



2020-2021 ANNUAL REPORT



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Introduction to the SMC

The Southern California Stormwater Monitoring Coalition (SMC) is a partnership of 16 stormwater management agencies working to develop solutions to regional challenges in stormwater management. Since its founding in 2001, the SMC has been pooling its members' resources and expertise to collaboratively conceptualize, develop and fund stormwater research and monitoring initiatives across coastal southern California. This collaborative approach to stormwater management has influenced the development of NPDES permits, 303(d) listings and TMDLs, watershed plans, and stormwater monitoring designs.

SMC mission statement

To solve stormwater management challenges across southern California by building regional consensus around best-in-class tools, methods and monitoring strategies

SMC member agencies

The SMC's 16 member agencies represent the region's largest stormwater management agencies and the regulatory agencies that oversee them. Indirectly, SMC member agencies represent many additional co-permittees.

Stormwater regulated agencies

- City of Los Angeles Watershed Protection Division
- City of Long Beach
- City of San Diego
- Orange County Public Works
- San Diego County Watershed Protection Program
- San Bernardino County Flood Control District
- Los Angeles County Flood Control District
- Riverside County Flood Control and Water Conservation District
- Ventura County Watershed Protection District
- State of California Department of Transportation (Caltrans)

Stormwater regulatory agencies

- Los Angeles Regional Water Quality Control Board
- San Diego Regional Water Quality Control Board
- Santa Ana Regional Water Quality Control Board
- California State Water Resources Control Board
- (*collaborating organization*) U.S. Environmental Protection Agency Office of Research and Development

Non-regulatory/R&D

- Southern California Coastal Water Research Project (SCCWRP)



A field crew for the SMC's Regional Watershed Monitoring Program collects data at a stream site in the Santa Monica Mountains. The cyclical stream monitoring program enables SMC member agencies to generate comparable data sets that paint a rich, encompassing portrait of regional ecosystem health.

The SMC was founded in **2001** when a group of local stormwater management agencies decided they could more effectively pursue their stormwater management priorities by working together. SMC member agencies come from both the regulated and regulatory sectors.

Through a cooperative agreement known as the **SMC Master Agreement**, the SMC's 16 agencies come together to investigate stormwater mechanisms and receiving-water impacts on a regional scale, as well as solutions for improving and protecting watershed health.

SMC projects are funded via a **co-funding model**, where SMC member agencies voluntarily pay for just the work that the Steering Committee has agreed to fund for the fiscal year. This co-funding model enables SMC member agencies to directly select which projects they fund.

SMC Progress Report

The SMC invests in high-quality science and engineering research to build a strong technical foundation upon which to optimize the effectiveness of stormwater management practices in coastal southern California. All of the SMC's work is guided by three main goals. The SMC uses multiple indicators to quantify its progress toward achieving these goals.

Fostering cooperation and collaboration

SMC Goal #1

Foster cooperation and collaboration among SMC member agencies to advance regional stormwater management

Progress Indicators

- » **47** external organizations that have partnered with the SMC on research and monitoring over the past five years
- » **9 out of 10** SMC projects over the past five years that were done in collaboration with partners external to the SMC
- » **67:1** projected average cost-leveraging ratio for each SMC member agency when all SMC 2019-2024 Research Agenda projects are completed

Advancing scientific knowledge

SMC Goal #2

Advance and expand understanding of the science and engineering behind stormwater management

Progress Indicators

- » **4 out of 5** SMC projects completed on time and on budget over the past five years
- » **5 out of 5** SMC projects over the past five years whose findings have been published in technical reports and/or peer-reviewed scientific literature

Improving management practices

SMC Goal #3

Use SMC research and monitoring data to improve stormwater management practices across southern California

Progress Indicators

- » **71%** of SMC member agencies that report that the SMC's work over the past five years has positively influenced at least one decision or action within their agency
- » **50%** of SMC member agencies that say that at least one SMC project completed over the past five years has been used to develop or update a stormwater regulatory program that directly involved their own agency



A 10-member panel of independent technical experts meets at SCCWRP in 2019 to collaboratively develop the SMC's 2019-2024 Research Agenda, a forward-looking document that lays out SMC research priorities over a five-year period. The SMC Research Agenda serves as a roadmap and a guide that helps the SMC decide which research projects to prioritize and fund over the coming five years.

Chair's Message



Rebekah Guill

This Annual Report marks the celebration of 20 successful years as a consortium of southern California stormwater agency members. The SMC has come a long way since its beginning in 2001, and our 2020-2021 Annual Report is a perfect reflection of just how much the SMC has accomplished and how far we have come through the efforts of our regional collaboration. This

year's Annual Report has been completely redesigned by the active efforts of the SMC to better reflect and highlight our successes as an organization.

The new format of the Annual Report is part of an ongoing SMC initiative to reimagine how and what the SMC communicates. A few years ago, we invested in a plan to help update, modernize and expand the SMC's communications efforts. As part of this effort, the SMC has been working collaboratively with its members to implement the communication plan, which includes a revamped SMC website, www.socalsmc.org, as well as periodic email newsletters. The newsletters allow us to better communicate project status, products, and initiatives.

It is important to note that the old format Annual Report was primarily a reference document that stormwater dischargers submitted as part of their annual regulatory compliance obligations. The new Annual Report is an opportunity to showcase why the SMC exists and to demonstrate that what we do matters to the SMC's 16 member agencies, as well as to the broader community of co-permittees and other stakeholders that the SMC serves.

The new Annual Report consists of a brief overview of the SMC's current portfolio of research projects, followed by a feature article that chronicles the influence that the SMC's work has had on stormwater management decision-making and actions in southern California. The report ends with the inclusion of the previously published

SMC newsletter articles and lists of the many individuals and organizations that have contributed to the SMC's success.

I'm grateful for the opportunity given to me by the SMC to oversee the modernization of communications initiatives for the SMC. I am particularly proud of the current serving members of the SMC Steering Committee who, despite the difficulties faced during the COVID-19 pandemic, continued keeping their attention on the SMC efforts, working to clearly define our priorities for the coming year and finalizing our first strategic plan. Over the past year, we all worked together to modernize the SMC's mission and vision statements to more appropriately fit where we want to go as an organization, as well as developed clear, long-term organizational goals and performance metrics that guide all of the SMC's work. I am honored to work alongside Southern California's leading municipal and regulatory stormwater experts as we celebrate 20 years of dedication and ingenuity that exists through the SMC.

I hope you enjoy the new format of this Annual Report, and I would love to receive your feedback.

Best Regards,

Rebekah Guill

Chair, SMC Steering Committee

Senior Flood Control Planner, Riverside County Flood Control and Water Conservation District

SMC Project Portfolio

An overview of ongoing, planned and recently completed SMC projects

		SMC 2019-2024 Research Agenda (view)					
		2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025
2019-2024 Projects	Human Fecal Indicators and Health Risk (Research Agenda Project 2.4)		ACCOMPLISHMENTS » Established technical workgroup » Developed project workplan	PLANNED » Identify and test candidate indicators of human and non-human contamination	PLANNED » Measure pathogens in human sources	PLANNED » Develop health risk estimates » Final report	
	BMP Regional Monitoring (Research Agenda Project 3.4)		ACCOMPLISHMENTS » Established technical workgroup » Identified monitoring questions	PLANNED » Develop study design » Establish field technical support team	PLANNED » Develop repository for field monitoring data	PLANNED » Conduct pilot regional survey » Final report	PLANNED » Implement regional BMP monitoring network
	Chemistry Laboratory Intercalibration (Research Agenda Project 6.5)		ACCOMPLISHMENTS » Held kickoff meeting » Adopted 3-year schedule and scoring criteria	PLANNED » First round (TSS, nutrients, metals, chlorinated hydrocarbons, pyrethroids)	PLANNED » Second round (to include polycyclic aromatic hydrocarbons)	PLANNED » Third round (to include polycyclic aromatic hydrocarbons)	PLANNED » Revise guidance manual
	Streamlining Annual Reporting (Research Agenda Project 4.2)		ACCOMPLISHMENT » Created focus group » Reviewed existing reporting practices	PLANNED » Identify key metrics for assessing compliance	PLANNED » Create data platform template » Pilot test new web interface	PLANNED » Final report and recommendation for new reporting format	
	Effectiveness of Non-Structural BMPs (Research Agenda Project 3.5)			PLANNED » Review existing data » Identify gaps/recommended directed research » Develop workplan(s)			
Ongoing initiatives	SMC Regional Watershed Monitoring Program	ACCOMPLISHMENTS » Completed second monitoring cycle (2014-2019) » Published 2018-2019 Report on the SMC Regional Stream Survey	ACCOMPLISHMENTS » Developed Workplan 1.0 for third monitoring cycle (2021-2025) » Initiated field sampling				PLANNED » Complete third monitoring cycle » Publish final report
	Communications Plan	ACCOMPLISHMENT » Developed implementation workplan	ACCOMPLISHMENTS » Adopted updated mission, vision, and goals/metrics » Updated SMC website and published 3 newsletter issues	ACCOMPLISHMENT » Revamp SMC 2020-2021 Annual Report (this document)	PLANNED » Develop additional communications capacity		

SMC Project Descriptions

Human Health Indicators and Health Risk

Existing regulatory thresholds designed to protect body-contact recreation in southern California focus on fecal indicator bacteria – primarily enterococci and *E. coli*, which may not be relevant to actual health risk for multiple reasons. More recently, numerous alternative indicators of fecal pollution, including human-specific indicators, have been developed. To effectively protect public health, stormwater managers need to better understand the relationship between these newer indicators of fecal pollution in southern California recreational waters and the degrees of human health risk that they correlate to. Then, prediction of human health risk from a given level of existing or new indicators can be achieved by using risk assessment models such as quantitative microbial risk assessment (QMRA).

This project will identify and evaluate indicators that can be used to reliably and accurately assess human health risk posed by fecal contamination during wet weather, paving the way for stormwater managers to answer the fundamental question of “how much of these indicators is too much” from the perspective of protecting beach recreational beneficial uses. This project will also provide identification of potential indicators; test indicators from human sources and non-sources; measurement of pathogens in human sources; and the development of health risk estimates using QMRA.

BMP Regional Monitoring

Thousands of BMPs have been installed across southern California, and thousands more will be installed over the next 20 years for regulatory compliance, even as little is known about their long-term performance for improving water quality and managing runoff. Despite the growing investment in BMPs, there is a dearth of field data documenting BMP performance for water quality treatment, hydromodification mitigation, operations and maintenance requirements, and other potential benefits. This project will develop a regional BMP monitoring program to generate robust, statistically relevant data sets covering a range of BMP types, serving multiple land uses, across a spectrum of operating conditions. These data will be used to improve BMP selection guidance, streamline annual reporting, develop cost-effective asset management programs, and support Reasonable Assurance Analysis and Alternative Compliance. In

addition, this project will inventory existing and planned structural BMPs, create a study design, establish a field technical support team; revise or expand California BMP database and/or SMC Data Portal as repository for field monitoring data; and conduct a pilot regional survey to test the monitoring program.

Chemistry Laboratory Intercalibration

As part of the SMC’s Model Monitoring Program, 11 analytical laboratories previously completed two intercalibration studies to assess interlaboratory variability and enhance comparability for chemical analysis of runoff samples for SMC member agencies. The intercalibration and resulting guidelines/protocols were documented in a Laboratory Guidance Manual for SMC member agency laboratories and supported with draft contract language for member agencies. The Laboratory Guidance Manual and intercalibration efforts, however, were incomplete in two respects, necessitating a follow-up study that will intercalibrate on additional constituents. The original laboratory intercalibrations focused on suspended solids (TSS), nutrients, trace metals, and organic constituents such as chlorinated hydrocarbons (CHC) and pyrethroid pesticides. This round of studies will also include the above constituents and other organic constituents, including organophosphorus pesticides (OP) and polycyclic aromatic hydrocarbons (PAH), that were not part of the original intercalibrations. This follow-up intercalibration also will provide an opportunity to repeat the intercalibration – which needs to be done periodically anyway – and to involve new laboratories and new personnel that were not part of the previous intercalibrations.

Streamlining Annual Reporting

Although SMC member agencies spend hundreds to thousands of person-hours each year to produce “annual reports” as a compliance requirement, there is little guidance for reporting these compliance requirements. As a result, annual reports are difficult to read and understand, are almost always comprised of non-machine-readable data, and rarely get used beyond their one-time specific application. Both regulated and regulatory agencies are left with a feeling of wasted effort, incomplete outcomes, and lost opportunities to glean more information and insight. Because both regulated and regulatory agencies are members of the SMC, they will work together to dramatically streamline guidance for

annual reporting, focusing on performance metrics that provide the key information for decision-making and that facilitate the reports' production using an automated, seamless, and transparent process. This project will accomplish three objectives: 1) identify key metrics that are the essence of program effectiveness, 2) create a data platform for incorporating the data necessary to track and calculate the key metrics, and 3) generate a user interface for quickly and efficiently automating the Annual Report.

Effectiveness of Non-Structural BMPs

The efficacy of non-structural stormwater BMPs can vary widely and is difficult to accurately quantify, even as all SMC members rely on non-structural BMPs as a first option for pollutant removal. Non-structural BMPs consist of programmatic activities, such as street sweeping or public education, as well as source control (e.g., plastic bag bans). Virtually no quantitative effectiveness data exist for some non-structural BMPs, and even where data may exist, they may not be from southern California. More reliable and quantitative information for these programs will provide greater confidence in predicting their effectiveness in improving the health of receiving water bodies, which has the potential to reduce dependence on typically more costly structural BMPs. This project, scheduled to be initiated in 2021, will create a comprehensive set of recommendations and associated workplan(s) for implementing research to quantify the contributions of non-structural BMPs to water quality improvements. This recommended workplan will also prioritize subsequent SMC research projects on non-structural BMPs, document challenges and benefits of each research project, and estimate project costs and schedule.

SMC Regional Watershed Monitoring Program

Comprising more than 7,000 stream-kilometers, southern California's coastal watersheds are diverse, ecologically and economically important habitats. Despite devoting extensive local resources to monitoring their condition, SMC member agencies historically could not draw conclusions about overall regional health until the 2009 establishment of the cyclical SMC Regional Watershed Monitoring Program. In addition to providing critical contextual information for interpreting all other stream monitoring in the region, the SMC regional monitoring program produces data that support numerous local watershed management programs and that inform development of statewide policy. The program also serves

to promote data quality and comparability and consistency in field and laboratory data collection efforts. The third cycle of SMC regional monitoring is scheduled to be completed in 2024.

Communications Plan

As the SMC was approaching its 20th anniversary in 2021, the SMC recognized it had grown and matured to a point where it needed to develop a strategic communications vision and action plan for more effectively and consistently publicizing SMC goals, progress and accomplishments. The resulting Communications Plan is the SMC's first formal plan for maximizing the effectiveness and reach of SMC communications among both internal and external audiences. The plan's goals are to get executive management and co-permittees more invested in the SMC, improve the Steering Committee onboarding process (including continuity during transitions), and bring new project partners into the SMC fold. Through the Communications Plan, the SMC has updated its mission and vision statements, developed and reported on strategic goals and organizational performance metrics, introduced a quarterly newsletter and written orientation guide for new Steering Committee members, and revamped existing communications products, including the website and Annual Report.

Assessing the SMC’s effectiveness in influencing management

The SMC directly polls its member agencies to understand the SMC’s reach and influence within their own organizations

The SMC was founded in 2001 with a simple premise: That the SMC’s member agencies could more expediently answer pressing regional questions about stormwater management by pooling their resources and working together to conduct research and monitoring.

Twenty years later, the SMC’s co-funding model is working: SMC member agencies have collectively conceptualized, developed and overseen \$17.8 million in research and monitoring initiatives.

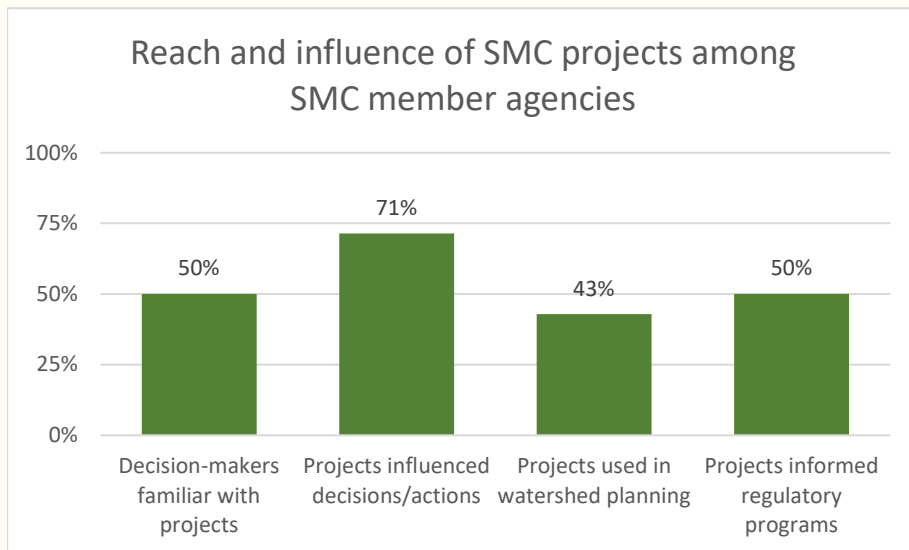
The best litmus test of the SMC’s effectiveness, however, isn’t the number of projects completed or funds spent. The SMC’s bottom-line effectiveness is rooted in its ability to positively influence the thought processes, decisions and actions of southern California’s stormwater management community – particularly the 16 agencies that make up the SMC.

To assess the SMC’s effectiveness in influencing management, the SMC surveyed its own member agencies at the end of fiscal year 2020-2021, asking multiple, multi-faceted questions designed to understand at a granular level if and/or precisely how the SMC’s technical accomplishments have

SMC MEMBER AGENCY SURVEY

Tangible influence on management thought processes and decision-making

SMC member agencies say the SMC’s work is reaching and influencing relevant decision-makers within their organizations



» **50%** of SMC member agencies report that decision-makers in their agency are generally familiar with SMC projects that have the potential to directly influence their thought processes, decisions and actions.

» **71%** of SMC member agencies can point to at least one SMC project in the past five years that influenced decisions or actions by their agency.

» **43%** of SMC member agencies can point to at least one SMC project in the past five years that was used in the development of (or as part of an update to) one or more watershed management plans that directly involve their agency.

» **50%** of SMC member agencies can point to at least one SMC project in the past five years that helped inform the development of or an update to stormwater regulatory programs, including NPDES permits, TMDLs and 303(d) listings.

positively influenced its member agencies over the past five years.

SMC member agencies were asked to provide information about:

» whether decision-makers in their agency have been briefed on the

projects that the SMC has undertaken in recent years

» if and how decision-makers within SMC member agencies have changed their thought processes or actions as a result of SMC projects

» if and how SMC projects have influenced management planning and development of regulatory programs

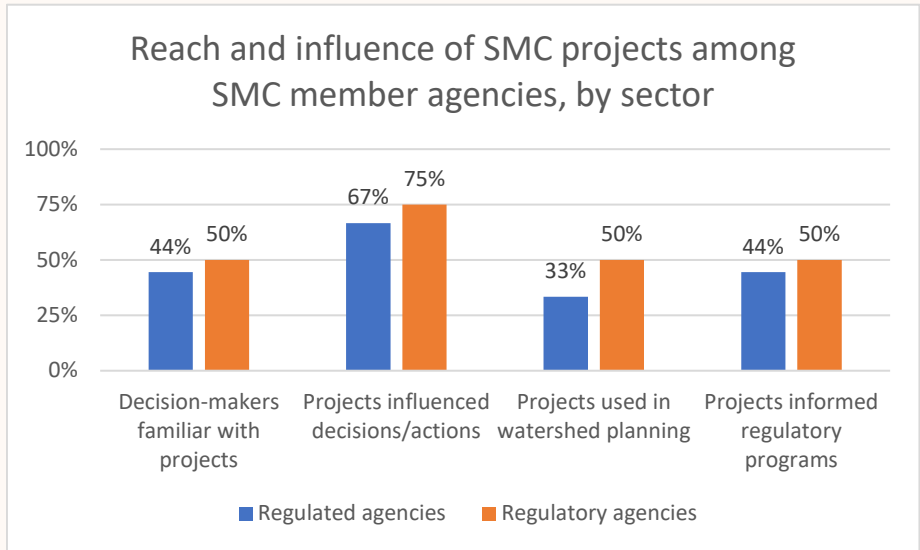
The survey results show that the SMC’s work is having a direct, measurable impact on stormwater management in southern California. SMC member agencies say that the SMC is positively influencing thought processes and actions of the decision-makers within their organizations.

Moreover, the SMC’s influence on management is broad, encompassing and cross-cutting, with the SMC’s influence extending to both the SMC’s stormwater regulated member agencies and regulatory member agencies.

That said, the survey results also show that not every SMC member agency is realizing the benefits of every SMC project among decision-makers within their own agency. Thus, the SMC Steering Committee is now armed with the hard data it needs to hold meaningful, ongoing conversations about the limitations of the SMC’s reach and influence – and what actions the SMC might take to boost that influence going forward.

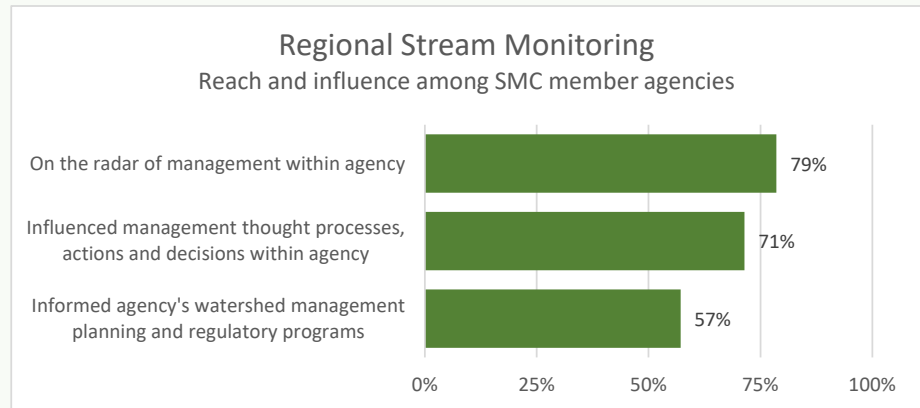
Cross-cutting reach and influence of the SMC’s work

Both regulated and regulatory agencies say the SMC is positively impacting their organizations



Measurable impacts from individual SMC initiatives

SMC member agencies say that individual SMC projects are having management influence; below are project-specific survey results for one of the SMC’s signature initiatives



New SMC 5-year Research Agenda underscores the commitment to collaborative, regional stormwater research projects



A vegetated swale that abuts the shoreline in Long Beach filters and removes stormwater contaminants, helping to protect beach water quality. The SMC's new 2019-2024 Research Agenda reinforces the coalition's commitment to helping managers overcome pressing regional stormwater monitoring and stormwater management challenges.

The Southern California Stormwater Monitoring Coalition (SMC) has renewed its commitment to solving regional stormwater management challenges collaboratively with the development of a comprehensive, five-year research agenda.

The [2019-2024 Research Agenda](#) is being used by the SMC to prioritize, design and execute regional stormwater research projects that the SMC's 15 member agencies have collectively agreed to fund. The new research agenda builds off the SMC's [previous five-year agenda](#).

The Research Agenda spans 24 priority research projects that are organized into six thematic areas:

- 1. Microbiology and Human Health Risk**
- 2. BMP Monitoring, Implementation and Effectiveness**
- 3. Innovative Technology and Science Communication**

4. [Expanding the Utility of Biomonitoring](#)
5. [Improving Stormwater Monitoring Effectiveness](#)
6. [Emerging Challenges](#)

New projects

The SMC Steering Committee has unanimously approved [initiating four new projects](#) for fiscal year 2020-2021 from the new five-year Research Agenda:

- [Human Fecal Indicators and Health Risk \(Project 2.4\)](#)
- [BMP Regional Monitoring \(Project 3.4\)](#)
- [Streamlined Annual Reporting \(Project 4.2\)](#)
- [Laboratory Intercalibration \(Project 6.5\)](#)

Since its inception in 2001, the SMC has funded nearly 30 research projects valued at \$17 million. Half of that effort has come from in-kind resources from non-SMC member agencies, underscoring the value of a collaborative, regional approach to stormwater research and monitoring. SMC projects have, among other things, influenced the development of NPDES permits, 303(d) listings and TMDLs, watershed plans and monitoring designs.

Dive deeper

- Read more about the [4 priority research projects](#) the SMC initiated in 2020-2021
- Access the full [2019-2024 SMC Research Agenda](#) online
- Learn about the independent [expert panel convened by the SMC](#) to develop the 2019-2024 Research Agenda
- View the new [SMC Master Agreement](#) that reauthorizes this regional collaboration

Originally published in the SMC Summer 2020 Newsletter

SMC CLEAN project helps bring regional consistency, standardization to LID implementation



Bioretention systems, such as this one at the Riverside County Flood Control and Watershed Protection District, are a ubiquitous type of LID/green infrastructure in southern California designed to improve runoff water quality. The SMC has developed region-specific guidance to help managers optimize the implementation of their bioretention and biofilter systems.

The SMC has developed a new comprehensive guidance manual and accompanying video training modules to bring consistency and standardization to the construction, maintenance, inspection and monitoring of two common types of Low-Impact Development (LID) and green infrastructure systems across southern California.

The SMC CLEAN project (SMC California LID Evaluation and Analysis Network) provides guidance to stormwater managers on the practical considerations, nuances and best practices they should keep in mind when implementing bioretention and biofiltration systems in southern California. The guidance manuals and video training modules are [available publicly online](#).

The five-year SMC CLEAN project, which was completed in September 2020, also updated the SMC's [LID Manual for Southern California](#), a region-specific guidance manual that promotes best-practices LID implementation.

The SMC CLEAN project is intended to address gaps in region-specific guidance on how to optimize the performance of bioretention and biofiltration systems. Stormwater program managers historically have not had access to practical guidance that goes beyond the design phase for LID and green infrastructure, which has often led to inconsistent implementation across southern California. The standardization provided by SMC CLEAN will help stormwater managers extract relevant, comparable insights and statistics from regional LID and green infrastructure monitoring data sets.

LID and green infrastructure are commonly implemented stormwater management strategies for improving and protecting runoff water quality. LID and green infrastructure also have other

benefits, including supporting groundwater recharge and restoring hydrologic flows to more natural conditions.

Stormwater managers can use the SMC CLEAN guidance manuals and accompanying videos to improve standardization and consistency of LID and green infrastructure implementation in a number of ways, including how they:

- Design these systems to address site-specific concerns
- Oversee the construction of these systems to ensure proper implementation
- Create tracking and maintenance schedules for these systems
- Optimally design monitoring programs to measure system performance
- Diagnose the reasons behind system underperformance or failure
- Conduct modeling analyses to understand long-term performance of these systems

The SMC CLEAN project also includes a [mobile-friendly web application](#) to help managers figure out how to collect the critical data and information they need to oversee the installation and ongoing operation and maintenance of bioretention and biofiltration systems. The app offers a suggested template for data collection, enabling managers to design more effective monitoring programs for evaluating long-term performance effectiveness.

Dive deeper

- [How the CLEAN project advances long-term BMP management goals](#)
- [The many partners that contributed to the CLEAN project's success](#)
- [Access the guidance manual and accompanying video training modules on the SMC CLEAN project page](#)
- [Read the full SMC CLEAN final project report](#) and [report addendum](#)

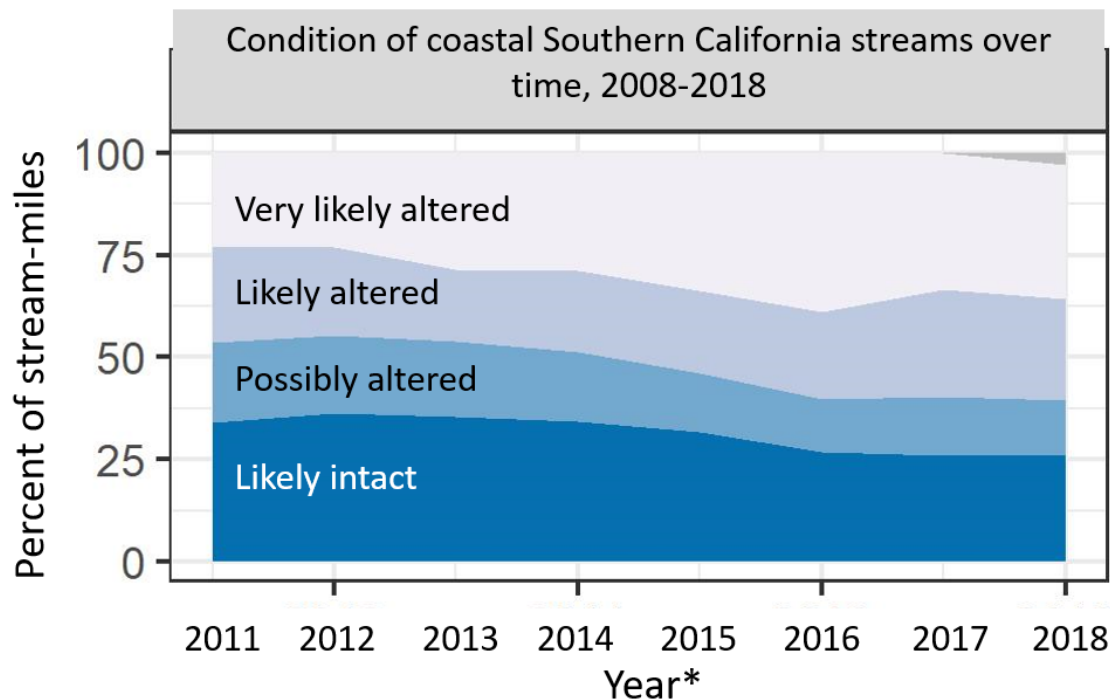
Originally published in the SMC Winter 2021 Newsletter

First decade of SMC regional bioassessment program generates key insights about stream condition

The SMC has built a spatially representative, regional data set reflecting the biological condition of streams across coastal southern California over the past decade – an important milestone for the SMC Regional Watershed Monitoring Program that underscores the value of investing in a long-term monitoring collaboration.

A recent analysis of 10 years of bioassessment data from the SMC Regional Watershed Monitoring Program found that the biological integrity of most wadeable streams across coastal southern California has generally been stable over a decade-long span that ended in 2018.

About one in four stream-miles across the South Coast region is considered to have biological communities that are “likely intact” – the highest of four possible stream condition categories. The other three-quarters of the region’s stream-miles are considered to have possibly, likely or very likely altered biological communities.



*Condition category assignments are based on four years of averaged data (i.e., the stated year + prior three years)

The first decade of SMC bioassessment monitoring has enabled researchers to understand the biological condition of southern California wadeable streams over time. An analysis of the data found that that biological integrity of most streams has been generally stable over the past decade.

SMC bioassessment monitoring uses a probabilistic sampling design that enables managers to sample about 90 stream sites each year, including revisiting a statistically representative subset of sites each year. Then, the SMC can use the bioassessment data to estimate the overall condition each year of the approximately 4,000 kilometers of wadeable streams that drain to the coastal ocean. The SMC’s regional bioassessment monitoring program, which began in 2009, runs in five-year cycles.

As bioassessment monitoring data have provided an increasingly clear picture of regional stream condition, the SMC has been able to take on new investigations to answer additional management questions about watershed condition.

During the program's third cycle – which will kick off with field sampling this spring – the SMC will leverage the program to pursue multiple new regional studies, including:

- A causal assessment investigation that will work to determine why some stream reaches with good physical habitat are in poor biological condition
- A study to increase data collection in high-interest but under-sampled areas or stream types, including soft-bottom channels and small urban creeks
- An effort to map flow conditions to better understand where perennial, intermittent and ephemeral streams are located

Over the past decade, SMC bioassessment monitoring data have been used in a number of ways, including:

- To develop two statewide tools for scoring stream health – the [California Stream Condition Index](#) (CSCI) and [Algal Stream Condition Index](#) (ASCI) – that are now used in routine stream monitoring programs statewide
- To develop an integrative tool – the [Stream Quality Index](#) (SQI) – that combines biological, chemical and physical habitat data into a single overall assessment of stream health; the SQI helps managers prioritize streams for protection and remediation
- To complete the State's annual Integrated Report on the condition of streams in California; in the most recent report, SMC data was used to identify a number of impaired streams, as well as high-quality streams where beneficial uses are supported
- To establish a scientific foundation for stream biointegrity and biostimulatory substances policies at the State and regional levels

Dive deeper

- [Learn about the key management benefits of SMC regional watershed monitoring](#)
- [Explore which stressors are considered major causes of biological impacts to Southern California streams](#)
- [Read the technical report summarizing what the SMC learned from its first decade of bioassessment monitoring data](#) (PDF report)
- [Explore the SMC's 2021-2025 workplan for the upcoming third cycle of bioassessment monitoring](#) (PDF report)
- [Explore the SMC Regional Watershed Monitoring Program's publicly accessible data portal for bioassessment and other stream condition data](#)

Originally published in the SMC Spring 2021 Newsletter

SMC regional stream monitoring kicks off third cycle

The third cycle of the SMC’s Regional Watershed Monitoring Program kicked off this spring with an updated monitoring design that builds on previous stream surveys, while simultaneously expanding the collaborative, regional program into new frontiers.

Program participants plan to conduct field sampling at 475 stream sites spanning 15 major watershed areas across coastal southern California over a five-year period, 2021 to 2025.

Environmental managers depend on the program to provide key insights about regional stream health over time. Last year, the SMC [published an analysis](#) of the first decade of regional stream monitoring data that found that the biological health of the majority of stream-reaches neither improved nor declined from 2008 to 2018.

Similarly, an analysis of the first cycle of SMC stream monitoring found that the top three stressors mostly likely responsible for biological degradation of the region’s streams were nutrients, major ions and degraded habitat.

The SMC uses the program’s comparable, statistically representative data sets each year to assess the ecological health of 7,000 stream-kilometers that drain to southern California’s coastal ocean.



An SMC field crew conducts an intercalibration exercise in Agoura Hills for the Regional Watershed Monitoring Program. Stormwater managers use the program to put the ecological condition of streams into a regional context that informs how managers set priorities and allocate resources.

The design of the SMC’s third regional monitoring cycle – described in a [published workplan](#) – will focus on trend assessments, enabling the SMC to continue tracking stream condition over time. The program’s 2021-2025 cycle also will encompass special studies to address three key areas of management interest:

- **Generating higher-resolution insights for priority areas:** The SMC will target particular areas that tend to be under-sampled via the core monitoring program, including restored

sites, soft-bottom channels, small urban streams and other sites that help SMC member agencies answer priority management questions.

- **Cost-efficient stream causal assessments:** The SMC will use a novel, rapid screening approach to causal assessment to determine specifically why some stream sites with degraded water quality score low using bioassessment-based stream scoring tools. SMC monitoring will adapt over the five years of the survey to investigate likely causes of degradation – but in a cost-efficient way that won't increase monitoring costs.
- **Mapping wet and dry streams:** The SMC will map wet and dry streams in the region to better understand which streams are ephemeral, intermittent, or perennial – key insights that can help managers better understand the extent of aquatic resources, as well as identify which streams could be subject to State and regional biological objectives.

The expanded workplan overall is a cost-neutral survey for program participants, as the extensive stream data that was collected during previous program cycles has reduced the need to collect as much core monitoring data going forward.

Dive deeper

- [Learn more about the three special studies planned for SMC 2021-2025 regional stream monitoring](#)
- [See the full list of contributors to the third cycle of the SMC's regional monitoring program](#)
- [Read the full workplan outlining the monitoring design of the SMC's 2021-2025 Regional Watershed Monitoring Program](#) (PDF report)
- [Explore the SMC Regional Watershed Monitoring Program's publicly accessible data portal for bioassessment and other stream condition data](#)

Originally published in the SMC Fall 2021 Newsletter

Contributors to Success

The SMC's success is rooted in the talents, dedication and collaboration of the many individuals and organizations that generously give their time, expertise and funding to support the SMC.

SMC Steering Committee Members

	SMC Member Agency	Lead Member		Alternate Member	
		Name	Job Title	Name	Job Title
Regulated Agencies	City of Long Beach	Melissa You	Compliance Officer	Vacant	
	City of Los Angeles Watershed Protection Division	Charlie Yu	Senior Chemist	Zora Baharians	Senior Water Biologist
	City of San Diego	Andre Sonksen	Program Manager, Transportation & Storm Water	Ruth Kolb	Biologist-Storm Water Specialist
	Los Angeles County Flood Control District	Geremew Amenu	Civil Engineer	Yao Kouwonou	Associate Civil Engineer
	Orange County Public Works	Grant Sharp	Manager, South OC Watershed Management Area	Chris Crompton	Manager
	Riverside County Flood Control and Water Conservation District	Rebekah Guill <i>Chair</i>	Senior Flood Control Planner	Richard Boon	Chief of Watershed Protection
	San Bernardino County Flood Control District	Arlene Chun	Stormwater Program Manager	Harold Zamora	Division Chief
	San Diego County Stormwater Management Program	Dr. Joanna Wisniewska <i>Vice Chair</i>	Landuse Environmental Planner III	Jo Ann Weber	Water Resource Manager
	Ventura County Watershed Protection District	David Laak <i>Vice Chair</i>	Stormwater Resource Manager	Arne Anselm	Deputy Director
	California Department of Transportation (Caltrans)	Bhaskar Joshi	Chief, Office of Stormwater Program Development	Cornelis Hakim	Senior Transportation Engineer
	Southern California Coastal Water Research Project	Ken Schiff	Deputy Director	Elizabeth Fassman-Beck	Principal Engineer
Regulatory Agencies	California Regional Water Quality Control Board, Los Angeles Region	Ivar Ridgeway	Senior Environmental Scientist	Vacant	
	California Regional Water Quality Control Board, San Diego Region	Chad Loflen	Senior Environmental Scientist	Wayne Chiu	Senior WRC Engineer Specialist
	California Regional Water Quality Control Board, Santa Ana Region	Adam Fischer	Chief, Inland Storm Water Unit	Vacant	
	California State Water Resources Control Board	Nicholas Martorano	Executive Director, Water Quality Monitoring Council	Amanda Magee	STORMS Unit Chief, Division of Water Quality
	U.S. Environmental Protection Agency Office of Research and Development	Mike Borst	Engineer	Vacant	

External partners in the SMC's success

Dozens of organizations contribute to the SMC's success every year by offering their technical expertise, counsel, resources and perspective. The following is a list of every organization external to the SMC that has partnered on SMC projects over the past five years.

- AECOM
- Aquatic Bioassay & Consulting
- Babcock Laboratories
- Building Industry Association
- Caltest Analytical Laboratory
- California Department of Fish and Wildlife
- California State University, Long Beach
- California State University, Sacramento
- California Stormwater Quality Association
- CloudCompli
- Colorado School of Mines
- Contech Engineered Solutions
- Council for Watershed Health
- County of San Diego Department of Public Health
- County of Orange Health Care Agency
- Enthalpy Laboratory
- Eurofins Laboratory
- Frog Environmental
- Heal the Bay
- Larry Walker & Associates
- Marine Pollution Studies Laboratory at Granite Canyon
- MBC Aquatic Sciences
- Michael Baker International
- Moss Landing Marine Laboratories
- National Park Service
- Nautilus Environmental
- Olaunu
- Oregon State University
- Pacific EcoRisk
- Physis Laboratory
- San Francisco Estuary Institute
- Sanitation Districts of Los Angeles County
- State Water Resources Control Board Surface Water Ambient Monitoring Program
- Tetra Tech
- Truesdail Laboratory
- U.S. Army Corps of Engineers
- University of California, Davis
- University of California, Los Angeles
- University of California, San Diego
- University of Maryland, College Park
- University of California Extension
- University of South Florida
- Ventura Regional Sanitation District
- Vista Analytical Laboratory
- Weck Laboratory
- Weston Solutions
- Wood Environment and Infrastructure Solutions