessment/tracking methodology for mercury and PCBs load reduction												
9.6	Develop initial phase of a reasonable assurance analysis												
9.7	Develop a building demolition management program	Ongoing task support as needed											
9.8	Develop an assessment methodology and data collection program to quantify PCBs loads reduced via the above program	Ongoing task support as needed											
9.9	Coordination with CCAG and BASMAA	Ongoing task support as needed											
<b>10</b>	<b>Stormwater Resource Planning</b>												
10.7	Assist with community participation process												
10.9	Prepare Stormwater Resource Plan												
10.10	Develop Proposition 1 Grant Application												
10.11	Coordination with CCAG and BASMAA	Ongoing task support as needed											

January 2017-June 2017

Task	Schedule Fiscal Year 2016-17 (July 2016-June 2017)	2017											
		January		February		March		April		May		June	
		1-15	16-31	1-15	16-28	1-15	16-31	1-15	16-30	1-15	16-31	1-15	16-30
<b>5</b>	<b>Green Infrastructure Planning</b>												
5.1	Develop coordinated approach for GI Plans												
	a. Support ongoing technical advisory committee			Prepare agenda	Meeting					Prepare agenda	Meeting		
	b. Support development of GI planning workplans	Finalize & distribute	Member Agencies review & initial "specific" WP	TAC workshop	Member Agencies "specific" WP	Member agency approval process							
	c. Develop guidelines, standard specifications, and design details	Sample guidelines	Member Agency Review	TAC Mtg. & resolve comments		Draft guidelines & standards					Review w/ C/CAG		
	d. Develop model plan update materials	Draft model plan update materials			Review w/ C/CAG	Finalize draft model plan update materials			Member Agency Review		Review w/ C/CAG		
	e. Green Infrastructure Opportunities and Prioritization	Follow up data request	Prepare initial compilation of data and identify opportunities			Review initial data compilation and opportunities methodology w/ C/CAG and refine				Member Agency Review			
5.2	Support outreach efforts on GI planning												
5.6	Coordination with CCAG and BASMAA												
<b>9</b>	<b>Mercury and PCBs Load Reduction</b>												
9.3	Evaluate alternative PCBs load reduction allocation approach												
9.4	Develop, document, and implement an assessment/tracking methodology for mercury and PCBs load reduction												
9.6	Develop initial phase of a reasonable assurance analysis												
9.7	Develop a building demolition management program												
9.8	Develop an assessment methodology and data collection program to quantify PCBs loads reduced via the above program												
9.9	Coordination with CCAG and BASMAA												
<b>10</b>	<b>Stormwater Resource Planning</b>												
10.7	Assist with community participation process												
10.9	Prepare Stormwater Resource Plan												
10.10	Develop Proposition 1 Grant Application												
10.11	Coordination with CCAG and BASMAA												

## Budget

The proposed budget for the FY 2016-2017 scope of work is provided in the summary table below. The budget is broken down by tasks, subtasks, and billing rates consistent with the rates set in the on-call contract with C/CAG. The detailed budget is provided in a spreadsheet.

Task	Preliminary Budget Estimate for Scope of Work Fiscal Year 2016-17 (12 Months) (July 2016-June 2017)	LWA Sub-Total	Paradigm Sub-Total	CD+A Sub-Total	Total Task Cost <sup>1</sup>
<b>5</b>	<b>Green Infrastructure Planning</b>				
5.1	Develop coordinated approach for GI Plans	\$ 11,440	\$ 18,280	\$ 135,875	\$ 181,011
5.2	Support outreach efforts on GI planning	\$ 2,820	\$ -	\$ 7,087	\$ 10,616
5.6	<i>Coordination with CCAG and BASMAA</i>	\$ 24,340	\$ 6,000	\$ 6,289	\$ 37,858
<b>9</b>	<b>Mercury and PCBs Load Reduction</b>				
9.3	Evaluate alternative PCBs load reduction allocation approach	\$ 4,815	\$ 29,000	\$ -	\$ 36,715
9.4	Develop, document, and implement an assessment/tracking methodology for mercury and PCBs load reduction	\$ 4,815	\$ 16,200	\$ -	\$ 22,635
9.6	Develop initial phase of a reasonable assurance analysis	\$ 10,300	\$ 192,950	\$ -	\$ 222,545
9.7	Develop a building demolition management program	\$ 8,780	\$ -	\$ -	\$ 8,780
9.8	Develop assessment methodology and data collection to quantify PCBs loads reduced in bldg demo program	\$ 8,680	\$ 2,000	\$ -	\$ 10,880
9.9	<i>Coordination with CCAG and BASMAA</i>	\$ 21,520	\$ 6,000	\$ 5,782	\$ 34,481
<b>10</b>	<b>Stormwater Resource Planning</b>				
10.7	Assist with community participation process	\$ -	\$ 4,580	\$ -	\$ 5,038
10.9	Prepare Stormwater Resource Plan	\$ -	\$ 19,160	\$ -	\$ 21,076
10.10	Develop Proposition 1 Grant Application	\$ 22,430	\$ 1,600	\$ -	\$ 24,190
10.11	<i>Coordination with CCAG and BASMAA</i>	\$ 6,320	\$ 3,200	\$ 5,782	\$ 16,201
	<b>Totals</b>	\$ 126,260	\$ 298,970	\$ 160,817	\$ 632,025