

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD**

**SAN DIEGO REGION**

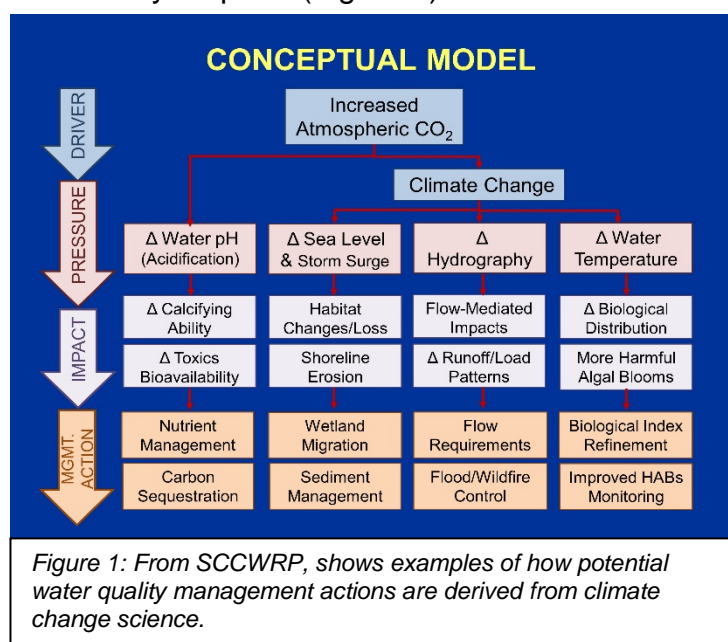
**RESOLUTION NO. R9-2018-0051**

**ADDRESSING THREATS TO BENEFICIAL USES FROM CLIMATE CHANGE**

***WHEREAS:***

1. The most basic goal of the California Regional Water Quality Control Board, San Diego Region (San Diego Water Board) is to preserve and enhance the quality of water resources in the San Diego Region for the benefit of present and future generations. Pursuant to the federal Clean Water Act and the California Porter-Cologne Water Quality Control Act, the San Diego Water Board designates beneficial uses of the Region's surface water and groundwater and establishes water quality objectives for the reasonable protection of those uses. Beneficial uses are the uses of water necessary for the survival or well-being of humans, plants and wildlife. These uses of water serve to promote the tangible and intangible economic, social and environmental goals of humankind.
2. Global climate change is happening. Air and ocean temperatures are rising, precipitation patterns are shifting, more extreme climate events are happening, sea levels are rising, and the ocean pH levels are falling. Scientists are highly confident that, although natural factors have caused the climate to change during previous periods of the Earth's history, the overarching driver for these changes is rising levels of carbon dioxide and other greenhouse gases in the atmosphere from human activity, primarily the burning of fossil fuels.
3. Although climate change is a global phenomenon in scale and scope, it will trigger a wide range of increasingly severe physical, chemical and biological effects to water resources in the San Diego Region. Climate change exacerbates some challenges, like droughts and coastal erosion, and creates new ones like those associated with sea level rise and ocean acidification. The direct and indirect effects of climate change have broad-reaching implications for the San Diego Water Board's mission to protect and restore uses of water for people and ecosystems.

4. Some threats to waters in the San Diego Region are summarized in a [climate change impact report \(2009\)](#) by the California Climate Change Center. Threats to San Diego Region riparian and freshwater ecosystems are summarized in a report from the Climate Science Alliance (2018).<sup>1</sup> Research from the Scripps Institution of Oceanography, for example, demonstrates shifts in precipitation regimes driven by climate change are already increasing the influence of atmospheric rivers on our regional stream systems, which increases the vulnerability of ecosystems and infrastructure along riparian floodplain corridors. The Southern California Coastal Research Project (SCCWRP), of which the San Diego Water Board is a member agency, is working to understand the ecosystem impacts of a changing environment and how the water-quality management community can effectively respond (Figure 1).



5. Climate change can affect our ability to meet strategic objectives outlined in our Practical Vision (Resolution No. R9-2013-0153), including protecting key beneficial uses and areas; producing and relying on meaningful assessment data; restoring wetland and riparian zones; and achieving a sustainable local water supply.

<sup>1</sup> Jennings et al. 2018 "San Diego County Ecosystems: The Ecological Impacts of Climate Change on a Biodiversity Hotspot" available at <http://www.climate-science-alliance.org/sdc-ecosystems-assessment>

6. Executive Order S-03-05 required the California State agencies to produce periodic [scientific assessments](#) on the potential impacts of climate change in California and reports potential adaptation responses. These assessments found that very significant economic impacts are expected from climate change, and that impacts may be reduced with appropriate measures to reduce risk. Assessments also explored local and statewide vulnerabilities to climate change, highlighting opportunities for taking concrete actions to reduce climate-change impacts. The fourth climate change assessment will provide additional information to support decisions that will safeguard the people, economy, and resources of California.
7. Climate change increases the risk of public health threats that affect beneficial uses of waters, such as those from harmful algal blooms in drinking water reservoirs and swimming areas, pathogens in fish or shellfish, and sewage contamination of swimming areas.
8. Some projected climate change impacts may disproportionately affect those who are socially or economically disadvantaged, and hence represent environmental justice concerns.
9. The production, storage, transport and delivery of water for agricultural, residential, and commercial needs have significant energy and greenhouse gas implications. A sustainable local water supply is one that decreases reliance on imported water and efficiently uses energy to produce and transport water suitable for municipal, agricultural, industrial and other human uses while also optimizing the reuse of water.
10. Mitigating climate change effects relies on actions at the local level, and there are many current efforts in the San Diego Region to reduce greenhouse emissions, assess climate change risks, and plan for adaptation actions. The San Diego Water Board must play a strong role with other stakeholders in developing long-term strategies for monitoring, mitigating, and offsetting the local water resource impacts of global climate change.

11. Wetlands provide resilience for both human and ecosystem beneficial uses of water threatened by climate change. Restoration of aquatic resources, including wetlands, can play crucial roles in reducing risks from climate change by improving water quality, protecting water resources, mitigating GHG emissions, and enhancing habitat. In Resolution No. R9-2015-0041,<sup>2</sup> the San Diego Water Board recognized threats of climate change to aquatic ecosystems and directed staff to promote and advance aquatic ecosystem restoration. Subsequent law (e.g., Assembly Bill 1482) requires State agencies to promote the use of natural systems and infrastructure, such as wetlands,<sup>3</sup> in climate change adaptation plans.
12. Governments, utilities, non-governmental organizations, and industries in the San Diego Region need to make a variety of difficult decisions regarding potential climate change impacts to their interests; and those decisions could affect beneficial uses. For example:
  - a. Accommodating higher tidal surges by armoring coastlines that would restrict recreational uses of beaches and bays and prevent inland migration of intertidal habitat and species.
  - b. Managing larger volumes of storm water by modifying stream channels that would disrupt ecosystem uses of streams, wetlands, and associated floodplains.
  - c. Relying on natural attenuation of soil contamination that would result in hazardous releases if the area becomes inundated due to sea level rise and/or rising groundwater.
13. The San Diego Water Board supports and has important roles to play in the State of California efforts to prepare for and adapt to a changing climate. [Safeguarding California](#), the State's adaptation strategy, provides a roadmap for State government action to build climate change resiliency. It identifies seven overarching principles that represent foundational objectives for California's approach to climate change adaptation:
  - a. Consider climate change in all functions of government.
  - b. Partner with California's most vulnerable populations to increase equity and resilience through investments, planning, research, and education.
  - c. Support continued climate research and data tools.
  - d. Identify significant and sustainable funding sources to reduce climate risks, harm to people, and disaster spending.
  - e. Prioritize natural infrastructure solutions that build climate preparedness, reduce greenhouse gas emissions, and produce other multiple benefits.

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<sup>2</sup> [Resolution No. R9-2015-0041](#): "Resolution to Support Restoration of Aquatic Ecosystems in the San Diego Region." Dated June 24, 2015.

<sup>3</sup> As defined in Government Code section 65302 means "the preservation or restoration of ecological systems, or utilization of engineered systems that use ecological processes, to increase resiliency to climate change, manage other environmental hazards, or both. This may include, but is not limited to, floodplain and wetlands restoration or preservation, combining levees with restored natural systems to reduce flood risk, and urban tree planting to mitigate high heat days."

- f. Promote collaborative adaptation processes with federal, local, tribal, and regional government partners.
  - g. Increase investment in climate change vulnerability assessments of critical built infrastructure systems.
14. The San Diego Water Board and staff have begun to participate in regional and statewide climate change initiatives and to incorporate climate change considerations into decision-making for projects including but not limited to water recycling and conservation, existing and proposed ocean discharges, and coastal zone site cleanup plans.
15. In August 2015, the San Diego Water Board held a public informational item on climate change considerations in the Region. In February 2017, the Board accepted public comments on tentative Resolution No. R9-2017-0035, *Addressing Threats to Beneficial Uses from Climate Change*. As part of the 2017 Operational Plan, staff developed climate change goals to protect key beneficial uses, which the Board considered at its May 9, 2018 meeting and provided direction to staff to revise. The subsequent climate change goals are shown in Table 1.

Key Beneficial Use	Key Areas for the Use*	Top Goals Related to Climate Change
<b>Safe to Drink</b>	1 <sup>st</sup> Rank: Drinking water supply reservoirs 2 <sup>nd</sup> Rank: Groundwater	<ul style="list-style-type: none"> <li>• Increase local water supply via effective water conservation and enhanced water recycling</li> <li>• Capture storm water without harming downstream ecosystems</li> </ul>
<b>Safe to Eat</b>	1 <sup>st</sup> : Ocean 2 <sup>nd</sup> : Bays 3 <sup>rd</sup> : Harbor, lagoons, estuaries	<ul style="list-style-type: none"> <li>• Address bioaccumulation and toxin threats</li> <li>• Protect and increase refuges for intertidal ecosystems</li> </ul>
<b>Safe to Swim</b>	1 <sup>st</sup> : Ocean and Bays 2 <sup>nd</sup> : Harbors 3 <sup>rd</sup> : Lagoons, estuaries, streams, stream mouths	<ul style="list-style-type: none"> <li>• Ensure low-gradient beaches remain accessible for recreational uses</li> <li>• Identify and remedy vulnerable public infrastructure</li> </ul>
<b>Healthy Ecosystems</b>	1 <sup>st</sup> : Ocean, bays, lagoons, estuaries, streams 2 <sup>nd</sup> : Stream mouths 3 <sup>rd</sup> : Ponds, harbors	<ul style="list-style-type: none"> <li>• Protect and increase intertidal ecosystems</li> <li>• Protect and restore natural flow regimes</li> </ul>

Table 1: Top climate change readiness recommendations for Key Beneficial Uses and Areas.  
\* Key areas are identified in “*Key Beneficial Uses and Key Areas: Focusing on What is Most Important*” adopted by Resolution [R9-2017-0030](#).

16. Challenges affecting the San Diego Water Board’s ability to implement key actions for addressing climate change threats to beneficial uses include:
- a. Ensuring staff have a strong conceptual understanding of the key stressors induced by climate change and the impacts of these stressors.

- b. Improving staff and stakeholder understanding of the scope, timing, cost, feasibility, consequences, and effectiveness of various management options to address climate change risks.
  - c. Accessing and assimilating relevant data for decision-making.
  - d. Collaborating and communicating with external parties to influence their waste discharge plans.
  - e. Integrating climate change considerations into program work plans and statewide performance measures.
  - f. Ensuring short-term and long-term water resource and planning needs are met without sacrificing long-term beneficial uses.
17. The uncertainties of climate change that affect human and ecosystem beneficial uses, such as extent and timing of sea level rise or frequency of high intensity storms, can be mitigated by an adaptive approach rooted in our Practical Vision.

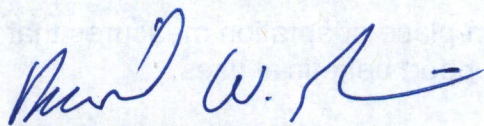
***THEREFORE BE IT RESOLVED THAT it is the intent of the San Diego Water Board to:***

1. Direct the San Diego Water Board staff to implement actions to counter the effects of climate change and its potential effects on beneficial uses in water quality control planning, permitting, site remediation, monitoring, financial assistance, education, and enforcement actions. This resolution does not change or expand the San Diego Water Board's authority and obligations under applicable law, or impose new requirements on the regulated community.
2. Incorporate Safeguarding California strategies and scientific findings from California Climate Change Assessments to strengthen the ability of water resources to sustain strong and diverse local economies and ecosystems resilient to adverse impacts of global climate change.
3. Proactively and effectively use San Diego Water Board resources, expertise, and authorities under applicable law to ensure its actions are preserving, enhancing, and restoring water quality for all beneficial uses for future generations that will live with likely climate change effects.
4. Address climate change threats with the principles, core values, and desired outcomes identified in our Practical Vision.
5. Maintain low greenhouse gas emissions via alternate work schedules, vehicle usage, procurement, meeting technology, and other means consistent with operational needs.

6. Implement a Climate Change Readiness Work Plan in accordance with the 2018 Operational Plan adopted by the Board in February 2018 (Resolution No. R9-2018-0013) that outlines courses of action to achieve the goals in Table 1 of Finding 15 of this Resolution, incorporates public participation where warranted, establishes short and long term goals, and identifies challenges to reduce water quality threats from climate change.
7. Ensure staff is able to translate the best available climate science into appropriate regulatory decision-making by hiring and/or collaborating with scientists with backgrounds in relevant fields.
8. Work with scientists from SCCWRP, Scripps Institution of Oceanography, and other organizations to understand the state of climate change science and to identify climate change-based research needs that support the Practical Vision and the Climate Change Readiness Work Plan.
9. Encourage and ensure activities regulated, endorsed, funded, or otherwise subject to Water Board review, are compatible with plausible beneficial use scenarios based on reasonable climate change models and predictions. Therefore, we will work with dischargers and stakeholders on project applications and proposals to assess how reasonably foreseeable climate change scenarios could affect the project's relationship to beneficial uses. Certain projects may need effective long-term strategies for monitoring, mitigating, and offsetting impacts related to discharges or potential discharges of waste and fill material affected by climate change.
10. Propose permit language that includes monitoring, adaptive management, and funding/financing provisions, for reducing vulnerability of regulated facilities to sea level rise or flooding due to climate change.
11. Advocate for solutions that protect beneficial uses from direct and indirect effects of climate change, including but not limited to prioritizing:
  - a. Natural infrastructure solutions, including emphasizing the restoration, enhancement, and creation of wetlands, both submerged and terrestrial, over hardscape infrastructure in climate adaptation plans.
  - b. Water capture, recharge, and reuse solutions over increased effluent discharges.
  - c. Relocation of vulnerable infrastructure over in-place adaptation measures that impair the resilience of water resources to support beneficial uses.
12. Facilitate monitoring, assessment, and research conducted, supported, or required by the Board to improve management options through review and revision of existing discharger monitoring and assessment requirements and staff activities in consideration of projections for effects of climate change such as sea level rise, storm intensity, and ocean acidification.

13. Consider the ability of proposed remedial actions in enforcement cases to use green cleanup methods and technology; be resilient to climate change effects such as increased storm surges, more intense storm water discharges, and changes in groundwater levels and recharge rates; to implement local climate change adaptation plans; and to verify resilience via surveillance and monitoring plans.
14. Encourage, promote, and facilitate development of new and diverse sustainable local water supplies without restricting existing and potential beneficial uses of water or exacerbating existing water body impairments.
15. Ensure compensatory wetland and stream channel mitigation, such as required in Clean Water Act section 401 Water Quality Certifications, will withstand and protect beneficial uses and public health from the most likely hydrological and temperature effects from climate change.
16. Incentivize and prioritize coastal and inland shoreline protection techniques that protect, preserve, enhance, or restore beneficial uses.
17. Collaborate with public agencies and nongovernmental organizations in the region to leverage resources around common climate change priorities and to identify and reduce conflicting priorities.
18. Identify and inform the State Water Resources Control Board by December 2018 which San Diego Water Board climate change priorities are best suited to statewide guidance or direction.
19. Identify and inform the State Water Board by February 2019 of specific instances in which statewide Orders support, impede, or conflict with regional climate change priorities.
20. Receive periodic updates from the Executive Officer on progress of implementation actions and key challenges relative to climate change.

I David W. Gibson, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of a Resolution adopted by the California Regional Water Quality Control Board, San Diego Region, on June 20, 2018.



DAVID W. GIBSON  
Executive Officer