

Anza Borrego Desert Integrated Regional Water Management Planning Grant Proposal Work Plan

Attachment 3 consists of the following items:

- ✓ **Current Status in Meeting IRWM Plan Standards (page 6)**
- ✓ **Grant Work Plan Content (page 8)**
 - A. Outreach & Program Administration
 - B. Regional Water Resources Plans Development
 - C. Updating the ABD-IRWM Plan
 - D. Proposal Administration
- ✓ **Additional IRWM Plan Work (page 32)**

Introduction

The Anza Borrego Desert (ABD) Integrated Regional Water Management (IRWM) Region (Region), which was formally approved through the California Department of Water Resources' (DWR's) Region Acceptance Process (RAP) in 2009, is unique compared to other IRWM regions for several reasons.

First, the Region is largely comprised (over 70%) of State land that falls within the jurisdiction of the Anza-Borrego Desert State Park (State Park). For this reason, the Region possesses unique natural and cultural resources that are irreplaceable and of Statewide and National importance. Designated as a National Natural Landmark in 1974 [and a Biosphere Reserve by the United Nations](#), the State Park contains the largest area of open wilderness within the State of California, including approximately 61 sensitive plant species, 86 sensitive animal species, nine (9) California Historic Landmarks, and innumerable cultural resource sites (Anza-Borrego Desert State Park 2005). Second, the Region is unique because almost 100% of the Region qualifies as a disadvantaged community (DAC). Therefore, it is critical to ensure that the Region continues to maintain a sustainable and safe water supply in accordance with Statewide Priorities regarding DACs. Lastly, the Region is unique because given its particular value regarding natural resources and DACs, the Region faces critical water supply issues that impact both the State Park and DACs. The Region relies on groundwater resources for its sole source of water supply, yet existing groundwater resources are in a state of overdraft and potentially face substantial water quality issues [which could adversely impact both the State Park's missions to preserve and to conserve the natural capital of the desert ecosystems within the Park and the DACs ongoing ability to afford potable water withdrawn from the groundwater basins.](#)

Unique Attributes of the Region:

- Over 70% is comprised of important State [and National and Federal](#) resources (Anza-Borrego Desert State Park).
- Almost 100% of the Region qualifies as a DAC.
- Faces critical water supply issues relating to sole reliance on dwindling groundwater resources.

Due to the Region's unique nature, it is imperative that the ABD IRWM Plan be updated to meet DWR's IRWM Plan Standards so as to comprehensively address the Region's water resource issues while

positioning the Region for necessary funding to implement critical water supply and water quality projects.

General Background

The following information, adapted from the 2009 RAP Submittal and the Round 1 Planning Grant Application, provides general background information regarding the Region.

History of Water Management Efforts in the Region

The Region's primary groundwater basin (the Borrego Valley Groundwater Basin), which supplies water to the majority of the Region's residents, has been known to be in a state of overdraft for many years, most likely since 1945. In the past few decades, the Region's water demands have increased, therefore increasing the magnitude of the Region's overdraft situation.

Over the last few decades local residents and other interests within the Region expressed growing concern regarding the lowering of the Region's groundwater table and the fact that the Region did not have a plan or regulatory agency with the authority to enforce or to pay for the implementation of a plan to address regional groundwater overdraft. As a result of this concern, in 2000 the Borrego Water District (BWD) initiated the process of becoming a Groundwater Management Agency in accordance with the Groundwater Management Act (also known as Assembly Bill 3030; Water Code §§ 10750 et seq.).

BWD's 2002 Groundwater Management Plan (GWMP) successfully established BWD as the designated AB3030 groundwater management agency for the Borrego Valley Groundwater Basin. However, as of today this groundwater basin remains an unmanaged basin, as the statutory provisions of the Act apparently provide neither the enforcement authority nor the ability to collect water extraction fees where replenishment of the basin has not already commenced. For these reasons, BWD has previously attempted to address the overdraft through voluntary measures paid for by BWD's ratepayers, although these ratepayers account for only approximately 10% of annual withdrawals from the basin. Thus, since 2002, although there has been concerted effort by Regional stakeholders to comprehensively address and manage the Region's groundwater resources, the authority and funding mechanism has not been in place to establish *managed* groundwater basins, presently considered a necessary criteria for water banking, importing replenishment water, and obtaining the financing for building water transport pipelines to accomplish these purposes.

As mentioned previously, the Region officially became an IRWM Region approved by DWR in 2009. The impetus of this process was to gather a comprehensive group of agencies, stakeholders, and citizens that could work toward developing an IRWM Plan that would assist the Region in resolving regional issues such as groundwater overdraft, as well as potentially position the Region for necessary funding.

Geographic and Hydrogeographic Setting

The Region is located in the Colorado River Funding Area, which coincides with the Lower Colorado River hydrologic unit. This 850,000-acre Region is almost entirely located in the County of San Diego, with a small area in southern Riverside County. The Region is bounded on the east by Imperial County; on the south by Mexico; on the west by the Peninsular Range and on the north by Riverside County, except for a portion of the Coyote Creek watershed that extends into Riverside County (refer to **Figure 3-1**).

The topography of the Region is highly variable and has a major effect on meteorology, hydrology, soils, vegetative communities, wildlife habitat use, and human use patterns (refer to **Figure 3-2**). Elevations range from a few feet above mean sea level (AMSL) to over 6,000 feet AMSL in the Peninsular Range. Topography in the Peninsular Range area creates unique habitat niches such as deep canyons on the eastern slopes that support native vegetation, and alluvial fans that extend from the canyon mouths. In addition, topographically enclosed drainage basins containing interior valleys and no outlets are common. The eastern portion of the Region is made up of ancient sea bottom, shoreline, marsh, and inland lake deposits. Mountain masses are scattered throughout the Region and are thought to be related to the

Peninsular Range, and made of the same parent rock. [The oldest rocks in the ABD region dating from about 540 million years ago are in the Coyote Mountains in the southern part of the Park. These rocks were originally part of an ancient inland sea bottom and contain fossils of life forms that are 540 million years old. The record of life in these deposits is the longest continuous record for life for this period in North America.](#)

[The ABD region is bisected by two active fault zones, the San Jacinto and the Elsinore faults. The San Jacinto fault runs from the Helmut area through Borrego Valley with branches to the Salton Trough. The Elsinore fault runs from Temecula south along County Road S-2. On April 9, 1968, the largest earthquake in southern California in modern times occurred on the Coyote Canyon fault, a branch of the San Jacinto fault. The epicenter was near Borrego Mountain. The magnitude was 6.4 on the Richter Scale.](#)

Annual precipitation is sparse and variable throughout the Region, ranging from 2 to 6 inches at stations on the desert floor. However, occasional flash flooding can bring torrential rainfall and destructive flooding. Flash flooding is generally attributed to monsoon-like conditions, which generally occur in the summer and fall months as a result of local thunderstorms and tropical cyclones that develop in the Gulf of Mexico. Flash flooding poses a substantial Regional issue in that it has resulted in severe development restrictions throughout the Region.

The Region experiences mild temperatures in the winter months and hot temperatures in the summer. Measurements taken at the Borrego Desert Park Weather Station show that in a typical year monthly extreme high temperatures reach over 85° F (29° C) as early as March, and are routinely over 100° F (38° C) by May. From June through September, the monthly extreme high temperatures will routinely exceed 110° F (43° C). Not until November will monthly maximum temperatures stay consistently below 100° F.

Figure 3-1: Jurisdictions within the ABD IRWM Region

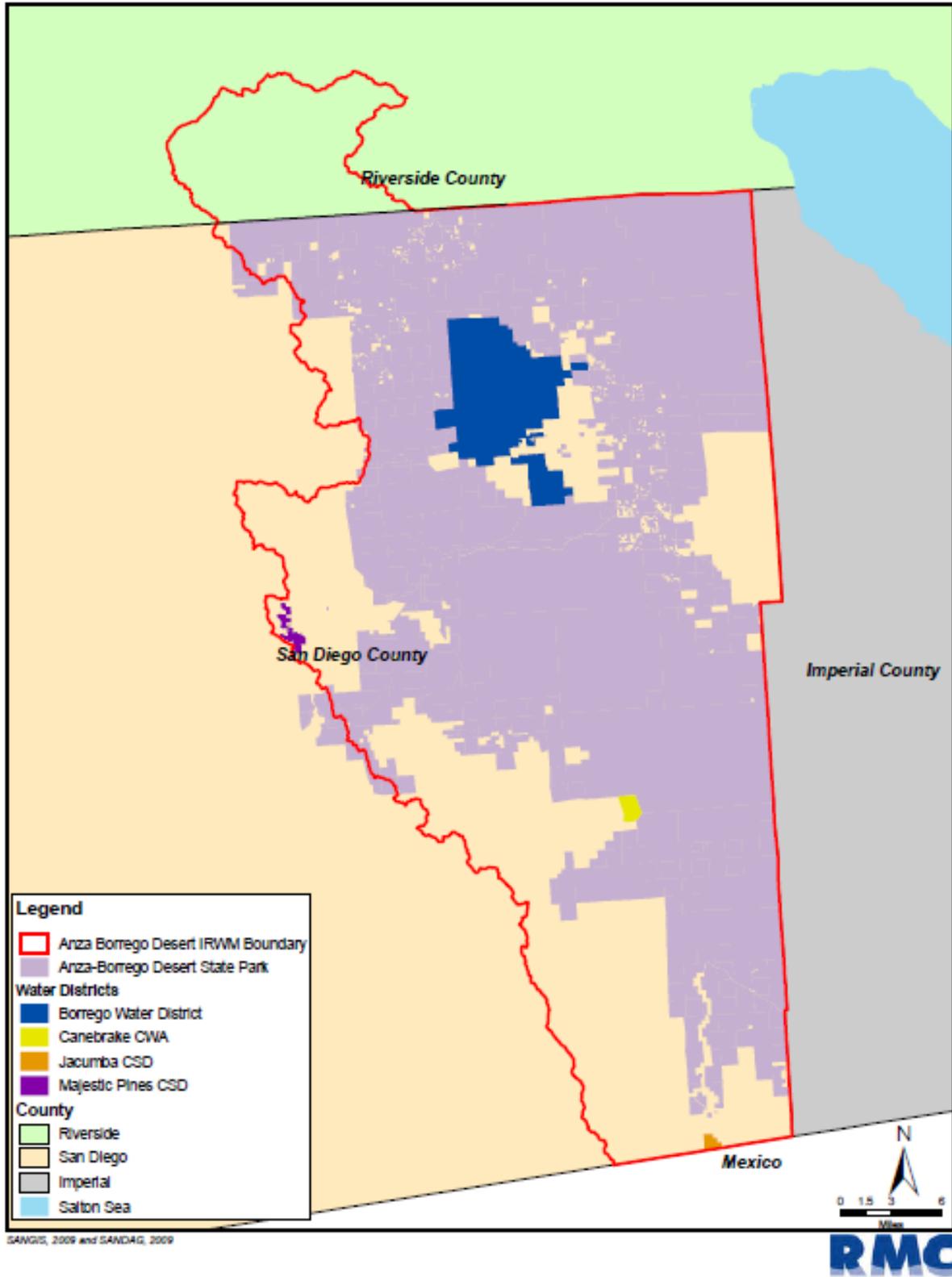
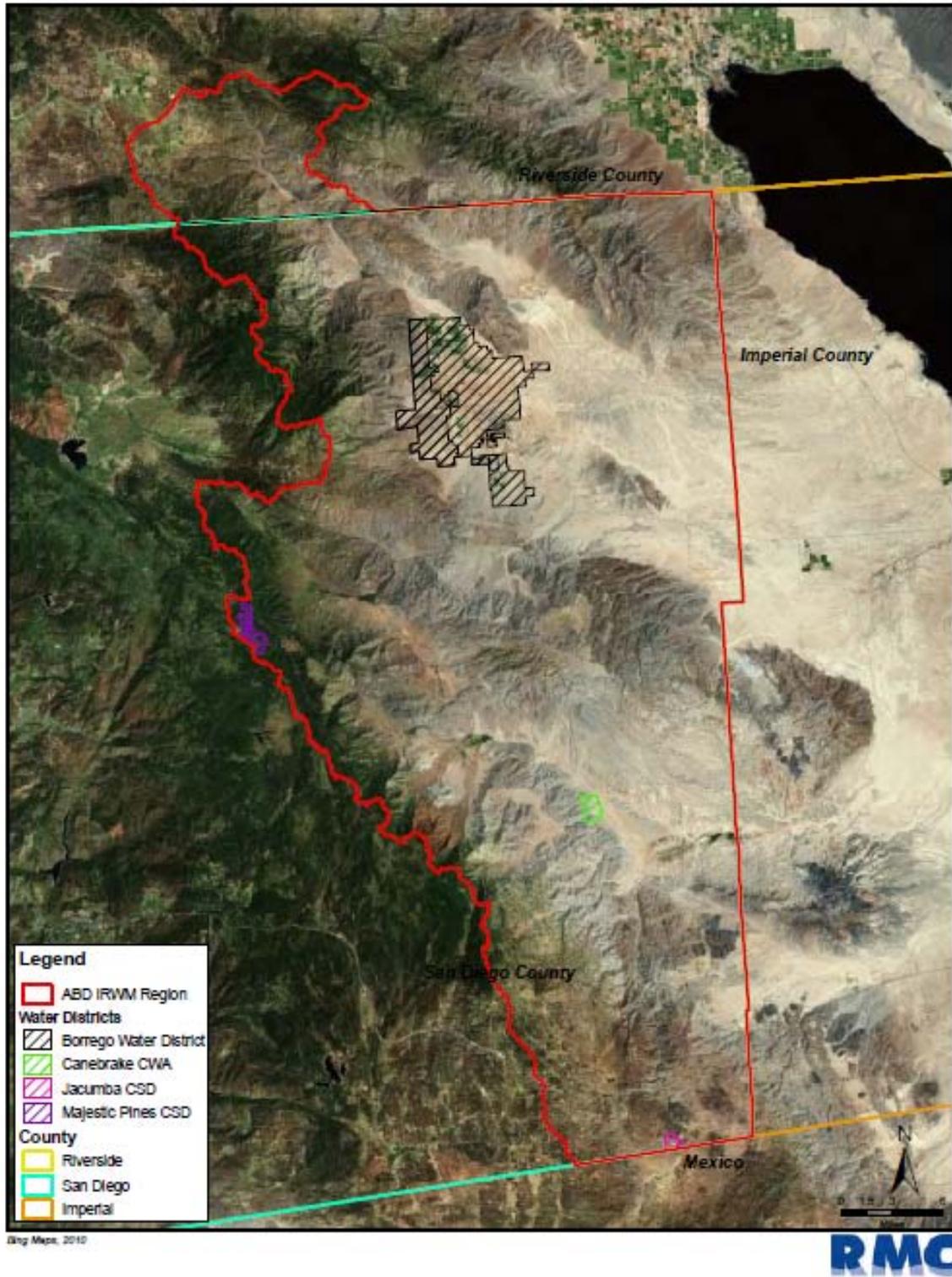


Figure 3-2: Aerial Map of the Anza Borrego Desert IRWM Region



Water supply to the Region is composed of groundwater that is recharged by runoff from the surrounding mountain watersheds. These flows, primarily from the north (Coyote Creek), recharge the upper aquifer of the of the Region's groundwater basins along permeable water courses. Groundwater is extracted and utilized throughout the Region from numerous wells. Agencies with water control authority, including BWD, measure their own groundwater extractions; however the majority of groundwater extractions are not measured, and are therefore estimated by indirect methods.

On rare occasions, storm flows in the Region are of such a magnitude that they cannot entirely percolate to groundwater basins before reaching an area known as the Borrego Sink, located at the lowest elevation in the Borrego Valley. This depression is typically a dry lake bed, however during very rare events, the Borrego Sink may overflow with water. Such storm flows are often associated with tropical monsoons originating in the Gulf of Mexico, which impact the Region from a flood control perspective.

Regional Water Management Group

To comply with the IRWM requirements, a Regional Water Management Group (RWMG) was formed to implement the ABD IRWM Program. Three local agencies comprise the RWMG:

- The BWD,
- The County of San Diego (County), and
- The Resource Conservation District of Greater San Diego County (RCD).

The BWD service area overlays the northern portion of the Region, while both the County and RCD operate within the entire Region with the exception of lands within the Coyote Creek Watershed that lie within Riverside County (refer to Figure 3-1). Figure 3-1 also demonstrates that the ABD IRWM Region is largely comprised (approximately 70%) of land owned by the State of California as part of the Anza-Borrego Desert State Park.

BWD is a water supply and groundwater management agency with the responsibility to manage the Region's largest water supply source (groundwater). The County has also been involved in water management through collection of annual groundwater level data and development of land use restrictions that prevent an increase in aquifer overdraft. In addition, the County has responsibilities regarding flood control within the portions of the Region that lie within the County, and has land use authority within San Diego County lands. The RCD brings important expertise to the RWMG in the areas of soil and water conservation and watershed restoration.

[The RCD brings important expertise to the RWMG in the areas of soil and water conservation and watershed management/restoration and brings to the table historic partnerships with local, state and federal agencies throughout the region. RCD long-range/strategic plan focal areas encompass:](#)

- [Firewise Approach to Landscape Management: Formation and support for community fire safe councils; administration for Community Wildfire Protection Plan \(CWPP\) processes; pre-fire management and wildfire protection planning outreach and assistance; fuel reduction projects.](#)
- [Watershed Approach to Resource Management: Addressing improved water quality/quantity, soil quality, coastal conservation issues, and habitat management.](#)
- [Agricultural Sustainability: Addressing agricultural sustainability, demonstration gardens and community gardens.](#)
- [Sustainability: Support for sustainability of RCD and community resources through development of 'green' policies and educational outreach.](#)

[All RCD programs and projects fall into these four resource categories. Current project details may be viewed at \[www.rcdsandiego.org\]\(http://www.rcdsandiego.org\) and \[www.firesafecouncil.org\]\(http://www.firesafecouncil.org\). The RCD has been involved with the San](#)

Diego IRWMP since the beginning stages of the planning process and has been an active member of the Anza-Borrego IRWMP Steering Committee since its formation.

Current Status in Meeting IRWM Plan Standards

The ABD IRWM planning process was initiated by the RWMG in January 2010 via a Public Kick-Off meeting. Subsequent to that, all interested participants were organized into a Stakeholders Committee. Monthly meetings of both the RWMG and the Stakeholders Committee were immediately initiated and work began on developing an IRWM Plan. As of August 2011, portions of the IRWM Plan have been completed in draft form.

While the Draft IRWM Plan provides a substantial starting point, it was not completed, finalized, or adopted by the respective RWMG agencies or the Stakeholders Committee. These groups have determined that additional work, in addition to increased stakeholder and public outreach, and revisions to the Draft IRWM Plan are needed prior to adoption and formalization of the IRWM Plan. In addition, current guidance requires that the IRWM Plan be updated to meet DWR's 2010 Guidelines in order to be eligible for future rounds of Proposition 84 or Proposition 1E grant funding. As such, this Work Plan includes the tasks necessary to complete an IRWM Plan that is compliant with current DWR standards, and approved by the RWMG and the Stakeholders Committee.

The 2010 DWR Guidelines include sixteen (16) specific standards that must be met by the IRWM Plan. **Table 3-1** provides a summary of revisions that need to be made to the existing Draft IRWM Plan to meet standards set within the 2010 DWR Guidelines. In addition, because the Draft IRWM Plan is not complete nor has it been approved by the RWMG or the Stakeholders Committee, **Table 3-1** also provides work that needs to be completed in whole to achieve compliance with 2010 DWR Guidelines. In addition, **Table 3-1** provides information regarding whether or not given revisions or work will be covered by funds requested as part of this Planning Grant Proposal. Any necessary work not contained within the *Grant Work Plan Content* is described in within *Additional IRWM Plan Work*.

Table 3-1: Revisions Needed for the IRWM Plan

IRWM Plan Sections (DWR 2010)	Draft IRWM Plan Section (2010)	Revisions and Work Needed	Work Plan Task Addressing IRWM Plan Section	Covered by DWR Planning Grant?
Governance	Section 1, Governance	Expand discussion of governance structure, public noticing, Plan adoption, decision-making, and collaborative process	Task 1, Task 3-1	Partially
Region Description	Section 2, Description of Region	Refine description of regional description based on new/updated information about the Region	Task 1, Task 2, Task 3-6	Partially
Objectives	Section 3, Goals, Objectives, and Targets	Expand discussion of process used to determine objectives	Task 3-2	Yes
Resource Management Strategies	Section 4, Resource Management Strategies Identification and Integration	Expand discussion of process used to identify resource management strategies for IRWM Plan	Task 3-6	Yes
Integration	Section 4, Resource Management Strategies Identification and Integration	Expand discussion of stakeholder/institutional and project integration	Task 1, Task 3-6	Yes
Project Review Process	Section 5, Project Review Process	Expand discussion of project submittal, funding application prioritization, and modification	Task 3-2	Yes
Impact and Benefit	Section 6, Impact and Benefits	Expand discussion of the impacts and benefits of program implementation	Task 3-6	Yes
Plan Performance and Monitoring	Not completed	Determine discussion of methods to evaluation Plan performance	Task 3-4	Yes
Data Management	Not completed	Determine the IRWM data management system	Task 3-3	Yes
Finance	Not completed	Evaluate potential sources and certainty of funding	Task 3-1	Yes
Technical Analysis	Not completed	New discussion of technical information, analysis, and methods	Task 3-3	Yes
Relation to Local Water Planning	Not completed	New discussion of relation to local water and flood management planning	Task 3-5	Yes
Relation to Local Land Use Planning	N/A	New discussion of relation to local land use planning, relationships between water managers and planners, and proactive efforts to improve relationships	Task 3-5	Yes
Stakeholder Involvement	Section 2, Description of Region	Expand discussion of process used to engage stakeholders and DACs, decision-making process, and information access	Task 1, Task 2, Task 3 (all subtasks)	Partially
Coordination	Section 2, Description of Region	Expand discussion of coordination with State and federal agencies, as well as interregional IRWM partners	Task 1, Task 2, Task 3 (all subtasks)	Yes
Climate Change	N/A	New discussion of climate change, anticipated implications and effects, and mitigation opportunities	Task 2-3, Task 3-6	Yes

Grant Work Plan Content

A. Task 1: Outreach & Program Administration

Task 1-1: Stakeholder Outreach (Including DACs and Tribes)

Background and Purpose

During past IRWM-related efforts, the RWMG led by the BWD initiated a stakeholder outreach process to help support development and adoption of an IRWM Plan. As part of the stakeholder outreach process, the Stakeholders Committee met on October 11, 2011 and completed an exercise to identify all potential stakeholders within the Region. **Table 3-2** below provides a list of identified stakeholders; those stakeholders identified in italics currently participate on the Stakeholders Committee.

Table 3-2: Identified ABD Stakeholders

<i>Agricultural Interests (Agricultural Alliance for Water and Resource Education)</i>	Lodging Interests*
<i>Anza-Borrego Desert State Park</i>	Ocotillo Wells State Vehicular Recreation Area (HOV Park)
<i>Anza-Borrego Foundation</i>	Outlying Community: Boulevard
<i>Borrego Water District</i>	Outlying Community: Canebrake
<i>Borrego Chamber of Commerce</i>	Outlying Community: Jacumba
Borrego Community Sponsor Group	Outlying Community: Ocotillo Wells
Borrego Springs Unified School District	Homeowners Associations
Campo Band of Mission Indians	Los Coyotes Band of Cahuilla Mission Indians
Canebrake County Water District	Majestic Pines Community Services District
Commercial Development*	Manzanita Band of Mission Indians
<i>County of San Diego (Flood Control District)</i>	Residential Development*
Cuyapaipe Band of Mission Indians	<i>Resource Conservation District of Greater San Diego County</i>
<i>Elsinore-Murrieta-Anza Resource Conservation District</i>	RV Park Interests*
<i>Golf Course Interests*</i>	<i>Salton Community Service District</i>
Jacumba Community Services District	Santa Ysabel Band of Mission Indians

*It was noted that these groups do not have a cohesive group of aligned interests at this time.

In order to increase the possibility of a successful planning grant application and to facilitate a robust stakeholder process, DWR project manager for ABD IRWMP requested that DWR, through its contract with Center for Collaborative Policy (CCP), provide facilitation services to the ABD IRWMP stakeholders. The request, granted by DWR Regional Planning Branch, included a scope of work with two phases:

1. During Phase 1, CCP would draft interview questions and conduct interviews of potential stakeholders in the ABD Region to determine the feasibility of providing facilitation services in support of the development of an ABD IRWMP. Questions to be addressed included: Will stakeholders from the key organizations in the Region participate in IRWMP planning in order to make it a legitimate process? What are the main water issues and challenges that need to be addressed in the Plan? Will the region be successful in addressing those issues in spite of obstacles that might derail the development of the plan? In addition, RMC-WRIME through a separate contract with DWR, would take part in the relevant interviews and conduct additional

research to ascertain the status of technical information, determine technical needs and determine the feasibility of providing technical support to assist in the drafting of the ABD IRWMP.

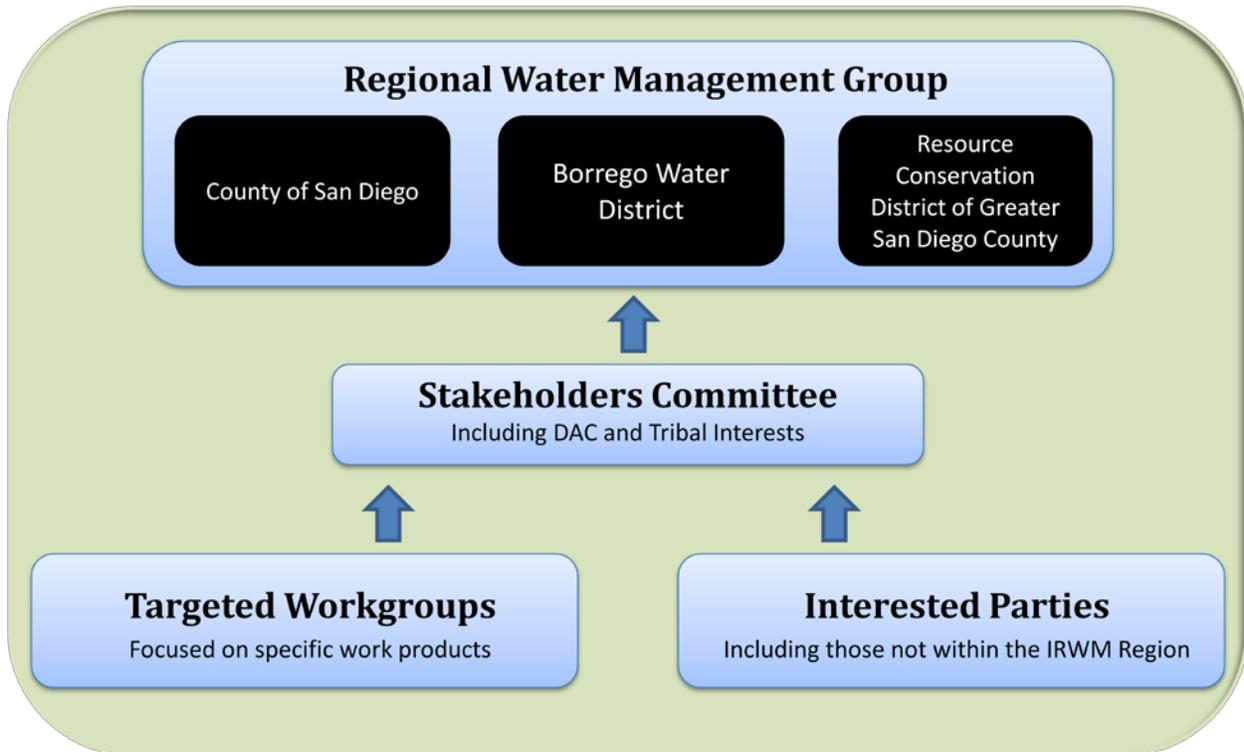
2. If recommended [for additional funding](#), in Phase 2, DWR would fund CCP facilitation of several meetings and limited stakeholder outreach during the development of the ABD IRWMP.

Please note that because this work is being completed utilizing California State funding through DWR, this work is not included within the overall Budget (refer to Attachment 4), and is not being considered as matching funds. Additionally, this work captured a limited number of stakeholder input; as such, additional outreach is needed and included in this Work Plan.

Establishing a common understanding and support for the IRWM Program among key stakeholders is critical to the success of the ongoing program. As the program moves forward, it will be important to do what is possible to increase stakeholder engagement through increased attendance and participation in stakeholders meetings. It will be especially important to increase outreach to stakeholders that have been previously contacted but have not yet officially participated in the IRWM Program or the Stakeholders Committee.

The Region strives to maintain transparency in all IRWM-related activities, and therefore has an organization (governance) structure that functions as a “bottom-up” process where stakeholders feed information and input up through the RWMG, who is responsible for considering stakeholder input when making informed decisions for the Region. **Figure 3-3** below provides a graphical representation of the Region’s bottom-up governance structure.

Figure 3-3: Existing Bottom-Up Governance Structure

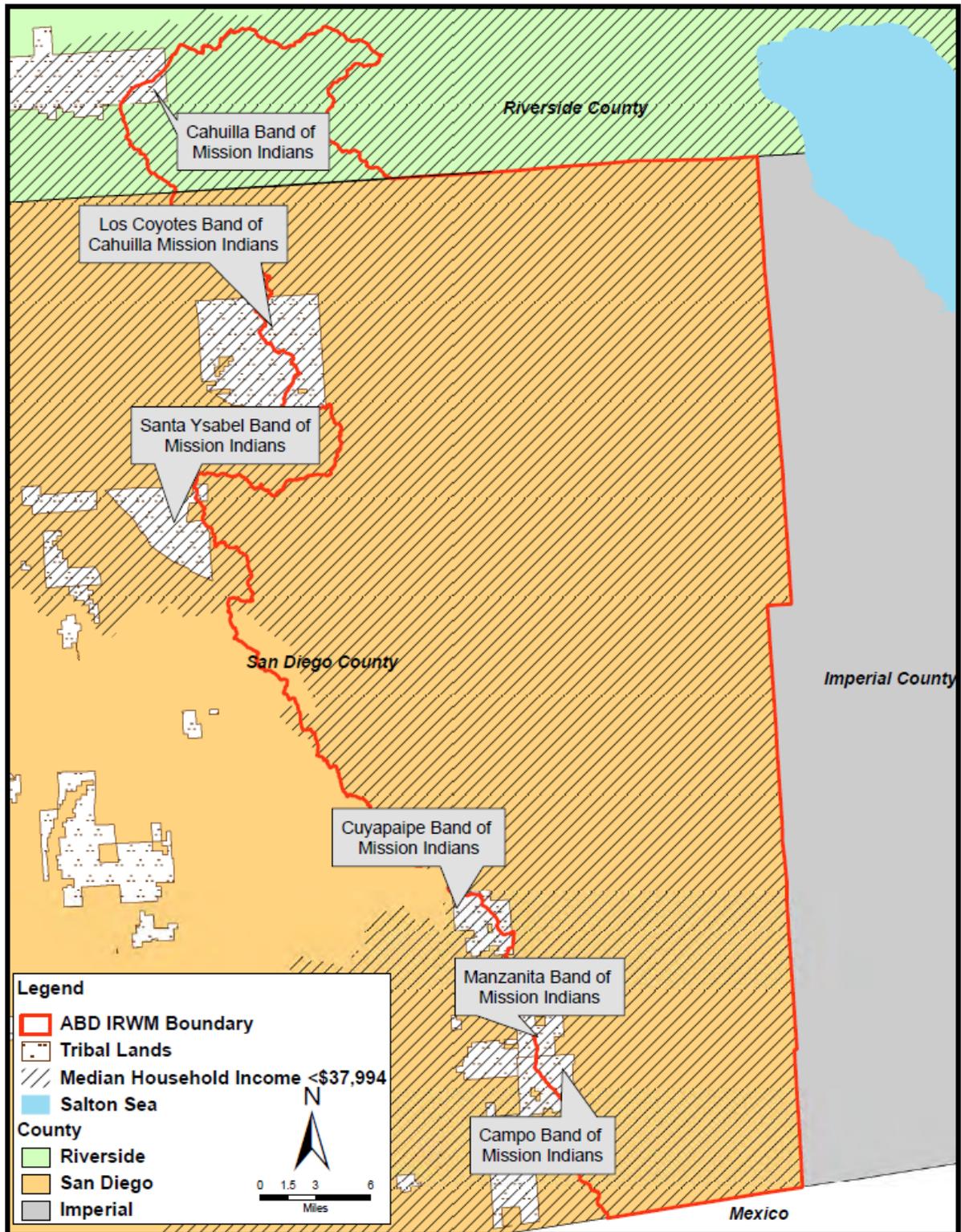


As demonstrated within **Figure 3-4**, almost the entire Region is classified as a DAC according to DWR standards. According to the 2010 DWR Guidelines, a DAC is classified as, “a community with an annual median household income (MHI) that is less than 80 percent of the Statewide annual median household income.” Based on the most recent geographic data available for the Region (2000 Census data), the MHI for California is \$47,493. As such, those communities with incomes less than 80% of this value, or \$37,994, qualify as DACs. Due to the fact that almost the entire Region qualifies as a DAC, stakeholder outreach directed at interested groups throughout the Region constitutes outreach to DACs. Despite this fact, the Region is committed to conducting further outreach efforts to non-governmental organizations (NGOs) and other groups representing the interest of DACs in order to facilitate and support sustained DAC participation in the IRWM planning process.

[Canbrake Water District has 6 full time residents and 80 customers total with the majority of customers in residence around one month per year. This district is chartered by San Diego County, and it is the understanding of the RWMG that they are grandfathered in such a fashion that their water system does not need to follow current DWR regulations or codes. The community is spread over a large area with the customers dispersed; as a result, to date they have not considered any long term planning issues regarding water.](#)

As demonstrated by Figure 3-4, the Region also contains small amounts of tribal land from five separate tribal entities, including the: Los Coyotes Band of Cahuilla Mission Indians, Santa Ysabel Band of Mission Indians, Cuyapaipe Band of Mission Indians, Manzanita Band of Mission Indians, and the Campo Band of Mission Indians. Despite the presence of tribal land within the Region, very few, if any, tribal members reside within the Region. As such, while tribal members have been repeatedly contacted to participate within the IRWM effort, tribal members have not participated to date. Feedback received to date is that there is a perception that water issues within the ABD IRWM Region do not impact tribal livelihoods. Therefore, outreach efforts proposed under Task 1-1 will include directed outreach to the aforementioned tribal entities to obtain and sustain tribal participation in the IRWM planning process.

Figure 3-4: Disadvantaged Communities and Tribal Land within the ABD Region



The following are specific subtasks that will be completed as part of Task 1-1:

Subtask 1-1.1: Increase and Sustain Stakeholder Involvement

Stakeholder outreach will continue to involve announcing and posting agendas, minutes, and other items of the stakeholder meetings on the BWD website. Additionally, all meetings and materials will continue to be sent to the IRWM stakeholder email distribution list. Following are specific ongoing outreach activities that will take place in support of the IRWM program process and IRWM Plan implementation.

The RWMG will conduct follow-up activities to the stakeholder outreach that has been completed to date. Such activities will include contacting stakeholders by phone and by email to notify them about upcoming IRWM activities and solicit participation in public workshops. In addition, existing stakeholder outreach being conducted by the Center for Collaborative Policy will produce directed outreach strategies that the Region can employ to increase stakeholder involvement. While these specific outreach strategies have not yet been identified, it is anticipated that they will include refining the existing stakeholder list and presenting IRWM-related materials at community organization meetings. In addition, directed outreach will include producing up to six (6) newsletters that can be distributed electronically and in-person at meetings, and development of periodic press releases that will be sent to local news publications such as the Borrego Sun, Anza-Borrego State Park Magazine, Julian News, High Country Journal, and other local news sources to notify community members about upcoming public workshops on IRWM planning topics. The purpose of these stakeholder outreach efforts is to support sustained stakeholder participation throughout development of the IRWM Plan.

Other Studies or Work Products to be Utilized

- Work completed by the Center for Collaborative Policy under Anza Borrego Desert Integrated Regional Water Management Plan Facilitation and Technical Support Contract.

Deliverables

- Refined electronic distribution list with contact phone numbers to provide for follow-up communication;
- Periodic updates of the IRWM website (hosted on BWD's website);
- Development of up to six (6) newsletters that will be provided to stakeholders to update them on the IRWM Planning Process;
- Periodic press releases submitted to the Borrego Sun and other local news sources as appropriate;
- Identification and implementation of directed outreach strategies such as presentations and outreach at community organization meetings; and
- Up to six (6) public workshops on IRWM planning topics, including development of agendas, presentations, handouts, and notes. Two (2) of these public workshops will be directed toward receiving input on the Public Draft IRWM Plan document.

Subtask 1-1.2: Increase and Sustain Involvement from DAC and Tribal Entities

Specific targeted outreach efforts will also be conducted to groups and individuals representing DAC and tribal interests. Outreach efforts will include contacting identified DAC and tribal stakeholders by phone and by email to notify such stakeholders about upcoming IRWM activities and solicit participation in public workshops. Outreach efforts will also include refining the existing list of DAC and tribal contacts to ensure that all interested DAC and tribal communities and their representatives are included. Outreach will also include up to four (4) meetings to be held in DAC or tribal areas; these meetings will be structured to facilitate direct coordination with DAC and tribal entities to identify their major water-related issues and priorities. These meetings will result in the development of text that will be incorporated into the IRWM Plan to characterize DAC and tribal communities and their water management needs.

Lastly, development of the IRWM Plan and other ABD IRWM-related activities involve a Stakeholders Committee that is discussed in detail in Task 1-2. Due to the importance of DAC and tribal communities within the Region, directed outreach via telephone calls and e-mails, will be conducted prior to Stakeholders Committee meetings to encourage participation among DAC and tribal representatives.

Other Studies or Work Products to be Utilized

- Work completed by the Center for Collaborative Policy under under Anza Borrego Desert Integrated Regional Water Management Plan Facilitation and Technical Support Contract.

Deliverables

- Refined electronic distribution list, specifically updated with DAC and tribal entities, with contact phone numbers to provide for follow-up communication;
- Up to four (4) DAC and tribal outreach meetings, including preparation of draft and final agendas, presentations, handouts, and notes; and
- Draft and final IRWM Plan section articulating DAC and Tribal water-related issues and their respective water management needs.

Task 1-2: RWMG and Stakeholders Committee Meetings and Coordination (Including DACs and Tribes)

Background and Purpose

A Public Kick-off meeting held in January 2010 initiated the IRWM planning process. Following this meeting, the RWMG and IRWM stakeholders (Stakeholders Committee) worked through September 2010 to begin development of a draft IRWM Plan and prepare and submit a Round 1 Proposition 84 Planning Grant Application to DWR. During this time frame, the RWMG and the Stakeholders Committee met on a regular basis.

Upon receipt of information that the Region was not recommended for Round 1 Proposition 84 Planning Grant funding, the RWMG reconvened to begin development of a Round 2 Proposition 84 Planning Grant Application. The RWMG decided to increase stakeholder involvement and transparency in development of Round 2 Planning Grant Application materials by inviting all regional stakeholders to meetings and soliciting further stakeholder input on application materials. Through this process, the RWMG convened six (6) meetings (open to all stakeholders) from July 2011 to February 2012 to develop planning grant application materials and solicit general direction from stakeholders regarding the overall goals and focus of the IRWM planning process. In addition, a Work Plan Workgroup comprised of interested stakeholders was convened through two conference calls and several e-mail correspondences that were used to develop a draft Work Plan outline for the Proposition 84 Planning Grant Application. The draft Work Plan outline, all completed attachments, and other materials included within the final Proposition 84 Planning Grant Proposal were vetted through the larger stakeholder group. **Figure 3-5** provides a graphical representation of the past timeline of the IRWM Program.

Figure 3-5: IRWM Timeline

Milestones	2009	2010				2011				2012
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
Region Approved through RAP	■									
Public Kick-off Meeting		★								
Develop Draft IRWM Plan		■	■	■						
Develop Round 1 Planning Grant (PG) Application			■	■						
Reconvene for Round 2 PG Application							■			
PG Round 2 Stakeholder Meetings								★	★	★
PG Round 2 Workgroup Meetings									★	★

The following are specific subtasks that will be completed as part of Task 1-2:

Subtask 1-2.1: RWMG Meetings

The RWMG is responsible for ongoing management of the IRWM program. The RWMG will meet on an approximately monthly basis. These meetings will generally occur via conference calls. These meetings are critical to maintaining ongoing communication among RWMG members throughout the implementation of Stakeholder Outreach (Task 1-1), and development of the Regional Water Resources Plans Development (Task 2) and of the IRWM Plan Update (Task 3). A majority of the RWMG meetings will involve IRWM Plan development and outreach activities. These meetings will be the primary opportunity for the RWMG agencies to provide in-kind contributions and assistance to the development of the IRWM Plan and related efforts. This task will involve continued support of the RWMG meetings, including preparation for, facilitation of, and participation in monthly RWMG meetings.

Deliverables

- Draft and final agendas, materials, handouts, and meeting notes for RWMG meetings (up to 24 meetings).

Subtask 1-2.2: Stakeholders Committee Meetings including DACs and Tribes

Due to the importance of continuing participation and information sharing with regional stakeholders, Stakeholders Committee meetings will be held on a monthly or bi-monthly (every other month) basis throughout the time frame of IRWM Plan development (from 2012 through Summer 2014) and the two-year grant period. As mentioned within Task 1-1, almost the entire Region is considered a DAC. In addition, as demonstrated within Figure 3-4, multiple tribal lands lie within the Region. Despite the presence of DAC and tribal groups within the Region, the Stakeholders Committee does not currently contain members that represent specific DAC or tribal interests. Therefore, as described under Task 1-1, work will be conducted to increase DAC and tribal participation in Stakeholders Committee meetings. As part of these efforts, the RWMG will work with DAC and tribal entities to schedule Stakeholders Committee meetings, and will hold meetings in locations preferable to these groups as practical.

Half of these meetings will take place in person, and half will be held via conference call and/or webinar. The in-person meetings will be held at the BWD headquarters in Borrego Springs or at alternate locations throughout the Region to accommodate other stakeholders, particularly DAC and tribal representatives. Agendas for these meetings will be prepared and distributed in advance to each person listed on the stakeholders list and on the BWD (IRWM) website. A conference line will be provided so that stakeholders that cannot attend in-person can participate via conference call. As necessary, webinars will be utilized to allow for presentations to occur during conference calls.

Other Studies or Work Products to be Utilized

- Work completed by the Center for Collaborative Policy under Anza Borrego Desert Integrated Regional Water Management Plan Facilitation and Technical Support Contract.
- Refined electronic distribution list with contact phone numbers to provide for follow-up communication. Please note that the electronic distribution list will be created as part of Task 1-1, and will include specifics regarding DAC and tribal stakeholders.

Deliverables

- Draft and final agendas, materials, handouts, webinars, and meeting notes for Stakeholders Committee meetings (up to 24 meetings).

Task 1-3: Coordination with other IRWM Regions

Background and Purpose

This task includes outreach to and coordination with neighboring IRWM regions within the Colorado River Funding Area, as well as neighboring IRWM regions within other funding areas. The goal of this outreach is to establish a coordination meeting that occurs up to three times per year between the four existing regions within the Colorado River Funding Area (Imperial, Coachella Valley, Mojave, and Anza Borrego Desert) to discuss common planning issues, results of regional planning studies, and possibly distribution of the available remaining Proposition 84 funding. In addition, this task will serve to provide a forum for discussing any joint project opportunities and/or project conflicts with neighboring IRWM regions, particularly those within adjacent or overlapping watersheds.

Other Studies or Work Products to be Utilized

- IRWM Plans for neighboring regions, as appropriate.

Deliverables

- Targeted outreach (emails, telephone calls) to neighboring IRWM regions;
- Draft and final agendas, materials, and handouts, and meeting notes for Inter-Regional Coordination meetings (up to 6 meetings).

B. Task 2: Regional Water Resources Plans Development

Development of this Anza Borrego Desert Planning Grant Proposal occurred through an open stakeholder process that included six (6) meetings from July 2011 to February 2012. In October 2011, stakeholders participated in an exercise with a professional facilitator through which they identified “big” (key) issues within the Region. During this process, stakeholders unanimously identified four key issues: water supply, water quality, flood control, and environmental integrity. In addition, stakeholders unanimously identified water supply as the Region’s most important issue among the four identified key issues. While the issue of environmental integrity was not formally defined within this process, stakeholders agreed that due to the importance of the State Park to the Region, water-related issues potentially affecting the natural

Key Regional Issues Identified by Stakeholders:

- Water supply;
- Water quality;
- Flood control; and
- Environmental Integrity.

“Environmental integrity” embraces the concept that the Region and its vast array of environmental resources must be protected through ensuring their sustainability. Sustainable water use does not harm ecosystems, degrade water quality, or compromise the ability of future generations to meet their own needs.

environment (particularly within the State Park) should be considered.

Due to the importance of the four key issues within the Region, it is essential that they are properly addressed and included within the IRWM Plan. Therefore, the following tasks outline regional water resources plans that aim to address each of the four key issues. Water supply (groundwater) is addressed in Task 2-1, and water quality (groundwater quality) as it relates to changes in groundwater levels is addressed in Task 2-2. Tasks 2-1 and 2-2 also include components that address environmental integrity. Task 2-3 addresses climate change, which is a substantial component of 2010 DWR Guidelines for IRWM Plans. In addition, because climate change is anticipated to

substantially impact flood control and invasive species (environmental integrity), Task 2-3 also includes specific components that analyze how climate change will impact these key issues.

Task 2-1: Managing the Region’s Groundwater Basins

Background

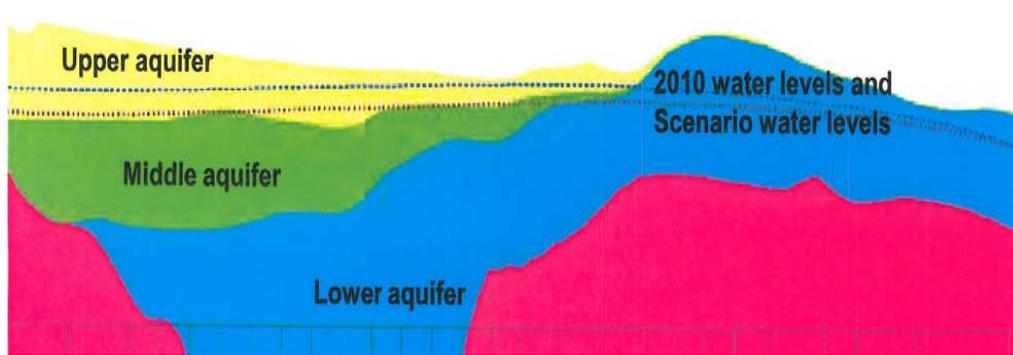
Usable water supply within the Region is solely sourced from groundwater basins. Within the Region, runoff from surrounding mountain watersheds recharges local groundwater basins, which are then accessed from multiple locations via pumping. There are many groundwater aquifers within the Region; however the Borrego Valley Groundwater Basin (Basin 7-24 per DWR Bulletin 118) supplies water to the majority of the Region’s residents (refer to **Figure 3-6**). The Borrego Valley Groundwater Basin is composed of three distinct aquifers: the Upper, Middle, and Lower aquifers.

Despite the importance of local groundwater resources, the Region’s groundwater basins, particularly the Borrego Valley Groundwater Basin, are in a state of overdraft. According to preliminary findings from a United States Geological Survey report, the estimated usable life of the Upper Aquifer of the Borrego Valley Groundwater Basin under existing conditions is approximately 50 to 100 years (County of San Diego 2011). The stakeholders within the region have many concerns about this useful life of the aquifer as it applies to feasibility. For example, as the top aquifer is drawn down, it will become increasingly expensive to draw upon the middle and lower aquifer, both in terms of electricity, but also in potentially required treatment.

Despite the potentially dire situation of the Region’s main water supply source, the Region has not yet reached consensus regarding the status of the Region’s groundwater basins.

Available groundwater within the Borrego Valley Groundwater Basin is currently sourced mainly from the Upper Aquifer (County of San Diego 2010). Hydrogeological information regarding the Borrego Valley Groundwater Basin suggests that it is not known at this time whether it is economically viable to pump groundwater from the Middle and Lower aquifers due to their depth and the quality of groundwater that can be obtained on a continuous basis from these aquifers. For example, if groundwater from this depth contains large amounts of fluorides, expensive tertiary treatment may be required for all purposes, including irrigation and municipal uses (County of San Diego 2010). **Figure 3-7** provides a visualization of the hydrogeology of the Borrego Valley Groundwater Basin. Please note that this figure provides a graphical representation of the Borrego Valley Groundwater Basin and is meant for information purposes only; this figure does not constitute an accurate representation of the Region’s groundwater levels.

Figure 3-7: Hydrogeology of the Borrego Valley Groundwater Basin (USGS 2011)



Groundwater overdraft is not only an issue from a water supply perspective, but has also resulted in environmental integrity issues. Specifically, overdraft of the Borrego Valley Groundwater Basin, in conjunction with recent droughts, has caused substantial loss to important biological resources such as sensitive plant and animal species (County of San Diego 2011). The issue of maintaining environmental integrity is of particular importance for the Anza-Borrego Desert State Park, which accounts for the majority of land (approximately 70%) within the Region. For example, if the Region's groundwater basins continue to be dewatered and lose viability, it is possible that environmental integrity issues, such as the loss of important biological resources, will continue to develop and result in potentially large adverse economic impacts to the considerable annual revenues generated for the region from tourists visiting the State Park and frequenting the resorts and winter homes in the region.

Despite the importance of groundwater supplies and the potentially dire situation of the Region's main water supply source (the Borrego Valley Groundwater Basin), the Region has not yet reached consensus regarding the current and future status of the Region's groundwater basins. Work is currently being conducted under a separate DWR contract to develop the *State of the Basin* report. This report will analyze existing information regarding the Region's groundwater basins, and document the past, present, and range of foreseeable future conditions within the local groundwater basins. Through a stakeholder-driven process, the *State of the Basin* report will help achieve consensus within the Region regarding current and future projected land use assumptions, water demands, and groundwater basin characteristics. Due to the fact that the Borrego Valley Groundwater Basin provides water supplies to the majority of residents within the Region, the *State of the Basin* report will focus on this basin in particular, but will address other groundwater basins within the Region as well. As the *State of the Basin* report will rely on existing information, it will compile information regarding the existing groundwater supply and demand, given that information regarding these parameters is available and agreed upon by stakeholders. As such, this report will produce information regarding the existing status of the Region's groundwater basins, and will not produce future modeling of groundwater levels or groundwater quality.

Purpose

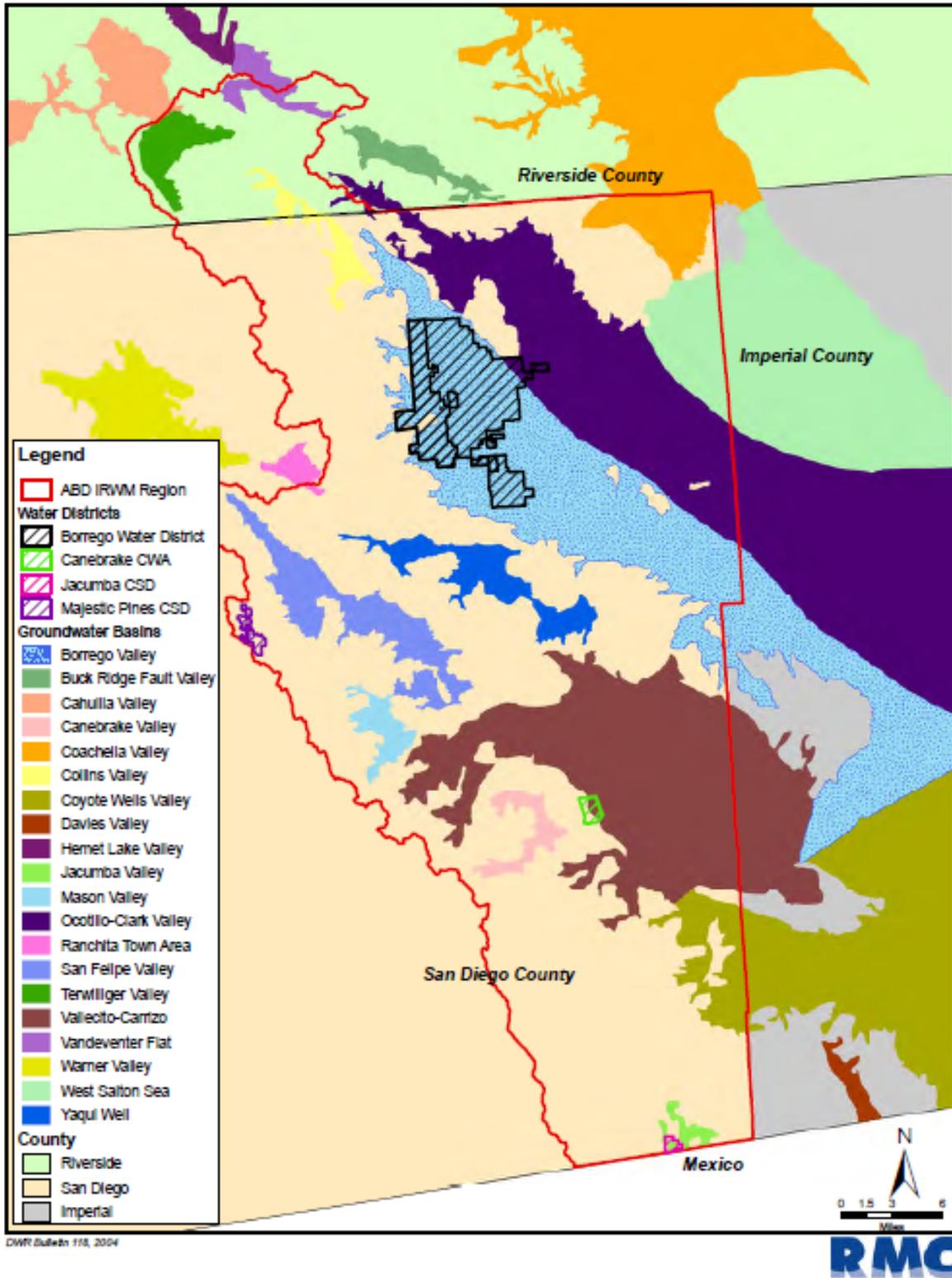
Given the Region's reliance on groundwater supplies, it is imperative that the Region manages its groundwater basins in a scientific and economic manner. The purpose of Task 2-1 is to use existing data, including information prepared within the *State of the Basin* report, and working through an open and transparent stakeholder process to develop a ranked list of alternative strategies and associated funding mechanisms that would provide the Region with implementable strategies for adequately managing its groundwater resources. In addition, due to the intrinsic link between groundwater supplies and environmental integrity within the Region, Task 2-1 will also assess how environmental integrity issues have arisen and may continue to arise if the Region's groundwater basins are not adequately managed.

Overall Structure of Task 2-1

The following provides an outline of Task 2-1 to demonstrate the general structure of this task:

- Task 2-1: Managing the Region's Groundwater Basins
 - Subtask 2-1.1: Characterization and Risk Assessment of Current Regional Water Supply
 - Subtask 2-1.2: Alternative Strategies for Establishing Managed Basins
 - Subtask 2-1.3: Mechanisms for Funding Groundwater Management Alternatives
 - Subtask 2-1.4: Addressing Environmental Integrity Issues

Figure 3-6: Groundwater Basins within the ABD IRWM Region



The following are specific subtasks that will be completed as part of Task 2-1:

Subtask 2-1.1: Characterization and Risk Assessment of Current Regional Water Supply

<<Include all information pertaining to the ~~Southeast California Regional Basin Study~~ USGS Study to delineate the hydrogeology and water availability of the Borrego Valley for the period of October 1, 2008 to September 30, 2011. - ~~that~~ will be included as matching funds. Must include a description of work, and then tie in how this study is a necessary component of the overall groundwater study. In addition, we need all financial backup information showing costs for the plan (or relevant sections) and what was funded with that money. We also need a timeline of completion to plug into our schedule.>>

Subtask 2-1.2: Alternative Strategies for Establishing Managed Basins

Following the description of baseline conditions and trends established in the *State of the Basin* report, potential alternative strategies that could be implemented to adequately manage the Region's groundwater basins will be developed. Please note that alternative strategies may include a compilation of various options, and are not limited to a single strategy. Potential options could include technical, legal, and legislative options such as groundwater recharge (technical), legally stipulated agreements negotiated among pumpers (legal), and special act legislation that grants groundwater management authority (legislative).

Work conducted under this subtask will include coordinating with the Stakeholders Committee to determine an agreed upon definition for adequately managing the Region's groundwater basins. Some of the questions that will be addressed in agreeing upon this definition will be:

- 1) What is necessary to develop a plan that actually addresses the overdraft by bringing withdrawals into balance w/ annual recharge?
- 2) Who has or how do we establish the authority to enforce the plan?
- 3) What is a mechanism to pay for implementing the plan?

It is assumed that the *State of the Basin* report will produce information regarding the baseline (existing) groundwater balance (supplies and demands), which do not constitute adequate management due to existing groundwater overdraft conditions. It is likely that the stakeholder group utilized for this subtask will be synonymous with the stakeholder group established to review and provide input for the *State of the Basin* report; however attendance and participation will be open to all interested stakeholders, particularly DAC and tribal representatives.

This subtask will also involve developing a sound scientific and economic evaluation (a formal prioritization process) that will be used to rank each potential alternative. The prioritization process shall take into consideration the hydrologic feasibility that implementation of each alternative would lead the Region towards adequately managing its basins according to the definition of "adequately managing" as agreed upon by stakeholders. In addition, the prioritization process will assess the relative economic cost associated with implementing and operating each alternative over its reasonable lifetime.

The results of this prioritization process will include a prioritized list that ranks alternative strategies among each other and places alternative strategies into relative tiers. Up to eight (8) of the top-scoring alternative strategies will be placed within the "top-tier" of alternatives. The results of this process will be integrated into the IRWM Plan (refer to Task 3).

Subtask 2-1.3: Mechanisms for Funding Groundwater Management Alternatives

In conjunction with work completed under Subtask 2-1.2, potential mechanisms will be developed to analyze how alternative strategies included within the top-tier list of ranked alternatives could be funded on an ongoing basis (refer to Subtask 2-1.2). Any alternatives that are identified as financially infeasible will be removed from the top-tier list and replaced with subsequently ranked alternatives. This subtask will include development of financing proposals that describe how to finance implementation, operation,

and maintenance of each financially feasible top-tier alternative through its reasonable life. This task will include economic analysis and may also include review by attorneys specializing in water law. The results of this process will be integrated into the ABD IRWM Plan (refer to Task 3).

Subtask 2-1.4: Addressing Environmental Integrity Issues

This subtask will involve development of a summary of existing and future potential environmental integrity issues and their associated costs assuming continuation of existing conditions (i.e. not adequately managing) the Borrego Valley Groundwater Basin and the Region's other groundwater basins. The purpose of this subtask is to provide information regarding environmental integrity-related issues that have arisen and will potentially arise in the future if the Region's groundwater basins are not adequately managed. Specifically, this subtask will address potential impacts that have occurred and may impact biological resources/ecosystem services if the Region's groundwater basins are not adequately managed. The results of this process are not anticipated for incorporation into the alternative strategy ranking process (Subtask 2-1.2), but rather will be integrated into the IRWM Plan to describe the Region's important environmental resources and the associated water demands to support environmental needs (refer to Task 3).

Other Studies or Work Products to be Utilized

- Work completed by RMC-Wrime under <<list formal name of Ali Taghavi's study through DWR here.>>
- 2002 Groundwater Management Plan, Borrego Water District
- 2009 Integrated Water Resources Management Plan, Borrego Water District
- 2004 California's Groundwater Bulletin 118 for the Borrego Valley Groundwater Basin, DWR
- 2011 San Diego County General Plan Update, County of San Diego
- Pending: 2011 Evaluation of Groundwater Conditions and Land Subsidence in the Borrego Valley, United States Geological Survey
- Pending: Southeast California Regional Basin Study, United States Bureau of Reclamation and the Borrego Water District <<POTENTIAL FOR SOME LOCAL MATCHING \$>>
- Pending: State and Tribal Assistance Grant (STAG) Borrego Springs Pipeline Feasibility Study, United States Environmental Protection Agency and the Borrego Water District

Deliverables

- Up to five (5) Stakeholders Committee meetings to discuss the alternative basin management strategies, the prioritization process, the potential funding mechanisms, and the existing and future potential environmental integrity issues. This deliverable will include preparation of agendas, presentations, handouts, and notes;
- Draft and final Groundwater Management Technical Memorandum including a summary of the Stakeholders Committee meetings, alternative strategies, prioritization process, potential funding mechanisms, and associated environmental integrity issues; and
- Integration of conclusions and results of the Groundwater Management Technical Memorandum into the ABD IRWM Plan.

Task 2-2: Forecasting Changes in Water Quality as the Groundwater Basins are Dewatered

Background

As described above, the Region's groundwater basins, and in particular the Borrego Valley Groundwater Basin, are in a state of overdraft. It is possible that under existing conditions, the Upper Aquifer of the Borrego Valley Groundwater Basin will-may only be able to supply the Region with groundwater for 50-100 years (County of San Diego 2011). As the Region's groundwater basins are dewatered (under

existing conditions), it is possible that water quality issues will arise. According to Bulletin 118 from DWR, the Borrego Valley Groundwater Basin is currently impacted by total dissolved solids (TDS), and also potentially by nitrates (DWR 2004). Information from local stakeholders suggests that nitrates, inorganic compounds, and other byproducts from the Region's agricultural industry may exist at high concentrations within certain portions of the Region's groundwater basins. Therefore, there is concern that as the Region's groundwater basins become dewatered, water quality conditions will change, and a greater amount of the Region's groundwater supply will be impacted by water quality issues. Given that the Region's existing groundwater from municipal water wells used to supply potable water does not exceed maximum contaminant levels set by regulators, if water quality issues were to arise, they would potentially require that the Region implement water treatment systems that are not currently in place. As such, water quality impacts could have a substantial economic impact within the Region, by potentially rendering groundwater prohibitively expensive depending on the level of water treatment required.

In addition, as described within Task 2-1, groundwater levels have an intrinsic connection with environmental integrity (particularly biological resources) within the Region. Similarly, if groundwater quality issues arise due to dewatering, it is possible that constituents of concern could substantially impact the Region's environmental integrity.

Purpose

Although groundwater quality issues could have a potentially substantial impact with regards to the usability and affordability of groundwater and the Region's environmental integrity, groundwater quality has not been comprehensively analyzed within the Region. Therefore, the purpose of Task 2-2 is to develop forecasts that analyze potential water quality impacts and their relative economic and environmental integrity impacts that may arise due to the lowering of the Region's groundwater tables (dewatering).

Overall Structure of Task 2-2

The following provides an outline of Task 2-2 to demonstrate the general structure of this task:

- Task 2-2: Forecasting Changes in Water Quality as the Groundwater Basins are Dewatered
 - Subtask 2-2.1: Methodologies for Developing Water Quality Forecasts
 - Subtask 2-2.2: Analyze Potential Economic Impacts and Impact Timeframes
 - Subtask 2-2.3: Addressing Environmental Integrity Issues

The following are specific subtasks that will be completed as part of Task 2-2:

Subtask 2-2.1: Methodologies for Developing Water Quality Forecasts

This subtask involves development of methodologies (including assumptions) that will be utilized to develop water quality forecasts that demonstrate the potential water quality impacts that could occur and the timeframes over which they would occur as the Region's groundwater basins are dewatered. The forecasts will be required to demonstrate the magnitude and extent of water quality impacts under various groundwater management scenarios, including a baseline, "status quo," scenario. The baseline scenario would be established from information presented within the *State of the Basin* report, which will determine the current water balance of groundwater within the Region. The results of this process will be integrated into the IRWM Plan (refer to Task 3 below).

Subtask 2-2.2: Analyze Potential Economic Impacts and Impact Timeframes

This subtask involves implementation of the methodologies developed within Subtask 2-2.1 in order to complete forecasts that demonstrate the potential water quality impacts and the attendant economic costs of these impacts that may occur and the timeframes over which they would occur as the Region's groundwater basins are dewatered. The probabilistic economic cost estimates from this analysis will demonstrate the magnitude and extent of water quality impacts under various groundwater management

scenarios, including a baseline scenario. The results of this analysis will be integrated into the IRWM Plan (refer to Task 3).

Subtask 2-2.3: Addressing Environmental Integrity Issues

This subtask will involve development of a summary of existing and future potential environmental integrity issues that would be anticipated based on water quality forecasts determined within Subtask 2-2.2. The purpose of this subtask is to provide an estimate of both first and second order economic and qualitative information regarding environmental impacts that may potentially arise in the future due to probabilistically forecasted a decline in water quality resulting from dewatering of the Region's groundwater basins. The results of this analysis will be integrated into the IRWM Plan to describe the Region's salient and projected environmental resources and the associated water quantity and quality needed to support these economically important environmental resource needs (refer to Task 3).

Other Studies or Work Products to be Utilized

- No applicable studies are available at this time.

Deliverables

- Up to ten (10) Stakeholders Committee meetings to discuss the water quality forecasts, the water quality forecast results, and the potential environmental integrity issues. This deliverable will include preparation of agendas, presentations, handouts, and notes.
- Draft and final Water Quality Technical Memorandum including methodologies, forecast results (economic impacts and timeframes), and associated environmental integrity issues.
- Integration of conclusions and results of the Water Quality Technical Memorandum into the IRWM Plan.

Task 2-3: Anticipating the Impacts of Climate Change on Regional Water Resources

Background

The 2010 DWR Guidelines, which will guide development of the IRWM Plan, contain specific and substantial requirements regarding climate change. Specifically, DWR requires that IRWM plans address both adaptation to the effects of climate change and mitigation of greenhouse gas emissions. While many generalized climate change studies have been completed throughout the State of California, no climate change vulnerability analyses, greenhouse gas inventories, or other specific climate change analyses have been completed for the Region. Therefore, Subtask 2-3.1 described below will be conducted to provide requisite climate change information and analysis for incorporation within the IRWM Plan.

While no specific ABD-Region climate change analyses have been conducted, due to the Region's reliance on groundwater supplies, climate change analyses will need to assess potential climate change-related impacts to this critical regional resource. A 2010 paper written by scientists from the Massachusetts Institute of Technology indicates that climate change is anticipated to impact annual recharge rates, which would therefore impact the Region's water balance and potentially reduce the usable lifetime of the Borrego Valley Groundwater Basin (Gene-Hua et al 2010). Therefore, Task 2-3 will include analysis of climate change vulnerabilities as they relate to the Region's water supply balance.

In October 2011, stakeholders identified flood control as a key issue within the Region. In particular, stakeholders noted that flood-based development restrictions have harmed the Region's economy; because the County of San Diego currently restricts development in certain portions of the Region that have mapped flood risks according to the Federal Emergency Management Agency (FEMA). As such, flooding in the Region provides an economic impetus for implementing flood control measures, because such measures may alleviate development restrictions and provide benefits to the Region's economy (refer to **Figure 3-8** for an overview of the current flood areas mapped by FEMA). The purpose of flood-related development restrictions is to avoid damages to structures and property during flood events, which has been a substantial issue in the Region. For example, a 2010 study conducted by the United States

Army Corps of Engineers (USACE) indicates that the total damage incurred to the Borrego Springs area alone due to a 100-year flood event is over \$29 million (USACE 2010). An existing report from DWR entitled *Water and Border Area Climate Change – An Introduction* provides an overview of potential impacts that may arise within the United States-Mexico Border Region (within which the Region lies) as a result of climate change (DWR 2008). The aforementioned document indicates that monsoons originating in the Gulf of Mexico, which currently cause flash flooding within the Region, could intensify with climate change (DWR 2008). As such, an important component of climate change analysis for the Region will be to consider existing flood impacts and analyze how impacts may increase due to intensified rainfall events as a result of climate change.

Lastly, due to the importance of environmental integrity within the Region, anticipated climate change impacts must consider the water demands needed to provide the ecosystem services necessary to sustain irreplaceable and protected biomes managed by the State Park and those of the surrounding desert environment. In addition, the climate change analysis must project how the groundwater requirements of the desert ecosystem and water table levels required to meet those demands may be affected as a result of climate change impacts on the variability of annual recharge. In addition, the potential increase in flood events due to climate change have already impacted some of the region's environmental resources, such as the recent flood event that damaged and removed some of the palm trees in Palm Canyon. As such, an important component of the climate change analysis will be to consider potential environmental integrity issues that will arise as a result of climate change [and what mitigation factors can be employed by the Region](#).

Purpose

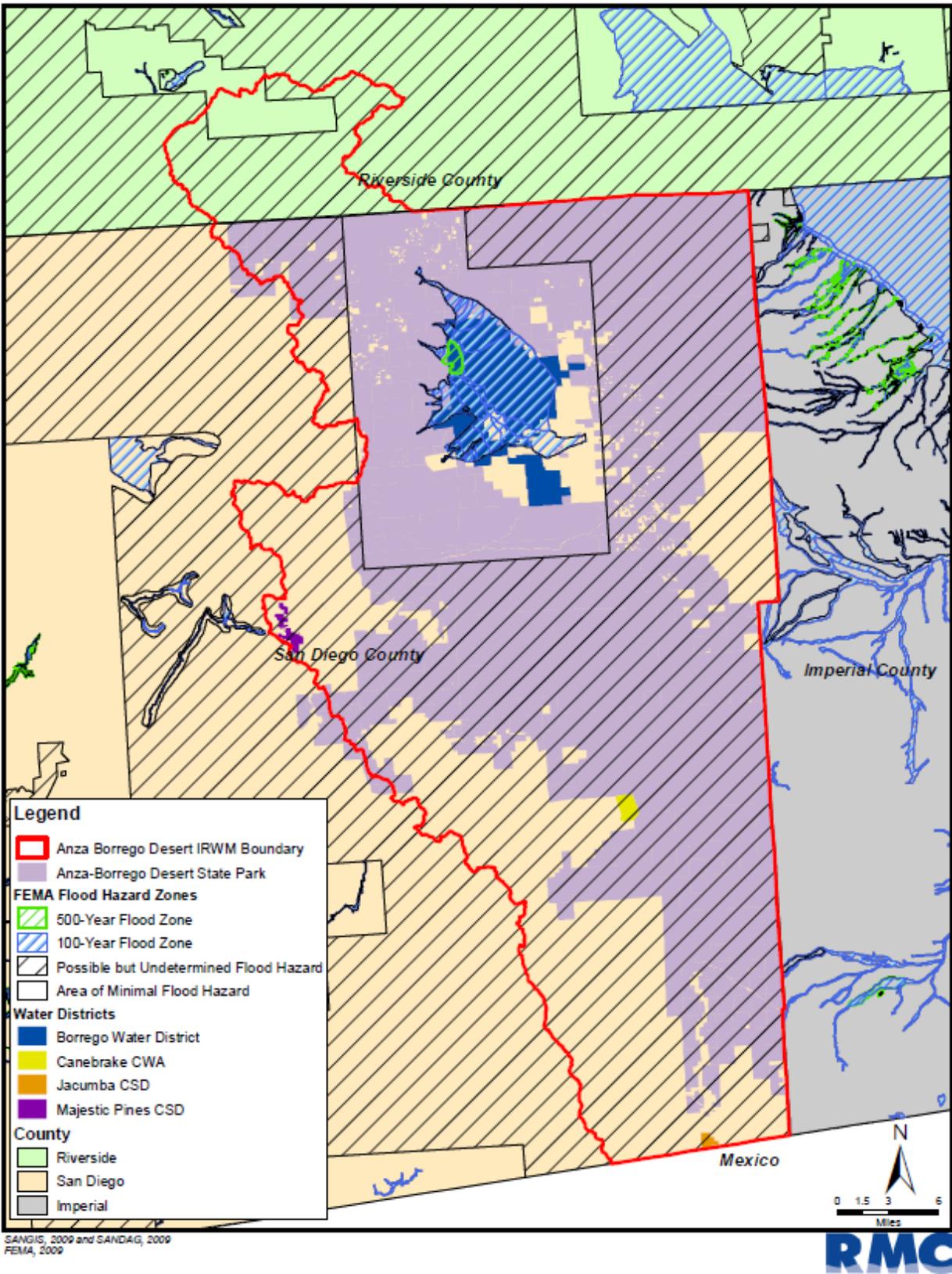
The purpose of Task 2-3 is two-fold. First, this task will be utilized to conduct climate change analyses and efforts as specified by DWR within the 2010 IRWM Guidelines. Second, two key Regional issues, flood control and environmental integrity, are anticipated to be affected by climate change. Therefore, Task 2-3 will provide information regarding climate change impacts, vulnerabilities, and possible solutions as they relate to the specific issues of flood control and environmental integrity.

Overall Structure of Task 2-3

The following provides an outline of Task 2-3 to demonstrate the general structure of this task:

- Task 2-3: Anticipating the Impacts of Climate Change on Regional Water Resources
 - Subtask 2-3.1: Climate Change Vulnerability Analysis and Prioritization
 - Subtask 2-3.2: Flood Control and Other Adaptation Strategies
 - Subtask 2-3.3: Addressing Environmental Integrity Issues

Figure 3-8: Currently Mapped Flood Areas according to FEMA



The following are specific subtasks that will be completed as part of Task 2-3:

Subtask 2-3.1: Climate Change Vulnerability Analysis and Prioritization

This task involves development of the climate change analysis required to address DWR IRWM Plan Standards relating to climate change. As such, modeling efforts will provide quantitative tools to determine the vulnerability of the Region to Region-specific climate change impacts, such as groundwater recharge rates and flooding. The vulnerability analysis will include an evaluation of the adaptability of water management systems in the Region to climate change, including water supply, wastewater, and flood control systems. A Climate Change Workgroup will be established to guide development of the vulnerability analysis. The workgroup will establish priorities by which to rank climate change vulnerabilities, and then complete a prioritization exercise that ranks vulnerabilities in terms of risk and severity. The results of this process will be integrated into the IRWM Plan (refer to Task 3 below).

Subtask 2-3.2: Flood Control and Other Adaptation Strategies

Upon assessing the Region's vulnerability to climate change, work will be completed to identify specific adaptation strategies that can be completed to allow the Region to better adapt to anticipated climate change vulnerabilities.

Information from a 2008 DWR report entitled *Water and Border Area Climate Change* indicates that the Region will face exacerbated flood-related issues as a result of climate change (DWR 2008). Considering that the Region already faces substantial impacts related to flooding and flood-based development restrictions, it is imperative that the Region have a comprehensive understanding of existing and potential future flood impacts and strategies for addressing such impacts. As such, this subtask will include an assessment of alternative flood control strategies that can be utilized to address existing and anticipated future (climate change-related) flood impacts. Part of the alternatives analysis will include an assessment of the relative costs of various flood control strategies in order to determine relative costs to address existing and future flood control techniques.

Further, this subtask will provide climate change adaptation strategies for all other top-ranking climate change vulnerabilities identified within Subtask 2-3.1. This exercise will include an assessment of the relative costs of various climate change adaptation strategies. The results of this process will be integrated into the IRWM Plan (refer to Task 3).

Subtask 2-3.3: Addressing Environmental Integrity Issues

This subtask will involve development of a summary of future potential environmental integrity issues that would be anticipated throughout the Region based on the climate change vulnerability analysis completed within Subtask 2-3.1. The purpose of this subtask is to provide information regarding environmental issues anticipated to arise in the future due to anticipated climate change impacts. The results of this process will be integrated into the IRWM Plan (refer to Task 3).

Other Studies or Work Products to be Utilized

- 2010 *Probabilistic Analysis of the Effects of Climate Change on Groundwater Recharge*, Gene-Hua et al.
- 2010 White Paper – Borrego Springs Flood Risk Management Study, United States Army Corps of Engineers
- 2008 Water and Border Area Climate Change, DWR
- 2008 *Managing an Uncertain Future – Climate Change Adaptation Strategies for California's Water* – DWR
- 2010 Storm Stories Depict Vulnerability of Valley to Flooding/Heavy Rain, Borrego Sun
- 1989 Borrego Valley Flood Management Report, Boyle Engineering for the County of San Diego

- 1985 Rain and Streamflow History in Eastern San Diego County, County of San Diego
- 1976 Storm Report – Tropical Storm Kathleen, County of San Diego Department of Sanitation and Flood Control
- 1977 Storm Report – Tropical Storm Doreen, County of San Diego Department of Sanitation and Flood Control
- Guidelines for Flood Protection of Structures in Borrego Springs, County of San Diego
- November 2011 Climate Change Handbook for Regional Water Management, USEPA Region 9 and DWR

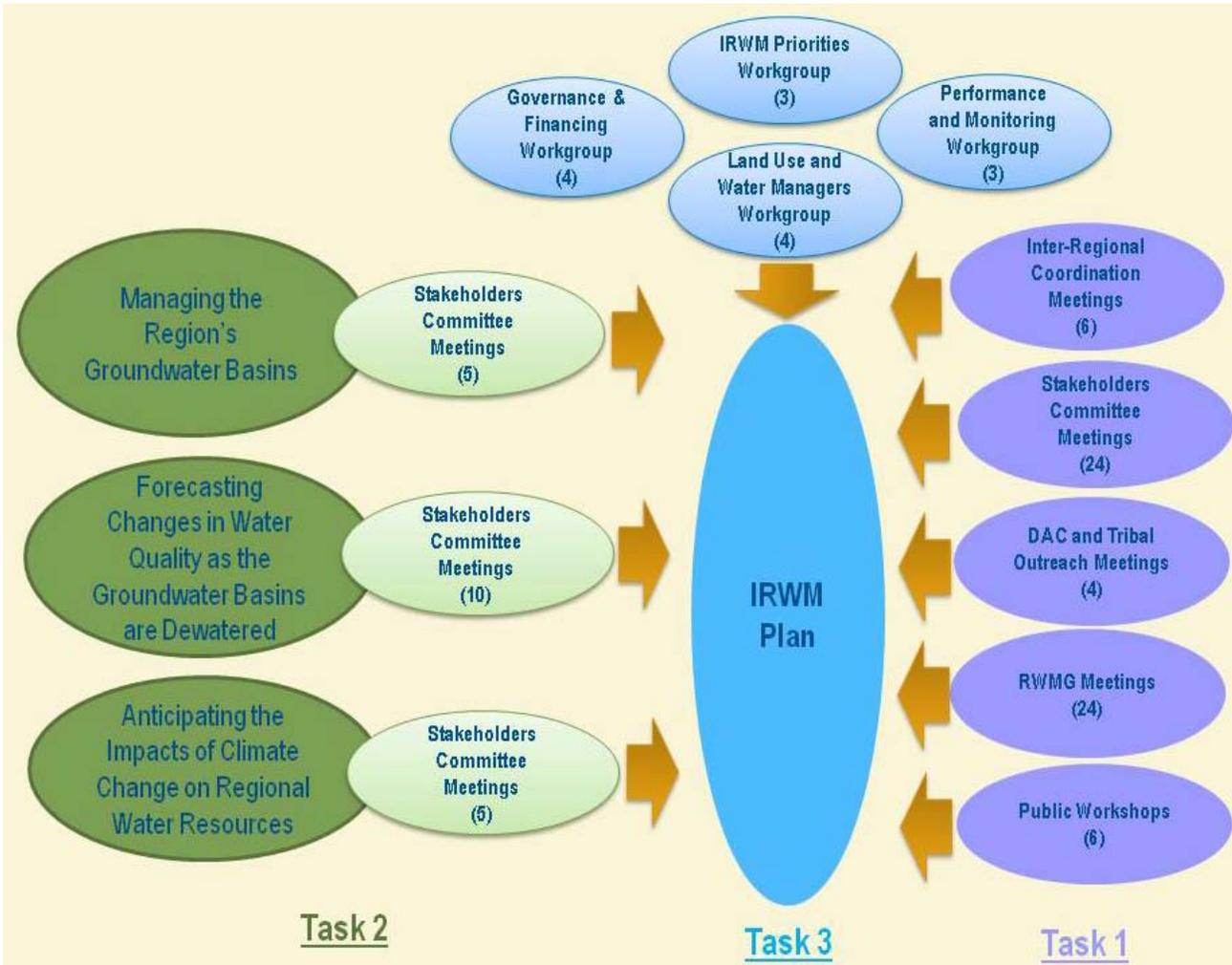
Deliverables

- Up to five (5) Stakeholders Committee meetings to discuss and rank the climate change vulnerability analysis, the climate change adaptation strategies and costs, the flood control strategies and costs, and the potential environmental integrity issues. This deliverable will include preparation of agendas, presentations, handouts, and notes.
- Draft and final Climate Change Technical Memorandum including climate change vulnerabilities, climate change adaptation strategies and relative costs, flood control strategies and relative costs, and associated environmental integrity issues.
- Integration of conclusions and results of the Climate Change Technical Memorandum into the ABD IRWM Plan.

C. Task 3: Updating the ABD IRWM Plan

Task 3 includes all activities required to update the IRWM Plan to meet DWR’s 2010 Guidelines, and incorporate other work products such as stakeholder outreach and Regional Water Resources Plans described within Task 1 and Task 2 of this Work Plan. Please note that several of the tasks below include work completed by stakeholder workgroups. The meetings, work, budget, and schedule for the stakeholder workgroups involved in Task 3 are distinct from the Stakeholders Committee meetings, public workshops, and other meetings described in Task 1 and Task 2. **Figure 3-9** provides a graphical overview of each of the Stakeholders Committee meetings, directed workgroups, and other meeting-related components of this Work Plan that will feed into the IRWM Plan.

Figure 3-9: Meetings Involved in Development of the IRWM Plan



Task 3-1: Updates to Governance and Financing Plan

This task involves development of a Governance and Financing Workgroup that will be established to examine long-term governance alternatives available to the Region, including defining both decision-making and financing structures. This effort is intended to help the Region establish a long-term governance structure that will continue regional coordination and collaboration efforts regardless of what occurs on a Statewide level. The Governance and Financing Workgroup will develop a set of recommendations for long-term governance to present to the full Stakeholders Committee and RWMG for consideration. These recommendations will include governance and financing proposals (i.e., how to

finance annual program administration), as well as an implementation or transition plan for moving from the existing governance structure to the long-term governance structure. The RWMG will then present the long-term governance recommendations to their governing bodies for discussion and approval.

Other Studies or Work Products to be Utilized

- 2010 Draft IRWM Plan
- Work completed by the Center for Collaborative Policy under Anza Borrego Desert Integrated Regional Water Management Plan Facilitation and Technical Support Contract.

Deliverables

- Up to four (4) meetings of a Governance and Financing Workgroup to discuss long-term governance and financing alternatives, including preparation of agendas, presentations, handouts, and notes.
- Draft and final Long-Term Governance White Paper addressing recommended decision-making structure, financing program, and implementation or transition plan.
- Draft and final formal governance agreements (MOU, etc.).

Task 3-2: Refine IRWM Plan Goals, Objectives, and Priorities

As the IRWM Plan is developed, a detailed refinement of the Region's goals and objectives will be necessary. As the Regional Water Resources Plans identified in Task 2 move forward, the RWMG will incorporate any new information learned about the Region's water management systems into the IRWM Plan. This may include clarification of critical water supply or water quality issues and/or incorporation of the new planning strategies into the IRWM Plan framework.

Based on this work, an IRWM Priorities Workgroup will be established and convened via conference call to refine the IRWM Plan goals and objectives to guide the Region during the next planning horizon. The workgroup will be advertised to all regional stakeholders, and will likely include participants from the RWMG and the Stakeholders Committee. Additionally, the IRWM Priorities Workgroup shall revisit the short- and long-term priorities laid out in the Draft IRWM Plan to determine if the new information and/or changing regional conditions or regulatory requirements results in different priorities. During the last meeting of the IRWM Priorities Workgroup, a recommendation shall be formalized and provided to the RWMG. The RWMG will utilize meetings with the Stakeholders Committee, general public, and other regional stakeholders contacted under Task 1 to discuss the IRWM Priorities Workgroup recommendation and refine the IRWM Plan goals, objectives, and priorities.

Due to the extensive nature of environmental integrity issues addressed within the Alternatives/Plans described within Task 2, the RWMG and Stakeholders Committee will be sure to incorporate information relating to environmental integrity into the IRWM Plan.

Other Studies or Work Products to be Utilized

- 2010 Draft ABD IRWM Plan Deliverables
- Up to three (3) IRWM Priorities Workgroup conference calls to discuss IRWM Plan goals, objectives, and priorities
- Recommendation on IRWM Plan goals, objectives and priorities by the IRWM Priorities Workgroup
- Draft and final IRWM Plan goals and objectives; and
- Draft and final IRWM Plan regional priorities.

Task 3-3: Develop Data Management Plan

Data collected to date has included prior reports, memos, letters, and meeting minutes. These items along with raw data such as groundwater levels, water quality, pumping test results, and other information are routinely stored in BWD files, and incorporated into the BWD Geographic Information System (GIS) database. The BWD GIS database was developed in conjunction with the development of numeric modeling currently being formulated by USGS, and generally only covers portions of the Region.

Currently, the RWMG, with assistance from the Southern Office of DWR, is working to integrate the ABD State Park's extensive GIS data, which covers a large portion of the Region, into the BWD GIS database. In addition to this work, there is a need to incorporate portions of the County's GIS data into the BWD GIS database to create a robust GIS database with information for the entire Region.

This task will involve development of a Regional data management system (DMS), which will be developed with common protocols for gathering data in a consistent manner, and making data accessible to the Policy Committee and other stakeholders as appropriate. The DMS will be structured to ensure efficient use of available data, increase stakeholder access to data, and ensure that data gathered as part of IRWM-related activities can be integrated into existing State and local databases.

Other Studies or Work Products to be Utilized

- BWD GIS database
- San Diego County GIS database
- State Park GIS database
- 2010 Draft IRWM Plan

Deliverables

- Regional DMS with GIS data layers.

Task 3-4: Develop Performance and Monitoring Methods

This task will involve incorporating information from the stakeholder outreach process (refer to Task 1) to determine appropriate targets by which to measure IRWM Plan performance. These metrics and targets will be aligned with the IRWM Plan goals and objectives (refer to Task 3-1) so that the Region can track how integrated projects are helping to achieve the Region's goals.

In addition, this task will involve determination of a reporting process that will be used to assess and report plan performance. An annual reporting process will be used to evaluate the Region's progress on fulfilling the short-term priorities (i.e., program implementation), as well the Region's progress on implementing the identified water management projects (i.e., project implementation). The annual reporting will contain criteria used to evaluate the progress of implementation projects in meeting the IRWM Plan objectives. This will ensure that the Region is efficiently making progress towards meeting the objectives in the IRWM Plan, the Region is implementing projects listed in the IRWM Plan, and each project in the IRWM Plan is monitored to comply with all applicable rules, laws and permit requirements.

The annual reports will be short and concise summaries that can be used to communicate Plan performance to stakeholders, the public, and the RWMG governing bodies. The annual reports will be delivered in both print and electronic copy to reach as many stakeholders as possible. Due to the importance of stakeholder outreach and transparency within the Region, the annual report will be designed such that it may be presented at the Borrego Springs Annual Town Hall Meeting held in April of each year.

A Performance and Monitoring Methods Workgroup will be established and convened up to three (3) times via conference call to discuss metrics, targets, and the proposed reporting process. The workgroup will be advertised to all regional stakeholders, and will likely include participants from the RWMG and

the Stakeholders Committee. During the last meeting of the Performance and Monitoring Methods Workgroup, a recommendation shall be formalized and provided to the RWMG. The RWMG will utilize meetings with the public, stakeholders, and the Stakeholders Committee under Task 1 to discuss and present the Performance and Monitoring Methods Workgroup's recommendation.

Other Studies or Work Products to be Utilized

- 2010 Draft ABD IRWM Plan

Deliverables

- Up to three (3) Performance and Monitoring Methods Workgroup conference calls to discuss IRWM Plan metrics, and performance and monitoring methods;
- Draft and final IRWM Plan metrics;
- Draft and final IRWM Plan performance and monitoring methods; and
- Design draft and final template for Annual Report.

Task 3-5: Describe IRWM Process Relating to Local Land Use and Water Planning

The RWMG will work with local land use planning efforts, including State and Federal agencies with land use authority such as the State Park, the Bureau of Land Management (BLM), local Resource Conservation Districts, and others to define land use issues as they relate to water management. The RWMG will also invite other water managers such as local community service districts to participate in this task. This task will involve continued dialogue between the RWMG agencies, the State Park, and other agencies with land use and water authority to ensure continued cooperation in implementing IRWM-related projects and meeting regional goals and objectives established under Task 3-2. It is assumed that these parties will meet up to four (4) times during development of the IRWM Plan to ensure that there is an exchange of knowledge and expertise between land use and water managers and identify how to improve planning efforts between these entities. These meetings will occur independently of other public meetings and stakeholder meetings described within Task 1.

Other Studies or Work Products to be Utilized

- 2011 San Diego County General Plan Update, County of San Diego
- 2010 Draft IRWM Plan Deliverables
- 2005 Anza-Borrego Desert State Park Final General Plan and Environmental Impact Report
- All planning documents for local water authorities including BWD, the RCD, and other participating water agencies.

Deliverables

- Up to four (4) Land Use and Water Managers Workgroup meetings with local land use and water managers, including agendas, presentations, handouts, and notes.
- Draft and final IRWM Plan text describing coordination between water management and land use planning.

Task 3-6: Prepare IRWM Plan per State Guidelines

Based on all of the work completed in Tasks 3-1 through 3-5 above, the RWMG will prepare an administrative draft IRWM Plan for internal review. In addition, the RWMG will utilize information for sections such as Resource Management Strategies, Impacts and Benefits, and Integration Opportunities that were included within the Draft IRWM Plan. It is assumed that any sections or work for the IRWM Plan not specifically called out in the sections above will be completed as part of Task 3-6.

The administrative draft IRWM Plan will contain the following sections:

1. Introduction
2. Region Description, Issues, and Needs
3. Governance and Stakeholder Involvement
4. Vision, Mission, Goals and Objectives
5. Resource Management Strategies
6. Integration Opportunities
7. Project Evaluation and Prioritization
8. Data Management and Technical Analysis
9. Framework for Implementation
10. References

As part of the IRWM Plan development process, the RWMG will document how the IRWM Plan meets State goals and priorities. The IRWM Plan will contain a clear description outlining the location of all content as required by DWRs' IRWM Plan Guidelines. The IRWM Plan will also clearly articulate steps for evaluation and measurement of Plan success.

The RWMG will then prepare a Public Review Draft IRWM Plan for review and consideration by the Stakeholders Committee and other interested parties. This task will involve two public workshops to present and discuss the Draft IRWM Plan (see Task 1). The RWMG will facilitate review and discussion of the draft IRWM Plan with stakeholders, including collecting and compiling their comments into a comments matrix.

Following public review of the draft IRWM Plan, the RWMG will review comments, present IRWM Plan changes in response to comments, and solicit agreement from the Stakeholders Committee on the proposed changes. Based on the comments reviewed from the Stakeholders Committee and general public, the RWMG will prepare an Administrative Final IRWM Plan. Following one round of revisions based on final comments, the RWMG will prepare a Final IRWM Plan for presentation to the Stakeholders Committee and other interested parties.

Following completion of the IRWM Plan, the RWMG will prepare an IRWM Plan Executive Summary that will provide a short, visually appealing overview of the IRWM Plan and related activities. The Executive Summary will showcase and communicate IRWM Plan benefits and milestones to the general public, stakeholders, and governing bodies. The Executive Summary will serve as an educational document for the IRWM program that describes the program and explains the value that IRWM planning provides to the Region.

Other Studies or Work Products to be Utilized

- All plans listed in Task 1, Task 2, and subtasks of Task 3.

Deliverables:

- Administrative IRWM Plan, in accordance with State Guidelines;
- Public Review Draft IRWM Plan;
- Compiled response to comments matrix;
- Administrative Final IRWM Plan;
- Final IRWM Plan; and
- IRWM Plan Executive Summary.

D. Task 4: Proposal Administration

This task addresses administration of the Planning Grant Contract between BWD and DWR. Preparation of the contract materials, invoices, progress reports, and project performance documentation is included within this task. [This task does not address governance tasks, which are addressed separately under Task 1.](#)

Deliverables

- Planning Grant contract, invoices, progress reports, and project performance documentation.

Additional IRWM Plan Work

<<Need to describe all other pending studies listed above, including: Dale Schafer's work, Ali Taghavi's work, the USGS study, the USEPA STAG Pipeline Feasibility Study, and the US Bureau of Reclamation Study.>>

References

Anza-Borrego Desert State Park. 2005. *Anza-Borrego Desert State Park Final General Plan & EIR*. Available: http://www.parks.ca.gov/?page_id=21314

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County of San Diego. 2010. *Evaluation of Groundwater Conditions in Borrego Valley*. Available: http://www.sdcountry.ca.gov/dplu/gpupdate/docs/BOS_Aug2011/EIR/Appn_D_GW_Appendices.pdf

County of San Diego. 2011. *County of San Diego General Plan – Borrego Springs Community Plan*.

Gene-Hua, Crystal Ng, Dennis McLaughlin, Dara Entakhabi, and Bridget R. Scanlon (Gene-Hua et al). 2010. *Probabilistic Analysis of the Effects of Climate Change on Groundwater Recharge*. Water Resources Research, Volume 46: W07502. Published July 2010.

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