Stormwater Workshop -
"Integrating Reasonable Assurance Analysis and Stormwater/Green Infrastructure Plans"

Sponsored by SF Bay Regional Water Quality Control Board and EPA Region 9 Water Division
1515 Clay Street, Oakland, CA
Room 1 (2nd Floor)

Wednesday Sept. 23, 2015
9am – 4pm

Agenda

Introduction Dave Smith (EPA Region 9) and Tom Mumley (SF Bay Water Board)
9am – 10 am

Module 1   Los Angeles ("Huub" Cox, City of LA and Steve Carter, Paradigm H2O)
10 – 10:45

Break – 15 min.

Module 2   Paso Robles (Dave LaCaro, City of Paso Robles and Nicole Beck, 2NDNATURE)
11:00 – 11:45

Lunch ~ 1 hr.   (not provided)

Module 3   San Diego (Drew Kleis, City of San Diego)
12:45 – 1:10

1:20 – 1:30   *Special Guest* – Los Angeles Water Board (Renee Purdy)

Module 4   Lake Tahoe (Peter Kraatz, Placer County and Chad Praul, Environ. Incentives)
1:30 – 2:15

Break – 15 min.

Module 5   San Mateo County (Matt Fabry, San Mateo Cty. and Lester McKee, SF Estuary Inst.)
2:30 – 3:15

Synthesis and Next Steps   Keith Lichten (SF Bay Water Board)
3:15 – 4 pm

Reasonable Assurance Workshop – Case study overview

Below is relevant background information about each case study to be presented at this workshop.

City of Los Angeles – County of Los Angeles MS4 Permit

The City of Los Angeles is one of 86 co-permittees regulated by the Los Angeles County MS4 permit, issued by Los Angeles Regional Water Board in 2012. The Phase I MS4 permit requires permittees to develop watershed management plans (WMPs) and implementing programs to describe stormwater control measures necessary to meet 33 TMDLs for numerous pollutants as well as current 303(d) listed pollutants not yet addressed by TMDL. The City of Los Angeles developed four Enhanced WMPs for its watersheds. For three of the watersheds, the Watershed Management Modeling System (WMMS) was created by Los Angeles County Flood Control District (LACFCD) for inland watersheds and coastal waters in the Los Angeles region. WMMS includes a combination of two models (LSPC[1] and SUSTAIN[2]) that simulate land use runoff, pollutant loading, and BMP processes and support BMP siting analysis. The model also includes an optional cost optimization component that provides cost-benefit analyses to support capital improvement planning by permittees. The City of Los Angeles has developed and submitted four Enhanced WMPs which evaluate storm water retention volumes along with pollutant load reductions and describe a general long term stormwater control plan to implement water quality-based permit requirements. The Enhanced WMPs are consistent with reasonable assurance analysis guidance provided by Los Angeles Water Board (and developed in discussion with stakeholders). The City uses multiple strategies for stormwater compliance, including green infrastructure, regional stormwater treatment facilities, retrofit of all its catch basins with trash screens and/or inserts, and low flow diversions to divert dry weather runoff away from the beaches and into the sewer system. Funded by a $500 million bond program that was overwhelmingly approved by the voters in 2004, the City has implemented over 30 green/blue infrastructure projects for stormwater capture, infiltration and reuse throughout the city.

City of Paso Robles – Statewide MS4 General Permit

The City of Paso Robles is enrolled in the California statewide Phase II Small MS4 general permit, which requires a stormwater Program Effectiveness Assessment and Improvement Plan (PEAIP). Amongst other things, the Plan must address "quantification of pollutant loads and pollutant load reductions achieved by the [stormwater] program as a whole." The Central Coast Regional Water Board Low Impact Development Initiative and the Central Coast municipal partners (including City of Paso Robles) are collaborating with 2NDNATURE, LLC to develop tools to maximize and track stormwater program effectiveness. The tools of the MS4 Support Project are intended to guide yearly prioritization of actions to restore hydrologic processes, reduce urban pollutant loading and facilitate simple and meaningful communication the effectiveness of those actions. In addition, the products generated will allow municipalities to meet a number Phase II MS4 permit requirements. This approach focuses on monitoring and modelling the urban landscape to derive accurate estimates on a relative scale of volume and pollutant load reductions resulting from stormwater management actions. The monitoring includes the inventory and assessment of relative structural BMP condition

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[1] LSPC = EPA's Loading Simulation Program C++ watershed model

[2] SUSTAIN = EPA's System for Urban Stormwater Treatment and Analysis INtegration model, based on EPA's SWMM model.

(i.e. maintenance urgency) over time using a BMP Rapid Assessment Methodology (BMP RAM). The modelling is conducted using a computationally refined urban hydrology and pollutant loading model - Tool to Estimate Load Reductions (TELR) - developed to estimate the relative expected benefits of the structural BMPs and other programmatic BMPs implemented within urban catchments. A number of simplifying, yet scientifically defensible, assumptions are used regarding the fate and transport of urban stormwater and associated particulates are made. The resulting products aim to successfully guide stormwater program managers in prioritizing where to implement the most cost-effective improvements and track the effectiveness of those improvements on a catchment scale. The approach is transparent and aims to put cost-effective tools directly into the hands of the stormwater managers and their staff. The final tools will be web-based, easy to use, comprehensive, data management systems that allows annual iteration of tasks, continually informing where limited resources would be best spent to manage stormwater as resource, communicating the estimated water quality benefits of actions implemented, and meeting ongoing stormwater permit requirements. These tools will be available to any municipality in late 2016.

San Diego County Regional MS4 permit - City of San Diego

The San Diego Regional MS4 permit (2015) covers 28 cities, County of San Diego, County of Orange, San Diego County Regional Airport Authority, and the San Diego Unified Port District, and is currently under amendment to add south Riverside County and associated cities. This Phase I MS4 requires development of Water Quality Improvement Plans (WQIPs) that specify actions necessary to implement relevant stormwater TMDL wasteload allocations (WLAs), while addressing other 303(d) impairments and priority water quality conditions. The City of San Diego Transportation and Storm Water Department, representing the largest and most populated City in the region, partnered with co-permttees to develop six WQIPs in the region (leading contracting of consultant teams for three WQIPs). The WQIPs were supported by development of a modeling system to provide reasonable assurance that management strategies result in attainment of goals to address water quality priorities, and included simulation of storm flows and pollutant concentrations from various land uses and evaluation of BMP options to reduce pollutant loads. The modeling system was based on a combination of two models, LSPC and SUSTAIN. The resulting WQIPs define a detailed strategy for implementation of nonstructural BMPs, green infrastructure, and regional treatment facilities, and provide essential information to begin more robust capital improvement planning and the pursuit of much needed funding. To support this planning process, management strategies proposed in the WQIP have been integrated within the City's Watershed Asset Management Plan to provide a comprehensive financial analysis of the City's stormwater planning needs.

Lake Tahoe MS4 permit - Placer County

The Lahontan Regional Water Board issued this Phase I MS4 permit in 2011 for the City of South Lake Tahoe, El Dorado and Placer Counties. The permittees were required to submit pollutant load reduction plans (by Sept. 2014) to meet urban stormwater wasteload allocations specified in the Lake Tahoe TMDL for fine sediment particles, total nitrogen, and total phosphorus. Plans were required to describe prioritized catchments and corresponding control measures, including a schedule and provisions for annual adaptive management reviews. As part of MS4 permit, the Lahontan Water Board and Nevada Dept. of Environmental Protection, developed the Lake Clarity Crediting Program (Crediting Program) that uses standardized tools and protocols to consistently and transparently estimate, account for, and report fine sediment load reductions achieved through the permittees' water quality improvement actions. The crediting program is based on, the Pollutant Load Reduction

Model (PLRM), a continuous simulation water quality model, that summarizes outputs as average annual runoff volumes and pollutant loads for each modeled scenario. Modeled scenarios may vary based on many user specified inputs that affect pollutant load generation and reductions, which can include variations in land use types and land use conditions, pollutant source controls, hydrologic source controls, and centralized storm water treatment BMPs. The PLRM allows for comparison of multiple alternatives against a baseline scenario to evaluate the potential load reductions achieved among the alternatives formulated. In March 2016, permittees will submit their first annual stormwater reports that will include quantitative load reduction estimates in accordance with the Crediting Program. Based on progress to date, State TMDL program managers anticipate these reports will confirm achievement of the first TMDL milestone, a ten percent reduction of fine sediment particles from each urban jurisdiction.

San Francisco Bay Municipal Regional MS4 permit - San Mateo County

In 2009, the San Francisco Regional Water Board issued the (Phase I) Municipal Regional Permit (MRP) for stormwater discharges from 76 co-permittees, including Alameda, Contra Costa, Santa Clara and San Mateo Counties. The MRP is currently being renewed and the Water Board anticipates adoption in November 2015. The MRP contains numeric compliance milestones for mercury, PCBs and trash. The MRP also requires permittees to develop green infrastructure plans to quantify and ensure pollutant load reductions in years 3-5 of the forthcoming permit term as well as subsequent decades (~through 2040). The City/County Association of Governments of San Mateo County (C/CAG), through its Countywide Water Pollution Prevention Program, is exploring the approach of planning multi-objective projects that will address regional transportation and stormwater quality planning requirements, with hopes to garner additional funding sources, improve local roadways and produce multiple benefits including reducing stormwater runoff volumes and related pollutants. One of C/CAG's member agencies, the City of San Mateo, has partnered with San Francisco Estuary Institute (SFEI) to develop and test Green Plan-IT modeling and planning tools to develop its GI plan as a complement to its Sustainable Streets Plan.

The GreenPlan-IT ToolKit is comprised of three modules: a GIS-based Site Locator Tool, a Modeling Tool, and an Optimization Tool. The Site Locator Tool works with ESRI Arc-GIS software to produce customizable, practical, and useful planning-level maps that identify and rank feasible locations to implement GI on public and private lands. Built on EPA's SWMM[3] model, the Modeling Tool is used to simulate current conditions and to estimate likely changes to flow and pollutant load generation in relation to green infrastructure scenarios. This coupled to the Optimization Tool allows the users to explore locations, types, and design configurations for GI that minimize the relative cost while satisfying water quality, flow and ground water infiltration goals set by the local community. During the development of the modeling and optimization tools, SFEI worked with the City of San Jose in support of their general plan (Envision San Jose 2040). In the next phase of work, SFEI will continue working with the City of San Jose to refine the water quality modeling and optimization components and use the model to run a continuous simulation to predict flow and load reductions in relation to implementation scenarios. In future, SFEI will develop a post-implementation tracking tool to input and track BMP location and performance.

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[3] SWMM = EPA's StormWater Management Model is a dynamic rainfall-runoff simulation model used for single event or long-term (continuous) simulation of runoff quantity and quality from primarily urban areas. It can be applied to runoff in non-urban areas too.