2 Vision and Objectives

This chapter addresses requirements set forth in the Objectives Standard included in the 2012 IRWM Program Guidelines (DWR 2012). Consistent with DWR's 2012 Guidelines, the objectives presented in this chapter were developed to manage or eliminate the challenges faced by the Region as described in detail in *Chapter 3, Region Description.*

2.1 Overview

The intent of this chapter is to document various aspects of the planning hierarchy established for the 2013 San Diego IRWM Plan. Specifically, this chapter includes information regarding:

- The process used to develop the IRWM objectives.
- How the objectives address major water-related issues and conflicts of the Region.
- How the objectives will be measured so that achievement of objectives can be monitored.
- An explanation of why the objectives were not prioritized.
- An explanation of the overall planning hierarchy (vision, mission, goals, and objectives) included in the 2013 IRWM Plan.

2.2 Describing the Process

The IRWM planning components (vision, mission, goals, and objectives) were revised for the 2013 IRWM Plan through a collaborative process that involved members of the public, stakeholders, workgroup members, the Regional Advisory Committee (RAC), and the Regional Water Management Group (RWMG).

As described in detail in *Chapter 6, Governance and Stakeholder Involvement,* the 2013 IRWM Plan involved a number of workgroups consisting of representatives from the RAC and interested stakeholders, which were convened to provide input on specific components of the 2013 IRWM Plan. One workgroup, the Priorities and Metrics Workgroup, was convened to complete the following tasks:

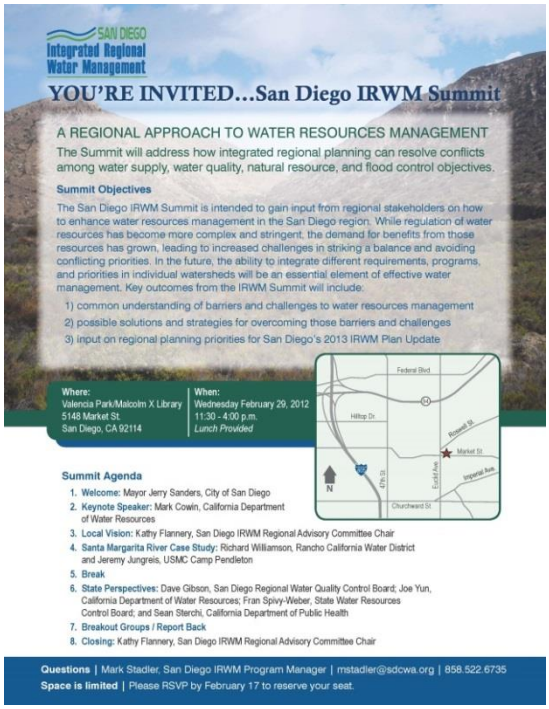
- Refine IRWM vision, mission, goals, and objectives
- Review information received during the IRWM Summit (described in detail below) and use that information to refine the vision, mission, goals, and objectives
- Develop a recommended list of targets and metrics that can be used to measure achievement of the IRWM objectives
- Discuss pros and cons of prioritization and potentially prioritize the IRWM objectives

The Priorities and Metrics Workgroup met a total of five times from February to December 2012 and provided substantial input on the development of the IRWM vision, mission, goals, and objectives. The workgroup used information received at a public IRWM Summit to refine those planning components. Further information regarding the Priorities and Metrics Workgroup,

including complete meeting agendas and notes are available online at the following web address: http://sdirwmp.org/2013-irwm-plan-update-workgroups.

The 2007 IRWM Plan vision, mission, goals, and objectives were used as a starting point for the Priorities and Metrics, as these existing IRWM Plan components were previously determined by the Region's stakeholders. Further, the Priorities and Metrics Workgroup considered existing water management plans such as the Region's 2010 Urban Water Management Plans, the San Diego County General Plan Update, and requirements and considerations established by the California Department of Water Resources (DWR) in the 2012 IRWM Guidelines (DWR 2012).

The IRWM Summit, held on February 29, 2012, was open to members of the public, and had two purposes: 1) to increase awareness of the IRWM Program and 2013 IRWM Plan as part of the Region's public outreach and involvement process, and 2) to solicit stakeholder input on the existing IRWM objectives, and any additional objectives that may be suitable to include in the 2013 IRWM Plan. IRWM Summit attendees considered a wide array of information to make recommendations regarding the IRWM objectives. IRWM Summit attendees provided input via open discussions, and largely relied upon personal knowledge and experience as the basis for their input.



The IRWM Summit, held in February 2012, provided a venue to receive public input on key aspects of the 2013 IRWM Plan, including the IRWM Objectives.

Determining the IRWM objectives was considerably more challenging than determining the IRWM vision, mission, or goals and included many revisions and substantial input from all stakeholders. Further, due to the planning hierarchy of the vision, mission, goals, and objectives; the goals were reviewed and revised as applicable when revising the objectives to ensure that the information and priorities included in the goals were reflected in the objectives, and vice versa.

The Priorities and Metrics Workgroup, in coordination with the RWMG, was responsible for compiling a draft version of the vision, mission, goals, and objectives for further vetting through the RAC and members of the public. On December 5, 2012, a joint Public Workshop/RAC meeting was held, which focused on receiving input on the revised IRWM vision, mission, goals, and objectives before they were incorporated into the 2013 IRWM Plan.

The information included in the following sections regarding the IRWM vision, mission, goals, and objectives represents a synthesis of the input received through the aforementioned processes and stakeholder groups. Together, these processes were highly collaborative, involving as many IRWM stakeholders and interested parties as possible. All input received on the IRWM vision, mission, goals, and objectives was compiled into the Public Draft version of the 2013 IRWM Plan, which was further reviewed and commented upon by IRWM stakeholders, ensuring that the IRWM vision, mission, goals and objectives were established through a collaborative stakeholder process.

2.3 Sustainability of Water Resources

The IRWM Program supports the concept of sustainability, which is integrated in the IRWM vision, mission, goals, and objectives (see sections below for further details). Sustainability, broadly stated, calls for meeting the needs of the present without compromising the ability of future generations to meet their own needs. The San Diego IRWM Program advocates for sustainable water resources planning and has adopted a triple-bottom line definition to foster comprehensive results. Below you will find the San Diego IRWM Program's definition of sustainability.

Definition of Sustainability for the 2013 IRWM Plan

- ***Social***: Fostering public health and safety and maintaining the community's quality of life through provision of safe, reliable water supplies, and recreational waters.
- ***Environmental***: Providing effective stewardship of water-based natural resources, including protection of water quality, habitat, water supply and minimizing climate change impacts.
- ***Economic***: Providing and protecting reliable, sustainable water resources that support the regional economy.

Ensuring long term sustainability requires effective leadership and commitment that encourages collaboration, improved integration of infrastructure and natural systems, and addresses conflicting regulations and policies. Sustainability is also furthered by the approach that is taken to assess and manage water resource projects. Considerations in assuring sustainable water management may include: water quality, habitat, floodplain functions, biodiversity, wetland and surface water functions, greenhouse gas emissions, resiliency and life cycle costing that broadly considers all costs associated with materials, construction, operations maintenance, and decommissioning. No-regret climate change strategies (discussed in the *Climate Change Study* in Appendix 7-D), which are defined as those strategies that would take place in the Region even in the absence of climate change, will also be considered for purposes of assessing sustainability.

As discussed in *Chapter 1, Introduction*, securing reliable sources of funding for these costs, particularly for operation and maintenance costs, is considered a potential implementation barrier as funding for these items is not readily available. For more information on implementation issues and challenges to sustainability, refer to *Chapter 11, Implementation*.

Principles of Sustainability for the 2013 IRWM Plan

2.4 IRWM Vision

The San Diego IRWM vision is to achieve:

> ***An integrated, balanced, and consensus-based approach to ensuring the long-term sustainability of the Region's water supply, water quality, and natural resources.***

2.5 IRWM Mission

The mission of the San Diego IRWM Program is:

> ***To develop and implement an integrated strategy to guide the Region toward protecting, managing, and developing reliable and sustainable water resources. Through a stakeholder-driven and adaptive process, the Region can develop solutions to water-related issues and conflicts that are economically and environmentally preferable, and that provide equitable resource protection for the entire Region.***

2.6 IRWM Goals

The San Diego IRWM goals are as follows:

1. ***Improve the reliability and sustainability of regional water supplies.***
2. ***Protect and enhance water quality.***
3. ***Protect and enhance our watersheds and natural resources.***
4. ***Promote and support sustainable integrated water resource management.***

2.7 IRWM Objectives

The 11 IRWM objectives described below were developed to meet the IRWM goals included as part of the 2013 IRWM Plan. Each objective has a number of targets and associated metrics designed to evaluate how well each objective is being met by the Region's water management activities. These targets, along with their metrics, are presented in Table 2-2. The IRWM objectives and targets were developed considering the State's planning guidance in CWC §10540(c), and encompass water supply reliability, water quality, groundwater overdraft, environmental stewardship, and water-related needs of economically disadvantaged communities (DACs). These objectives reflect the San Diego Region's efforts towards obtaining the State's goal for water and the environment.

In total, two new objectives were added to the existing 2007 IRWM Plan objectives: one that encourages integration (Objective A) and one that addresses climate change (Objective K). To be included in the IRWM Plan, projects only need to meet one of the 11 IRWM objectives (refer to *Chapter 9, Project Evaluation and Prioritization*). However, to be considered for IRWM funding, projects have to meet Objective A, Objective B, and at least one other objective. Each of the 11 IRWM objectives, as well as information regarding how each objective addresses relevant water management issues, is provided below.

IRWM Funding Requirement – Objective A, Objective B, and One Other

To be included in the IRWM Plan, projects must contribute to at least one IRWM objective. A new requirement of the 2013 IRWM Plan is that, in order to be **eligible for IRWM funding**, projects must meet Objective A, Objective B, and at least one additional IRWM objective.

Objective A: Encourage the development of integrated solutions to address water management issues and conflicts.

Detailed Description of Objective A

Implement projects and programs that effectively address local water management issues and conflicts through the following types of integration:

1. *Partnership*: Establishing partnerships between different organizations to increase cost-effectiveness through sharing of data, resources, and infrastructure.
2. *Resource Management*: Employing multiple resource management strategies within a single project to effectively address a variety of issues.
3. *Beneficial Uses*: Developing solutions that address multiple beneficial uses to expand benefits.
4. *Geography*: Implementing watershed- or regional-scale projects to benefit a greater amount of people and potentially save costs through economies of scale.
5. *Hydrology*: Addressing multiple watershed functions within the hydrologic cycle to holistically address issues and resolve conflicts.
6. *Sustainability:* Implement projects that meet the needs of the present without compromising the ability of future generations to meet their own needs and broadly support social, environmental, and economic benefits.

The focus of this objective is to meet the requirements of Goal 4, which focuses on integration of water resources management. Both the vision and mission emphasize an integrated approach to water management, which is also a Statewide Priority (refer to Section 2.9). Due to the importance of integration to the San Diego IRWM Region, stakeholders determined that in order to be included in the IRWM Plan, a project must meet one of the IRWM Plan Objectives. To be eligible for IRWM grant funding, a project must meet Objective A, Objective B, and at least one additional objective. Refer to *Chapter 9, Project Evaluation and Prioritization* for more information.

Table 1-2, which can be found in *Chapter 1, Introduction,* includes an overview of identified water management challenges and conflicts relevant to the Region. In addition to the integration definitions described above, attainment of this objective will be evaluated based upon the ability to address relevant issues listed in Table 1-2.

Determination and Rationale for Objective A: The Region is a large and diverse area, falling under the jurisdiction of multiple water management agencies and organizations. By creating an objective that specifically focuses on integrated approaches to water resources and their management, the 2013 IRWM Plan emphasizes the importance of addressing issues across the Region regardless of jurisdictional and other boundaries that are not necessarily conducive to effective water management. Integration is the "I" in IRWM planning, and is the emphasis of the State's efforts towards IRWM planning, which encourages planning and understanding of the inter-relationships across a variety of resource areas rather than traditional water planning efforts through which different resource areas (water supply, water quality, natural resources, flood management, etc.) are not necessarily coordinated. For example, water reuse efforts in the Region integrate both

wastewater management and water supply development, and represent an integrated approach to managing water resources within the Region.

Incorporating cost-effective approaches to water management is essential for sustainable water management. Integration should also focus on the region's ability to accomplish more with less. The IRWM mission seeks solutions to water-management issues that are economically preferable on a long-term basis. The following text box, developed by the Priorities and Metrics Workgroup, acknowledges some of the disincentives and benefits of integration.

Potential Barriers or Disincentives to Integration	***Potential Benefits or Incentives to Integration***
• Takes a lot of time and energy to coordinate with other partners. • Integration may mean reducing the amount of grant funding that each organization receives. • Administrative costs associated with combining projects and completing grant administrative for multiple entities. • Integrating with other partners could mean losing some control over a project. • Integration makes projects more complex. • May have to give up some benefits or features of the original project concept to integrate with another project concept.	• Integration makes projects more competitive to receive grant funding, although integration in early or pre-design produces more win-win opportunities. • May be more cost-effective – partners such as NGOs can provide services at a lower cost and are adept at grant writing and grant administration. • May be more cost effective due to cost sharing with other agencies. • Integration reduces conflicts, which may result in streamlining for project approvals. • Integration may add additional expertise to a project.

Objective B: Maximize stakeholder/community involvement and stewardship of water resources, emphasizing education and outreach.

Detailed Description of Objective B

Implement efforts to engage and educate the public on the IRWM Program and the interconnectedness of water supply, water quality, and natural resources. Build stewardship throughout the Region by providing opportunities to participate in water management and promote individual and community ownership of water resource problems and solutions.

The focus of this objective is to incorporate stakeholder and community involvement and engagement into realization of each IRWM goal. The IRWM vision emphasizes the need for a consensus-based approach in water resources management within the Region, and the mission emphasizes the need for a stakeholder-driven process. Maximizing stakeholder and community involvement and stewardship has been a critical focus of the IRWM Program, and is a component of every aspect of the IRWM planning hierarchy. Due to the importance of stakeholder involvement to the San Diego IRWM Region, stakeholders determined that in order to be eligible for IRWM grant funding, a project must meet Objective A, Objective B, and at least one additional objective. Refer to *Chapter 9, Project Evaluation and Prioritization* for more information.

Determination and Rationale for Objective B: Stakeholder involvement is a vital part of the IRWM Program, and is necessary to identify and address public interests and perceptions, address stakeholder questions and issues upfront, ensure that the 2013 IRWM Plan and projects are consistent with public interests, provide for public ownership and support of IRWM activities, and bring diverse viewpoints to improve the next iteration of the IRWM Plan.

Stakeholder involvement may assist in identifying areas where increased public education and outreach is required and help focus on the public's key water management issues and potential solutions. Public education and outreach at community events, workshops, and school-based educational programs are required to promote the identification and understanding of the Region's resources. Hands-on and volunteer participation of the public encourages community ownership of water resource problems and solutions. Stakeholder input is also an essential element in identifying and resolving potential water management conflicts within the Region, and has been a fundamental component of the 2007 and 2013 San Diego IRWM Plans.

Objective C: Effectively obtain, manage, and assess water resource data and information.

Detailed Description of Objective C

Increase and expand sharing, integration, and comprehensive analysis of water resource and water quality data to provide a basis for improved water resources management.

Attainment of each IRWM goal can be enhanced through data and information sharing. Through this objective, the RWMG and RAC recognize that obtaining and evaluating water quality, water supply, environmental, and recreational data is essential to the successful development and implementation of regional water management actions and programs. Data collection and analysis is required to identify trends, document water quality improvements or impairments, assess the effectiveness of water resource management programs, and provide direction for future program planning and management strategies.

Determination and Rationale for Objective C: Organizations and individuals that collect data within the Region have historically worked separately, and have not compiled information into a central repository where data can be evaluated, formulated, compared, and shared with interested stakeholders. The IRWM Program has undertaken actions to address this issue, and is working toward development and implementation of a Data Management System (DMS) that will meet this very important regional need. Refer to *Chapter 10, Data and Technical Analysis* for more information.

Despite the IRWM Program's efforts towards implementing a Region-wide DMS, there are still challenges associated with data and data management that are the impetus for Objective C. Challenges associated with trying to collect regional data from multiple jurisdictions and organizations include: (1) differences and sometimes incompatibilities in electronic formats, (2) the lack of a centralized system or location for maintaining hard copy data such as reports or maps, (3) proprietary data use concerns, (4) inconsistent data protocols that make data comparison difficult and time-consuming, and (5) the cost of maintaining an ongoing regional data management system.

The RWMG and RAC recognize that the IRWM Program offers a potential opportunity for regional entities to coordinate the collection, storage, analysis, and distribution of water quality, water supply, and natural resources data to overcome the challenges stated above. Beyond the regional DMS, other potential data-related opportunities for managers and stakeholders may include:

- making it possible to identify and update water supply, water quality, and other related data that will assist with water management issues
- providing data collection and storage in compatible electronic formats so that it is easily accessible to water managers and regional stakeholders

- analyzing collected data from areas within the Region that will assist in supporting water management actions/decisions
- assessing integration efforts between managers and stakeholders to provide water quality, water supply, and natural resources data in a beneficial manner to all parties involved
- developing a method to implement adequate quality controls for data collection, record keeping and analysis for the Region
- soliciting public/stakeholder involvement on data management and distribution
- identifying gaps in existing data or research needs to improve water resource management

Objective D: Further the scientific and technical foundation of water management.

Detailed Description of Objective D

Promote actions, programs, and projects that increase scientific knowledge and understanding of water management issues and support sustainable science-based regulations and requirements. Coordinate with regulatory agencies to assess and resolve ambiguous or conflicting regulatory standards or requirements.

Attainment of each IRWM goal can also be enhanced through increasing the scientific and technical foundation of water management. Objective D recognizes that additional scientific information and technical understanding is required to effectively implement many water management strategies, as well as improve regulations pertaining to water management.

Determination and Rationale for Objective D: Water management actions for the Region must comply with existing water quality, public health, flood control, environmental, and other laws and regulations. While water management actions must be addressed within the framework of existing regulations, additional technical and scientific understanding is required to adjust regulations and the way in which regulations are implemented to ensure that such regulations are realistic, cost-effective, and being implemented in a meaningful way.

By addressing scientific and technical issues through regional coordination efforts, implementing agencies may recognize benefits of cost sharing, economies of scale and scope, and the increased potential for outside funding through collaborative approaches. Additionally, increased technical and scientific understanding allows for more consistent and expedient implementation of programs and activities.

Increased scientific data and technical comprehension may allow for the development of regionally-feasible or watershed- based compliance alternatives that may not have been feasible from site-specific or project-specific standpoints. Better scientific understanding will result in more effective use of technology and other natural approaches that will encourage the implementation of the most cost-effective solutions and improved water quality on a long-term basis. The IRWM Plan process may also allow regional agencies to coordinate with regulators to identify areas where modification of regulations or regulatory procedures may be appropriate for maximizing beneficial use and protecting the Region's water resources.

Objective E: Develop and maintain a diverse mix of water resources, encouraging their efficient use and development of local water supplies.

Detailed Description of Objective E

Continue to develop diverse water resources to meet local supply and conservation goals, reduce dependence on imported water supplies, and increase water supply reliability. A diverse mix of water resources includes imported water, water transfers, recycled water, water conservation, desalination, local surface water, and groundwater.

The focus of this objective is to meet the requirements of Goal 1. The Region's population of approximately three million and the Region's economy are both dependent upon a reliable, cost-effective, and diverse water supply. Securing a variety of water supply sources will help the Region ensure that even in drought or emergency conditions, reliable water supply can be made available now and in the future. Ensuring that water supplies are available to meet future demands is essential given that the Region's population is projected to increase by approximately one third by 2030. This objective addresses the variety of water supply sources – both imported and local – that are necessary to sustain the Region's water demands.

Determination and Rationale for Objective E: As documented within the *California Water Plan Update 2009* (DWR 2009), water allocation, environmental, and hydrologic constraints present significant challenges to the sustainability of State Water Project and Colorado River supplies (imported water supplies), particularly during long-term droughts. Additionally, reliance on imported water supplies renders the Region potentially vulnerable to short-term reliability issues that may occur in the event of a catastrophic emergency such as an earthquake that cuts off imported water supplies for up to six months.

El Capitan Reservoir has a storage capacity of 112,800 acre-feet and holds both surface runoff and imported water.

Photo credit: Jeff Pasek, City of San Diego

Despite historic reliance on imported water supplies, the Region has made substantial progress in diversifying its water supply portfolio, a trend which will continue to occur in the future. Objective E aims to support the Region's water supply diversification efforts as well as the Region's water conservation efforts, which will both help to increase water supply reliability and reduce demands on imported water supplies.

Objective F: Construct, operate, and maintain a reliable water management infrastructure system.

Detailed Description of Objective F

Construct, operate, and maintain water conveyance, treatment, storage, and distribution facilities that comprise a reliable water infrastructure system consistent with the future planned mix of water resources, and provide flexibility in system operations.

The focus of this objective is to provide reliable infrastructure to meet IRWM goals 1, 2, and 3. The Region's residents and economy are both dependent upon a reliable infrastructure to deliver water to residents, businesses, industries, parks, and agricultural lands. The Region's existing water supply infrastructure is described in *Chapter 3, Region Description*, and is a complex system of aqueducts, reservoirs, treatment plants, water pipelines, pump stations, and other appurtenances. Further, this objective addresses water infrastructure required for the disposal and reuse of wastewater, as well as infrastructure required for stormwater, flood control, water quality-related concerns, and natural resources protection and enhancement.

Determination and Rationale for Objective F: Improvements to existing water supply infrastructure are required to ensure facilities are in place to produce, deliver, store, and treat supplies to reliably meet existing and future demands throughout the Region. Capital improvements will focus on increasing water supply flexibility, storage, supply diversity, and reliability.

This objective also addresses requisite improvements to other types of water infrastructure that are required to meet other objectives included in this IRWM Plan. Other types of infrastructure are related: wastewater, flood control, and stormwater infrastructure should be designed in a manner to address, improve, and maintain water quality, and protect and enhance natural resources and watersheds.

Objective G: Enhance natural hydrologic processes to reduce the effects of hydromodification and encourage integrated flood management.

Detailed Description of Objective G

Restore and enhance natural hydrologic processes, and promote best management practices that reduce negative effects on receiving systems such as natural stream systems, groundwater systems, local water supply reservoirs, and lagoons, bays, and the ocean. Reduce runoff from impervious surfaces, erosion, sedimentation, and flooding. Use integrated flood management to holistically address flood issues, water quality, natural resources, and other water management concerns.

The focus of this objective is to help achieve IRWM goals 2 and 3. Sediment pollution, erosion, and other development-related water quality and hydromodification issues have impacted the Region's water resources. This objective is intended to encourage restoration and floodplain management activities that help to address these historical issues, and includes activities that utilize natural infrastructure and mimic natural infrastructure functions.

Determination and Rationale for Objective G: Sedimentation, erosion, and hydromodification present significant water management challenges within many of the Region's watersheds. Development practices may decrease normal, distributed, at-source infiltration and therefore increase the volume and duration of stormwater runoff due to the increased amount of impermeable surfaces, such as paved areas and roofs. These development practices impact natural conveyance systems, such as creeks, streams and rivers due to increases of water loads from storm

drain and other discharge points not originally part of the natural drainage system. Future development in the Region will also contribute to these impacts.

Pollution loads due to runoff will reflect the change in residential, commercial, industrial, construction and agricultural activities (land use changes). These land use changes can result in physical changes (hydromodification) to the Region's waterways. Addressing these problems will require regional cooperation in identifying and implementing cost-effective strategies. By identifying and addressing areas that are already, or likely to be, affected by hydromodification, stakeholders and mangers can prevent or decrease its impacts, mitigate its negative effects and address economic impacts that future development may have on the current infrastructure.

Community flood damage loss can be addressed through integrated flood management solutions.

Photo credit: Bruce Phillips, PACE

Further, integrated flood management, which is a Statewide Priority, is also included within this objective. Integrated flood management involves developing solutions for effectively managing flood risks through a watershed approach that allows for development of holistic strategies that can also address beneficial uses and watershed functions.

Objective H: Effectively reduce sources of pollutants and environmental stressors to protect and enhance human health, safety, and the environment.

Detailed Description of Objective H

Reduce pollutants and environmental stressors to maintain or improve water quality through the application of point and non-point source controls, stormwater best management practices, management measures such as land use planning and conservation, and reservoir management. Reduce pollutant loads to protect the health and safety of humans and the environment.

The focus of this objective is to help achieve IRWM goals 2 and 3. Existing regulatory programs control pollutants through a broad array of point source and non-point source programs. These programs are directed towards achieving compliance by mandating pollutant source controls and industry-standard best management practices. This objective is intended to encourage restoration, source control, and treatment activities that help to address water quality issues.

Determination and Rationale for Objective H: More than 54 inland surface waters (rivers or streams) and 13 reservoirs are listed on the 303(d) list of impaired water bodies as not attaining applicable water quality standards. Region-wide constituents of concern include bacteria, sediment, nutrients, and total dissolved solids (TDS). Toxic inorganic and toxic organic constituents are additional pollutants of concern in many of the Region's urbanized watersheds.

Cost-effective approaches to reducing pollutant loads, sources, and stressors is essential to bring listed water bodies into attainment of the standards, achieve Total Maximum Daily Load (TMDL) allocations, and prevent waters that currently meet the standards from slipping into non-attainment. Additional data and analysis are required to establish a correlation between the use of

pollutant source controls and water quality improvements, which will assist in the identification of predominant pollutant sources.

An important management consideration in addressing pollutants and stressors within local water supplies is reservoir and lake management. Reservoir and lake management strategies, including natural treatment systems, can be considered as a way to reduce problems associated with poor water quality and treatability resulting from stressors such as nitrogen, phosphorus, iron, manganese, and sulfur.

Objective I: Protect, restore, and maintain habitat and open space.

Detailed Description of Objective I

Manage and acquire land to preserve open space and protect sensitive habitat for endangered, threatened, and locally-important plant and wildlife species. Invasive species management, habitat conservation, and water pollution prevention activities will help to maintain and enhance biological diversity.

The focus of this objective is to meet Goal 3. The Region features biologically diverse and important habitats and has a high degree of biological diversity (biodiversity). In recent decades, however, development and population growth within the Region have resulted in the loss of open space and habitat. Additionally, remaining native habitat may be subject to impacts or stress from invasive species, water quality degradation, or hydromodification.

Determination and Rationale for Objective I: More bird and plant species live within San Diego County than in any other county in the contiguous United States; however, the reduction of available open space lands that can support wildlife habitats has reduced the number of native plants and animals living in the Region, and has reduced overall biodiversity. The trend of decreasing open space land within the Region is projected to continue, and it is anticipated that biodiversity in the Region will decrease as well.

Lower Otay Reservoir contains extensive wetlands habitats.
Photo credit: Jeff Pasek, City of San Diego

Due to anticipated growth and development, preservation and maintenance of open space is an important component of ensuring protection of the Region's water quality, water availability, and protection of endangered and threatened species and habitats. Preserving and maintaining open space is also important for maintaining the Region's natural aesthetics, preserving and enhancing recreational opportunities, enhancing the quality of life for residents, and providing benefits relative to tourism and the economy. Further, the *Water Quality Control Plan for the San Diego Basin* (Basin Plan) identifies several beneficial uses that address the needs of aquatic, wildlife, and marine habitats. Due to Basin Plan beneficial use designations pertaining to habitats, habitat management in the Region is a regulatory requirement that must be considered in water bodies that have such habitat-related beneficial uses, including Areas of Special Biological Significance (ASBS). Maintaining and expanding habitat can have an additional benefit of improving water quality.

Objective J: Optimize water-based recreational opportunities.

Detailed Description of Objective J

Protect and provide access to water-based recreational activities such as swimming, fishing, boating, as well as picnicking and hiking along waterways, while ensuring that the recreational activities do not adversely affect other beneficial uses of water. Improve public safety in water-based recreational areas so that members of the Region can use them freely.

The focus of this objective is to meet Goal 4. The Basin Plan designates both water contact recreation (swimming, wading, tide pooling, water skiing, surfing) and non-contact recreation (boating, fishing, hiking, bird watching, kayaking) as key beneficial uses of inland and marine waters within the Region.

Determination and Rationale for Objective J: Water contact and non-contact recreation are important components of the Region's quality of life and tourism-dependent economy. A considerable number of recreational opportunities exist at the beaches, rivers, streams, lakes, marine and estuarine waters within the Region.

Urban and agricultural stormwater runoff frequently degrades the water quality of the Region's coastal waters, resulting in the posting of advisories of potential public health threats and beach closures. Controlling these pollutant-contributing activities is critical to enhancing and maintaining water-based recreational opportunities within the Region.

The Region's inland lakes are all man-made water supply reservoirs. Many of these reservoirs permit recreational uses that may adversely affect water quality due to contamination from swimmers, boating equipment, camping activities, and littering. Recreational activities within the Region's reservoirs must therefore be balanced with water supply and water quality protection needs. While optimizing recreational opportunities is a Plan objective, restrictions on recreation (limiting public access, limiting certain recreational activities, or requiring implementation of best management practices) may be necessary to protect water supply and other beneficial uses.

Objective K: Effectively address climate change through greenhouse gas reduction, adaptation, or mitigation in water resource management.

Detailed Description of Objective K

Adapt to the potential effects of climate change, such as sea-level rise, temperature changes, and rainfall variability, by implementing 'climate-proof' water management projects and programs. Incorporate greenhouse gas emissions reduction and energy efficiency in planning and management efforts.

Each IRWM goal can potentially be enhanced by considering climate change. Climate change may have wide-spread impacts on water resources management, including less overall precipitation and associated water supply, more severe and unpredictable flood events, and sea level rise and associated impacts to coastal infrastructure. Planning for future water management infrastructure needs to consider both mitigation of additional contributions to climate change through greenhouse gas (GHG) reduction and adaptation to its future impacts (such as sea level rise).

Determination and Rationale for Objective K: The effects of climate change have the potential to dramatically alter the natural resources of the Region. As a coastal area, the Region is susceptible to changes in sea level, salt water inundation, and potential extreme weather events. Climate change is also likely to affect habitat availability for the Region's multitude of species, and increase the vulnerability of the Region's water supply. Implementation of projects and programs that are not

influenced by the effects of climate change, such as water recycling, will help the Region adapt to the potential effects of climate change.

2.7.1 Prioritizing the IRWM Objectives

The 11 IRWM objectives described above will be used to evaluate potential projects for inclusion in the 2013 IRWM Plan, and will therefore help to determine which projects are submitted in grant applications. The question of prioritizing objectives was discussed by stakeholders in the Priorities and Metrics Workgroup, who ultimately recommended against prioritizing objectives in the 2013 IRWM Plan. While recognizing that prioritizing objectives could make project evaluation easier and more transparent, it was determined that the costs of prioritizing objectives, including limiting the potential breadth of water management activities, losing some of the flexibility of the 2013 IRWM Plan, and losing stakeholder support, outweighed the benefits. All 11 IRWM objectives were developed by stakeholders because they address an identified priority for water management in the Region. Balancing project selection such that all objectives are addressed through IRWM funding opportunities will contribute to broader sustainability is the approach that the IRWM Region will take.

2.7.2 Climate Change Considerations

Climate change considerations pertaining to the IRWM objectives are addressed directly by Objective K, which was added to the 2013 IRWM Plan to reflect the Region's growing concern over climate change impacts on water resources management (refer to *Chapter 7, Regional Coordination* for more information on the Climate Change Study). In addition, several of the other IRWM objectives will generate climate change adaptation and mitigation benefits. Examples of how the other IRWM objectives will potentially address and consider climate change adaptation and mitigation are provided below:

1. *Climate Change Adaptation*: Objective E encourages development of diverse water supplies, including municipal recycled water. Increasing local water supplies such as recycled water and desalinated water will help the Region adapt to climate change by increasing the availability of 'drought-proof' local water supplies, which are not dependent on factors influenced by climate change such as temperature and precipitation. Local supply development also reduces the Region's reliance on imported water supplies that may be more severely impacted by climate change.
2. *Climate Change Mitigation*: Objective I encourages protection and restoration of habitat and open space. Conserving natural habitat and restoring native plants in the Region could mitigate climate change by sequestering greenhouse gases.

2.8 IRWM Planning Hierarchy

This chapter includes an overview of all aspects of the IRWM planning hierarchy. The IRWM planning hierarchy included in this 2013 IRWM Plan is consistent with the planning hierarchy originally developed for the 2007 IRWM Plan.

The individual components of the planning hierarchy – as illustrated in Figure 2-1 – are explained in the previous sections and are applied consistently throughout the 2013 IRWM Plan.

Figure 2-1: IRWM Planning Hierarchy

2.9 Consistency with Statewide Priorities

The IRWM objectives included in the previous sections address issues specific to the San Diego IRWM Region as identified by and vetted with regional stakeholders. While the objectives address issues specific to the IRWM Region, they are also in conformance with the Statewide Priorities set forth by DWR in the 2012 IRWM Guidelines (DWR 2012). The following table demonstrates how the IRWM objectives either directly or indirectly address each Statewide Priority included in the 2012 IRWM Guidelines.

2.10 IRWM Plan Targets

Each of the 11 IRWM objectives described above has a number of measurable targets designed to help evaluate how well each objective is being met. Each of these targets has one or more quantitative or qualitative metric to evaluate the targets. The targets and metrics for each objective are described in Table 2-2 below. The process of assessing attainment of each objective through the targets and metrics is detailed in *Chapter 11, Implementation.* Further, Table 2-2 indicates (with an "x") whether each measurable target can be implemented through the IRWM Program or through IRWM Projects, which are organized by project type in the table.

Table 2-1: Conformance of Plan Objectives with Statewide Priorities

San Diego IRWM Objectives	Statewide Priorities							
	Drought Preparedness	Use and Reuse Water More Efficiently	Climate Change Response Actions	Expand Environmental Stewardship	Practice Integrated Flood Management	Protect Surface Water and Groundwater Quality	Improve Tribal Water and Natural Resources	Ensure Equitable Distribution of Benefits
Objective A: Encourage the development of integrated solutions to address water management issues and conflicts.	○	○	○	●	●	○	○	●
Objective B: Maximize stakeholder/community involvement and stewardship of water resources, emphasizing education and outreach.	○	●	○	●	●	○	●	●
Objective C: Effectively obtain, manage, and assess water resource data and information.	○	○	○	●	○	○	○	○
Objective D: Further scientific and technical foundation of water management.	○	○	○	●	○	○	○	○
Objective E: Develop and maintain a diverse mix of water resources, encouraging their efficient use and development of local water supplies.	●	●	○	●	○	○	○	○
Objective F: Construct, operate, and maintain a reliable infrastructure system.	●	●	○	○	○	○	○	○
Objective G: Enhance natural hydrologic processes to reduce the effects of hydromodification and encourage integrated flood management.			○	●	●	○	○	○
Objective H: Effectively reduce sources of pollutants and environmental stressors to protect and enhance human health, safety, and the environment.			○	●		●	○	○
Objective I: Protect, restore, and maintain habitat and open space.			○	●			○	○
Objective J: Optimize water-based recreational opportunities.							○	○
Objective K: Effectively address climate change through adaptation or mitigation in water resource management.	○	○	●	●	○	○	○	○

● IRWM Plan objective directly supports the listed Statewide Priority
○ IRWM Plan objective indirectly supports the listed Statewide Priority

Table 2-2: IRWM Objectives, Targets, and Metrics

Objectives *Specific observable outcomes.*	**Targets** *Measurable and tangible actions to achieve the objectives.*	**Metrics** *Measurements that can be used to evaluate the actions – may be quantitative or qualitative.*	**IRWM Program**	**Project Type**						
				Water Supply	Wastewater	Recycled Water	Groundwater	Stormwater	Flood Control	Habitat / Open Space
Objective A: Encourage the development of integrated solutions to address water management issues and conflicts.	1. Encourage the development of partnerships to implement water management projects.	Number of IRWM-funded projects that have multiple partners	x	x	x	x	x	x	x	x
	2. Encourage the development of projects that achieve multiple IRWM Plan objectives.	Number of IRWM-funded projects that contribute to attainment of multiple IRWM Plan objectives	x	x	x	x	x	x	x	x
	3. Encourage the development of projects that integrate multiple Resource Management Strategies.	Number of IRWM-funded projects with multiple Resource Management Strategies	x	x	x	x	x	x	x	x
	4. Encourage the development of projects that provide regional or multi-watershed benefits.	Number of IRWM-funded projects that provide multi-watershed or regional benefits	x	x	x	x	x	x	x	x
	5. Encourage the development of projects that consider multiple hydrologic functions.	Number of IRWM-funded projects addressing multiple watershed functions considering the hydrology of the system (upstream/downstream, surface/groundwater)	x	x	x	x	x	x	x	x
	6. Realize efficiencies by implementing integrated approaches to water management.	Number of benefits per IRWM-funded project	x	x	x	x	x	x	x	x
Objective B: Maximize stakeholder/community involvement and stewardship of water resources, emphasizing education and outreach.	1. Maintain the regional IRWM website to provide centralized public access to IRWM program data and information.	Regular updates to the website Access provided Number of website visits	x							

Objectives *Specific observable outcomes.*	Targets *Measurable and tangible actions to achieve the objectives.*	Metrics *Measurements that can be used to evaluate the actions – may be quantitative or qualitative.*	IRWM Program	Project Type						
				Water Supply	Wastewater	Recycled Water	Groundwater	Stormwater	Flood Control	Habitat / Open Space
	2. Provide access (via active link) to the regional IRWM website to help inform the Region's population about the IRWM program.	Access provided		x	x	x	x	x	x	x
	3. Conduct education and outreach activities to obtain a measureable increase in the regional population's knowledge of sustainable water resources management, including the nexus between water and energy.	Public workshops, meetings and presentations held Outreach activities (brochures, fair booths, landscape contests); Survey results	x	x	x	x	x	x	x	x
	4. Provide "hands-on" stewardship and volunteer opportunities in the Region's watersheds, including underserved and disadvantaged communities.	Stewardship activities held Number of participants (new vs. returning)		x	x	x	x	x	x	x
	5. Encourage the use of partnerships and community contacts to collect and disseminate information on water management.	Partners utilized to collect and disseminate information	x	x	x	x	x	x	x	x
Objective C: Effectively obtain, manage, and assess water resource data and information.	1. Provide centralized public access to key water management data sets and contribute water resources data consistent with established standards to regional data management system (DMS)	Regional DMS developed and populated Data sets that meet quality standards contributed Access to regional water quality sampling and reporting data for public health and environmental protection purposes	x	x	x	x	x	x	x	x
	2. Collect and evaluate water resources data in order to assess and document regional conditions, issues, and potential solutions.	Collected data informs and supports decision-making	x	x	x	x	x	x	x	x

Objectives *Specific observable outcomes.*	Targets *Measurable and tangible actions to achieve the objectives.*	Metrics *Measurements that can be used to evaluate the actions – may be quantitative or qualitative.*	IRWM Program	Project Type						
				Water Supply	Wastewater	Recycled Water	Groundwater	Stormwater	Flood Control	Habitat / Open Space
Objective D: Further scientific and technical foundation of water management.	1. Work with the Regional Board to implement collaborative activities to update, improve, and validate the Basin Plan.	Collaborative activities with Regional Board Development of alternative strategies (such as implementation plans) to maintain compliance with Basin Plan water quality objectives Implementation of Regulatory Workgroup Strategies Number of scientifically-based site-specific objectives developed	x	x	x	x	x	x	x	x
	2. Work with regional flood managers to understand and encourage application of integrated flood management techniques.	Studies/projects implemented	x	x	x	x	x	x	x	x
	3. Promote the inclusion of sustainable water resource management policies in land use plans.	Number and diversity of water resource management policies included in land use plans	x							
	4. Expand the technical foundation of reusing local supplies (i.e. potable reuse, stormwater capture, greywater).	Study outcomes Guidelines or specifications developed Research and development, pilot testing, or conceptual design projects implemented New technologies used	x	x	x	x	x	x	x	x
	5. Apply innovative approaches to understanding the connectivity between regional groundwater and surface water supplies.	Study outcomes Research and development, pilot testing, or conceptual design projects implemented	x	x	x	x	x	x	x	x
	6. Expand the technical foundation of using riparian habitat for greenhouse gas mitigation.	Study outcomes	x							x

Objectives *Specific observable outcomes.*	Targets *Measurable and tangible actions to achieve the objectives.*	Metrics *Measurements that can be used to evaluate the actions – may be quantitative or qualitative.*	IRWM Program	Project Type						
				Water Supply	Wastewater	Recycled Water	Groundwater	Stormwater	Flood Control	Habitat / Open Space
	7. Explore innovative Low Impact Development concepts and develop new solutions to manage runoff.	Study outcomes Research and development, pilot testing, or conceptual design projects implemented	x					x		
Objective E: Develop and maintain a diverse mix of water resources, encouraging their efficient use and development of local water supplies.	1. Conserve or reuse water to meet aggregated retail agency SBX7-7 demand target of 167 gallons per capita day (gpcd) for the region by 2020.	AFY of water conserved AFY of recycled water produced for beneficial use or used by customers Urban and agricultural water conservation programs implemented		x		x				
	2. Increase local supply development (recycled water, groundwater, desalinated water, surface water) in urban areas.	AFY of seawater desalinated AFY of recycled water used Number of new recycled water connections AFY of potable reuse (purified water) used Number of potable reuse projects studied, designed, or implemented AFY of groundwater produced or recharged Maintenance of groundwater levels		x	x	x	x			
	3. Implement Colorado River conservation and transfer programs to augment local supply development.	AFY of Colorado River water delivered		x						
	4. Encourage efficient technologies, water conservation, and recharge area protection in rural areas in order to assure a sustainable long-term supply of groundwater.	AFY of groundwater produced or recharged Maintenance or increase of groundwater levels AFY of water conserved Water use audits performed Well meters installed Studies/projects implemented		x		x	x			

Objectives *Specific observable outcomes.*	Targets *Measurable and tangible actions to achieve the objectives.*	Metrics *Measurements that can be used to evaluate the actions – may be quantitative or qualitative.*	IRWM Program	Project Type						
				Water Supply	Wastewater	Recycled Water	Groundwater	Stormwater	Flood Control	Habitat / Open Space
	5. Develop and implement effective and cost efficient approaches for drinking water source protection.	Studies/projects implemented Improved local water supply quality		x	x	x	x	x	x	x
	6. Protect water supply from invasive Quagga mussels.	Number of sites with Quagga mussels present Amount of Quagga mussels removed, eradicated, or avoided								
Objective F: Construct, operate, and maintain a reliable infrastructure system.	1. Develop facilities and manage supplies to ensure adequate emergency and carry-over deliveries.	AFY of emergency and carry-over supply % of reservoir storage capacity used Increase in operational flexibility		x						
	2. Develop, maintain, and optimize infrastructure and water quality for delivering water, collecting wastewater, capturing stormwater, and transporting storm water and flood flows.	Infrastructure developed Length of conveyance pipe installed Construction or maintenance projects implemented Water quality projects that maintain use of infrastructure		x	x	x	x	x	x	
	3. Encourage innovative approaches to sustain or increase groundwater supplies in rural areas.	AFY of groundwater produced or recharged Infrastructure developed Soil humidity					x			
	4. Create, restore, protect, and maintain habitats that also serve a water resources management function.	Acreage of habitat associated with water resources Acreage of functioning wetlands Volume of transitory flood storage		x				x	x	x
	5. Enable small water systems to effectively construct and maintain their infrastructure.	AFY of supply impacted by project Infrastructure developed Small water systems brought into drinking water compliance Management plans developed		x	x		x			

Objectives *Specific observable outcomes.*	Targets *Measurable and tangible actions to achieve the objectives.*	Metrics *Measurements that can be used to evaluate the actions – may be quantitative or qualitative.*	IRWM Program	Project Type						
				Water Supply	Wastewater	Recycled Water	Groundwater	Stormwater	Flood Control	Habitat / Open Space
Objective G: Enhance natural hydrologic processes to reduce the effects of hydromodification and encourage integrated flood management.	1. Integrate cost-effective flood management benefits into water supply and water quality projects.	Integrated projects implemented AFY of stormwater captured, treated, or reused		x			x	x	x	x
	2. Enhance or restore healthy hydrologic processes in the Region's watersheds, notably reducing the negative effects of impervious surfaces.	Decrease in peak flow or total runoff Reduction in flood claims Reduction in road closures due to flooding Acreage of impervious surface restored Acreage of functioning wetlands Volume of transitory flood storage						x	x	x
	3. Promote watershed management and land use planning that mitigates or avoids typical hydromodification impacts associated with urbanization.	Policies Acreage of permeable surface protected Acreage of riparian or floodplain buffer protected	x					x	x	x
Objective H: Effectively reduce sources of pollutants and environmental stressors to protect and enhance human health, safety, and the environment.	1. Maintain or improve the water quality entering local reservoirs, groundwater, recharge areas, watersheds, and other local water resources.	AFY flow reduction to ocean outfalls Decrease in pollutant concentrations Pounds of trash removed Pounds of trash prevented from entering water ways Acreage of buffer vegetation planted Strategies employed TMDL implementation plans developed Number of 303(d)-listed water bodies that are de-listed		x	x	x	x	x	x	x

Objectives *Specific observable outcomes.*	Targets *Measurable and tangible actions to achieve the objectives.*	Metrics *Measurements that can be used to evaluate the actions – may be quantitative or qualitative.*	IRWM Program	Project Type						
				Water Supply	Wastewater	Recycled Water	Groundwater	Stormwater	Flood Control	Habitat / Open Space
		Measured decreases in pollutant concentrations Reduction in MS4 exceedances BMPs implemented								
	2. Implement 3-6 individual groundwater basin plans with stakeholder involvement that adhere to the Salinity/Nutrient Management Guidelines that will assist in the preservation of the quality of the Region's water resources.	Groundwater basin plans implemented		x		x	x		x	x
	3. Develop and implement effective and cost efficient source management strategies to address regionally-significant constituents (e.g., pathogens, nutrients, sediments, solid waste).	Volume of fertilizer/pesticide applied Amount of organic versus chemical fertilizer applied Decrease in sediment transport Decrease in solid waste Strategies employed		x	x	x	x	x		x
	4. Implement wastewater improvements that reduce the frequency and volume of sanitary sewer overflows within the Region.	Number of sewer overflows Reduced beach postings Volume of sewer overflows per mile of pipe			x					
	5. Implement Low Impact Development (LID) practices to reduce non-stormwater runoff.	Decrease in peak flow or total runoff Volume of water retained						x		
	6. Plan and implement stormwater or natural treatment systems on a watershed scale to improve water quality.	Decrease in pollutant concentrations Reduced beach postings Acreage of functioning wetlands						x	x	x
	7. Protect and improve groundwater quality in rural basins to ensure compliance with drinking water standards.	Decrease in pollutant concentrations Compliance with MCLs		x		x	x			

Objectives *Specific observable outcomes.*	Targets *Measurable and tangible actions to achieve the objectives.*	Metrics *Measurements that can be used to evaluate the actions – may be quantitative or qualitative.*	IRWM Program	Project Type						
				Water Supply	Wastewater	Recycled Water	Groundwater	Stormwater	Flood Control	Habitat / Open Space
Objective I: Protect, restore, and maintain habitat and open space.	1. Conserve, protect, and restore habitat, open space, and sensitive species associated with water resources, including functional aquatic, riparian, and wetland habitat and associated buffer habitat.	Acreage of habitat or open space Number of parcels acquired Number of sensitive species with potential to occur on site Presence/ absence of sensitive species		x				x	x	x
	2. Reduce, remove, and control sources of sediment and trash	Pounds of trash diverted Pounds of trash collected Metric for sediment						x		
	3. Remove and control non-native invasive plants that are impacting regional water resources.	Acreage of invasive plants % of native planting survival % percent increase in flow capacity Water resources affected						x	x	x
	4. Monitor, manage, control, and prevent establishment of nuisance aquatic species in the Region.	Water resources affected Increase in operational time due to control		x						x
Objective J: Optimize water-based recreational opportunities.	1. Develop water-based recreational open space that is open to the public and focuses on underserved areas and ensures equal access for disadvantaged communities.	Acreage of open space Number of visitors								
	2. Develop new public access points (boat launch facilities, fishing floats or piers, swim beaches, trails, stairs, parking areas, or similar) to recreational surface waters.	Number of public access points Number of visitors Length of trail Connectivity between existing open spaces		x				x	x	x

Objectives *Specific observable outcomes.*	Targets *Measurable and tangible actions to achieve the objectives.*	Metrics *Measurements that can be used to evaluate the actions – may be quantitative or qualitative.*	IRWM Program	Project Type						
				Water Supply	Wastewater	Recycled Water	Groundwater	Stormwater	Flood Control	Habitat / Open Space
	3. Improve quality of recreation through interpretation, signage, and ADA access.	Number/length of wheelchair accessible trails Number of visitors utilizing interpretation resources Number of interpretive signs Amount of trees and urban forests								
Objective K: Effectively address climate change through adaptation or mitigation in water resource management.	1. Encourage development of cost-effective and energy efficient strategies for water management projects.	kWh of energy offset Efficiency strategies implemented		x	x	x	x	x	x	x
	2. Incorporate adaptation strategies to respond to sea-level rise, rainfall variability, and temperature variability in planning for water and wastewater management.	Adaptation measures implemented		x	x	x	x	x	x	x
	3. Reduce or neutralize GHG emissions and embedded energy or capture GHG emissions in water resource management.	GHG emissions offset or neutralized Mitigation measures implemented		x	x	x	x	x	x	x

2.11 References

California Department of Water Resources (DWR). 2012. *Guidelines: Integrated Regional Water Management, Proposition 84 and 1E*. November 2012. Available: http://www.water.ca.gov/irwm/grants/docs/Guidelines/GL_2012_FINAL.pdf