

Vision for Sustainable Stormwater Management

Vision:

Manage stormwater as a vital component of California's water resources in a sustainable manner, to support human and ecological needs, to protect water quality, and to enhance and restore our waterways

California Stormwater Quality Association

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Vision

Manage stormwater as a vital component of California's water resources in a sustainable manner, to support human and ecological needs, to protect water quality, and to enhance and restore our waterways.

Guiding Principles

The guiding principles to support this vision are:

Principle 1 : Sustainable stormwater management uses runoff as a resource, protects water quality and beneficial uses, and efficiently minimizes pollution.

Principle 2: Policies, regulations, guidance, training, and funding need to support sustainable stormwater management.

Principle 3: Public awareness, understanding, and appreciation of the value of stormwater is essential to sustainable stormwater management.

Purpose

This Vision for Sustainable Stormwater Management (Vision for Stormwater) was developed to address the primary issue for stormwater management: The lack of consensus on how best to meet the goals of the Clean Water Act for stormwater. CASQA developed this Vision for Stormwater for itself, its members, and the public to pursue a comprehensive plan for stormwater that will achieve the goals of the Clean Water Act and sustainable stormwater management.

Preface

The stormwater program is in its third decade of implementation by municipal separate storm sewer systems (MS4s). Permittees have made great strides to address the impact of stormwater on local receiving waters through focused outreach to the public and an increased knowledge base on effective pollutant prevention and removal strategies. MS4 permits have evolved substantially, generally building on the original approach framed by the U.S. Environmental Protection Agency (EPA) for the Phase I program. The approach described in current permits is to: 1) effectively prohibit non-stormwater discharges into MS4s and 2) reduce the discharge of pollutants from MS4s to the maximum extent practicable (MEP) through the implementation of best management practices (BMPs). MEP was designed as a flexible technology-based standard that would change over time to reflect evolving understanding of pollutant sources and BMPs. An additional requirement in permits is to comply with water quality standards, especially as implemented through total maximum daily loads (TMDLs).

The MEP approach has been applied by permittees to both the built environment during redevelopment and to new development, with varying levels of success. Programs for control of runoff from new development have been relatively successful. Permittees have used low impact development (LID) or green infrastructure and end of pipe treatment (gray infrastructure) to minimize the impact of development on water quality. Permittees have been less successful improving water quality from existing development. Traditional urban design principles resulted in a landscape that moves stormwater quickly off-site for conveyance to receiving waters. Permittees have found that retrofit of the stormwater system with LID measures and end of pipe treatments in the existing environment is costly, technically difficult, and requires time to plan and significant resources to fund the capital improvement projects. Permittees have also found that it is not technically feasible to retrofit all existing development with treatment BMPs and further, retrofitting is not the most environmentally and cost-effective approach for improving water quality.

Drivers for Change

There are several drivers necessitating change for the existing approaches to stormwater management. At the most basic level, the current program is failing to meet the goals of the Clean Water Act (CWA) within a timeframe deemed reasonable by the stakeholders. Drivers, which include both challenges and opportunities, are:

Challenges

- **303(d) listings.** More and improved monitoring has identified water bodies that are not meeting water quality standards. These water bodies are being listed as impaired under Section 303(d) of the CWA with pollutant-specific waste load allocations (WLAs) incorporated into municipal stormwater National Pollutant Discharge Elimination System (NPDES) permits. The number of 303(d) listed waters and the number of existing and proposed TMDLs are growing rapidly. The 2014-2016 303(d) list in California has 4,367 waterway-pollutant listings, up 783 listings or 22% from 2012. Adding more TMDL water bodies is ultimately unsustainable from both a regulatory and permittee (implementation) standpoint. There are far too many potential pollutants in the environment to address them on a pollutant-by-pollutant basis.
- **TMDLs and BMPs.** The TMDL regulations (CWA Sections 303(d – e); 40 CFR 130.7) were developed almost 20 years before EPA started to regulate stormwater; therefore the regulations are based on a wastewater model. Wastewater originates in a human-made, closed system (sinks, toilets, etc.) that is relatively controllable. Accordingly, the TMDL regulations are based on the presumption that a program of BMPs can achieve WLAs. On the other hand, stormwater originates from a natural, outdoor, and open system that is inherently highly variable and therefore much less predictable and controllable than wastewater. Stormwater permittees implementing TMDLs have discovered that, depending on the pollutant, best management practices are not 100% effective at preventing or removing the pollutant and for many stormwater pollutants, BMPs are essentially non-existent. So, the presumption that BMPs exist for stormwater, let alone are powerful enough to achieve WLAs, is highly questionable. And yet, most TMDLs

are written and adopted as if the presumption of BMPs is true for stormwater. Hence, the regulation of stormwater seems theoretical and out of touch with the technical reality of stormwater management.

- **Compliance with Water Quality Standards.** As currently regulated in MS4 permits, stormwater permittees must comply with water quality standards. This interpretation was supported by the Ninth Circuit Court of Appeals and State Water Resource Control Board WQ [Order 2015-0075](#), which have accelerated the need to identify a long-term solution to stormwater management that will support affordable compliance with numeric standards.
- **Regulations are Designed for Wastewater, not Stormwater.** Water quality objectives were initially developed to protect water bodies from the continuous and relatively homogenous discharges of wastewater. Like the TMDL regulations, the receiving water quality standards do not reflect the dynamic conditions found in stormwater discharges, or the intermittent nature of the discharges. As a result, stormwater programs struggle to attain the existing standards in Basin Plans as they provide limited value in defining standards for wet weather conditions. The public will not invest resources to correct “administrative” water quality problems when no actual beneficial use impairments exist, or the existence of the ‘impairment’ is due to natural sources. This problem tends to be particularly acute for recreation water quality standards, where regulation to protect swimmers is not a practical beneficial use during periods of high flows.
- **Program Funding.** Sufficient resources need to be dedicated to water quality. Most stormwater programs are funded through municipal general funds. The current funding structure presents a major challenge for elected officials as they must balance the funding of the stormwater program with other programs supported by the general fund, including such things as law enforcement, fire protection, and other essential services. Proposition 218¹ has proven a significant barrier for establishing local funding sources. Some communities have attempted and failed to pass local measures. However, there have been a few successes, with Measure W² in Los Angeles County serving as the most recent, and significant, success.

Opportunities

- **Stormwater as a Valuable Resource.** Recurring drought conditions in California have spotlighted the value of stormwater as part of the solution to providing a reliable and sustainable water supply. Stormwater needs to be addressed more as an important resource and less as a source of pollution.
- **Ascent of Source-Based BMPs.** As presented in Challenges above, BMPs are another area where the wastewater model is misleading if applied as-is to stormwater. First and foremost, the BMPs for wastewater are end-of-pipe treatment (e.g., primary, secondary) and improved BMPs tend to be more or higher levels of treatment (e.g., tertiary). On the other hand, the best management practices for stormwater tend to be those focused on the “sources” of stormwater pollution – flows and potential pollutants. Prevention can be accomplished by reducing either or both of the two parts, with Green Infrastructure and True Source Control providing two opportunities. Green Infrastructure and stormwater capture reduce the amount of stormwater and True Source Control reduces the amount of potential pollutants.
 - **Green Infrastructure:** EPA states “Green infrastructure is a cost-effective, resilient approach to managing wet weather impacts that provides many community benefits. While single-purpose gray stormwater infrastructure—conventional piped drainage and water treatment systems—is designed to move urban stormwater away from the built environment, green infrastructure reduces and treats stormwater at its source...” Green infrastructure slows runoff by dispersing it to vegetated areas, harvests and uses runoff, promotes infiltration and evapotranspiration, and uses bioretention and other green infrastructure practices to clean stormwater runoff.

¹ For more information, including a list of successful and unsuccessful attempts for stormwater funding efforts under Proposition 218 (through 2018), see: <https://www.casqa.org/resources/funding-resources/creating-stormwater-utility/proposition-218-proceeding>

² <http://safecleanwaterla.org/central-la-county/>

- **Stormwater Capture:** Stormwater capture is the intentional collection of urban runoff to augment surface water supplies, to recharge groundwater, or to support ecosystems. As noted by the State Water Resources Control Board (State Water Board) “The current drought has created additional pressure on the state to manage its water resources more effectively, as reflected by the goal in Governor Brown’s Executive Order B-29-15 to reduce statewide water use by 25 percent. Beyond drought response, storm water projects that provide multiple benefits, in addition to storm water capture and treatment, present opportunities for better buy-in by communities. For example, well-conceived storm water resource projects can provide additional public benefits including increased space for public recreation, increased tree canopy, and increased stream and riparian habitat area, resulting in an overall increased sense of ownership and pride in the natural infrastructure and community empowerment.”
- **True Source Control:** – “True Source Control” focuses on the original source of potential pollutants by eliminating or significantly reducing the existence of potential pollutants, thereby negating the need to prevent contact between potential pollutants and stormwater or to treat the pollutants out of stormwater. That focus is different than that of “Operational Source Controls”, which physically keep the potential pollutants from contacting rainfall and stormwater runoff through covering / containing, berming, or cleaning. That difference in focus between the current source and the original source is similar to the directional difference between compass north and true north. The use of the term “true” in defining one category of source controls is not a reflection on the appropriateness or effectiveness of the other category of source controls.

Collaboration and Partnerships

Other organizations have developed strategic documents that are complementary to the goals of CASQA’s Vision for Stormwater. As appropriate, CASQA will work to identify opportunities to support, collaborate, and build partnerships with the following efforts:

- **State Water Board’s Strategy to Optimize Resource Management of Stormwater (STORMS):** STORMS is a strategy-based initiative developed and managed by the State Water Board that is closely related to this Vision for Stormwater. The mission of STORMS is “to lead the evolution of stormwater management in California by advancing the perspective that stormwater is a valuable resource, supporting policies for collaborative watershed-level stormwater management and pollution prevention, removing obstacles to funding, developing resources, and integrating regulatory and non-regulatory interests.
- **The California Water Plan:** Originally released by the administration of Governor Brown in January 2014, the purpose of the initial California Water Action Plan was to provide a roadmap for the first five years of the state’s journey toward sustainable water management. As directed by California Water Code, the Department of Water Resources (DWR) publishes an update to the California Water Plan every five years that incorporates the latest information and science, serving as the comprehensive strategic plan for how water is managed throughout the state. In July 2019, DWR released the Final 2018 Update³ to the California Water Plan (Update 2018). Per DWR, Update 2018 presents a vision where all Californians benefit from such desirable conditions as reduced flood risk, more-reliable water supplies, reduced groundwater depletion, and greater habitat and species resiliency — all for a more sustainable future.
- **Water Environment Federation’s (WEF) *Rainfall to Results*:** The release of this report is the first action of the Water Environment Federation (WEF) Stormwater Institute. The institute and report are designed to help the stormwater sector address challenges by leveraging WEF’s leadership, diverse membership, breadth of knowledge, and varied partnerships. *Rainfall to results: The future of stormwater*, intends to support this effort by setting a vision for the future of sustainable stormwater management. Based on input

³ <https://water.ca.gov/Programs/California-Water-Plan/Update-2018>

from stormwater professionals, this report charts a path forward using broad objectives and specific actions for achieving a healthier water environment and more vibrant communities.

- **WEF Stormwater Institute**
 - **Strategic Plan Goals and Purpose:** This Stormwater Institute document provides a vision for stormwater, and a mission, critical objectives, and goals for the Institute to effect that vision. The critical objectives are: encourage innovation and best practices, secure tools and financing, build a strong community of professionals, and promote the linkage between stormwater management and water quality. The plan was adopted in early 2019 and is in implementation.
 - **Recommendations to Improve the Stormwater Program in the U.S.:** In association with WEF, the National Municipal Stormwater Alliance (NMSA) has produced this “ask” document to aid those advocating with Congressional representatives in the interest of stormwater, including legislative actions that could assist with stormwater program implementation. As stated in the document’s Summary: “This fact sheet outlines a long-term strategy to guide the stormwater program through the next 20 years. These strategies are reasonable and practical actions for Congress to enact. These recommendations address the fundamental issues of: reliable funding, infrastructure retrofit and maintenance and pollution source control as the next steps to achieve the goals of the Clean Water Act.”
- **California Council for Environmental and Economic Balance’s (CCEEB) *Optimizing Storm Water*:** CCEEB – an organization whose mission is to find environmental and economic balance – has issued the report “Optimizing Storm Water” to recommend a strategy for sustainable, multi-benefit storm water solutions and integrated approaches to California’s water supplies. The report’s six recommendations complement the State’s STORMS Program. CCEEB proposes that the State Water Board’s STORMS program be advanced in five-year increments, with input from scientific, economic, and legal experts, and a robust public process that incorporates lessons learned.

Vision Updates

CASQA’s Vision for Stormwater is meant to be implemented and not just a philosophy. Therefore, as implementation occurs, and the field of stormwater evolves, periodic updates will be necessary. CASQA will conduct an evaluation of the Vision every two years and make changes as needed. This process will keep the Vision current, incorporate new information, and allow each Chair of the Board of Directors to focus their two-year term on the most relevant actions needed to achieve the Vision.

Vision Implementation

As it is not feasible to simultaneously implement all of the efforts identified within this Vision for Stormwater, CASQA has developed a prioritization process. Priorities are established annually by the CASQA Board of Directors, focused on the most pressing needs of the organization and membership. Those priorities will drive the selection of projects for the coming year and allow CASQA to align resources with those most critical needs.

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Principle #1: Sustainable stormwater management uses runoff as a resource, protects water quality and beneficial uses, and efficiently minimizes pollution.

Stormwater is a resource, with social, economic, and ecological value and should be managed in a sustainable manner. Domestic water supply sources in California are strained, and stormwater will play an important role in maintaining a consistent and resilient domestic supply. Using, and reusing water within local watersheds will help maintain local water balance, reduce energy use, and avoid environmental impact to ground and surface waters. Stormwater programs must protect the environment and be cost-effective to implement. For each pollutant, there is a most cost-effective point of control. For many pollutants, the most cost-effective point of control will be at the source, before the pollutant contacts stormwater. For other pollutants, a combination of source controls, treatment controls, and regulatory approaches or beneficial use assessment may be needed.

Action 1.1: Promote Stormwater as a Resource

Goal: To implement guidance and recommendations for IRWMPs, GSPs, and similar efforts that integrates all of California's water resources to achieve optimum use while protecting the beneficial uses of receiving waters.

BACKGROUND⁴

The integrated regional water management plans (IRWMPs) have provided a partial answer to integrated water resource planning, but can be improved to include more information for stormwater to ensure that it supports the highest use of other water sources in urban areas. Implementation of guidance and recommendations is needed for the development of the stormwater portion of IRWMPs, to truly integrate stormwater with the other water resources in California, and to help agencies understand how stormwater will be used as a productive part of the state's water supply.

Similarly, the Sustainable Groundwater Management Act (SGMA)⁵ requirements and Groundwater Sustainability Plan (GSP) regulations present opportunities to coordinate stormwater and groundwater management. For example, under SGMA, Groundwater Sustainability Agencies, as they develop their GSPs, must address any surface and groundwater interaction or interconnection. Additionally, there may be other integrative efforts in which stormwater should be a more significant element and that would benefit from more information and guidance on stormwater.

⁴ Note: This action is closely related to Action 3.1 – Create opportunities for multiple agency and collaborative efforts to demonstrate the value of stormwater to the public. The actions share the subject of stormwater as a resource but they differ in their focus and audience. The focus of Action 1.1 is inward toward public agencies and the implementation of guidance for public agencies. The focus of Action 3.1 is outward toward the public and the publicity of projects and programs.

⁵ The legislative intent of the 2014 SGMA is for groundwater to be managed sustainably in California's groundwater basins by local public agencies and newly-formed groundwater sustainability agencies (GSAs). In the basins designated by DWR as medium and high priority, local public agencies and GSAs are required to develop and implement groundwater sustainability plans or alternatives to GSPs (Alternatives). Pursuant to Water Code Section 10733.2, DWR drafted and adopted emergency regulations in May 2016 for the evaluation of GSPs and Alternatives, the implementation of GSPs and Alternatives, and coordination agreements.

PROPOSED EFFORT

Objective 1. Integrate Stormwater as a Resource Into IRWMPs

Lead: CASQA

Support: Department of Water Resources; State Water Board

Anticipated Scope:

- Meet with State Water Board and DWR staff to discuss the goal of Action 1.1 and develop a problem statement as well as general steps for corrective action. Determine the most appropriate approach to guide the development of the stormwater portion of IRWMPs.
- Work with the State Water Board and DWR to identify (or develop as needed) a guide (model) for the integrated use of stormwater in California that will serve as a required reference document during the development of IRWMPs. The guide should address the following items:
 - Potential ways that stormwater capture and use can complement, rather than compete with, recycled and grey water use
 - Incentives for capture and use
 - Methods to encourage site based capture and use, including distributed green infrastructure and infiltration strategies in urban areas
 - A Water Rights definition for captured stormwater, either at the surface or after infiltration
 - Potential conflicts between uses (stormwater use, habitat protection, flood control) and proposed solutions for conflicts
 - Criteria for application of model guidelines to IRWMPs
 - Steps for integrated planning with other organizations and agencies
 - Required partners such as water agencies, etc.
 - Key findings of the STORMS Project 1a/1b report and recommended actions relevant to IRWMP guidance
- Work with the State Water Board and DWR to raise the standing (or finalize as needed) the guide (model) by adopting it as a required reference document. Develop an implementation plan, including scope of work, schedule, resources, and roles (including lead and support), and responsibilities.

Objective 2. Integrate Stormwater as a Resource into GSPs

Lead: CASQA

Support: Department of Water Resources; State Water Board

Anticipated Scope:

- Meet with State Water Board and DWR staff to discuss the goal of Action 1.1 and how stormwater agencies can play a significant role in the development of various GSPs⁶ (statewide and locally), and

⁶ Under SGMA, Section 10721. Definitions – Undesirable Results, (w) “Undesirable result” means one or more of the following effects caused by groundwater conditions occurring throughout the basin: (6) Depletions of interconnected surface water that has significant and unreasonable adverse impacts on beneficial uses of the surface water.

incorporate stormwater capture and recharge projects into those GSPs. Furthermore, identify actions to coordinate with those DWR and State Water Board divisions responsible for SGMA implementation.

Action 1.2: Identify Constraints and Opportunities for Maximizing Stormwater as a Resource

Goal: To identify existing constraints and opportunities to incentivize use of stormwater as a natural resource.

BACKGROUND

MS4 permit provisions and other regulatory requirements can result in unintended constraints on the use of stormwater as a resource. Additionally, as new regulations are developed in other areas, such as local site use or SGMA, consideration of stormwater as a resource is not always maximized or consistently incorporated. This action will demonstrate how local agencies can improve their use of stormwater. The goal of the STORMS Project 1a/1b *Enhancing Urban Runoff Capture and Use* (Office of Water Programs, 2018) is to “increase the incentives for stormwater capture and use by identifying and proposing solutions to common barriers .”

PROPOSED EFFORT

Objective 1. Identify Key Conflicts and Constraints for Projects that use Stormwater as a Resource

Lead: CASQA

Support: State Water Board

Anticipated Scope:

- Survey agencies and review recently adopted MS4 permits to identify key conflicts and constraints for identifying and implementing projects that use stormwater. Use the STORMS Project 1a/1b Report as a starting point to develop the survey. Meet with the State Water Board and DWR to discuss the findings.

Objective 2. Develop Recommendations for Future Regulations and Guidance to Support Stormwater as a Resource

Lead: CASQA

Support: State Water Board

Anticipated Scope:

- Based on the results of Objective 1, and the STORMS Project 1a/1b Report, develop recommendations for ways in which future regulations and guidance can more effectively support use of stormwater as a resource. Provide the State Water Board with ways to incentivize the use of stormwater as a resource and remove constraints that currently exist to support the State Water Board’s STORMS program.

SGMA Section 10727.2. Required Plan Elements (d) Components relating to the following, as applicable to the basin:

(4) How recharge areas identified in the plan substantially contribute to the replenishment of the basin.

(5) A description of surface water supply used or available for use for groundwater recharge or in lieu use.

SGMA Section 10727.4. Additional Plan Elements, a groundwater sustainability plan shall include, where appropriate and in collaboration with the appropriate local agencies, all of the following: (f) Activities implementing, opportunities for, and removing impediments to, conjunctive use or underground storage.

Objective 3. Establish a Statewide Policy Goal for Capturing Stormwater and Using it as a Resource

Lead: CASQA

Support: State Water Board

Anticipated Scope:

- Based on the results of Objective 2, work with the State Water Board and DWR to incorporate consideration of stormwater as a resource into development of new regulations and guidance where appropriate. Establish a statewide goal for capturing stormwater and using it as a resource.

Action 1.3: Provide Effective and Efficient Solutions through True Source Control

Goal: Develop a list of pollutants in stormwater that should most appropriately be controlled at the source (source control). Determine the commercial use of each pollutant, and outline a recommended source control approach.

BACKGROUND

A sustainable stormwater program will implement controls that are recognized as effective and economical. For example, it is difficult to remove nutrients from stormwater. Generally, the most effective point of control for this pollutant is at the source (e.g., application). The control of some pollutants in stormwater is beyond the direct control of the municipality. True source control⁷ and the use of alternative products and green chemistry⁸ may ultimately offer the most effective and economical approach to the elimination of many pollutants that impair beneficial use of waters. New legislation may be needed to implement this action.

Pesticides

Pesticides represent a special and specific challenge to municipal stormwater programs since they are licensed for use by the State and EPA, are present in concentrations too low to be practical to remove from stormwater but are commonly found in sufficient quantities to cause toxicity in receiving waters. They may also be synergistic in effect, combining to cause greater toxicity. Widespread toxicity due to urban-use diazinon and chlorpyrifos in urban water bodies was discovered in the mid 1990s. Toxic levels of other urban use pesticides, including pyrethroids, fipronil, and imidacloprid, continue to be found in urban runoff and receiving waters.

In response, CASQA as well as Water Board staff, have actively advocated for more effective, proactive regulation of pesticides by the California Department of Pesticide Regulation (DPR), and the EPA Office of Pesticide Programs (OPP). In the 2000s, DPR began to improve its capacity and procedures for protecting urban water quality, and currently has a much more robust and effective system for identifying, preventing, and mitigating pesticide impacts. Currently, the State Water Board is developing the Urban Pesticide Amendments (Amendments) to the Ocean Plan and Inland Surface Waters, Enclosed Bays, and Estuaries Plan. The Amendments project is one of the initial priorities of the State Water Board's STORMS strategic initiative (Project 6a - *Establish Statewide Framework for Urban Pesticide Reduction*). The Amendments are expected to help institutionalize DPR's more effective, proactive regulation of pesticides. Additionally, the Amendments are expected to include:

- Pesticide regulatory authority will be recognized statewide by State Water Board policy as critical for addressing pesticides in urban runoff. As stated in the STORMS fact sheet, "*The most effective way to reduce urban pesticide-related impairments now and into the future is source control through coordination with state and federal pesticide regulators.*"

⁷ True source control is the elimination of the pollutant at its source, as opposed to physically keeping the potential pollutant from contacting rainfall and stormwater runoff through covering / containing, berming, or cleaning (i.e., operational source control).

⁸ EPA defines green chemistry as, "the design of chemical products and processes that reduce or eliminate the generation of hazardous substances."

- A statewide regulatory framework for addressing urban pesticide impairments will be established that supplants the need for developing multiple watershed-specific TMDLs.
- A statewide monitoring framework will be established to better coordinate Water Board, DPR, and MS4 pesticide monitoring to utilize public resources more efficiently, satisfy Clean Water Act requirements, and support effective pesticide regulation.
- Consistent, reasonable requirements for MS4 implementation.

PROPOSED EFFORT

Objective 1. Identify and Prioritize Pollutants for Source Control Initiatives

Lead: CASQA

Support: TBD

Anticipated Scope:

- Assemble a scope of work for a technical report to identify pollutants in stormwater that impact local receiving waters. This effort will largely be a compendium of MS4 annual reports around the state. Assemble a technical advisory team to oversee the development of the technical report.
- Prepare a technical report per significant pollutant that describes the causes of receiving water impairment in urban areas, defines each pollutant and assesses the degree of pollutant control available to municipalities. As an example, each pollutant may be assessed according to the following categories:
 - Source characterization – sources, pathways (e.g., stormwater, air deposition), fate; relative amounts of pollutant / uncertainty per pathway
 - Whether removal is available through cost effective treatment controls
 - Whether true source control is feasible or cost effective
 - Whether a Green Chemistry approach is appropriate, and for what industry

The reports should identify partners for collaboration to implement the control for each of the categories defined above. The reports should also include a prioritized implementation plan.

Objective 2. Implement Prioritized Source Control Initiatives

Lead: CASQA

Support: State Water Board, DTSC, EPA, DPR

Anticipated Scope:

- Provide State Water Board with recommended actions to support true pollutant source control consistent with STORMS Project 6b. Work with the State Water Board, Department of Toxic Substances Control (DTSC), and other agencies to support development of partnerships and collaboration and other actions identified in the technical reports to support true pollutant source control. Work with EPA to implement true source control work through education and regulation.

Objective 3: Work with DPR to Control Toxicity in Receiving Waters from Pesticide Application

Lead: CASQA

Support: State Water Board, EPA, DPR

Anticipated Scope:

- Develop a regulatory system implemented by EPA OPP and California DPR to identify whether use of a pesticide poses a threat to water quality, and then restrict or disallow those uses proactively so that water quality impacts are avoided.
- Respond to the immediate need to participate in EPA pyrethroids, fipronil, and imidacloprid reviews (the only such opportunity for the next 15 years) and to support and encourage DPR steps toward expanded pyrethroids and new fipronil mitigation measures.
- Seek EPA risk mitigation for malathion and carbaryl in urban runoff and the continuation of traditional water quality risk assessments in tandem with Endangered Species Act (ESA) evaluations.
- Continue to leverage successes at the state level as a key stakeholder in the development of statewide Water Quality Control Plan Amendments for urban pesticides reduction.

Principle #2: Policies, regulations, guidance, training, and funding need to support sustainable stormwater management

There is a fundamental flaw in the current approach to improving water quality – municipalities have limited control over the generation and release of pollutants into the environment and a limited number of cost-effective tools to improve runoff water quality. The new outcome-based permit strategies developed by the Water Boards will require increased accountability of the permittee, but the current technical and legal constraints will limit improvements in receiving water quality. Stormwater program managers need regulatory assistance along with new source control and treatment control tools to comply with permit requirements.

To achieve sustainable stormwater management, a re-examination of regulatory and management structures is warranted. Regulations must support the use of adaptive management and alternative control approaches. The public will support programs that address demonstrated water quality issues. These efforts will require collaboration among agencies and industries to affect the biggest change for the lowest cost, as well as modification to regulatory requirements to accommodate beneficial uses of receiving waters that are deemed essential.

Action 2.1: Define Stormwater as a Non-Point Source

Goal: Propose rulemaking or legislation that clarifies stormwater as a non-point source, and clearly outlines expectations of stormwater as different from wastewater and other point sources.

BACKGROUND

Stormwater is legally defined as a point source and is addressed through a point source regulatory program (i.e., the NPDES program). In reality, stormwater is a non-point source (diffuse in nature). Some of the compliance issues that MS4s are facing can be traced to the application of the current regulatory model, which is based on 30+ years of experience with point sources (e.g., wastewater), with limited acknowledgement for the non-point source nature of stormwater (e.g., MEP and BMP concepts). Court cases have stipulated that stormwater is a point source and subject to the NPDES program, therefore the only option available to modify this interpretation is to clarify through rulemakings, or amend the Clean Water Act to refine the regulatory approach to better support the non-point source nature of stormwater pollution.

This change requires a significant undertaking and discussions with all interested parties to develop a broad-based consensus of how best to clarify regulations to reduce pollution in stormwater and improve the cost efficiency of stormwater programs.

PROPOSED EFFORT

Objective 1. Develop a Strategy to Address Stormwater as a Non-Point Source

Lead: NMSA; WEF; NAFSMA; National League of Cities; National Association of Counties; EPA
Support: CASQA

Anticipated Scope:

- Confer with national stormwater organizations (e.g., NMSA, WEF, National Association of Flood and Stormwater Management Agencies (NAFSMA), National Association of Clean Water Agencies (NACWA), Natural Resources Defense Council (NRDC)) to explore ideas about rulemaking or legislation that would redefine stormwater as a non-point source of pollutants, or change how stormwater is permitted as a point source. Develop a consensus strategy with interested stakeholders to accomplish this objective.

Objective 2. Educate State and National Organizations and Elected Officials

Lead: CASQA

Support: NMSA; WEF; NAFSMA; National League of Cities; National Association of Counties; EPA

Anticipated Scope:

- Reach out to state and national governmental organizations (e.g., League of California Cities (LCC), California State Association of Counties (CSAC), County Associations of Government) to educate local and state elected officials on the issue. Coordinate with EPA and NGOs.

Objective 3. Implement the Strategy to Define Stormwater as a Non-Point Source

Lead: TBD (Based on the strategy)

Support: TBD (Based on the strategy)

Anticipated Scope:

- TBD, based on the strategy developed under Objective 1

Action 2.2: Identify and Address Stormwater Program Priorities

Goal: Ensure the most critical water quality issues associated with stormwater are identified and corresponding strategies developed to address the issues.

BACKGROUND

Municipalities face many challenges in developing and implementing an effective and sustainable stormwater program. Such challenges may be regulatory, technical, or financial in nature. It is important to identify the water quality priorities that municipalities can best address so that resources are allocated accordingly. The first step in crafting a long-term sustainable approach to stormwater management is to identify the challenges and then to identify strategies to address these challenges. The State Water Board can help provide guidance / policy to address critical water quality issues associated with stormwater. For example, the State Water Board is currently addressing trash through amendments to the Water Quality Control Plans for the Ocean Waters and the Inland Surface Waters, Enclosed Bays, and Estuaries of California and has initiated efforts to develop a bacteria initiative relevant to wet weather conditions. Similar efforts are also underway for biological objectives. The State Water Board also developed and is running the STORMS program that will help prioritize the State's actions.

PROPOSED EFFORT**Objective 1: Identify the Highest Priority Water Quality Issues for Stormwater**

Lead: CASQA

Support: TBD

Anticipated Scope:

- Develop a methodology to identify the highest priority water quality issues for stormwater. This methodology will be an approach that can be implemented in future years, as needed. In considering water quality priorities, both current needs (existing challenges), as well as opportunities to mitigate future issues, will be included in the methodology. As this effort will inform CASQA's prioritization process, the methodology will also include considerations such as timeframes (how long a strategy would take to implement), likelihood of success, and associated resource needs (ballpark estimates).

- Periodically repeat this exercise to ensure stormwater is focused on the highest priority water quality issues.

Objective 2: Identify Strategies to Address Highest Priority Water Quality Issues for Stormwater

Lead: CASQA

Support: TBD

Anticipated Scope:

- Applying the methodology under Objective 1, identify the strategies for each priority. Such strategies may include developing consistent permit requirements, modifying Basin Plans, and providing guidance to support technical and regulatory issues.
- Periodically repeat this exercise to ensure stormwater is focused on the highest priority water quality issues.
- Capture the priorities, and the associated strategies, within the next update of CASQA's Vision for Stormwater (identify additional objectives for Vision Action 2.2 that clearly identifies those issues and the associated strategies; evaluate and modify other aspects of CASQA's Vision, as needed, to incorporate additional strategies).

Objective 3: Communicate Highest Priority Water Quality Issues for Stormwater

Lead: CASQA

Support: TBD

Anticipated Scope:

- Engage stakeholders, regulators, and other partners and communicate the highest priority water quality issues for stormwater. Identify partnership opportunities where stormwater shares priorities with others (e.g., wastewater, NGOs, etc.).
- Participate in the Regional Water Boards' Triennial Reviews, or similar efforts, to identify the highest priority water quality issues for stormwater.

Action 2.3: Modify / Develop Water Quality Standards to Address Wet Weather (Stormwater) Conditions

Goal: Ensure all water quality standards are based on and reflect sustainable beneficial uses and the nature and impact of stormwater.

BACKGROUND

Many implementation concerns for permitted stormwater agencies arise due to application of water quality objectives developed primarily based on continuous flow data during dry weather conditions (e.g. wastewater discharges) which are then applied to wet weather without guidance or consideration for implementation. Issues include:

- Consideration of exposure periods for toxic pollutants
- Consideration of the beneficial use impacts during and after storm events as distinct from dry weather conditions
- Program of implementation required to meet standards during wet weather

Porter Cologne (Section 13240) provides an opportunity for the Regional Water Boards to periodically review their Basin Plans to ensure the plans reflect the newest information and data, are current with State and Federal policies, and support the priorities of the Regional Water Board. Basin Plans were primarily developed in the 1970s and 1980s and as a result have limited consideration of wet weather issues. This action will review adopted water quality objectives and beneficial uses (i.e., water quality standards) to ensure they are applicable for wet weather conditions. Some Regional Water Boards have started to address this concern. This action will be designed to support those efforts.

PROPOSED EFFORT

Objective 1. Incorporate Seasonality Into New Objective Development

Lead: CASQA
Support: TBD

Anticipated Scope:

- Develop a fact sheet with regulatory and technical justification for considering seasonal objectives during development of new policies and objectives.
- Educate representatives to various regulatory Stakeholder Advisory Groups (SAGs) on key points regarding seasonality to make during participation in objective development.
- Meet with State Water Board staff to discuss building wet weather into considerations of regulation development:
 - Request that State Water Board make consideration of the seasonal application of objectives a conscious part of their objective development process.
 - Focus on requirements for 13241 and 13242 analysis of implementation requirements separately.
- Look at STORMS projects and identify which ones the CASQA representatives should recommend consideration of wet weather specific strategies and develop key points and recommend as part of implementation committee

Objective 2: Assess Water Quality Standards Per California Water Code Section 13241

Lead: CASQA
Support: TBD

Anticipated Scope:

- Working with the State Water Board, develop an assessment method reflective of wet weather conditions that would address the following factors to support a Basin Plan amendment:
 - §13241(a): past, present, and probable future beneficial uses of water.
 - Further guidance by the State is needed to assist Regional Water Boards in defining “existing” and “probable” uses as this factor is one of the more difficult factors to evaluate.
 - §13241(b): environmental characteristics of the hydrographic unit under consideration, including the quality of water available thereto.
 - §13241(c): water quality conditions that could reasonably be achieved through the coordinated control of all factors that affect water quality in the area.

- §13241(d): economic considerations.
 - Further guidance by the State is needed as there is significant disagreement between permittees and environmental community regarding the method used to comply with this section. The need for further guidance has also been identified by other organizations (e.g., Little Hoover Commission, CCEEB).
- §13241(e): the need for developing housing within the region.
- §13241(f): the need to develop and use recycled water.

Objective 3: Develop an implementation program consistent with California Water Code Section 13242

Lead: CASQA

Support: TBD

Anticipated Scope:

- Develop an implementation program consistent with California Water Code Section 13242 to support revised water quality standards including a schedule and monitoring program. Working with the State Water Board, develop a framework for defining the implementation program required to support the revised water quality standards.

Objective 4. Amend Basin Plans For Wet Weather Conditions

Lead: CASQA

Support: TBD

Anticipated Scope:

- Based on Objectives 2 – 3, during triennial reviews, provide input and data to support the reconsideration of water quality standards including assessment of current beneficial uses and application of water quality objectives during wet weather conditions.

Action 2.4: Develop Permitting Policies / Framework Focused on Sustainable Stormwater Management

Goal: Develop a regulatory framework for stormwater that will provide statewide consistency in permitting and TMDL implementation and support the implementation of sustainable stormwater programs. Provide definitions and requirements as needed to clarify expectations for MS4 programs. Develop process for implementing watershed based approaches for the MS4 program. Ensure that the framework is implemented statewide.

BACKGROUND

What constitutes a stormwater program has evolved considerably since the stormwater regulations were promulgated in November 1990. In the almost 30 years since, stormwater programs have changed from relatively basic programs focused on stormwater quality to relatively comprehensive and complicated programs addressing everything from Areas of Special Biological Significance to watershed management. Despite the evolution of what constitutes a stormwater program, the regulations have not changed and although the permits have gotten longer and more complex, they are still essentially based on the Part I and Part II permit application requirements from the 1990 regulations.

The National Research Council noted the greatest potential improvement to EPA's stormwater program would be to convert to a watershed based permitting system. The Little Hoover Commission in California has also recommended

the State emphasize a watershed-based approach. Recent MS4 permits in California (e.g., Los Angeles countywide and San Diego countywide) have reflected a focus on watersheds.

EPA regulations, policies, and guidance provide the opportunity to address water quality issues through an adaptive management and sustainable process. For example, EPA adopted a strategy to support the adoption of green infrastructure as a means of supporting water quality and community development goals. These actions will provide policy guidance to assist MS4 and other permittees with an overall approach to protect water quality through an adaptive management process. This guidance may be provided in a statewide stormwater policy, standard permit conditions, or equivalent document.

PROPOSED EFFORT

Objective 1: Identify Recommended Permitting Approaches

Lead: State Water Board; Regional Water Boards

Support: CASQA

Anticipated Scope:

- Use the recommendations from the December 2017 EPA-sponsored Municipal Stormwater Permit Evolution workshop to confer with interested parties to identify the constraints and inconsistencies as well as benefits and challenges of existing policy and permitting efforts. Prioritize the challenges for subsequent attention in Objective 2.

Objective 2: Define MEP, RWL Compliance, and TMDL Implementation

Lead: State Water Board; Regional Water Boards

Support: CASQA

Anticipated Scope:

- Based on the results of Objective 1, refine this scope as needed. Anticipated scope includes the following:
 - Define MEP and RWL compliance and TMDL implementation. Stipulate the mandatory requirements for stormwater program implementation to define MEP using the work already completed by CASQA, State Water Board executive management, Regional Water Boards Executive Officers, and EPA Region IX stormwater staff from the Statewide Stormwater Permit Design Review (2011-2012). Likewise, develop an adaptive management approach for TMDL development and implementation and compliance with receiving water limitations. Define any additional priorities identified in Objective 1, and develop a scope(s) and schedule(s) to address in subsequent objectives.

Objective 3: Define Baseline Monitoring Requirements

Lead: State Water Board; Regional Water Boards

Support: CASQA

Anticipated Scope:

- Define baseline monitoring requirements. Use the recommendations from the second of two EPA-sponsored Municipal Stormwater Permit Evolution workshops (March 2018) and follow-up to convene stakeholders to clarify purpose of the monitoring effort, to clarify standard monitoring methods and procedures, and establish mandatory reporting requirements and format.

Objective 4: Define Adaptive Management Principles

Lead: State Water Board; Regional Water Boards

Support: CASQA

Anticipated Scope:

- Define adaptive management principles as a pathway for compliance with water quality standards and TMDLs. Adaptive management is as much art as science and the process and form it takes can vary from situation to situation. Develop case studies of adaptive management. Case studies improve our understanding of adaptive management by showcasing the ways the process may be used and the results it can generate. This approach would also include the need to provide options for reviewing and modifying TMDLs based on new information, technology, monitoring results, etc.

Objective 5: Establish Watershed-Based or Equivalent Program Option

Lead: CASQA

Support: State Water Board; Regional Water Boards

Anticipated Scope:

- Assess efforts in Los Angeles, Bay Area, and San Diego to identify the benefits, the challenges, and any recommended changes.
- Work with the State Water Board to incorporate watershed based planning as an option into all MS4 permits. The permits should highlight the need to prioritize watershed based water quality issues and encourage implementation of stormwater programs at the watershed level. Review and incorporate the EPA's Integrated Planning Framework into permits.
- Create opportunities for regional solutions. Initial stormwater permits discouraged regional solutions to water quality issues but more recently this approach has been updated and regional approaches are allowed. The State Water Board should be encouraged to find ways to incentivize regional solutions as part of the State's STORMS program. Incorporate recommendations from EPA-sponsored Municipal Stormwater Permit Evolution workshops (December 2017).
- Create a pollutant trading / credit program framework. Water quality trading is an innovative approach to achieve water quality goals more efficiently and is especially suited for projects and programs that are watershed based and subject to a TMDL. A pilot project should be identified and implemented.

Objective 6: Develop a Statewide Policy for Stormwater

Lead: State Water Board; Regional Water Boards

Support: CASQA

Anticipated Scope:

- The policy should support an approach that incorporates adaptive management, provides a logical and progressive pathway to water quality protection and promotes green infrastructure. As such, the approach should progress from a narrative definition of technology-based effluent limits (TBELs) to numeric based technology based effluent limits to narrative water quality-based effluent limits (WQBELs) and ultimately, if required, numeric WQBELs. The policy should also include the results of Objective 2, Objective 3, Objective 4, and Objective 5.
- Once developed, ensure the policy is implemented statewide.

Action 2.5: Enable Funding for Stormwater Programs

Goal: Assist with use of one or more funding options for municipalities to support their stormwater programs to reduce or eliminate reliance on general funds. In the near-term, identify short-term solutions to provide funding. In the long-term, identify a permanent solution that will support sustainable stormwater programs.

BACKGROUND

Municipal stormwater systems are public facilities, but they differ from other public utilities such as water, sewer, gas, electric, and trash in one key aspect: other utilities existed prior to the passage of Proposition 218 and are financially supported by service fees. By comparison, most stormwater programs rely on the public agency's general fund. This funding structure presents a major challenge for elected officials as they must balance the funding of the stormwater program with other programs supported by the general fund, including such things as law enforcement, fire, paramedics, parks, street lighting, and libraries. Funding stormwater does not sell itself. So, permittees must be able to clearly communicate the need and consequences of inaction to the public, so that resources for stormwater programs can be prioritized along with other social programs funded by local and state governments.

The stormwater sector has not historically invested in public education for stormwater, defining what it is, what its beneficial uses are, what impacts its beneficial uses, and what is needed to protect and improve stormwater quality. Stormwater protection programs are chronically underfunded, in part due to a lack of public support. The public must understand the problems with stormwater quality, the benefits of improving stormwater quality, and the costs to complete these actions.

To address this challenge, NMSA, in association with the American Society of Civil Engineers (ASCE), has been working to create a new category on the ASCE Infrastructure Report Card (IRC) for stormwater. The IRC is published every four years at both the state and national level. A stormwater category on the report card would be an effective way to educate the public on the environmental and fiscal challenges of the sector. The IRC provides letter grades (from A, being the best, to F, being the worst) for selected categories of America's infrastructure. The IRC is the definitive assessment of the condition of the nation's infrastructure. The ASCE Infrastructure Report Card committee recently voted to include Stormwater as an independent category on the national IRC due out in 2021.

Addressing Proposition 218

Proposition 218 (1996) requires local voter approval of certain property-related fees. The imposition or increase of a property related fee or charge must be approved by a majority vote of the property owners subject to the fee or charge or, at the option of the agency imposing the fee or charge, by a 2/3 vote of the electorate residing in the area affected by the fee or charge. Proposition 218 exempts certain types of fees, such as those for water, sewer, and refuse, from the voter approval requirements of Proposition 218.

Recent legislation has clarified the standing of stormwater within Proposition 218 and the accompanying Omnibus Implementation Act of 1997, including relative to the water and sewer exemptions. The passage of AB 2403 (2014) provides an option under the water exemption for funding the capital portion of projects that conserve or use stormwater for water supply. Similarly, the passage of SB 231 (2017) provides the same option under the sewer exemption for projects that benefit sewer services. To-date, the option created by AB 2403 has not been used by a MS4 to raise stormwater fees but CASQA expects the passage of SB 231 to encourage MS4s to do so.

The use of either option is expected to be closely watched by interest groups in preparation for bringing one or more lawsuits to try to restrict or reverse the interpretation of the legislation. As a result, the SB 231 Implementation Working Group, a coalition expected to include the legislator's office, the sponsors of the legislation, LCC, CSAC, environmental NGOs, and others are developing a strategy to try to ensure that agencies use the options appropriately and avoid engendering lawsuits that could set legal precedents unfavorable to the needs of stormwater

programs. To implement this action, CASQA will work closely with the coalition and CASQA members to help ensure that all MS4s are aware, understand, and follow the strategy.

California Stormwater Authority

Another aspect to establishing funding is to provide a means for agencies to combine their funds for projects and programs that are bigger than any one agency. Over the last 25 years the State Water Board and CASQA have partnered on several statewide projects and programs to assist stormwater permittees (e.g., BMP Handbooks, Construction General Permit Qualified SWPPP Developer (QSD)/Qualified SWPPP Practitioner (QSP) training program, Industrial General Permit Qualified Industrial Stormwater Practitioner (QISP) Training Program). However, restrictions and barriers to collecting, combining, or receiving funds from agencies to conduct statewide programs and projects through CASQA as a non-profit organization or through a third-party agency acting as CASQA's fiduciary agent make these approaches difficult, inefficient, and often infeasible. A Joint Powers Authority (JPA) is a public agency and as such, under State policies, the State as well as local agencies would be able to fund programs and projects through a JPA more easily and efficiently. The California Stormwater Authority was formed in 2018 to fill this purpose.

Funding Information Online

There have been many sources of information on stormwater funding, however given the constraints and opportunities that are unique to California, the development of one location for stormwater permittees to identify and evaluate opportunities for stormwater funding in California was identified as a significant need to be addressed, which CASQA did by creating the [Funding Resources](#) website in 2019. The website functions as the primary location for information on funding opportunities in California and provides an opportunity for stormwater project proponents to evaluate multiple benefits of proposed projects and identify funding sources associated with multiple benefits. The website links to the EPA water financing website and serves as the primary repository of information related to CASQA stormwater funding initiatives, including the CASQA funding white papers developed as part of the LID Barriers Grant. Going forward, a key element of the funding website will be maintenance. CASQA will need to determine if the State Water Board can contribute resources so the website can be maintained.

Funding for Sustainable Streets

Sustainable Street projects are projects that include both active transportation improvements and green infrastructure, and that are maintained in a state of good repair. Sustainable Streets are important to stormwater compliance, due to the water quality impacts of vehicles, the fact that stormwater runoff from adjacent properties is often routed to roadways, and the integration of storm drain systems into streets and roads. However, the funding of Sustainable Streets projects has proven challenging, due to the tendency for various funding programs to focus only on one or a few of the multiple benefits provided by Sustainable Streets. It may be possible to achieve economies of scale by combining investments in reducing water pollutant loads and greenhouse gas emissions with funding for active transportation, pavement rehabilitation, and water grants to fully fund Sustainable Streets projects. To that end, EPA Region 9 funded a grant project that was used to convene meetings of representatives from federal, state, regional, and local agencies to produce a roadmap⁹ of specific actions for funding Sustainable Streets. The proposed efforts below are drawn from that roadmap.

⁹ *Draft Roadmap of Funding Solutions for Sustainable Streets*, Urban Greening Bay Area Initiative, Bay Area Stormwater Management Agencies Association, 2017

PROPOSED EFFORT**Objective 1. Promote SB 231 and AB 2304 as Viable Means of Addressing Prop 218**

Lead: SB 231 Working Group

Support: CASQA

Anticipated Scope:

- Participate in SB 231 Implementation Working Group and the planning and development of the strategy. Encourage MS4s interested in raising stormwater fees to join the Working Group and to conduct their efforts consistent with the strategy.
- Develop and disseminate information regarding the strategy and its implementation.

Objective 2. Support the California Stormwater Authority

Lead: CASQA

Support: State Water Board, Alameda County Flood Control & Water Conservation District, Fresno Metropolitan Flood Control District

Anticipated Scope:

- Assist with finishing the establishment of the JPA, including further defining the size and composition of the Board of Directors and developing policies and procedures for funding solicitation, collection, management, and accounting and project solicitation, selection, and management.
- Assist with securing funding and implementation of first JPA project, including identification of likely funding and candidate projects.

Objective 3: Maintain the CASQA Funding Resources Website

Lead: CASQA

Support: State Water Board, TBD

Anticipated Scope:

- Develop a scope (tasks, budget, and schedule) for curating the website and for sustaining that curation indefinitely.
- Solicit and secure long-term resources to implement the scope.

Objective 4. Support Funding for Sustainable Streets

Lead: State Water Board (Prop 1 Update)
California Transportation Commission (Green Infrastructure eligibility)
CASQA (Project packaging guidance)

Support: CASQA (Prop 1 Update)
CASQA (Green Infrastructure eligibility)
Grantor agencies (Project packaging guidance)

Anticipated Scope:

- Update Proposition 1 Stormwater Grant Guidance. During the comment period for the development of the Proposition 1 Storm Water Grant Program Guidelines – Amended for Round 2¹⁰, provide guidance on how to demonstrate the eligibility of transportation elements, including pervious paving and active transportation and transit improvements that reduce greenhouse gases (Roadmap Specific Action 1.3).
- Clarify green infrastructure eligibility in the local streets and roads program. As guidelines are developed in accordance with SB 1 (2017) clarify the eligibility of green infrastructure elements in pavement rehabilitation and other applicable projects (Roadmap Specific Action 1.4).
- Prepare guidance for packaging projects. Prepare statewide guidance on how to package Sustainable Streets projects for specific grants (Roadmap Specific Action 2.4).

Action 2.6: Determine the Cost of Compliance for Stormwater Programs

Goal: Identify or develop a system for collecting and analyzing information on needs and costs of compliance for stormwater permittees (construction, industrial, and municipal), and implement it in California.

BACKGROUND

An MS4's defining characteristic is that it is an open system, wherein flows are determined by the amount of precipitation and inputs into the system are open and accessible on every street and property. Discharges (stormwater and other flows) into an MS4 represent the diversity of activities and behaviors conducted by humans and other species from the surrounding watershed and the airshed. To address such an open system, regulations, permits, and programs have been developed that match its scope. Accordingly, the scope of a municipal stormwater program cuts across all departments and professional disciplines. Most stormwater programs do not have a dedicated fee or assessment and are funded out of an agency's general fund. Additionally, many of the activities of a stormwater program are conducted as part of other existing municipal services (e.g., street sweeping, catch basin cleaning). Finally, the size of the agencies implementing the program range from populations of 10,000¹¹ to more than 10 million.

All of these factors – diffuse pollution sources (including cross media, sources), broad scope, multiple departments and budgets, integrated tasks, wide range of agencies – make determining the needs and costs of the stormwater program an accounting challenge within any one agency. Between agencies, differences in program design and organization make it difficult to combine information from multiple agencies into a larger, consistent database from which to report average results without significant variability. Without a reliable accounting of funding and funding needs, it is difficult to identify funding to fill the gaps.

At the national scale, there are several attempts to gather information on needs and costs:

- **EPA Clean Watersheds Needs Survey (CWNS)** - In partnership with states, territories and the District of Columbia, EPA conducts the CWNS every four years. Congress requires EPA to conduct the CWNS under sections 205(a) and 516 of the CWA (33 U.S Code §1375). The CWNS is a comprehensive assessment of the capital costs (or needs) to meet the water quality goals of the CWA and address water quality and water quality related public health concerns. Every four years, the states and EPA collect information about:

¹⁰ https://www.waterboards.ca.gov/water_issues/programs/grants_loans/swgp/prop1/

¹¹ Although the lower population threshold for Phase II Stormwater Program is 10,000, many municipalities with populations less than 10,000 are required to implement stormwater programs. This is the case in heavily urbanized areas where smaller municipalities are contiguous with larger municipalities, or they are part of regional programs, or the Water Boards designated population areas based on density or water quality concerns.

- Publicly owned wastewater collection and treatment facilities
- Stormwater and combined sewer overflow control facilities
- Non-point source pollution control projects
- Decentralized wastewater management

EPA collects information about these facilities and projects including:

- Estimated needs to address water quality or water quality related public health problems.
- Location and contact information for facilities and projects.
- Facility populations served, flow, effluent, and unit process information.
- Non-point source pollution control best management practices.

EPA documents national and state needs in a Report to Congress used by Congress and state legislatures in their budgeting efforts. The data are also used to:

- Help measure environmental progress
 - Contribute to academic research
 - Provide information to the public
 - Help local and state governments implement water quality programs
- **WEF Needs Assessment Survey of MS4s** - WEF's Stormwater Institute is developing a national needs assessment of MS4s. The national survey will determine where potential program theme gaps may occur, identify opportunities to share lessons among peers, and provide a catalyst for developing new programs to meet the stormwater challenge. The MS4 survey was conducted in early 2018. The Stormwater Institute will work with partners to implement indicated improvements to both enhance existing programs and develop new tools to help the municipal sector meet their permit requirements and community water quality goals.

PROPOSED EFFORT

Objective 1. Identify Cost of Compliance for Municipal Stormwater Permittees

Lead: State Water Board (STORMS)
Support: CASQA

Anticipated Scope:

- This Objective could be achieved through STORMS
- Research the EPA and WEF surveys and determine the extent to which they address municipal stormwater in California. Identify any gaps.
- Dependent on the results and recommendations from Objective 1, develop and conduct a survey for MS4s in California, and analyze the results.
- Determine the management questions and utility of conducting the surveys on some regular basis.

Objective 2. Identify Cost of Compliance for Construction Stormwater Permittees

Lead: CASQA
Support: State Water Board, EPA, WEF

Anticipated Scope:

- This Objective could be achieved through STORMS
- Develop and conduct a survey for construction stormwater permittees in California, and analyze the results.
- Determine the management questions and utility of conducting the surveys on some regular basis.

Objective 3. Identify Cost of Compliance for Industrial Stormwater Permittees

Lead: CASQA

Support: State Water Board, EPA, WEF

Anticipated Scope:

- This Objective could be achieved through STORMS
- Develop and conduct a survey for industrial stormwater permittees in California, and analyze the results.
- Determine the management questions and utility of conducting the surveys on some regular basis.

Principle #3: Public awareness, understanding, and appreciation of the value of stormwater is essential to sustainable stormwater management.

Stormwater agencies need to educate the public about the value of water. Although domestic water is relatively inexpensive and abundant in the U.S, the recurring drought and population increases have begun to strain the storage and delivery infrastructure in California and the southwest. Management of water resources in California must change. To make the necessary changes, there must be public support.

Action 3.1: Communicate the Value of Stormwater to the Public

Goal: Elevate public awareness, understanding, and appreciation of the value of stormwater in California.

BACKGROUND

Public support is needed, from funding local stormwater programs to ensuring the successful implementation of multi-benefit projects, public support is vital. In order to gain that support, public awareness, understanding, and appreciation of the value of stormwater is necessary.

Objective 1: Develop a Strategy to Communicate the Value of Stormwater to the Public

Lead: CASQA
Support: TBD

Anticipated Scope:

- Develop a strategy that outlines the steps needed to be taken to elevate public awareness, understanding, and appreciation of the value of stormwater in California. Clarify the issues needed to be addressed “Who? What? When? Where? How, and Why’s?” and develop messaging.
- Upon CASQA BOD review and approval of the strategy, develop detailed action plans to elevate public awareness, understanding, and appreciation of the value of stormwater in California. Action plans may need to use a phased approach.

Objective 2: Implement the Strategy to Communicate the Value of Stormwater to the Public

Lead: CASQA
Support: TBD

Anticipated Scope:

- Implement the strategy, based upon the results of Objective 1

Action 3.2: Create Opportunities for Multiple Agency and Collaborative Efforts to Demonstrate the Value of Stormwater to the Public

Goal: Establish and define a basic set of multi-benefit projects and programs that a stakeholder agency can initiate.

BACKGROUND

The public is more likely to support infrastructure projects that are multi-objective and multi-benefit as compared to single-purpose projects. The potential number of funding sources is greater for multi-objective projects. Multi-objective projects are more complex owing to disparate funding sources, and the requirements of various public

agencies. However, multi-objective projects have additional benefits as compared to single use projects, and generally will have a comparatively higher return on investment for the public. An example would be a green street project that is also a complete street to enhance mobility, or a green street with a safe routes to schools project. Note: This action is closely related to Action 1.1 – Develop guidance for integrated management of water resources that promotes stormwater as a resource. The actions share the subject of stormwater as a resource but they differ in their focus and audience. The focus of Action 3.1 is outward toward the public and the publicity of projects and programs. The focus of Action 1.1 is inward toward public agencies and the production of guidance for public agencies.

PROPOSED EFFORT

Objective 1. Identify Stakeholder Agencies

Lead: CASQA
Support: TBD

Anticipated Scope:

- Potential candidate projects and programs to consider:
 - Water Supply
 - Groundwater Recharge
 - Recreational Facilities
 - Transportation
 - Municipal Infrastructure
- Identify funding sources that each agency uses for capital improvements, programs, maintenance, and land acquisition and the limitations on the use of those funds.

Objective 2. Identify Candidate Project

Lead: CASQA
Support: TBD

Anticipated Scope:

- Identify at least one multi-benefit project type or program that includes two or more agencies listed in Objective 1 that can be implemented by municipalities or other stakeholders. Create or document demonstration projects that can be implemented by permittees statewide. For each multi-benefit project or program, develop a detailed 'road map' or model manual for the project describing:
 - Approval processes
 - Funding sources and limitations
 - Benefits of project
 - Preferred application environment
 - Idealized schedule
- Multi-benefit projects should focus on urban infrastructure and include the following:
 - Transform existing flood control facilities to optimize use of stormwater
 - Daylighting of streams
 - Volume and flow reduction – hydromodification controls
 - Protect or restore stream habitat
 - Converting standard streets to Sustainable Streets

Objective 3. Publish Report

Lead: CASQA
Support: TBD

Anticipated Scope:

- Publish a report based on the findings of this action with completed project scenarios.

Objective 4. Track Plans for STORMS Project 2a.

Lead: CASQA
Support: TBD

Anticipated Scope:

- Increase Stakeholder Collaboration to Promote Stormwater as a Resource, and depending on the circumstances, scope out a task(s) to coordinate with, support, or help implement STORMS Project 2a.