SAN DIEGO
Integrated Regional
Water Management

2015 San Diego IRWM Program

IRWM Implementation Grant Proposal

Submitted by San Diego County Water Authority

on behalf of the Regional Water Management Group
and the Regional Advisory Committee

The City of San Diego

County of San Diego

San Diego County
Water Authority

Attachment **1**

San Diego Integrated Regional Water Management

2015 IRWM Implementation Grant Proposal

Authorization and Eligibility Requirements – Authorizing Documentation

Attachment 1 consists of the following items:

- ✓ **Authorization and Eligibility Requirements.** This attachment explains how the applicant, projects, and project proponents included within this Proposal meet the authorizing documentation and eligible applicant requirements set by the California Department of Water Resources (DWR) in the *Proposal Solicitation Package for the 2015 Integrated Regional Water Management (IRWM) Grant Solicitation (2015 PSP)*. The attachment is comprised of nine separate files, each of which correspond to the applicable authorization and eligibility requirements described in the PSP:
    - 1-1. Authorizing Documentation
    - 1-2. Eligible Applicant Documentation (RWMG Memorandum of Understanding)
    - 1-3. Adopted Plan and Proof of Formal Adoption
    - 1-4. Project Consistency with an Adopted IRWM Plan
    - 1-5. Urban Water Management Compliance, including:
        - 2010 Urban Water Management Plan (UWMP) Verification letters from DWR (as applicable for project sponsors that did not submit documentation during the Drought Grant)
        - AB 1420 Self-certification Form (as applicable for project sponsors that did not submit documentation during the Drought Grant)
        - Water Metering Self-certification Form (as applicable for project sponsors that did not submit documentation during the Drought Grant)
    - 1-6. Agricultural Water Management Compliance (as applicable for project sponsors that did not submit documentation during the Drought Grant)
    - 1-7. Surface Water Diverter Compliance (as applicable)
    - 1-8. Groundwater Management Compliance (as applicable)
    - 1-9. CASGEM Compliance, including:
        - CASGEM Confirmation letters from DWR (as applicable)
        - GIS shapefile showing service area boundaries of project sponsors that are eligible monitoring entities per CWC §10927

Authorizing Documentation

Resolution 2015-16 was adopted by the San Diego County Water Authority (SDCWA) Board of Directors on June 25, 2015, and authorizes SDCWA to submit this *2015 IRWM Implementation Grant Proposal* and execute an agreement with the State of California for implementation of thirteen priority water resources projects (see **Appendix 1-1**).

RESOLUTION No. 2015-16

RESOLUTION OF THE BOARD OF DIRECTORS OF THE SAN DIEGO COUNTY WATER AUTHORITY AUTHORIZING THE GENERAL MANAGER TO SUBMIT A 2015 IRWM FINAL ROUND IMPLEMENTATION GRANT APPLICATION, ACCEPT THE AWARDED GRANT FUNDS AND DISTRIBUTE THE FUNDS TO PROJECT SPONSORS

WHEREAS, Proposition 84, the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (Public Resources Code section 75001 *et seq.*), authorized the California Legislature to appropriate $1 billion to encourage integrated regional water management planning in California; and

WHEREAS, Section 83002(b)(3)(A)(i) of the California Water Code appropriated to the Department of Water Resources (DWR) funds for integrated regional water management (IRWM) planning grants and other purposes; and

WHEREAS, DWR has made these funds available through a grant program that allocates specific amounts of money to 11 funding areas located throughout California, including the San Diego Funding Area; and

WHEREAS, grant application procedures established by DWR require applicants to provide a copy of a resolution adopted by the applicant's governing body designating an authorized representative to file an application for an IRWM implementation grant; and

WHEREAS, achieving IRWM grant funding will help to achieve the regional water supply goals established in the Water Authority's 2010 Urban Water Management Plan and to prepare the San Diego Region for the impacts of drought; and

WHEREAS, the San Diego Regional Water Management Group (RWMG), in close cooperation with the Regional Advisory Committee (RAC), is preparing an application for a 2015 IRWM Final Round implementation grant to further water supply reliability, water quality enhancement, natural resources stewardship and water resource management in the region; and

WHEREAS, on June 3, 2015, the RAC recommended that the Water Authority Board authorize submittal of the San Diego Region's application for a 2015 IRWM Final Round implementation grant; and

WHEREAS, the memorandum of understanding that established the San Diego IRWM Program identifies the Water Authority as the program's authorized representative; and

WHEREAS, the Water Authority Board of Directors is the decision-making body for the Water Authority.

NOW, THEREFORE, the Board of Directors of the San Diego County Water Authority resolves the following:

1. The foregoing facts are true and correct.

2. The General Manager is authorized to prepare the necessary data, conduct investigations and submit a 2015 Integrated Regional Water Management Final Round implementation grant.

3. The General Manager is authorized to enter into an agreement to receive a 2015 Integrated Regional Water Management Final Round implementation grant from the California Department of Water Resources.

4. The General Manager is authorized to enter into contracts to distribute the awarded grant funds to the project sponsors.

PASSED, APPROVED AND ADOPTED, this 25th day of June, 2015, by the following vote:

AYES: Unless noted below all Directors voted aye.

NOES: None

ABSTAIN: None

ABSENT: Boyle, Brady, Kennedy, Lewinger, Tu, Watkins, and Watton

Mark Weston
Chair

ATTEST:

Jim Madaffer
Secretary

I, Melinda Cogle, Clerk of the Board of the San Diego County Water Authority, certify that the vote shown above is correct and this Resolution No. 2015- 16 was duly adopted at the meeting of the Board of Directors on the date stated above.

Melinda Cogle
Clerk of the Board

Project Selection Workgroup Recommendation
DWR Prop 84-Final Round Grant Program

Project Title	Local Project Sponsor	Recommended Funding Amount
Rural Disadvantaged Community Partnership Project - Phase III	Rural Community Assistance Corporation	$3,000,000
San Diego River Healthy Headwaters Restoration Project	USDA Forest Service	$2,116,000
Conserving Water, Creating Energy in the Chollas Creek Watershed	Groundwork San Diego	$542,000
City of San Diego Water Conservation Enhancement Partnership Project	City of San Diego	$866,000
UC San Diego Water Conservation and Watershed Protection Project	UC San Diego, EH&S Environmental Affairs	$1,435,000
Padre Dam Water Recycling Facility, Phase 1 Expansion	Padre Dam Municipal Water District	$6,000,000
2015 Regional Drought Response Program	San Diego County Water Authority	$3,800,000
Safari Park Drought Response and Outreach Project	Zoological Society of San Diego	$2,900,000
Sweetwater Reservoir Wetlands Habitat Recovery Project	Sweetwater Authority	$1,500,000
City of Escondido's MFRO Facility for Agriculture	City of Escondido	$2,000,000
Hodges Reservoir Natural Treatment System	City of San Diego Public Utilities Department	$2,886,472
Conservation 101	San Elijo Joint Powers Authority	$2,500,000
Ms. Smarty-Plants Grows Waterwise Schools	The Water Conservation Garden	$652,000
PROJECT SUBTOTAL		**$30,197,472**
Grant Administration (to Water Authority)	-	$933,943
TOTAL		**$31,131,415**

Attachment

1

San Diego Integrated Regional Water Management

2015 IRWM Implementation Grant Proposal

Authorization and Eligibility Requirements – Eligible Applicant Documentation

Eligible Applicant Documentation

This *2015 IRWM Implementation Grant Proposal* is being submitted by San Diego County Water Authority (SDCWA). Per the adopted *Memorandum of Understanding Between City of San Diego, County of San Diego, and San Diego County Water Authority for the Integrated Regional Water Management Program for Fiscal Years 2012-2016*, the San Diego Regional Water Management Group (RWMG) – comprising the City of San Diego, the County of San Diego, and SDCWA – has determined that SDCWA shall have overall responsibility for submitting all applications to the State on behalf of the parties (see **Appendix 1-2**). SDCWA is submitting this grant proposal on behalf of the following entities:

- Project 1: San Diego County Water Authority (SDCWA)
- Project 2: Groundwork San Diego (Groundwork)
- Projects 3 & 13: City of San Diego (City)
- Project 4: The Water Conservation Garden (The Garden)
- Project 5: Rural Community Assistance Corporation (RCAC)
- Project 6: San Elijo Joint Powers Authority (San Elijo JPA)
- Project 7: University of California San Diego (UCSD)
- Project 8: City of Escondido (Escondido)
- Project 9: Padre Dam Municipal Water District (Padre Dam MWD)
- Project 10: Zoological Society of San Diego (Zoological Society)
- Project 11: United States Department of Agriculture Forest Service (USFS)
- Project 12: Sweetwater Authority (SWA)

SDCWA has submitted several IRWM Grant applications after January 1, 2012 (Prop 84-Round 2 in March 2013 and Prop 84-Drought Round in July 2014). In accordance with the *2015 PSP*, SDCWA (as the grant applicant) is not required to submit the eligible applicant information listed on page 13 of the *2015 PSP*.

MEMORANDUM OF UNDERSTANDING
BETWEEN CITY OF SAN DIEGO
COUNTY OF SAN DIEGO, and SAN DIEGO COUNTY WATER AUTHORITY
for the
INTEGRATED REGIONAL WATER MANAGEMENT PROGRAM
For Fiscal Years 2012-2016

This Memorandum of Understanding (MOU) between the San Diego County Water Authority (Water Authority); the City of San Diego, a municipal agency (City); and the County of San Diego, a political subdivision of the State of California (County), sets forth the respective roles of Water Authority, City and County in regard to the Integrated Regional Water Management (IRWM) Plan and Program. Water Authority, City and County are sometimes referred to in this MOU collectively as the "Parties" and individually as "Party."

This MOU replaces the Memorandum of Understanding (March 25, 2009), as amended, between City, County, and Water Authority for Fiscal Years 2009-2013 for the IRWM Grant Program.

RECITALS:

1. The California Legislature enacted SBX2 1 (Perata, Chapter 1 Statutes of 2008), the Integrated Regional Water Management Planning Act, which repealed and re-enacted Part 2.2 of Division 6 of the Water Code relating to integrated regional water management plans. SBX2 1 provides that a regional water management group may prepare and adopt an integrated regional water management (IRWM) plan.

2. In November 2002, Proposition 50, the Water Security, Clean Drinking Water, Coastal and Beach Protection Act, authorized the Legislature to appropriate funding for competitive grants for IRWM projects.

3. In November 2006, Proposition 84, the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Act, authorized the Legislature to appropriate funding for competitive grants for IRWM projects.

4. The intent of the IRWM Grant Program (Program) established in accordance with Proposition 50 and SBX2 1, is to encourage integrated regional strategies for management of water resources and to provide funding, through competitive grants, for projects that protect communities from drought, protect and improve water quality, promote environmental stewardship, and improve local water security by reducing dependence on imported water.

5. To qualify as a regional water management group (RWMG) and comply with the Program Guidelines (Guidelines) established under Proposition 50 and SBX2 1, at least three agencies must participate in the group; two of the agencies must have statutory authority over

water management that may include water supply, water quality, flood control, or stormwater management.

6. In 2005, the Parties established an RWMG that consists of Water Authority, which has statutory authority over water management; City, which has statutory authority over water management, water quality, wastewater, flood management and stormwater; and County, which has statutory authority over water quality, stormwater and flood control in the unincorporated area.

7. The Parties understand that only through a collaborative effort with the many stakeholders involved in water management planning can the IRWM Plan process be successful in the San Diego region.

8 As part of the public outreach and stakeholder involvement effort, the Parties established the Regional Advisory Committee (RAC), which comprises up to 32 representatives appointed by the Parties from the water management areas of water supply, water quality and natural resources/watersheds management; and representatives of businesses, academia and tribes, as well as other interested members of the public. The purpose of the RAC is to make recommendations to the Parties on key issues related to IRWM planning and grant applications.

9. The Parties, acting with positive recommendations from the RAC, completed the first San Diego IRWM Plan (Plan) in 2007. Subsequently, the Parties have received funding for planning and implementation of projects from the California Department of Water Resources (DWR). Additional funding is available to the San Diego IRWM Program from Proposition 84, approved by California voters in 2006.

10. To qualify for Proposition 84 IRWM funding, a planning region must have an IRWM Plan that complies with the requirements of California Water Code Section 83002(b)(3)(B), or must have committed to bringing its plan into compliance within two years of receiving such funding.

11. A Local Project Sponsor (LPS) is a proponent of an individual project that will be funded as part of an IRWM Program grant from the State or other future funding agencies. An LPS may be Water Authority, County, City, a Water Authority member agency, a municipality, a local agency or a non-profit organization.

12. This MOU consists of five major components: general grant obligations, San Diego IRWM Plan update, IRWM grant administration, the role of the RAC, and funding for IRWM Program management.

Now, therefore, in consideration of the above incorporated recitals and mutual obligations of the Parties herein expressed, the Parties agree as follows:

1. General Grant Obligations

a. The Parties are equal partners in the development and submission of IRWM grant applications. All Parties shall provide timely reviews and approvals before grant

applications are submitted.

b. Water Authority shall submit the grant applications to the funding agency on behalf of the Parties.

c. To expedite the grant application process, Water Authority shall provide initial funding for a consultant to develop the applications. The total cost of the consultant and applications shall be shared by the parties consistent with Section 5 of this MOU.

d. The funding commitment by the Parties under Section 5 of this MOU assumes that the Parties will continue to pay or provide in-kind services as allowed for the entire cost of grant applications for the IRWM Program. As part of the IRWM Plan Update described in Section 2 of this MOU, the Parties agree to study the concept of obtaining funding from other sources to fully or partially defray the cost of grant applications.

e. Water Authority shall be responsible for administering funding for projects that are receiving IRWM Program grant funding with respect to submitting invoices and quarterly reports to the funding agency, distributing funding to LPS, and processing contract amendments as applicable.

f. The Parties shall share equally in any and all contractual liability, regardless of nature or type, which arises out of or results from a LPS's performance of services under its agreement with the Water Authority. The Parties shall share equally in any of the default provisions listed in the grant agreements received by the Parties. The Water Authority also agrees to pursue contractual remedies.

g. Each Party shall procure and maintain during the period of this MOU insurance from insurance companies admitted to do business in the State of California or shall self-insure to cover any contractual liability resulting from the conditions referenced in Section 1f.

2. San Diego IRWM Plan Update

a. The Parties are equal partners in the update of the Plan. Water Authority shall contract with a consultant to update the Plan in compliance with the Guidelines and schedule established by DWR, and submit the updated Plan to DWR.

b. The update of the Plan shall be contingent upon receipt of grant funding for this purpose.

3. IRWM Grant Contracts Administration

a. The Water Authority shall administer and manage IRWM grant agreements, administer the LPS contracts, develop and maintain a reporting and invoicing program, and communicate project and agreement progress to the RWMG, RAC, and the funding agency.

b. An LPS that has satisfied all invoicing requirements for a grant shall invoice the Water Authority, which shall in turn invoice the funding agency. The Water Authority shall, within 45 days of receipt of funds from the funding agency, disburse the funds to the LPS.

c. The Water Authority shall appropriate a percentage of the grant money allocated to each LPS project to fund administration of the IRWM grants. The Parties shall agree mutually to the percentage of the grant money that is to be appropriated for this purpose. To the extent that costs exceed the amount in this fund, and that the Parties mutually agree to the additional cost, the Parties shall equally share the additional costs in accordance with Section 5a.

d. Where a labor compliance requirement has been established by the granting agency, Authority shall report to the granting agency the compliance status of LPS, as reported by LPS, with applicable public works laws.

4. Role of Regional Advisory Committee (RAC)

The RAC shall be considered the project advisory committee. The Parties are committed to a cooperative relationship with the RAC and will incorporate the RAC's consensus recommendations in documents prepared for presentations to the Parties' governing bodies. The Parties' governing bodies will give primary consideration to the recommendations of the RAC as part of any decision related to the following:

a. Adoption of updates to the IRWM Plan for the San Diego Region.

b. Criteria for prioritizing projects to be submitted for IRWM grant programs.

c. Reevaluation of all projects submitted for grant funding if a funding agency funds the Program at a level lower than the requested grant amount and does not provide direction on which projects to fund. Parties shall fund the projects based on consultation with the RAC and the criteria for project prioritization (Section 4b).

d. Approval and submittal of grant applications.

e. Transition of responsibility for implementation of the IRWM Plan to a new institutional structure.

5. Funding

a. Funding for FY 2012-2016 shall not exceed $1,470,000. Each Party shall provide an equal share of this funding in an amount not to exceed $490,000. If a Party's contribution was not totally expended in the MOU (March 25, 2009), as amended, that Party shall be credited for the unexpended amount in this MOU.

b. In-kind services provided by the Parties shall be considered in excess of the above funding amounts and are not reimbursable. The Parties' staff shall separately document time spent on in-kind services for IRWM planning, administration and grant applications.

c. The funding commitment described in 5a shall not include expenditures to administer the IRWM Grant Program.

d. Water Authority shall invoice City and County on a quarterly basis along with supporting documentation of expenses. City and County shall remit payment within 60 days of receipt of invoice.

6. Assignment

Parties shall not assign or transfer this MOU or any rights under or interest in this MOU without written consent of all other Parties, which may be withheld for any reason.

7. Defense and Indemnity

Water Authority, City, and County each agree to mutually indemnify, defend at its own expense, including attorneys' fees, and hold each other harmless from and against all claims, costs, penalties, causes of action, demands, losses and liability of any nature whatsoever, including but not limited to liability for bodily injury, sickness, disease or death, property damage (including loss of use) or violation of law, caused by or arising out of or related to any negligent act, error or omission of that party, its officers or employees, or any other agent acting pursuant to its control and performing under this Agreement.

Nothing in the foregoing shall be construed to require any Party to indemnify another for any claim arising from the sole negligence or willful act of the Party to be indemnified.

8. Document Review

Water Authority, City and County each shall make available for inspection to the other Parties, upon reasonable advance notice, all records, books and other documents relating to the Plan and the Program, unless privileged.

9. Term

The term of this MOU shall begin on the date of execution by all Parties and expire on June 30, 2016 expressly contingent upon funding by Water Authority, City and County. The term may be extended by written agreement of all Parties. The Parties shall continue to participate in the planning, development and coordination of the Plan and Grants to the maximum extent possible. The Parties agree to notify one another in the event that their agency's future budget appropriations impact Program funding continuity. If appropriations are different than anticipated, the MOU and Program funding shall be adjusted based on actual funding.

10. Notice

Any notice, payment, credit or instrument required or permitted to be given hereunder will be deemed received upon personal delivery or 24 hours after deposit in any United States mail depository, first class postage prepaid, and addressed to the Party for whom intended as follows:

If to the Water Authority:	San Diego County Water Authority 4677 Overland Avenue San Diego, CA 92123 Attn: Mark Stadler
If to City:	City of San Diego Water Department 600 B Street, Suite 600 San Diego, CA 92101 Attn: Cathy Pieroni
If to County	County of San Diego 5201 Ruffin Road, Suite P San Diego, CA 92123 Attn: Sheri McPherson

Any Party may change such address or contact by notice given to the other Parties as provided herein.

11. Amendments

The MOU may be amended by written agreement of all Parties.

12. Severability

The partial invalidity of one or more parts of this MOU will not affect the intent or validity of this MOU.

13. Governing Law

This MOU shall be deemed a contract under the laws of the State of California and for all purposes shall be interpreted in accordance with such laws. Any action brought shall be in San Diego County, California.

14. Obligations

Nothing in this agreement shall create additional obligations with respect to the Plan or Program.

15. Termination of MOU

This MOU may be terminated by any Party with or without cause 30 days after notice in writing to the other Parties.

16. Signatures

The individuals executing this MOU represent and warrant that they have the legal capacity and authority to do so on behalf of their respective legal entities.

IN WITNESS WHEREOF, the Parties have executed this MOU as of the date below.

San Diego County
Water Authority

By: _____
Ken Weinberg
Director of Water Resources

City of San Diego

By: _____
Hildred Pepper Jr.
Purchasing & Contracting
Director

County of San Diego

By: _____
Richard Crompton, Director
Department of Public Works

By: _____
Winston F. McColl, Director
Department of Purchasing and Contracting

APPROVED AS TO FORM:

San Diego County
Water Authority

By: _____
General Counsel
San Diego County Water Authority

City of San Diego

By: _____
Raymond C. Palmucci
Deputy City Attorney

County of San Diego

By: _____
James O'Day
County Counsel, Senior Deputy

Date: 9/21/11

Appendix 1-2 Memorandum of Understanding

Adopted IRWM Plan and Proof of Formal Adoption

In 2013, the San Diego IRWM Region updated its 2007 IRWM Plan consistent with the *2012 IRWM Grant Program Guidelines* (*2012 Guidelines*)[1] and CWC §10543. The *2013 San Diego Integrated Regional Water Management Plan* (*2013 IRWM Plan*) was finalized in September 2013, and formally adopted by RWMG agencies' governing bodies and all project proponents on the dates provided below. Copies of adoption resolutions not submitted during the Prop 84-Drought Round IRWM Grant (Drought Grant) are included in **Appendix 1-3**.

- RWMG:
  - SDCWA: September 26, 2013 (submitted under Drought Grant)
  - County of San Diego: October 9, 2013 (submitted under Drought Grant)
  - City of San Diego: October 8, 2013 (submitted under Drought Grant)
- Project 1: SDCWA (*see above*)
- Project 2: Groundwork San Diego: April 17, 2015
- Projects 3 & 13: City of San Diego (*see above*)
- Project 4: The Garden: July 28, 2015
- Project 5: RCAC: November 6, 2014
- Project 6: San Elijo JPA: December 8, 2014
- Project 7: UCSD: May 14, 2014
- Project 8: City of Escondido: August 5, 2015
- Project 9: Padre Dam MWD: August 5, 2015
- Project 10: Zoological Society: June 23, 2015
- Project 11: USFS: June 30, 2015
- Project 12: SWA: June 11, 2014 (submitted under Drought Grant)

SDCWA, on behalf of the RWMG and San Diego IRWM Region, submitted the *2013 IRWM Plan* to DWR for review in accordance with Appendix H of the *2012 Guidelines*. The Plan Review Process is designed to assess whether an IRWM Plan is consistent with the IRWM Plan Standards included in the *2012 Guidelines*. The *2013 IRWM Plan* was found to be consistent with the IRWM Planning Act and related IRWM Plan Standards contained in the *2012 Guidelines* on June 6, 2014. A confirmation letter of this finding is included in **Appendix 1-4**.

[1] Department of Water Resources (DWR). 2012. *Integrated Regional Water Management Proposition 84 and 1E Guidelines*. November.

Groundwork SAN DIEGO Chollas Creek

CHANGING PLACES CHANGING LIVES

Resolution of the Board of Directors of Groundwork San Diego-Chollas Creek In Support of 2013 San Diego IRWM Plan

Whereas Groundwork San Diego-Chollas Creek serves as the watershed manager for the Chollas Creek Watershed at the request of the City of San Diego and

Whereas Groundwork San Diego-Chollas Creek leads the implementation of the Chollas Creek Enhancement Program and the Chollas Creek Revitalization and Opportunities Plan (funded by DWR) and

Whereas Groundwork San Diego-Chollas Creek leads stormwater improvement projects in the Chollas Creek Watershed and

Whereas Groundwork San Diego-Chollas Creek engages children and families in stormwater education and

WHEREAS, this 2013 San Diego IRWM Plan is consistent with the mission and goals of Groundwork San Diego-Chollas Creek

NOW, THEREFORE, the Board of Directors of Groundwork San Diego-Chollas Creek hereby endorses the 2013 San Diego IRWM Plan.

Passed Approved Adopted on April 17, 2015

Ayes
Noes None

Signed by
Secretary
Susan Taylor

THE water conservation garden

A RESOLUTION

WHEREAS the San Diego Regional Water Management Group (RWMG), comprised of the San Diego County Water Authority, City of San Diego and County of San Diego, has collaborated with the Regional Advisory Committee (RAC), comprised of water management stakeholders from throughout the San Diego region, to develop an update to the 2007 San Diego Integrated Regional Water Management (IRWM) Plan;

WHEREAS the 2013 San Diego IRWM Plan includes information from planning documents published since 2007, as well as information produced from planning studies, workshops and workgroups that are being conducted to address Region-specific issues; and

WHEREAS the 2013 San Diego IRWM Plan will allow the Region to focus updated priorities and issues, facilitate project integration, forge partnerships with a variety of stakeholders, and move the Region forward in implementing high-priority projects;

WHEREAS the State of California encourages integrated water resource planning on a regional basis through IRWM Plans and by conditioning certain existing and possibly future grant funding programs-including Proposition 84, the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (Public Resources Code section 75001 et seq.) to activities contained in IRWM Plans;

NOW THEREFORE BE IT RESOLVED that The Friends of The Water Conservation Garden adopts the 2013 San Diego Integrated Regional Water Management Plan and is committed to continued development and implementation of the Plan to support water resources management in the San Diego region, and

BE IT FURTHER RESOLVED that we encourage the California Department of Water Resources to fully fund the grant applications that are prepared as a result of the Plan.

PASSED AND ADOPTED at a regular meeting of the Board of Directors of The Friends of The Water Conservation Garden, held on this 28th day of July 2015 by the following vote:

AYES: 8 NAYS: _____ ABSTAIN: _____ ABSENT: 4

RATIFIED:
Elyssa Robertson, President

ATTEST:
Margaret Matarese, Secretary

Major support of The Water Conservation Garden made possible by
SAN DIEGO COUNTY WATER AUTHORITY • OTAY WATER DISTRICT • HELIX WATER DISTRICT • SWEETWATER AUTHORITY • CITY OF SAN DIEGO • CUYAMACA COLLEGE

Resolution of the Board of Directors (14-14)
Rural Community Assistance Corporation

Authorizing adoption of the
2013 San Diego Integrated Regional Water Management (IRWM) Plan

LET IT BE RESOLVED, that RCAC's Board of Directors duly accepts and endorses the 2013 San Diego Regional Integrated Regional Water Management Plan.

BE IT ALSO RESOLVED, that RCAC intends to support the plan through multiple rounds of grant awards from the San Diego County Water Authority.

BE IT ALSO RESOLVED, that the Board of Directors of RCAC authorizes its officers to execute and attest all necessary papers, documents and applications related to the foregoing.

BE IT FURTHER RESOLVED, that Stanley Keasling, RCAC chief executive officer, is authorized on behalf of the RCAC Board of Directors to execute all aspects of this grant request.

I, Nalani Fujimori Kaina, secretary of the RCAC Board of Directors, do hereby certify that the above is a true and correct copy of a resolution adopted at the meeting of the Board of Directors of RCAC on November 6, 2014, at which a quorum was present and voted.

Nalani Fujimori Kaina
Secretary, RCAC Board of Directors

RESOLUTION NO. 2015-01

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE SAN ELIJO JOINT POWERS AUTHORITY ADOPTING THE 2013 SAN DIEGO INTEGRATED REGIONAL WATER MANAGEMENT PLAN

WHEREAS the San Diego Regional Water Management Group (RWMG), comprised of the San Diego County Water Authority, City of San Diego, and County of San Diego, has collaborated with the Regional Advisory Committee (RAC), comprised of water management stakeholders from throughout the San Diego region, to develop an update to the 2007 San Diego Integrated Regional Water Management (IRWM) Plan;

WHEREAS the 2013 San Diego IRWM Plan includes information from planning documents published since 2007, as well as information produced from planning studies, workshops, and workgroups that are being conducted to address Region-specific issues; and

WHEREAS the 2013 San Diego IRWM Plan will allow the Region to focus on updated priorities and issues, facilitate project integration, forge partnerships with a variety of stakeholders, and move the Region forward in implementing high-priority projects;

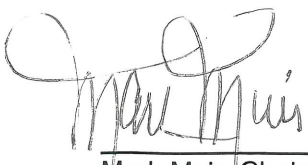
WHEREAS the State of California encourages integrated water resource planning on a regional basis through IRWM Plans and by conditioning certain existing and possibly future grant funding programs - including Proposition 84, the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (Public Resources Code section 75001 *et seq.)* - to activities contained in IRWM Plans;

NOW THEREFORE BE IT RESOLVED that the San Elijo Joint Powers Authority adopts the 2013 San Diego Integrated Regional Water Management Plan and is committed to continued development and implementation of the Plan to support water resources management in the San Diego region, and

BE IT FURTHER RESOLVED that we encourage the California Department of Water Resources to fully fund the grant applications that are prepared as a result of this Plan.

PASSED AND ADOPTED at a regular meeting of the Board of Directors of the San Elijo Joint Powers Authority, California, held on this 8th day of December, 2014 by the following vote:

AYES:	Boardmembers:	Mark Muir, David Zito, Teresa Barth, Thomas Campbell
NOES:	Boardmembers:	
ABSENT:	Boardmembers:	
ABSTAIN:	Boardmembers:	



Mark Muir, Chairperson
SEJPA Board of Directors

ATTEST:

Michael T. Thornton, P.E.
Secretary of the Board

UNIVERSITY OF CALIFORNIA, SAN DIEGO

BERKELEY • DAVIS • IRVINE • LOS ANGELES • MERCED • RIVERSIDE • SAN DIEGO • SAN FRANCISCO

SANTA BARBARA • SANTA CRUZ

ENVIRONMENT, HEALTH AND SAFETY, 0920

9500 GILMAN DRIVE
LA JOLLA, CALIFORNIA 92093-0920
PHONE (858) 534-3660
FAX (858) 534-7982

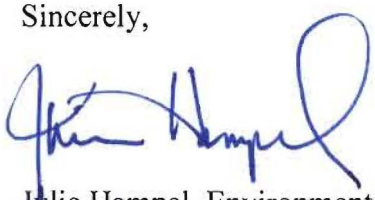
May 15, 2014

San Diego Regional Water Management Group (RWMG)
The San Diego County Water Authority, City of San Diego, and County of San Diego
Ken Weinberg, Marsi Steirer, and Troy Bankston

Dear RWMG,

As a proponent of safe drinking water, water quality and supply, flood control, and river and coastal protection, the University of California, San Diego, formally adopts the 2013 San Diego Integrated Regional Water Management Plan dated September 2013. The University of California is a leader in coastal protection and embraces the IRWM Plan vision to plan projects using *"an integrated, balanced, and consensus-based approach to ensuring the long-term sustainability of the Region's water supply, water quality, and natural resources"*.

Sincerely,



Julie Hampel, Environmental Affairs Division Manager
Environment, Health, & Safety Department
University of California, San Diego

RESOLUTION NO. 2015-129

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ESCONDIDO, CALIFORNIA, AUTHORIZING THE CITY COUNCIL TO ADOPT ON BEHALF OF THE CITY, THE 2013 UPDATE OF THE SAN DIEGO INTEGRATED REGIONAL WATER MANAGEMENT PLAN

WHEREAS, the San Diego Regional Water Management Group ("RWMG"), in close cooperation with the Regional Advisory Committee ("RAC"), drafted the 2007 San Diego Integrated Regional Water Management ("IRWM") Plan to optimize water supply reliability, protect and enhance water quality, provide stewardship of natural resources and coordinate and integrate water resource management in the region; and

WHEREAS, on February 16, 2011, the City of Escondido Council approved Resolution 2011-29 adopting the San Diego IRWM Plan; and

WHEREAS, on September 11, 2013, the IRWM Plan was updated based on stakeholder input, while still retaining the original goals and objectives; and

WHEREAS, the updated IRWM Plan has been adopted by Regional Water Management Group agencies including the County Water Authority and the City and County of San Diego; and

WHEREAS, the Proposition 84 grant also requires grant applicants to adopt the IRWM Plan;

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Escondido, California:

1. That the above recitations are true.

2. That the City Council adopts the 2013 update of the San Diego Integrated Regional Water Management Plan and the associated project list.

PASSED, ADOPTED AND APPROVED by the City Council of the City of Escondido at a regular meeting thereof this 5th day of August, 2015 by the following vote to wit:

AYES : Councilmembers: DIAZ, GALLO, MASSON, MORASCO, ABED

NOES : Councilmembers: NONE

ABSENT : Councilmembers: NONE

APPROVED:

Sam Abed

SAM ABED, Mayor of the
City of Escondido, California

ATTEST:

Diane Halverson

DIANE HALVERSON, City Clerk of the
City of Escondido, California

RESOLUTION NO. 2015-129

RESOLUTION 2015-25

RESOLUTION OF THE BOARD OF DIRECTORS OF PADRE DAM MUNICIPAL WATER DISTRICT ADOPTING THE 2013 SAN DIEGO INTEGRATED REGIONAL WATER MANAGEMENT PLAN

WHEREAS, the San Diego Regional Water Management Group (RWMG), comprised of the San Diego County Water Authority, City of San Diego, and County of San Diego, has collaborated with the Regional Advisory Committee (RAC), comprised of water management stakeholders from throughout the San Diego region, to develop an update to the 2007 San Diego Integrated Regional Water Management (IRWM) Plan;

WHEREAS, the 2013 San Diego IRWM Plan includes information from planning documents published since 2007, as well as information produced from planning studies, workshops, and workgroups that are being conducted to address Region-specific issues; and

WHEREAS, the 2013 San Diego IRWM Plan will allow the Region to focus on updated priorities and issues, facilitate project integration, forge partnerships with a variety of stakeholders, and move the Region forward in implementing high-priority projects;

WHEREAS, the State of California encourages integrated water resource planning on a regional basis through IRWM Plans and by conditioning certain existing and possibly future grant funding programs - including Proposition 84, the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (Public Resources Code section 75001 *et seq.)* - to activities contained in IRWM Plans.

NOW THEREFORE, BE IT RESOLVED that the Padre Dam Municipal Water District adopts the 2013 San Diego Integrated Regional Water Management Plan and is committed to continued development and implementation of the Plan to support water resources management in the San Diego region, and

BE IT FURTHER RESOLVED that we encourage the California Department of Water Resources to fully fund the grant applications that are prepared as a result of this Plan.

PASSED AND ADOPTED at a regular meeting of the Board of Directors of the Padre Dam Municipal Water District held on August 5, 2015, by the following vote, to wit;

AYES:	Caires, Peasley, Pommering, Scalzitti, Wilson
NOES:	None
ABSTAIN:	None
ABSENT:	None

ATTEST:

Board Secretary

PADRE DAM MUNICIPAL WATER DISTRICT ORGANIZED NOV. 23, 1955 CALIFORNIA

Board President

RESOLUTION OF THE BOARD OF TRUSTEES

ENDORSING THE SAN DIEGO INTEGRATED REGIONAL WATER MANAGEMENT PLAN

ZOOLOGICAL SOCIETY OF SAN DIEGO

WHEREAS the San Diego Regional Water Management Group (RWMG), comprised of the San Diego Water Authority, City of San Diego, and County of San Diego, has collaborated with the Regional Advisory Committee (RAC), comprised of water management stakeholders from throughout the San Diego region, to draft the 2013 San Diego Integrated Regional Water Management (IRWM) Plan (an update of the 2007 IRWM Plan); and

WHEREAS the 2013 San Diego IRWM Plan seeks to optimize water supply reliability, protect and enhance water quality, provide stewardship of natural resources, and coordinate and integrate water resource management within the region; and

WHEREAS the San Diego IRWM Plan forms the foundation of long-term IRWM planning in the region, fostering coordination, collaboration and communication among governmental and nongovernmental water management stakeholders; and

WHEREAS the State of California encourages integrated water resource planning on a regional basis through IRWM Plans and by conditioning certain existing and possibly future grant funding programs – including Proposition 84, the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (Public Resources Code section 75001 *et seq.*) – to activities contained in IRWM Plans;

NOW, THEREFORE, BE IT FURTHER RESOLVED that the Zoological Society of San Diego Board of Trustees hereby endorses the 2013 San Diego Integrated Regional Water Management Plan and the continued development and implementation of the Plan to support water resources management in the San Diego region.

I, Judith Wheatley, Secretary of the Zoological Society of San Diego, hereby certify that the foregoing is a true, accurate and correct copy of a resolution duly adopted by the Board of Trustees at a meeting duly held on the 23rd day of June, 2015, at which a quorum was present and voting, and that the same has not been repealed or amended and remains in full force and effect and does not conflict with the Bylaws of the Corporation.

23 June, 2015
Dated

Judith Wheatley, Secretary
Judith Wheatley, Secretary

– CORPORATE SEAL –

USDA United States Department of Agriculture
Forest Service
Cleveland National Forest
10845 Rancho Bernardo Road
Suite 200
San Diego, CA 92127

File Code: 2520
Date: June 30, 2015

San Diego IRWM Program
c/o Mark Stadler
San Diego IRWM Program Manager
San Diego County Water Authority
4677 Overland Avenue
San Diego, CA 92123

Dear San Diego IRWM Program,

The Cleveland National Forest is pleased that "San Diego River Healthy Headwaters Restoration Project" was included in the San Diego Integrated Regional Water Management (IRWM) Plan and subsequently chosen for inclusion in the 2015 Proposition 84 IRWM Implementation application for funding from the California Department of Water Resources (DWR).

The Cleveland National Forest officially supports and adopts the current San Diego IRWM Plan and Amended Project List to facilitate cooperation between our agencies for mutually beneficial objectives and as a requirement of Proposition 84 funding. Adoption of the plan does not hold the Federal Government to any legal action; however, the goals and objectives of the plan are in line with our National direction and Forest Land Management Plan (LMP). Because of this, by following our National direction and LMP we will meet the intent of the plan. The Cleveland National Forest intends to continue the partnership with the IRWM and participate in strategic planning to reach mutually beneficial objectives in the San Diego IRWM area.

If you have any questions, please contact our Forest Hydrologist, Emily Fudge at (858) 674-2993.

Sincerely,

William Metz

WILLIAM METZ
Forest Supervisor

STATE OF CALIFORNIA – CALIFORNIA NATURAL RESOURCES AGENCY
EDMUND G. BROWN JR., *Governor*

DEPARTMENT OF WATER RESOURCES
1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

June 6, 2014

Mr. Mark Stadler
San Diego IRWM Program Manager
San Diego County Water Authority
4677 Overland Avenue
San Diego, California 92123

San Diego Integrated Regional Water Management Plan Final Review

Dear Mr. Stadler:

This letter transmits the Department of Water Resources (DWR) final review of the San Diego Integrated Regional Water Management (IRWM) Plan. The public comment period on DWR's review of the San Diego IRWM Plan has closed and no public comments were received. DWR has determined that the San Diego IRWM Plan is consistent with the IRWM Planning Act and the related IRWM Plan Standards contained in the 2012 IRWM Program Guidelines. The final review is posted on the following link: http://www.water.ca.gov/irwm/grants/prp.cfm.

If adopted by the Regional Water Management Group and project proponents, by the appropriate dates, the San Diego IRWM Plan will satisfy the terms of the Round 1 and Round 2 Implementation Grant Agreements default clause and the adopted plan eligibility criteria for the 2014 Drought Solicitation. Each agreement and grant solicitation has its own date for adoption compliance.

To simplify submitting proof of adoption, DWR will compile and track this information and inform DWR grant managers and grant application review teams appropriately. You may submit proof of adoption material as often as necessary. When submitting information, please fill out and the IRWM Plan Adoption Form, found at: http://www.water.ca.gov/irwm/grants/resourceslinks.cfm, along with scanned proof of adoption, and then submit the material directly to Craig Cross at the email address listed below.

If you have any questions, please contact Craig Cross at (916) 651-9204 or Craig.Cross@water.ca.gov

Sincerely,

Tracie L. Billington, P.E. Chief
Financial Assistance Branch
Division of Integrated Regional Water Management

INTRODUCTION

IRWM planning regions must have an IRWM Plan that has been reviewed and deemed consistent with the 2012 IRWM Plan Standards by DWR for eligibilty to receiving Round 3 Proposition 84 funding. This 2012 IRWM Plan Standards Review Form for DWR staff use provides a consistent means in determining whether the 2012 IRWM Guidelines are being addressed in the IRWM Plan. It is part of the Plan Review Process that will begin prior to Round 3 solicitation. The form is similar to a grant application review form in that there is a checklist for each of the 16 Plan Standards and narrative evaluations where required. However, the evaluation is pass/fail; there is no numeric scoring. Each Plan Standard is either sufficient or not based on its associated requirements. Each Standard consists of between one and fourteen requirements. A Yes or No is automatically calculated in each Plan Standard header based on the individual requirement evaluations. In general, a passing score of "C" (i.e. 70% of the requirements for a given Plan Standard) is required for a Standard to pass. Standards with only one or 2 requirements will need one or both of those requirements to pass. Standards with 3 requirements will need at least 2 of the requirements to pass. Standards with 4 or 5 requirements will need at least 3 to pass. Some plan elements are legislated requirements. Such plan elements must be met in order to be considered consistent with plan standards. A summary of the sufficiency of each Standard is automatically calculated on the Standards Summary worksheet. A "No" evaluation indicates that a Standard was not met due to insufficient requirements comprising the Standard. The evaluation for each Plan Standard and any associated insufficiencies is automatically compiled on the Standards Summary page. Additional reviewer comments may be added at the bottom of each standards work sheet.

Note: This review form is meant to be a tool used in conjunction with the 2012 IRWM Guidelines document to assist in the evaluation of IRWM plans. It is not designed to be a substitute for the Guidelines document itself. Reviewers must use the Guidelines in determining plan consistency.

DEFINITION OF TABLE HEADINGS

IRWM Plan Standard: As named in the November 2012 IRWM Prop 84 and 1E Guidlelines.

Overall Standard Sufficient: This field is either "YES" or "NO" and is automatically calculated based on the "Sufficient" column described below. If all fields are "y", the the overall standard is deemed sufficient. Any entry other than a "y" in the Sufficient column (i.e. "n", ?, not sure, more detail needed, etc.) results in a NO.

Plan Standard Requirements Which Must Be Addressed **Fields with an asterisk * are required by legislation to be included in an IRWM Plan.**

Requirement	Requirements are taken directly from the November 2012 Guidelines.
Included	Is the Guideline Requirement included in the IRWM Plan? The options are: y = yes, requirement is included in the IRWMP; or n = no, requirement is not included in the IRWMP. If only y or n then presence/absence of the requirement is sufficient for evaluation. If there is a "q" (qualitative) then add a brief narrative, similar to a Grant Application Review public evaluation or supporting information.
Plan Standard Source	
2012 IRWM Grant Program Guidelines Source Page(s)	Page(s) in the Guidelines (November 2012) which pertain to the Requirement.
Legislative Support and/or Other Citations	The CWC or other regulations that pertain to the Requirement, **if applicable**. This is for reference purposes. The cell links to a weblink of the regulatory code.
Evidence of Sufficiency	
Location of Standard in Grantee IRWM Plan	The page(s) or sections in the IRWM Plan where information on the Requirement can be found. This can be specific paragraphs or entire chapters for more general requirements.
Brief Qualitative Evaluation Narrative	Supporting information for the Requirement if a "q" is in the Included column. This can be just a few sentences or a paragraph and can be taken directly from the IRWM Plan. Comments or supporting information may be entered regardless of whether required.
Sufficient	Is the Guidelines requirement sufficiently represented in the IRWM Plan (y/n).

2012 IRWM Plan Standards Review Form

Regional Acceptance Process Planning Region: San Diego
Regional Water Management Group: San Diego
IRWM Plan Title: 2013 San Diego Integrated Water Management Plan

PLAN IS SUFFICIENT

IRWM Plan Standard	Overall Standard Sufficient	Requirement(s) Insufficient
Governance	Yes	
Region Description	Yes	
Objectives	Yes	
Resource Management Strategies	Yes	
Integration *	Yes	
Project Review Process	Yes	
Impact and Benefit	Yes	
Plan Performance and Monitoring	Yes	
Data Management	Yes	
Finance	Yes	
Technical Analysis	Yes	
Relation to Local Water Planning	Yes	
Relation to Local Land Use Planning	Yes	
Stakeholder Involvement	Yes	
Coordination	Yes	
Climate Change	Yes	

* If not included as an individual section use Governance, Project Review Process, and Data Management Standards per November 2012 Guidelines, p. 44.

Additional Comments:

IRWM Plan Standard: Governance						**Overall Standard Sufficient**	**Yes**
Requirement	**Included**		**Plan Standard Source**		**Evidence of Sufficiency**		**Sufficient**
From IRWM Guidelines	**y/n - Present/Not Present in the IRWMP. If y/n/q qualitative evaluation needed.**		**2012 IRWM Grant Program Guidelines Source Page(s)**	**Regulatory and/or Other Citations**	**Location of Standard in Grantee IRWM Plan**	**Brief Evaluation Narrative**	**y/n**
Document a governance structure to ensure updates to the IRWM Plan							
The name of the RWMG responsible for implementation of the IRWMP	**y/n**	Y	**18/35**	CWC §10539	Section 1.3, P.1-7-10		Y
A description of the IRWM governance structure	**y/n**	y	**19/36**		Section 6.3, P.6-5		Y
A description of how the chosen form of governance **addresses** and **ensures**:							
Public outreach and involvement processes	**y/n/q**	y	**19/36-37**	§10540, §10541	Sectiontion 6.4, P.6-12-19	Outreach includes website, emails, public workshops, presentations, summits, and partnerships. As evidence of public participation efforts to the Plan update the Regional Water Management Group (RWMG) provides formal comments letters received for their 2013 IRWM Plan Update in Appendix 6-D.	Y
Effective decision making	**y/n/q**	y	**19/37**		Section 6.3 and 6.3.1-6.3.4, P.6-5-12	Organizational structure includes five major components (RWMG, Regional Adivisory Committee (RAC), Workgroups, Tri-County Funding Area Coordinating Committee (FACC), and the public) that is essential to their decision making.	Y
Balanced access and opportunity for participation in the IRWM process	**y/n/q**	y	**19/37**		Section 6.4, P.6-12-19, Section 6.4.1-2, P.6-19-25, & Appendix 6-B	Several outreach methods are used to solicit nformation from all applicable parties during the IRWM process. The information gathered is considered by the member elected RAC), which advises the RWMG on decisions related to IRWM.	y
Effective communication – both internal and external to the IRWM region	**y/n/q**	y	**19/37-38**		Section 6.3.4, P.6-12, Section 6.4, P.6-12-19, Section 6.4.1-2, P.6-19-25	Several outreach methods are used to communicate with both internally and externally in the region. In addition, the RWMG meets regularly and coordinates with the other IRWM groups in their funding region	Y
Long term implementation of the IRWM Plan	**y/n/q**	y	**19/38**		Section 6.1, P.6-1-2, Section 6.4, P.6-12-26	The RWMG states a commitment of long term implementation the stakeholder involvement process which is described in the plan.	Y
Coordination with neighboring IRWM efforts and State and federal agencies	**y/n/q**	Y	**19/38**		Section 6.3.2, P.6-7-8, Section.6.3.5, P.6-12	The RWMG, Upper Santa Margarita RWMG, and South Orange County RWMG collaborate in an inter-regional body established via MOU and known as the Tri-County FACC to address issues and conflicts across planning regions. The SDIRWM also has state and federal agencies as non-voting members of their RAC.	Y
The collaborative process(es) used to establish plan objectives	**y/n/q**	y	**19/38**		Section 2.2, P.2-1-2	The RWMG used workgroups and the RAC to the develop the IRWM Plan. While the RWMG help developed the IRWM Plan based on input received from the various stakeholder, approval and acceptance was voted on by the RAC	Y
How interim changes and formal changes to the IRWM Plan will be performed	**y/n/q**	y	**19/38**		Section 6.5, P.6-27	The IRWM governance structure states the Plan will be updated at a minimum every five-years. The Plan allows for periodic updates to the IRWM project list prior to new funding opportunities without a formal Plan Amendment.	y
Updating or amending the IRWM Plan	**y/n/q**	y	**19/38**		Section 6.5, P.6-27	The Plan discusses in detail how a formal update will be conducted, which includes public notice and adoption.	y
Publish NOI to prepare/update the plan; adopt the plan in a public meeting	**y/n/q**	Y	**35**	CWC §10543	Section 6.5, P.6-27	The RWMG indicates that a publised NOI will be needed to prepare or update the Plan	Y

IRWM Plan Standard: Region Description						Overall Standard Sufficient	Yes
Requirement	**Included**		**Plan Standard Source**		**Evidence of Sufficiency**		**Sufficient**
From IRWM Guidelines	**y/n - Present/Not Present in the IRWMP. If y/n/q qualitative evaluation needed.**		**2012 IRWM Grant Program Guidelines Source Page(s)**	**Legislative Support and/or Other Citations**	**Location of Standard in Grantee IRWM Plan**	**Brief Evaluation Narrative**	**y/n**
If applicable, describe and explain how the plan will help reduce dependence on the Delta supply regionally	**y/n**	y	**20**	--	Section 2.7, P.2-9, Section 3.10, P. 3-92-98	The RWMG plans to reduce dependence on Delta and imported water supply by diversifying the region's water supply.	y
Describe watersheds and water systems	**y/n**	y	**19/39**	PRC §75026.(b)(1) and CWP Update 2009	Ch.5, P.5-1-109		y
Describe internal boundaries	**y/n**	y	**19/39**	--	Section 3.6, P. 3.61-69		y
Describe water supplies and demands for minimum 20 year planning horizon	**y/n**	y	**19/39**	--	Section 3.10, P.3-92-98		y
Describe water quality conditions	**y/n**	y	**19/40**	--	Section 3.7, P.3-69-84		y
Describe social and cultural makeup, including specific information on DACs and tribal communities in the region and their water challenges.	**y/n/q**	y	**19/40**	--	Section 3.1,P.3-1-7, Section 3.3, P.3-11-22, Ch. 4, 4-1-22	The RWMG provides a brief overview of the region's social and cultural makeup, but discusses in detail the water chanllenges DAC's and tribal communities in the region face.	y
Describe major water related objectives and conflicts *	**y/n/q**	y	**19/40**	§10541. (e)(3)	Section 3.11, P. 3-98-99, Sec 2.7, P. 2-4-14	Table 3-40 sumarizes water management issues and potential conflicts, which coincide with the objectives stated in Ch.2 sec.2.7.	y
Explain how IRWM regional boundary was determined and why region is an appropriate area for IRWM planning.	**y/n/q**	y	**19/40**	--	Section 3.2, P.3-10-11	The IRWM region was determined based primarily on Regional Board jurisdiction, political jurisdictions, physical and hydrologic characteristics, the imported water supply service area, and wastewater service considerations.	y
Describe neighboring and/or overlapping IRWM efforts	**y/n**	y	**19/40**	--	Section 3.12, P.3-100-102		y
Explain how opportunities are maximized (e.g. people at the table, natural features, infrastructure) for integration of water management activities	**y/n**	y	**38**	--	Section 9.2, P.9-1-5		y

* Requirement must be addressed.

IRWM Plan Standard: Objectives						Overall Standard Sufficient	Yes
Requirement	Included		Plan Standard Source		Evidence of Sufficiency		Sufficient
From IRWM Guidelines	y/n - Present/Not Present in the IRWMP. If y/n/q qualitative evaluation needed.		2012 IRWM Grant Program Guidelines Source Page(s)	Legislative Support and/or Other Citations	Location of Standard in Grantee IRWM Plan	Brief Qualitative Narrative	y/n
Through the objectives or other areas of the plan, the 7 items on pg 41 of GL are addressed.*	y/n	y	20/40 - 41	§10540.(c)	Section 2.7, P.2-4-14		Y
Describe the collaborative process and tools used to establish objectives: - How the objectives were developed - What information was considered (i.e., water management or local land use plans, etc.) - What groups were involved in the process - How the final decision was made and accepted by the IRWM effort	y/n	y	20/41	--	Section 2.2, P.2-1-2		Y
Identify quantitative or qualitative metrics and measureable objectives: Objectives must be measurable - there must be some metric the IRWM region can use to determine if the objective is being met as the IRWM Plan is implemented. Neither quantitative nor qualitative metrics are considered inherently better. *	y/n/q	y	20/41 - 42	10541.(e)	Section 2.10, P.2-15-25	The Plan describes targets and qualitative or quantitative metrics for each one of the group's eleven objectives identified. The metrics provided are appropriate for the given objective.	Y
Explain how objectives are prioritized or reason why the objectives are not prioritized	y/n/q	y	20/42-43	--	Section 2.7.1, P.2-11	The group did not prioritize it's eleven plan objectives due to limiting the potential breadth of water management activities, losing flexibility in the Plan, and losing stakeholder support.	Y
Reference specific overall goals for the region: RWMGs may choose to use goals as an additional layer for organizing and prioritizing objectives, or they may choose to not use the term at all.	y/n	y	43	--	Section 2.6, P.2-4		Y

* Requirement must be addressed.

IRWM Plan Standard: Resource Management Strategies (RMS)						Overall Standard Sufficient	Yes
Requirement	Included		Plan Standard Source		Evidence of Sufficiency		Sufficient
From IRWM Guidelines	y/n - Present/Not Present in the IRWMP. If y/n/q qualitative evaluation needed.		2012 IRWM Grant Program Guidelines Source Page(s)	Legislative Support and/or Other Citations	Location of Standard in Grantee IRWM Plan	Brief Evaluation Narrative	y/n
Identify RMS incorporated in the IRWM Plan: Consider all California Water Plan (CWP) RMS criteria (29) listed in Table 3 from the CWP Update 2009 *	y/n	y	20/43	CWP Update 2009 Volume II; 10541(e)(1)	Ch.8, P.8-1-23		y
Consideration of climate change effects on the IRWM region must be factored into RMS	y/n	y	20/43	--	Section 8.7,P.8-25-26		Y
Address which RMS will be implemented in achieving IRWM Plan Objectives	y/n	y	44	--	Section 8.5-6, P.8-23-25		Y

* Requirement must be addressed.

IRWM Plan Standard: Integration						Overall Standard Sufficient	Yes
Requirement	Included		Plan Standard Source		Evidence of Sufficiency		Sufficient
From IRWM Guidelines	y/n - Present/Not Present in the IRWMP. If y/n/q qualitative evaluation needed.		2012 IRWM Grant Program Guidelines Source Page(s)	Legislative Support and/or Other Citations	Location of Standard in Grantee IRWM Plan	Brief Evaluation Narrative	y/n
Contains structure and processes for developing and fostering integration [1]: - Stakeholder/institutional - Resource - Project implementation	y/n/q	y	20/44 - 45	§10540.(g); §10541.(h)(2)	Section 9.2, P.9-1-5	The Plan contains a separate integration section with six separate sub-sections: Partnership Integration, Resource Management Integration, Beneficial Use Integration, Geographical Integration, and Hydrological Integration. Methods used to promote and encourage integration are discussed and examples of integration are presented.	Y

1. If not included as an individual section use Governance, Project Review Process, and Data Management Standards per November 2012 Guidelines, p. 44.

IRWM Plan Standard: Project Review Process						Overall Standard Sufficient	Yes
Requirement	Included		Plan Standard Source		Evidence of Sufficiency		Sufficient
From IRWM Guidelines	y/n - Present/Not Present in the IRWMP. If y/n/q qualitative evaluation needed.		2012 IRWM Grant Program Guidelines Source Page(s)	Regulatory and/or Other Citations	Location of Standard in Grantee IRWM Plan	Brief Evaluation Narrative	y/n
Process for projects included in IRWM plan must address 3 components: - procedures for submitting projects - procedures for reviewing projects - procedures for communicating lists of selected projects	**y/n**	y	**20/45**	§75028.(a)	Section 9.3, 9.4, 9.4.1, P.9-5-10		y
Does the project review process in the plan incorporate the following factors:							
How a project contributes to plan objectives	**y/n**	y	**20**		Section 9.3, 9.4, 9.4.1, P.9-5-10		y
How a project is related to Resource Management Strategies identified in the plan.	**y/n**	y	**20**		Section 9.4.2, P.9.9-13		y
The technical feasibility of a project.	**y/n**	y	**20**		Section 9.4.2, P.9-12		y
A projects specific benefits to a DAC water issue.	**y/n**	y	**20**		Section 9.4.2, P.9-11-12		y
Environmental Justice considerations.	**y/n**	y	**20**		Section 9.4.2, P.9-11-12		y
Project costs and financing	**y/n**	y	**20**		Section 9.4.2, P.9-12		y
Address economic feasibility	**y/n**	y	**21**		Section 9.4.2, P.9-12		y
Project status	**y/n**	y	**21**		Section 9.4.2, P.9-12		y
Strategic implementation of plan and project merit	**y/n**	y	**21/48**		Section 9.4.2, P.9-11-12		y
Project's contribution to climate change adaptation	**y/n**	y	**21**		Section 9.4.2, P.9-12		y
Contribution of project in reducing GHGs compared to project alternatives	**y/n**	y	**21**		Section 9.4.2, P.9-11	This is incorporated in the category of "Other" and will depend on Grant requirements.	y
Status of the Project Proponent's IRWM plan adoption	**y/n**	y	**21**		Section 6.5, P.6-27		Y
Project's contribution to reducing dependence on Delta supply (for IRWM regions receiving water from the Delta).	**y/n**	y	**21**		Section 9.4.2, P.9-11	This is incorporated in the category of "Other" and will depend on Grant requirements.	y

IRWM Plan Standard: Impact and Benefit						Overall Standard Sufficient	Yes
Requirement	Included		Plan Standard Source		Evidence of Sufficiency		Sufficient
From IRWM Guidelines	y/n - Present/Not Present in the IRWMP. If y/n/q qualitative evaluation needed.		2012 IRWM Grant Program Guidelines Source Page(s)	Legislative Support and/or Other Citations	Location of Standard in Grantee IRWM Plan	Brief Evaluation Narrative	y/n
Discuss potential impacts and benefits of plan implementation within IRWM region, between regions, with DAC/EJ concerns and Native American Tribal communities	y/n	y	21	--	Section 11.3.1, P.11-13-20		Y
State when a more detailed project-specific impact and benefit analysis will occur (prior to any implementation activity)	y/n	y	49	--	Section 11.3,P.11-12		Y
Review and update the impacts and benefits section of the plan as part of the normal plan management activities	y/n	y	50	--	Section 11.5.1, P.11-32-33		Y

IRWM Plan Standard: Plan Performance and Monitoring						Overall Standard Sufficient	Yes
Requirement	Included		Plan Standard Source		Evidence of Sufficiency		Sufficient
From IRWM Guidelines	y/n - Present/Not Present in the IRWMP. If y/n/q qualitative evaluation needed.		2012 IRWM Grant Program Guidelines Source Page(s)	Legislative Support and/or Other Citations	Location of Standard in Grantee IRWM Plan	Brief Evaluation Narrative	y/n
Contain performance measures and monitoring methods to ensure that IRWM objectives are met *	y/n	y	21/53	PRC §75026.(a)	Section 11.5.1, P.11-32-33		y
Contain a methodology that the RWMG will use to oversee and evaluate implementation of projects.	y/n	y	21/53		Section 11.5.2, P.11-33		Y

* Requirement must be addressed.

IRWM Plan Standard: Data Management						Overall Standard Sufficient	Yes
Requirement	Included		Plan Standard Source		Evidence of Sufficiency		Sufficient
From IRWM Guidelines	y/n - Present/Not Present in the IRWMP. If y/n/q qualitative evaluation needed.		2012 IRWM Grant Program Guidelines Source Page(s)	Regulatory and/or Other Citations	Location of Standard in Grantee IRWM Plan	Brief Evaluation Narrative	y/n
Describe data needs within the IRWM region	**y/n**	y	**54**	--	Section 10.2.1, P.10-1		y
Describe typical data collection techniques	**y/n**	Y	**54**	--	Section 10.2.2.1		Y
Describe stakeholder contributions of data to a data management system	**y/n**	Y	**54**	--	Section 10.2.3-4, P.10-12-18		Y
Describe the entity responsible for maintaining data in the data management system	**y/n**	Y	**54**	--	Section 10.2.4, P.10-15		Y
Describe the QA/QC measures for data	**y/n**	Y	**54**	--	Section 10.2.2, P.10-6, Section 10.2.3 P. 10-17		y
Explain how data collected will be transferred or shared between members of the RWMG and other interested parties throughout the IRWM region, including local, State, and federal agencies *	**y/n**	y	**54**	--	Section 10.2.3-4, P.10-12-18		Y
Explain how the Data Management System supports the RWMG's efforts to share collected data	**y/n**	y	**54**	--	Section 10.2.4, P.10-13-14		y
Outline how data saved in the data management system will be distributed and remain compatible with State databases including CEDEN, Water Data Library (WDL), CASGEM, California Environmental Information Catalog (CEIC), and the California Environmental Resources Evaluation System (CERES).	**y/n**	y	**54**	--	Section 10.2.2, P.10-6		Y

* Requirement must be addressed.

IRWM Plan Standard: Finance						Overall Standard Sufficient	Yes
Requirement	Included		Plan Standard Source		Evidence of Sufficiency		Sufficient
From IRWM Guidelines	y/n - Present/Not Present in the IRWMP. If y/n/q qualitative evaluation needed.		2012 IRWM Grant Program Guidelines Source Page(s)	Legislative Support and/or Other Citations	Location of Standard in Grantee IRWM Plan	Brief Evaluation Narrative	y/n
Include a programmatic level (i.e. general) plan for implementation and financing of identified projects and programs* including the following:	y/n	y	21	§10541.(e)(8)	Section 11.4, P.11-21		Y
List known, as well as, possible funding sources, programs, and grant opportunities for the development and ongoing funding of the IRWM Plan.	y/n	y	21		Section 11.4.1, P.11-21-23		Y
List the funding mechanisms, including water enterprise funds, rate structures, and private financing options, for projects that implement the IRWM Plan.	y/n	y	21		Section 11.4.2, P.11-24-31		y
An explanation of the certainty and longevity of known or potential funding for the IRWM Plan and projects that implement the Plan.	y/n	Y	21		Section 11.4.1&2, P.11-21-24		Y
An explanation of how operation and maintenance (O&M) costs for projects that implement the IRWM Plan would be covered and the certainty of operation and maintenance funding.	y/n	y	21		Section 11.4.3, P.11-24-31		y

* Requirement must be addressed.

IRWM Plan Standard: Technical Analysis						**Overall Standard Sufficient**	**Yes**
Requirement	**Included**		**Plan Standard Source**		**Evidence of Sufficiency**		**Sufficient**
From IRWM Guidelines	**y/n - Present/Not Present in the IRWMP. If y/n/q qualitative evaluation needed.**		**2012 IRWM Grant Program Guidelines Source Page(s)**	**Legislative Support and/or Other Citations**	**Location of Standard in Grantee IRWM Plan**	**Brief Evaluation Narrative**	**y/n**
Document the data and technical analyses that were used in the development of the plan *	**y/n**	y	**22**	--	Section 10.3.2, P.10-19-25		y

* Requirement must be addressed.

IRWM Plan Standard: Relation to Local Water Planning						Overall Standard Sufficient	Yes
Requirement	Included		Plan Standard Source		Evidence of Sufficiency		Sufficient
From IRWM Guidelines	y/n - Present/Not Present in the IRWMP. If y/n/q qualitative evaluation needed.		2012 IRWM Grant Program Guidelines Source Page(s)	Legislative Support and/or Other Citations	Location of Standard in Grantee IRWM Plan	Brief Evaluation Narrative	y/n
Identify a list of local water plans used in the IRWM plan	y/n	Y	22	§10540.(b)	Table 7-1, P.7-3		Y
Discuss how the plan relates to these other planning documents and programs	y/n	Y	22		Section 7.2.1, P.7-1-2		Y
Describe the dynamics between the IRWM plan and other planning documents	y/n	Y	22		Section 7.2.1,P.7-1-2		Y
Describe how the RWMG will coordinate its water management planning activities	y/n	Y	58		Section 7.2.1,P.7-1-2		y

IRWM Plan Standard: Relation to Local Land Use Planning						Overall Standard Sufficient	Yes
Requirement	Included		Plan Standard Source		Evidence of Sufficiency		Sufficient
From IRWM Guidelines	y/n - Present/Not Present in the IRWMP. If y/n/q qualitative evaluation needed.		2012 IRWM Grant Program Guidelines Source Page(s)	Legislative Support and/or Other Citations	Location of Standard in Grantee IRWM Plan	Brief Evaluation Narrative	y/n
Document current relationship between local land use planning, regional water issues, and water management objectives	y/n	y	22/59 - 62	--	Section 7.7 & 7.7.1, P.7-31-33, Table 7-1		Y
Document future plans to further a collaborative, proactive relationship between land use planners and water managers	y/n	Y	22/59 - 62	--	Section 7.7.2-3, P.7-33-34, Table 7-1		Y

IRWM Plan Standard: Stakeholder Involvement						Overall Standard Sufficient	Yes
Requirement	Included		Plan Standard Source		Evidence of Sufficiency		Sufficient
From IRWM Guidelines	y/n - Present/Not Present in the IRWMP. If y/n/q qualitative evaluation needed.		2012 IRWM Grant Program Guidelines Source Page(s)	Legislative Support and/or Other Citations	Location of Standard in Grantee IRWM Plan	Brief Evaluation Narrative	y/n
Contain a public process that provides outreach and opportunity to participate in the IRWM plan *	y/n	Y	22/63	§10541.(g)	Section 6.4, P.6-12-19		Y
Identify process to involve and facilitate stakeholders during development and implementation of plan regardless of ability to pay; include barriers to invlovement *	y/n	y	64	§10541.(h) (2)	Section 6.2 & 6.2.1, P.6-3 & 4		Y
Discuss involvement of DACs and tribal communities in the IRWM planning effort	y/n	y	23	--	Section 6.4.1&2, P.6-19-26		Y
Describe decision-making process and roles that stakeholders can occupy	y/n	y	23	--	Section 6.3.2&3, P.6-7-11		Y
Discuss how stakeholders are necessary to address objectives and RMS	y/n	y	23	--	Section 8.4, P.8-6-24		Y
Discuss how a collaborative process will engage a balance in interest groups	y/n	y	23	--	Section 6.3.2, P.6-7-9		Y

* Requirement must be addressed.

IRWM Plan Standard: Coordination						Overall Standard Sufficient	Yes
Requirement	Included		Plan Standard Source		Evidence of Sufficiency		Sufficient
From IRWM Guidelines	y/n - Present/Not Present in the IRWMP. If y/n/q qualitative evaluation needed.		2012 IRWM Grant Program Guidelines Source Page(s)	Legislative Support and/or Other Citations	Location of Standard in Grantee IRWM Plan	Brief Evaluation Narrative	y/n
Identify the process to coordinate water management projects and activities of participating local agencies and stakeholders to avoid conflicts and take advantage of efficiencies *	**y/n**	y	**23/65**	§10541.(e)(13)	Section 9.2.6, P.9-4-5		Y
Identify neighboring IRWM efforts and ways to cooperate or coordinate, and a discussion of any ongoing water management conflicts with adjacent IRWM efforts	**y/n**	y	**23/65**	--	Section 3.12, P.3-100-101		Y
Identify areas where a state agency or other agencies may be able to assist in communication or cooperation, or implementation of IRWM Plan components, processes, and projects, or where State or federal regulatory decisions are required before implementing the projects.	**y/n**	y	**23**	--	Table 7-2, P.7-4		Y

* Requirement must be addressed.

IRWM Plan Standard: Climate Change						**Overall Standard Sufficient**	**Yes**
Requirement	**Included**		**Plan Standard Source**		**Evidence of Sufficiency**		**Sufficient**
From IRWM Guidelines	**y/n - Present/Not Present in the IRWMP. If y/n/q qualitative evaluation needed.**		**2012 IRWM Grant Program Guidelines Source Page(s)**	**Legislative Support and/or Other Citations**	**Location of Standard in Grantee IRWM Plan**	**Brief Evaluation Narrative**	**y/n**
Evaluate IRWM region's vulnerabilities to climate change and potential adaptation responses based on vulnerabilites assessment in the DWR Climate Change Handbook for Regional Water Planning *	**y/n**	y	**23/66 - 73**	Climate Change Handbook vulnerability assessment: http://www.water.ca.gov/climatechange/CCHandbook.cfm; November 2012 Guidelines Legislative and Policy Context, p. 66 §10541.(e)(11)	Section 7.8.1, P.7-36-38		y
Provide a process that considers GHG emissions when choosing between project alternatives *	**y/n**	y	**23/68**		Table 9-1 & 2, P.9-11-12		y
Include a list of prioritized vulnerabilites based on the vulnerability assessment and the IRWM's decision making process.	**y/n**	y	**23/66 - 73**		Table 7-16, P.7-38		Y
Contain a plan, program, or methodology for further data gathering and analysis of prioritized vulnerabilities	**y/n**	y	**23/66 - 73**		Section 11.2.1, P.11-9		y
Include climate change as part of the project review process	**y/n**	y	**23/68**		Table 9-1 & 2, P.9-11-12		Y

* Requirement must be addressed.

Regulatory Citation	Link	Notes
IRWM Prop 84 and 1E Guidelines	http://www.water.ca.gov/irwm/grants/docs/Guidelines/GL_2012_FINAL.pdf	DWR November 2012 Guidelines - Final
CWC §10539	http://www.leginfo.ca.gov/cgi-bin/displaycode?section=wat&group=10001-11000&file=10532-10539	
CWC §10540, §10541	http://www.leginfo.ca.gov/cgi-bin/displaycode?section=wat&group=10001-11000&file=10540-10543	
CWC §10543	http://www.leginfo.ca.gov/cgi-bin/displaycode?section=wat&group=10001-11000&file=10540-10543	
PRC §75026, §75028, CWP Update 2009, and California Watershed Portal	http://www.leginfo.ca.gov/cgi-bin/displaycode?section=prc&group=75001-76000&file=75020-75029.5	The Department of Water Resources shall give preference to proposals that satisfy the criteria specified in PRC §75026.(b)(1). §75028.(a) - the department shall defer to approved local project selection, and review projects only for consistency with the purposes of Section 75026.
	http://www.waterplan.water.ca.gov/cwpu2009/index.cfm	2009 California Water Plan Volumes I and II
	http://www.conservation.ca.gov/dlrp/watershedportal/Pages/Index.aspx	California Watershed Portal
§10541. (e)(3)	http://www.leginfo.ca.gov/cgi-bin/displaycode?section=wat&group=10001-11000&file=10540-10543	

Project Consistency with Adopted IRWM Plan

The *2013 IRWM Plan* is a "living" document that can add projects to its project list, and subsequently include in them in the Region's funding proposals, via a three-step process: 1) projects are entered into online project database for screening per IRWM Plan Objectives, 2) projects are scored using selection criteria determined by the Regional Advisory Committee (RAC), and 3) a project suite is selected by the Project Selection Workgroup. Each step is described below, along with the final project suite for this Proposal.

Step 1: Online Project Database and Project Screening

Per *Section 9.3 Including Projects in the IRWM Plan* of the *2013 IRWM Plan*, "Projects that meet at least one Plan Objective are eligible for inclusion in the San Diego IRWM Plan as soon as they are entered into the San Diego IRWM Project Database..." Therefore, the first step in adding a project to the current IRWM Plan is to log in to the online project database (the "OPTI" system), and enter the project. One field of the project entry form asks project sponsors to identify which of the eleven objectives of the *2013 IRWM Plan* the project addresses. The form also requires a brief explanation of how the project will meet each of the indicated objectives. Once the response is verified, this requirement is fulfilled and the project is considered part of the IRWM Plan. The San Diego IRWM project list is hosted online at: http://irwm.rmcwater.com/sd/login.php. Excerpts from the list highlighting projects included in this Proposal are included as **Appendix 1-5**. Note that some project names have been modified since they were entered in the database, to fully represent each project's intent.

Projects in the online project database are only eligible for inclusion in regional funding applications if they meet Objective A, Objective B, and at least one other objective of the *2013 IRWM Plan* (see *Section 9.3 Including Projects in the IRWM Plan*). **Objective A** encourages the development of integrated solutions to address water management issues and conflicts. As described in *Section 2.7 IRWM Objectives* of the *2013 IRWM Plan*, there are six types of integration that meet Objective A:

- *Partnership*: Establishing partnerships between different organizations to increase cost-effectiveness through sharing of data, resources, and infrastructure.
- *Resource Management*: Employing multiple resource management strategies within a single project to effectively address a variety of issues.
- *Beneficial Uses*: Developing solutions that address multiple beneficial uses to expand benefits.
- *Geography*: Implementing watershed- or regional-scale projects to benefit a greater amount of people and potentially save costs through economies of scale.
- *Hydrology*: Addressing multiple watershed functions within the hydrologic cycle to holistically address issues and resolve conflicts.
- *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.

Objective B maximizes stakeholder/community involvement and stewardship of water resources, emphasizing education and outreach. All projects eligible for inclusion in regional funding applications must therefore include some form of active outreach.

Other objectives of the *2013 IRWM Plan* include:

- **Objective C:** Effectively obtain, manage, and assess water resource data and information.
- **Objective D:** Further the 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 water management 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 greenhouse gas reduction, adaptation, or mitigation in water resource management.

A complete description of the Plan objectives can be found in *Chapter 2 Vision and Objectives* of the *2013 IRWM Plan*.

Step 2: Numerical Scoring

Section 9.4 IRWM Project Review of the *2013 IRWM Plan* describes how the Region evaluates and selects projects, and the importance of stakeholder input in this process. Projects entered into the online project database are scored by a third party using the scoring criteria found in Table 9-1 of the *2013 IRWM Plan*. As noted in the plan, the scoring criteria are weighted, and additional scoring criteria may be added, to reflect the priorities of the Region and the specific requirements and preferences of the funding solicitation in question. The scoring criteria were modified and approved by the RAC through an open and transparent process at a meeting on April 1, 2015. At this meeting, the RAC also nominated a Project Selection Workgroup to evaluate the projects, and authorized it to select a suite of projects on behalf of the Region to include in this application.

Step 3: Project Selection Workgroup

The Project Selection Workgroup members followed the Project Selection Process in the *2013 IRWM Plan*, which directed them to consider Tier 1 Projects (those that received the highest scores under Step 2) in more depth. To guide this discussion, the Project Selection Workgroup used the *Framework for Scoring Guidelines for IRWM Grant Opportunities* (Table 9-2 of the *2013 IRWM Plan*), which were also modified and approved by the RAC at the meeting on April 1, 2015. The Project Selection Workgroup met six times for a total of 37 hours. Two of those meetings were Project Interviews where project sponsors were invited to interview with the Project Selection Workgroup to present additional information about their projects and answer questions from the Workgroup. Each project included within this Proposal was prioritized and recommended by the Project Selection Workgroup, with the final recommendation validated by the RAC on June 3, 2015 and approved by the SDCWA Board of Directors on June 25, 2015.

Proposed Project Suite

Table 1-1 shows which of the objectives of the *2013 IRWM Plan* described above are met by each of the projects included in this Proposal. The following sections provide a brief overview of each project included within this application.

Table 1-1: Consistency of Proposed Projects with IRWM Plan Objectives

Proposal Projects		IRWM Plan Objectives Addressed										
		A	B	C	D	E	F	G	H	I	J	K
Conservation Program												
1	Regional Drought Resiliency Program	●	●	●		●			●			●
2	Conservation Home Makeover in the Chollas Creek Watershed	●	●	●		●		○	●			●
3	San Diego Water Conservation Program	●	●			●			●			●
4	Ms. Smarty-Plants Grows Water-Wise Schools	●	●	●		●			○			●
Rural Water Infrastructure Program												
5	Rural Disadvantaged Community Partnerships – Phase III	●	●	○	○	●	●	●	●	●	●	●
Water Reuse Program												
6	Integrated Water Resource Solutions in the Carlsbad Watershed	●	●	●		●	●	●	●	●	○	●
7	UCSD Water Conservation and Watershed Protection	●	●	●	●	●	●	●	●	○		●
8	Escondido Advanced Water Treatment for Agriculture	●	●	●		●	●		●		○	●
9	Padre Dam Advanced Water Treatment – Phase IA Expansion	●	●	●	●	●	●		○	○	○	●
10	Safari Park Drought Response and Outreach	●	●			●	●		○	○		●
Water Quality and Habitat Program												
11	San Diego River Healthy Headwaters Restoration	●	●	○		○		●	●	●		●
12	Sweetwater Reservoir Wetlands Habitat Recovery	●	●	●	●	○		●	●	●	○	●
13	Hodges Reservoir Natural Treatment System	●	●			○	●		●	●	○	○

● = directly addresses; ○ = indirectly addresses

The Project Selection Workgroup used the *2013 IRWM Plan* as its guidebook in evaluating and selecting projects for this *2015 IRWM Implementation Grant Proposal*. All projects included in this funding package are consistent with, and help to implement, multiple objectives in the *2013 IRWM Plan*, as shown in **Table 1-1**. The thirteen projects included in this package can be grouped into four programs: 1) Conservation Program, 2) Rural Water Infrastructure Program, 3) Water Reuse Program, and 4) Water Quality and Habitat Program. These four programs each address important geographies and needs of the San Diego IRWM Region, and the projects included herein encompass the goals, objectives, and values of the Region. Many of these projects build upon the experiences of past IRWM-funded projects, and continue successful work by expanding existing programs and implementing projects recommended by, or developed as a result of, past IRWM-funded studies. As encouraged by the *2013 IRWM Plan*, and as directed by the RAC, the Region sought to select projects that would span the region and population, address a wide range of *2013 IRWM Plan* objectives, and provide benefits beyond water supply and water quality, while considering the importance of projects that provide drought resiliency. In addition, the Project Selection Workgroup considered how projects paved the way for future priority projects in the Region, including potable reuse opportunities, and those projects whose results could be used to successfully expand or create similar programs in the future. By program, the proposed funding package includes:

Conservation Program

The Conservation Program addresses seven *2013 IRWM Plan* objectives, and supports the Region's water supply reliability goals. The target audience for the Conservation Program's projects ranges from DACs to schools to all members of the public. Outreach approaches include mass outreach through the two regional projects (*1: Regional Drought Resiliency Program* and *3: San Diego Water Conservation Program*), and targeted outreach to schools (*4: Ms. Smarty-Plants Grows Water-Wise Schools*) and DACs (*2: Conservation Home Makeover in the Chollas Creek Watershed*). The two regional projects expand and build upon previous IRWM-funded projects, leveraging the success of those projects to reach additional stakeholders and achieve greater conservation savings. With the groundwork for these programs in place through the previous iterations of these programs, they are able to expand the conservation programs to include pilot greywater rebates, and to utilize lessons learned to improve program efficiency and effectiveness. *4: Ms. Smarty-Plants Grows Water-Wise Schools* builds upon The

Garden's history of successful school outreach to go beyond education and implement on-the-ground water savings at schools, while engaging students and families and providing conservation skills that can also be put to use in their homes. *2: Conservation Home Makeover in Chollas Creek Watershed* is a unique project that utilizes water conservation techniques to meet basic needs of DACs and improve quality of life. This project's success, and the lessons learned, will be used to expand these "home makeovers" to other residents in DACs, and will act as a pilot project for similar efforts.

Project 1: Regional Drought Resiliency Program

SDCWA will implement its *Regional Drought Resiliency Program* in partnership with the California Department of Corrections and Rehabilitation and Otay Water District. There are six components to the program, which primarily build on successful water conservation efforts that have been implemented in the past, including some that received IRWM funding in previous grant cycles. Program components include: 1) Correctional Facility Retrofit Project; 2) Electrical Conductivity Mapping and Soil Moisture Sensor Systems Project; 3) WaterSmart Field Services Program; 4) Sustainable Landscapes Program; 5) WaterSmart Landscape Makeover Program; and 6) Drought Outreach and Education activities. This program will continue the efforts to retrofit correctional facilities with controlled flushing mechanisms and water-saving hardware, conserving water and reducing potential inmate conflicts within the facility, continue the popular turf replacement rebate program to convert landscapes to water-wise landscaping, and provide continued outreach to property owners on reducing water demands while maintaining attractive landscaping. Outreach and education efforts included in this project will expand the learning modules available for successful conversions to water-wise landscaping, and will expand target audiences and demographics media for water-efficiency outreach, and offering school programs to foster conservation values in youth.

This project directly addresses six of the *2013 IRWM Plan* objectives, and supports the Region's goals of water supply reliability and sustainability, water quality protection, and sustainable integrated water resources management. As a regional project, it provides benefits throughout the Region, including DACs.

Project 2: Conservation Home Makeover in the Chollas Creek Watershed

Groundwork San Diego has partnered with the U.S. Green Building Council-San Diego, San Diego Sustainable Living Institute, San Diego Unified School District, and Encanto Neighborhoods Community Planning Group to implement the *Conservation Home Makeover in the Chollas Creek Watershed* project. This project will engage low income youth and their families within the Encanto neighborhood of southeastern San Diego to mitigate drought impacts through water capture and greywater reuse for food production and landscaping. Along with its partners, Groundwork San Diego will install stormwater capture and greywater systems in 50 low-income homes, which will be used to irrigate fruit trees planted on these properties. Benefits from the project will be reducing potable water demands, reducing costs for low-income residents, education and outreach to build technical capacity for low water systems, improved food security, stormwater capture, addressing climate change impacts, and reducing economic and health risks to DACs associated with drought and climate change. To further increase the education component, Groundwork San Diego will use analytical models to produce reports enabling users to visualize future carbon, water, energy, and fire impacts of landscape makeovers at the residential parcel scale. The results of this project will form the basis for a future scale up of the project across the more than 12,000 dwellings in the Encanto neighborhood of southeastern San Diego.

This project addresses DAC needs for water conservation, water supply, and food security. It directly addresses six of the *2013 IRWM Plan* objectives, and indirectly addresses one. The project supports the Region's goals of water supply sustainability, protection of natural resources, and promotion of sustainable integrated water resources management, while also helping the Region to address urban DAC needs.

Project 3: San Diego Water Conservation Program

The City of San Diego's *San Diego Water Conservation Program* will achieve water conservation by expanding the City's successful turf replacement rebate and implementing a pilot program for greywater system rebates. An estimated 440,000 square feet of turf will be replaced through this rebate program, to provide an anticipated 45.9 acre-feet per year (AFY) water savings. Approximately 1,000 greywater system rebates will be provided, reusing a further 28.9 AFY. The project will fund an irrigation efficiency exhibit at The Water Conservation Garden (The Garden). Greywater system installation training and relevant training in outdoor conservation will be provided by the San Diego Sustainable Living Institute (SDSLI), helping to build technical capacity in the Region.

This project will directly address five of the *2013 IRWM Plan* objectives, and support the Region's goals of water supply reliability and sustainable integrated water resources management. In addition, as a project that covers a large area within the region, including heavily urbanized areas, this project provides opportunities for DAC participation, helping to address urban DAC issues of water supply costs.

Project 4: Ms. Smarty-Plant Grows Water-Wise Schools

The *Ms. Smarty-Plants™ Grows Water-Wise Schools* project, implemented by The Water Conservation Garden (The Garden), will target K-12 schools in the Otay and Helix Water Districts with a special emphasis on Title I schools and DACs in Spring Valley and Lemon Grove. Title I schools are those schools serving high numbers or high percentages of children from low-income families. The U.S. Department of Education allows schools with at least 40% of their student population from low-income families to apply for Title I funding assistance for the entire school. The project will deliver the *Ms. Smarty-Plants Grows Earth Heroes* education program to 10,000-20,000 students at K-12 schools. The Garden will also identify and recruit twelve to fifteen K-12 schools to participate in its Water-Wise Schools effort, which will help convert school landscaping to water-wise plants, remove turf, upgrade irrigation systems, and adopt water-wise practices for school operations. Each school that participates in the conversion to water-wise landscaping and practices is expected to save approximately three AFY, with approximately 2.1 AFY savings per school from landscape makeovers alone. This project will also expand the classroom at The Garden to accommodate more students and provide additional workshops and classes. Project partners include Helix Water District, Otay Water District, and La Mesa-Spring Valley and Lemon Grove schools.

This project addresses DACs by targeting Title I schools and helps to build technical capacity by engaging students and their families to implement the turf conversion and water conservation elements at each school. It supports the Region's goals of water supply reliability and sustainability, protection of water quality, and sustainable integrated water resources management. This project directly addresses five of the *2013 IRWM Plan* objectives, and indirectly addresses one.

Rural Water Infrastructure Program

The Rural Water Infrastructure Program comprises one multi-component project: *5: Rural Disadvantaged Community Partnership Project – Phase III*. This project builds upon the success of the previous two phases, funded through Prop 84-Round 1 and Prop 84-Round 2 IRWM grants. The previous phases implemented projects in rural DACs, and developed a process for evaluating and selecting projects that meet DAC needs while also supporting the goals of the IRWM Program. The San Diego IRWM Region seeks to address the water-related needs of its rural stakeholders, which are generally located beyond the boundaries of local water and wastewater agencies. Because of this, it can be challenging to address their needs through traditional means. RCAC has successfully implemented rural DAC projects through the IRWM Program in the past, and has proven a valuable partner in getting IRWM funds to small rural communities that are in need of infrastructure improvements for human health and safety. The Region has also faced challenges to engaging the 18 tribal communities in San Diego County, despite making increased engagement with and participation by tribes a priority for the Region. The RCAC project has been prioritized by the Region as one way to assist tribes in implementing IRWM-funded projects.

Project 5: Rural Disadvantaged Community Partnership Project – Phase III

RCAC's *Rural Disadvantaged Community Partnership Project – Phase III* is the third phase of its partnership program. Through its established project selection process, RCAC has vetted projects to be implemented in conjunction with its rural community partners that will improve water and wastewater infrastructure and address water quality concerns in underserved rural communities and DACs. This project will provide funding for ten sub-projects that will improve water infrastructure or environmental areas in rural DACs. These sub-projects include potable water storage tanks, reclaimed water infrastructure, water meter installation, regionalization/consolidation of neighboring water systems, iron and manganese treatment system installation, floating trash removal, and bioswale construction. Projects will be implemented in the following DACs: Campo Kumeyaay Nation; La Jolla Band of Luiseno Indians; Nestor Community of San Diego; Pauma Band of Luiseno Indians; Richardson Beardsley Park; San Pasqual Band of Mission Indians; Tijuana River Valley Community of San Diego County; and Willowside Terrace Water Association. RCAC has partnered with Alter Terra, Indian Health Services, Bureau of Indian Affairs, SDCWA, City of San Diego, State Water Resources Control Board (SWRCB), Tijuana River Valley Community of San Diego County, and Willowside Terrace Water Association to assist with project implementation.

This project will directly address nine of the *2013 IRWM Plan* objectives, and indirectly address the remaining two. It helps to address the Human Right to Water by implementing water infrastructure improvements that improve drinking water supply reliability and quality. Without this project, the targeted DACs would face potential water shortages in the face of drought and wildfire threats, and continue to drink from contaminated supplies.

Water Reuse Program

The Water Reuse Program includes projects that reuse water efficiently to serve various types of water demands in the Region. This program also helps to support, promote, and lay the groundwork for potable reuse, which is a critical piece of the Region's future water portfolio. Some of these projects, including *6: Integrated Water Resource Solutions for the Carlsbad Watershed, 8: Escondido Advanced Water Treatment for Agriculture*, and *9: Padre Dam Advanced Water Treatment – Phase IA Expansion*, build on previously implemented IRWM-funded projects. *9: Padre Dam Advanced Water Treatment – Phase IA Expansion* takes the first step towards implementing potable reuse within eastern San Diego County, utilizing the lessons learned from Padre Dam MWD's advanced water treatment pilot project funded by a Prop 50 IRWM grant. Similarly, the City of Escondido's project will both set the stage for future potable reuse and expand on previously-funded recycled water system components in a Prop 84-Round 2 IRWM grant. The City of Escondido's project, along with San Elijo JPA's *6: Integrated Water Resource Solutions in the Carlsbad Watershed* project, support and complement the North San Diego Water Reuse Coalition's efforts to integrate wastewater and recycled water between ten water and wastewater agencies in northern San Diego County.

The projects in the Water Reuse Program address different target audiences, and together target a broad range of stakeholders and the public to provide education and outreach about water reuse, the value to the Region, and importance of conserving and protecting the Region's water resources. *7: UCSD Water Conservation and Watershed Protection* targets students and residents of DACs in distinct communities in the Region. Similarly, *10: Safari Park Drought Response and Outreach Program* targets students through its school education efforts, but also expands outreach to target all residents in the Region, along with the thousands of people who visit the Safari Park each year – educating those less familiar with the Region about the reality and use of water resources in San Diego County. Both *6: Integrated Water Resource Solutions in the Carlsbad Watershed* and *9: Padre Dam Advanced Water Treatment – Phase I Expansion* target residential customers, with the latter targeting inland residents, and the former targeting coastal residents and community centers. Finally, *8: Escondido Advanced Water Treatment for Agriculture* targets agricultural customers, with an emphasis on avocado growers whose crops are salt-sensitive.

As shown in **Table 1-1**, the Water Reuse program directly addresses ten of the eleven *2013 IRWM Plan* objectives, and indirectly addresses the eleventh. These projects will reduce potable water demands, reduce local demand for imported water, and increase local, drought-proof supplies. Together, they will improve local water supply reliability through an integrated approach providing multiple benefits.

Project 6: Integrated Water Resource Solutions for the Carlsbad Watershed

San Elijo JPA's *Integrated Water Resource Solutions for the Carlsbad Watershed* project utilizes recycled water and low-impact development (LID) strategies to reduce discharge to the Escondido Land Outfall and reduce urban runoff, as well as implements water quality monitoring at San Elijo Lagoon. Project components include construction of an additional 750,000 gallons of recycled water storage at the San Elijo Water Recycling Facility (SEWRF), installation of pipelines and appurtenances to increase influent delivery to SEWRF, construction of three miles of pipeline to distribute additional recycled water to the Cities of Encinitas and Solana Beach, and installation of LID streetscape improvements along Highway 101. These improvements are anticipated to provide water quality benefits to San Elijo Lagoon and Cottonwood Creek/Moonlight Beach, which will be monitored for water quality purposes. In addition, San Elijo JPA and its partners (City of Encinitas, City of Solana Beach, San Dieguito Water District, Santa Fe Irrigation District, Olivenhain Municipal Water District, and San Elijo Lagoon Conservancy) will conduct community outreach targeting DACs.

This project directly addresses nine of the *2013 IRWM Plan* objectives, and indirectly addresses one. It supports the Region's supply reliability and sustainability goals and protects water quality and natural resources.

Project 7: UCSD Water Conservation and Watershed Protection

UCSD will improve water conservation and watershed protection with its *UCSD Water Conservation and Watershed Protection* project. This project will be implemented in partnership with San Diego Coastkeeper, Urban Corps of San Diego, WILDCOAST, and community-based organizations. Components of the water conservation portion of this project include: 1) expanded recycled water use at the Central Utilities Plant cooling tower at UCSD; 2) retrofitting HVAC systems to allow reuse of condensation water for irrigation; 3) turf replacement; and 4) water conservation community outreach and education. These conservation and reuse efforts are anticipated to conserve 203 AFY potable water. The watershed protection program includes: 1) restoration of the Tijuana River Valley through trash and invasive species removal, 2) turf replacement with stormwater treatment landscaping, and 3) a Modular Wetland Stormwater Treatment System at UCSD to treat and monitor stormwater runoff. This project will reduce non-point source pollution, engage disadvantaged and underserved communities and youth in restoration work, and directly reduce pollutants discharged to San Diego Bay, the Peñasquitos Watershed, and the La Jolla Shores Area of Special Biological Significance (ASBS).

This project directly addresses nine *2013 IRWM Plan* objectives and indirectly addresses one. It supports the *2013 IRWM Plan*'s water supply reliability and sustainability goals, provides for watershed and natural resources protection, and improves water quality in the Region.

Project 8: Escondido Advanced Water Treatment for Agriculture

The City of Escondido's *Escondido Advanced Water Treatment for Agriculture* project will construct a new membrane filtration reverse osmosis (MFRO) advanced treatment facility with a total production capacity of 2.0 million gallons per day (mgd). Water treated at the MFRO Facility will be blended with tertiary treated water, and distributed to agricultural customers in the northern and eastern areas of the City of Escondido. Project components include construction of several buildings, storage tanks, and pump station at the MFRO Facility. The MFRO Facility will produce 2,240 AFY of desalted recycled water, to be blended with tertiary-treated water from Hale Avenue Resource Recovery Facility (HARRF), to meet a total reduced-salt agricultural demands of 4,440 AFY. This blended product water will offset 888 AFY of additional recycled water that is needed for soil flushing to remove excess salts accumulated in soils from application of unblended recycled water. The City of Escondido has partnered with Escondido Growers for Agricultural Preservation, Vista Irrigation District, City of San Diego, and Rincon Del Diablo Municipal Water District to implement this project.

This project directly addresses seven of the *2013 IRWM Plan* objectives, and indirectly addresses one. It supports the Region's goals of supply reliability and sustainability, and protects water quality while supporting local agriculture and the economy.

Project 9: Padre Dam Advanced Water Treatment – Phase IA Expansion

Padre Dam MWD's *Padre Dam Advanced Water Treatment – Phase IA Expansion* project is a key component of the East County Regional Water Reuse Program, a water reuse partnership with Helix Water District, County of San Diego, and City of El Cajon. The proposed project will expand the Ray Stoyer Water Reclamation Facility (WRF) from 2 mgd to 6 mgd to deliver an additional 1,008 AFY (0.9 mgd) of recycled water for irrigation, and to deliver tertiary effluent to the planned Advanced Water Purification Facility (AWPF), which is anticipated to produce 2,464 AFY (2.2 mgd) of advanced treated water in the future for potable reuse. This project will also complete three-dimensional hydrodynamic modeling of Lake Jennings to assess the potential for potable reuse at the reservoir, which could expand the potential potable reuse opportunities for the East County Regional Water Reuse Program. Project work for the WRF expansion includes increasing the influent pump station capacity by 4 mgd, a new headworks and grit facility, construction of a flow equalization basin, new primary and secondary clarifier tanks, modification of the biological basins, and additional filters. In partnership with Helix Water District, the modeling will be conducted at Lake Jennings Reservoir.

This project directly supports seven *2013 IRWM Plan* objectives, and indirectly addresses three. In addition it helps to move Padre Dam MWD and Helix Water District towards potable reuse, supporting the Region's goal of supply reliability and sustainability.

Project 10: Safari Park Drought Response and Outreach

The Zoological Society's *Safari Park Drought Response and Outreach* project will achieve 72 AFY potable water savings through increased conservation and recycled water use. Conservation will be achieved through reduced

landscape irrigation by replacing turf with water-wise (xerophytic) landscaping, while the Zoological Society's existing wastewater treatment plant will be upgraded from secondary to tertiary treatment, expanding the potential recycled water uses. To utilize this new recycled water supply, the Zoological Society will construct a recycled water conveyance system and recycled water storage to use the recycled water for maintenance of landscaping and animal exhibits at the Safari Park. The Zoological Society will also expand its water conservation outreach education, available at the Safari Park and online. Approximately 1.4 million people visit the Safari Park each year and 23 million visit the website annually, all of whom would have access to the Zoological Society's water conservation outreach, whose messaging is produced in partnership with SDCWA. The Zoological Society will also expand its existing water conservation education program at the Safari Park, which provides water conservation education and outreach to hundreds of school groups in both the City and County of San Diego, and enhances education programs for stakeholders including DACs, water agencies, community groups, and NGOs throughout California.

This project directly supports five *2013 IRWM Plan* objectives, and indirectly supports another two. It promotes the Region's goals of improving supply reliability and sustainability, and protects water quality, watershed, and natural resources.

Water Quality and Habitat Program

The Water Quality and Habitat Program includes three projects that together address all eleven of the 2013 IRWM Plan objectives. This program helps to address the Region's goals of protection of watersheds and natural resources, enhancing water quality, and sustainable integrated water resource management. Projects included in this program are located in three distinct areas of the Region (see **Figure 2-1** in *Attachment 2 Project Justification*) – Hodges Reservoir in the middle of the Region, the upper San Diego River in the eastern rural area, and the Sweetwater Reservoir in the southern portion of the Region. Each of these projects ultimately support improved water supply and water quality in reservoirs – Hodges, El Capitan, and Sweetwater Reservoirs – while providing habitat benefits to support wildlife. In the case of *13: Hodges Reservoir Natural Treatment System*, the constructed wetland will also provide direct water quality benefits. These projects help to support human needs for water, and reduce conflicts between water resources management and native species management. San Diego County has a high level of biodiversity, with more threatened and endangered species than any comparable land area in the country. Supporting these species while meeting the water-related needs of the more than 3.1 million people in the Region presents challenges, which this Water Quality and Habitat Program helps to address.

Project 11: San Diego River Healthy Headwaters Restoration

USFS's *San Diego Healthy Headwaters Restoration* project implements a watershed-wide, cooperative approach to invasive species removal (feral pigs, invasive weeds and invasive aquatics), and restoration of impacted sites through decommissioning of unauthorized trails and campgrounds, installation of drainage improvements, and site rehabilitation in the San Diego River watershed. Altogether, the project components will improve 335 acres of habitat in the project area. USFS will treat over 50 linear miles of riparian area (stream corridor) for invasive species removal and restoration, protecting approximately 300 acres of surrounding riparian habitat. USFS will also treat an additional 14 acres of known tamarisk population. The City of San Diego will treat 2.5 acres of a known *Arundo donax* population at the El Capitan Reservoir, and will strategically treat an additional 11.4 acres of invasive weeds. The Back Country Land Trust will treat weeds and restore 7 acres of private and Tribal land within the Alpine area. The Feral Pig Working Group will oversee treatment of habitat destruction from feral pig populations (whose activities threaten water quality), as well as invasive aquatic species removal, such as removal of bullfrogs. The project would also restore unauthorized routes, hiking trails, and recreation sites that currently contribute to sediment runoff and water quality impacts. These restoration efforts will help improve hydrologic services that are currently negatively impacted by unauthorized recreation in the project area. Outreach efforts for this project will be headed by San Diego River Park Foundation, and USFS will upgrade information kiosks at four sites to include information on water-wise gardening, native plants, and ways to minimize watershed impacts. Additional partners include San Diego River Conservancy and U.S. Department of Interior.

This project directly addresses six of the *2013 IRWM Plan* objectives, and indirectly addresses two. Through habitat restoration and species removal, this project supports the Region's goals of protecting water quality, enhancing watersheds and natural resources, improving the reliability of regional water supplies, and supporting sustainable integrated water resource management. It also addresses key concerns in the San Diego River Watershed, including TDS, invasive species, and wildfire threats.

Project 12: Sweetwater Reservoir Wetlands Habitat Recovery

SWA's *Sweetwater Reservoir Wetlands Habitat Recovery* project will implement the construction phase of the Habitat Recovery Project (HRP) in response to the 2007 Harris Fire which burned 90 acres near the Sweetwater Reservoir, a key storage site for SWA's water supplies. The HRP has been designed to achieve and contribute to objectives related to floodplain and habitat functionality, constructability, and regional habitat values and water benefits. The project entails major site grading, temporary irrigation, and planting. A multi-channel design and bridge installation will spread river flow more evenly and improve habitat quality in areas lacking sufficient hydrology. Within the 112.7-acre project area, the HRP will restore and enhance approximately 112.5 acres of riparian and 0.2 acre of transitional habitats and result in a net increase of 74.6 acres of endangered Least Bell's Vireo (*Vireo bellii pusillus*) habitat, ultimately providing 212.6 acres of habitat. The *Sweetwater Reservoir Wetlands Habitat Recovery* project will also act as an expansion to an existing preserve located adjacent to the project area, leveraging the habitat benefits provided by both. This effort will reestablish the river-floodplain connection and permit normal Sweetwater Reservoir storage operations to allow the reservoir to store an additional 7,873 AF water when available and maximize wetland functions to provide water quality benefits to the reservoir. Project partners include SDCWA, California Conservation Corps, and Urban Corps of San Diego County.

This project directly addresses eight of the *2013 IRWM Plan* objectives, and indirectly addresses two. It supports the Region's goals of supply reliability, protection of natural resources, and sustainable integrated water resource management. This project will successfully allow for the restoration of habitat and riparian function in the Sweetwater River at the reservoir, supporting endangered species habitat (Least Bell's Vireo) and habitat for other native species, while allowing for optimum operation of the Sweetwater Reservoir to support water storage needs.

Project 13: Hodges Reservoir Natural Treatment System

The City of San Diego's *Hodges Reservoir Natural Treatment System (NTS)* project will create a biofiltration wetland at the Hodges Reservoir to treat seasonally degraded water quality in the reservoir. This project combines recommendations from two previously-funded IRWM studies which identified opportunities for reducing nutrient loading and cycling the reservoir. This project also complements the Regional Emergency Storage and Conveyance Intertie Optimization project funded by a Prop 84-Drought Round IRWM grant. Both of these projects will address the water quality issues facing Hodges Reservoir that prevent full implementation of the Pumped Storage Project at Hodges Reservoir, which is a major element of SDCWA's Emergency Storage Project. Water quality issues in the past have prevented full use of the connectivity between the City of San Diego's Hodges Reservoir and SDCWA's Olivenhain Reservoir, and improving water quality in the reservoir will allow this water to freely move between regional components without damaging existing treatment infrastructure. The wetland will provide habitat, and as water quality in the reservoir improves, additional recreational opportunities are likely to become available. Project partners include the Santa Fe Irrigation District, San Dieguito Water District, San Dieguito Valley Conservancy, and SDCWA.

This project directly addresses five of the *2013 IRWM Plan* objectives, and indirectly addresses three. It supports the Region's goals of water supply reliability, improved water quality, and sustainable integrated water resources management. This project builds on, and complements, previous IRWM-funded projects, and utilizes natural watershed processes to achieve reservoir management goals.

7/25/2015 Projects

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Project Title	Project Organization
2014 San Diego Regional Drought Response Program	SDCWA
2015 Regional Drought Response Program	San Diego County Water Authority
22nd District Agricultural Association/San Dieguito Creek Sewer Force Main Replacement Project	22nd District Agricultural Association
51st St. Headwater Canyon Restoration Project	Groundwork San Diego-Chollas Creek
Acquiring Willow Glen Farm	Back Country Land Trust of San Diego County
Chollas Creek Water Quality, Habitat, and Education Improvement Project	Groundwork San Diego-Chollas Creek
Cielo Azul property acquisition	The Escondido Creek Conservancy
City of Escondido's MFRO Facility for Agriculture	City of Escondido
City of Oceanside Customer Driven Demand Management Automated Metering Infrastructure	City of Oceanside
City of Oceanside Recycled Water Plant and Distribution Expansion Project	City of Oceanside
City of San Diego - Mt. Abernathy Green Street Project	City of San Diego - Storm Water
City of San Diego AMI Expansion and Water Conservation Enhancement Partnership Project	City of San Diego
City of San Diego Parklands Recycled Water Retrofit Program and Distribution System	City of San Diego
City of San Diego Potable Water Use Reduction & Drought Relief Project	City of San Diego Public Utilities Department
City of San Diego Reservoir Sediment Removal and Storage Recovery Project	City of San Diego Water Department
Conservation 101	San Elijo Joint Powers Authority
Conservation in the Campo Valley	Back Country Land Trust of San Diego County
Conservation on Demand: Advanced Metering Infrastructure-Facilitated Conservation	Rincon del Diablo Municipal Water District
Conserving Water, Creating Energy in the Chollas Creek Watershed	Groundwork San Diego
Cooperative Conservation: Integrating Smart Water Management	Olivenhain Municipal Water District
County of San Diego Chollas Creek Runoff Reduction and Groundwater Recharge Project	Department of General Services, County of San Diego
Habitat Enhancement & Invasive Species Control Program for the Elfin Forest Recreational Reserve	Olivenhain Municipal Water District
Harmony Grove Water Factory	Rincon del Diablo Municipal Water Dist
Hodges Reservoir Natural Treatment System	City of San Diego Public Utilities Department
Hodges Reservoir Oxygenation System (HOS) Project	City of San Diego Public Utilities Department (City)
Hodges Reservoir Water Quality Improvements Implementation Projects	City of San Diego Water Department
Hodges Reservoir Water Quality Improvements Plan	City of San Diego Water Department
Implementation of Agricultural Efficiency Programs	San Diego County Water Authority
Mission Valley Brackish Groundwater Desalination Pilot Project	City of San Diego/Water Department
Mountain Empire Watershed Preservation Program ? ?Pollution Prevention Education?	The Southern California Center for Youth, Nature and the Arts, Inc
Ms. Smarty-Plants Grows Waterwise Schools	The Water Conservation Garden
Naturalize Telegraph Canyon Creek Channel in the City of Chula Vista at San Diego Bay	City of Chula Vista

Padre Dam Recycled Water Demand Optimization Project	Padre Dam Municipal Water District
Padre Dam Santee Basin Groundwater Injection and Extraction for Indirect Potable Reuse	Padre Dam Municipal Water District
Padre Dam Water Recycling Facility, Phase 1 Expansion	Padre Dam Municipal Water District (PDMWD)
Paradise Mountain Groundwater Development	Valley Center MWD
Phase 1 - Upper San Marcos Creek Nutrient and Water Quality Abatement/Urban Stream Restoration- San Marcos Creek	City of San Marcos
Phase I -- Chollas Creek Integration Project, Part B	Jacobs Center for Neighborhood Innovatio
Rose Creek Watershed Invasives Control Program: Implementation Phase 2	The Chaparral Lands Conservancy
Rural DAC Drought Partnership Project	RCAC
Rural Disadvantaged Community (DAC) Partnership Project - Phase III	Rural Community Assistance Corporation (RCAC)
Rural Disadvantaged Community (DAC) Partnership Project-Phase II	Rural Community Assistance Corporation (RCAC)
Rural Disadvantaged Community (DAC) Partnership Project	Rural Community Assistance Corp (RCAC)
Ruxton Earthen Channel Improvements	County of San Diego
SFID EASTERN SERVICE AREA RECYCLED WATER PROJECT	Santa Fe Irrigation District
SFID Western Service Area Recycled Water Distribution System Expansion	Santa Fe Irrigation District
Safari Park Drought Response and Outreach Project	Zoological Society of San Diego
Safari Park Storm Water Runoff Management Project	Zoological Society of San Diego
Safari Park Water Conservation Project	Zoological Society of San Diego
San Diego National Wildlife Refuge - Otay Unit Land & Crestridge Linkage Acquisition	The Nature Conservancy
San Diego North Regional Recycled Water Project	Olivenhain Municipal Water District
San Diego Region Four Reservoir Intertie Project Feasibility Study	Sweetwater Authority
San Diego River Healthy Headwaters Restoration Project	USDA Forest Service
San Diego River Watershed Coordinator	The San Diego River Park Foundation
San Diego RiverNet	San Diego State University
San Diego Water Department Cornerstone Lands Management and Source Water Protection	City of San Diego Water Department
Sustaining Healthy Tributaries to the Upper San Diego River and Protecting Local Water Supplies	The San Diego River Park Foundation
Sweetwater Reservoir Wetlands Habitat Recovery Project (HRP)	Sweetwater Authority
Tavern Road Drainage Improvements	County of San Diego
The City of San Diego Recycled Water Infill Projects	City of San Diego
The San Marcos Creek Floodway Improvement Project	Cityof San Marcos
The Sweetwater River Watershed Management Plan	County of San Diego
The Water Conservation Garden Authority Multipurpose Building	The Water Conservation Garden
Tijuana River Valley Invasive Plant Control Program - Phase 4	Southwest Wetlands Interpretive Association
Tijuana River Valley Recovery Strategy Implementation Project	Earth Island Institute
Tijuana River Valley Sediment Management Plan	City of San Diego - Storm Water
Tijuana River Valley Wetlands Restoration Project	San Diego County Water Authority
Tijuana River Watershed Invasive Species Removal	County of San Diego
Turf Replacement and Agricultural Irrigation Efficiency Program	San Diego County Water Authority
UC San Diego Drought Response Project	Facilities, Design and Construction University of California, San Diego
UC San Diego Water Conservation Program - Water Fixture Replacements/Retrofits	University of California, San Diego
UC San Diego Water Conservation and Watershed Protection Project	UC San Diego, EH&S Environmental Affairs
Undergrounding Water Supply Through the Sweetwater National Wildlife Refuge	City of Chula Vista
Upper San Marcos Creek/Lake San Marcos Nutrient Diagnostic and Cleanup Project - Phases 1,2 and 3	City of San Marcos
Upper San Marcos Creek/Lake San Marcos Voluntary Nutrient TMDL - Phase I Diagnostics	City of San Marcos

Urban Water Management Compliance

All urban water suppliers included as project proponents in this Proposal are compliance with the urban water management requirements listed in the *2015 PSP*. **Table 1-2** indicates which supporting documents are provided, and which ones were submitted with the Region's Prop 84-Drought Round IRWM Grant (Drought Grant) and are therefore not included in **Appendix 1-6** per the *2015 PSP*.

Urban Water Management Plan Compliance

There are five urban water suppliers included as project proponents within this *2015 IRWM Implementation Grant Proposal*: SDCWA, City of San Diego, City of Escondido, Padre Dam MWD, and Sweetwater Authority. As required by the Urban Water Management Planning Act (CWC §10610 *et seq.*), each of these agencies submitted complete 2010 Urban Water Management Plans (UWMP). All five of these agencies, have received approval by DWR regarding their 2010 UWMPs and are currently eligible to receive grant funds. Three of these agencies, the City of San Diego, SDCWA, and Sweetwater Authority, submitted UWMP Compliance documentation in the Region's 2014 Drought Grant application. In accordance with the *2015 PSP*, UWMP compliance documents for these agencies have not been included in this round. UWMP compliance documents have been provided for the remaining two agencies (City of Escondido and Padre Dam MWD) in **Appendix 1-6**.

AB 1420 Compliance

As defined in the *2015 IRWM Grant Program Guidelines* (*2015 Guidelines*), AB 1420 conditions the receipt of IRWM grant funds on implementation of demand management measures in compliance with CWC §10631. As noted above, SDCWA, City of San Diego, and Sweetwater Authority submitted UWMP compliance documentation (including AB 1420 compliance) during the 2014 Drought Grant, and additional AB 1420 compliance documentation is not included herein. AB 1420 compliance documentation for the remaining two urban water suppliers included in this Proposal (City of Escondido and Padre Dam MWD) is included in **Appendix 1-6**.

Water Meter Compliance

As defined in the *2015 Guidelines*, CWC §525 *et seq.* requires urban water suppliers applying for IRWM grant funds to demonstrate that they meet the State's Water Meter requirements. As noted above, SDCWA, City of San Diego, and Sweetwater Authority submitted UWMP compliance documentation (including Water Meter compliance) during the 2014 Drought Grant, and additional Water Meter compliance documentation is not included herein. The remaining two urban water suppliers included in this Proposal (City of Escondido and Padre Dam MWD) have provided Water Meter compliance forms as part of this Proposal (see **Appendix 1-6**).

Table 1-2: UWMP Compliance Contact Information for Urban Water Suppliers

Project	Agency	Contact Name	Phone	Email	DWR Verification Date of UWMP	AB 1420 Compliance Date	Water Metering Compliance Date	Included?
1	**SDCWA**	Carlos Michelon	858-522-6756	cmichelon@sdcwa.org	December 22, 2011	September 9, 2010	July 16, 2014	No: Submitted under Drought Grant
3 & 13	**City of San Diego**	Goldamer Herbon	619-533-4120	GHerbon@sandiego.gov	December 22, 2011	February 8, 2013	June 4, 2014	No: Submitted under Drought Grant
8	**City of Escondido**	Chris McKinney	760-839-4090	cmckinney@ci.escondido.ca.us	June 10, 2014	July 28, 2015	July 13, 2015	Yes
9	**Padre Dam MWD**	Al Lau	619-596-1804	Alau@padre.org	May 12, 2014	October 8, 2014	October 9, 2014	Yes
12	**Sweetwater Authority**	Pete Famolaro	619-409-6814	pfamolaro@sweetwater.org	April 10, 2014	June 20, 2014	July 20, 2014	No: Submitted under Drought Grant

STATE OF CALIFORNIA – CALIFORNIA NATURAL RESOURCES AGENCY
EDMUND G. BROWN JR., Governor

DEPARTMENT OF WATER RESOURCES
1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

June 10, 2014

Mr. Clay Phillips
City Manager
City of Escondido
201 North Broadway
Escondido, California 92025

Dear Mr. Phillips:

The Department of Water Resources (DWR) has reviewed the City of Escondido's (City) 2010 Urban Water Management Plan (UWMP) received August 8, 2011. The California Water Code (CWC) directs DWR to report to the legislature once every five years on the status of submitted plans. In meeting this legislative reporting requirement, DWR reviews all submitted plans.

DWR's review of the City's 2010 UWMP has found that the plan has generally addressed the requirements of the CWC.

DWR recommends that when updating this plan in 2015, the City:

1) Excludes the volume of water the agency conveys for use by another urban water supplier from the City's 20x2020 gross water use calculations. (CWC Section 10608.12 (g)).

By making this change in the 2015 and 2020 UWMPs, the City's 20x2020 baseline and compliance per capita water use calculations will conform to the legislative requirements.

DWR's review of plans is limited to assessing whether suppliers have addressed the required legislative elements. In its review, DWR does not evaluate or analyze the supplier's UWMP data, projections, or water management strategies. This letter is meant to acknowledge that the City's 2010 UWMP has addressed these requirements. The results of the review will also be provided to DWR's Financial Assistance Branch.

If you have any questions regarding the review of the plan or urban water management planning, please do not hesitate to contact me.

Sincerely,

Peter Brostrom
UWMP Program Manager
brostrom@water.ca.gov
(916) 651-7034

cc: Mary Ann Mann
Utilities Manager
City of Escondido

Sergio Fierro
DWR Southern Regional Office

Joanne Tang
DWR Headquarters

Gwen Huff
DWR Headquarters

STATE OF CALIFORNIA – CALIFORNIA NATURAL RESOURCES AGENCY
EDMUND G. BROWN JR., *Governor*

DEPARTMENT OF WATER RESOURCES
1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

May 12, 2014

Mr. Alan Carlisle
General Manager
Padre Dam Municipal Water District
Post Office Box 719003
Santee, California 927072-9003

Dear Mr. Carlisle:

The Department of Water Resources (DWR) has reviewed the Padre Dam Municipal Water District's (District) 2010 Urban Water Management Plan (UWMP) received on July 28, 2011. The California Water Code (CWC) directs DWR to report to the legislature once every five years on the status of submitted plans. In meeting this legislative reporting requirement, DWR reviews all submitted plans.

DWR's review of District's 2010 Plan has found that the Plan has addressed the overall requirements of the CWC.

DWR's review of plans is limited to assessing whether suppliers have addressed the required legislative elements. In its review, DWR does not evaluate or analyze the supplier's UWMP data, projections, or water management strategies. This letter simply acknowledges that the District's UWMP has addressed these requirements. The results of the review will also be provided to DWR's Financial Assistance Branch.

If you have any questions regarding the review of the plan or urban water planning, please don't hesitate to email or call.

Sincerely,

Peter Brostrom
UWMP Program Manager
Brostrom@water.ca.gov
(916) 651-7034

cc: Ms. Melissa McChesney
Communications Coordinator
Padre Dam Municipal Water District

Sergio Fierro
DWR Southern Regional Office

Joanne Tang
DWR Headquarters

AB 1420 Self- Certification Statement Table 1

Note: Table 1 documents Status of Past and Current BMP implementation.

Self-Certification Statement: The Urban Water Supplier and its authorized representative certifies, under penalty of perjury, that all information and claims, stated in this table, regarding compliance and implementation of the BMPs, including alternative conservation approaches, are true and accurate. This signed AB 1420 Self-Certification Statement Table 1, and Table 2 are the basis for granting funds by the Funding Agency. Falsification and/or inaccuracies in AB 1420 Self Certification Statement Table 1, and Table 2 and in any supporting documents substantiating such claims may, at the discretion of the funding agency, result in loss of all State funds to the applicant. Additionally, the Funding Agency, in its sole discretion, may halt disbursement of grant or loan funds, not pay pending invoices, and/or pursue any other applicable legal remedy and refer the matter to the Attorney General's Office.

Name of Signatory_Elisa Marrone___Title of Signatory __Environmental Programs Specialist_____ Signature of signatory _____ Date 7-28-15

Application Date:

Proposal Identification Number: [ ] **CUWCC Member? Yes/No** [Yes]

Has Urban Water Supplier submitted a ~~2005~~ 2010 Urban Water Management Plan? Yes/No [Yes] **Is the UWM Plan Deemed Complete by DWR? Yes/No** [Y]

Applicant Name: City of Escondido

Project Title:

Applicant's Contact Information: **Name:** Christopher W. McKinney **Phone:** 760-839-4090 **E-mail:** cmckinney@escondido.org

Participants:

Retailer (List Below)	*Wholesaler (List Below)*
Vista Irrigation District	
City of San Diego	
Rincon Del Diablo Water District	

C1 C2 C3 C4 C5 *C6 C7 **C8 **C9 **C10 C11 C12 C13 C14 C15 C16 C17 C18

BMPs required for Wholesale Supplier	BMPs required for Retail Supplier	BMPs	BMP Implemented by Retailers and/or Wholesalers / *BMP*			Compliance Options/Alternative Conservation Approaches (1)			BMP Is Exempt (2)			BMP Implementation Requirements Met				
			Retailer *Yes/No*	Wholesaler *Yes/No*	Regional *Yes/No*	BMP Checklist	Flex Track	Gallons Per Capita Per Day GPCD	Not Cost Effective	Lack of Funding	Lack of Legal Authority	CUWCC MOU Requirement Met: Retailer *Yes/No*	CUWCC MOU Requirement Met: Wholesaler *Yes/No*	Date of BMP Report Submitted to CUWCC for (~~2007-2008~~) (2011-2012) (MOU Signatories)	Date BMP Implementation Data Submitted to DWR in CUWCC Format (Non MOU Signatories) (3)	All Supporting Documents have been Submitted Yes/No
	✓	BMP 1 Water Survey for Single/Multi-Family Residential Customers	✓	n/a	n/a	n/a	n/a	✓	n/a	n/a	n/a	✓	n/a	11/22/2013	n/a	yes
	✓	BMP 2 Residential Plumbing Retrofit	✓	n/a	n/a	n/a	n/a	✓	n/a	n/a	n/a	✓	n/a	11/22/2013	n/a	yes
✓	✓	BMP 3 System Water Audits, Leak Detection	✓	n/a	n/a	n/a	n/a	✓	n/a	n/a	n/a	✓	n/a	11/22/2013	n/a	yes
✓	✓	BMP 3 Leak Repairs	✓	n/a	n/a	n/a	n/a	✓	n/a	n/a	n/a	✓	n/a	11/22/2013	n/a	yes
	✓	BMP 4 Metering with Commodity Rates for All New connections	✓	n/a	n/a	n/a	n/a	✓	n/a	n/a	n/a	✓	n/a	11/22/2013	n/a	yes
	✓	BMP 4 Retrofit of Existing Connections	✓	n/a	n/a	n/a	n/a	✓	n/a	n/a	n/a	✓	n/a	11/22/2013	n/a	yes

C1	C2	C3	C4	C5	*C6	C7	**C8	**C9	**C10	C11	C12	C13	C14	C15	C16	C17	C18
				BMP Implemented by Retailers and/or Wholesalers / *BMP*			Compliance Options/Alternative Conservation Approaches (1)			BMP Is Exempt (2)			BMP Implementation Requirements Met				
BMPs required for Wholesale Supplier	BMPs required for Retail Supplier	BMPs	Retailer *Yes/No*	Wholesaler *Yes/No*	Regional *Yes/No*	BMP Checklist	Flex Track	Gallons Per Capita Per Day GPCD	Not Cost Effective	Lack of Funding	Lack of Legal Authority	CUWCC MOU Requirement Met: Retailer *Yes/No*	CUWCC MOU Requirement Met: Wholesaler *Yes/No*	Date of BMP Report Submitted to CUWCC for (~~2007-2008~~) (2011-2012) (MOU Signatories)	Date BMP Implementation Data Submitted to DWR in CUWCC Format (Non MOU Signatories) (3)	All Supporting Documents have been Submitted Yes/No
	✓	BMP 5 Large Landscape Conservation Programs and Incentives	✓	n/a	n/a	n/a	n/a	✓	n/a	n/a	n/a	✓	n/a	11/22/2013	n/a	yes
	✓	BMP 6 High-Efficiency Washing Machine Rebate Programs	✓	n/a	n/a	n/a	n/a	✓	n/a	n/a	n/a	✓	n/a	11/22/2013	n/a	yes
✓	✓	BMP 7 Public Information	✓	n/a	n/a	n/a	n/a	✓	n/a	n/a	n/a	✓	n/a	11/22/2013	n/a	yes
✓	✓	BMP 8 School Education	✓	n/a	n/a	n/a	n/a	✓	n/a	n/a	n/a	✓	n/a	11/22/2013	n/a	yes
	✓	BMP 9 Conservation programs for Commercial, Industrial, and Institutional (CII) Accounts	✓	n/a	n/a	n/a	n/a	✓	n/a	n/a	n/a	✓	n/a	11/22/2013	n/a	yes
✓		BMP 10 Wholesale Agency Assistance Programs	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	✓	BMP 11 Conservation Pricing	✓	n/a	n/a	n/a	n/a	✓	n/a	n/a	n/a	✓	n/a	11/22/2013	n/a	yes
✓	✓	BMP 12 Conservation Coordinator	✓	n/a	n/a	n/a	n/a	✓	n/a	n/a	n/a	✓	n/a	11/22/2013	n/a	yes
	✓	BMP 13 Water Waste Prohibitions	✓	n/a	n/a	n/a	n/a	✓	n/a	n/a	n/a	✓	n/a	11/22/2013	n/a	yes
	✓	BMP 14 Residential ULFT Replacement Programs	✓	n/a	n/a	n/a	n/a	✓	n/a	n/a	n/a	✓	n/a	11/22/2013	n/a	yes

***C6:** Wholesaler may also be a retailer (supplying water to end water users)
****C8, **C9, **, and C10:** Agencies choosing an alternative conservation approach are responsible for achieving water savings equal or greater than that which they would have achieved using only BMP list.

(1) For details, please see: http://www.cuwcc.org/mou/exhibit-1-bmp-definitions-schedules-requirements.aspx.
(2) BMP is exempt based on cost-effectiveness, lack of funding, and lack of legal authority criteria as detailed in the CUWCC MOU
(3) Non MOU signatories must submit to DWR reports and supporting documents in the same format as CUWCC.

AB 1420 Self- Certification Statement Table 2

Provide Schedule, Budget, and Finance Plan to Demonstrate Commitment to Implement All BMP's to Become in Compliance with BMP Implementation - Commencing Within 1st Year of Agreement for Which Applicant Receives Funds.

Self-Certification Statement: The Urban Water Supplier and its authorized representative certifies, under penalty of perjury, that all information and claims, stated in this table, regarding compliance and implementation of the BMPs, including alternative conservation approaches, are true and accurate. This signed AB 1420 Self-Certification Statement Table 1 and Table 2 are the basis for granting funds by the Funding Agency. Falsification and/or inaccuracies in AB 1420 Self Certification Statement Table 1 and Table 2, and in any supporting documents substantiating such claims may, at the discretion of the funding agency, result in loss of all State funds to the applicant. Additionally, the Funding Agency, in its sole discretion, may halt disbursement of grant or loan funds, not pay pending invoices, and/or pursue any other applicable legal remedy and refer the matter to the Attorney General's Office.

Name of Signatory Elisa Marrone Title of Signatory Environmental Programs Specialist Signature of signatory E Marrone Date 7-28-15

Application Date:

Proposal Identification Number:

CUWCC Member? Yes/No: yes

Applicant Name: City of Escondido

Is the UWM Plan Deemed Complete by DWR? Yes/No: yes

Project Title:

Applicant's Contact Information: Name: Christopher W. McKinney

	Retailer (List Below)		
Participants:	Vista Irrigation District		
	City of San Diego		
	Rincon Del Diablo Water District		

C1	C2	C3	C4	C5	*C6	C7	C8	**C9	**C10	**C11	C12			C13	C14	C15	C16	C17	C18	C19
				BMP Implemented by Retailers and/or Wholesalers				Compliance Options / Alternative Conservation Approaches (1)			BMP is Exempt (2)			Implementation Scheduled to Commence within 1st Year of Agreement						
CUWCC 2010 Flex Track BMPs	BMPs required for Wholesale Supplier	BMPs required for Retail Supplier	BMPs	Retailer Yes/No	Wholesaler Yes/No	Regional Yes/No	Alternative Conservation Approaches Yes/No	BMP Checklist	Flex Track	Gallons Per Capita Per Day GPCD	Not Cost Effective	Lack of Funding	Lack of Legal Authority	Start Date (MM/YR)	Completion Level (%)	BMP Completion Date (MM/YR)	Budget (Dollars)	Funding Source & Finance Plan to Implement BMPs	Meets CUWCC Coverage Yes/No	Funds Requested, if Available. (See AB 1420 Compliance Table 3) Yes/No
1. Utility Operations Programs																				
1.11	✓	✓	BMP 12 Conservation Coordinator	Yes	n/a	n/a	n/a	n/a	n/a	✓				7/1/2015	100	6/30/2016	in practice	annual budget	yes	
1.12		✓	BMP 13 Water Waste Prohibitions	Yes	n/a	n/a	n/a	n/a	n/a	✓				7/1/2015	100	6/30/2016	in practice	annual budget	yes	
1.13	✓	✓	BMP 10 Wholesale Agency Assistance Programs	Yes	n/a	n/a	n/a	n/a	n/a	✓				7/1/2015	100	6/30/2016	in practice	annual budget	yes	
1.20	✓	✓	BMP 3 System Water Audits, Leak Detection/**Repair**	Yes	n/a	n/a	n/a	n/a	n/a	✓				7/1/2015	100	6/30/2016	in practice	annual budget	yes	
1.30		✓	BMP 4 Metering with Commodity Rates for All New/**Retrofit of Existing** connections	Yes	n/a	n/a	n/a	n/a	n/a	✓				7/1/2015	100	6/30/2016	in practice	annual budget	yes	
1.40		✓	BMP 11 Conservation Pricing	Yes	n/a	n/a	n/a	n/a	n/a	✓				7/1/2015	100	6/30/2016	in practice	annual budget	yes	
2. Educational Programs																				
2.10	✓	✓	BMP 7 Public Information	Yes	n/a	n/a	n/a	n/a	n/a	✓				7/1/2015	100	6/30/2016	3500	annual budget	yes	
2.20	✓	✓	BMP 8 School Education	Yes	n/a	n/a	n/a	n/a	n/a	✓				7/1/2015	100	6/30/2016	2500	annual budget	yes	
3. Residential																				
3.11		✓	BMP 1 **Indoor** Water Survey for Single/Multi-Family Residential Customers	n/a	n/a	n/a	n/a	n/a	n/a	n/a				n/a	n/a	n/a	n/a	n/a	n/a	
3.12			BMP 1 Outdoor Water Survey for Single/Multi-Family Residential Customers	n/a	n/a	n/a	n/a	n/a	n/a	n/a				n/a	n/a	n/a	n/a	n/a	n/a	
3.20		✓	BMP 2 Residential Plumbing Retrofit	n/a	n/a	n/a	n/a	n/a	n/a	n/a				n/a	n/a	n/a	n/a	n/a	n/a	

CUWCC 2010 Flex Track BMPs	BMPs required for Wholesale Supplier	BMPs required for Retail Supplier	BMPs	BMP Implemented by Retailers and/or Wholesalers			Compliance Options / Alternative Conservation Approaches (1)				BMP is Exempt (2)			Implementation Scheduled to Commence within 1st Year of Agreement						
				Retailer *Yes/No*	Wholesaler *Yes/No*	Regional *Yes/No*	Alternative Conservation Approaches Yes/No	BMP Checklist	Flex Track	Gallons Per Capita Per Day GPCD	Not Cost Effective	Lack of Funding	Lack of Legal Authority	Start Date (MM/YR)	Completion Level (%)	BMP Completion Date (MM/YR)	Budget (Dollars)	Funding Source & Finance Plan to Implement BMPs	Meets CUWCC Coverage Yes/No	Funds Requested, if Available. (See AB 1420 Compliance Table 3) Yes/No
3.30		✓	BMP 6 High-Efficiency Washing Machine Rebate Programs	n/a	n/a	n/a	n/a	n/a	n/a	n/a				n/a	n/a	n/a	n/a	n/a	n/a	
3.40		✓	BMP 14 Residential ULFT Replacement Programs	n/a	n/a	n/a	n/a	n/a	n/a	n/a				n/a	n/a	n/a	n/a	n/a	n/a	
4. Commercial, Industrial, Institutional																				
4.00		✓	BMP 9 Conservation programs for Commercial, Industrial, and Institutional (CII) Accounts	n/a	n/a	n/a	n/a	n/a	n/a	n/a				n/a	n/a	n/a	n/a	n/a	n/a	
5. Landscape																				
5.00		✓	BMP 5 Large Landscape Conservation Programs and Incentives	n/a	n/a	n/a	n/a	n/a	n/a	n/a				n/a	n/a	n/a	n/a	n/a	n/a	

*C6: Wholesaler may also be a retailer (supplying water to end water users)
**C9, ** C10, and **C11: Agencies choosing an alternative conservation approach are responsible for achieving water savings equal or greater than that which they would have achieved using only BMP list.
(1) For details, please see http://www.cuwcc.org/mou/exhibit-1-bmp-definitions-schedules-requirements.aspx.
(2) BMP is exempt based on cost-effectiveness, lack of funding, or lack of legal authority, as detailed in the CUWCC MOU.

AB 1420 Self- Certification Statement Table 1

Note: Table 1 documents Status of Past and Current BMP implementation. Appendix 1-6 Urban Water Compliance

Self-Certification Statement: The Urban Water Supplier and its authorized representative certifies, under penalty of perjury, that all information and claims, stated in this table, regarding compliance and implementation of the BMPs, including alternative conservation approaches, are true and accurate. This signed AB 1420 Self-Certification Statement Table 1, and Table 2 are the basis for granting funds by the Funding Agency. Falsification and/or inaccuracies in AB 1420 Self Certification Statement Table 1, and Table 2 and in any supporting documents substantiating such claims may, at the discretion of the funding agency, result in loss of all State funds to the applicant. Additionally, the Funding Agency, in its sole discretion, may halt disbursement of grant or loan funds, not pay pending invoices, and/or pursue any other applicable legal remedy and refer the matter to the Attorney General's Office.

Name of Signatory Allen Carlisle Title of Signatory CEO/General Manager Signature of signatory Date 10/8/2014

Application Date:

Proposal Identification Number: CUWCC Member? Yes/No: Yes

Has Urban Water Supplier submitted a 2005 Urban Water Management Plan? Yes/No: Yes

Is the UWM Plan Deemed Complete by DWR? Yes/No: Yes

Applicant Name: Padre Dam Municipal Water District

Project Title:

Applicant's Contact Information: Name: Melissa McChesney Phone: 619-258-4680 E-mail: mmcchesney@padre.org

Participants:

Retailer (List Below)	*Wholesaler (List Below)*
Padre Dam Municipal Water District	

C1	C2	C3	C4	C5	*C6	C7	**C8	**C9	**C10	C11	C12	C13	C14	C15	C16	C17	C18
				BMP Implemented by Retailers and/or Wholesalers / *BMP*			Compliance Options/Alternative Conservation Approaches (1)			BMP Is Exempt (2)			BMP Implementation Requirements Met				
BMPs required for Wholesale Supplier	BMPs required for Retail Supplier	BMPs	Retailer *Yes/No*	Wholesaler *Yes/No*	Regional *Yes/No*	BMP Checklist	Flex Track	Gallons Per Capita Per Day GPCD	Not Cost Effective	Lack of Funding	Lack of Legal Authority	CUWCC MOU Requirement Met: Retailer *Yes/No*	CUWCC MOU Requirement Met: Wholesaler *Yes/No*	Date of BMP Report Submitted to CUWCC for (2007-2008) (MOU Signatories)	Date BMP Implementation Data Submitted to DWR in CUWCC Format (Non MOU Signatories) (3)	All Supporting Documents have been Submitted Yes/No
	✓	BMP 1 Water Survey for Single/Multi-Family Residential Customers	n/a					x				n/a		28-Apr-14	28-Jul-11	yes
	✓	BMP 2 Residential Plumbing Retrofit	n/a					x				n/a		28-Apr-14	28-Jul-11	yes
✓	✓	BMP 3 System Water Audits, Leak Detection	yes					x				yes		28-Apr-14	28-Jul-11	yes
✓	✓	BMP 3 Leak Repairs	yes					x				yes		28-Apr-14	28-Jul-11	yes
	✓	BMP 4 Metering with Commodity Rates for All New connections	yes					x				yes		28-Apr-14	28-Jul-11	yes
	✓	BMP 4 Retrofit of Existing Connections	yes					x				yes		28-Apr-14	28-Jul-11	yes

C1	C2	C3	C4	C5	*C6	C7	**C8	**C9	**C10	C11	C12	C13	C14	C15	C16	C17	C18
				BMP Implemented by Retailers and/or Wholesalers / *BMP*			Compliance Options/Alternative Conservation Approaches (1)			BMP Is Exempt (2)			BMP Implementation Requirements Met				
BMPs required for Wholesale Supplier	BMPs required for Retail Supplier	BMPs	Retailer *Yes/No*	Wholesaler *Yes/No*	Regional *Yes/No*	BMP Checklist	Flex Track	Gallons Per Capita Per Day GPCD	Not Cost Effective	Lack of Funding	Lack of Legal Authority	CUWCC MOU Requirement Met: Retailer *Yes/No*	CUWCC MOU Requirement Met Wholesaler *Yes/No*	Date of BMP Report Submitted to CUWCC for (2007-2008) (MOU Signatories)	Date BMP Implementation Data Submitted to DWR in CUWCC Format (Non MOU Signatories) (3)	All Supporting Documents have been Submitted Yes/No	
	✓	BMP 5 Large Landscape Conservation Programs and Incentives	n/a					x				n/a		28-Apr-14	28-Jul-11	yes	
	✓	BMP 6 High-Efficiency Washing Machine Rebate Programs	n/a					x				n/a		28-Apr-14	28-Jul-11	yes	
✓	✓	BMP 7 Public Information	yes	yes				x				yes	yes	28-Apr-14	28-Jul-11	yes	
✓	✓	BMP 8 School Education	yes	yes				x				yes	yes	28-Apr-14	28-Jul-11	yes	
	✓	BMP 9 Conservation programs for Commercial, Industrial, and Institutional (CII) Accounts	n/a					x				n/a		28-Apr-14	28-Jul-11	yes	
✓		BMP 10 Wholesale Agency Assistance Programs	yes					x				yes		28-Apr-14	28-Jul-11	yes	
	✓	BMP 11 Conservation Pricing	yes					x				yes		28-Apr-14	28-Jul-11	yes	
✓	✓	BMP 12 Conservation Coordinator	yes					x				yes		28-Apr-14	28-Jul-11	yes	
	✓	BMP 13 Water Waste Prohibitions	yes					x				yes		28-Apr-14	28-Jul-11	yes	
	✓	BMP 14 Residential ULFT Replacement Programs	n/a					x				n/a		28-Apr-14	28-Jul-11	yes	

*C6: Wholesaler may also be a retailer (supplying water to end water users)

**C8, **C9, **, and C10: Agencies choosing an alternative conservation approach are responsible for achieving water savings equal or greater than that which they would have achieved using only BMP list.

(1) For details, please see: http://www.cuwcc.org/mou/exhibit-1-bmp-definitions-schedules-requirements.aspx.

(2) BMP is exempt based on cost-effectiveness, lack of funding, and lack of legal authority criteria as detailed in the CUWCC MOU

(3) Non MOU signatories must submit to DWR reports and supporting documents in the same format as CUWCC.

Attachment T2b

CERTIFICATION FOR COMPLIANCE WITH WATER METERING REQUIREMENTS FOR FUNDING APPLICATIONS

Funding Agency Name: State Water Resources Control Board

Funding Program Name: Clean Water State Revolving Fund

Applicant (Agency Name): City of Escondido

Please check one of the boxes below and sign and date this form.

☐ As the authorized representative for the applicant agency, I certify under penalty of perjury that the agency is not an urban water supplier, as that term is understood pursuant to the provisions of section 529.5 of the Water Code.

☒ As the authorized representative for the applicant agency, I certify under penalty of perjury that the applicant agency has fully complied with the provisions of Division 1, Chapter 8, Article 3.5 of the California Water Code (sections 525 through 529.7 inclusive) and that the ordinances, rules, or regulations submitted with this certification as listed below have been duly adopted and are in effect as of this date.

I understand that the Funding Agency will rely on this signed certification in order to approve funding and that false and/or inaccurate representations in this Certification Statement may result in loss of all funds awarded to the applicant for its project. Additionally, for the aforementioned reasons, the Funding Agency may withhold disbursement of project funds, and/or pursue any other applicable legal remedy.

Christopher W. McKinney
Name of Authorized Representative
(Please print)

Director of Utilities
Title

Christopher W. McKinney
Signature of Authorized Representative

July 13, 2015
Date

Attachment T2c

CERTIFICATION FOR FISCAL SUSTAINABILITY PLAN

REQUIRED FOR ALL CWSRF FUNDING APPLICATIONS FOR TREATMENT WORKS PROJECTS

Funding Agency: State Water Resources Control Board

Funding Program: Clean Water State Revolving Fund (CWSRF)

Applicant (Agency Name): City of Escondido

Section 603(d)(1)(E) of the federal Clean Water Act (CWA) requires a CWSRF financing recipient with a project involving the repair, replacement, or expansion of a treatment works[1] (including treatment, pumping, collection, distribution and storage facilities etc.) to develop and implement a fiscal sustainability plan or certify that it has developed and implemented such a plan.

[1] "Treatment works" is defined in section 212(2)(A) of the CWA. (33 U.S.C. § 1282(2)(A).)

Please check one of the boxes below and sign and date this form:

☐ As the authorized representative for the applicant agency, I certify that the agency shall develop and implement a fiscal sustainability plan as set forth in section 603(d)(1)(E)(i) of the Clean Water Act no later than _____ that includes:

(I) an inventory of critical assets that are a part of the treatment works;
(II) an evaluation of the condition and performance of inventoried assets or asset groupings;
(III) a certification that the agency has evaluated and will be implementing water and energy conservation efforts as part of the plan; and
(IV) a plan for maintaining, repairing, and, as necessary, replacing the treatment works and a plan for funding such activities

☒ As the authorized representative for the agency, I certify that the agency has developed and implemented a fiscal sustainability plan that meets the requirements of section 603(d)(1)(E)(i) of the federal Clean Water Act (33 U.S.C. § 1383(d)(1)(E)(i)).

I understand that the Funding Agency will rely on this signed certification in order to approve funding and that false and/or inaccurate representations in this Certification may result in loss of all funds awarded to the applicant for its project. Additionally, the Funding Agency may withhold disbursement of project funds, and/or pursue any other applicable legal remedy.

Christopher W. McKinney
Name of Authorized Representative (Please print)

Director of Utilities
Title

Christopher W. McKinney
Signature of Authorized Representative

July 13, 2015
Date

California State Water Resources Control Board
California Department of Water Resources
California Department of Public Health

CERTIFICATION FOR COMPLIANCE WITH WATER METERING REQUIREMENTS FOR FUNDING APPLICATIONS

Funding Agency name: STATE WATER RESOURCES CONTROL BOARD

Funding Program name: RECYCLED WATER PLANNING GRANT

Applicant (Agency name): PADRE DAM MUNICIPAL WATER DISTRICT

Project Title (as shown on application form): EAST COUNTY REGIONAL WATER REUSE PROGRAM PLANNING STUDY

Please check one of the boxes below and sign and date this form.

☐ As the authorized representative for the applicant agency, I certify under penalty of perjury under the laws of the State of California, that the agency is not an urban water supplier, as that term is understood pursuant to the provisions of section 529.5 of the Water Code.

☒ As the authorized representative for the applicant agency, I certify under penalty of perjury under the laws of the State of California, that the applicant agency has fully complied with the provisions of Division 1, Chapter 8, Article 3.5 of the California Water Code (sections 525 through 529.7 inclusive) and that ordinances, rules, or regulations have been duly adopted and are in effect as of this date.

I understand that the Funding Agency will rely on this signed certification in order to approve funding and that false and/or inaccurate representations in this Certification Statement may result in loss of all funds awarded to the applicant for its project. Additionally, for the aforementioned reasons, the Funding Agency may withhold disbursement of project funds, and/or pursue any other applicable legal remedy.

ALLEN CARLISLE
Name of Authorized Representative (Please print)

Signature

GENERAL MANAGER / CEO
Title

OCTOBER 9, 2014
Date

Agricultural Water Management Compliance

None of the project proponents are agricultural water suppliers, and all agricultural water demands supplied by the project proponents are included in their respective UWMPs. Therefore, no Agricultural Water Management Plans required for any of the project proponents.

Surface Water Diverter Compliance

Four local project sponsors in this Proposal are surface water diverters: SDCWA, City of San Diego, City of Escondido, and SWA. Each of these project proponents has submitted surface water diversion reports to the State Water Resources Control Board (SWRCB) in compliance with Part 5.1 of Division 2 of the CWC. The most recent diversion reports downloaded from the SWRCB's website are included as **Appendix 1-7.** Contact information for these surface water diverters is provided here.

Table 1-3: Contact Information for Surface Water Diverters

Project	Agency	Contact Name	Phone	Email	Verification Documentation Date
1	**SDCWA**	Carlos Michelon	858-522-6756	cmichelon@sdcwa.org	February 19, 2015
3 & 13	**City of San Diego**	Goldamer Herbon	619-533-4120	GHerbon@sandiego.gov	June 18 and 19, 2014
8	**City of Escondido**	Chris McKinney	760-839-4090	cmckinney@ci.escondido.ca.us	June 24, 2014
12	**Sweetwater Authority**	Pete Famolaro	619-409-6814	pfamolaro @sweetwater.org	June 30, 2014

Appendix 1-7 Surface Water Diverters

[SUMMARY OF FINAL SUBMITTED VERSION]

PROGRESS REPORT BY PERMITTEE FOR 2014

Primary Owner: SAN DIEGO COUNTY WATER AUTHORITY
Primary Contact: SAN DIEGO COUNTY WATER AUTHORITY

Date Submitted: 2015-02-19

Application Number: A030243
Permit Number: 020787

Source(s) of Water	POD Parcel Number	County
UNST		San Diego

MAX Direct Diversion Rate: 0.0 GPD
MAX Collection to Storage: 150.0 AC-FT
Face Value: 150.0 AC-FT

Permitted Use(s)	Acres	Direct Diversion Season	Storage Season
Municipal	0.0		01/01 to 12/31
Recreational	0.0		01/01 to 12/31

1. Permit Review	
I have reviewed my water right permit	Yes

2. Compliance with Permit Terms and Conditions	
I am complying with all terms and conditions	Yes
Description of noncompliance with terms and conditions	

3. Changes to the Project	
Intake location has been changed	
Description of intake location changes	
Type of use has changed	
Description of type of use changes	
Place of use has changed	
Description of place of use changes	
Other changes	
Description of other changes	

4-6. Permitted Project Status	
Project Status	Complete
6a. Construction work has commenced	
6b. Construction is completed	
6c. Beneficial uses of water has commenced	
6d. Project will be completed within the time period specified in the permit	
6e. Explanation of work remaining to be done	
6f. Estimated date of completion	

7. Purpose of Use	
Municipal	3300000

Appendix 1-7 Surface Water Diverters

8. Amount of Water Diverted and Used		
Month	Amount directly diverted or collected to storage (Acre-Feet)	Amount used (Acre-Feet)
January	0	0
February	7.6	0
March	2.8	0
April	7.2	0
May	0	0
June	0	0
July	0	0
August	0.1	0
September	0	0
October	0	0
November	16	0
December	57.4	0
Total	91.1	0
Comments	Of the 91.1 AF captured from runoff or direct rainfall, all water was lost to evaporation (507.5 AF).	

9. Maximum Rate of Diversion for each Month	
Month	Maximum Rate of Diversion (CFS)
January	0
February	0
March	0
April	0
May	0
June	0
July	0
August	0
September	0
October	0
November	0
December	0

10. Storage					
Reservoir name	Spilled this year	Feet below spillway at maximum storage	Completely emptied	Feet below spillway at minimum storage	Method used to measure water level
Olivenhain Reservoir	No	20.9	No	48.1	Electronic

Conservation of Water	
11. Are you now employing water conservation efforts?	Yes
Description of water conservation efforts	Voluntary conservation efforts were in effect from May through December.
12. Amount of water conserved	

Water Quality and Wastewater Reclamation	
13. During the period covered by this Report, did you use reclaimed water from a wastewater treatment facility, water from a desalination facility, or water polluted by waste to a degree which unreasonably affects the water for other beneficial uses?	No
14. Amount of reclaimed, desalinated, or polluted water used	

Conjuctive Use of Groundwater and Surface Water	
15. During the period covered by this Report, were you using groundwater in lieu of available surface water authorized under your permit?	No
16. Amounts of groundwater used	

Additional Remarks

Attachments		
File Name	Description	Size
No Attachments		

Contact Information of the Person Submitting the Form	
First Name	Jim
Last Name	Fisher
Relation to Water Right	Other: Authorized Official
Has read the form and agrees the information in the report is true to the best of his/her knowledge and belief	Yes

Appendix 1-7 Surface Water Diverters

[SUMMARY OF FINAL SUBMITTED VERSION]

REPORT OF LICENSEE FOR 2013

Primary Owner: CITY OF SAN DIEGO
Primary Contact: CITY OF SAN DIEGO

Date Submitted: 2014-06-18

Application Number: A002992
License Number: 002674

Source(s) of Water	POD Parcel Number	County
FLUME NINE CREEK		San Diego

MAX Direct Diversion Rate: 0.0 GPD
MAX Collection to Storage: 298.0 AC-FT
Face Value: 298.0 AC-FT

Licensed Use(s)	Acres	Direct Diversion Season	Storage Season
Municipal	0.0		

1. Project Abandoned	
The project has been abandoned and I request revocation of my water right license	No

2. Compliance with License Terms and Conditions	
I have currently reviewed my water right license and I am complying with all terms and conditions	Yes
Description of noncompliance with terms and conditions	

3. Changes to the Project	
Intake location has been changed	
Description of intake location changes	
Type of use has changed	
Description of type of use changes	
Place of use has changed	
Description of place of use changes	
Other changes	
Description of other changes	

4. Purpose of Use	
Other	Storage
Municipal	1326200

5. Amount of Water Diverted and Used		
Month	Amount directly diverted or collected to storage (Acre-Feet)	Amount used (Acre-Feet)
January	50	50
February	50	50
March	50	50
April	50	50
May	48	48

June	0	0
July	0	0
August	0	0
September	0	0
October	0	0
November	0	0
December	50	50
Total	298	298
Comments		

Appendix 1-7 Surface Water Diverters

6. Maximum Rate of Diversion for each Month	
Month	Maximum Rate of Diversion ()
January	
February	
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	

7. Storage					
Reservoir name	Spilled this year	Feet below spillway at maximum storage	Completely emptied	Feet below spillway at minimum storage	Method used to measure water level
Lower Otay Reservoir	No	9.62	No	14.94	Reservoir Water Gauge

Conservation of Water	
8. Are you now employing water conservation efforts?	No
Description of water conservation efforts	
9. Amount of water conserved	

Water Quality and Wastewater Reclamation	
10. During the period covered by this Report, did you use reclaimed water from a wastewater treatment facility, water from a desalination facility, or water polluted by waste to a degree which unreasonably affects the water for other beneficial uses?	No
11. Amount of reclaimed, desalinated, or polluted water used	

Conjuctive Use of Groundwater and Surface Water	
12. During the period covered by this Report, were you using groundwater in lieu of available surface water authorized under your license?	No
13. Amounts of groundwater used	

Additional Remarks

Appendix 1-7 Surface Water Diverters

Attachments		
File Name	Description	Size
No Attachments		

Contact Information of the Person Submitting the Form	
First Name	Rosalva
Last Name	Morales
Relation to Water Right	Primary Owner of Record
Has read the form and agrees the information in the report is true to the best of his/her knowledge and belief	Yes

Appendix 1-7 Surface Water Diverters

[SUMMARY OF FINAL SUBMITTED VERSION]

REPORT OF LICENSEE FOR 2013

Primary Owner: CITY OF SAN DIEGO
Primary Contact: CITY OF SAN DIEGO

Date Submitted: 2014-06-19

Application Number: A002995
License Number: 002677

Source(s) of Water	POD Parcel Number	County
MATCHIN CREEK		San Diego

MAX Direct Diversion Rate: 0.0 GPD
MAX Collection to Storage: 436.0 AC-FT
Face Value: 436.0 AC-FT

Licensed Use(s)	Acres	Direct Diversion Season	Storage Season
Municipal	0.0		

1. Project Abandoned	
The project has been abandoned and I request revocation of my water right license	No

2. Compliance with License Terms and Conditions	
I have currently reviewed my water right license and I am complying with all terms and conditions	Yes
Description of noncompliance with terms and conditions	

3. Changes to the Project	
Intake location has been changed	
Description of intake location changes	
Type of use has changed	
Description of type of use changes	
Place of use has changed	
Description of place of use changes	
Other changes	
Description of other changes	

4. Purpose of Use	
Other	Storage

5. Amount of Water Diverted and Used		
Month	Amount directly diverted or collected to storage (Acre-Feet)	Amount used (Acre-Feet)
January	80	80
February	80	80
March	80	80
April	80	80
May	36	36
June	0	0

July	0	0
August	0	0
September	0	0
October	0	0
November	0	0
December	80	80
Total	436	436
Comments		

Appendix 1-7 Surface Water Diverters

6. Maximum Rate of Diversion for each Month	
Month	Maximum Rate of Diversion ()
January	
February	
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	

7. Storage					
Reservoir name	Spilled this year	Feet below spillway at maximum storage	Completely emptied	Feet below spillway at minimum storage	Method used to measure water level
Lower Otay Reservoir	No	9.62	No	14.94	Reservoir Water Gauge

Conservation of Water	
8. Are you now employing water conservation efforts?	No
Description of water conservation efforts	
9. Amount of water conserved	

Water Quality and Wastewater Reclamation	
10. During the period covered by this Report, did you use reclaimed water from a wastewater treatment facility, water from a desalination facility, or water polluted by waste to a degree which unreasonably affects the water for other beneficial uses?	No
11. Amount of reclaimed, desalinated, or polluted water used	

Conjuctive Use of Groundwater and Surface Water	
12. During the period covered by this Report, were you using groundwater in lieu of available surface water authorized under your license?	No
13. Amounts of groundwater used	

Additional Remarks

Appendix 1-7 Surface Water Diverters

Attachments		
File Name	Description	Size
No Attachments		

Contact Information of the Person Submitting the Form	
First Name	Rosalva
Last Name	Morales
Relation to Water Right	Primary Owner of Record
Has read the form and agrees the information in the report is true to the best of his/her knowledge and belief	Yes

Appendix 1-7 Surface Water Diverters

[SUMMARY OF FINAL SUBMITTED VERSION]

REPORT OF LICENSEE FOR 2013

Primary Owner: CITY OF SAN DIEGO
Primary Contact: CITY OF SAN DIEGO

Date Submitted: 2014-06-19

Application Number: A002993
License Number: 002675

Source(s) of Water	POD Parcel Number	County
RATTLESNAKE CREEK		San Diego

MAX Direct Diversion Rate: 0.0 GPD
MAX Collection to Storage: 660.0 AC-FT
Face Value: 660.0 AC-FT

Licensed Use(s)	Acres	Direct Diversion Season	Storage Season
Municipal	0.0		

1. Project Abandoned	
The project has been abandoned and I request revocation of my water right license	No

2. Compliance with License Terms and Conditions	
I have currently reviewed my water right license and I am complying with all terms and conditions	Yes
Description of noncompliance with terms and conditions	

3. Changes to the Project	
Intake location has been changed	
Description of intake location changes	
Type of use has changed	
Description of type of use changes	
Place of use has changed	
Description of place of use changes	
Other changes	
Description of other changes	

4. Purpose of Use	
Other	Storage
Municipal	1326200

5. Amount of Water Diverted and Used		
Month	Amount directly diverted or collected to storage (Acre-Feet)	Amount used (Acre-Feet)
January	110	110
February	110	110
March	110	110
April	110	110
May	110	110

June	0	0
July	0	0
August	0	0
September	0	0
October	0	0
November	0	0
December	110	110
Total	660	660
Comments		

Appendix 1-7 Surface Water Diverters

6. Maximum Rate of Diversion for each Month	
Month	Maximum Rate of Diversion ()
January	
February	
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	

7. Storage					
Reservoir name	Spilled this year	Feet below spillway at maximum storage	Completely emptied	Feet below spillway at minimum storage	Method used to measure water level
Lower Otay Reservoir	No	9.62	No	14.94	Reservoir Water Gauge

Conservation of Water	
8. Are you now employing water conservation efforts?	No
Description of water conservation efforts	
9. Amount of water conserved	

Water Quality and Wastewater Reclamation	
10. During the period covered by this Report, did you use reclaimed water from a wastewater treatment facility, water from a desalination facility, or water polluted by waste to a degree which unreasonably affects the water for other beneficial uses?	No
11. Amount of reclaimed, desalinated, or polluted water used	

Conjuctive Use of Groundwater and Surface Water	
12. During the period covered by this Report, were you using groundwater in lieu of available surface water authorized under your license?	No
13. Amounts of groundwater used	

Additional Remarks

Appendix 1-7 Surface Water Diverters

Attachments		
File Name	Description	Size
No Attachments		

Contact Information of the Person Submitting the Form	
First Name	Rosalva
Last Name	Morales
Relation to Water Right	Primary Owner of Record
Has read the form and agrees the information in the report is true to the best of his/her knowledge and belief	Yes

Appendix 1-7 Surface Water Diverters

[SUMMARY OF FINAL SUBMITTED VERSION]

REPORT OF LICENSEE FOR 2013

Primary Owner: CITY OF SAN DIEGO
Primary Contact: CITY OF SAN DIEGO

Date Submitted: 2014-06-19

Application Number: A002994
License Number: 002676

Source(s) of Water	POD Parcel Number	County
TUNNEL TWO CREEK		San Diego

MAX Direct Diversion Rate: 0.0 GPD
MAX Collection to Storage: 615.0 AC-FT
Face Value: 615.0 AC-FT

Licensed Use(s)	Acres	Direct Diversion Season	Storage Season
Municipal	0.0		

1. Project Abandoned	
The project has been abandoned and I request revocation of my water right license	No

2. Compliance with License Terms and Conditions	
I have currently reviewed my water right license and I am complying with all terms and conditions	Yes
Description of noncompliance with terms and conditions	

3. Changes to the Project	
Intake location has been changed	
Description of intake location changes	
Type of use has changed	
Description of type of use changes	
Place of use has changed	
Description of place of use changes	
Other changes	
Description of other changes	

4. Purpose of Use	
Other	Storage
Municipal	1326200

5. Amount of Water Diverted and Used		
Month	Amount directly diverted or collected to storage (Acre-Feet)	Amount used (Acre-Feet)
January	102.5	102.5
February	102.5	102.5
March	102.5	102.5
April	102.5	102.5
May	102.5	102.5

June	0	0
July	0	0
August	0	0
September	0	0
October	0	0
November	0	0
December	102.5	102.5
Total	615	615
Comments		

Appendix 1-7 Surface Water Diverters

6. Maximum Rate of Diversion for each Month	
Month	Maximum Rate of Diversion ()
January	
February	
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	

7. Storage					
Reservoir name	Spilled this year	Feet below spillway at maximum storage	Completely emptied	Feet below spillway at minimum storage	Method used to measure water level
Lower Otay Reservoir	No	9.62	No	14.94	Reservoir Water Gauge

Conservation of Water	
8. Are you now employing water conservation efforts?	No
Description of water conservation efforts	
9. Amount of water conserved	

Water Quality and Wastewater Reclamation	
10. During the period covered by this Report, did you use reclaimed water from a wastewater treatment facility, water from a desalination facility, or water polluted by waste to a degree which unreasonably affects the water for other beneficial uses?	No
11. Amount of reclaimed, desalinated, or polluted water used	

Conjuctive Use of Groundwater and Surface Water	
12. During the period covered by this Report, were you using groundwater in lieu of available surface water authorized under your license?	No
13. Amounts of groundwater used	

Additional Remarks

Appendix 1-7 Surface Water Diverters

Attachments		
File Name	Description	Size
No Attachments		

Contact Information of the Person Submitting the Form	
First Name	Rosalva
Last Name	Morales
Relation to Water Right	Primary Owner of Record
Has read the form and agrees the information in the report is true to the best of his/her knowledge and belief	Yes

Appendix 1-7 Surface Water Diverters

[SUMMARY OF FINAL SUBMITTED VERSION]

REPORT OF LICENSEE FOR 2013

Primary Owner: CITY OF SAN DIEGO
Primary Contact: CITY OF SAN DIEGO

Date Submitted: 2014-06-19

Application Number: A004343
License Number: 001716

Source(s) of Water	POD Parcel Number	County
UNXX		San Diego

MAX Direct Diversion Rate: 0.75 CFS
MAX Collection to Storage: 0.0 AC-FT
Face Value: 452.2 AC-FT

Licensed Use(s)	Acres	Direct Diversion Season	Storage Season
Irrigation	70.0	02/01 to 12/01	

1. Project Abandoned	
The project has been abandoned and I request revocation of my water right license	No

2. Compliance with License Terms and Conditions	
I have currently reviewed my water right license and I am complying with all terms and conditions	Yes
Description of noncompliance with terms and conditions	

3. Changes to the Project	
Intake location has been changed	
Description of intake location changes	
Type of use has changed	
Description of type of use changes	
Place of use has changed	
Description of place of use changes	
Other changes	
Description of other changes	

4. Purpose of Use	
Irrigation	70 Acres Other

5. Amount of Water Diverted and Used		
Month	Amount directly diverted or collected to storage (Acre-Feet)	Amount used (Acre-Feet)
January	3	3
February	3	3
March	3	3
April	3	3
May	3	3
June	3	3

July	3	3
August	3	3
September	3	3
October	3	3
November	3	3
December	3	3
Total	36	36
Comments		

6. Maximum Rate of Diversion for each Month	
Month	Maximum Rate of Diversion ()
January	
February	
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	

7. Storage					
Reservoir name	Spilled this year	Feet below spillway at maximum storage	Completely emptied	Feet below spillway at minimum storage	Method used to measure water level

Conservation of Water	
8. Are you now employing water conservation efforts?	No
Description of water conservation efforts	
9. Amount of water conserved	

Water Quality and Wastewater Reclamation	
10. During the period covered by this Report, did you use reclaimed water from a wastewater treatment facility, water from a desalination facility, or water polluted by waste to a degree which unreasonably affects the water for other beneficial uses?	No
11. Amount of reclaimed, desalinated, or polluted water used	

Conjuctive Use of Groundwater and Surface Water	
12. During the period covered by this Report, were you using groundwater in lieu of available surface water authorized under your license?	No
13. Amounts of groundwater used	

Additional Remarks

Attachments

Appendix 1-7 Surface Water Diverters

File Name	Description	Size
No Attachments		

Contact Information of the Person Submitting the Form	
First Name	Rosalva
Last Name	Morales
Relation to Water Right	Primary Owner of Record
Has read the form and agrees the information in the report is true to the best of his/her knowledge and belief	Yes

Appendix 1-7 Surface Water Diverters

[SUMMARY OF FINAL SUBMITTED VERSION]

REPORT OF LICENSEE FOR 2013

Primary Owner: CITY OF ESCONDIDO
Primary Contact: Christopher Mckinney

Date Submitted: 2014-06-24

Application Number: A011870
License Number: 012198

Source(s) of Water	POD Parcel Number	County
JACK CREEK		San Diego

MAX Direct Diversion Rate: 0.0 GPD
MAX Collection to Storage: 1500.0 AC-FT
Face Value: 1500.0 AC-FT

Licensed Use(s)	Acres	Direct Diversion Season	Storage Season
Municipal	0.0		01/01 to 12/31

1. Project Abandoned	
The project has been abandoned and I request revocation of my water right license	No

2. Compliance with License Terms and Conditions	
I have currently reviewed my water right license and I am complying with all terms and conditions	Yes
Description of noncompliance with terms and conditions	

3. Changes to the Project	
Intake location has been changed	
Description of intake location changes	
Type of use has changed	
Description of type of use changes	
Place of use has changed	
Description of place of use changes	
Other changes	
Description of other changes	

4. Purpose of Use	
Recreational	Boating, Fishing
Irrigation	3000 Acres Mixed Crop Types
Municipal	150000

5. Amount of Water Diverted and Used		
Month	Amount directly diverted or collected to storage (Acre-Feet)	Amount used (Acre-Feet)
January	5	5
February	3	3
March	0	0
April	0	0

Appendix 1-7 Surface Water Diverters

May	0	0
June	0	0
July	0	0
August	0	0
September	0	0
October	0	0
November	3	3
December	5	5
Total	16	16
Comments	Jack Creek flows into Dixon Lake, a municipal water reservoir of the City of Escondido. All water is used in the municipal water supply for the City.	

6. Maximum Rate of Diversion for each Month	
Month	Maximum Rate of Diversion ()
January	
February	
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	

7. Storage					
Reservoir name	Spilled this year	Feet below spillway at maximum storage	Completely emptied	Feet below spillway at minimum storage	Method used to measure water level
Dixon Lake	No	1.5	No	5.6	Staff gauge reading

Conservation of Water	
8. Are you now employing water conservation efforts?	Yes
Description of water conservation efforts	County-wide conservation ordinance and a local City ordinance - The program includes outreach and education available to all City elementary school teachers from 1st through 4th grade.
9. Amount of water conserved	2000 Acre-Feet

Water Quality and Wastewater Reclamation	
10. During the period covered by this Report, did you use reclaimed water from a wastewater treatment facility, water from a desalination facility, or water polluted by waste to a degree which unreasonably affects the water for other beneficial uses?	No
11. Amount of reclaimed, desalinated, or polluted water used	

Conjuctive Use of Groundwater and Surface Water	
12. During the period covered by this Report, were you using groundwater in lieu of available surface water authorized under your license?	No
13. Amounts of groundwater used	

Additional Remarks
Jack Creek is a minor, seasonal tributary of the City's municipal supply reservoir, Dixon Lake. Water from Jack Creeks collected in Dixon Lake is seasonal runoff from the surrounding watershed. No water is directly diverted, and flow rates vary with annual rainfall.

Attachments		
File Name	Description	Size
No Attachments		

Contact Information of the Person Submitting the Form	
First Name	Christopher
Last Name	McKinney
Relation to Water Right	Primary Owner of Record
Has read the form and agrees the information in the report is true to the best of his/her knowledge and belief	Yes

Appendix 1-7 Surface Water Diverters

[SUMMARY OF FINAL SUBMITTED VERSION]

REPORT OF LICENSEE FOR 2013

Primary Owner: SWEETWATER AUTHORITY
Primary Contact: SWEETWATER AUTHORITY

Date Submitted: 2014-06-30

Application Number: A010661
License Number: 011734

Source(s) of Water	POD Parcel Number	County
SWEETWATER RIVER		San Diego

MAX Direct Diversion Rate: 0.0 GPD
MAX Collection to Storage: 14600.0 AC-FT
Face Value: 14600.0 AC-FT

Licensed Use(s)	Acres	Direct Diversion Season	Storage Season
Industrial	0.0		01/01 to 12/31
Irrigation	524.0		01/01 to 12/31
Municipal	0.0		01/01 to 12/31

1. Project Abandoned	
The project has been abandoned and I request revocation of my water right license	No

2. Compliance with License Terms and Conditions	
I have currently reviewed my water right license and I am complying with all terms and conditions	Yes
Description of noncompliance with terms and conditions	

3. Changes to the Project	
Intake location has been changed	
Description of intake location changes	
Type of use has changed	
Description of type of use changes	
Place of use has changed	
Description of place of use changes	
Other changes	
Description of other changes	

4. Purpose of Use	
Recreational	Fishing
Irrigation	524 Acres Mixed Crop Types
Municipal	188418

5. Amount of Water Diverted and Used		
Month	Amount directly diverted or collected to storage (Acre-Feet)	Amount used (Acre-Feet)
January	139.1	0
February	317.2	0

Appendix 1-7 Surface Water Diverters

March	401.8	0
April	40.9	0
May	39.4	0
June	2.1	0
July	0	0
August	8.1	0
September	0	0
October	7.4	0
November	14.3	0
December	5.2	0
Total	975.5	0
Comments	1. Sweetwater Main Dam is point of rediversion (Ref: Statement S004727) 2. Municipal and industrial uses and irrigaton of 524 acres, all within the service area of South Bay Irrigation District as shown on map filed with State Water Resources Control Board. 3. Water transfer from Loveland to Sweetwater January/February 2013. Approximatley 9,037 AF released Loveland Approximatly 7,099 AF received Sweetwater	

6. Maximum Rate of Diversion for each Month	
Month	Maximum Rate of Diversion (CFS)
January	5.94
February	12.85
March	28.48
April	3.46
May	2.24
June	2.64
July	1.87
August	2.31
September	1.96
October	4.03
November	4.73
December	4.9

7. Storage					
Reservoir name	Spilled this year	Feet below spillway at maximum storage	Completely emptied	Feet below spillway at minimum storage	Method used to measure water level
Loveland	No	20.08	No	53.49	Staff gauge
Sweetwater	No	18.2	No	41.28	Staff gauge

Conservation of Water	
8. Are you now employing water conservation efforts?	Yes
Description of water conservation efforts	Implementation of all 16 BMP's specified in the MOU regarding Urban Water Conservation in California.
9. Amount of water conserved	

Water Quality and Wastewater Reclamation	
10. During the period covered by this Report, did you use reclaimed water from a wastewater treatment facility, water from a desalination facility, or water polluted by waste to a degree which unreasonably affects the water for other beneficial uses?	No

11. Amount of reclaimed, desalinated, or polluted water used	

Conjuctive Use of Groundwater and Surface Water	
12. During the period covered by this Report, were you using groundwater in lieu of available surface water authorized under your license?	No
13. Amounts of groundwater used	

Additional Remarks
Water transfer from Loveland to Sweetwater January/February. Approximatley 9,037 AF released Loveland Approximatly 7,099 AF received Sweetwater

Attachments		
File Name	Description	Size
2013 Statement or Water Diversion Summary.xls	Worksheet	344 KB
Water Diversion Measurement Components.pdf	Measurement devices	74 KB

Contact Information of the Person Submitting the Form	
First Name	James
Last Name	Smith
Relation to Water Right	Primary Owner of Record
Has read the form and agrees the information in the report is true to the best of his/her knowledge and belief	Yes

Groundwater Management Compliance

Four local project sponsors included in this Proposal are groundwater users: City of San Diego, City of Escondido, Padre Dam MWD, and SWA. Contact information for those agencies is included in **Table 1-4.**

Table 1-4: Contact Information for Groundwater Users

Project	Agency	Contact Name	Phone	Email	Project Effect on Groundwater
3 & 13	**City of San Diego**	Goldamer Herbon	619-533-4120	GHerbon@sandiego.gov	No direct effect.
8	**City of Escondido**	Chris McKinney	760-839-4090	cmckinney@ci.escondido.ca.us	No direct effect.
9	**Padre Dam MWD**	Al Lau	619-596-1804	Alau@padre.org	No direct effect.
12	**Sweetwater Authority**	Pete Famolaro	619-409-6814	pfamolaro@sweetwater.org	No direct effect.

None of the thirteen projects included within this *2015 IRWM Implementation Grant Proposal* require compliance with or development of a groundwater management plan (GWMP) because they would not involve groundwater management or recharge. These projects fall within the categories of water reuse, conservation, rural water infrastructure, and water quality and habitat. As such, these projects do not propose any direct action with regards to groundwater, and would not directly impact groundwater, either positively or negatively. Therefore, the GWMP (CWC §10753.7) self-certification documentation is not required from any of the project proponents. Even though the City of San Diego, City of Escondido, Padre Dam MWD, and SWA have been identified as groundwater users, they are not subject to GWMP compliance in regards to this application because their projects would not directly affect groundwater levels or quality.

CASGEM Compliance

Within the San Diego IRWM Region, there are four medium priority groundwater basins per the California Statewide Groundwater Elevation Monitoring (CASGEM) Program definition: San Pasqual Valley, San Diego River Valley, Santa Margarita Valley, and San Luis Rey Valley. There are no high priority groundwater basins in the Region. Four of the local project sponsors in this Proposal are eligible monitoring entities as defined in CWC §10927: City of Escondido, City of San Diego, Padre Dam MWD, and SWA. The remaining eight local project sponsors are not eligible monitoring entities because they are non-profit organizations (UCSD, Groundwork, RCAC, The Garden, and Zoological Society), federal agencies (USFS), or are public agencies without jurisdiction over groundwater management, activities, or monitoring (San Elijo JPA and SDCWA). An explanation of why each project proponents is or is not an eligible monitoring entity, as defined in CWC §10927 is provided here:

- **Project 1: SDCWA (Ineligible)**: SDCWA is not an eligible monitoring entity because it has no jurisdiction over groundwater-related activities in the Region. SDCWA is a water wholesaler and does not have any jurisdictional connectivity with the San Diego County nor land use authority. SDCWA is governed by a Board of Directors that consists of member agencies (water agencies); while the County of San Diego is governed by their own separate Board of Supervisors.
- **Project 2: Groundwork (Ineligible)**: Groundwork is not an eligible monitoring entity because it is a non-profit organization that is not a groundwater management agency, groundwater replenishment district, local agency, or part of a voluntary groundwater monitoring association.
- **Projects 3 & 13: City of San Diego (Eligible)**: The City of San Diego is an eligible monitoring entity because it is a local agency that is managing all or part of the San Diego River Valley Basin and the San Pasqual Valley Basin, among others. It regularly reports groundwater monitoring results to the State.
- **Project 4: The Garden (Ineligible)**: The Garden is not an eligible monitoring entity because it is a non-profit organization that is not a groundwater management agency, groundwater replenishment district, local agency, or part of a voluntary groundwater monitoring association.
- **Project 5: RCAC (Ineligible)**: RCAC is a non-profit organization that provides technical and financial assistance to rural communities in the areas of environmental infrastructure, affordable housing, economic and leadership, and community development. It is not a groundwater management agency, groundwater replenishment district, local agency, or part of a voluntary groundwater monitoring association, and therefore is not an eligible monitoring entity.
- **Project 6: San Elijo JPA (Ineligible)**: San Elijo JPA is not an eligible monitoring entity because it is not a groundwater management agency, groundwater replenishment district, local agency monitoring and reporting groundwater levels, or part of a voluntary groundwater monitoring association. San Elijo JPA is a wastewater collection and treatment entity that provides recycled water for irrigation uses. It does not utilize or recharge groundwater resources.
- **Project 7: UCSD (Ineligible)**: UCSD is a non-profit higher education and research organization. It is not a groundwater management agency, groundwater replenishment district, local agency, or part of a voluntary groundwater monitoring association. Therefore, UCSD is not an eligible monitoring entity.
- **Project 8: City of Escondido (Eligible)**: The City of Escondido is an eligible monitoring entity because it is a local agency that is managing all or part of the Escondido Valley Groundwater basin. However, this basin is a low priority basin and, for the purposes of this grant, does not require CASGEM compliance.
- **Project 9: Padre Dam MWD (Eligible):** Padre Dam MWD is a local agency that manages a portion of the San Diego River Valley groundwater basin, and is an eligible monitoring entity.
- **Project 10: Zoological Society (Ineligible)**: The Zoological Society is not an eligible monitoring entity because it is not a groundwater management agency, groundwater replenishment district, local agency, or part of a voluntary groundwater monitoring association. The Zoological Society is a non-profit organization

whose mission is to conserve and protect wildlife and provide outreach to the community regarding wildlife and habitat conservation.

- **Project 11: USFS (Ineligible)**: USFS is not an eligible monitoring entity because it is a federal agency and not subject to CASGEM. Further, it is not a groundwater management agency, groundwater replenishment district, local agency, or part of a voluntary groundwater monitoring association.
- **Project 12: SWA (Eligible)**: SWA is an eligible monitoring entity because it is a water supply agency that manages the Sweetwater Valley basin (as part of the San Diego Formation). The Sweetwater Valley basin is a low priority basin and, for the purposes of this grant, CASGEM compliance is not required.

Table 1-5 shows the groundwater basins in the Region that underlie the projects included in this Proposal. As indicated in **Table 1-5**, there are two unmonitored medium-priority basins in the Region (San Luis Rey Valley and Santa Margarita Valley). There are no project sponsors that are also eligible monitoring entities per CWC §10927 whose service areas or projects overlie the San Luis Rey Valley or Santa Margarita Valley groundwater basins.

San Diego River Valley Groundwater Basin

The City of San Diego's service area and its *3: San Diego Water Conservation Program* partially overlie the San Diego River Valley groundwater basin. Padre Dam MWD's service area also overlies the San Diego River Valley groundwater basin, although its *9: Padre Dam Advanced Water Treatment – Phase I Expansion* lies outside the basin itself. The San Diego River Valley groundwater basin has high nitrates, high total dissolved solids (TDS) in the western portion of the basin, and requires iron and manganese treatment. The City of San Diego and Padre Dam MWD have partnered with Helix Water District, Lakeside Water District, and the County of San Diego to monitor the San Diego River Valley groundwater basin in compliance with CASGEM. The San Diego River Valley groundwater basin, as defined by DWR, includes the Santee, Lakeside, Moreno Valley, and El Monte sub-basins. Groundwater management planning[2] was completed in 2001 by SDCWA in partnership with Padre Dam MWD, Helix Water District, Lakeside Water District, Riverview Water District, and the City of San Diego. A Salt and Nutrient Management Plan for the Santee Basin began in 2013 and is currently in development.

The City of San Diego received notification on August 5, 2015 from DWR that they have been recognized as the designated Monitoring Entity for the San Diego River Valley groundwater basin. A copy of the email notification is included in **Appendix 1-8**, and a formal letter will be available on request upon receipt of the letter from DWR. CAGEM compliance for the San Diego River Valley groundwater basin has been met, and the City of San Diego and Padre Dam MWD are both eligible to receive grant funding under this solicitation.

San Pasqual Valley Groundwater Basin

The City of San Diego's service area overlies the medium-priority San Pasqual Valley groundwater basin. The San Pasqual Valley groundwater basin has been identified as a Tier A basin indicating that it is of high priority for salt and nutrient management, having both significant groundwater storage capacity and significant potential for municipal groundwater use. The San Pasqual Valley groundwater basin is monitored by the City of San Diego and has an established Groundwater Management Plan[3] and a Salt and Nutrient Management Plan[4].

A CASGEM compliance letter from DWR for the City of San Diego, for the San Pasqual Valley groundwater basin is included in **Appendix 1-8**.

Figure 1-1 shows the location of the identified medium-priority groundwater basins in the Region, along with the service areas of each project sponsor that is an eligible monitoring entity and the location of each project. A geographic information system (GIS) shapefile called "Eligible Monitoring Entity Service Area Boundaries" that includes the service area boundaries of each of the eligible monitoring agencies (City of San Diego, City of Escondido, Padre Dam MWD, and SWA) has been uploaded to GRanTS as "Att1_2015IRWM_Eligible_10of10". For clarity, services areas for project sponsors that do not meet the definition of an eligible monitoring entity was not included in this figure.

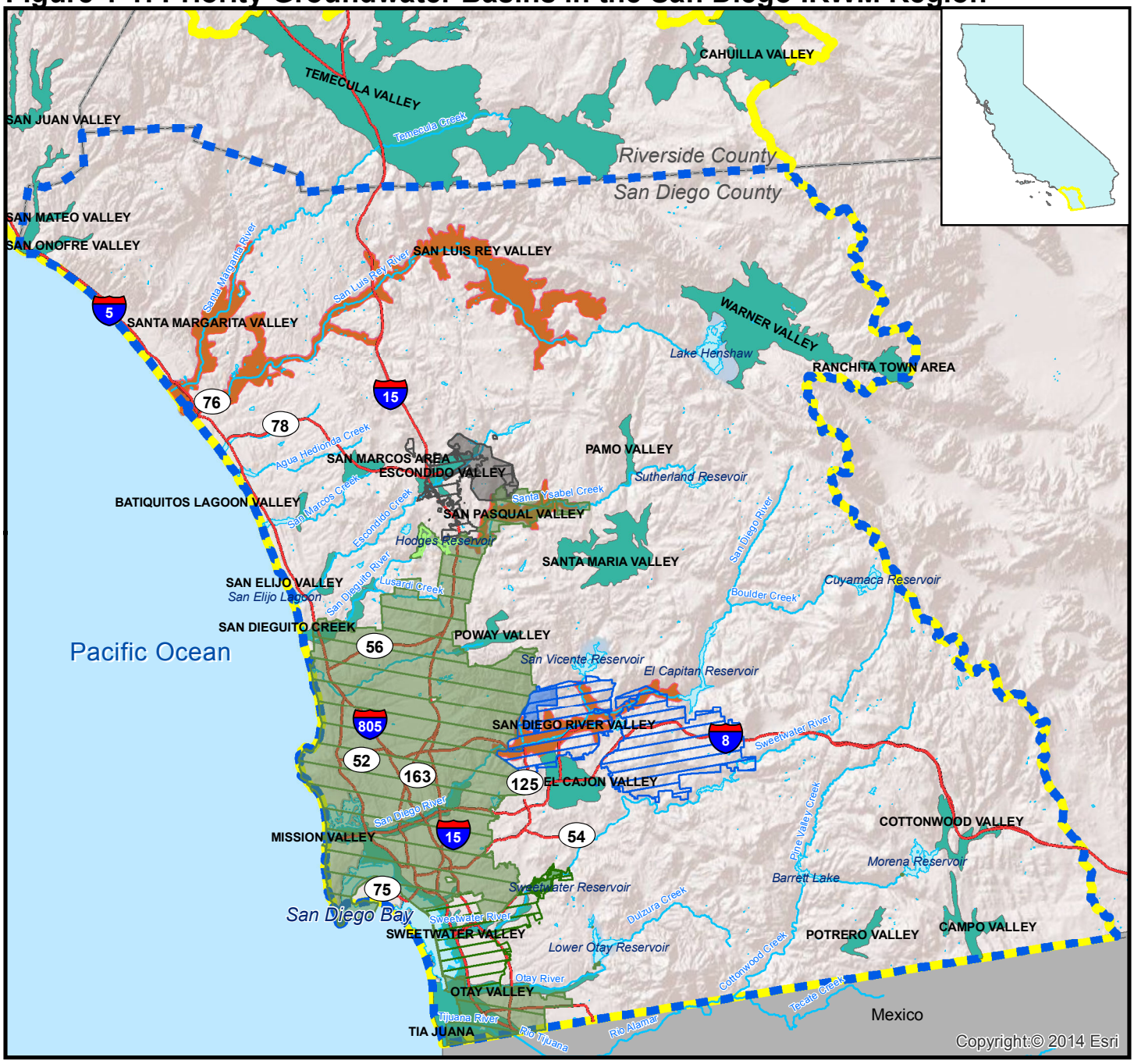
[2] SDCWA. 2001. *Groundwater Management Planning Study Santee-El Monte Basin, Phase III Report*. January.
[3] City of San Diego. 2007. *San Pasqual Groundwater Management Plan*. November.
[4] City of San Diego. 2013. San Pasqual Valley Groundwater Basin Salt and Nutrient Management Plan. October.

Table 1-5: Groundwater Basin Monitoring Priority for Projects with Eligible Monitoring Project Proponents

Projects		Project Proponent	Underlying Groundwater Basin(s)	Basin Priority (If Applicable)	Designated Monitoring Entity (If Applicable)	Eligible As a Monitoring Entity?	Included in GIS Shapefile?
Conservation Program							
1	Regional Drought Resiliency Program	SDCWA	San Mateo Valley	Very Low	N/A	No	No
			San Onofre Valley	Very Low	N/A	No	No
			Santa Margarita Valley	Medium	None	No	No
			San Luis Rey Valley	Medium	None	No	No
			Escondido Valley	Very Low	N/A	No	No
			San Pasqual Valley	Medium	City of San Diego	No	No
			Santa Maria Valley	Very Low	N/A	No	No
			San Dieguito Creek	Very Low	N/A	No	No
			Poway Valley	Very Low	N/A	No	No
			Mission Valley	Very Low	N/A	No	No
			San Diego River Valley	Medium	City of San Diego	No	No
			El Cajon Valley	Very Low	N/A	No	No
			Sweetwater Valley	Very Low	N/A	No	No
			Otay Valley	Very Low	N/A	No	No
			Tijuana Basin	Very Low	N/A	No	No
			Batiquitos	Very Low	N/A	No	No
			Lagoon Valley	Very Low	N/A	No	No
			San Elijo Valley	Very Low	N/A	No	No
			Pamo Valley	Very Low	N/A	No	No
			San Marcos Area	Very Low	N/A	No	No
2	Conservation Home Makeover for the Chollas Creek Watershed	Groundwork	N/A	N/A	N/A	No	No
3	San Diego Water Conservation Program	City of San Diego	San Diego River Valley	Medium	City of San Diego	Yes	Yes
			San Pasqual Valley	Medium	City of San Diego	Yes	Yes
			Mission Valley	Very Low	N/A	Yes	Yes

Projects		Project Proponent	Underlying Groundwater Basin(s)	Basin Priority (If Applicable)	Designated Monitoring Entity (If Applicable)	Eligible As a Monitoring Entity?	Included in GIS Shapefile?
			Otay Valley	Very Low	N/A	Yes	Yes
			Poway Valley	Very Low	N/A	Yes	Yes
			San Dieguito Creek	Very Low	N/A	Yes	Yes
			Sweetwater Valley	Very Low	N/A	Yes	Yes
			Tijuana	Very Low	N/A	Yes	Yes
4	Ms. Smarty-Plants Grows Water-Wise Schools	The Garden	El Cajon Valley	Very Low	N/A	No	No
Rural Water Infrastructure Program							
5	Rural Disadvantaged Community Partnership Project – Phase III	RCAC	San Luis Rey Valley	Medium	None	No	No
			Otay Valley	Very Low	N/A	No	No
			Tijuana	Very Low	N/A	No	No
Water Reuse Program							
6	Integrated Water Resource Solutions for the Carlsbad Watershed	San Elijo JPA	San Elijo Valley	Very Low	N/A	No	No
7	UCSD Water Conservation and Watershed Protection	UCSD	Otay Valley	Very Low	N/A	No	No
			Tijuana	Very Low	N/A	No	No
8	Escondido Advanced Water Treatment for Agriculture	City of Escondido	Escondido Valley	Very Low	N/A	Yes	No
9	Padre Dam Advanced Water Treatment – Phase IA Expansion	Padre Dam MWD	San Diego River Valley	Medium	City of San Diego	Yes	Yes
10	Safari Park Drought Response and Outreach	Zoological Society	San Pasqual Valley	Medium	City of San Diego	No	No
Water Quality and Habitat Program							
11	San Diego River Healthy Headwaters Restoration	USFS	N/A	N/A	N/A	No	No
12	Sweetwater Reservoir Wetlands Habitat Recovery	SWA	Sweetwater Valley	Very Low	N/A	Yes	Yes
13	Hodges Reservoir Natural Treatment System	City of San Diego	San Pasqual Valley	Medium	City of San Diego	Yes	Yes

Figure 1-1: Priority Groundwater Basins in the San Diego IRWM Region



Legend

- San Diego IRWM Region
- Funding Area Boundary
- Freeway
- Waterbody
- County
- Medium Priority Groundwater Basin
- Very Low Priority Groundwater Basins

Service Area Boundary for Agencies Eligible for CASGEM Monitoring Entity Designation*

- City of Escondido
- Padre Dam MWD
- City of San Diego
- Sweetwater Authority

Project Area Boundary for Agencies Eligible for CASGEM Monitoring Entity Designation*

- 3 San Diego Water Conservation Program
- 8 Escondido Advanced Water Treatment for Agriculture
- 9 Padre Dam Advanced Water Treatment - Phase IA Expansion
- 12 Sweetwater Reservoir Wetlands Habitat Recovery
- 13 Hodges Reservoir Natural Treatment System

*Note: In accordance with CWC §10927, the following local project sponsors are not included in this map as they do not match the list of potential monitoring entities for high and medium priority basins: Rural Community Assistance Corporation, USDA Forest Service, Groundwork San Diego, UC San Diego, Zoological Society of San Diego, The Water Conservation Garden, San Diego County Water Authority, San Elijo Joint Powers Authority.

N

Sources: San Diego Association of Governments (SANDAG) - GIS Data Warehouse
Document Path: N:\Projects GIS\0188-003 SDIRWM Plan Update\Prop84_Rnd4\MXD\1-1_PriorityGWBasins_060815.mxd

Rosalyn Prickett

From: Adrian, George <GAdrian@sandiego.gov>
Sent: Wednesday, August 05, 2015 2:07 PM
To: Herbon, Goldamer; Rosalyn Prickett
Cc: Wiborg, Lan; Abutin, Larry; Cross, Gregory; Arne Sandvik; Albert Lau; Brett Sanders; Brian Olney
Subject: FW: Email Notification - Designation as Monitoring Entity for the California Statewide Groundwater Elevation Monitoring Program

Hi Everyone
Please see below…the hardcopy letter will be following in the mail. But I was assured this would pass as being "official notification"
Thanks
George

George Adrian P.E.
Principal Water Resources Specialist
Long-Range Planning and Water Resources
Public Utilities
525 B Street, Suite 300
San Diego, CA 92101-4409
(619) 533-4680

From: no-reply@water.ca.gov [mailto:no-reply@water.ca.gov]
Sent: Wednesday, August 05, 2015 1:41 PM
To: Adrian, George
Subject: Email Notification - Designation as Monitoring Entity for the California Statewide Groundwater Elevation Monitoring Program

Dear george adrian:

Thank you for volunteering to be a Monitoring Entity for the California Statewide Groundwater Elevation Monitoring (CASGEM) program. The Department of Water Resources (DWR) received your notification that City of San Diego - Public Utilities Department intends to assume responsibility for monitoring and reporting local groundwater elevations for the CASGEM program.

Based on review and verification of the information that you submitted to DWR via the CASGEM Online Submittal System, City of San Diego - Public Utilities Department is designated as the Monitoring Entity for the 9-15 San Diego River Valley.

This is a courtesy automated Email notification. You will also be receiving formal correspondence from DWR regarding your designation as a CASGEM Monitoring Entity.

Thank you for your participation in the CASGEM program.

Sincerely,
Brett Wyckoff
Senior Engineering Geologist
CASGEM Program
Division of Integrated Regional Water Management

STATE OF CALIFORNIA – CALIFORNIA NATURAL RESOURCES AGENCY

EDMUND G. BROWN JR., *Governor*

DEPARTMENT OF WATER RESOURCES
1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

April 23, 2014

Mr. George Adrian, PE
Principal Water Resources Specialist
City of San Diego Public Utilities Department
525 B Street, Suite 300, MS906
San Diego, California 92101

Monitoring Entity Designation for the City of San Diego Public Utilities Department under the California Statewide Groundwater Elevation Monitoring Program

Dear Mr. Adrian:

Thank you for volunteering to be a Monitoring Entity for the California Statewide Groundwater Elevation Monitoring (CASGEM) program. On December 27, 2010, the Department of Water Resources (DWR) received your notification that the City of San Diego Public Utilities Department intends to assume responsibility for monitoring and reporting local groundwater elevations for the CASGEM program. Based on review and verification of the information that you submitted to DWR via the CASGEM Online Submittal System, the City of San Diego Public Utilities Department is designated as the Monitoring Entity for the following groundwater basin:

- San Pasqual Valley (9-10)

The CASGEM Online System is ready to accept submittal of your groundwater elevation data. In accordance with the Water Code, you should submit groundwater elevation data for the wells you have included in the CASGEM program, beginning with data collected in fall 2011.

Additional information is available on the CASGEM program website at http://www.water.ca.gov/groundwater/casgem.

If you have any questions about the CASGEM program, please contact Timothy M. Ross in DWR's Southern Region Office at 770 Fairmont Avenue, Suite 102, (818) 500-1645 x278, or email timothy.ross@water.ca.gov.

Thank you for your participation in the CASGEM program.

Sincerely,

Paula J. Landis, Chief
Division of Integrated Regional Water Management

cc: Timothy M. Ross, Southern Region Office
Brett Wyckoff, Bonderson, Rm. 213 A

Attachment 2

San Diego Integrated Regional Water Management

2015 IRWM Implementation Grant Proposal

Project Justification

Attachment 2 consists of the following items:

- ✓ **Project Justification.** This attachment includes a summary of the proposed projects, along with a technical justification of each project, which describes how each project can achieve the claimed level of benefits, explains how the benefits will be attained through the least cost alternative, and identifies a plan to monitor project performance.

Table of Contents

Introduction

This *2015 IRWM Implementation Grant Proposal* (Proposal) contains thirteen high-priority projects that were evaluated and selected by a subcommittee (the Project Selection Workgroup) of the Region's primary stakeholder body, the Regional Advisory Committee (RAC). The Project Selection Workgroup carefully evaluated each project to determine its potential to provide multiple benefits to the San Diego Integrated Regional Water Management (IRWM) Region. It also evaluated each project's readiness to proceed, previously completed work, and viability.

This attachment contains a summary of the proposed projects, the estimated physical benefits of the projects, justifies how the projects are technically feasible, describes how the projects can achieve the level of claimed benefits, and explains whether the benefits will be attained through the least cost alternative.

Project Summary

Table 2-1 includes information about how each of the thirteen projects included in the Proposal meet applicable IRWM Program Elements stipulated in Table 4 of the *2015 Proposal Solicitation Package (2015 PSP)*.

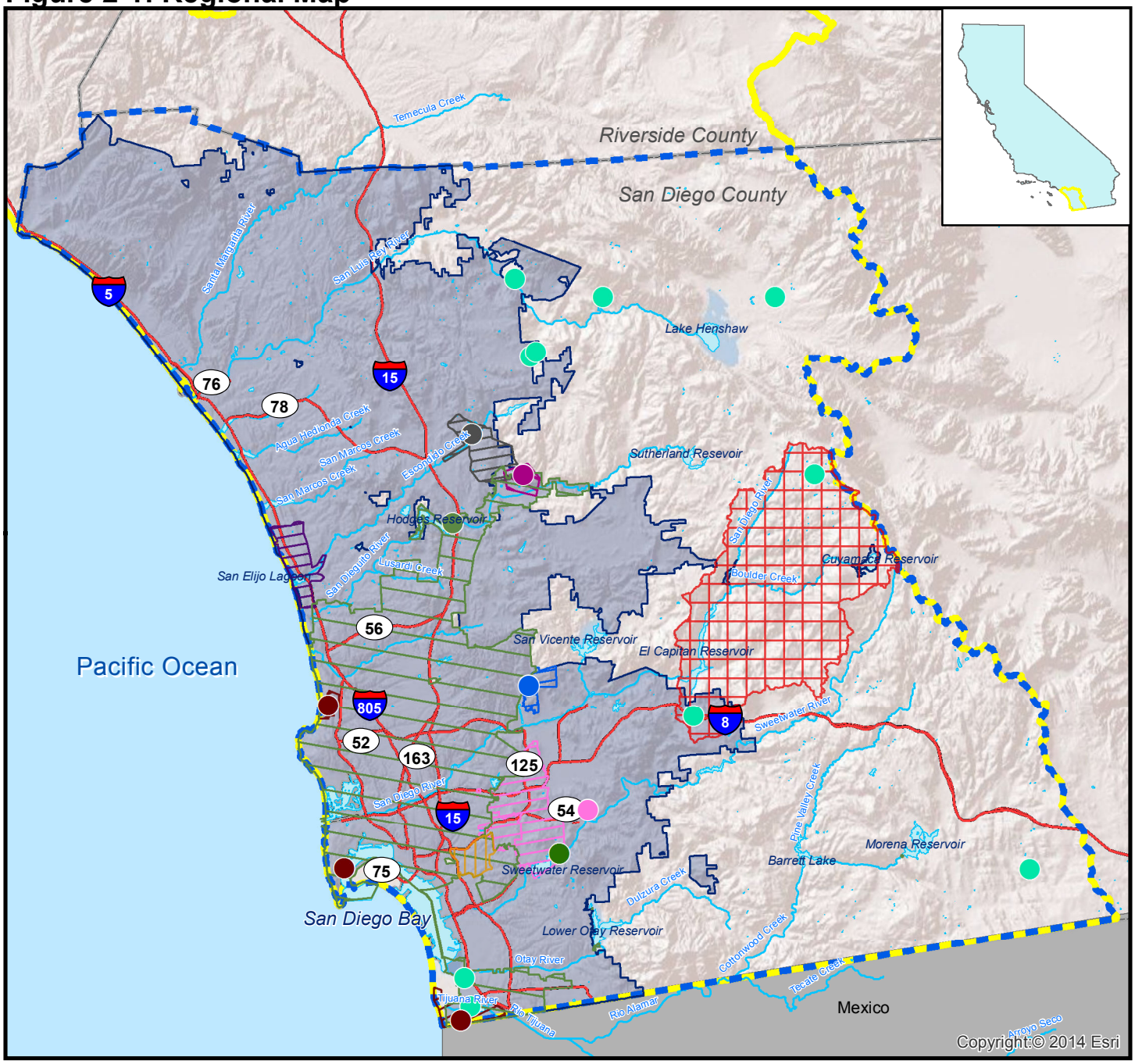
Table 2-1: *2015 IRWM Implementation Grant Proposal* Summary Table

		1: Regional Drought Resiliency Program	2: Conservation Home Makeover in the Chollas Creek Watershed	3: San Diego Water Conservation Program	4: Ms. Smarty-Plants Grows Water-Wise Schools	5: Rural Disadvantaged Community Partnership Project – Phase III	6: Integrated Water Resource Solutions in the Carlsbad Watershed	7: UCSD Water Conservation and Watershed Protection	8: Escondido Advanced Water Treatment for Agriculture	9: Padre Dam Advanced Water Treatment – Phase 1A Expansion	10: Safari Park Drought Response and Outreach	11: San Diego River Healthy Headwaters Restoration	12: Sweetwater Reservoir Wetlands Habitat Recovery	13: Hodges Reservoir Natural Treatment System
IRWM Project Element														
IR.1	Water supply reliability, water conservation, and water use efficiency	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
IR.2	Stormwater capture, storage, clean-up, treatment, and management		✓			✓	✓	✓			✓	✓	✓	✓
IR.3	Removal of invasive non-native species, the creation and enhancement of wetlands, and the acquisition, protection, and restoration of open space and watershed lands							✓				✓	✓	
IR.4	Non-point source pollution reduction, management, and monitoring						✓	✓						
IR.5	Groundwater recharge and management projects													
IR.6	Contaminant and salt removal through reclamation, desalting, and other treatment technologies and conveyance of reclaimed water for distribution to users					✓	✓		✓	✓	✓			
IR.7	Water banking, exchange, reclamation, and improvement of water quality					✓	✓	✓	✓	✓	✓	✓	✓	✓
IR.8	Planning and implementation of multipurpose flood management programs						✓	✓				✓	✓	
IR.9	Watershed protection and management	✓	✓	✓	✓		✓	✓			✓	✓	✓	✓
IR.10	Drinking water treatment and distribution					✓								
IR.11	Ecosystem and fisheries restoration and protection	✓	✓	✓	✓		✓					✓	✓	✓

Regional Map

Figure 2-1 includes the San Diego IRWM regional boundary and a marker identifying the location of each project contained in this Proposal. **Figures 2-2** through **2-31** provided below include the project maps as required by the California Department of Water Resources (DWR) in the *2015 PSP* along with additional project-specific maps that provide back-up and supporting information for the benefits claimed herein.

Figure 2-1: Regional Map



Legend

- San Diego IRWM Region
- Funding Area Boundary
- Freeway
- Waterbody
- County

- 1 Regional Drought Resiliency Program
- 2 Conservation Home Makeover in the Chollas Creek Watershed
- 3 San Diego Water Conservation Program
- 4 Ms. Smarty-Plants Grows Water-Wise Schools
- 5 Rural Disadvantaged Community Partnership Project - Phase III (Note: 10 project sites)

- 6 Integrated Water Resources Solutions for the Carlsbad Watershed
- 7 UCSD Water Conservation and Watershed Protection (Note: 3 project sites)
- 8 Escondido Advanced Water Treatment for Agriculture
- 9 Padre Dam Advanced Water Treatment - Phase IA Expansion
- 10 Safari Park Drought Response and Outreach

0 115 230 460
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- 11 San Diego River Healthy Headwaters Restoration
- 12 Sweetwater Reservoir Wetlands Habitat Recovery
- 13 Hodges Reservoir Natural Treatment System

Sources: San Diego Association of Governments (SANDAG) - GIS Data Warehouse
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Grant Administration

Grant Administrator: San Diego County Water Authority (SDCWA)
Partners: Local Project Sponsors – Padre Dam Municipal Water District, Zoological Society of San Diego, City of Escondido, San Elijo Joint Powers Authority, University of California San Diego, Groundwork San Diego, City of San Diego, SDCWA, The Water Conservation Garden, Rural Community Assistance Corporation, USDA Forest Service, and Sweetwater Authority

Project Summary

SDCWA will administer this grant on behalf of the San Diego IRWM Region project sponsors, coordinate with DWR, and ensure grant contract requirements are met.

Project Description

SDCWA is the grant applicant for the *2015 IRWM Implementation Grant Proposal*, and will be responsible for contracting with California Department of Water Resource (DWR), contracting with project proponents (referred to here as "local project sponsors" or "LPS"), submitting all invoices, progress reports, and deliverables to the DWR on behalf of LPS, ensuring compliance with all grant requirements, and coordinating with DWR and LPS.

Project Physical Benefits

The benefits of having a regional grant administrator include: knowledgeable grant administration staff, efficient review and feedback on invoices and progress reports, regional labor compliance contracting, and a regional "voice" for LPS during communications with DWR. No formal benefits analysis has been conducted for Grant Administration.

Conservation Program

Project 1: Regional Drought Resiliency Program

Local Project Sponsor: San Diego County Water Authority (SDCWA)
Partner: California Department of Corrections and Rehabilitation (CDCR), Otay Water District, and Mission Resources Conservation District (MRCD)

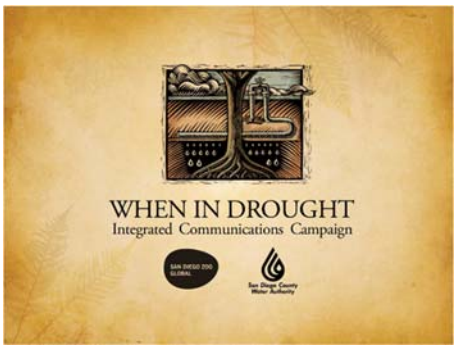
Project Summary

The program expands efforts to retrofit correctional facilities with water-saving devices, implement a sustainable landscapes program, and outreach to property owners on reducing water demands.

Project Maps

Figure 2-2 shows the *Regional Drought Resiliency Program* project area, the service areas of the project sponsor, the project facilities and the project's relation to groundwater basins and surface water, disadvantaged communities (DACs) and proposed monitoring locations.

Pre- and Post-turf conversion landscaping



Drought and water conservation outreach from SDCWA and its partners

Project Description

SDCWA will expand current water conservation and sustainability programs to continue its efforts to reduce water use and improve water awareness in the community. The *Regional Drought Resiliency Program* project will conduct a correctional facility retrofit project to reduce water use in prisons, expand the existing turf replacement program and upgrade it to a sustainability program, continue efforts to improve agricultural irrigation efficiencies, and continue education and outreach programs that empower and enable individuals to implement changes in their personal lives to reduce water use. This project will conserve a total of 1,809 acre-feet per year (AFY) potable water (14,510 acre-feet [AF] over the project life) and help SDCWA and the Region meet its water conservation goals and reduce water use during drought. This project consists of six components:

Component 1: Correctional Facility Retrofit Project: In collaboration with CDCR and Otay Water District, this project provides financial incentives for the direct installation of water efficiency hardware upgrades at Donovan Correctional Facility (DCF), a 780-acre state prison facility located in unincorporated southern San Diego County, California. This project will purchase 600 electronic faucet controllers, 265 aerators, 44 faucet flow reducers, 188 low-flow showerheads with timers, 26 commercial toilets, 4 urinal flush valves, and 267 high-efficiency toilets and 23 urinals for public and employee areas at DCF to produce immediate water and embedded energy savings. The project is modeled after a successful pilot phase at the Bailey and Vista detention facilities that together reduced water use by more than 348 AFY.

Component 2: Electrical Conductivity (EC) Mapping and Soil Moisture Sensor Systems Project: The project will develop and use EC maps to install 200 soil moisture sensor systems that would enable approximately 100 farmers in SDCWA's service area to switch from using a calendar to using precise irrigation management resources to make irrigation decisions.

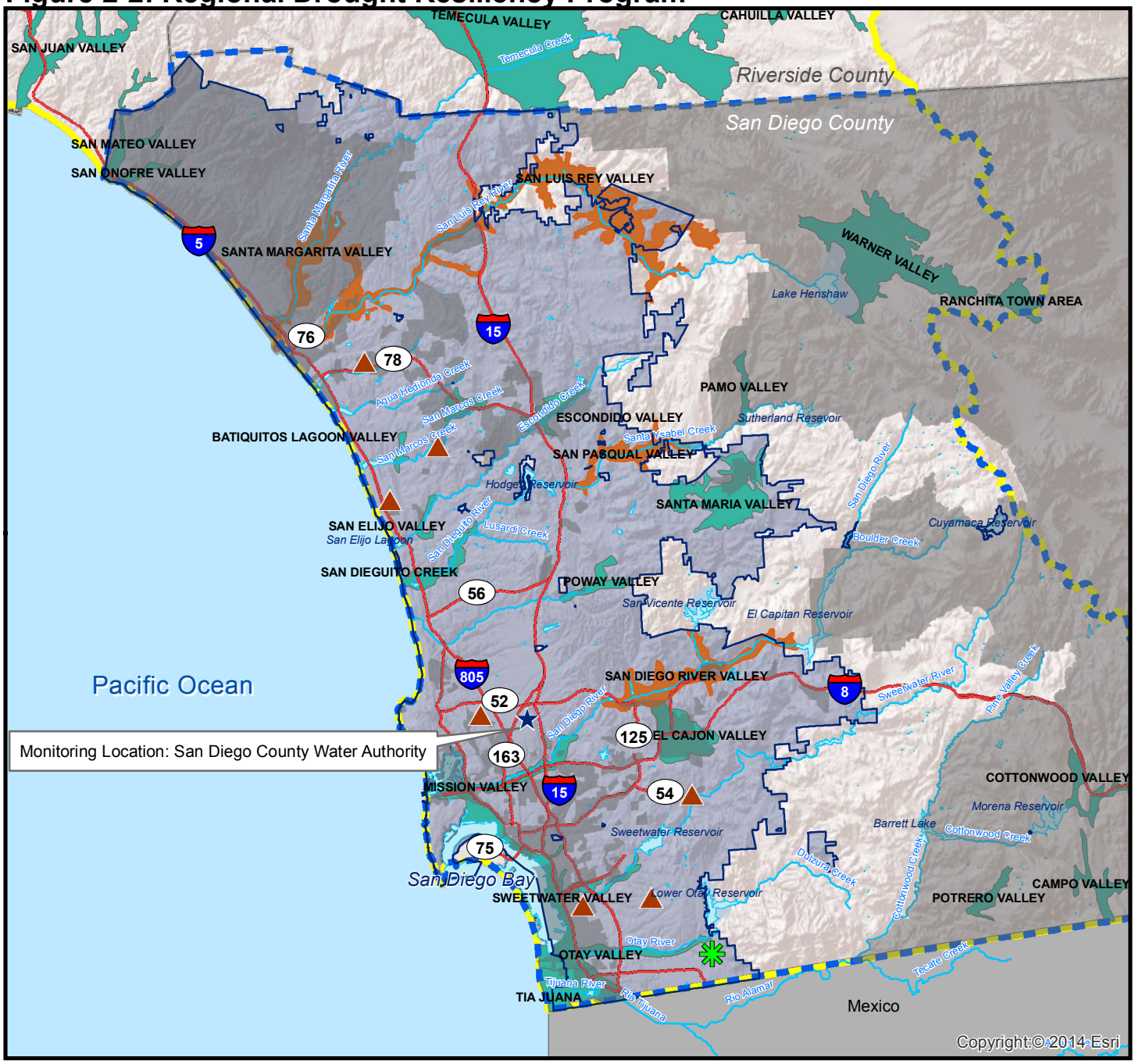
Component 3: WaterSmart Field Services Program: This program (aka WaterSmart Checkup) will be expanded to continue to reduce water waste and increase water-use efficiencies through water surveys and landscape audits. Participation in this program will be open to all users, but will target mid- to heavy water users across all markets. Field services provide water use data, savings recommendations, and resources to assist in reducing water use to participants. Approximately 8,300 field services will be provided.

Component 4: Sustainable Landscapes Program: This program will promote outdoor water use efficiency in all sectors by expanding existing financial incentives to replace an additional 1,270,588 square feet (sq ft) of existing turf with water-wise landscaping and upgrade overhead sprinkler irrigation systems to high-efficiency irrigation systems. Due to changing regulatory and drought conditions, SDCWA may also add components to the existing turf rebate program to achieve multiple benefits from more sustainable landscape practices.

Component 5: WaterSmart Landscape Makeover Program: This program will provide homeowners with the education and skills necessary for successful conversion of turf into a WaterSmart landscape. A four-class series will provide an opportunity for hands-on learning necessary for a successful landscape retrofit, and will result in a landscape design ready for implementation. This series will be conducted five times and participants will commit to converting a minimum of 400 sq ft of turf, with an average conversion of 1,000 sq ft. Additional 3-hour workshops and online eLearning modules will also be developed that will be self-paced and available 24/7.

Component 6: Drought Outreach and Education: This program will communicate water-efficient practices and ensure compliance with local water use restrictions and state-mandated reductions; use media and community partners to leverage grant and operating funds and to increase the reach of conservation messaging; inform the public of programs that provide water-efficient landscape education and incentives; provide outreach to Hispanic, Pan-Asian, and other minority communities with appropriate native language advertising and community events; offer programs for K-12 students, community leaders, and other key audiences to establish a life-long conservation ethic; and conduct research to track changes in attitudes and monitor effectiveness.

Figure 2-2: Regional Drought Resiliency Program



Coordinates: 32.8255, -117.13116

Legend

- San Diego IRWM Region
- Funding Area Boundary
- Freeway
- Waterbody
- County
- Disadvantaged Community Area (DAC)*
- Medium Priority Groundwater Basin
- Very Low Priority Groundwater Basins
- Benefit Area: 1 Regional Drought Resiliency Program (corresponds to SDCWA service area)
- R.J. Donovan Correctional Facility
- Landscape Workshops
- Monitoring Location

0 4.75 9.5 19

Miles

N

*Note: DAC as determined by census tract and block group data for the year 2013, from the American Community Survey 2009-2013 5-year results. DAC determined based on definition of median household incomes below 80% of the statewide MHI or $48,875.

Sources: U.S. Census 2013 ACS 5-year estimates; San Diego Association of Governments (SANDAG) - GIS Data Warehouse
Document Path: N:\Projects GIS\0188-003 SDIRWM Plan Update\Prop84_Rnd4\MXD\Project maps\2-2_SDCWAProject28072015.mxd

Project Physical Benefits

This project has two quantified benefits: Water Supply and Habitat Improved. These benefits are presented in **Table 2-3** and **Table 2-4**, below. The primary benefit is Water Supply (1,809 AFY), achieved through water conservation from turf conversions, hardware upgrades, irrigation efficiencies, and individual implementation of field services recommendations. The secondary benefit is Habitat Improved (18.7 acres), achieved through turf conversions to water-wise and native landscaping.

For the primary benefit (Water Supply), the baseline value was calculated as the baseline water use for each component that contributed toward water conservation (Components 1, 2, 3, and 4). The baseline calculations are explained here, and summarized in **Table 2-2**, below.

- For Component 1, the baseline value was water use at Donovan Correctional Facility (DCF), which was reported as 635 AF in 2012.[1] The anticipated useful life of the DCF upgrades is 10 years.
- Component 2's baseline was calculated as the average water demand for agricultural land multiplied by the total agricultural lands that would participate in the Soil Moisture Sensor program. MRCD will implement this component over approximately 900 acres.[2] The City of Escondido's *Easterly Recycled Water Main Preliminary Design Report* states that agricultural water use in northern San Diego County is approximately 5 AFY per acre.[3] Applying this demand to the total 900 acres participating in this program yields a baseline of 4,500 AFY. The anticipated useful life of the soil moisture sensors is 10 years.
- Component 3 will complete a total of 7,927 field services at residences, 166 field services at large residential properties, and 209 field services at Commercial, Industrial, and Institutional (CII) sites. For both the residential and large property water use, an average water use per residence was calculated. The Equinox Center reports that SDCWA's Fiscal Year (FY) 2014 water use was 92 gallons per capita per day (GPCD).[4] The Equinox Center's data was used, rather than the "r-gpcd" values being reported to the State Water Resources Control Board under the emergency regulations, because the FY2014 data is considered as a reasonable median sans extraordinary conservation measures. Assuming 4 persons per household yields a baseline of 0.4 AFY per household. This was then applied to the total number of field services provided to residential and large residential customers (8,890 field services), for baseline water use of 3,671 AFY. CII baseline water use was calculated by determining the average number of employees per business, based on U.S. Census estimates for 2013. Within the County of San Diego, there are 78,379 businesses, and an employed population of 1,181,133 people, for an average of 15.1 people per business.[5] Again applying this to SDCWA's GPCD (92 gal/day) and the number of CII field services (209), yields a baseline water use of 324.6 AFY for CII customers. Together, the baselines water use for customers receiving field services is 3,996 AFY. The anticipated useful life of the field services measures is 5 years.
- Component 4's baseline is water use for residences participating in the program. Assuming that an average of 1,000 sq ft are converted per participant, 1,271 homes would participate. Assuming 4 persons per household, multiplied by 92 GPCD, baseline water use for Component 4 is 525 AFY. The anticipated useful life of the turf conversions is 13 years, based on length of average homeownership estimated by U.S. Department of Housing and Urban Development[6] (HUD) and assuming that new homeowners may not be inclined to maintain water-wise landscaping.

In total, the baseline water use for the *Regional Drought Resiliency Program* is 9,655 AFY. Note that some differences may occur due to rounding.

[1] CDCR. 2013. *Level II Infill Correctional Facilities Project Draft Environmental Impact Report, Volume 2: Site-Specific Evaluation of Level II Infill Correctional Facilities at R.J. Donovan Correctional Facility*. June.
[2] Pers. Comm. Lori Swanson, Water Resources Specialist, San Diego County Water Authority. 23 July 2015.
[3] City of Escondido. 2012. Easterly Recycled Water Main Extension Preliminary Design Report. August 2012.
[4] Equinox Center. 2015. *H2Overview Series: San Diego County Residential Water Use Trends*. February.
[5] U.S. Census. State & County Quick Facts – San Diego County, California. Website. Accessed 23 July 2015. Available: http://quickfacts.census.gov/qfd/states/06/06073.html
[6] U.S. Department of Housing and Urban Development. 2004. *The Sustainability of Homeownership: Factors Affecting the Duration of Homeownership and Rental Spells*. Note: Typical homeownership duration for whites, African Americans, and Hispanics is estimated to be: 16.1, 9.5, and 12.5 years, respectively; 13 years is the average.

Table 2-2: Baseline Calculations for Water Use for *Regional Drought Resiliency Program*

Component	Assumptions for Baseline	Baseline Water Use	Benefit Accrual	Project Life
1. Correctional Facility	635 AFY water use at DCF	635 AFY	81 AFY	10 yr
2. EC Mapping	Agricultural water demand = 5 AFY/acre; Project installs sensors over 900 acres	4,500 AFY	800 AFY	10 yr
3. Field Services		3,995 AFY	795 AFY	5 yr
3.1 Residential – Indoor	*3,128 field services; 92 GPCD; 4 persons/household; converted to AFY*	*1,292 AFY*	*44 AFY*	*5 yr*
3.2 Residential – Landscape	*501 field services; 92 GPCD; 4 persons/household; converted to AFY*	*207 AFY*	*12 AFY*	*5 yr*
3.3 Residential – Indoor and Outdoor	*4,298 field services; 92 GPCD; 4 persons/household; converted to AFY*	*1,775 AFY*	*163 AFY*	*5 yr*
3.4 CII	*209 field services; 92 GPCD; 15.1 persons per business; converted to AFY*	*325 AFY*	*56 AFY*	*5 yr*
3.5 Full Audit	*962.8 field services; 92 GPCD; 4 persons/household; converted to AFY*	*398 AFY*	*520 AFY*	*5 yr*
4. Sustainable Landscapes	1,270,588 sq ft converted; 1,000 sq ft per house; 92 GPCD; 4 persons/household; converted to AFY	525 AFY	133 AFY	13 yr
Total Baseline		**9,655 AFY**	**1,809 AFY**	

The value of the water supply benefit for the DCF component (81 AFY) was from CDCR's *Water Systems Efficiency and Conservation Feasibility Study: R.J. Donovan Correctional Facility*. The value of the water supply benefit for the EC Mapping component (800 AFY) was from Rancho California Water District's (RCWD's) *Enhanced Agricultural Irrigation Efficiency Program*. The value of the water supply benefit for the Field Services component (795 AFY) was from the *Alliance for Water Efficiency Conservation Tracking Tool*. The value of the water supply benefit for the Sustainable Landscapes component (133 AFY) is based on information from the California Urban Water Conservation Council (CUWCC) on turf conversions. Annual benefit is anticipated vary over the course of the project life (see **Table 2-3**), with the maximum annual reduction in potable water use being 1,809 AFY in years 2019 and 2020. Over the course of the project life, total water savings from conservation is anticipated to be 14,494 AF.

Table 2-3: Primary Physical Benefit – Water Supply
Regional Drought Resiliency Program

Project Name: Regional Drought Resiliency Program
Type of Benefit Claimed: Water Supply – Conservation from hardware, turf conversion, irrigation efficiency, field services
Units of the Benefit Claimed: AFY
Anticipated Useful Life of Project: Variable 5-13 Years

(a)	(b)	(c)	(d)
Year	**Annual Without Project**	**Annual With Project**	**Annual Change Resulting from Project (c) – (b)**
2016	9,655 AFY	9,159 AFY	496 AFY
2017	9,655 AFY	8,582 AFY	1,073 AFY
2018	9,655 AFY	8,078 AFY	1,577 AFY
2019	9,655 AFY	7,846 AFY	1,809 AFY
2020	9,655 AFY	7,846 AFY	1,809 AFY
2021	9,655 AFY	8,045 AFY	1,610 AFY
2022	9,655 AFY	8,244 AFY	1,411 AFY
2023	9,655 AFY	8,443 AFY	1,212 AFY
2024	9,655 AFY	8,642 AFY	1,013 AFY
2025	9,655 AFY	8,642 AFY	1,013 AFY
2026	9,655 AFY	8,914 AFY	741 AFY
2027	9,655 AFY	9,259 AFY	397 AFY
2028	9,655 AFY	9,523 AFY	133 AFY
2029	9,655 AFY	9,556 AFY	99 AFY
2030	9,655 AFY	9,589 AFY	66 AFY
2031	9,655 AFY	9,622 AFY	33 AFY

Comments: This project has an expected life ranging between 5 and 13 years, depending on the component. Component 1's 10-year project life is based on assumptions used for the Baily Correctional Facility Retrofit project, funded through a Prop 84-Drought IRWM grant, which installed similar water-saving features at a correctional facility. Turf conversions completed under Component 4 are anticipated to last 13 years based on HUD estimates of typical homeownership duration. Although homeownership duration could be a reasonable project life for Component 3, SDCWA does not offer on-going support to field services program participants, and project life has been modified to a conservative 5 years. This project life is consistent with the "Useful Life" reported in the AWE Conservation Tracking Tool. Benefits were phased in for each component, based on the project schedule (see *Attachment 5 Schedule*), and phased out in a similar manner. Benefits were assumed to begin accruing immediately upon completion for the Donovan facility (completed in October 2016, full benefits realized starting 2017), and immediately upon completion of services, conversions, and sensor installations at each individual site for the Components 2, 3, and 4. For the latter components, implementation was assumed to occur at a constant rate: Sensor installation phases in by 33% per year 2016-2018, field services by 25% per year 2016-2019, and turf conversions by 25% per year 2016-2019). Benefits are phased out in the same way at the end of their useful life.

Sources: WMI. 2006. *Water Systems Efficiency and Conservation Feasibility Study: R.J. Donovan Correctional Facility.*
Rancho California Water District. 2014. *Enhanced Agricultural Irrigation Efficiency Program*. December 31.
CUWCC. 2015. *Turf Removal & Replacement: Lessons Learned.* March.
Alliance for Water Efficiency Conservation Tracking Tool, available with subscription: http://www.allianceforwaterefficiency.org/Tracking-Tool.aspx.
A&N Technical Services, Inc. 2011. *Mini-Audit Program Evaluation Prepared for the San Diego County Water Authority*. June.

The secondary benefit of this project is Habitat Improved achieved through conversion from turf monoculture to diverse WaterSmart landscaping. The baseline for this secondary benefit was calculated as the geographic area that currently provides wildlife habitat within SDCWA's service area. Habitat was defined as Landscape Open Space, Open Space Park or Preserve, or Undevelopable Natural Area in land use data from San Diego Association of Governments (SANDAG).[7] This analysis found 22% of the project area, or 277,011 acres, qualified as existing habitat. Baseline habitat also included areas that have been, or are committed to be, converted through SDCWA's existing turf replacement rebate program, which has committed to funding 282,176 sq ft (6.5 acres) to date via Prop 84-Round 2 and Prop 84-Drought IRWM grants. The value of the habitat accrual (18.7 acres) was calculated based on the City of San Diego's estimate of 64% plant coverage for participating residential properties in their existing turf rebate program. This estimate is used because it is local data and assumes that on average, customers throughout SDCWA's service area will convert turf in a similar manner as those within the City of San Diego. Note that this is considered a conservative estimate, because the City of San Diego does not have a minimum vegetation cover requirement and issues rebates for backyard conversions which may have more hardscapes (e.g., patios), compared to SDCWA's rebate program which requires a minimum 50% vegetation cover and limits rebates to landscaping visible from the street. Assuming the same proportion of habitat accrual in Rounds 2, 3 and 4 of the IRWM grant program, total "without project" habitat area is therefore 277,015 acres. The useful project life is considered 13 years for the turf conversions, based on length of average homeownership estimated by HUD.[8]

Table 2-4: Secondary Physical Benefit – Habitat Improved
Regional Drought Resiliency Program

Project Name: Regional Drought Resiliency Program
Type of Benefit Claimed: Habitat Improved – Water-wise and native plantings
Units of the Benefit Claimed: Acres
Anticipated Useful Life of Project: 13 years

(a)	(b)	(c)	(d)
Year	**Annual Without Project**	**Annual With Project**	**Annual Change Resulting from Project (c) – (b)**
2016	277,015 acres	277,020 acres	4.7 acres
2017	277,015 acres	277,024 acres	9.3 acres
2018	277,015 acres	277,029 acres	14.0 acres
2019-2028	277,015 acres	277,034 acres	18.7 acres
2029	277,015 acres	277,029 acres	14.0 acres
2030	277,015 acres	277,024 acres	9.3 acres
2031	277,015 acres	277,020 acres	4.7 acres

Comments: This project has an anticipated project life of 13 years, based on HUD estimates of typical homeownership duration. Benefits are assumed to begin accruing immediately following each turf conversion. An equal number of landscapes are assumed to be converted each year of the four-year implementation period, and each landscape assumed to provide equal benefits. Benefits are anticipated to phase in at 25% per year. The annual benefit will remain the same for 2019-2028 at 100% and then phase back out (as properties change hands and water-wise landscapes may be replanted or removed).

Sources: Equinox Center. 2015. *H2Overview Series: San Diego County Residential Water Use Trends*. February.
CUWCC. 2015. *Turf Removal & Replacement: Lessons Learned.* March.

[7] San Diego Association of Governments (SANDAG). SanGIS Data Warehouse – Landuse_Current. Available for download through the Regional GIS Data Warehouse, which can be accessed here: http://www.sandag.org/index.asp?subclassid=100&fuseaction=home.subclasshome

[8] U.S. Department of Housing and Urban Development. 2004. *The Sustainability of Homeownership: Factors Affecting the Duration of Homeownership and Rental Spells*. Note: Typical homeownership duration for whites, African Americans, and Hispanics is estimated to be: 16.1, 9.5, and 12.5 years, respectively; 13 years is the average.

Technical Analysis of Physical Benefits Claimed

Project Need and Conditions

With California experiencing extreme drought conditions, the need to immediately reduce water use is paramount. This comprehensive *Regional Drought Resiliency Program* responds to the State's mandatory water use restrictions. SDCWA, the Region's wholesale water agency, imported approximately 76% of its water supplies from the State Water Project (SWP) and the Colorado River in 2014.[9] SWP supplies from the Bay-Delta have been restricted since 2006 due to drought and environmental regulations, while the delivery of Colorado River water may be subject to limitations in the future. Recent drought has limited the Region's ability to acquire extra Colorado River supplies (beyond its allocation) to make up the reductions from SWP. For 2015, SWP deliveries have been reduced to 20% of allocations,[10] during a time when local supplies are stretched thin and demand for imported water is increasing. On April 1, 2015, Governor Brown's executive order imposed mandatory statewide water restrictions to reduce water use by 25%. SDCWA's member agencies must reduce water use from 12%-36%, depending on the agency.[11] This suite of proposed projects will help the Region meet the Governor's water use reduction target, as well as potential future water conservation targets or objectives.

According to SDCWA's *2010 Urban Water Management Plan*, 9% of water use by its customers was for agricultural uses, projected to be 30,358 AF in 2015. Agricultural water use within SDCWA's service area is concentrated mainly in the North County, and includes member agencies such as the Rainbow, Valley Center, Ramona, and Yuima Municipal Water Districts, the Fallbrook Public Utility District, and the City of Escondido. The primary crops grown for local, national, and international markets are avocados, citrus, cut flowers, and nursery products. Agricultural water demand has decreased substantially in that last decade due to SWP cutbacks (specifically targeted to farmers in 2008) and resultant tree stumping and plant stock reduction.[12] To maintain the region's $1.68 billion agricultural industry (2011 annual crop value within San Diego County[13]), tools must be made available to farmers to support efficient water use.

According to SDCWA's *2010 Urban Water Management Plan*, residential use was 56% of total demand, projected to be 360,346 AF in 2015 (61% of projected Municipal and Industrial demand). Outdoor water use comprises up to 60% of total residential use.[14] Water use efficiency and water conservation is a key component of SDCWA's water demand management strategy, and conservation is one of the most cost-effective and environmentally-friendly ways to reduce regional water demands. This project would expand existing conservation and efficiency programs, which have already been proven to be successful. Demand for SDCWA's existing turf rebate program is so high that funds have already been exhausted, as have funds for other turf rebate programs residents in SDCWA's service area may have qualified for, such as Metropolitan Water District of Southern California's Water$mart turf rebate program.[15] Component 4 would help meet the need and demand for additional turf conversion incentives.

The DCF, which is operated by CDCR, was opened in 1987 with a mission to provide housing for inmates classified as medium-high custody. Currently, there are approximately 3,200 inmates detained and approximately 1,700 support staff. An expansion that is currently underway will increase these numbers to approximately 4,000 inmates and 2,000 staff by February 2016. The DCF is the largest customer of the Otay Water District and offers a correspondingly large opportunity for water efficiency improvements. At the DCF, onsite research showed that 55% of the facility's water use was from excessive flushing of inmate bathrooms. Previously, Otay Water District partnered with CDCR to install valves (electronic bathroom controls) to limit the number of daily flushes at DCF,

[9] SDCWA. Increasing San Diego County's Water Supply Reliability through Supply Diversification. Available: http://www.sdcwa.org/sites/default/files/images/piechart.jpg
[10] California Department of Water Resources. 2015. Notice to State Water Project Contractors – 2015 State Water Project Allocation Increase – 20 Percent. March 2.
[11] State Water Resources Control Board. 2015. Final Urban Water Supplier Conservation Tiers. May. Available: http://www.waterboards.ca.gov/water_issues/programs/conservation_portal/docs/supplier_tiers.pdf
[12] SDCWA. 2011. *2010 Urban Water Management Plan*. June.
[13] San Diego RWMG and RAC. 2013. *2013 San Diego IRWM Plan*.
[14] SDCWA. 2011. *2010 Urban Water Management Plan*. June.
[15] WaterSmart. San Diego County Water Authority Turf Replacement Program. Website. Accessed 23 July 2015. Available: http://turfreplacement.watersmartsd.org/

as toilets were flushed an average of 18 times per day. The valves reduced flushing to 12 times per day.[16] However, additional opportunities exist to conserve water at the DCF. SDCWA partnered with CDCR and Otay Water District, via a Prop 84-Drought IRWM grant, to retrofit the Bailey Facility, and found that installing 64 controlled flush toilets saved 1,615,260 gal/yr.[17]

While SDCWA has an aggressive drought awareness campaign in place ("When in Drought"), with messaging available over radio, billboards, signs, websites, and other media, most of this messaging is available in English only. As described in the *2013 San Diego Integrated Regional Water Management Plan (2013 IRWM Plan)*, the population of the region is highly diverse, with less than 50% of San Diego County identifying as "white". Approximately 37% of adults in the Region speak a language other than English as the primary language in the home. Approximately 16% of the population speak English less than "very well".[18] There is a clear need for translation of outreach materials and campaigns into other languages and targeted towards minority communities, in order to realize a "water conservation ethic" across all of the Region's population.

Billboard advertisement on University Ave. promotes watering your landscape no more than two days a week and letting your lawn get a tan.

Billboard Advertisement on Broadway promotes shorter showers.

SDCWA's "When in Drought" advertising campaign (http://www.sdcwa.org/whenindrought)

[16] Otay Water District. 2010. From Report to Reality; One Agency's Delayed Success Story. Presented at the WaterSmart Innovations Conference and Exposition. 6 October. Presented by Rhianna Pensa, Water Conservation Specialist. Pp.13-14
[17] Otay Water District. 2010. From Report to Reality; One Agency's Delayed Success Story. Presented at the WaterSmart Innovations Conference and Exposition. 6 October. Presented by Rhianna Pensa, Water Conservation Specialist. Pg. 19.
[18] San Diego RWMG and RAC. 2013. *2013 San Diego Integrated Regional Water Management Plan*. September.

San Diego County is also one of the most highly biodiverse areas of the country, with more endangered, threatened, and rare species than any other comparable area in the nation.[19] Habitat improvements realized through conversion from turf monoculture to native and water-wise polyculture landscaping could provide habitat for numerous species residing within, or with potential to reside within, the project area. A California Natural Diversity Database (CNDDB) query for the project area had 222 species (130 plants and 92 animals) recorded as existing or with the potential to exist within SDCWA's service area (animal species are listed in **Table 2-5**).[20] Habitat improvements from Component 4 could help to support populations of these species.

Table 2-5: Species Listed in CNDDB Within or Near the Project Area

Animals		
Federal- or State-Listed Threatened, Endangered, or Candidate Species		
Arroyo Toad	Least Bell's Vireo	Stephens' Kangaroo Rat
Bank Swallow	Lesser Long-Nosed Bat	Swainson's Hawk
Belding's Savannah Sparrow	Light-Footed Clapper Rail	Tidewater Goby
California Black Rail	Pacific Pocket Mouse	Townsend's Big-Eared Bat
California Least Tern	Quino Checkerspot Butterfly	Vernal Pool Fairy Shrimp
Coastal California Gnatcatcher	Riverside Fairy Shrimp	Western Snowy Plover
Green Turtle	San Diego Fairy Shrimp	Western Yellow-Billed Cuckoo
Hermes Copper Butterfly	Southern Steelhead - Southern California Dps	Southwestern Willow Flycatcher
Non-Listed Species		
American Badger	Grasshopper Sparrow	Senile Tiger Beetle
American Peregrine Falcon	Hoary Bat	Silver-Haired Bat
Arroyo Chub	Jacumba Pocket Mouse	Silvery Legless Lizard
Bell's Sage Sparrow	Least Bittern	South Coast Garter Snake
Big Free-Tailed Bat	Los Angeles Pocket Mouse	Spotted Bat
Black-Crowned Night Heron	Mesa Shoulderband	Thorne's Hairstreak
Burrowing Owl	Mexican Long-Tongued Bat	Tricolored Blackbird
California Brown Pelican	Northern Harrier	Two-Striped Garter Snake
California Horned Lark	Orangethroat Whiptail	Wandering (=Saltmarsh) Skipper
California Mellitid Bee	Osprey	Western Beach Tiger Beetle
Coast Horned Lizard	Pallid Bat	Western Mastiff Bat
Coast Patch-Nosed Snake	Pocketed Free-Tailed Bat	Western Pond Turtle
Coast Range Newt	Prairie Falcon	Western Red Bat
Coastal Cactus Wren	Red-Diamond Rattlesnake	Western Small-Footed Myotis
Coastal Whiptail	Rosy Boa	Western Spadefoot
Cooper's Hawk	San Bernardino Ringneck Snake	Western Tidal-Flat Tiger Beetle
Coronado Island Skink	San Diego Banded Gecko	Western Yellow Bat
Double-Crested Cormorant	San Diego Black-Tailed Jackrabbit	White-Faced Ibis
Dulzura Pocket Mouse	San Diego Desert Woodrat	White-Tailed Kite
Ferruginous Hawk	San Diego Ringneck Snake	Yellow Warbler
Globose Dune Beetle	Sandy Beach Tiger Beetle	Yellow-Breasted Chat
Mimic Tryonia (=California Brackishwater Snail)	Monarch - California Overwintering Population	Northwestern San Diego Pocket Mouse
Southern California Rufous-Crowned Sparrow	Golden Eagle	

Source: California Natural Diversity Database (CNDDB). RareFind 5 database query within Project Area (21 July 2015).

[19] San Diego RWMG and RAC. 2013. *2013 San Diego Integrated Regional Water Management Plan*. September.
[20] California Natural Diversity Database. Rarefind 5. Database query within Project Area. Accessed 21 July 2015. Available with subscription: https://map.dfg.ca.gov/rarefind/view/RareFind.aspx

Without-Project Conditions

This project would conserve a total of 14,494 AF over the entire project life, or 1,809 AFY when all project components are fully implemented. These water savings reduce overall water demand in the Region, which is heavily reliant on imported water. Without this project, SDCWA and its member agencies would need to find other ways to meet the State's mandatory use reductions, which may be less cost-effective or take longer to implement if such efforts were starting from scratch, instead of expanding existing programs. If conservation mandates couldn't be met, SDCWA and its member agencies might also need to either purchase additional imported water supplies (via transfers or other means), mine groundwater supplies (which are limited in San Diego), or expand desalination and recycled water programs to meet demands.

Without the *Regional Drought Resiliency Program* project, a CDCR DCF facility would not receive water efficiency upgrades and potable water would continue to be wasted through inefficient fixtures and behaviors such as excessive toilet flushing. EC mapping and soil moisture sensor installations would not occur, and agricultural irrigation would continue to be more inefficient than necessary. Growers may continue to lack the knowledge to maximize crop and irrigation management efficiency, which could mean additional tree stumping or crop reduction to minimize costs and/or meet conservation mandates. This could have a significant impact on the County's agricultural industry, which is the 18th largest in the country.[21]

Without the WaterSmart Field Services Program, residents who would have participated in the program would not receive irrigation check-ups, landscape audits, water consumption data, site-specific water savings recommendations, or program and incentive information. These customers may not be aware of opportunities to receive assistance to implement water saving features on their property, or may improperly install features, which means conservation targets may not be met region-wide.

The Sustainable Landscapes Program's turf rebates would need to be funded from another source in order to continue providing incentives for customers to replace water intensive turf with water-wise landscaping. Given high demand for turf conversion rebates (SDCWA, City of San Diego, and MWD have all exhausted existing rebate funds),[22,23,24] customers are less likely to be able to obtain financial assistance and may not be able to afford to implement conversions. Although DWR is implementing a turf rebate program in the near future, only $12 million is available for "Non-Targeted California Counties", which includes all counties outside the San Joaquin Valley, and is likely to be highly competitive.[25] It is unlikely that a substantial amount of these funds would be distributed for turf conversion in San Diego. High water demands for turf irrigation would continue, or if water cuts are implemented and existing turf allowed to die, property values could decrease as a result of diminished curb appeal. Further, if turf remains intact or simply allowed to die, as could happen without this project, the additional habitat provided by conversion from turf to water-wise and native landscaping would not be realized, and there would be less habitat overall for native species.

The benefits of this project are enhanced by the education and outreach components, and workshops designed to increase the success of implemented water conservation measures. While extensive outreach is already underway in the Region, it fails to adequately reach minority populations, who would benefit from additional outreach and education in languages other than English and using methods targeted to their communities. Without expanding and improving outreach to these communities and the Region as a whole, the full benefits of existing water conservation efforts may not be realized.

Methods Used to Estimate the Physical Benefits

Calculations for each of the two physical benefits of this project (Water Supply and Habitat Improved) are provided below. Note that these calculations show the annual benefits anticipated when the project is completed and 100% of the benefits are realized annually. Some differences may occur due to rounding.

[21] San Diego RWMG and RAC. 2013. *2013 San Diego IRWM Plan*.
[22] WaterSmart. San Diego County Water Authority Turf Replacement Program. Website. Accessed 23 July 2015. Available: http://turfreplacement.watersmartsd.org/
[23] City of San Diego. Rebate Programs. Website. Accessed 20 July 2015. Available: http://www.sandiego.gov/water/conservation/rebates/index.shtml
[24] SoCal Water$mart. Turf Removal Program Update. Website. Accessed 20 July 2015. Available: http://socalwatersmart.com/?page_id=2967
[25] California Department of Water Resources. *California 2015 Turf Replacement Initiative – Guidelines*.

Primary Benefit – Water Supply

The primary benefit of this project is water supply that is achieved through conservation. This project will conserve a total of 1,809 AFY from Components 1, 2, 3, and 4.

Component 1 will conserve 80.9 AFY at the Donovan Correctional Facility (DCF). A *Water Systems Efficiency and Conservation Feasibility Study* for DCF was completed in 2006 by Water Management, Inc. for Otay Water District and SDCWA, which evaluated the existing water uses at the facility, the water uses of each type of fixture at the facility based on the manner and frequency of use and the fixture's flow rates, and made recommendations for hardware changes that could conserve water. The Feasibility Study also determined the savings potentials of the recommended changes. Using these values, the savings per fixture were calculated, as shown in **Table 2-6**.

Table 2-6: Water Savings of Hardware Improvements at Donovan Correctional Facility

Fixture	Recommended Quantity*	Total Gallons/Year Water Savings*	Gallons/Year Savings per Fixture
Electronic Shower Controls	176	13,094,010	74,398
Electronic Faucet Controls	500	5,840,000	11,680
Replace Commercial Toilets	26	1,790,592	68,869
Replace Urinal Flush Valves	4	156,160	39,040
Faucet Flow Reducers	44	78,022	1,773
Replace Common Area Toilets	267	2,797,729	10,478
Replace Common Area Urinals	23	468,096	20,352
Faucet Aerators	265	68,270	258

Source: Otay Water District and San Diego County Water Authority. 2006. *Water Systems Efficiency and Conservation Feasibility Study: R.J. Donovan Correctional Facility.*

*As reported in the Feasibility Study. Note that these values may have changed as this project was developed.

These values were then applied to the number of each type of fixture installed as part of this project to calculate the total savings associated with Component 1. As described in *Attachment 3 Work Plan*, this component will install 188 electronic shower controls, 600 electronic faucet controls, 26 commercial toilets, 4 urinal flush valves, 44 faucet flow reducers, 265 faucet aerators, and will replace 267 common area toilets and 23 common area urinals. This component would save 26,353,652 gallons, or 80.9 AFY, as shown in **Table 2-7**.

$$Number\ of\ Fixtures * \frac{Water\ Savings}{Fixture} = Water\ Savings\ from\ Fixture\ Upgrades$$

Table 2-7: Water Savings Calculations for Component 1 Hardware Upgrades

Fixture	Number Installed	Savings Per Fixture (gal/yr)	Total Savings (gal/yr)	Total Savings (AFY)
Electronic Shower Controls	188	74,398	13,986,783	42.9
Electronic Faucet Controls	600	11,680	7,008,000	21.5
Replace Commercial Toilets	26	68,869	1,790,592	5.5
Replace Urinal Flush Valves	4	39,040	156,160	0.5
Faucet Flow Reducers	44	1,773	78,022	0.2
Replace Common Area Toilets	267	10,478	2,797,729	8.6
Replace Common Area Urinals	23	20,352	468,096	1.4
Faucet Aerators	265	258	68,270	0.2
Total Savings for Component 1			**26,353,652**	**80.9**

Component 2 would install moisture sensors for agricultural irrigation systems to reduce unnecessary irrigation on large areas or farm and cropland. Rancho California Water District (RCWD) implemented a similar program in Temecula and Murrieta, and found that soil moisture sensors saved 5.4 AFY per device installed (a total of 24 devices, 130 AFY reported savings).[26] In consultation with MRCD, these savings have been conservatively revised down to 4 AFY per device, to due to potential differences in soil types and conditions between RCWD's project and this project.[27] This component will install a total of 200 sensors, for a savings of 800 AFY.

$$\frac{Water\ Savings}{Sensor} * Number\ of\ Sensors = Water\ Saved\ by\ Sensors$$

$$4\frac{AFY}{Sensor} * 200\ Sensors = \mathbf{800\ AFY}$$

Component 3 will conserve a total of 795.5 AFY. Each type of field service is anticipated to provide different levels of water savings. Residential field services provide between 0.01 and 0.04 AFY savings per service provided[28], CII field services will save 0.27 AFY per service[29], and full audits would conserve 0.54 AFY per acre that is audited.[30] Based on SDCWA's existing field services program, an average of 5.8 acres is evaluated for each full audit[31], and 166 full audits will be completed as part of this project, for a total area of 962.8 acres audited. Note that while some full audits will be conducted for residential sites, these field services are categorized as "full audits" and not "residential", due to the large size of the properties. These savings were multiplied times the number of services provided, or the total acres audited. **Table 2-8** shows the total savings associated with each type of field service.

Table 2-8: Water Conservation for Field Services

Field Service	Number of Services	Savings per Service (AFY)	Total Water Conservation (AFY)
Residential	7,927	-	219.1
Indoor Only	*3,128*	*0.01*	*43.8*
Landscape Only	*501*	*0.02*	*1.0*
Indoor & Landscape	*4,298*	*0.04*	*163.3*
CII Irrigation Check-Up	209	0.27	56.4
Full Audit	166 (963 acres)	0.54 per acre	519.9
Total Savings for Component 3			**795.5**

[26] Rancho California Water District. 2014. Enhanced Agricultural Irrigation Efficiency Program. December 31.
[27] Pers. Comm. Lori Swanson. Water Resources Specialist, San Diego County Water Authority. 23 July 2015.
[28] Alliance for Water Efficiency Conservation Tracking Tool, available with subscription: http://www.allianceforwaterefficiency.org/Tracking-Tool.aspx. These values were vetted through California Urban Water Agencies (CUWA) Water Use Efficiency. Note that the savings for "landscape only" was not provided from this tool, but was vetted through CUWA and is considered reasonable.
[29] A&N Technical Services, Inc. 2011. *Mini-Audit Program Evaluation Prepared for the San Diego County Water Authority*. June.
[30] Alliance for Water Efficiency Conservation Tracking Tool, available with subscription: http://www.allianceforwaterefficiency.org/Tracking-Tool.aspx.
[31] Pers. Comm. Kelly Mooney. Water Resources Specialist, San Diego County Water Authority. 23 July 2015.

Component 4 will provide financial incentives to convert 1,270,588 sq ft of turf to water-wise, sustainable landscapes. Published data from California Urban Water Conservation Council (CUWCC) shows that conversion from turf to water-wise landscaping saves 34 gallons of water per square foot.[32] For Component 4, this is a total savings of 43,199,992 gallons per year, or 133 AFY.

$$Area\ Converted * \frac{Water\ Savings}{Area} = Total\ Water\ Savings$$

$$1{,}270{,}588\ sq\ ft * 34 \frac{gal}{sq\ ft * yr} = 43{,}199{,}992\ \frac{gal}{yr} * \frac{1\ AF}{325{,}851\ gal} = \mathbf{133\ AFY}$$

Together, Components 1, 2, 3, and 4 would conserve 1,809 AFY. This is a conservative estimate of the conservation savings that will result from the *Regional Drought Resiliency Program*, as it does not include the water use reductions that are anticipated from participants in the outreach and education programs that will be implemented as part of Component 6, nor does it include potential water savings from residents who may attend a WaterSmart Landscape Makeover Program course and implement landscape makeovers without applying for a turf rebate available under Component 4.

Secondary Benefit - Habitat Improved

The secondary benefit of this project is habitat improved from conversion from turf monoculture to water-smart landscaping. A study by Andrea D. Haller found that "SmartScape" landscaping (similar in nature to SDCWA's WaterSmart Sustainable Landscapes) provided improved habitat for bird species.[33] Native plant gardens generally provide a more diverse mix of evergreen and flowering trees, shrubs, succulents and grasses, offering birds a wide range of textures and vertical variation for shelter and nesting opportunities. Additionally, varied food resources are provided, such as nectar, seeds, and the insects that will be attracted. Bird species that were observed in a similar, water-wise landscape analyzed in the Haller study included Red-tailed Hawk, Bushtits, Black Phoebe, Anna's Hummingbird, Ravens, Lesser Goldfinches, Mourning Doves, House Finches, House Sparrows, and Tree Swallows.[34]

SDCWA's existing turf replacement rebate program requires a minimum 50% vegetation cover, and areas eligible for rebates for residences must be visible from the street. The City of San Diego's similar turf rebate program has found an average of 64% of the area converted from turf is vegetation cover. This analysis assumed that only the area with vegetation cover would provide habitat improvement benefits. Although the City of San Diego does not have a minimum vegetation cover requirement, and its turf rebates can be used for conversions in backyards and areas not visible from the street, this more conservative value is used to calculate habitat benefits for SDCWA's Sustainable Landscapes Program because it is based on actual local data. This project will fund conversion of 1,270,588 sq ft of turf, providing 813,176 sq ft of additional habitat, or 18.7 acres.

$$Area\ Converted * Habitat\ Factor = Total\ Habitat$$

$$1{,}270{,}588\ sq\ ft\ converted * \frac{0.64\ sq\ ft\ habitat}{1\ sq\ ft\ converted} = 813{,}176\ sq\ ft\ habitat * \frac{1\ ac}{43{,}560\ sq\ ft} = \mathbf{18.7\ ac\ habitat}$$

New Facilities, Policies, and Actions Required to Obtain Physical Benefits

The quantified physical benefits are directly realized through implementation of Components 1, 2, 3, and 4, and supported through implementation of Components 5 and 6. Implementation of these components would not require any additional facilities, polices, or actions beyond those contained within the Work Plan (see *Attachment 3 Work Plan*) in order to realize the benefits described above. This project continues and expands existing water conservation programs that have proven successful in the past, and will generally be able to continue within the existing policies and utilize existing facilities.

[32] CUWCC. 2015. Turf Removal & Replacement: Lessons Learned. March.
[33] Haller, Andrea D. 2012. *SmartScape Design Provides Improved Avian Habitat*. June.
[34] Haller, Andrea D. 2012. *SmartScape Design Provides Improved Avian Habitat*. June.

The physical benefits of the Sustainable Landscapes Program and associated Landscape Workshops components of the project require participants to complete their individual turf replacement projects. Rebates are not issued until projects are complete, so no other facilities, policies, or actions would be required to obtain the physical benefits described here. Similarly, the benefits associated with hardware upgrades at the DCF and the irrigation hardware upgrades for agricultural users would need to be installed to obtain the water savings benefits associated with those components. All required hardware upgrades at the DCF and for soil moisture sensors would be installed as part of this project. The water savings from Component 2 would require that agriculture customers utilize the sensor data to inform irrigation decision making, but given the training they will receive, the cost of water, and potential future and/or additional water supply restrictions, it is highly likely that these users would quickly adapt their irrigation practices to the data the sensors provide.

Potential Adverse Physical Effects of the Project and Mitigation

There are no anticipated sustained adverse physical effects from this project. There may be temporary effects associated with turf replacement, such as noise, air quality, or odors from equipment required for removing, hauling, and disposal of turf; however these effects are anticipated to be minor and temporary in nature. Similar localized impacts may be felt during sensor installations, but would also be minor and temporary in nature.

Long-Term Drought Preparedness

This project would effectively increase long-term drought preparedness by reducing potable water demand in the project area through four methods identified in Table 1 of the *2015 Guidelines*: 1) conservation, 2) improved landscape irrigation efficiencies, 3) improved agricultural irrigation efficiencies, and 4) long-term reduction of water use. Conservation is achieved through installation of low-water use fixtures and controlled water use hardware at DCF, conversion of turf to WaterSmart landscaping, improving irrigation efficiencies for both turf conversion participants and agricultural users, and affecting behavioral changes through outreach and education, and individual water use assessments and recommendations tailored to each site. Irrigation efficiencies will be implemented for both urban and agricultural users, and field services will provide recommendations to improve irrigation efficiencies at residential and CII sites. Efficient irrigation systems, such as drip or micro-spray irrigation, is required for landscape conversions subsidized through the Sustainable Landscapes Program, while installation of soil moisture sensors for agricultural users will improve agricultural irrigation efficiencies by allowing farmers to irrigate only as much and as often as necessary, rather than using a set schedule that does not account for actual water needs.

In conjunction with the Field Services and Outreach components, this project will result in long-term reduction of water use by creating sustainable, and easy, ways to conserve water. To maintain water savings benefits from turf conversions, WaterSmart landscaping would simply need to remain in place. Some maintenance would be required for the soil moisture sensors, but once installed, it is unlikely that farmers accustomed to irrigating only enough to meet crop needs would be likely to convert back to irrigating by the calendar. Further, Components 3 and 6 will foster behavioral changes in the community to reduce water use. Once a behavior becomes a habit, it is likely to continue, and helps to foster a culture of water-wise behavior beyond those individuals directly receiving education and outreach efforts.

This project would indirectly provide drought preparedness through indirect groundwater resource protection. Irrigation efficiencies, both urban and agricultural, will reduce runoff, thereby reducing the amount of pollution conveyed to local waterways and stormwater systems. This helps to reduce pollution reaching groundwater resource, helping to protect these resources for current and future use. Because this project will be implemented throughout SDCWA's service area, indirect groundwater protection would be provided to any one of 18 groundwater basins within the San Diego IRWM Region (see **Figure 2-2**, above).

Direct Water-Related Benefit to DACs

As described in *Attachment 7 Disadvantaged Communities*, an analysis was conducted to determine how much of each project area, by geography or population, was classified as a DAC. SDCWA's service area is 28% DAC by population (see **Table 7-1**). SDCWA's programs will be available to eligible customers within its service area, including DACs, and participation in these programs will directly address two urban DAC needs, and indirectly address another three. The primary direct benefit to urban DACs is funding for water conservation provided by the rebate program. Financial assistance will be provided to implement conservation programs that DAC residents may not otherwise be able to afford. Without this financial assistance, DAC residents may not be able to participate in conservation programs, and consequently would not be able to realize the other benefits associated with implementing conservation efforts. A second urban DAC need is met through direct DAC outreach. Although the outreach to be completed under Component 6 does not explicitly state that it will target DACs, but as it does target minority populations, and will prepare outreach materials in these communities' native languages. DACs are likely to be the primary recipients of such efforts. There has been a demonstrated lack of information about the need to conserve water that is both easily available and in languages by those who live in DACs. Most of the conservation and drought messaging that has occurred to-date during the current drought has been in English, with some in Spanish. This only captures a portion of the Region's residents, and may reflect a substantial outreach gap when considering DACs with a higher concentration of non-English-speaking residents than non-DACs.

Project Performance Monitoring Plan

Benefits will begin accruing as soon as water saving hardware is installed, turf is converted, and individuals begin implementing the recommendations of their field services evaluations. For this reason, interim targets will be based on the number of soil moisture sensors installed, the number and types of field services provided, and the total area of turf converted (based on rebates given out and/or rebate applications approved). Water savings for Component 1 are anticipated to begin accruing immediately following installation of all water savings hardware, and 100% benefits realized immediately following completion of the project. **Table 2-9** presents interim targets, along with annual benefits once 100% of each component is implemented. Note that these methods may change, pending development of the Project Performance Monitoring Plan under Task 9 of the Work Plan (see *Attachment 3 Work Plan*), and are presented as one option for measuring progress towards achieving the claimed benefits. Measurable targets for each benefit are also presented in the table.

SDCWA is the Region's water wholesaler and does not have direct metering data for individuals who participate in this project. SDCWA will complete pre- and post-site surveys where appropriate to quantify the annual amount of potable water saved as a result of this project. These surveys may involve coordination with SDCWA's member agencies (water retailers) to obtain water metering data, or may be included as a condition of program participation. Because household compositions or site circumstances can change over time, SDCWA or its project partners will follow up with residents, agricultural users, or CII customers whose water metering data or surveys show unusual or unanticipated changes in water use, in order to determine if these changes are beyond the influence or control of the project and how to address these differences when monitoring project performance.

Table 2-9: Project Monitoring for *Regional Drought Resiliency Program*

Proposed Physical Benefits	Measurement Tools and Methods	Targets	
		Interim Target	Total
Water Supply	For Donovan Correctional Facility – SDCWA will coordinate with Otay Water District to obtain and analyze water metering data for DCF. Metering data from the 12 months before hardware installations will be used to establish a baseline, while metering data collected after installation will be used to measure progress.	80.9 AFY	80.9 AFY
	For EC Mapping and Soil Moisture Sensor Systems – SDCWA will coordinate with MRCD to collect pre- and post-installation water use data for participating agricultural users. These data may be collected directly from program participants or may be obtained from water metering data acquired from the appropriate water retailers. Metering or water billing data from the 12 months before sensor system installation will be used to establish a baselines, while metering data or billing data collected after installation will be used to measure progress.	4 AFY/sensor	800 AFY
	For WaterSmart Field Services – SDCWA will coordinate with water retailers to obtain and analyze water metering data for participating properties. Metering data for the 12 months before field services are administered will be used to establish a baseline, while metering data collected after field services will be used to measure progress. SDCWA staff will encourage participants to indicate which recommendations were implemented to better track the success of the program and effectiveness of program recommendations.	Indoor Residential: 0.01 AFY Landscape Residential: 0.02 AFY Indoor & Landscape Residential: 0.04 AFY CII: 0.27 AFY Full Audit: 0.54 AFY/acre	7,955 AFY
	For Sustainable Landscapes – SDCWA will coordinate with water retailers to obtain and analyze water metering data for participating properties. Metering data for the 12 months before turf conversion will be used to establish a baseline, while metering data collected after field services project completion will be used to measure progress. Program participants may be asked to provide water meter data as a condition of participation.	Average 34 gal/ sq ft per year	132.6 AFY
Habitat Improved	For Sustainable Landscapes – SDCWA will file copies of before and after conversion photos, along with rebate forms documenting total vegetation cover. Staff will either request periodic updates from participants to provide photos showing long-term maintenance of vegetation, or will conduct site visit to visually confirm vegetation maintenance. Some combination of these two methods may be used, and may be required as a condition of participation.	Average 640 sq ft per turf conversion	18.7 acres

Cost Effectiveness Analysis

The *Regional Drought Resiliency Program* project will achieve two quantifiable physical benefits described in detail in the sections above, and summarized in **Table 2-3** and **2-4**. During project development, alternatives to the preferred project included in this application were considered and, ultimately, rejected. **Table 2-10** provides a cost effectiveness analysis consistent with Table 7 of the *2015 PSP*.

Table 2-10: Cost Effective Analysis for *Regional Drought Resiliency Program*

Cost Effective Analysis	
Question 1 Physical Benefits Summary	*Types of benefits provided as shown in Table 2-3 and 2-4.* Benefit 1: Water Supply – 1,809 AFY potable water conserved Benefit 2: Habitat Improved – 18.7 acres habitat created
Question 2 Alternatives Considered	*Have alternative methods been considered to achieve the same types and amounts of physical benefits as the proposed project been identified?* No.
	If no, why? If yes, list the methods (including the proposed project) and estimated costs. No program-wide alternatives were considered. No information on specific costs for alternatives was included in the source documentation and/or completed work cited in this Proposal. *Component 1:* DCF considered a number of different types of water saving hardware, and preliminary analysis presented four options for water savings. Subsequent evaluation determined that the recommended ICON system was preferred due to price and water savings, and was the only option fully developed. *Component 2:* This component is based on a successful pilot program implemented by RCWD. It builds on the lessons learned under that project, and the EC mapping completed as part of this component will help determine the exact location and details for installation of the soil moisture systems. *Component 3:* This component expands the existing field services program already being implemented by SDCWA. As the program continues, it has been adjusted to improve the efficiency and efficacy of the program, and no alternatives were necessary to consider. *Component 4:* This component expands the existing turf rebate program into a Sustainable Landscapes Program. It builds on the success of the existing program, which has proven extremely popular in the Region, even with relatively low rebates compared to similar programs. Because this component expands an existing program, no alternatives were considered. *Component 5:* This component expands and improves an existing WaterSmart Landscape Makeover Program, and is designed to support and improve the success of the landscape conversions implemented under Component 4. Because it expands an existing successful program, no alternatives were considered. *Component 6:* This component expands and improves SDCWA's existing drought outreach and education campaign to reach additional communities in the Region, particularly minority communities who would benefit from messaging translated into other languages and targeted to these communities. No alternatives were considered because this is a logical extension of SDCWA's existing outreach and education efforts.
Question 3 Preferred Alternative	*If the proposed project is not the least cost alternative, why is it the preferred alternative? Provide an explanation of any accomplishments of the proposed project that are different from the alternative project or methods.* There is no identified least cost alternative. This project expands and improves on existing programs, and is anticipated to provide substantial water savings, habitat benefits, and other non-quantified benefits. Each component was designed to be successful and support a long-term water conservation ethic. These programs have proven to be successful in the past, at a low cost for the level of benefit.

Project 2: Conservation Home Makeover in the Chollas Creek Watershed

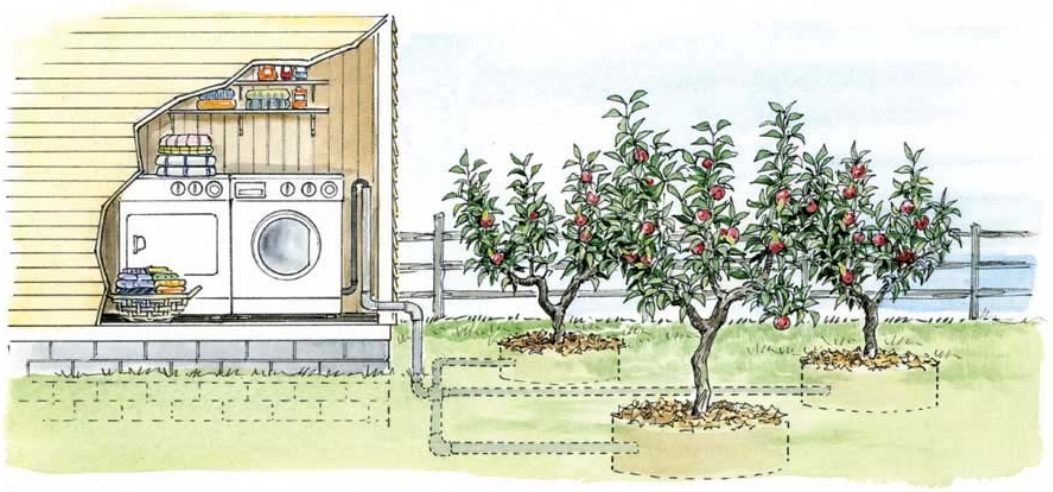
Local Project Sponsor: Groundwork San Diego
Partners: U.S. Green Building Council-San Diego (USGBC), San Diego Sustainable Living Institute (SDSLI), San Diego Unified School District (SDUSD), and Encanto Neighborhoods Community Planning Group (ENCPG)

Project Summary

The project will install stormwater capture, greywater, and landscape upgrades in low-income homes in the Encanto neighborhood to reduce potable water demands.

Project Map

Figure 2-3 shows the *Conservation Home Makeover in the Chollas Creek Watershed* project area, the service areas of the project sponsor, the project facilities and the project's relation to groundwater basins and surface water, disadvantaged communities (DAC), and proposed monitoring locations.



Proposed Laundry-to-Landscape greywater installations will provide sustainable healthy food production for local families

Rainbarrel installations

Neighborhood volunteers installing water-wise landscaping

Project Description

The *Conservation Home Makeover in the Chollas Creek Watershed* project will build drought, pollution, food security, and climate change response/resiliency in southeastern San Diego through a combination of conservation home makeovers and an outreach/engagement campaign directed at youth and families. The project will install stormwater capture, greywater, and landscape upgrades in 50 low-income homes in the Encanto neighborhood. It will mitigate the impact of drought through water conservation installations, water capture, and greywater reuse for food production and landscaping. The project will address the interlocking challenges of water, food, and energy in the Encanto neighborhood, a DAC, under the overarching crisis of water supply reliability.

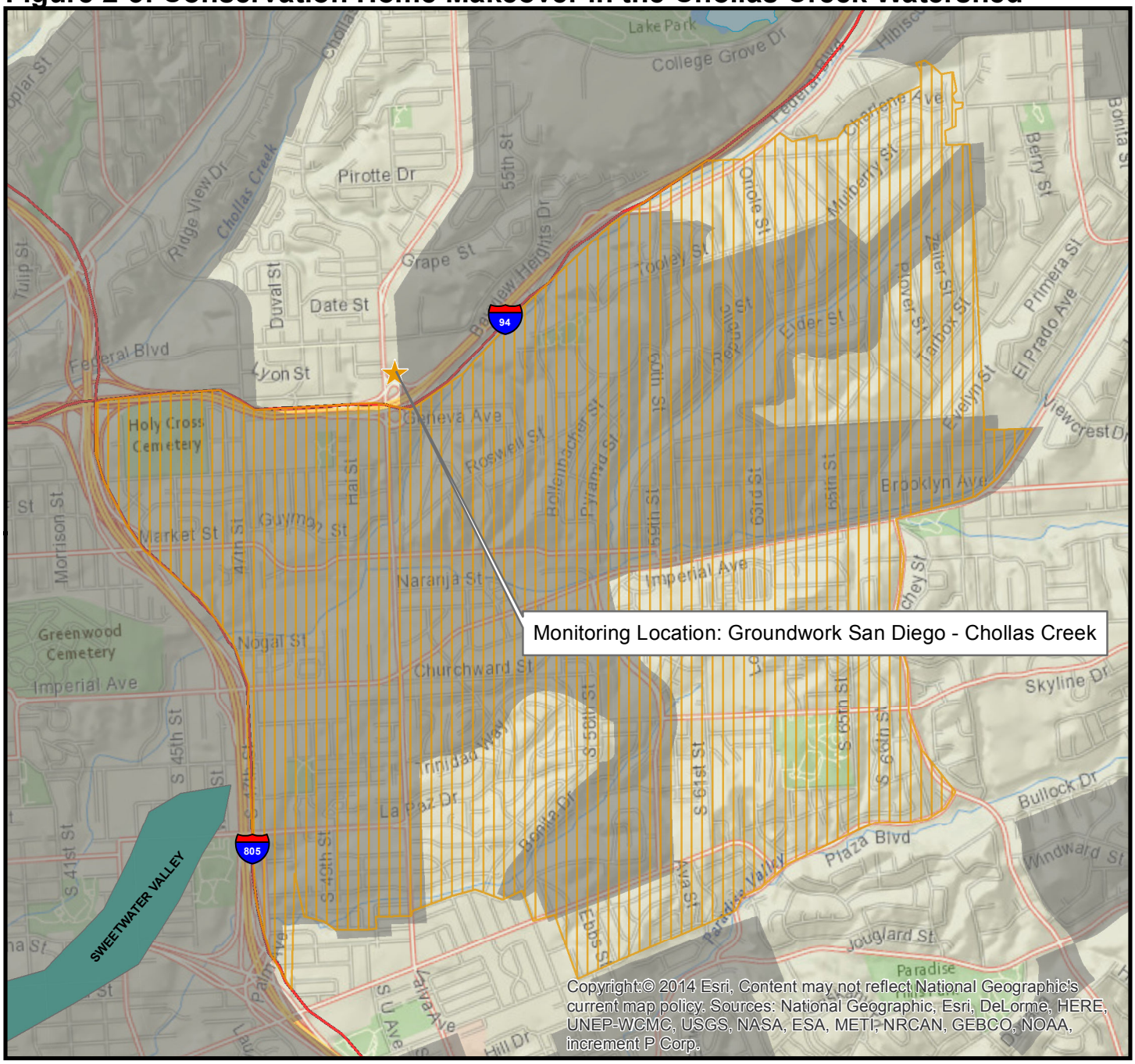
Direct marketing to families will occur through neighborhood presentations, media, and door-to-door canvassing conducted by ENCPG and other project partners. It will be reinforced by a school-based effort targeting student conservation awareness and action at home, including training Groundwork's High School Green Team to assist in residential installations. Approximately 800 students from Encanto schools (Millennial Tech Middle School, Gompers Preparatory Academy, Horton, and Chollas Mead) will be instructed in about water conservation education, and knowledge and interest gains will be measured with pre- and post-tests. Age-appropriate water audit instruments will be used by students to assess their home water consumption, and students will assist in the marketing of the residential makeover activities. Older students will be trained in conservation installation and be invited to assist professional installers.

Groundwork and its partners will use data collected from this project, and the lessons learned, to expand future conservation home makeovers to reach additional neighborhoods. Outcomes and metrics from this project will be used for future advocacy for new governmental policies supporting and incentivizing low income families to participate in conservation. In addition to helping meet the region's water conservation and climate resiliency goals, and creating habitat for native species, families will reap the personal benefits of lower water bills, enhanced tree canopy shade, and wildlife-friendly drought tolerant landscapes (in what are currently concrete/asphalt dominant streets). Cultivation of pesticide-free fruit trees will also contribute to healthy food options and reduced food costs in these underinvested DACs characterized as "food deserts". The ongoing training of Green Team students will further contribute to lasting behavioral change and promote academic interest in environmental health and science. Project partners will deliver a menu of conservation goods and services to 50 owner-occupied Encanto homes, tailored to each residence based on a home water audit and resident landscape design-input.

USGBC will utilize software models and analytics to evaluate the siting, costs, and water benefits of the project with an eye to future project scalability throughout the Encanto neighborhood. Geographic information system (GIS) scenario planning will be integrated with flow path modeling to calculate project outcomes related to stormwater diversion/capture, soil types, and vegetative coverage. Flow estimates will guide future project expansion into neighborhoods, as well as integration with Groundwork's drought response initiatives related to larger institutional BMPs in the Encanto area that are implemented by organizations such as CalTrans, City of San Diego, and SDUSD. USGBC will track and report on all project metrics and large scale impacts/implications, and will identify preferred rating systems/labels for comparing home outcomes.

SDSLI provides conservation training and installations throughout the region. For this project, they will install "laundry-to-landscape" gray water systems, water-saving devices (toilets, faucets), rain gardens and rainbarrels within the 50 Encanto homes. SDSLI will design and install drought tolerant and edible gardens within the re-landscaped areas, and also provide training to participating homeowners for the installations.

Figure 2-3: Conservation Home Makeover in the Chollas Creek Watershed



Coordinates: 32.71726, -117.08834

Legend

- Freeway
- Waterbody
- DAC Area*
- Very Low Priority Groundwater Basins
- Benefit Area: 2 Conservation Home Makeover in the Chollas Creek Watershed
- Monitoring Location

0 0.25 0.5 1

Miles

N

*Note: DAC as determined by census tract and block group data for the year 2013, from the American Community Survey 2009-2013 5-year results. DAC determined based on definition of median household incomes below 80% of the statewide MHI or $48,875.

Sources: U.S. Census 2013 ACS 5-year estimates; San Diego Association of Governments (SANDAG) - GIS Data Warehouse
Document Path: N:\Projects GIS\0188-003 SDIRWM Plan Update\Prop84_Rnd4\MXD\Project maps\2-3_GroundworksProject28072015.mxd

Project Physical Benefits

The *Conservation Home Makeover in the Chollas Creek Watershed* project will provide multiple benefits, two of which have been quantified and are presented in **Tables 2-11** and **2-12**. The two quantified physical benefits are Water Supply (achieved through conservation and reuse) and Habitat Improved (from turf conversion to water-wise and native landscaping).

For the primary benefit (Water Supply), the baseline value was calculated using fiscal year (FY) 2014 water demands provided by the City of San Diego Public Utilities Department for residents in the City (137 gallons per capita per day or GPCD)[35], assuming an average of 4 persons per household and 50 households, which equals 30.7 AFY. The useful project life is considered 13 years for the turf conversions, rainbarrels, and greywater systems, based on length of average homeownership estimated by U.S. Department of Housing and Urban Development[36] (HUD) and assuming that new homeowners may not be inclined to maintain the rainbarrels and/or water-wise landscaping. Note, however, that this is a conservative assumption because incoming homeowners may choose to continue using all conservation tools available. The benefit accrual (8.5 AFY) is based on information from the California Urban Water Conservation Council (CUWCC) on turf conversions, and from U.S. Environmental Protection Agency (EPA) and Energy Star on greywater supplies (via clothes washers). Over the project life, the *Conservation Home Makeover in the Chollas Creek Watershed* is anticipated to reduce potable demand by a total of 110.5 AF from 2017 to 2031.

Table 2-11: Primary Physical Benefit – Water Supply
Conservation Home Makeover in the Chollas Creek Watershed

Project Name: Conservation Home Makeover in the Chollas Creek Watershed
Type of Benefit Claimed: Water Supply – Conservation from turf conversions, greywater, and rainbarrels
Units of the Benefit Claimed: AFY
Anticipated Useful Life of Project: 13 years

(a)	(b)	(c)	(d)
Year	**Annual Without Project**	**Annual With Project**	**Annual Change Resulting from Project (c) – (b)**
2017	30.7 AFY	27.9 AFY	-2.8 AFY
2018	30.7 AFY	25.1 AFY	-5.6 AFY
2019-2029	30.7 AFY	22.2 AFY	-8.5 AFY
2030	30.7 AFY	25.1 AFY	-5.6 AFY
2031	30.7 AFY	27.9 AFY	-2.8 AFY

Comments: This project has an expected project life of 13 years, based on HUD estimates of typical homeownership duration. Benefits are assumed to begin accruing immediately following each home makeover. An equal number of houses are assumed to be converted each year of the four years scheduled for installation, and each house assumed to provide equal benefits. Benefits are therefore expected to phase in at 33% per year between 2017-2019. The annual benefit will remain the same for 2019-2030. Benefits will phase out in a manner consistent with how they were phased in.

Sources: Equinox Center. 2015. *H2Overview Series: San Diego County Residential Water Use Trends*. February.

CUWCC. 2015. *Turf Removal & Replacement: Lessons Learned*. March.

U.S. EPA. 2015. WaterSense – Indoor Water Use in the U.S. http://www.epa.gov/WaterSense/pubs/indoor.html

Energy Star. 2015. Certified Products – Clothes Washers. https://www.energystar.gov/products/certified-products/detail/clothes-washers

[35] Pers. Comm. Dianne Modelo, Senior Management Analyst, City of San Diego. E-mail. August 3, 2015.
[36] U.S. Department of Housing and Urban Development. 2004. *The Sustainability of Homeownership: Factors Affecting the Duration of Homeownership and Rental Spells*. Note: Typical homeownership duration for whites, African Americans, and Hispanics is estimated to be: 16.1, 9.5, and 12.5 years, respectively; 13 years is the average.

The baseline for the secondary benefit (Habitat Improvedt) was determined using a GIS analysis of the project area. Land uses that currently support wildlife habitat include Landscape Open Space, Open Space Park or Preserve, and Undevelopable Natural Areas, as mapped using data from San Diego Association of Governments (SANDAG).[37] This analysis found that 5%, or 192 acres, of the project area currently supports wildlife habitat. The same useful life estimate, 13 years, was used for this secondary benefit based on length of average homeownership from HUD.[38] The benefit accrual (0.7 acres) is based on the 2012 study, *SmartScape Design Provides Improved Avian Habitat* and the City of San Diego's vegetation cover data from their existing turf conversion rebate program.

Table 2-12: Secondary Physical Benefit – Habitat Improved
Conservation Home Makeover in the Chollas Creek Watershed

Project Name: Conservation Home Makeover in the Chollas Creek Watershed
Type of Benefit Claimed: Habitat Improved – Water-wise plantings
Units of the Benefit Claimed: Acres
Anticipated Useful Life of Project: 13 years

(a)	(b)	(c)	(d)
Year	**Annual Without Project**	**Annual With Project**	**Annual Change Resulting from Project (c) – (b)**
2017	192 acres	192.2 acres	0.2 acres
2018	192 acres	192.5 acres	0.5 acres
2019-2029	192 acres	192.7 acres	0.7 acres
2030	192 acres	192.5 acres	0.5 acres
2031	192 acres	192.2 acres	0.2 acres

Comments: This project has an expected project life of 13 years, based on HUD estimates of typical homeownership duration. Benefits are assumed to begin accruing immediately following each home makeover. An equal number of houses are assumed to be converted each year of the four years scheduled for installation, and each house assumed to provide equal benefits. Benefits are therefore expected to phase in at 33% per year. The annual benefit will remain the same for 2019-2029. Benefits will phase out in a manner consistent with how they were phased in.

Sources: San Diego Association of Governments (SANDAG). *SanGIS Data Warehouse – Landuse_Current*. Available for download through the Regional GIS Data Warehouse. Accessed: July 21, 2015.

Haller, Andrea D. 2012. *SmartScape Design Provides Improved Avian Habitat*. June.

In addition to the quantified benefits, the project would provide additional water conservation through behavioral changes inspired by the project's outreach and education components, and through changing out of older home fixtures to water efficient fixtures. Reduced water use for irrigation, combined with onsite retention of stormwater, will also reduce urban runoff and provide water quality benefits to local waterways and the San Diego Bay. These water quality benefits are anticipated to include reduced total suspended solids, total dissolved solids, and nutrients. Further, the inclusion of fruit trees in the plant palette provides healthy food options for families in an area notorious for a lack of access to fresh, local, and healthy foods. This provides for public health protection, reducing direct costs to the community. Because this project will reduce potable water demands, participants' water bills will be lowered, helping to reduce costs for residents of this DAC. Reduced water demand also provides for drought preparedness, helps the City of San Diego meet State-mandated water reduction targets and 20x2020 targets, and reduces regional energy demands (and associated greenhouse gas [GHG] emissions). This project also acts as a pilot program for future expansion of conservation home makeovers to other communities, and will lay the groundwork for revitalizing DACs in San Diego, as well as be a model for sustainable urban design.

[37] San Diego Association of Governments (SANDAG). *SanGIS Data Warehouse – Landuse_Current*. Available for download through the Regional GIS Data Warehouse. Accessed: July 21, 2015.
[38] U.S. Department of Housing and Urban Development. 2004. *The Sustainability of Homeownership: Factors Affecting the Duration of Homeownership and Rental Spells*. Note: Typical homeownership duration for whites, African Americans, and Hispanics is estimated to be: 16.1, 9.5, and 12.5 years, respectively; 13 years is the average.

Technical Analysis of Physical Benefits Claimed

Project Need and Conditions

This project will serve a DAC in southeastern San Diego. DACs often lack the technical and financial capacity to implement projects, may face additional water quality issues, and are disproportionately impacted by water rate increases or fees compared to non-DAC areas. The State, and San Diego IRWM Region, are suffering from one of the worst droughts in recent history, making water conservation both a priority and a necessity. The Region is heavily reliant on water imported from the State Water Project (SWP) and the Colorado River, but has seen these supplies restricted as a result of the drought – a time when scant local rainfall has increased demand for imported water. In addition, the State has instituted mandatory water use restrictions on cities and agencies. The Encanto neighborhood is within the service area of the City of San Diego, which must reduce its water use by 16% city-wide. The City is urging residents to reduce outdoor irrigation as the easiest and fastest way to reduce water use.[39]

Rain barrel installed by SDSLI in a DAC home

Groundwork's education and outreach activities reach students in DACs

According to the California Homebuilding Foundation, water conservation in older homes (versus newer homes or in other sectors) represent one of the most effective water savings strategies available to California.[40] This project targets Encanto, where approximately 93% of single family homes were constructed prior to 1990.[41] While the City of San Diego offers a spectrum of residential conservation rebates (turf removal, rotating sprinklers, rain barrels, soil sensors, high efficiency toilets), low income communities are underrepresented in such rebate programs and in regional conservation efforts generally as a result of both limited capacity (on the part of the DAC residents) and outreach efforts that cater to the general population and may not be designed in an effective manner for DACs.

As reported in the *Chollas Creek Comprehensive Load Reduction Plan*[42] and the *2013 IRWM Plan*, urbanization and high density along Chollas Creek have resulted in land uses dominated by roadways, freeways, and transportation infrastructure. This dense urbanization has resulted in high runoff volume, increased pollutant loading to the watershed, and related vehicular air and water pollution. The project's home landscape makeovers will capture runoff from properties and improve air quality by planting trees.

The high level of dense urbanization in Chollas Creek Watershed has also resulted in reduced habitat and habitat quality for native species, including birds, reptiles, and small mammals. The County of San Diego is one of the most biodiverse areas in the country, with over 200 species listed as endangered, threatened, rare, or are candidates for listing.[43] A California Natural Diversity Database (CNDDB) query within the project area yields a total of 10 native species that could be present within the Encanto neighborhood. The results of this search show that even in a relatively small project area, a number of species of value could be present if habitat were available. Installing trees, along with native and water-wise vegetation,

[39] City of San Diego. Drought Information and Resources – Drought Alert: Mandatory Water Use Restrictions. Website. Accessed 17 July 2015. Available: http://www.sandiego.gov/water/conservation/drought/prohibitions.shtml
[40] California Homebuilding Foundation. 2010. Water Use in the California Residential Home. January.
[41] City-Data. San Diego, CA. Search performed for "Year house built" and Encanto neighborhood was selected. Website. Accessed 29 July 2015. Available: http://www.city-data.com/city/San-Diego-California.html
[42] City of San Diego, et al. 2012. Chollas Watershed Comprehensive Load Reduction Plan. July 20.
[43] U.S. Fish and Wildlife Service and California Department of Fish and Wildlife. 1998. San Diego County Multiple Species Conservation Plan EIR/EIS.

would provide habitat and food sources not currently available due to a combination of urbanization and the predominance of turf as preferred landcover.

According to the Shriver Center on Poverty Law, and based on testimony of Robert Greenstein of the Center on Budget and Policy Priorities, the effects of climate change (extreme weather, drought, pollution, and airborne toxins) will hit low income communities first and hardest.[44],[45] The low-lying communities in the Chollas Creek Watershed will suffer disproportionately from sea level rise, storm surges, and inundations. DAC residents will also suffer disproportionately from water price increases and unavailability, due to a lesser ability to pay as water prices increase. DACs must understand, prepare for, and be empowered to mitigate climate change.

As described in the *2013 IRWM Plan*, food security also plagues urban DACs in the Region. According to a recent study of Southeastern San Diego, few healthy food options exist there, resulting in a "food swamp" where there is high exposure to unhealthy food choices.[46] Such environments have been found to result in impacts to community health. However, where fresh produce is accessible, such as near homes, schools, and work places, healthy habits are more common, and bringing healthy options to food swamps can improve public health. This project will support healthy food availability by planting fruit trees during re-landscaping efforts at DAC homes.

Without-Project Conditions

Without the *Conservation Home Makeover in the Chollas Creek Watershed* project, 50 low income single family residences would not receive home conversions to low water use/stormwater capture/carbon sequestration/food production model dwellings. These residences would continue to use existing water volumes, which total 137 gallons per person per day of potable water in the City of San Diego.[47] For an average four-person household, this is equivalent to approximately 0.6 AFY. Continuation of existing water use would impact the Region's available potable water supplies and the individual families' water costs. Without this project, the participating households would continue to use approximately 30.7 AFY and would fail to conserve 8.5 AFY potable water, based on the assumption that there would remain limited capacity to implement typical water conservation efforts in the Encanto community. If water costs increase as a result of the drought or climate change, these families will be adversely affected in a disproportionate level compared to non-DAC families. Water conservation education would not be received by the 800 students and their families in the project area. With a lack of education, these DAC residents would continue to feel the impacts of the drought and climate change, and would not be able to build technical capacity to help implement similar changes on their own.

Further, without this project, landscape makeovers would not be completed. Landscaping at these homes would remain turf, and continue to be marginally, if at all, useable as habitat for native species and birds. Stormwater would continue to runoff from properties (both because of the lack of rainbarrels to capture water, and the lack of landscaping features to retain runoff on-site), continuing to convey pollutants to local waterways. Other efforts to increase access to healthy food choices may be implemented, but are unlikely to plant fruit trees directly in people's yards, where it is the easiest to access, thereby making it the most likely fresh and healthy food source to be utilized by individual families.

Methods Used to Estimate the Physical Benefits

The calculations for each of the two quantified physical benefits are provided below. Note that these calculations show the annual benefits anticipated when the project is complete and 100% of the benefits are realized annually. Some differences may occur due to rounding.

Primary Benefit - Water Supply

The primary benefit of this project is potable Water Supply savings achieved through conservation and reuse. This project will conserve 8.5 AFY of potable water. These savings are realized through reduced water demand from

[44] Shriver Center on Poverty Law. 2009. The Shriver Brief: Climate Change's Unique Impact on Low-Income Communities. August 18.
[45] Robert Greenstein, Executive Director, Center on Budget and Policy Priorities. 2009. Testimony to the House Committee on Energy and Commerce. April 23.
[46] SDSU. 2014. Southeastern San Diego's Food Landscape. April. Available: http://geography.sdsu.edu/Research/Projects/FEP/Docs/Report.pdf
[47] Pers. Comm. Dianne Modelo, Senior Management Analyst, City of San Diego. E-mail. August 3, 2015.

1) landscape makeovers, 2) rainwater collection through installation of rainbarrels, and 3) water reuse through installation of greywater systems.

The water savings from the landscape makeovers would be achieved through turf replacement with water-wise landscaping and efficient irrigation. Note that these saving are pure conservation savings (via the residence's potable water meter), and do not include the greywater to be used for irrigation of the new landscaping. An average turf area for a single family home in Encanto is estimated as 1,000 sq. ft., based on lot sizes of 1/5 acre, average single-family home size of 1,500 sq. ft., and some assumed minor hardscaping that would remain in place, such as driveways. Under the proposed project, landscaping will include a minimum of 4 fruit trees, with the rest planted with water-wise landscaping. Although fruit trees require more water than water-wise plants, this analysis assumes that additional fruit tree water demands would be served by the greywater system and that the efficient (drip) irrigation installed to serve the water-wise plants would adequate to serve the full area of removed turf. Annual water savings were estimated at approximately 34 gallons per square foot[48] or 68,000 gallons per house per year. Once all 50 houses complete their landscape makeovers, savings are anticipated to be 1,700,000 gallons per year or 5.2 AFY.

$$\frac{Water\ Savings}{Area} * \frac{Area\ Converted}{House} * Number\ of\ Houses = Water\ Saved\ from\ Landscape\ Makeovers$$

$$34\frac{gal}{sq\ ft * yr} * 1{,}000\ \frac{sq\ ft}{house} = 68{,}000\frac{gal}{house} * 50\ houses = 1{,}700{,}000\frac{gal}{yr} * \frac{1AF}{325{,}851\ gal} = \mathbf{5.2\ AFY}$$

The rainbarrels would collect all water that falls on the roof of each participating house. The roof size of the average house in the Encanto neighborhood was estimated as 50 ft x 30 ft, or 1,500 sq. ft. (roughly equivalent to the footprint of an average single-family home[49]). Average rainfall in the City of San Diego is 10 inches[50], resulting in an average annual collection by the rainbarrels of 1,250 cubic-feet per house. For all 50 houses in this project, an estimated 62,500 cubic feet per year or 467,533 gallons per year (1.4 AFY) can be collected and routed to landscaped areas to offset potable demand.

$$\frac{Roof\ Area}{House} * Annual\ Rainfall * Number\ of\ Houses = \ Amount\ of\ Rainwater\ Collected\ for\ Reuse$$

$$1{,}500\frac{sq\ ft}{house} * 10\frac{in}{yr} * \frac{1\ ft}{12\ in} * \frac{7.48\ gallons}{1\ cu\ ft} * 50\ houses = 461{,}992\ \frac{gal}{yr} * \frac{1AF}{325{,}851\ gal} = \mathbf{1.4\ AFY}$$

The greywater systems will reuse greywater from washing machines to irrigate on-site landscaping. The U.S. EPA Energy Star program estimates that an average household runs their washing machine 300 times a year[51] and each load uses approximately 27 – 54 gallons of water for traditional front-loading models[52] (the type generally found in DACs). The project will install greywater systems in 50 houses, thereby diverting greywater to the fruit trees at an average 40.5 gallons per load, for a total savings of 12,150 gallons per year per hour or 607,500 gallons per year (1.9 AFY) in total once all 50 systems are installed.

$$\frac{Annual\ Loads}{House} * \frac{Water}{Load} * Number\ of\ Houses = Greywater\ Available\ for\ Reuse\ per\ Year$$

$$300\frac{loads}{house * yr} * 40.5\frac{gal}{load} * 50\ houses = 607{,}500\frac{gal}{yr} * \frac{1AF}{325{,}851\ gal} = \mathbf{1.9\ AFY}$$

[48] CUWCC. 2015. *Turf Removal & Replacement: Lessons Learned*. March.
[49] Per data available for Encanto neighborhood on www.realtor.com, the average home price is $265,056, and price per square foot is $170, making the average home size 1,559 square feet. Accessed 29 July 2015. Available: http://www.realtor.com/local/Encanto_San-Diego_CA/home-prices
[50] City of San Diego. 2011. *2010 Urban Water Management Plan*.
[51] U.S. EPA. 2015. WaterSense – Indoor Water Use in the U.S. http://www.epa.gov/WaterSense/pubs/indoor.html
[52] Energy Star. 2015. Certified Products – Clothes Washers. https://www.energystar.gov/products/certified-products/detail/clothes-washers

Total water savings benefits from this project is the sum of the benefits realized by each of these three components, or **8.5 AFY**.

Secondary Benefit - Habitat Improved

The secondary benefit of this project is Habitat Improved, which is achieved through the landscape makeovers that will convert landscaping from turf to water-wise and native vegetation. As described above, the estimated average lot size in the Encanto neighborhood is 1/5 acre, of which 1,000 sq. ft. is turf. This project will complete landscape makeovers at 50 houses, resulting in a total conversion of 1.1 acres to water-wise and native vegetation.

Water-wise and native vegetation have been shown to increase the number of bird species present compared to the same area when landscaped with turf.[53] Native plat gardens generally provide a more diverse mix of evergreen and flowering trees, shrubs, succulents and grasses, offering birds a wide range of textures and vertical variation for shelter and nesting opportunities. Additionally, varied food resources are provided, such as nectar, seeds, and the insects that will be attracted. Bird species that were observed in a similar, water-wise landscape analyzed in the Haller study included Red-tailed Hawk, Bushtits, Black Phoebe, Anna's Hummingbird, Raves, Lesser Goldfinches, Mourning Doves, House Finches, House Sparrows, and Tree Swallows. The presence of trees was also found to be beneficial to attracting bird species, as canopies can provide habitat for nesting, roosting, and protection.[54] While all of the converted landscape would provide habitat improvement, for consistency with similar projects in this Proposal, it is assumed that 64% of the converted area would be plant cover (and counted as habitat) based on the City of San Diego's existing turf replacement program.

$$\left(50\ homes * 1{,}000 \frac{sq\ ft}{home}\right) * \frac{1\ acre}{43{,}560\ sq\ ft} * 64\% = \mathbf{0.7\ acres}$$

New Facilities, Policies, and Actions Required to Obtain Physical Benefits

This project would install new landscaping and irrigation, greywater systems, and rainbarrels at 50 residences in the Encanto neighborhood. It would replace existing turf areas with plant water-wise landscaping and fruit trees. Finally, it would install water-wise fixtures such as showerheads, faucets, or toilets within the homes. Greywater systems will be installed compliant with the existing Chapter 16A Nonpotable Water Reuse Systems of the California Plumbing Code. No additional facilities, policies, or actions are required to realize the benefits provided by the project.

Potential Adverse Physical Effects of the Project and Mitigation

There are no anticipated adverse physical effects from this project. There may be temporary effects associated with turf/landscape replacement such as hauling and disposal of removed turf or emissions and noise from landscaping equipment; however, these effects are anticipated to be minor and temporary in nature. Other potential impacts could include impacts associated with disposal of inefficient fixtures in local landfills, although existing disposal facilities have sufficient capacity to accommodate these small items. The greywater systems installed as part of this project would be installed compliant with the California Plumbing Code, and would not create an adverse physical effect.

Long-Term Drought Preparedness

This project would effectively increase long-term drought preparedness in the project area by reducing potable water demands through five methods identified in Table 1 of the *2015 Guidelines*. These methods are: 1) conservation, 2) reuse, 3) improved irrigation efficiencies, 4) long-term reduction of water use, and 5) creating a new water supply for participating households. Conservation would be achieved through conversion of turf to water-wise landscaping, changing out fixtures to water-saving devices, and outreach/education that encourages and enables individuals to reduce water use. The greywater systems provide an easy, on-site water reuse mechanism, reducing potable water demands, without connecting to the City's recycled water distribution system. As part of the landscape makeovers, efficient irrigation will be installed, helping to reduce overall water use and

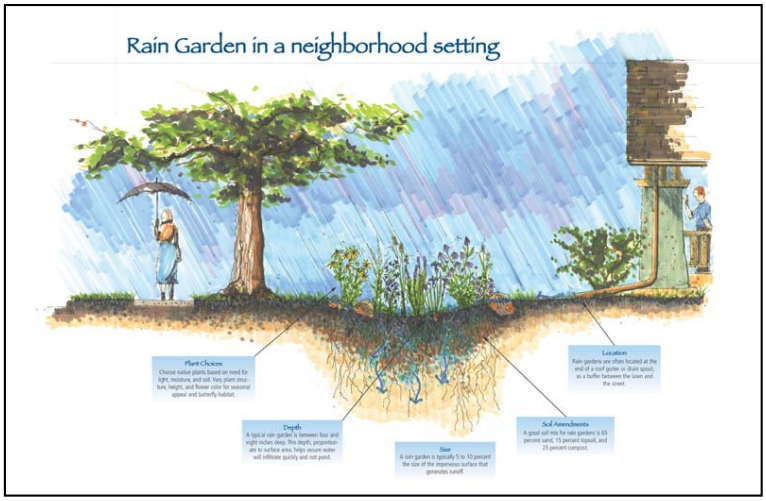
[53] Haller, Andrea D. 2012. *SmartScape Design Provides Improved Avian Habitat*. June.
[54] Haller, Andrea D. 2012. *SmartScape Design Provides Improved Avian Habitat*. June.

providing drought preparedness. The rainbarrels will collect rainwater that would otherwise become urban runoff. This urban runoff enters local, polluted, waterways, include Chollas Creek, and the City's stormwater system, and is not utilized as a water supply, as these systems discharge to San Diego Bay. Installation of rainbarrels would create a new water supply because it would utilize water that is otherwise uncaptured and unused.

Combined, these efforts result in long-term reduction of water use by creating sustainable, and easy, ways to reduce water use. Fixtures, rainbarrels, and greywater systems would only require standard maintenance to continue to provide drought preparedness benefits in the long-term, while the landscape conversions would simply need to remain in place (e.g., not converted back to turf) to continue to provide water savings benefits. Water-saving benefits associated with outreach and education would also be long-term because it would encourage and support behavioral changes, and could even encourage additional long-term benefits by helping to foster a culture of water-saving behaviors in the community beyond those individuals who directly receive the education and outreach.

The project also lays the groundwork for scaling up the project to implement conservation home makeovers throughout the neighborhood, and could be used as the basis for other larger scale conversions.

Although the groundwater basin in the watershed is not currently utilized in the watershed, it may be used as a resource in the future. Stormwater detention, and reduced urban runoff from this project would help reduce pollution reaching groundwater resources, protecting these resources for future use. Further, while not a direct drought preparedness benefit of this project, if the results of this project were used to develop a similar project in another area that did overlie a groundwater basin utilized for water supply, that basin would benefit from the lessons learned from this project.



Water collection and on-site stormwater detention

Direct Water-Related Benefit to DACs

The *Conservation Home Makeover in the Chollas Creek Watershed* project specifically targets residences in the Encanto neighborhood of the City of San Diego. This neighborhood is located between Hwy. 805 to the west, Hwy. 94 to the north, Hwy. 125 to the east, and Division and Plaza streets to the south. As shown in **Figure 2-3** (above) and in **Table 7-1** (see *Attachment 7 Disadvantaged Communities*), this area is 64% DAC by area as defined in the 2015 Guidelines. As shown in **Table 7-2** (*Attachment 7 Disadvantaged Communities*), this project will directly address seven urban DAC needs: Community Development, Funding, Flooding/Impervious Surfaces, San Diego Bay Pollution, Food Security/Irrigation Costs, Technical Capacity, and DAC Outreach.

Installation of greywater systems through this project will help address food security and irrigation costs by diverting greywater from the sewer system for use in irrigation of fruit trees to be planted at each residence. The project will reduce runoff from residences, protecting against flooding. Landscape makeovers will also help to reduce impervious surfaces and increase on-site stormwater retention. Along with the rainbarrel installations, landscape makeovers will reduce pollution reaching San Diego Bay. The project will build technical capacity by providing technical training to project participants, which will teach proper system maintenance, support community development and job skills, and provide outreach to DACs. The project will provide funding to help to offset the costs of installing greywater systems, water-wise fixtures, rainbarrels, and implement landscape makeovers. Data collected from the project will be used to support future expansion of conservation home makeovers, and to secure funding for such expansion through other grant programs, which helps to address the funding shortage issue that so often plagues urban DAC projects in the Region. This project will help to foster community development by enlisting community members to assist with implementing the home makeovers, provide training for system maintenance, and help to create a model community for water conservation and

healthy foods. Together these will help to foster a sense a community pride, and build technical capacity in the neighborhood. Project participation relies heavily on outreach that will be conducted to inform residents of the importance and value of water conservation and reuse, and the role this project can play in this. Because outreach is key to participation, it will be specifically targeted to the Encanto neighborhood.

Project Performance Monitoring Plan

Benefits will begin accruing as soon as the conservation makeover is completed. For this reason, interim targets would be based on the number of homes that have been completed **Table 2-13**, below, describes the methods that will be used to measure the quantified benefits of this project and described in the sections above. Measurable targets for each benefit are also presented in the table.

Groundwork is not a water supply agency, and is therefore unable to use metering data to evaluate progress towards achieving the primary benefit of water savings. Therefore, progress towards this benefit will rely on self-reporting from the project participants, and will be built into their participation agreements. Groundwork staff will visit participating homes following completion of the home makeovers as part of their work plan. As part of these visit, Groundwork staff will strengthen relationships with participants and remind them that they will be subject to annual visits as part of Groundwork's project monitoring conducted to meet the conditions of this grant.

Table 2-13: Project Monitoring for *Conservation Home Makeover in the Chollas Creek Watershed*

Proposed Physical Benefits	Measurement Tools and Methods	Targets	
		Per house	Total (50 houses)
Water Supply	As part of their participation agreements, homeowners will commit to submitting water bills to Groundwork Staff, who will compile water use data to show total water savings At the time of the agreement, homeowners will provide copies of their water bills for the 12 months prior to conversion to act as a baseline. If these bills are not available to establish a baseline, an average water use value will be applied as calculated above.	0.44 AFY water use, for a reduction of 0.17 AFY water use from current demand	22 AFY total water use, for a total reduction of 8.5 AFY from current demand
Habitat Improved	Groundwork staff will visit participant homes to verify landscaping remains in place and has not been converted back to turf or otherwise removed. Landscaped area will be measured during design of the landscaping plan, and these data will be retained by Groundwork staff to assist during project monitoring. Should any changes to landscaping be made by homeowners, Groundwork staff will re-calculate the total area landscaped with water-wise and native vegetation.	1,000 sq ft/house converted from turf, with average 64% vegetation cover (640 sq ft of habitat per house)	1.1 acres total, averaging 64% vegetation cover (0.7 acres of habitat total)

Cost Effectiveness Analysis

The Conservation Home Makeover in the Chollas Creek Watershed project will achieve two quantifiable physical benefits described in detail in the sections above, and summarized in **Table 2-11 and 2-12**. During project development, alternatives to the preferred project included in this application were considered and, ultimately, rejected. **Table 2-14** provides a cost effectiveness analysis consistent with Table 7 of the *2015 PSP*.

Table 2-14: Cost Effective Analysis for *Conservation Home Makeover in the Chollas Creek Watershed*

Cost Effective Analysis	
Question 1 Physical Benefits Summary	*Types of benefits provided as shown in Table 2-11 and 2-12.* Benefit 1: Water Supply – 8.5 AFY potable water savings Benefit 2: Habitat Improved – 1.1 acres habitat created
Question 2 Alternatives Considered	*Have alternative methods been considered to achieve the same types and amounts of physical benefits as the proposed project been identified?* No
	If no, why? If yes, list the methods (including the proposed project) and estimated costs. No alternatives were considered for this project. While other projects could potentially be implemented that would achieve similar levels of water savings and habitat protection, this project goes beyond the two quantified benefits and addresses larger community needs, including food security, that are less likely to be achieved through alternative projects that provide benefits solely equivalent to the two quantified benefits for this project. Groundwork has a long history of working within the targeted community, and their experience and relationships with the community lead to development of this project specifically to meet their needs – because this project was tailored to the known needs and based in a deep understanding of the community, no viable alternatives were considered. Cost effectiveness of materials will be evaluated prior to purchase to ensure the project stays within budget.
Question 3 Preferred Alternative	*If the proposed project is not the least cost alternative, why is it the preferred alternative? Provide an explanation of any accomplishments of the proposed project that are different from the alternative project or methods.* There is no identified least cost alternative. It is the preferred alternative because it provides water savings and habitat improvement benefits (the two quantified benefits) but also a host of other, non-quantified, benefits, that address needs specific to this DAC. These other benefits include food security, improved public health through access to healthy food options and reduced exposure to pollutants, water quality protection in the watershed from reduced urban runoff, drought preparedness, cost savings (particularly important in DACs), and outreach and education specifically designed for the community, making it more effective for promoting behavioral changes that would result in fostering a water-wise community ethic.

Project 3: San Diego Water Conservation Program

Local Project Sponsor: City of San Diego
Partners: Water Conservation Garden (The Garden) and San Diego Sustainable Living Institute (SDSLI)

Project Summary

The project will achieve water conservation by expanding City of San Diego's successful turf replacement rebate program and implementing greywater system rebate pilot program.

Project Maps

Figure 2-4 shows the *San Diego Water Conservation Program* project area, the service areas of the project sponsor, the project facilities and the project's relation to groundwater basins and surface water, disadvantaged communities (DAC) and proposed monitoring locations.

The City of San Diego's existing turf rebate program has proven popular and is supported by community outreach

Project Description

The City of San Diego (City) will continue its existing incentive program for water-wise landscaping, develop and implement a pilot program for greywater system incentives, and partner with The Garden and SDSLI to provide a variety of related water conservation education and training courses that will result in conservation of 481 AFY of potable water. These efforts will help the City meet its water conservation goals, reduce water use in a time of drought, move the city to more sustainable water use practices, and engage and educate the public while providing the tools to successfully implement water conservation projects at home.

Landscape irrigation represents up to 50% or more of the total water consumed by single family residences in San Diego.[55] As such, the City foresees great potential for water savings in outdoor irrigation at single family residences. This project will fund additional rebates for the City of San Diego's existing turf replacement rebate program, which was awarded Prop 84-Round 2 funding to develop and implement the program. Since its inception, the turf rebate program has been overwhelmingly popular, to the extent that available funds were exhausted in FY 2014-15. Applications for additional funds from fiscal year (FY) 2015-16 were accepted starting July 1, 2015, and were exhausted within the same day that the rebate application period opened. Expansion of this proven, successful program is needed to meet the high demand for landscape and irrigation conversion incentives by City customers. All of the program development for the turf rebate component is already in place. The turf replacement rebates provide a cash back incentive per square foot (sq ft) for conversion from turf to water-wise landscaping, and requires installation of efficient irrigation systems (such as drip irrigation). To-date, the existing turf rebate program has funded conversion of approximately 844,518 sq ft of turf. This program expansion will convert an additional 440,000 sq ft of turf to water-wise landscaping, resulting in a total water savings of 45.9 acre-feet per year (AFY) and creation of 6.5 acres habitat for native species.

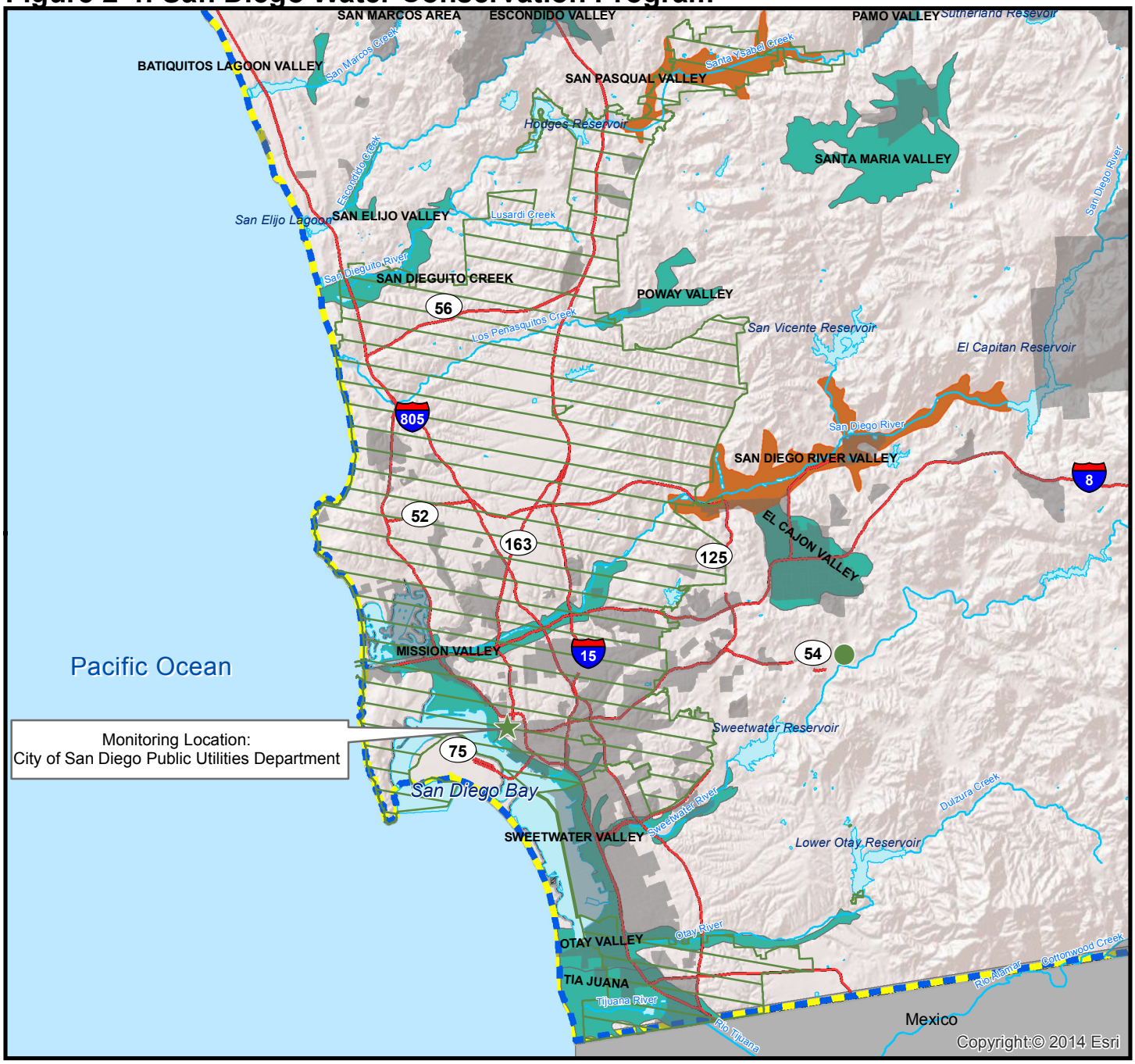
As drought conditions continue to challenge the region, the City will also develop a new rebate program for greywater systems as another incentive to encourage customers to conserve water. The greywater rebate pilot program will develop guidance for providing rebates to participants who install greywater systems in their homes to capture and safely reuse greywater from laundry machines or other sources. This guidance will include the process for applying for rebates, the rules homeowners must follow to qualify for rebates, eligible types of greywater systems, and provide information on how to safely install greywater systems in homes. This component also includes program administration and funds for the rebates themselves. This program is anticipated to offer 1,000 rebates, valued at $200 per rebate, and will result in water savings of 28.9 AFY.

Complementing these conservation efforts will be workshops and outreach regarding water-wise landscaping, irrigation efficiency, greywater systems, and water conservation. The Garden will add a new exhibit that showcases cutting-edge irrigation technologies that can contribute to reducing overall water use, which will reach an estimated 50,000 visitors per year. It will also provide outreach consisting of ten to twenty presentations over a two-year period at community venues such as churches, community events, schools, community organizations, and social clubs with a special emphasis on reaching DACs. Several workshops, classes, and tours will be offered at The Garden focusing on topics such as landscape design, water-wise veggie gardens, and efficient irrigation methods utilizing the new irrigation exhibit.

In addition to the outreach conducted by The Garden, SDSLI will conduct water reuse workshops for the public that will include monthly hands-on training for greywater installation ("Laundry to Landscape") and workshops on rainwater harvesting five times a year. The greywater and other outdoor water conservation seminars will educate the public on how to properly install, maintain, and use these tools to reduce outdoor water use. SDSLI will also provide monthly Water Conservation Talks related to rainwater, groundwater, and landscape design as well as offer quarterly water harvesting neighborhood tours.

[55] City of San Diego. Drought Information and Resources – Drought Alert: Mandatory Water Use Restrictions. Website. Accessed 17 July 2015. Available: http://www.sandiego.gov/water/conservation/drought/prohibitions.shtml

Figure 2-4: San Diego Water Conservation Program



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Legend

- San Diego IRWM Region
- Funding Area Boundary
- Freeway
- Waterbody
- County
- DAC Area*
- Medium Priority Groundwater Basin
- Very Low Priority Groundwater Basins
- Benefit Area: 3 San Diego Water Conservation Program (corresponds to City of San Diego)
- Monitoring Location
- The Water Conservation Garden

*Note: DAC as determined by census tract and block group data for the year 2013, from the American Community Survey 2009-2013 5-year results. DAC determined based on definition of median household incomes below 80% of the statewide MHI or $48,875.

Sources: U.S. Census 2013 ACS 5-year estimates; San Diego Association of Governments (SANDAG) - GIS Data Warehouse
Document Path: N:\Projects GIS\0188-003 SDIRWM Plan Update\Prop84_Rnd4\MXD\Project maps\2-4_CityofSDProject29072015.mxd

Project Physical Benefits

This project will provide two quantified physical benefits, Water Supply and Habitat Improved, as presented in **Table 2-15** and **Table 2-16** below. The primary benefit is 74.8 AFY Water Supply, achieved through water conservation from turf conversions and greywater reuse. The secondary benefit is 6.5 acres Habitat Improved, achieved through turf conversions to water-wise and native landscaping.

For the primary benefit (Water Supply), the baseline value was calculated using the FY2014 water demands provided by City of San Diego Public Utilities Department for residents in the City (137 gal/person/day [GPCD])[56] and assumed an average of 4 persons per household. This value was used, rather than the "r-gpcd" values being reported to the State Water Resources Control Board under the emergency regulations, because the FY2014 data is considered as a reasonable median sans extraordinary conservation measures. The useful project life is considered 13 years for the turf conversions and greywater systems, based on length of average homeownership estimated by U.S. Department of Housing and Urban Development[57] (HUD) and assuming that new homeowners may not be inclined to maintain the greywater and/or water-wise landscaping. Note, however, that this is a conservative assumption because incoming homeowners may choose to continue using all conservation tools available. The value of the conservation benefit (45.9 AFY) was calculated assuming an average turf conversion of 1,000 square feet per household, for a total of 440 participating households. The value of the greywater reuse benefit (28.8 AFY) was calculated assuming participation by 1,000 households. This number may change as the rebate program guidelines are refined. Total participation in the two rebate programs could be up to 1,440 households; however, this is also a conservative estimate because some of those households may opt to participate in both rebate programs. The benefit accrual (8.5 AFY) is based on information from the California Urban Water Conservation Council (CUWCC) on turf conversions, and from U.S. Environmental Protection Agency (EPA) and Energy Star on greywater supplies (via clothes washers). The cumulative change resulting from the project is 971 AF from 2016 to 2030.

[56] Pers. Comm. Dianne Modelo, Senior Management Analyst, City of San Diego. E-mail. August 3, 2015.
[57] U.S. Department of Housing and Urban Development. 2004. *The Sustainability of Homeownership: Factors Affecting the Duration of Homeownership and Rental Spells*. Note: Typical homeownership duration for whites, African Americans, and Hispanics is estimated to be: 16.1, 9.5, and 12.5 years, respectively; 13 years is the average.

Table 2-15: Primary Physical Benefit – Water Supply
San Diego Water Conservation Program

Project Name: San Diego Water Conservation Program **Type of Benefit Claimed:** Water Supply – Conservation from turf conversion and greywater **Units of the Benefit Claimed:** AFY **Anticipated Useful Life of Project:** 13 years			
(a)	**(b)**	**(c)**	**(d)**
Year	**Annual Without Project**	**Annual With Project**	**Annual Change Resulting from Project (c) – (b)**
2016	884 AFY	859 AFY	-24.7 AFY
2017	884 AFY	835 AFY	-49.4 AFY
2018-2028	884 AFY	809 AFY	-74.8 AFY
2029	884 AFY	835 AFY	-49.4 AFY
2030	884 AFY	859 AFY	-24.7 AFY
Comments: This project has an expected project life of 13 years for both the turf conversions and the greywater systems, based on HUD estimates of typical homeownership duration. Benefits are assumed to begin accruing immediately following each conversion or system installation. Rebates are assumed to be distributed at a constant rate during the three-year implementation period. Based on the project schedule, benefits are anticipated to phase in by 33% per year between 2016-2018. Benefits remain constant from 2018-2086, and then are phased out at the end of the project life in a manner consistent with how they were phased in. Sources: Pers. Comm. Dianne Modelo, Senior Management Analyst, City of San Diego. 3 August 2015. CUWCC. 2015. *Turf Removal & Replacement: Lessons Learned*. March. U.S. EPA. 2015. WaterSense – Indoor Water Use in the U.S. http://www.epa.gov/WaterSense/pubs/indoor.html Energy Star. 2015. Certified Products – Clothes Washers. https://www.energystar.gov/products/certified-products/detail/clothes-washers			

The baseline for the secondary benefit (Habitat Improved) was calculated as the geographic area that currently provides wildlife habitat within the City. Habitat was defined as Landscape Open Space, Open Space Park or Preserve, or Undevelopable Natural Area in land use data from San Diego Association of Governments (SANDAG).[58] This analysis found 32% of the project area could be classified as habitat, or 87,808 acres. Baseline habitat also included areas converted from turf through the City's existing turf replacement rebate program, which has funded an estimated 844,518 (19.4 acres). Total "without project" habitat area is therefore 87,827 acres. The useful project life is considered 13 years for the turf conversions, based on length of average homeownership estimated by HUD[59]. The value of the habitat accrual (6.5 acres) was calculated based on the City's estimate of 64% plant coverage for participating residential properties in the existing turf rebate program.

[58] San Diego Association of Governments (SANDAG). SanGIS Data Warehouse – Landuse_Current. Available for download through the Regional GIS Data Warehouse, which can be accessed here: http://www.sandag.org/index.asp?subclassid=100&fuseaction=home.subclasshome

[59] U.S. Department of Housing and Urban Development. 2004. *The Sustainability of Homeownership: Factors Affecting the Duration of Homeownership and Rental Spells*. Note: Typical homeownership duration for whites, African Americans, and Hispanics is estimated to be: 16.1, 9.5, and 12.5 years, respectively; 13 years is the average.

Table 2-16: Secondary Physical Benefit – Habitat Improved
San Diego Water Conservation Program

Project Name: San Diego Water Conservation Program **Type of Benefit Claimed:** Habitat Improved – Water-wise and native plantings **Units of the Benefit Claimed:** Acres **Anticipated Useful Life of Project:** 13 years			
(a)	**(b)**	**(c)**	**(d)**
Year	**Annual Without Project**	**Annual With Project**	**Annual Change Resulting from Project (c) – (b)**
2016	87,827 acres	87,830 acres	2.1 acres
2017	87,827 acres	87,832 acres	4.3 acres
2018-2028	87,827 acres	87,834 acres	6.5 acres
2029	87,827 acres	87,832 acres	4.3 acres
2030	87,827 acres	87,830 acres	2.1 acres
Comments: Only the turf conversion component would contribute to this benefit. Project life for this component is 13 years, based on HUD estimates of typical homeownership duration. Benefits are phased in consistent with the project schedule, at a constant rate across the three-year implementation period, with 33% of the benefit realized each year. Benefits remain constant from 2018-2028, and have been consolidated for these years. Baseline conditions include the area of habitat that currently exists within the City of San Diego, including habitat created through implementation of the City's existing turf rebate program. Sources: San Diego Association of Governments (SANDAG). *SanGIS Data Warehouse – Landuse_Current*. Available for download through the Regional GIS Data Warehouse. Accessed: July 21, 2015. Haller, Andrea D. 2012. *SmartScape Design Provides Improved Avian Habitat*. June.			

In addition to the two quantified physical benefits, this project would provide additional benefits related to water quality protection through reduced urban runoff from improved irrigation efficiencies (primarily reduction in total suspended solids, total dissolved solids [TDS], and nutrients), direct water cost savings to participants, reduced costs and energy use by the Region to import potable water supplies to meet local demands, progress towards meeting State-mandated water conservation goals (emergency regulations and 20x2020 conservation goals), and reduced green waste and associated impacts from hauling of green waste.

Technical Analysis of Physical Benefits Claimed

Project Need and Conditions

As drought conditions continue to challenge the State and the Region, water agencies and cities are seeking to find ways to encourage water conservation. These efforts are necessary to conserve supplies for critical needs, protect against water right curtailments, and to help meet mandatory water use restrictions and targets. As part of the Governor's Drought Declaration (January 17, 2014), subsequent executive orders (April 25, 2014 order to speed up drought response actions; December 22, 2014 order extending previous order; and April 1, 2015 order mandating 25% reduction in potable water usage through February 2016)[60], and adoption of emergency conservation regulations, the SWRCB issued mandatory water use cutbacks to each public water supplier in the state. The City has been directed to reduce overall water use by 16%.[61] In FY 2014, residents within the City

[60] California Department of Water Resources. Governor's Drought Declaration. Website: http://www.water.ca.gov/waterconditions/declaration.cfm

[61] City of San Diego. Drought Information and Resources – Drought Alert: Mandatory Water Use Restrictions. Website. Accessed 17 July 2015. Available: http://www.sandiego.gov/water/conservation/drought/prohibitions.shtml

averaged 137 GPCD.[62] With an estimated 2014 population of 1,355,896,[63] the City's water use was approximately 208,075 AFY.

In addition to meeting mandatory use reduction targets, the City is working to reduce its dependence on imported water. The City of San Diego's water supply mix is: 84% imported water via San Diego County Water Authority; 12% local surface water; 4% recycled water; and a negligible amount of groundwater.[64] As noted in the *2013 IRWM Plan*, the Region is heavily dependent on water imported from the State Water Project (SWP) and Colorado River. This dependence on imported supplies has reduced the reliability of water supplies, particularly in times of drought when these supplies may be restricted. Current SWP allocations have been restricted to 20% for this year, while last year they were a mere 5%.[65,66] Water conservation has been identified as a strategy to reduce reliance on imported water, and help improve supply reliability by conserving water for critical needs. The existing turf replacement rebate program has proven hugely successful in the City, and high demand has exhausted available rebate funds.[67] Additional funding for rebates would allow the City to expand its turf rebate program to meet demand.

As the drought continues, San Diegans have been further seeking innovative ways to reduce their individual water use. One such opportunity is the installation of greywater systems that reuse water from the home, such as washing machines, for outdoor irrigation. Installation of greywater systems may be intimidating to the average homeowner, and a rebate program could be used to incentivize widespread installation of greywater systems, especially when combined with an education and outreach program to help residents understand the benefits of greywater and how to properly install and maintain their systems.

In addition to reducing potable water demands, greywater reuse would offset loading to the sewer system. Wastewater from the region is conveyed to and treated at the City's Point Loma Wastewater Treatment Plant (WWTP) prior to discharge to the Pacific Ocean through the Point Loma Ocean Outfall. While the Point Loma WWTP currently uses primary treatment and operates under a waiver, it is anticipated that in the future, the Point Loma WWTP will need to be upgraded to treat effluent to secondary levels. Reducing wastewater flows to the plant will ease this process by reducing the required secondary capacity and/or allow for a delay in those upgrades until after the City's Pure Water Program (potable reuse) is implemented. Given the Point Loma WWTP's location on the coast and surrounded by cliffs, the physical space limitations of the site make a secondary upgrade extremely costly and challenging, and any reduction of wastewater flows to the plant can help to make this process easier and less expensive.

The surface waters within the watersheds that encompass the City (San Dieguito, Peñasquitos, San Diego, Pueblo, Sweetwater, Otay, and Tijuana watersheds) have water quality issues that include nutrients, bacteria, TDS, turbidity, metals, trash, toxicity, and dissolved oxygen, among others.[68] These issues can be caused by or exacerbated by urban runoff, much of which is attributable to irrigation inefficiencies. Dry weather runoff can be reduced, however, as a result of: 1) compliance measures required for irrigation with greywater systems, 2) irrigation efficiencies required as part of the turf replacement rebate program, and 3) reduced irrigation needs of water-wise landscaping compared to conventional turf landscapes.

San Diego County is one of the most biodiverse areas of the country, with 492 bird species, 140 mammal species, 75 reptiles and amphibian species, 1,534 native plant species, and 20,000 insects. Over 200 of these species are listed as endangered, threatened, rare, or are candidates for listing.[69] Much of the City of San Diego is highly urbanized, but is interspersed with open space, particularly open space corridors along creeks and canyons. Turf is a monoculture that limits habitat availability and food sources for those species that used to live in what is now urbanized areas. Increasing habitat availability within urban areas, such as through replacement of turf

[62] Equinox Center. 2015. H2Overview Series: San Diego County Residential Water Use Trends. February.
[63] U.S. Census. Quick Facts – San Diego (city), California. Website. Accessed 20 July 2015. Available: http://quickfacts.census.gov/qfd/states/06/0666000.html
[64] City of San Diego. 2011. *2010 Urban Water Management Plan*.
[65] California Department of Water Resources. 2015. Notice to State Water Project Contractors – 2015 State Water Project Allocation Increase – 20 Percent. March 2.
[66] California Department of Water Resources. 2014. Notice to State Water Project Contractors – 2014 State Water Project Allocation Increase back to 5 Percent. April 18.
[67] City of San Diego. Rebate Programs. Website. Accessed 20 July 2015. Available: http://www.sandiego.gov/water/conservation/rebates/index.shtml
[68] San Diego RWMG. 2013. *2013 San Diego Integrated Regional Water Management Plan*.
[69] San Diego RWMG. 2013. *2013 San Diego Integrated Regional Water Management Plan*.

monoculture with a native and water-wise polyculture, would provide additional food sources and habitat for species as they live and travel between these existing corridors. A California Natural Diversity Database (CNDDB) query found 65 animal species and 82 plant species reported within the project area.[70] These species are present or could be supported by water-wise habitat if it existing within the project area. Potential wildlife species that could be supported by habitat created through turf conversion within the project area are listed in **Table 2-17**.

Table 2-17: Species Listed in the CNDDB Within or Near the Project Area

Animals		
Federal- or State-Listed Threatened, Endangered, or Candidate Species		
Hermes Copper Butterfly	Light-Footed Clapper Rail	Riverside Fairy Shrimp
Belding's Savannah Sparrow	Pacific Pocket Mouse	San Diego Fairy Shrimp
California Least Tern	Quino Checkerspot Butterfly	Western Yellow-Billed Cuckoo
Least Bell's Vireo	California Black Rail	Green Turtle
Western Snowy Plover	Coastal California Gnatcatcher	Swainson's Hawk
Non-Listed Species		
American Peregrine Falcon	Hoary Bat	Silvery Legless Lizard
American Badger	Least Bittern	Spotted Bat
Bell's Sage Sparrow	Northern Harrier	Thorne's Hairstreak
Big Free-Tailed Bat	Orangethroat Whiptail	Tricolored Blackbird
Burrowing Owl	Pallid Bat	Two-Striped Garter Snake
California Horned Lark	Pocketed Free-Tailed Bat	Western Beach Tiger Beetle
California Mellitid Bee	Prairie Falcon	Western Mastiff Bat
Coast Horned Lizard	Red-Diamond Rattlesnake	Western Red Bat
Coast Patch-Nosed Snake	Rosy Boa	Western Spadefoot
Coastal Cactus Wren	San Diego Desert Woodrat	Western Yellow Bat
Coastal Whiptail	San Diego Ringneck Snake	White-Tailed Kite
Cooper's Hawk	Sandy Beach Tiger Beetle	Yellow Warbler
Coronado Island Skink	Senile Tiger Beetle	Mesa Shoulderband
Dulzura Pocket Mouse	Silver-Haired Bat	Mexican Long-Tongued Bat
Globose Dune Beetle	Wandering (Saltmarsh) Skipper	Northwestern San Diego Pocket Mouse
Monarch - California Overwintering Population	Mimic Tryonia (California Brackishwater Snail)	Western Tidal-Flat Tiger Beetle
Southern California Rufous-Crowned Sparrow	San Diego Black-Tailed Jackrabbit	

Source: California Natural Diversity Database (CNDDB). RareFind 5 database query within Project Area (21 July 2015).

[70] California Natural Diversity Database. Rarefind 5. Database query within Project Area. Accessed 21 July 2015. Available with subscription: https://map.dfg.ca.gov/rarefind/view/RareFind.aspx

Without-Project Conditions

Without this project, the City of San Diego would need to find other ways to meet the State's mandatory use reductions, which may be less cost-effective, or take longer to implement if such efforts were starting from scratch, instead of expanding existing programs. The Garden's irrigation exhibit would not be built, and SDSLI's educational and training programs would not be expanded to provide customers with accessible and convenient resources to learn about ways to reduce water use and how to safely install and use greywater systems.

The City would not be able to continue the turf replacement rebate program to provide incentives for residential and commercial customers to conserve water, or would need to find other sources of funding to continue this effort, which could divert funds from other, equally valuable, projects. The City's greywater system rebate pilot program would need to seek other sources of funding to be implemented, which would delay implementation. While other entities (such as Metropolitan Water District of Southern California [MWD]) may offer similar turf rebates that City residents could apply for, these rebates are already running low or out. MWD's turf rebates have also run out of funds, and are no longer available, and uncertainty remains over whether rebates will become available in the future.[71] Although DWR is implementing a turf rebate program in the near future, only $12 million is available for "Non-Targeted California Counties", which includes all counties outside the San Joaquin Valley, and is likely to be highly competitive.[72] It is unlikely that a substantial amount of these funds would be distributed for turf conversion in the City of San Diego. Without these rebate programs, residents would be less likely to convert private landscapes to water-wise plantings and therefore be less likely to create an additional 6.5 acres of habitat.

High water demands for turf irrigation would continue, or property values would decrease as curb appeal diminishes when turf dies, especially if further water use restrictions are activated in response to the drought. Greywater would continue to be discharged as wastewater to the City's Point Loma WWTP.

Methods Used to Estimate the Physical Benefits

A primary (Water Supply) and secondary (Habitat Improved) physical benefit was quantified for this project and presented in **Table 2-15** and **Table 2-16**, above. The methodology used to calculate these benefits are described here. Note that the calculations show the annual benefits anticipated when the project is complete and 100% of the benefits are realized annually. Some difference may occur due to rounding.

Primary Benefit – Water Supply

The Water Supply benefit is achieved as a combination of conservation from the turf replacement rebate program and reuse from the greywater system rebate pilot program. Currently, the City's turf replacement rebate program guidelines[73] require that homeowners replace grass in their front, side, or backyards with specific minimums required for living plant material to receive up to $1.50 per sq ft rebate, up to $3,600 for residential and $15,000 for commercial. These guidelines are subject to change contingent on new rules and regulations that may impact the outdoor rebate program. Qualifying plants must be very low to moderate in water use and non-invasive. A portion of the project area must consist of pervious surface that helps reduce stormwater runoff. Published data from California Urban Water Conservation Council (CUWCC) shows conversion of turf to water-wise landscaping saves 34 gallons per square foot per year.[74] Expansion of the City's turf replacement rebate program will provide rebates to convert 440,000 square feet of turf to water-wise landscaping, saving 14,960,000 gallons per year, or 45.9 AFY. Assuming each participating homeowner converts approximately 1,000 sq ft of turf to water-wise and native plants, 440 households are anticipated to participate in the rebate program.

$$\frac{Water\ Savings}{Unit\ Area} * Area\ Converted = Total\ Water\ Savings$$

$$34\frac{gals}{sq\ ft * yr} * 440{,}000\ sq\ ft = 14{,}960{,}000\ \frac{gals}{yr} * \frac{1\ AF}{325{,}851\ gals} = \mathbf{45.9\ AFY}$$

[71] SoCal Water$mart. Turf Removal Program Update. Website. Accessed 20 July 2015. Available: http://socalwatersmart.com/?page_id=2967
[72] California Department of Water Resources. *California 2015 Turf Replacement Initiative – Guidelines*.
[73] City of San Diego. Grass Replacement Rebates. Website. http://www.sandiego.gov/water/conservation/rebates/grassreplacement.shtml
[74] CUWCC. 2015. Turf Removal & Replacement: Lessons Learned. March.

The City's draft greywater system rebate pilot program guidelines (under development) are considering an average $200 rebate for cost of materials only. Water reuse from greywater systems is calculated as the total volume of water reused by each greywater system and the total number of greywater systems to be installed. With implementation of a greywater system, all of the water used by washing machines or showers will be available for reuse. Greywater systems would only be installed if the water they make available for reuse is actually used (or the system owner would have no reason to install greywater), so all water available for reuse through the greywater system would offset potable water. Greywater systems will reuse water from washing machines or showers, for which water use varies depending on the type of washing machine being used. The range of standard washing machine water use is 27-54 gallons per load, for an average of approximately 41 gallons per load.[75] However, it is anticipated that residents who are "early adopters" of greywater systems, and most likely to participate in the greywater system rebate pilot program, may also have Energy-Star washing machines, which are low water/low energy appliances. These machines use approximately 13 gallons of water per load.[76] Averaging this with water use of traditional machines yields an average water use of 31 gallons per load. The average household runs 300 loads of laundry per year,[77] using 9,400 gallons per year. This project will fund rebates for 1,000 greywater systems, for a total reuse of 9,400,000 gallons per year, or 28.9 AFY.

$$\frac{Water\ Use}{Load} * \frac{Number\ of\ Loads}{House * year} * Number\ of\ Houses = Total\ Available\ Water\ for\ Reuse$$

$$31.3\frac{gals}{load} * 300\frac{loads}{house * yr} * 1{,}000\ houses = 9{,}400{,}000\frac{gals}{yr} * \frac{1\ AF}{325{,}851\ gals} = \mathbf{28.9\ AFY}$$

Together, the turf replacement rebate program and greywater system rebate pilot program will save 74.8 AFY of potable water.

Secondary Benefit - Habitat Improved

The secondary benefit of Habitat Improved is achieved through conversion of turf monoculture to water-wise and native landscaping. The total area to be converted through this project is 440,000 sq ft or 10.1 acres. Data generated by the City from the existing turf rebate program shows that past participants installed an average of 64% plant cover (31% with 25-49% plant coverage, 34% with 50-74% plant coverage, and 35% with 75-100% plant coverage).[78] Therefore, this analysis assumes 64% of the total converted area would qualify as habitat, and this factor was applied to the total converted area to give a total habitat area of 6.5 acres.

Water-wise and native vegetation have been shown to increase the number of bird species present compared to the same area when landscaped with turf.[79] Native plant gardens generally provide a more diverse mix of evergreen and flowering trees, shrubs, succulents and grasses, offering birds a wide range of textures and vertical variation for shelter and nesting opportunities. Additionally, varied food resources are provided, such as nectar, seeds, and the insects that will be attracted. Therefore, all of the converted landscape is considered habitat improvement, regardless of whether the landscape is purely native vegetation, or a mix of native and non-native water-wise vegetation. Bird species that were observed in a similar, water-wise landscape analyzed in the Haller study included Red-tailed Hawk, Bushtits, Black Phoebe, Anna's Hummingbird, Raves, Lesser Goldfinches,

[75] U.S. EPA. WaterSense: Indoor Water Use in the United States. Website. Accessed 20 July 2015. Available: http://www.epa.gov/WaterSense/pubs/indoor.html
[76] Energy Star. Clothes Washers for Consumers. Website. Accessed 20 July 2015. Available: https://www.energystar.gov/products/certified-products/detail/clothes-washers
[77] Energy Star. Clothes Washers for Consumers. Website. Accessed 20 July 2015. Available: https://www.energystar.gov/products/certified-products/detail/clothes-washers
[78] Pers Comm. Dianne Modelo. July 23, 2015. "Outdoor Res Rebate Data Area Dist.pdf"
[79] Haller, Andrea D. 2012. *SmartScape Design Provides Improved Avian Habitat*. June.

Before and after photos of a grass replacement project funded through the City's rebate

Source: City of San Diego. Grass Replacement Rebates. Website.

Mourning Doves, House Finches, House Sparrows, and Tree Swallows. The presence of trees was also found to be beneficial to attracting bird species, as canopies can provide habitat for nesting, roosting, and protection.[80]

$$Total\ Area\ Converted * Percent\ Habitat\ Factor = Total\ Habitat\ Improved$$

$$440{,}000\ sq\ ft * 64\% = 281{,}600\ sq\ ft * \frac{1\ ac}{43{,}560\ sq\ ft} = \mathbf{6.5\ ac\ of\ habitat}$$

In sum, this project will create 6.5 acres of new habitat comprised of water-wise plantings.

New Facilities, Policies, and Actions Required to Obtain Physical Benefits

To obtain the physical benefits of the *San Diego Water Conservation Program*'s Turf Replacement Rebate component, program participants will need to implement turf conversion projects (remove turf, install new landscaping, and install water-efficient irrigation systems in accordance with program guidelines). No additional policies, facilities, or actions would be required because this component is an expansion of an existing program, and would continue to use the same facilities, staff, and guidance. The Greywater System Rebate Program component will require completion of program guidelines, and installation of greywater systems and appropriate appurtenances by residents. All greywater systems will be installed compliant with the California Plumbing Code, and no additional policies would be required. The irrigation exhibit component will require installation of the exhibit itself, installed within The Garden's existing site, and all outreach and education benefits of this component of the project will be realized once all work included in the work plan (see *Attachment 3 Work Plan*) is completed.

Potential Adverse Physical Effects of the Project and Mitigation

There are no anticipated long-term adverse physical effects from this project. There may be temporary impacts associated with turf removal, such as air quality or noise impacts from removal and hauling of turf and installation of replacement landscaping. There may also be minor noise, odor, and air quality impacts from installation of the new irrigation exhibit at The Garden from trucks carrying materials, and equipment used to install the exhibit. However all adverse impacts are anticipated to be minor and temporary in nature.

Long-Term Drought Preparedness

This project will address long-term drought preparedness in four of the ways identified in Table 1 of the *2015 Guidelines*: 1) water conservation, 2) water reuse, 3) improve landscape irrigation efficiencies, and 4) achieve long-term reduction of water use. This project will promote water conservation through turf replacement conversions, education, and training. The project will also improve landscape irrigation efficiency by motivating customers to make long lasting changes to landscape and irrigation systems. The irrigation exhibit at The Garden, and SDSLI's outreach efforts will promote irrigation efficiency and show residents how these systems are installed and used to achieve water savings. Efficient irrigation systems are a requirement of the turf rebate program, encouraging conversion from inefficient irrigation (such as sprinklers) to efficient irrigation (such as drip irrigation or microspray sprinklers). Water reuse will be encouraged and achieved through installation of greywater systems

[80] Haller, Andrea D. 2012. *SmartScape Design Provides Improved Avian Habitat*. June.

under the greywater rebate pilot program, along with the outreach conducted by SDSLI. Greywater systems effectively reuse laundry water for on-site irrigation, which must also be applied using efficient systems as part of the safety measures implemented during greywater system installation (compliant with the California Plumbing Code). Turf conversion and greywater systems help achieve long-term reduction of water use, so long as these landscapes and systems remain in place. While homeowners typically stay in a house for 13 years (per a 2004 HUD study), and there is no guarantee that a new homeowner would keep these systems in place, it is reasonable to assume that some of these conversions and systems will remain intact and the water use reduction will be realized over the long-term. Particularly as conservation practices become the norm, rather than the exception, as rebate programs expand and more people become water-wise in their daily lives.

This project also indirectly addresses long-term drought preparedness by providing a new water supply through greywater system water reuse, and effective groundwater basin management. The "new" water supply from the greywater system is water that could have been recycled by the City for use in its recycled water distribution system, but is now being diverted from the wastewater flow for on-site reuse. While this water could have been reused elsewhere, diverting it at the point of origin does not diminish the recycled water availability within the City, which is limited by treatment and distribution capacity, rather than supply. Therefore, this is a "new" supply for residents. Groundwater basin management is improved indirectly by this project by reducing the pollutants entering local waterways and groundwater from urban runoff. The irrigation efficiencies, and required stormwater retention of the turf rebate program reduces urban runoff, while conversion to waterwise and native vegetation reduces the chemical inputs (fertilizer and pesticides) to the landscape, which also reduces the pollutants available to be conveyed by urban runoff.

Direct Water-Related Benefit to DACs

An analysis of the extent of DACs within the project area was completed in *Attachment 7 Disadvantaged Communities*. As demonstrated in that analysis, the City of San Diego is 28% DAC by population. The *San Diego Water Conservation Program* will be implemented throughout the City's service area, and is available for all customers, including DACs. Direct and indirect benefits are therefore anticipated to be distributed across the city, including its DACs. This project will directly address one urban DAC need (see **Table 7-2** of *Attachment 7 Disadvantaged Communities*). Direct benefits to DACs include funding support through rebates available to program participants. There is a need for financial assistance for conservation programs that DAC residents may not otherwise be able to afford. These rebates will help to overcome financial barriers to participation in water conservation efforts, and allow DAC residents to reap the benefits of participation in such efforts while allowing the City to help DACs contribute towards city-wide conservation goals.

Project Performance Monitoring Plan

Benefits will begin accruing as soon as turf conversions are completed or greywater systems are installed. For this reason, interim targets will be based on the number of greywater systems installed and the area of turf converted (based on rebates given out and/or rebate applications approved). Interim targets (by system and area) are provided in **Table 2-18**, along with annual benefits anticipated once 100% of the program is implemented. Note that these methods may change, pending development of the Project Performance Monitoring Plan under Task 9 of the Work Plan (see *Attachment 3 Work Plan*), and are presented as one option for measuring progress towards achieving the claimed benefits. Measurable targets for each benefit are also presented in the table.

As a water supplier, the City has access to metering data. This is the easiest way to determine how well the turf conversions and greywater systems contribute to potable water use reduction at participating residences. Because household compositions or circumstances can change over time, the City will follow up with residents whose water metering data show unusual or unanticipated changes in water use, in order to determine if these changes are beyond the influence or control of the project and how to address these differences when monitoring project performance.

For Habitat Improved, the City will ensure continued and on-going maintenance of vegetation installed as part of the turf rebate program. Turf conversion has been shown to create habitat and attract additional bird species. It is therefore presumed that maintenance of converted landscapes would continue to support these habitat improvements. The most appropriate way to determine continued maintenance of converted landscapes are site visits and/or visual inspections for rebate participant sites. The City may measure habitat by total vegetation cover included in the rebate application, and verified by site visits of photographs.

Table 2-18: Project Monitoring for *San Diego Water Conservation Program*

Proposed Physical Benefits	Measurement Tools and Methods	Targets		
		Per Area (Turf)	Per System (Greywater)	Total
Water Supply	The City will analyze water metering data for participating properties in both the turf rebate and greywater rebate programs. Metering data for the 12 months before turf conversion and/or greywater system installation will be used to establish a baseline, while metering data collected after conversion and/or installation will be used to measure post-project water consumption.	Average potable water offset of 34 gal/sq ft per year	Average potable water offset of 9,390 gal/system per year	74.8 AFY potable water offset (45.9 AFY from Turf, 28.8 AFY from Greywater)
Habitat Improved	The City will file copies of before and after conversion photos, along with rebate forms documenting total vegetation cover. Staff will conduct site visits to visually confirm vegetation maintenance.	Average 640 sq ft habitat per turf conversion	-	6.5 acres habitat

Cost Effectiveness Analysis

The *San Diego Water Conservation Program* project will achieve two quantifiable physical benefits described in detail in the sections above, and summarized in **Table 2-15 and 2-16**. During project development, no alternatives to the preferred project included in this application were considered as explained in **Table 2-19**. **Table 2-19** provides a cost effectiveness analysis consistent with Table 7 of the *2015 PSP*.

Table 2-19: Cost Effective Analysis for *San Diego Water Conservation Program*

Cost Effective Analysis	
Question 1 Physical Benefits Summary	*Types of benefits provided as shown in Table 2-15 and 2-16.* Benefit 1: Water Supply – 74.8 AFY of potable water conserved Benefit 2: Habitat Improvement – 6.5 acres of water-wise plantings
Question 2 Alternatives Considered	*Have alternative methods been considered to achieve the same types and amounts of physical benefits as the proposed project been identified?* No.
	If no, why? If yes, list the methods (including the proposed project) and estimated costs. No alternatives were considered for this project. The Turf Rebate Program component of this project is an extension of an existing rebate program, and does not require additional effort to develop or implement the rebate program. It would be inefficient and not cost-effective to develop an alternative program. The high success rate of the existing program, and relatively low rebate amounts ($1-$1.50/sq ft compared to Met's $2/sq ft), show that the program works well as it is currently designed. The Greywater Rebate Pilot Program is under development, and alternatives including how large each rebate should be will be considered during this process (Task 8 of the project's Work Plan in *Attachment 3 Work Plan*).
Question 3 Preferred Alternative	*If the proposed project is not the least cost alternative, why is it the preferred alternative? Provide an explanation of any accomplishments of the proposed project that are different from the alternative project or methods.* There is no least cost alternative identified for this project. The success of the existing Turf Rebate Program, and similar programs in southern California, shows that these types of programs are preferred mechanisms for encouraging individual conservation efforts. It is reasonable that a similar program for greywater systems would be successful as well, especially when coupled with outreach regarding safe installation and use of such systems. This project provides benefits beyond the two quantified benefits presented here, including water quality, water supply reliability, drought preparedness, and direct cost savings to customers (including DACs). Outdoor irrigation is a high water use for individual residences, and programs to reduce outdoor water use are generally effective for achieving substantial reductions in water use for relatively low effort and costs.

Project 4: Ms. Smarty-Plants Grows Water-Wise Schools

Local Project Sponsor: The Water Conservation Garden (The Garden)
Partners: Helix Water District, Otay Water District, and K-12 Schools within La Mesa-Spring Valley and Lemon Grove School Districts

Project Summary

The project will implement water conservation education, turf conversion, irrigation efficiency, and water-wise practices at 12 to 15 Title I schools.

Project Maps

Figure 2-5 shows the *Ms. Smarty-Plants Grows Water-Wise Schools* project area, the service areas of the project sponsor, the project facilities and the project's relation to groundwater basins and surface water, DACs, and proposed monitoring locations.

Students at Madison Elementary School preparing to convert from turf to water-wise landscaping

Water-wise landscaping at Madison Elementary School

Project Description

The *Ms. Smarty-Plants Grows Water-Wise Schools* project builds upon an award winning, nationally recognized education program for children and adults, and builds on a successful pilot project with four schools. In December 2013, Ms. Smarty-Plants™ received the State of California Governor's Excellence in Environmental Leadership Award (GEELA) in recognition of the success of this innovative program. Through this project, The Garden will deliver this program at its expanded Education Center classroom, with tours of The Garden, and at school assemblies. The Garden is a non-profit organization that uses educational programs and exhibits to promote water conservation and water-wise practices.

The *Ms. Smarty-Plants Grows Water-Wise Schools* program will be expanded to target K-12 schools in the Otay Water District and Helix Water District service areas, with a special emphasis on Title I low-income schools and in the disadvantaged communities (DAC) in the La Mesa-Spring Valley and Lemon Grove School Districts. Title I schools are those serving high numbers or high percentages of students from low-income families (schools with minimum of 40% of the student body from low-income families are eligible to receive U.S. Department of Education Title I funding for the entire school). Using The Garden – a living, breathing, hands-on demonstration garden that showcases six beautiful acres of innovative water conservation solutions as an outdoor classroom – program participants are transported to an environment where water conservation is "alive." The program engages students in learning about the adaptations of drought-tolerant plants, the role they play in conservation, and the value of water-wise landscaping in the region's local climate. Children are empowered to become part of the solution to the current water crisis in California by taking specific actions to change their behaviors related to how they use and value water. One of the goals of the Ms. Smarty-Plants program is to instill a conservation ethic in students who could translate this into conservation actions at home.

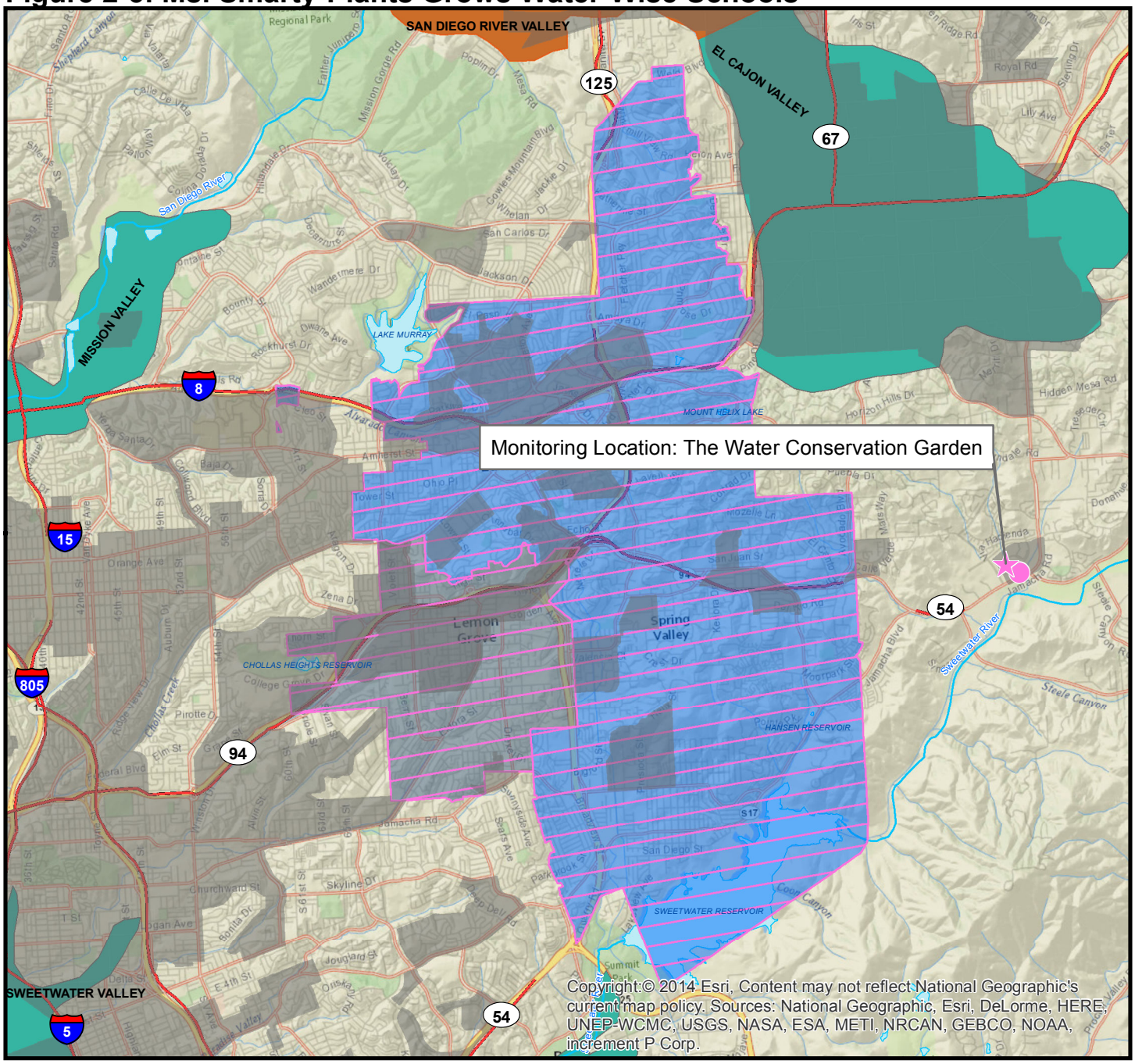
Component 1: The Garden will deliver the *Ms. Smarty-Plants Grows Water-Wise Schools* education program to 10,000-15,000 students at K-12 schools in Spring Valley and Lemon Grove that are served by the Otay Water District and Helix Water District. The education program involves critical thinking, hands-on exploration, water conservation education, citizen science, observation and investigation, spatial reasoning, and garden design. Some elements will include: 1) Lead school on a field trip tour of The Garden for ideas and design elements; 2) Perform a full School Assembly to kick off new garden and to excite students, teachers, and parents for "planting" day; and 3) Work with students and teachers on their onsite garden design and assist landscape designer with garden design.

Component 2: The Garden will identify and recruit twelve to fifteen K-12 schools identified in Component 1 to participate in the program to change out school grounds landscapes to water-wise plants, remove turf (approximately 20,000 square feet [sq ft] per school), upgrade irrigation systems (such as installation of drip irrigation), and adopt water-wise practices throughout school operations (such as identifying opportunities for low-flow or water-saving devices, modifying behaviors to reduce water use, or prioritizing water leaks during maintenance activities). This component includes development of site design, planting, and irrigation plans for each participating school. Installation of the landscape conversion will be conducted by volunteers from the schools (teachers, parents, students). Each school will recruit a "Garden Champion" who will be the point person for the school, organizer of volunteers, and schedule keeper. Community members and businesses may also join and support the school's efforts. The project will provide each school with a landscape design consultation, an irrigation audit, and incentives/rebates for turf removal and irrigation upgrades. The Otay and Helix Water Districts will send out flyers and newsletter articles to their ratepayers about the participating school projects to encourage residents to consider making changes to their home landscapes.

Component 3: The Garden will expand its onsite classroom by approximately 750 sq ft to accommodate more students and provide additional workshops and classes. The expanded classroom will be located in the central portion of The Garden's site and will be used broadly to deliver water conservation and irrigation efficiency classes to both youth and adults. The expanded classroom would allow The Garden to host classes of 70 students, up from its current capacity of 32 students.

This project will directly reduce water use at participating schools, and encourage long-term behavioral changes in students and families to implement water-wise practices in their daily lives. This project will address regional water supply and water use concerns during drought, as well as directly reach DACs, empowering the public to make an active change in their water use behavior.

Figure 2-5: Ms. Smarty-Plants Grows Water-Wise Schools



Coordinates: 32.74917, -116.9371

0 0.75 1.5 3

Miles

N

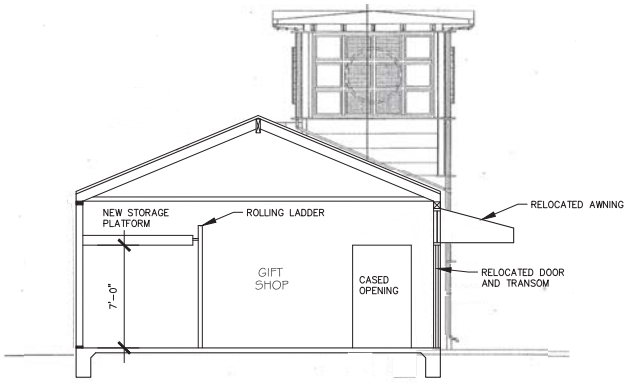
Legend

- Freeway
- Waterbody
- DAC Area*
- Medium Priority Groundwater Basin
- Very Low Priority Groundwater Basin
- Benefit Area: 4 Ms. Smarty-Plants Grows Water-Wise Schools
- The Water Conservation Garden
- Monitoring Location
- Lemon Grove School District
- La Mesa-Spring Valley School District

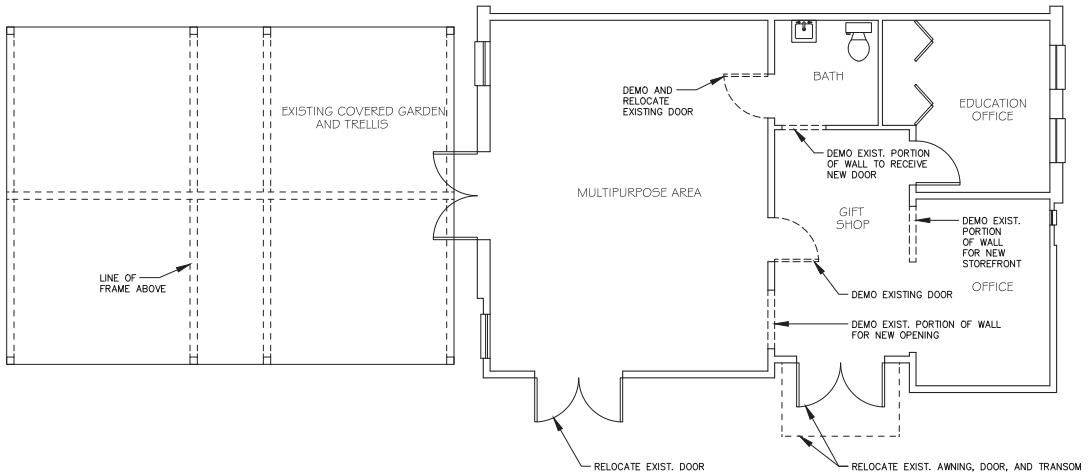
*Note: DAC as determined by census tract and block group data for the year 2013, from the American Community Survey 2009-2013 5-year results. DAC determined based on definition of median household incomes below 80% of the statewide MHI or $48,875.

Sources: U.S. Census 2013 ACS 5-year estimates; San Diego Association of Governments (SANDAG) - GIS Data Warehouse
Document Path: N:\Projects GIS\0188-003 SDIRWM Plan Update\Prop84_Rnd4\MXD\Project maps\2-5_WaterConsGarProject29072015.mxd

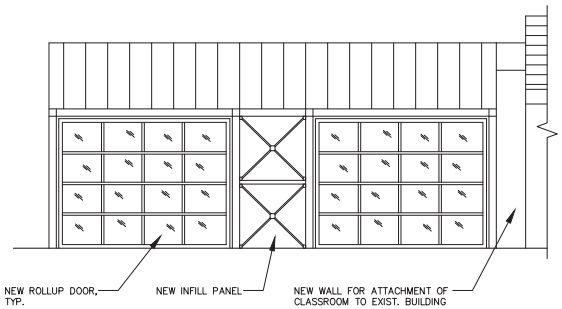
Figure 2-6: Education Center Expansion Design at The Garden



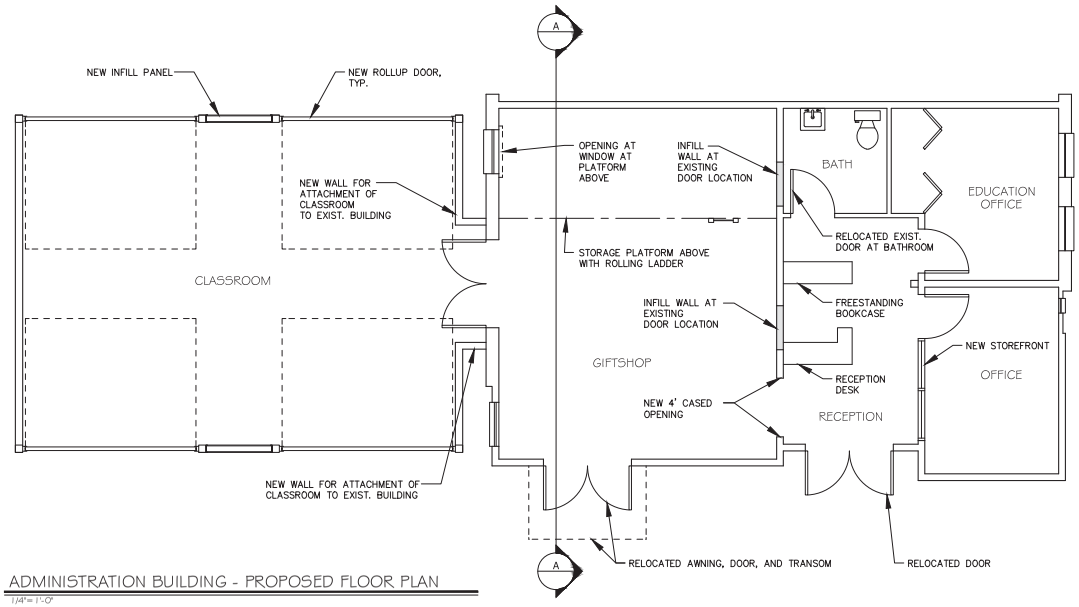
BUILDING SECTION - A
1/4"= 1'-0"



ADMINISTRATION BUILDING - DEMO FLOOR PLAN
1/4"= 1'-0"

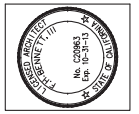


CLASSROOM BUILDING ELEVATION
1/4"= 1'-0"



ADMINISTRATION BUILDING - PROPOSED FLOOR PLAN
1/4"= 1'-0"

Bennett+assoc. architects
7755 Fay Avenue Suite C La Jolla, CA 92037
tel 858-454-4555 fax 858-454-9164
F H BENNETT, III Architect



THE WATER CONSERVATION GARDEN
12122 CUYAMACA COLLEGE DRIVE WEST
EL CAJON, CALIFORNIA 92019

ISSUE DATES

REVISION DATES

DRAWN BY
PLOT SCALE
SHEET NUMBER
P-1
SHEET OF

Project Physical Benefits

The two quantified physical benefits of 25 acre feet per year (AFY) of Water Supply and 5.5 acres of Habitat Improved are presented in T**able 2-20** and **Table 2-21**, respectively. This analysis assumes a 30-year project life, given that the areas to be converted to water-wise landscaping are not areas likely to be repurposed for other uses (i.e., landscaping is anticipated to remain in place for the full 30 years) and the long-term land ownership at school sites.

The primary physical benefit of this project is Water Supply resulting from turf conversion. These savings are achieved through conservation from conversion of turf to water-wise landscaping at a minimum of 12 schools. The Pacific Institute reports that California's K-12 schools use a total of 214,600 AFY across the state[81], or an average of 20.7 AFY per school.[82] The proposed 12 schools currently use approximately 248.4 AFY water per year, up to 72% of which is used for irrigation.[83] The estimated water savings for the school conversions (25 AFY) is based on Pacific Institute's *Waste Not, Want Not: The Potential for Urban Water Conservation in California* and on CUWCC's *Turf Removal and Replacement: Lessons Learned.* Over the project's useful life, it is anticipated that turf conversions will offset a total of 726 AF potable water from 2017 to 2048.

Table 2-20: Primary Physical Benefit – Water Supply
Ms. Smarty-Plants Grows Water-Wise Schools

Project Name: Ms. Smarty-Plants Grows Water-Wise Schools
Type of Benefit Claimed: Water Supply – Conservation from turf conversion
Units of the Benefit Claimed: AFY
Anticipated Useful Life of Project (years): 30 years

(a)	(b)	(c)	(d)
Year	**Annual Without Project**	**Annual With Project**	**Annual Change Resulting from Project (c) – (b)**
2017	248 AFY	240 AFY	-8.3 AFY
2018	248 AFY	232 AFY	-16.5 AFY
2019-2046	248 AFY	223 AFY	-25 AFY
2047	248 AFY	232 AFY	-16.5 AFY
2048	248 AFY	240 AFY	-8.3 AFY

Comments: The project has an expected project life of 30 years. Benefits are assumed to begin accruing immediately following school conversion, and schools assumed to be converted 33% per year from 2017-2019. School conversions begin in Fall 2016, so benefits will begin accruing in 2017. Benefits will remain constant from 2019-2046. Benefits were phased out in a manner consistent with how they were phased in. Without project water use was calculated using the average water use per K-12 school in California.

Sources: Pacific Institute. 2003. *Waste Not, Want Not: The Potential for Urban Water Conservation in California* – Appendix E: Commercial Water Use and Potential Savings. November.

California Urban Water Conservation Council. Briana Seapy. March 2015. *Turf Removal and Replacement: Lessons Learned*.

[81] Pacific Institute. 2003. *Waste Not, Want Not: The Potential for Urban Water Conservation in California* – Appendix E: Commercial Water Use and Potential Savings. November.
[82] Calculated using a total of 10,336 California schools serving students in grades K-12. California Department of Education. *Enrollment/Number of Schools by Grade Span & Type – CalEdFacts*. Website. Accessed 21 July 2015.
[83] Pacific Institute. 2003. *Waste Not, Want Not: The Potential for Urban Water Conservation in California* – Appendix E: Commercial Water Use and Potential Savings. November.

The secondary physical benefit of this project is Habitat Improved based on the area of new water-wise landscape plantings. This will be achieved through conversion from turf monoculture to a diverse array of water-wise and native vegetation that emphasize butterfly habitat. The without project baseline for this benefit was calculated using a geographic information system (GIS) analysis that determined the existing habitat available within the project area by calculating the Landscape Open Space, Open Space Park or Preserve, or Undevelopable Natural Area land use designations.[84] Within the project area, 18% currently falls within one of these three land use classifications, or 5,721 acres. The value of habitat created (5.5 acres) is based on program estimated of planted area.

In addition to the quantified benefits presented in **Tables 2-20** and **2-21**, this project would provide outreach and educational benefits to students and families in DACs, encourage individuals to make behavioral changes to conserve water, provide the tools to implement water-related change at home and in the community, reduce urban runoff, protect surface water quality, and promote a water-wise culture.

Table 2-21: Secondary Physical Benefit – Habitat Improved
Ms. Smarty-Plants Grows Water-Wise Schools

Project Name: Ms. Smarty-Plants Grows Water-Wise Schools
Type of Benefit Claimed: Habitat Improved – Water-wise and native plantings
Units of the Benefit Claimed: Acres
Anticipated Useful Life of the Project (years): 30 years

(a)	(b)	(c)	(d)
Year	**Annual Without Project**	**Annual With Project**	**Annual Change Resulting from Project (c) – (b)**
2017	5,721 acres	5,723 acres	1.8 acres
2018	5,721 acres	5,725 acres	3.6 acres
2019-2046	5,721 acres	5,727 acres	5.5 acres
2047	5,721 acres	5,725 acres	3.6 acres
2048	5,721 acres	5,723 acres	1.8 acres

Comments: This project has an expected project life of 30 years. Benefits are assumed to begin accruing immediately following each school conversion, and schools assumed to be converted 33% per year from 2017-2019. Each school assumed to provide an equal habitat benefit. The annual benefits will remain constant from 2019-2046. Benefits will phase out in a manner consistent with how they were phased in. The "Without Project" habitat area was calculated using a GIS analysis to determine the portion of the project area that fell within a land use designation that could reasonably be expected to provide habitat.

Sources: San Diego Association of Governments (SANDAG). SanGIS Data Warehouse – Landuse_Current. Available for download through the Regional GIS Data Warehouse.

[84] San Diego Association of Governments (SANDAG). SanGIS Data Warehouse – Landuse_Current. Available for download through the Regional GIS Data Warehouse.

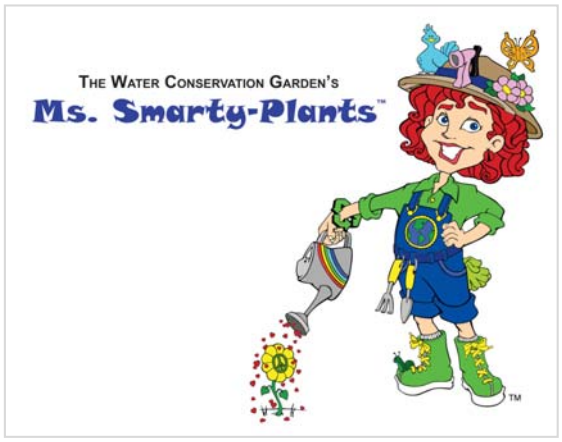
Technical Analysis of Physical Benefits Claimed

Project Need and Conditions

California is in the midst of one of its worst droughts in history, and reducing water use is a priority Statewide. In 2015, the State Water Resources Control Board issued mandatory water use reductions for all water supply agencies in California. Otay Water District and Helix Water District have both been directed to reduce water use by 20%.[85] Outdoor irrigation is one of the highest end uses of water, and represents some of the greatest opportunities for reducing water use.

Students make observations about a water-wise landscape

The Garden and its partners have identified an urgent need among K-12 schools in the La Mesa-Spring Valley and Lemon Grove School Districts to reduce water use in their landscapes because K-12 schools use up to 72% of their overall water use for outdoor irrigation.[86] Most of the schools in the target area, especially the Title I schools, do not currently have drought tolerant, water-wise landscapes on their grounds. Rather, school landscaping is dominated by turf. There is high demand from schools to implement turf conversions, with The Garden's very first water-wise school conversion initiated by the students themselves, asking their principal to have Ms. Smarty-Plants help them convert to water-wise landscaping. This first school removed turf, planted drought tolerant plants, and upgraded its irrigation systems. To-date, The Garden has successfully changed out landscapes in four schools and has received multiple requests from other schools for assistance. Demand for this project is high, with a proven need for such efforts. School districts lack the financial and technical resources to initiate landscape conversions, and need assistance to accomplish a transition to water-wise landscapes.



The Ms. Smarty-Plants program is an award winning, nationally recognized education program for children and adults

Turf landscapes are monocultures, which fail to provide diverse and complex habitats, and are not suitable for many native species. Turf conversions to water-wise and native vegetation is correlated with an increase in the number of bird species found within and near the site, when compared to the species present when the landscape was dominated by turf.[87] San Diego County is one of the most biodiverse areas of the country, with more threatened, endangered, rare, and species of concern than any other area of comparable size in the United States.[88] Within the project area lies potential habitat for 54 species (23 plants and 31 animals) listed on the California Natural Diversity Database (CNDDB).[89] These species are present or could be supported by habitat if it existed within the project area. Potential wildlife species that could be supported by habitat created at schools are listed in **Table 2-22**.

[85] State Water Resources Control Board. 2015. Urban Water Suppliers Conservation Tiers. Available: http://www.waterboards.ca.gov/water_issues/programs/conservation_portal/docs/supplier_tiers.pdf
[86] Pacific Institute. 2003. Waste Not, Want Not: The Potential for Urban Water Conservation in California – Appendix E: Commercial Water Use and Potential Savings. November.
[87] Haller, A.D. 2012. SmartScape Design Provides Improved Avian Habitat. June.
[88] San Diego RWMG and RAC. 2013. 2013 San Diego Integrated Regional Water Management Plan. September.
[89] California Natural Diversity Database. Rarefind 5. Database query within Project Area. Accessed 21 July 2015. Available with subscription: https://map.dfg.ca.gov/rarefind/view/RareFind.aspx

Table 2-22: Species Listed in the CNDDB Within or Near the Project Area

Animals		
Federal- or State-Listed Threatened, Endangered, or Candidate Species		
Townsend's Big-Eared Bat	Southwestern Willow Flycatcher	Swainson's Hawk
Least Bell's Vireo	San Diego Fairy Shrimp	Coastal California Gnatcatcher
Non-Listed Species		
Orangethroat Whiptail	Thorne's Hairstreak	Yellow-Breasted Chat
Mexican Long-Tongued Bat	Coastal Cactus Wren	Western Yellow Bat
Coast Horned Lizard	Rosy Boa	San Diego Black-Tailed Jackrabbit
Cooper's Hawk	Western Beach Tiger Beetle	Pocketed Free-Tailed Bat
Tricolored Blackbird	Red-Diamond Rattlesnake	Big Free-Tailed Bat
Pallid Bat	California Horned Lark	Double-Crested Cormorant
Bell's Sage Sparrow	Prairie Falcon	Yellow Warbler
Coastal Whiptail	Western Tidal-Flat Tiger Beetle	Southern California Rufous-Crowned Sparrow
American Badger		

Source: California Natural Diversity Database (CNDDB). RareFind 5 database query within Project Area (21 July 2015).

The Garden currently provides educational programs to over 60,000 people each year, but the existing 452 sq ft classroom at The Garden's Education Center has a maximum capacity of 30 people. The facility's size limits the number of classes and students that can participate in The Garden's classes. Average class size in the La Mesa-Spring Valley School District ranges from 26-32 students, depending on grade.[90] Average class size in Lemon Valley School District for the 2013-2014 school year ranged between 15-34 students, depending on school and grade.[91] When factoring the range of class sizes in these Districts, along with teachers, chaperones, and The Garden's education team, the existing facility is clearly unable to reliably accommodate a full class of students. This has created an urgent need for a larger indoor classroom to deliver the education component of the project.

The space limitations of the existing classroom, which also functions as a multipurpose room, significantly restricts opportunities for program growth and participation. Further, this space is the only indoor meeting space at The Garden and is used for all staff meetings, board meetings, and workshops. As a consequence of the great demand on the space, scheduling conflicts have increasingly become an issue. Upgrades to The Garden's classroom space are also necessary to deliver classes year-round, such as late spring through late fall when extreme heat makes air-conditioning necessary.

Without-Project Conditions

Without the *Ms. Smarty-Plants Grows Water-Wise Schools* project, The Garden's Ms. Smarty-Plants education program would not be expanded to reach an additional 10,000-15,000 students. These children would not learn water conserving behaviors to continue water savings into the future, nor would they bring these lessons home to share with family and friends. Landscapes of 12 to 15 Title I K-12 schools would not have turf removed and replaced with water-wise plants, nor would their irrigation systems be upgraded to allow for efficient irrigation. Turf would remain the norm for school landscaping, and as such, potable water would be used to continue to irrigate these water intensive landscapes.

Without this project, The Garden's Education Center classroom would not be expanded to provide additional workshops and classes, and would not be able to accommodate more students. Opportunities for educational program growth and participation would remain limited. If The Garden wanted to target larger classes or student groups without this project, additional educators may be necessary to allow classes to be split into groups to accommodate space limitations. Ms. Smarty-Plants curriculum may need to be revised to accommodate this type of adjustment, which could be costly or time consuming. Without the education programs that would be available

[90] La Mesa-Spring Valley School District. About Us – District Profile. Website. Accessed 21 July 2015. Available: http://www.lmsvsd.k12.ca.us/domain/179
[91] Lemon Grove School District. School Accountability Report Cards for School Year 2012-2013. Available by school at: http://lgsd.schoolwires.net//site/Default.aspx?PageID=3423

as part of the classroom expansion, and the school conversion projects, students will not be able to access the tools that would empower them to implement change in their communities as easily, and an opportunity to create long-term changes in students' relationship with water resources would be missed.

In addition to the direct benefits of this project that would not be realized without this project, urban runoff would continue at schools from irrigation inefficiencies and landscapes not designed for stormwater retention. In addition, schools would continue to apply fertilizers and pesticides in quantities appropriate for turf maintenance, which can be conveyed to local waterways and stormwater systems, contributing to water quality impairments. Schools would not realize the direct cost savings associated with reduced water demand, and those funds which may otherwise have been reallocated to other programs (such as educational programs or the arts), would continue to be spent on landscape maintenance.

Methods Used to Estimate the Physical Benefits

Calculations for each of the two physical benefits of this project (Water Supply and Habitat Improved) are provided below. Note that these calculations show the annual benefits anticipated when the project is complete and 100% of the benefits are realized annually. Some differences may occur due to rounding.

Primary Benefit – Water Supply

The primary benefit of this project is Water Supply that is achieved through conservation. This project will conserve 25 AFY. According to Otay Water District's Senior Water Conservation Specialist, each school is anticipated to convert 20,000 sq ft of turf to water-wise landscaping, which could realize a water savings of up to 3 AFY.[92] Published data from CUWCC shows that conversion from turf to water-wise landscaping saves 34 gallons of water per sq ft[93], resulting in a savings of 680,000 gallons per school per year (2.1 AFY). This more conservative figure was used in this analysis to estimate the water supply benefit. Additional water savings will be achieved through personal behavior changes adopted by children and their families, although these savings cannot be reasonably estimated or monitored by The Garden.

$$\frac{Area\ Converted}{School} * \frac{Water\ Savings}{Area} * Number\ of\ Schools = Total\ Water\ Savings$$

$$20{,}000\frac{sq\ ft}{school} * 34\frac{gal}{sq\ ft * yr} * 12\ schools = 8{,}160{,}000\ \frac{gal}{yr} * \frac{1\ AF}{325{,}851\ gal} = \mathbf{25\ AFY}$$

Based on the experience of Madison Elementary School, which was the first school water-wise conversion completed by The Garden, each school conversion could save up to 3 AFY[94] when accounting for both the landscape conversion savings and implementation of water-wise fixtures and behaviors. If this 3 AFY savings is applied to the minimum 12 participating schools, actual water savings from this project would be 36 AFY. Should this project implement 15 school conversions, this benefit would be increased to 31-45 AFY (depending on estimate used). While The Garden acknowledges that actual water savings may be higher than reported here, to account for unforeseen complications, the conservative value for only 12 schools is used for this analysis.

Secondary Benefit - Habitat Improved

The secondary benefit of this project is Habitat Improved achieved through conversion of turf to water-wise and native vegetation. The Garden intends to emphasize bird- and butterfly-friendly plants to create additional learning opportunities for students. Each school that participates in the program is anticipated to convert 20,000 sq ft of turf. Because these turf conversions are generally implemented in areas that will be primarily habitat, rather than walkways, play space, or hardscape (based on the experience at Madison Elementary School), all 100% of the converted area is considered habitat. Converting sq ft to acres provides a total habitat area of 0.46 acres per school, or 5.5 acres of habitat (240,000 sq ft) when the minimum 12 schools are converted. The project could create as much as 6.9 acres habitat if all 15 schools are converted.

[92] Pers. Comm. Richard Namba, Senior Water Conservation Specialist, Otay Water District.
[93] CUWCC. 2015. Turf Removal & Replacement: Lessons Learned. March.
[94] Pers. Comm. Richard Namba, Senior Water Conservation Specialist, Otay Water District.

$$\frac{Area\ Converted}{School} * Number\ of\ Schools = Total\ Habitat$$

$$20{,}000\,\frac{sq\ ft}{school} * 12\ schools = \ 240{,}000\ sq\ ft * \frac{1\ acre}{43{,}560\ sq\ ft} = \mathbf{5.5\ acres}$$

New Facilities, Policies, and Actions Required to Obtain Physical Benefits

To obtain the physical benefits of the *Ms. Smarty-Plants Grows Water-Wise Schools* project, the Water Conservation Garden's Education Center classroom will be expanded and school landscaping will be converted to water-wise landscapes. The Education Center expansion would require construction of the new classroom, installation of all necessary plumbing, electrical, and structural features, as well as all materials and equipment to create a finished educational space. Applicable construction-related permits would be required. All actions required to complete the classroom component are included in the project's Work Plan.

School water-wise conversions would require removal of turf, installation of water-wise plants, and upgrades to irrigation systems. Additional, unquantified, water savings could be achieved from additional water-wise changes at schools, including water audits, installation of water saving fixtures (e.g., low-flow fixtures and aerators), and behavioral changes inspired by the education and outreach conducted as part of this project. The project would require approval from appropriate school authorities, on a case-by-case basis. School conversions also require significant participation by the school's teachers and parents for labor during the "planting day", as well as materials donations from local businesses. Demand for school conversions is high, and approvals, participation, and donations are anticipated to be easily obtained.

Potential Adverse Physical Effects of the Project and Mitigation

There are no anticipated long-term adverse physical effects from this project. For the school conversions, there may be temporary noise, air quality, or odor impacts associated with turf replacement such as hauling and disposal of removed turf, and installation of water-wise vegetation; however these effects are anticipated to be minor and temporary in nature. Construction of the classroom could have short-term noise, traffic, and air quality impacts during construction from various equipment necessary to build the classroom, but these impacts would be felt primarily on-site (would have minimal effect on the surrounding community) and would be temporary in nature. Construction of the classroom would be completed in compliance with Cuyamaca College's 2013 Facilities Master Plan Environmental Impact Report (EIR).

Long-Term Drought Preparedness

This project directly promotes drought preparedness in three of the ways described in Table 1 of the *2015 Guidelines*: 1) water conservation, 2) improve landscape irrigation efficiencies, 3) long-term reduction of water use. The project will promote water conservation through delivery of the *Ms. Smarty-Plants Grows Water-Wise Schools* education program for K-12 students, working with school districts to transition to drought tolerant landscapes and remove turf, and encouraging water-wise practices at schools. By changing out just 20,000 sq ft of turf and mixed use plant materials on school grounds, each school can realize average savings of 2.1 AFY (see above), with a potential for 3 AFY savings when factoring in irrigation and behavior changes.[95] The project will improve landscape irrigation efficiency by providing financial incentives and technical assistance to schools to upgrade their irrigation systems during the landscape conversions. Long-term reduction of water use will be achieved by educating children and adults to change their personal behaviors to reduce water use, assisting schools to change out landscapes to water-wise plants, removal of turf, and creating a generation of Earth Heroes.

This project indirectly promotes long-term drought preparedness by protecting groundwater resources from pollution conveyed by urban runoff. Native and water-wise vegetation requires fewer chemical inputs (fertilizer and pesticides) than turf, meaning fewer pollutants are present in the watershed overall. Further, landscape designs would emphasize stormwater retention and infiltration to minimize runoff, and would install efficient irrigation which further minimizes dry-weather flows from participating schools. With fewer pollutants conveyed to waterways, and reduced urban runoff to local waterways, groundwater quality is indirectly protected. The San

[95] Schools who have participated in the conversion process already have realized an average 3 AFY savings. Pers. Comm. Richard Namza, Senior Water Conservation Specialist, Otay Water District.

Diego Formation (along the San Diego Bay) is a source of brackish groundwater that is desalinated and supplements the City of San Diego and Sweetwater Authority's potable water supply.

Direct Water-Related Benefit to DACs

Ms. Smarty-Plants Grows Water-Wise Schools targets Title I schools in the La Mesa-Spring Valley and Lemon Grove School Districts, portions of which fall within the service areas of Otay Water District and Helix Water District. These school districts are considered the project area, and are 25% DAC by population, as shown in the analysis completed in *Attachment 7, Table 7-1*. Title I schools are those schools serving high numbers or high percentages of children from low-income families. The U.S. Department of Education allows schools with at least 40% of their student population from low-income families to apply for Title I funding assistance for the entire school. According to the National Center for Education Statistics, in the 2012-2013 and 2012-2014 school years, there were six Title I schools in the Lemon Grove School District, and thirteen Title I schools in the La-Mesa Spring Valley School District. **Appendix 7-2** includes a list of all Title I schools located within these school districts, 12 to 15 of which will be selected for the water-wise school upgrades. Because all targeted schools will be Title I schools, and the project area is 25% DAC, all benefits from this project will be realized by DACs.

Students planting water-wise landscaping at Madison Elementary School

As shown in *Attachment 7 Disadvantaged Communities*, **Table 7-2**, this project will directly address three urban DAC needs: funding, flooding and impervious surfaces, and outreach. The turf conversions will cut expenses for the cash-strapped schools by reducing irrigation requirements, while at the same time making these conversions more affordable by providing financial incentives/rebates to participating schools, and covering the costs of professional landscape design. The conversion from turf will promote porous surfaces by reducing the potential for paving over existing turf to reduce water consumption, and will minimize runoff from the converted areas. In addition, the project will target DACs with its water conservation and water-wise landscaping outreach, and will implement the school conversions at Title I schools serving students from DACs.

Project Performance Monitoring Plan

Benefits will begin accruing as soon as each school's water-wise conversion is completed. For this reason, interim targets are based on the number of schools that have completed their conversions. It is anticipated that approximately 5 schools would be converted every 12 months. **Table 2-23**, below, describes the methods that will be used to measure the quantified benefits of this project. Note that these methods may change, pending development of the Project Performance Monitoring Plan under Task 9 of the Work Plan (see *Attachment 3 Work Plan*), and are presented as one option for measuring progress towards achieving the claimed benefits. Measurable targets for each benefit are also presented in the table.

The Garden has partnered with Otay Water District and Helix Water District, the two water suppliers that serve the schools that will be targeted by this project. These water districts have access to water meter data, which they will use to develop a pre-conversion baseline of water use for each school, and to track on-going water use following the landscape conversions. The habitat benefit is calculated as the total area converted to water-wise landscaping. Continued habitat benefits would be realized as long as this landscaping remains intact. Schools will be asked to submit photographs of the conversion areas to document sustained health of the habitat and to promote the conversion program. Staff from The Garden and/or the two water districts may also make periodic site visits to participating schools to visually confirm continued habitat health. As part of these visits, staff will look for opportunities to provide follow-on outreach or present educational programs to students who were not able to attend earlier programs.

Table 2-23: Project Monitoring for *Ms. Smarty-Plants Grows Water-Wise Schools*

Proposed Physical Benefits	Measurement Tools and Methods	Targets	
		Per School	Total (12 schools)
Water Supply	Otay Water District and Helix Water District will complete water audits before and after schools participate in landscape conversions. The Districts will collect and report water meter data for 10 years following each school conversion. Meter data for the year prior to conversion will be used as the baseline to determine overall reduction in water use. Should any outliers be noted in meter data, District staff will contact the school in question to attempt to determine why the unusual or unexpected water use occurred (i.e., pipe burst, substantial change in student body population). These outliers will be accounted for in project reporting.	2.1 AFY reduction in water use per school	25 AFY reduction in water use
Habitat Improved	Habitat improved is assumed to be equivalent to the area of turf converted to water-wise landscaping. So long as the area remains in water-wise and native vegetation, it would continue to provide habitat benefits for local bird and butterfly species. The Garden will require schools to submit photographs of converted land for 10 years to confirm continued health of the water-wise vegetation. Occasional site visits will be conducted by Otay and Helix Water District or The Garden staff to confirm the accuracy of the self-reporting.	20,000 sq ft per school (0.46 acres/school)	240,000 sq ft (5.5 acres)

Cost Effectiveness Analysis

The *Ms. Smarty-Plants Grows Water-Wise Schools* project will achieve two quantifiable physical benefits described in the sections above and summarized in **Table 2-20 and 2-21**. During project development, alternatives to the preferred project included in this application were not considered. **Table 2-24** provides a cost effectiveness analysis consistent with Table 7 of the *2015 PSP*.

Table 2-24: Cost Effective Analysis for *Ms. Smarty-Plant Grows Water-Wise Schools*

Cost Effective Analysis	
Question 1 Physical Benefits Summary	*Types of benefits provided as shown in Table 2-20 and 2-21.* Benefit 1: Water Supply – 25 AFY water conserved from turf conversions Benefit 2: Habitat Improved – 6.5 acres water-wise and native plantings
Question 2 Alternatives Considered	*Have alternative methods been considered to achieve the same types and amounts of physical benefits as the proposed project been identified?* No.
	If no, why? If yes, list the methods (including the proposed project) and estimated costs. No project alternatives were considered for the components that will directly contribute to the quantified physical benefits described above. These quantified benefits come from the water-wise school conversions. No alternatives were considered because this is an expansion of a pilot program that has been successfully implemented in four schools within the project area. There is documented high demand for expansion of the existing program, and no alternatives were deemed necessary to consider given the success of previous efforts. Specific alternatives for site design at each school may be considered during implementation of the conversion component, which includes landscape design. Bennett and Associates completed an extensive information gathering process to determine the actual needs of The Garden when developing *The Water Conservation Garden Master Plan*. The classroom design included in the Master Plan was developed in close coordination with The Garden, with preliminary design options vetted at workshops with staff.[96] The recommended classroom design was selected as the preferred design because it met the identified needs of The Garden and was developed in conjunction with key staff. No cost alternatives were included in the final Master Plan.
Question 3 Preferred Alternative	*If the proposed project is not the least cost alternative, why is it the preferred alternative? Provide an explanation of any accomplishments of the proposed project that are different from the alternative project or methods.* There is no least cost alternative identified for this project. The components included in this project were selected for their proven history of success (Ms. Smarty-Plants education program and school water-wise conversions) and high demand, as well as their ability to meet the identified needs of The Garden and its staff. Given the known successes of the existing outreach and education programs provided by The Garden, expansion of existing programs is preferred to development of new programs with unproven success. Similarly, the classroom expansion has been designed to meet the needs of the expanded education and outreach efforts of The Garden. Bidding for construction of the classroom will be done competitively, with a contractor selected in accordance with The Garden's existing policies for bid awards.

[96] Bennett and Associates. 2014. *The Water Conservation Garden Master Plan*. January.

Rural Water Infrastructure Program

Project 5: Rural Disadvantaged Community Partnership Project – Phase III

Local Project Sponsor: Rural Community Assistance Corporation (RCAC)
Partners: Alter Terra (and local communities), Indian Health Services (IHS), Bureau of Indian Affairs (BIA), San Diego County Water Authority (SDCWA), City of San Diego (City), County of San Diego Department of Environmental Health (DEH), State Water Resources Control Board (SWRCB)**,** Campo Kumeyaay Nation, La Jolla Band of Luiseno Indians, Nestor Community of San Diego, Pauma Band of Luiseno Indians, San Pasqual Band of Mission Indians, Quiet Oaks Mobile Home Park, Richardson Beardsley Park, and Willowside Terrace Water Association

Project Summary

The project will provide funding for ten sub-projects to improve water and wastewater infrastructure and address water quality concerns in underserved rural disadvantaged communities.

Project Maps

The ten disadvantaged community (DAC) components included in this project are described briefly below and represented in the project map in **Figure 2-7,** which shows the *Rural Disadvantaged Community Partnership Project – Phase III* area, service area of the project sponsor, project facilities, the project's relation to groundwater basins and surface water, DACs, and proposed monitoring locations. **Figure 2-8** provides additional detail on the location of Component 9 and Component 10, which will implement water quality improvement projects in the Tijuana River watershed.

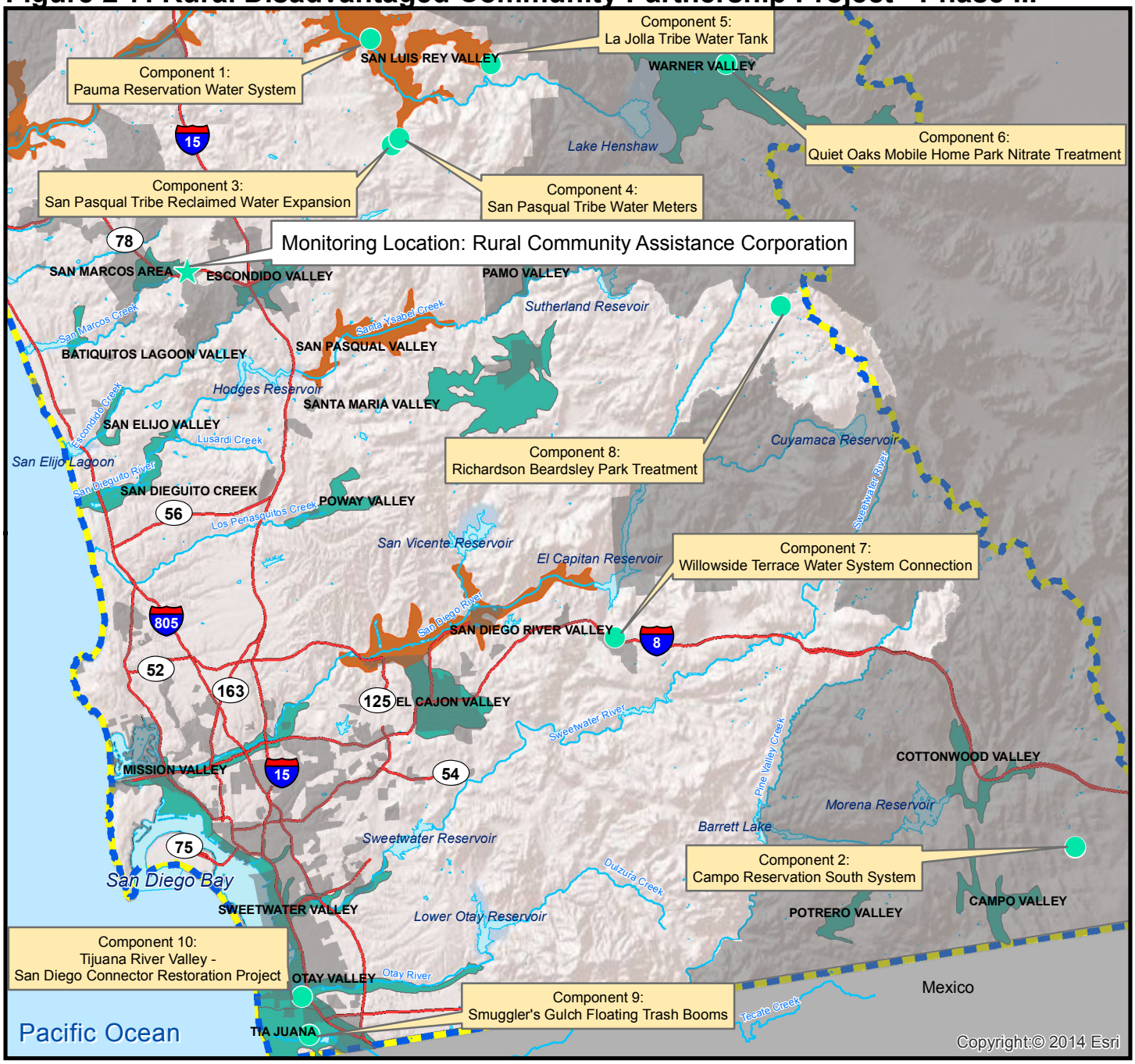
Project Description

This project is a continuation of RCAC's *Rural DAC Partnership Project Phase I and Phase II*. The three phases of Rural DAC Partnership Projects have collectively worked to meet the needs of rural DACs and Tribes in the Region. The *2013 IRWM Plan* discusses issues related to rural DACs that generally do not receive municipal water and sewer services because they are outside municipal agency service areas. The *2013 IRWM Plan* acknowledges that one of the greatest needs of rural DACs is technical support and capacity building to understand water-related issues and find long-term solutions. RCAC has worked to identify and address needs of rural DACs in the Region, focusing on solutions to resolve issues associated with accessibility to clean drinking water and wastewater services. RCAC established the Rural DAC Stakeholder Committee, comprising representatives from RCAC, IHS, SDCWA, the City, DEH, and SWRCB. In 2015, the Committee identified 24 critical, shovel-ready projects benefitting rural DACs that could be eligible for IRWM funding, and conducted additional refinement and prioritization and ultimately refined the list to 10 DAC components for this Proposal.

Table 2-25: Project Components - *Rural Disadvantaged Community Partnership Project – Phase III*

#	Brief Description
1	Pauma Reservation Water System • *Location*: Pauma Indian Reservation (population 150) • *Issue*: leaking water storage tank built in 1995 requires Tribe to pump more water than needed • *Resolution*: replace 111,000 gallon water storage tank that leaks as a result of a 2014 earthquake
2	Campo Reservation South System • *Location*: Campo Indian Reservation (population 45) • *Issue*: Tribe has struggled with water supply shortages for several years • *Resolution*: install a new 6-inch well, pump, motor, and piping to address water supply issue
3	San Pasqual Tribe Reclaimed Water Expansion • *Location*: San Pasqual Reservation (population 750) • *Issue*: reduce water costs by reducing demands for potable water through expansion of reclaimed water • *Resolution*: install 9,100 linear feet of pipe to bring reclaimed water to 45 households for irrigation
4	San Pasqual Tribe Water Meters • *Location*: San Pasqual Reservation (population 750) • *Issue*: reduce water costs by reducing demands for potable water through installing water meters • *Resolution*: install 245 water meters at each house on the reservation
5	La Jolla Tribe Water Tank • *Location*: La Jolla Indian Reservation (population 265) • *Issue*: Tribe has insufficient water storage capacity and frequently experiences water shortages • *Resolution*: design and construct a 80,000 gallon water storage tank
6	Quiet Oaks Mobile Home Park Nitrate Treatment • *Location*: Warner Springs (population 120) • *Issue*: groundwater exceeds Maximum Contaminant Levels (MCL) for nitrate • *Resolution*: install a nitrate treatment system
7	Willowside Terrace Water System Connection • *Location*: Alpine (population 100) • *Issue*: groundwater exceeds MCL for nitrate • *Resolution*: connect community to Padre Dam Municipal Water District's water system
8	Richardson Beardsley Park Treatment • *Location*: Julian (population 28) • *Issue*: groundwater exceeds secondary MCL for iron and manganese • *Resolution*: install an iron and manganese treatment system
9	Smuggler's Gulch Floating Trash Booms • *Location*: Tijuana River Valley • *Issue*: trash presents serious water quality and flood issues • *Resolution*: install trash removal system at the Smuggler's Gulch drainage
10	Tijuana River-San Diego Connector Restoration Project • *Location*: Tijuana River Valley • *Issue*: illegal dumping and trash present surface and groundwater quality issues in a seasonal stream • *Resolution*: conduct restoration, including bioswales, pervious pavers, plantings, and education

Figure 2-7: Rural Disadvantaged Community Partnership Project - Phase III



Coordinates: 33.138467, -117.154738

Legend

- San Diego IRWM Region
- Funding Area Boundary
- Freeway
- Waterbody
- County
- DAC Area*
- Medium Priority Groundwater Basin
- Very Low Priority Groundwater Basin
- Benefit Area: 5 Rural Disadvantaged Community Partnership Project - Phase III (Note: 10 project sites)
- Monitoring Location

0 3.5 7 14

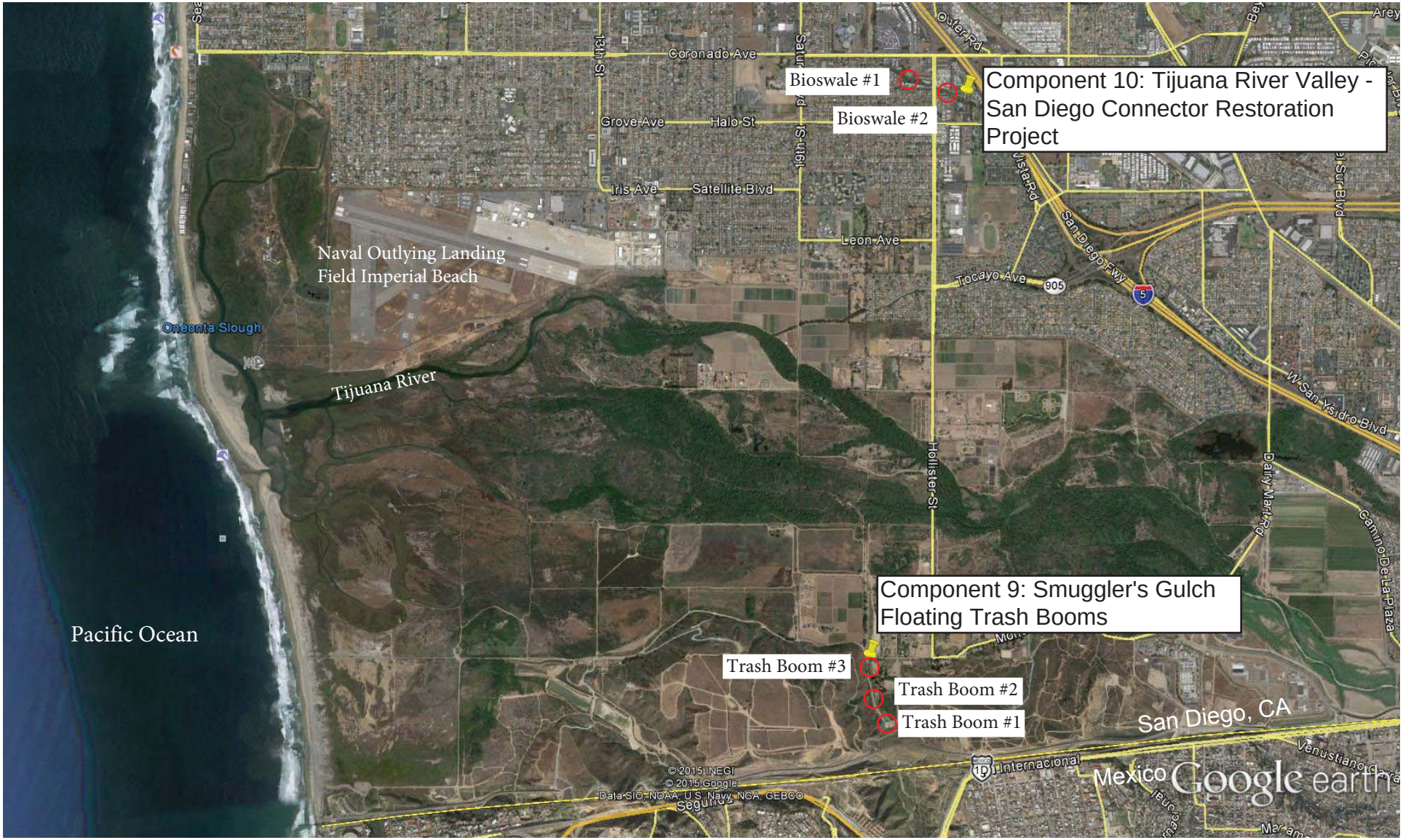
Miles

N

*Note: DAC as determined by census tract and block group data for the year 2013, from the American Community Survey 2009-2013 5-year results. DAC determined based on definition of median household incomes below 80% of the statewide MHI or $48,875.

Sources: U.S. Census 2013 ACS 5-year estimates; San Diego Association of Governments (SANDAG) - GIS Data Warehouse
Document Path: N:\Projects GIS\0188-003 SDIRWM Plan Update\Prop84_Rnd4\MXD\Project maps\2-6_RCACProject29072015.mxd

Figure 2-8: Components 9 and 10 of the *Rural Disadvantaged Community Partnership Project - Phase III*



Project Physical Benefits

The *Rural Disadvantaged Community Partnership Project – Phase III* will provide multiple benefits, two of which have been quantified and are presented in **Tables 2-26** and **2-27**. The two quantified physical benefits are Water Quality (from providing drinking water treatment) and Water Supply (achieved through conservation, reuse, and supply development). Both of these benefits were calculated using the methodology described below, and benefits phased in accordance with the project schedule presented in *Attachment 5 Schedule*.

For the primary benefit (Water Quality), two of the DAC components will provide clean drinking water to DACs that currently do not receive clean drinking water. The components included in this analysis are Component 6 (*Quiet Oaks Mobile Home Park Nitrate System*) and Component 7 (*Willowside Terrace Water System Connection*), both of which provide benefits to DACs that have drinking water in excess of the primary Maximum Contaminant Levels (MCL) for nitrate. The baseline water quality value for both projects were provided by RCAC based on existing water quality data from 2015, which show 58 milligrams per liter (mg/L) of nitrate for Quiet Oaks and 204 mg/L of nitrate for Willowside Terrace[97]. The value of the benefit (108 mg/L reduction in nitrate) is calculated from conceptual and preliminary design provided by RCAC and the DACs.

Table 2-26: Primary Physical Benefit – Water Quality
Rural Disadvantaged Community Partnership Project – Phase III

Project Name: Rural Disadvantaged Community Partnership Project – Phase III
Type of Benefit Claimed: Water Quality - Nitrate Reduction
Units of the Benefit Claimed: mg/L
Anticipated Useful Life of Project (years): 30 years

(a)	(b)	(c)	(d)
Year	**Without Project**	**With Project**	**Change Resulting from Project (c) – (b)**
2017	58 mg/L	30 mg/L	-28 mg/L
2018-2046	124 mg/L	16 mg/L	-108 mg/L
2047	66 mg/L	0 mg/L	-66 mg/L

Comments: The baseline water quality value for both projects were provided by RCAC based on existing water quality data from 2015, which show 58 milligrams per liter (mg/L) of nitrate for Quiet Oaks and 204 mg/L of nitrate for Willowside Terrace. Component 6 will be completed in August 2017 and will accrue benefits for 30 years, until 2046. Component 7 will be completed in March 2018 and will accrue benefits for 30 years, until 2047. The projects have separate water sources. In order to represent them as one benefit, a weighted average of their concentrations was used to determine a "without project" concentration and "with project" concentration.

Sources: Joni Johnson. *Rural DAC Partnership Application – Additional Data July 13, 2015 Project Benefits: Treatment.* Joni Johnson. *Rural DAC Partnership Project – Phase III Quantifiable Benefits Calculations.* April 22, 2014.

The baseline for the secondary benefit (Water Supply) is provided from on-the-ground conditions reported by RCAC and the Tribal Governments that would benefit from the projects. The components included in this analysis are Component 1 (*Pauma Reservation Water System*), Component 2 (*Campo Reservation South System*), and Component 3 (*San Pasqual Tribe Reclaimed Water*). The baseline water supply values for all three projects are considered to be zero. For Component 1, the Tribe currently has a leaking tank that wastes 3.2 acre-feet per year (AFY); once the project is implemented, the leak will be resolved and this amount of water will be saved. For Component 2, the 45 households that would be served by the project currently rely upon potable water for indoor and outdoor use and no alternative water sources are available; once the project is implemented the residents will have access to 24.2 AFY of recycled water and this amount of water will be reused. For Component 3, the Campo well is currently insufficient to provide an adequate supply for the Tribe; once the project is implemented the residents will have access to 4.8 AFY of groundwater produced by the well. The value of the benefit (32.2 AFY)

[97] Pers comm. Joni Johnson, RCAC Engineer.

is calculated from conceptual and preliminary design provided by RCAC and the DACs. Over the course of the 30-year project life, the cumulative water supply benefit is anticipated to be 955 AF.

Table 2-27: Secondary Physical Benefit – Water Supply
Rural Disadvantaged Community Partnership Project – Phase III

Project Name: Rural Disadvantaged Community Partnership Project – Phase III **Type of Benefit Claimed:** Water Supply – water saved from fixing leaks, recycled water, and groundwater **Units of the Benefit Claimed:** AFY **Anticipated Useful Life of Project (years):** 30 years			
(a)	**(b)**	**(c)**	**(d)**
Year	**Without Project**	**With Project**	**Change Resulting from Project (c) – (b)**
2017	0 AFY	21.5 AFY	21.5 AFY
2018-2046	0 AFY	32.2 AFY	32.2 AFY
Comments: Components 1, 2, and 3 will be completed in March 2017 and will accrue 2/3 of the total project benefits in the first year of operation. After the first year of operation, all three components will provide project benefits through their 30-year useful life (through 2046). Sources: Joni Johnson. *Rural DAC Partnership Project – Phase III Quantifiable Benefits Calculations.* April 22, 2014.			

The primary and secondary benefits of nitrate reduction and water supply benefits are just two of the many benefits of this project. These two benefits are pivotal to increasing the sustainability of water use in San Diego County, as well as ensuring safe drinking water supplies are available to DACs. Additional benefits not quantified for the projects include:

- Component 1: Project will increase storage for the Pauma Tribe by 20.2 AFY, and therefore will substantially increase water supply reliability and prevent future water shortages.
- Component 4: Project will install 245 smart water meters, which will increase operational efficiency and promote water conservation by helping the Tribe and local residents detect leaks.
- Component 5: Project will increase storage for the La Jolla Tribe by 35.6 AFY, and therefore will substantially increase water supply reliability and resolve existing water shortage issues.
- Component 7: Project will connect a mobile home park to a municipal water supply system, and will therefore provide long-term water supply reliability and ensure clean drinking (potable) water is made available to 100 DAC residents on a long-term basis.
- Component 8: Project will treat water for iron and manganese. 3.8 AFY of water will be treated per year, and the project will ensure that drinking water remains usable to residents that do not currently drink the water due to its odor and brown appearance.
- Component 9: Project will remove 18,000 cubic yards of floating trash per year and help resolve local flooding issues.
- Component 10: Project will install bioswales that will improve infiltration and local water quality; it is estimated that 11,400 square feet of bioswales will be installed.

Technical Analysis of Physical Benefits Claimed

Project Need and Conditions

There are many rural DACs in the San Diego IRWM Region with water quantity and quality issues. These issues are detailed in the *2013 IRWM Plan*, and include potable water shortages, compliance with MCL of nitrates, bacteria, and other constituents, and technical capacity to complete projects. The limited resources available to DACs, both financially and organizationally, make it difficult for many communities to access funding and implement technical projects to resolve complex water-related issues.

RCAC has been working with IRWM stakeholders for several years to develop a team of experts that are collectively organized as the Rural DAC Stakeholder Committee, and include representatives from RCAC, IHS, SDCWA, the City, and SWRCB. The Committee solicited input from local DACs, agencies, and other stakeholders in the Region to solicit project components this Proposal. The Committee developed a set of both primary and secondary criteria that were used to evaluate projects and ultimately identified 24 critical, shovel-ready projects benefitting rural DACs in the Region that could be eligible for IRWM funding. The Committee conducted additional refinement and prioritization and refined the list to 10 DAC components for this Proposal. The Committee used the following primary criteria to select DAC projects in 2015: location in an economically disadvantaged community, construction projects or planning projects that will lead to construction projects, positive impact to public health or the environment, critical need with respect to water quantity, water quality, water reliability, or the environment, high likelihood of project success, and ability to be completed within the allowable grant project period. Secondary criteria used by the Committee to select projects included: leverage of other funds, low capital cost per connection, multiple benefits for DACs, green technology, and remedying past environmental injustice issues.

The ultimate purpose of the *Rural Disadvantaged Community Partnership Project – Phase III* is to provide resources to RCAC and local DACs to provide rural DACs with the organizational, funding, and technical support needed to implement high-priority projects that address critical water quality and water supply issues. Specific details about the project need and conditions associated with each DAC component are provided below.

Component 1: Pauma Reservation Water System

The Pauma Indian Reservation, located within Pauma Valley in unincorporated San Diego County, has a community water system that was originally constructed in the early 1990's. This system currently serves 150 people, 58 homes, and 3 non-residential units and includes two bolted steel tanks, distribution pipe ranging from 4" to 10", fire hydrants, two community water wells, and two pump houses.

The *Pauma Reservation Water System Project* includes activities to replace one of the bolted steel tanks that was built in 1995 and currently exhibits severe leaking at the base of the tank. The project has been assessed by IHS, which completed a Preliminary Engineering Report (PER) [98] for the project in May 2014. The PER reports that the leak was noticed a few days after an earthquake occurred in January 2014 and that the leak is very large (estimated at 2 gallons per minute or gpm), contributing to ponding water around the foundation of the tank. The leak is currently deteriorating the existing tank, which is anticipated to cause major issues over the next several years. If the tank is rendered insufficient to store water, the community will not have enough storage capacity. Further, the current leak presents water quality issues as it has the potential to introduce bacteria into the tank. For these reasons, the Tribe is concerned about the reliability of the water storage tank. If it were to completely fail, the system would not have the ability to store an adequate amount of water for the community and water shortage and potential outages would be a great threat to the health and safety of all 150 residents on the Pauma system.

The PER analyzed three different alternatives to address the issue of the existing leaking tank, ultimately finding that replacing the tank would be more economical and would have a longer useful life (thirty years) compared to rehabilitating the existing tank. IHS's final recommendation in the PER was that the tank be replaced with a bolted steel water storage tank of the same capacity as the existing tank (111,000 gallons).

[98] Indian Health Services. 2014. *Preliminary Engineering Report for the Pauma Small Tank Replacement Project – Pauma Indian Reservation.*

Component 2: Campo Reservation South System

The Campo Indian Reservation, located in eastern unincorporated San Diego County, has a small community water system that relies 100% on groundwater supplies and serves a total of 45 residents.[99] The Campo Valley Groundwater Basin (California Department of Water Resources [DWR] Bulletin 118 Basin 9-28) serves the community and is designated as a "very low" priority basin per DWR's groundwater basin prioritization.

The Campo Indian Reservation has struggled with water supply shortages for several years, and is currently working with IHS to address this issue by drilling a new 6-inch well that would serve all 17 homes and 45 residents. To date, IHS has completed a conceptual cost estimate for the project, but additional engineering and design has not been completed. The IHS cost estimate is for a well that would have capacity to produce 15 gpm of groundwater, which would be sufficient to provide supplies to the Reservation and replace existing inadequate well system. The IHS cost estimate also assumes that the useful life of the new well would be approximately 30 years.

Component 3: San Pasqual Tribe Reclaimed Water Expansion

The San Pasqual Reservation is located near Valley Center in unincorporated San Diego County. The Reservation currently purchases the majority of its water supplies from the Valley Center Municipal Water District (VCMWD); 100% of VCMWD's supplies are currently provided by treated imported water that is purchased from SDCWA.[100] Over the years, the San Pasqual Tribe has been actively implementing projects to reduce its reliance on supplies from VCMWD, and thus from imported sources.

The Valley View Casino is located within the San Pasqual Reservation; the casino currently treats all of its wastewater and uses it for landscaping and irrigation around the casino grounds. Currently, the casino produces over 30,000 gallons of excess treated wastewater every day; the project would extend pipelines from the casino to users in the Tribal community to make use of this excess water for irrigation purposes. [101] The recycled water would serve an area referred to as "District B" of the San Pasqual Reservation, which is located within closest proximity to the Valley View Casino of the three districts included within the San Pasqual Reservation. Through previous efforts completed for the *Rural Disadvantaged Community Partnership Project – Phase II*, the Tribe has constructed one booster pump and approximately 14,000 linear feet of pipeline from the casino into the District B area. Additional work is necessary to expand the existing pipeline an additional 9,100 linear feet to serve approximately 45 households and 120 residents recycled water for outdoor irrigation purposes.[102] Given that these households currently receive imported potable water from Valley Center MWD, the project will result in direct reuse and offset potable water use.

Component 4: San Pasqual Tribe Water Meters

The San Pasqual Tribe has installed water meters throughout the three districts (District A, District B, and District C) included in its Reservation and has metered 100% of homes on the Reservation. There are a total of 245 meters on the 245 households located within the Reservation, including 140 homes in District A, 125 homes in District B, and 45 homes in District C. [103]

The Tribal water operators manually read all 245 meters each month, which takes about two working days to complete. The project would transition the Tribe from "traditional" meters to "smart" meters on the Reservation. In addition to providing benefits associated with worker efficiency, customers will be able to better monitor their water consumption and conservation efforts with a smart meter. Furthermore, with the installation of smart water meters, both customers and water operators can more easily detect water leaks or breaks resulting in a financial savings for customers and reduced dependence upon purchased water from VCMWD.

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[99] Campo Environmental Protection Agency (CEPA). 2002. *Campo Indian Reservation.* Available: http://water.epa.gov/lawsregs/guidance/cwa/305b/upload/2002_04_08_305b_94report_campo.pdf

[100] Valley Center Municipal Water District (VCMWD). 2014. *Valley Center Municipal Water District 2014 Water Quality Report*. Available: http://www.vcmwd.org/Portals/0/PDF/CCR/WaterQualityReport.pdf

[101] San Pasqual Tribe. 2014. *San Pasqual Band of Kumeyaay Indians – RTOC Summer Meeting Presentation.* Available: http://www.epa.gov/region9/tribal/rtoc/sum14/pdf/rtoc2014-san-pasqual-water-presentation.pdf

[102] San Pasqual Tribe. 2014. *San Pasqual Band of Kumeyaay Indians – RTOC Summer Meeting Presentation.* Available: http://www.epa.gov/region9/tribal/rtoc/sum14/pdf/rtoc2014-san-pasqual-water-presentation.pdf

[103] San Pasqual Tribe. 2014. *San Pasqual Band of Kumeyaay Indians – RTOC Summer Meeting Presentation.* Available: http://www.epa.gov/region9/tribal/rtoc/sum14/pdf/rtoc2014-san-pasqual-water-presentation.pdf

Component 5: La Jolla Tribe Water Tank

The La Jolla Indian Reservation, located in the foothills of the Palomar Mountains in unincorporated San Diego County, is nearly 10,000 acres in size. The La Jolla Tribe operates three EPA-regulated Public Water Supply Systems that provide treated groundwater to approximately 390 Tribal residents.

The project would include construction of an 80,000 gallon bolted steel water tank, with associated distribution service lines to serve the 71 homes and 263 people that are served by the La Jolla Western Water System. The project is needed because the Tribe's Western Water System has insufficient water storage capacity, which results in frequent water shortages. The project will, therefore directly increase the reliability of water for the La Jolla Tribe and provide infrastructure to reduce water shortages that threaten the health and safety of all 263 residents on the La Jolla Western Water System. To date, only conceptual-level work has been completed for the project; no engineering or design work has been completed.

Component 6: Quiet Oaks Mobile Home Park Nitrate Treatment

The Quiet Oaks Mobile Home Park is a small mobile home park community located within Warner Springs in unincorporated San Diego County. The mobile home park community contains approximately 120 residents, is served water by a small local groundwater well, and is located at a substantial distance from any municipal water agency.

Local groundwater sampling data for the Quiet Oaks Mobile Home Park show a consistent nitrate concentration of 58 mg/L, which exceeds the MCL for nitrate of 45 mg/L. According to the Division of Drinking Water (DDW), nitrate levels above the MCL can cause health-related issues, especially for children and pregnant women.[104] In order to protect residents of the Quiet Oaks Mobile Home Park from potential health impacts associated with high nitrate levels, the project will involve installation of a reverse osmosis (RO) treatment system that will be designed to reduce nitrate levels to 30 mg/L to ensure that residents are not exposed to nitrate levels in excess of the MCL. Feasibility documents for the project recommended installation of onsite treatment, because such a system is relatively easy to maintain, and the site is located at such a large distance from local municipal services that a municipal water connection is not feasible.

Component 7: Willowside Terrace Water System Connection

The Willowside Terrace Water Association serves water to residents of Willowside Terrace Mobile Home Park Community located in the community of Alpine in unincorporated San Diego County. The Willowside Terrace Mobile Home Park is located within the Eastern Service Area of the Padre Dam Municipal Water District (PDMWD), approximately 6,500 linear feet from an existing PDMWD water main.

The Willowside Terrace Water Association serves water to residents via one groundwater well (California Water System No. CA3701995), which consistently has nitrate/nitrite concentrations of 46 mg/L. Converting this water quality value to nitrate as N demonstrates that nitrate levels in the well are 204 mg/L, well above the regulated standard of 45 mg/L. Given the close proximity to an existing municipal water main, the most feasible long-term solution for addressing water quality issues for this community is establishing a connection to PDMWD's water system. This connection will ensure that residents are provided clean drinking water on a long-term basis, because PDMWD's *2014 Water Quality Report* demonstrates that drinking water met all regulated standards; specifically, nitrate levels were found at non-detect levels.[105]

Component 8: Richardson Beardsley Park Treatment

The Richardson Beardsley Mobile Home Park is located within Julian in unincorporated San Diego County. The community consists of 28 residents that are provided water from a single groundwater well. The groundwater within the community has a history of compliance issues, including violations for coliform (2014, 2009, and 2008), gross alpha particles (2008), and lead and copper (2005).[106] Currently, residents report the appearance of brown

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[104] Division of Drinking Water (DDW). 2014. *Nitrate Fact Sheet.* Available: http://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/nitrate/Fact%20Sheet%20-%20Nitrate_May2014%20update.pdf

[105] Padre Dam Municipal Water District (PDMWD). 2014. *2014 Water Quality Report*. Available: http://www.padredam.org/DocumentCenter/View/1695

[106] California Environmental Protection Agency (EPA). 2015. *Envirofacts for the Richardson Beardsley Park, Inc.* Available: file:///Z:/Projects/0188%20-%20SDCWA/0188-004_SDIRWM%20Program%20Management/02_Project%20Work/2A_Prop%2084-Round%204%20Grant/08_Coordination%20with%20LPS/02_Info%20from%20LPS/10_RCAC/Additional%20Information/8_Richardson%20Beardsley/SDWIS%20Search%20Results%20_%20Envirofacts%20_%20US%20EPA.html

water, which has been verified to exceed the Secondary MCL for both iron and manganese. While the Secondary MCL standards are not considered mandatory as they are set for aesthetic considerations such as taste, color, and odor, the brown coloring and smell of the groundwater at the Richardson Beardsley Mobile Home Park has effectively made the water un-drinkable by residents.[107]

The project will provide a cost-effective way to reduce iron and manganese concentrations by installing a packaged treatment system. Feasibility assessments for the project recommended installation of onsite treatment, because such a system is relatively easy to maintain, and the site is located at such a large distance from local municipal services that a municipal water connection is not feasible.

Component 9: Smuggler's Gulch Floating Trash Booms

Smuggler's Gulch Channel is a drainage located on the United States side of the Tijuana River Valley. Smuggler's Gulch is a main tributary drainage of the Tijuana River Valley, which has been studied extensively by the Tijuana River Valley Recovery Team (TRVRT). This area has been an issue of local concern and focus due to the high presence of trash, waste, illegal dumping, and sediment that have accumulated and pose flood risks in the area.[108] Information from the TRVRT states that, "the majority of stormwater, sediment, and trash enter the U.S. through the main Tijuana River Channel. Over time, the downstream areas have served as a sink for accumulated sediment and trash, resulting in an increase in vegetation. This causes storm flows to flood and deposit additional sediment and trash." The issue in Smuggler's Gulch is considered an ongoing issue that is a continual problem in wet seasons as additional sediment and trash accumulate in the area and pose flood risks; a long-term solution is needed to remove these sources of debris.

The project will involve planning, design, manufacturing, and installation of a floating trash removal system comprised of three floating trash booms, constructed from repurposed plastic, to be placed at the Smuggler's Gulch drainage channel between the Border Patrol fence culvert and Monument Road. The project also includes post-storm trash removal for three years. The transportable floating trash removal system will be operational during the wet season and will be removed during regular channel maintenance. Based on preliminary estimates, this project is expected to remove 18,000 cubic yards of floating trash per year.

Component 10: Tijuana River-San Diego Connector Restoration Project

The Tijuana River-San Diego Connector is a seasonal stream 2,600 feet in length that connects the Tijuana River Watershed and the Otay River Watershed, and drains north to the San Diego Bay. The stream operates as a runoff channel for multiple residential neighborhoods, businesses, and adjacent roads in the community of Nestor, which is an economically disadvantaged area located in southern City of San Diego, and is bounded on the north by the City of Chula Vista, on the east by the community of Otay Mesa, on the south by Tijuana River Valley and the San Ysidro community, and on the west by the City of Imperial Beach.[109]

The Tijuana River-San Diego Connector is connected to the Tijuana River National Estuarine Reserve and is used heavily as a thoroughfare by residents, or is home to transients. The area is currently filled with trash, construction debris, invasive species, and urban runoff. The primary issue in this area is illegal dumping and trash in the waterway contributing to surface water and groundwater contamination, which also causes degradation of natural resources like the San Diego Bay. San Diego Bay is currently listed for several water quality impairments.

The project will remove trash and invasive species, followed by native revegetation with 1,000 native plants, construction of two vegetated bioswales, and installation of 3,000 pervious pavers that would help improve drainage in the area. The project will also involve hands-on community participation and environmental education to motivate local residents to modify behaviors that exacerbate pollution and water quality issues. Further, the project will include post-storm trash removal for three years. This project is designed to promote filtration of urban runoff through the use of pervious pavers and vegetated bioswales to reduce the flow of trash and pathogens into the San Diego Bay. A combination of construction projects and educational programs will teach residents about native and non-native plants and the importance of ecosystem conservation.

[107] Pers comm. Joni Johnson, RCAC Engineer.
[108] California Department of Resources Recovery and Recycling. 2010. *Report of Trash, Waste Tire and Sediment Characterization Tijuana River Valley San Diego, California.*
[109] City of San Diego. 2015. *Community Profiles: Otay Mesa Nestor.* Available: http://www.sandiego.gov/planning/community/profiles/otaymesanestor/

Without-Project Conditions

Without the *Rural DAC Partnership Project – Phase III,* efforts to improve water systems in small (populations less than 10,000), rural, Tribal, and economically disadvantaged areas would be more difficult to implement. Without the project, RCAC would not provide technical and capacity-building support that is essential to overcome major obstacles that impede implementation of water projects in rural DACs. As such, without the project, the critical water and wastewater needs of the DACs benefitting from this project would not be met. If these needs are not met, water quality would continue to be at risk, human and environmental health would remain at risk, and anticipated physical benefits would not be obtained.

Without Components 6 and 7, the 120 residents of the Quiet Oaks Mobile Home Park and 100 residents of the Willowside Terrace Mobile Home Park would continue to be provided water that does not meet the primary MCL for nitrate. As substantially documented by DDW, high levels of nitrate (in excess of the MCL) can pose public health risks, especially to children and pregnant women. Rural DACs would remain at risk for public health issues or may be forced to spend their limited income on alternative water sources such as bottled water.

Without Components 1, 2 and 3, the DACs who would benefit from these projects would continue to have inefficient water storage facilities and distribution infrastructure and could experience public health issues associated with water shortages. Without Components 1, the 150 residents of the Pauma Reservation would continue to face water supply and public health issues associated with a leaking water storage tank. Water would continue to be wasted as a result of the leak and residents would continue to face impending water supply reliability issues associated with catastrophic failure of the leaking tank. Without Component 2, the 45 residents of the Campo Reservation would continue to face ongoing water supply shortages that force them to either go without water or spend their limited income on alternative water sources such as bottled water. Finally, without Component 3, the 130 residents of the San Pasqual Reservation would continue to use potable water purchased from VCMWD for all uses, including for outdoor irrigation. As such, the Tribe would continue to be reliant upon drought-susceptible imported water sources.

Although the remaining project components were not included in the quantified benefits analysis, failure to implement the proposed water and wastewater improvements would continue to stress these rural DAC communities. Without Component 4, the San Pasqual Tribe would continue to use traditional water meters, without access to water use data and associated incentives to conserve. Without Component 5, the La Jolla Tribe would continue to face frequent water shortage due to lack of water storage capacity. Without Component 8, the community of Julian would continue to receive groundwater supply that exceeds the secondary MCL for iron and manganese. Without Components 9 and 10, surface and groundwater quality in the Tijuana River Valley would remain degraded from ongoing trash and illegal dumping. Human and environmental health risks would continue unmitigated in these economically distressed areas.

Methods Used to Estimate the Physical Benefits

Primary Benefit - Water Quality

The primary benefit of Water Quality will come from the removal of an average of 108 mg/L of nitrate from potable water supplies. This number comes from two separate nitrate removal projects. In order to combine the benefits from these two projects, the average flow rate for each component had to be considered so that a weighted average water quality benefit could be calculated.

In Component 6, the Quiet Oaks Mobile Home Park currently has nitrate levels of 58 mg/L as reported by a local engineer.[110] The project would reduce nitrate levels from their current concentration to 30 mg/L using RO treatment, to ensure that residents receive water meeting the drinking water standard for nitrate of 45 mg/L. Once implemented, this project would reduce nitrate levels by 28 mg/L. There are currently 120 residents of the community that use approximately 120 gallons per capita per day (gpcd) of water.[111] In total, this translates to 19,896,128 liters per year. Taking into consideration the water use of residents, a total of -557,091,592 mg/year (or -28 mg/L) of nitrate will be removed as a result of the project.

[110] Pers comm. Joni Johnson, RCAC Engineer.
[111] Joni Johnson. *Rural DAC Partnership Project – Phase III Quantifiable Benefits Calculations.* April 22, 2014.

Baseline conditions for Component 6:

$$120\ people * 120\ gpcd * 365\frac{days}{yr} * 3.79\frac{L}{gal} * \ 58\frac{mg}{L} = 1{,}153{,}975{,}440\frac{mg}{yr}$$

With-project conditions for Component 6:

$$120\ people * 120\ gpcd * 365\frac{days}{yr} * 3.79\frac{L}{gal} * \ 30\frac{mg}{L} = 596{,}883{,}848\ \frac{mg}{yr}$$

With-project nitrate removal for Component 6:

$$1{,}153{,}975{,}440\frac{mg}{yr} - \ 596{,}883{,}848\frac{mg}{yr} = 557{,}091{,}592\frac{mg}{L}/36{,}476{,}235\frac{L}{yr} = 28\frac{mg}{L}$$

In Component 7, the Willowside Terrace Mobile Home Park currently has nitrate/nitrite levels of 46 mg/L as reported by a local engineer.[112] Converting this value to pure nitrate, the overall nitrate levels in the water are 204 mg/L. The project would connect residents to a municipal water system that has non-detectable levels of nitrates, effectively reducing nitrate levels from their current concentration to 0 mg/L. There are currently 100 residents of the community that use approximately 120 gpcd of water.[113] In total, this translates to 16,580,107 liters per year. Taking into consideration the water use of residents, a total of -3,377,604,634 mg/year (or -204 mg/L) of nitrate will be removed as a result of the project.

Baseline conditions for Component 7:

$$100\ people * 120\ gpcd * 365\frac{days}{yr} * 3.79\frac{L}{gal} * \ 204\frac{mg}{L} = 3{,}377{,}604{,}634\frac{mg}{yr}$$

With-project conditions for Component 7:

$100\ people * 120\ gpcd * 365\frac{days}{yr} * 3.79\frac{L}{gal} * \ 0\frac{mg}{L} = 0\frac{mg}{yr}$With-project nitrate removal for Component 7:

$$3{,}377{,}604{,}634\frac{mg}{year} - \ 0\frac{mg}{year} = 3{,}377{,}604{,}634\frac{mg}{year}/36{,}476{,}235\frac{liters}{year} = 204\frac{mg}{L}$$

Adding the nitrate savings for each project together, then accounting for the water use of each project, in total when both projects are implemented, the without-project (baseline) water quality is 124 mg/L and the with-project water quality is 16 mg/L, for a total water quality improvement of 108 mg/L.

Baseline conditions TOTAL:

$$1{,}153{,}975{,}440\frac{mg}{yr} + 3{,}377{,}604{,}634\frac{mg}{yr} = 4{,}531{,}580{,}074\frac{mg}{L}/36{,}476{,}235\frac{L}{yr} = 124\frac{mg}{L}$$

With-project conditions TOTAL:

$$596{,}883{,}848\frac{mg}{yr} + 0\frac{mg}{yr} = 596{,}883{,}848\frac{mg}{L}/36{,}476{,}235\frac{L}{yr} = 16\frac{mg}{L}$$

With-project nitrate removal TOTAL:

$$124\frac{mg}{L} - 16\frac{mg}{L} = \mathbf{108}\frac{\boldsymbol{mg}}{\boldsymbol{L}}\boldsymbol{reduction\ in\ nitrate}$$

[112] Pers comm. Joni Johnson, RCAC Engineer.
[113] Joni Johnson. *Rural DAC Partnership Project – Phase III Quantifiable Benefits Calculations.* April 22, 2014.

Secondary Benefit - Water Supply

The secondary benefit is the amount of water supply saved, produced, and recycled by Component 1, 2, and 3, respectively. For Component 1, the Pauma Reservation currently has a leaking tank that is leaking at an estimated rate of 2 gallons per minute (gpm) or 3.2 AFY. As a result of the project, this leak will no longer occur and 3.2 AFY of water will be saved.

$$2\frac{gal}{min} * 525{,}600\frac{min}{yr} = 1{,}051{,}200\frac{gal}{yr} * \frac{1\ AF}{325{,}851\ gal} = \mathbf{3.2\ AFY}$$

For Component 2, the Campo Reservation currently has a water supply deficit. As a result of the project, a well will be drilled that has a capacity of 15 gpm or 24.2 AFY. As a result of the project, this supply will be made available to the Tribe, so 24.2 AFY of water will be produced.

$$15\ \frac{gal}{min} * 525{,}600\frac{min}{yr} = 7{,}884{,}000\frac{gal}{yr} * \frac{1\ AF}{325{,}851\ gal} = \mathbf{24.2\ AFY}$$

For Component 3, the San Pasqual Tribe currently has wastewater available from the Valley View Casino, because the casino has an excess amount of recycled water that is not used. As a result of the project, recycled water will be made available to 45 homes. This analysis assumes that each household contains 2.5 people that use water at an average rate of 120 gpcd and that 35% of overall water use, or 1,724,625 gallons per year, is for outdoor irrigation.[114] As such, users use 4,927,500 gallons per year. Based upon previous experience implementing rural DAC recycled water systems, RCAC estimates that the recycled water project will provide 90% of the irrigation water used by households for a total recycled water use of 1,552,163 gallons per year (or 4.8 AFY) of water reused.

$$45\ homes * 2.5\frac{people}{home} * 120\ gpcd * 365\frac{days}{yr} = 4{,}927{,}500\frac{gal}{yr}$$

$$4{,}927{,}500\frac{gal}{yr} * 35\% = 1{,}724{,}625\frac{gal}{yr} * 90\% = 1{,}552{,}163\frac{gal}{yr} * \frac{1\ AF}{325{,}851\ gal} = \mathbf{4.8\ AFY}$$

In sum, the total amount of water supply benefits provided by Components 1, 2, and 3 is equal to the addition of each benefit for a total water supply saving of 32.2 AFY.

New Facilities, Policies, and Actions Required to Obtain Physical Benefits

Attachment 3, Work Plan explains the work necessary to obtain the physical benefits described herein. The projects were all vetted by the Rural DAC Stakeholder Committee, which evaluated the projects substantially, including an assessment of work completed to date for each project. Each of the projects are in various developmental phases; however, work included in the Work Plan describes all work necessary to complete each component. Further, the project includes labor required by RCAC staff to provide technical and capacity-building support to ensure that each of the components is completed. Therefore, no additional facilities, policies, or actions are required to realize the benefits provided by the project.

Potential Adverse Physical Effects of the Project and Mitigation

There are no significant, long-term adverse physical effects anticipated from implementation of this project. There may be temporary effects associated with construction activities, such as temporary noise, traffic, and air quality impacts. However, all project components will be analyzed for potential environmental impacts such as those described above and mitigation will be implemented to reduce these impacts to less-than-significant levels. For temporary noise impacts, noise attenuation facilities will be erected or construction activities will be timed to reduce impacts to residents. For temporary traffic impacts, traffic control plans will be implemented to ensure that impacts are not significant and that any traffic closures do not impact emergency safety routes. For temporary air quality impacts, construction will take place in accordance with standards established by the San Diego Air Pollution Control District, which will ensure that long-term operational impacts do not occur.

[114] Joni Johnson. *Rural DAC Partnership Project – Phase III Quantifiable Benefits Calculations.* April 22, 2014.

Furthermore, RCAC will work with DACs to ensure that long-term operation of the projects is conducted in accordance with requisite regulations, and therefore will ensure that long-term adverse physical effects are not generated as a result of project implementation.

Long-Term Drought Preparedness

This project would effectively increase long-term drought preparedness in the project area by reducing potable water demands through implementation of Components 1, 3, 4, and 7. The project promotes drought preparedness in two of the ways described in in Table 1 of the *2015 Guidelines*: 1) promoting water conservation, conjunctive use, reuse, and recycling, and 2) establishing system interties.

Components 1, 3, and 4 will either conserve or reuse water. Component 1 will conserve 3.2 AFY on a long-term, permanent basis by replacing a leaking storage tank and therefore reducing water waste. Component 3 will reuse 4.8 AFY of water by implementing recycled water infrastructure that will allow Tribal residents to use available recycled water instead of potable water for outdoor irrigation. Component 4 will conserve water by implementing water meters that will increase operational efficiency and allow for leak detection that will help the San Pasqual Tribe save water on a long-term basis. Component 7 will establish a system intertie between the Willowside Terrace Mobile Home Park Community and the Padre Dam Municipal Water District, therefore ensuring long-term availability of municipal supplies for a disadvantaged community.

Combined, these efforts result in long-term reduction of potable water use by implementing projects that will conserve, reuse, and connect water users on a long-term basis. The project also lays the groundwork for future work efforts. As noted previously, this project is Phase III of ongoing efforts to improve water-related conditions in rural DACs in San Diego County. It is anticipated that the work completed through this phase will lead to additional projects in the future.

Direct Water-Related Benefit to DACs

The *Rural DAC Partnership Project – Phase III* specifically targets rural DACs throughout San Diego County. This project is a continuation of RCAC's *Rural DAC Partnership Project Phase I and Phase II*, both funded in earlier rounds of the Prop 84 grant program. These projects have collectively worked to meet the needs of rural DACs in the Region. The *2013 IRWM Plan* acknowledges that one of the greatest needs of rural DACs is technical support and capacity building to understand water-related issues and find long-term solutions. RCAC has completed multiple efforts throughout the San Diego Region to identify and address needs of rural DACs, with a focus on finding solutions to resolve issues associated with accessibility to clean drinking water and wastewater services. The components of the Rural *DAC Partnership Project – Phase III* were vetted by RCAC's DAC Stakeholder Committee, and explicitly selected because they would address at least one water-related need of a DAC. RCAC will provide technical assistance and capacity building support to ensure successful implementation of the ten components. RCAC has verified that 100% of the area served by the project is DAC. As shown in **Table 7-3** (see *Attachment 7*), this project will directly address nine rural DAC needs. **Table 2-28** provides information about the specific DAC water-related issue(s) that will be resolved by implementation of the *Rural DAC Partnership Project – Phase III.*

Table 2-28: Brief Description of DAC Issues Addressed by *Rural DAC Partnership Project – Phase III*

Brief Description of DAC Water-Related Needs Addressed by Project
Component 1: Pauma Reservation Water System • *Need*: leaking water storage tank built in 1995 requires Tribe to pump more water than needed. Leak also poses a public health risk associated with potential contamination and increases chance of tank failure. • *Resolution*: replace leaking storage tank with new 111,000 gallon tank
Component 2: Campo Reservation South System • *Need*: Tribe has struggled with water supply shortages for several years and needs a new water supply source. • *Resolution*: install a new well and pipelines to provide additional water supply
Component 3: San Pasqual Tribe Reclaimed Water Expansion • *Need*: Tribe relies almost solely on imported water from a municipal agency, and therefore does not consider its water supplies to be reliable on a long-term basis. • *Resolution*: install 9,100 linear feet of reclaimed water pipeline to expand recycled water use (more reliable water supply that conserves potable water for potable needs)
Component 4: San Pasqual Tribe Water Meters • *Need*: Tribe uses manual-read meters, and therefore is not efficient at leak detection as meters are read on a monthly basis. • *Resolution*: install automatic meters to enable residents to better manage water use, and detect leaks early to reduce water waste
Component 5: La Jolla Tribe Water Tank • *Need*: Tribe has insufficient water storage capacity and frequently experiences water shortages. • *Resolution*: install a new 80,000 gallon water storage tank to increase storage capacity
Component 6: Quiet Oaks Mobile Home Park Nitrate Treatment • *Need*: groundwater exceeds drinking water MCL for nitrate • *Resolution*: install a nitrate treatment system to remove excess nitrate and meet drinking water MCL
Component 7: Willowside Terrace Water System Connection • *Need*: groundwater exceeds drinking water MCL for nitrate • *Resolution*: connect community to Padre Dam MWD's system; Padre Dam MWD provides water that meets all applicable MCLs, including nitrate
Component 8: Richardson Beardsley Park Treatment • *Need*: groundwater exceeds secondary MCL for iron and manganese • *Resolution*: install an iron and manganese treatment system which will improve water quality such that this secondary MCL is met
Component 9: Smuggler's Gulch Floating Trash Booms • *Need*: trash presents serious water quality and flood issues • *Resolution*: install trash removal system at Smuggler's Gulch to reduce trash-related water quality and flood issues
Component 10: Tijuana River-San Diego Connector Restoration Project • *Need*: illegal dumping and trash present surface and groundwater quality issues in a seasonal stream • *Resolution*: conduct restoration, including bioswales and pervious surfaces, plantings, and education to reduce pollutants from entering surface and groundwater, and reduce improper trash disposal

Project Performance Monitoring Plan

Benefits will begin accruing as soon as project construction/implementation is complete for each component. Due to the small-scale nature of the project components, interim targets will not be provided; rather, RCAC will work with each DAC to ensure projects are completed and that monitoring efforts are established once projects are completed.

Table 2-29, below, describes the methods that will be used to measure the quantified benefits of this project and described in the sections above. Note that these methods may change, pending development of the Project Performance Monitoring Plan under Task 9 of the Work Plan (see *Attachment 3 Work Plan*), and are presented as one option for measuring progress towards achieving the claimed benefits. Measurable targets for each benefit are also presented in the table.

RCAC will continue to provide technical support, and will work with project proponents to produce Project Completion Reports (during contract term) and Post-Performance Reports (after contract term) to DWR per terms of the Grant Agreement.

Table 2-29: Project Monitoring for *Rural Disadvantaged Community Partnership Project – Phase III*

Proposed Physical Benefits	Measurement Tools and Methods	Targets
Water Quality	*Component 6*: The Quiet Oaks Mobile Home Park supplies water to residents via one well and regular monitoring takes place to determine water quality for local residents. Once the project is completed, RCAC will work with the community to ensure that monthly water quality samples are taken and reported in accordance with applicable regulations (e.g., monthly for bacteria, annually for nitrate). Data will be collected by RCAC through standard water quality monitoring methods. *Component 7*: The Willowside Terrace Water System will be connected to the Padre Dam MWD water system. Padre Dam MWD compiles annual *Water Quality Reports* for public dissemination. RCAC will compile data about the water quality of water provided to residents of Willowside Terrace from the Padre Dam MWD *Water Quality Reports*.	Reaching these targets indicates a total reduction of 108 mg/L nitrate: • 30 mg/L nitrate for Quiet Oaks Mobile Home Park water • 0 mg/L (non-detect) nitrate for Padre Dam MWD water
Water Supply	*Component 1*: IHS and RCAC will produce an Engineers Certification of completion. This certification will demonstrate that the new tank was constructed in accordance with design specifications. Given that there is well-established data of the tank leaking (3.2 AFY), it is reasonable to assume that once an Engineers Certification of completion is received, the leak issue and water waste associated with the leak will be resolved. Therefore, the final Engineers Certification of completion will be the basis for demonstrating that the project is performing as planned. RCAC will continue to report the status of the project for 10 years following completion per DWR standards; these Post-Performance Reports will explain the current status of the tank and indicate any leaks or associated issues if they arise. *Component 2*: IHS and RCAC will produce an Engineers Certification of completion. This certification will demonstrate that the new groundwater well was constructed in accordance with design specifications. Given that design specifications will require construction of a 15 gpm well, it is reasonable to assume that up to 24.2 AFY of groundwater will be produced and supplied to the Tribe. RCAC will work with the Tribe to collect and submit annual pumping logs for the new well. RCAC will continue to report the status of the project for 10 years following completion per DWR standards; these Post-Performance Reports will explain the current status of the well and indicate any changes in capacity. *Component 3*: BIA and RCAC will produce an Engineers Certification of completion and the La Jolla Band will ensure that all connections are metered. RCAC will work with the La Jolla Band to accumulate recycled water meter data that will demonstrate annual recycled water use. RCAC will continue to report the status of the project for ten years following completion per DWR standards; these Post-Performance Reports will explain the annual recycled water use and any changes in use that may arise.	Total = 32.2 AFY: • 3.2 AFY for the Pauma Reservation water system • 24.2 AFY for the Campo Reservation South water system • 4.8 AFY for the San Pasqual Reservation recycled water system

Cost Effectiveness Analysis

Through implementation of Components 1, 2, 3, 6, and 7, the *Rural Disadvantaged Community Partnership Project – Phase III* will achieve two quantifiable physical benefits described in detail in the sections above, and summarized in **Table 2-26 and 2-27**. During project development, alternatives to the preferred project included in this application were considered and, ultimately, rejected. Components 4, 5, 8, 9, and 10 are important to provide safe and reliable water to DACs, but did not contribute to the two selected benefits that were quantified for this project, and are therefore not included in this cost-effectiveness analysis. **Table 2-30** provides a cost effectiveness analysis consistent with Table 7 of the *2015 PSP*.

Table 2-30: Cost Effective Analysis ***Project Name:* Rural Disadvantaged Community Partnership Project – Phase III**	
Question 1 Physical Benefits Summary	*Types of benefits provided as shown in Table 2-25 and 2-26.* Benefit 1: Water Quality – 108 mg/L reduction in nitrate levels through Component 6 and 7 Benefit 2: Water Supply – 32.2 AFY conserved, produced, and reused water through Component 1, 2, and 3
Question 2 Alternatives Considered	*Have alternative methods been considered to achieve the same types and amounts of physical benefits as the proposed project been identified?* Yes for Component 1 No for Component 2, 3, 6, and 7
	If no, why? *Component 2:* The Campo Reservation is located in an isolated, rural portion of San Diego County at substantial distance from municipal water agencies. The entire Campo area is served water by groundwater and there are no alternative water supply options. While the Tribal members could potentially use bottled water as a supply alternative, this alternative was not formally considered as it is not sustainable or cost-effective for an economically disadvantaged Tribal community. *Component 3:* Existing conditions could effectively be considered as an alternative, because currently the San Pasqual Tribe relies upon imported water purchased by VCMWD. However, this alternative would not meet the project goals because it would not increase water supply reliability for the Tribe. Given the location of the Tribe, no other feasible alternatives exist to increase water reuse and provide the benefits described herein. *Component 6*: The Quiet Oaks Mobile Home Park is located in a rural portion of San Diego County at substantial distance from municipal water agencies. The entire Warner Springs area is served water by groundwater and there are no alternative water supply options. While the local residents of the mobile home park could potentially use bottled water as a supply alternative, this alternative was not formally considered as it is not sustainable or cost-effective for an economically disadvantaged rural community. *Component 7:* The Willowside Terrace Mobile Home Park is located in the service area of a municipal water agency, within 6,500 feet of an existing water main. Given the close proximity to an existing municipal water main, the most feasible long-term solution for addressing water quality issues for this community is establishing a connection to the nearby municipal system. While onsite treatment methods were not formally analyzed, it is well-known that establishing a municipal connection will ensure that residents are provided clean drinking water on a long-term basis.

Table 2-30: Cost Effective Analysis ***Project Name:* Rural Disadvantaged Community Partnership Project – Phase III**	
	If yes, list the methods (including the proposed project) and estimated costs *Component 1:* A Preliminary Engineering Report (PER) was completed by Indian Health Services in 2014. The PER evaluated three alternatives. Below are the three alternatives and estimated costs: • No Action: Leave existing leaking tank and head towards tank failure as the tank continues to corrode and degrade. Total costs would be associated with operations and maintenance (O&M) and would total $11,747 per year. • Refurbish Existing Tank: Leave existing leaking tank and rehabilitate the tank to correct existing leaks within the shell. Total life cycle costs were estimated by IHS to be $532,913. • Proposed Project – Install a New Tank: Remove existing tank and replace with a new steel tank. Total life cycle costs were estimated by IHS to be $542,313.
Question 3 Preferred Alternative	*If the proposed project is not the least cost alternative, why is it the preferred alternative? Provide an explanation of any accomplishments of the proposed project that are different from the alternative project or methods.* There is no least cost alternative identified for Components 2, 3, 6, and 7. The projects identified in this project are known drinking water supply and quality issues and have been specifically selected for funding by IHS, BIA, SWRCB, and DEH, among with stakeholders. *Component 1:* The PER for the project concluded that while installation of a new tank vs. rehabilitation of the existing tank would not be the least cost alternative, it is the preferred alternative. IHS concluded that it would likely be more economical on a long-term basis to replace the tank than to rehabilitate the tank, even though the cost estimate for replacement is slightly higher. This is because the existing tank is 19 years old at present day, and could potentially be susceptible to additional failures not captured in the cost analysis. As such, the proposed project would provide an additional accomplishment of providing a long-term, reliable water supply and ensuring Tribal members that the community will be supplied with safe drinking water.

Water Reuse Program

Project 6: Integrated Water Resource Solutions for the Carlsbad Watershed

Local Project Sponsor: San Elijo Joint Powers Authority (San Elijo JPA)
Partners: City of Encinitas, City of Solana Beach, San Dieguito Water District (SDWD), Santa Fe Irrigation District (SFID), Olivenhain Municipal Water District (OMWD), and San Elijo Lagoon Conservancy (SELC)

Project Summary

The project will implement recycled water and low impact development (LID) strategies to offset potable water demands, reduce urban runoff, and implement water quality monitoring.

Project Maps

Figure 2-9 shows the *Integrated Water Resource Solutions for the Carlsbad Watershed* project area, the service areas of the project sponsor, the project facilities and the project's relation to groundwater basins and surface water, disadvantaged communities (DACs) and proposed monitoring locations. An excerpt from the 30% design for the LID improvements for Component 1 is shown in **Figure 2-10**, while **Figures 2-11** through **2-13** provide detailed location for the recycled water pipelines in Components 3, 4, and 5.

LID strategies will address non-point source pollution in Cottonwood Creek (left); Recycled water pipeline expansion will serve the Coastal Rail Trail (above)

Project Description

This project will implement multiple streetscape improvements and approximately 4 miles of recycled water pipeline along and adjacent to the Highway 101 corridor in the City of Encinitas and the City of Solana Beach to convert 100 acre-feet per year (AFY) of irrigation from potable water to recycled water, and to decrease flows to the San Elijo Ocean Outfall. San Elijo JPA owns and operates the San Elijo Water Reclamation Facility (WRF), a 5.25 million gallons per day (mgd) wastewater treatment and 3.02 mgd water reclamation facility serving irrigation demands within the City of Del Mar, SDWD, SFID, and OMWD. In conjunction with project partners, San Elijo JPA is pursuing an integrated approach to water quality, water conservation, and climate change along and adjacent to the Highway 101 corridor in North San Diego County. This project includes the following eight elements:

Component 1: Highway 101 Streetscape - Located just north of Encinitas Boulevard, this project element will be constructed by the City of Encinitas and includes reconstruction of Highway 101 from A Street to North Court to include plumbing for recycled water.

Component 2: Highway 101 Greenstreet Retrofit – Led by the City of Encinitas, this component will construct LID streetscape improvements along Highway 101 in the City of Encinitas, which will reduce peak runoff by 4.6%, total runoff by 3.5%, and coliforms reaching the Cottonwood Creek, a 303(d)-listed body of water, by an estimated 45%. The LID elements will be located along Highway 101, just south of Encinitas Boulevard, between E Street and F Street.

Component 3: Manchester Avenue Recycled Water Pipeline – Led by OMWD, this component will extend Pipeline No. 1 east along Manchester Avenue in the City of Encinitas to serve Mira Costa College, homeowners associations (HOAs), religious centers, and other customers.

Component 4: Via de la Valle/Highway 101 Recycled Water Pipeline – Led by SFID, this component will extend Pipeline No. 2 west along Via De La Valle and then north on Highway 101 in Solana Beach, allowing for conversion of several HOAs, and the City's Coastal Rail Trail to recycled water.

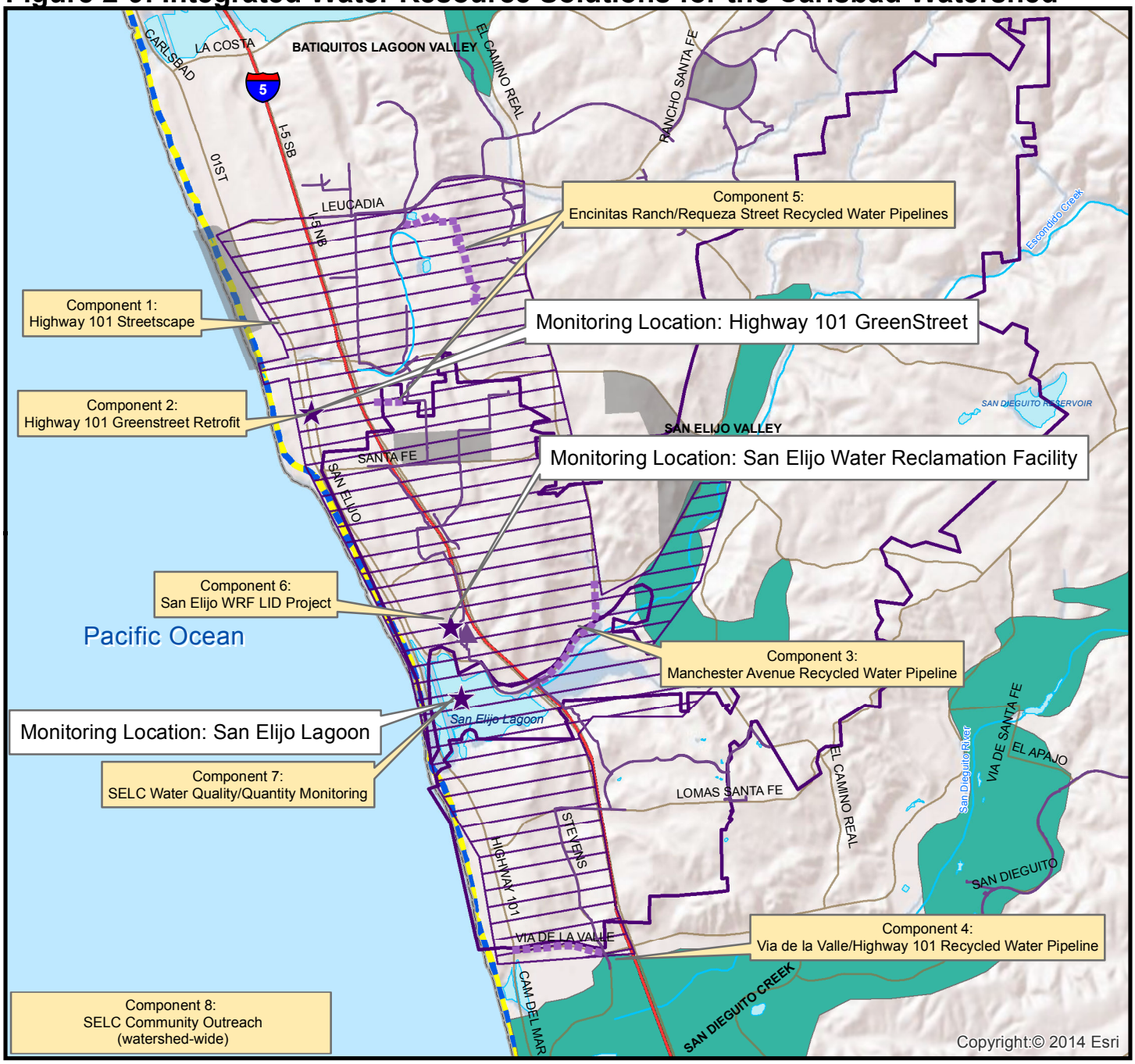
Component 5: Encinitas Ranch / Requeza Street Recycled Water Pipelines – Led by SDWD, this component will extend Pipeline No. 3 east adjacent to Paseo De Las Flores in the City of Encinitas to allow for conversion of several HOAs, agricultural sites, and recreational trails to recycled water use. Pipeline No. 4 will also be extended along Requeza Street to serve multiple HOAs.

Component 6: San Elijo WRF LID Project – San Elijo JPA will construct low impact development (LID) facilities at the San Elijo WRF, which will reduce Total Suspended Solids (TSS) entering San Elijo Lagoon, a 303(d)-listed body of water.

Component 7: SELC Water Quality/Quantity Monitoring – SELC will conduct water quality and quantity monitoring in the San Elijo Lagoon. The San Elijo Lagoon, a 303(d) listed body of water that is adjacent to the San Elijo WRF, is a vital and unique ecosystem in the Carlsbad Watershed. This program element proposes to support existing water quality and quantity monitoring efforts in the San Elijo Lagoon and will provide funding for data collection and uploading efforts for two years.

Component 8: SELC Community Outreach - This program element will support an existing outreach effort by SELC, which transports students from middle through high school to key areas in the watershed, such as the Elfin Forest Recreational Reserve and the San Elijo Lagoon, to participate in water conservation/quality education using a state approved curriculum. The proposed support will reach approximately 434 students over two years, including 313 students from Title I low-income schools in Escondido (including Central Elementary, Lincoln Elementary, Farr Elementary, and Felicity Elementary).

Figure 2-9: Integrated Water Resource Solutions for the Carlsbad Watershed



Coordinates: 33.01673, -117.27366

Legend

- San Diego IRWM Region
- Funding Area Boundary
- Freeway
- Major Roads
- Waterbody
- County
- DAC Area*
- Very Low Priority Groundwater Basins
- Benefit Area: 6 Integrated Water Resources Solutions for the Carlsbad Watershed
- San Elijo JPA
- Monitoring Locations
- San Elijo Water Reclamation Facility
- Existing Recycled Water Pipelines
- Proposed Recycled Water Pipelines

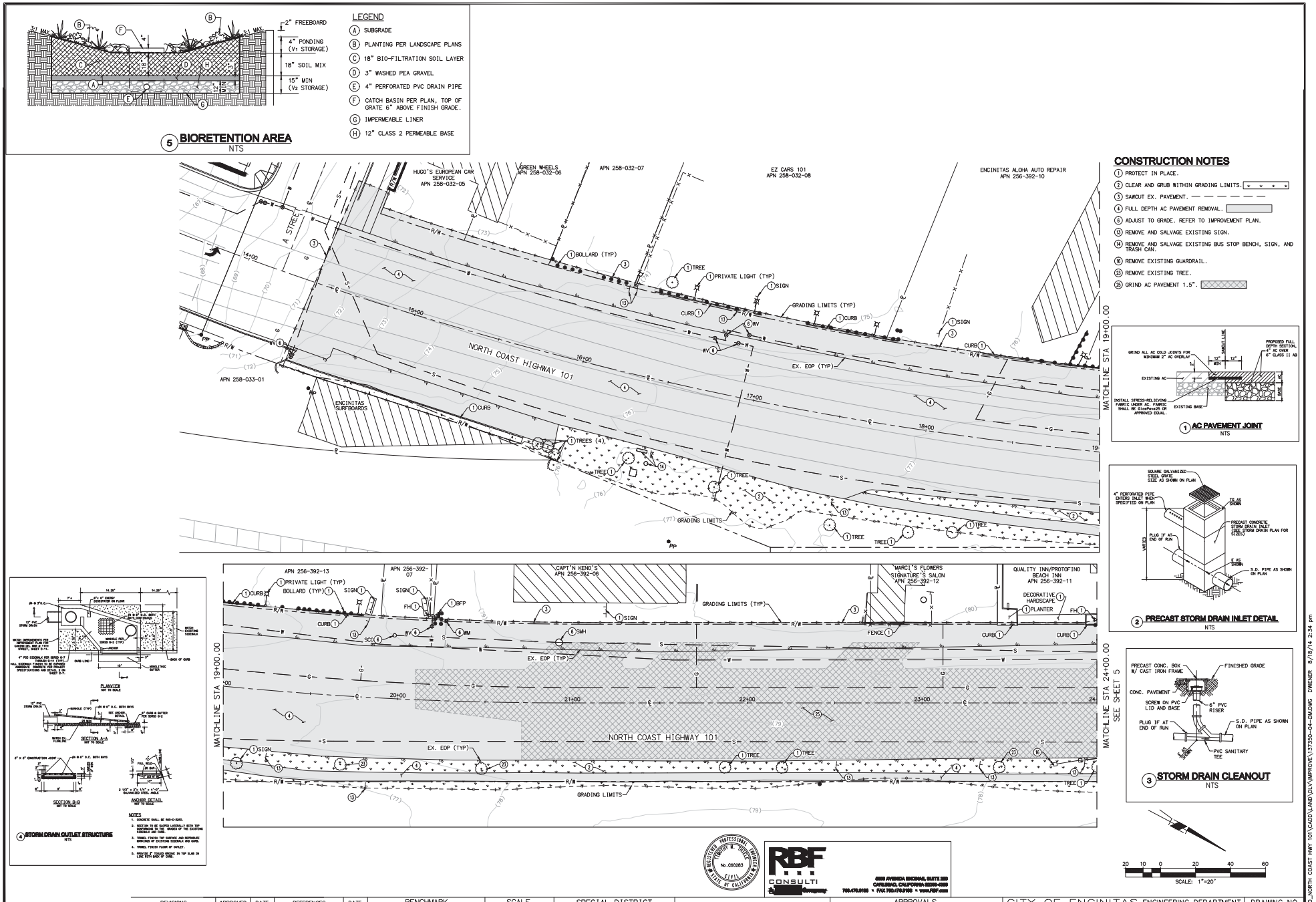
0 0.5 1 2
Miles

N

*Note: DAC as determined by census tract and block group data for the year 2013, from the American Community Survey 2009-2013 5-year results. DAC determined based on definition of median household incomes below 80% of the statewide MHI or $48,875.

Sources: U.S. Census 2013 ACS 5-year estimates; San Diego Association of Governments (SANDAG) - GIS Data Warehouse
Document Path: N:\Projects GIS\0188-003 SDIRWM Plan Update\Prop84_Rnd4\MXD\Project maps\2-7_SEJPAProject28072015.mxd

Figure 2-10: Excerpt from 30% Design for Component 1 Highway 101 Streetscape



REVISIONS	APPROVED	DATE	REFERENCES	DATE	BENCHMARK	SCALE	SPECIAL DISTRICT	APPROVALS	CITY OF ENCINITAS ENGINEERING DEPARTMENT	DRAWING NO.
					ELEVATIONS SHOWN HEREON ARE IN TERMS OF THE NORTH AMERICAN VERTICAL DATUM OF 1988, LOCALLY ON UPON FOLLOWING BENCHMARKS PER "ENCINITAS SURVEY CONTROL" RECORD OF SURVEY 18416. STATION ENC-04 ELEVATION 67.639 STATION ENC-25 ELEVATION 60.601	HORIZONTAL 1"=20' VERTICAL	PLANS PREPARED UNDER SUPERVISION OF ENGINEER: TIMOTHY M. THIELE R.C.E. NO. 60283 DATE:	RECOMMENDED BY: DATE: APPROVED BY: DATE:	DEMOLITION AND ROUGH GRADING PLAN FOR: NORTH COAST HIGHWAY 101 STREETSCAPE CIP PROJECT NO. CS04D STA 14+00 TO 24+00	0099-SI SHEET 4 OF 137

30% PLANS - NOT FOR CONSTRUCTION

H:\PDATA\137350_NORTH COAST HWY 101\CADD\LAND\LV\IMPROVE\137350-04-DM.DWG DWENER 8/18/14 2:34 pm

Figure 2-11: Component 3 Manchester Avenue Recycled Water Pipeline

Figure 2-12: Component 4 Via de la Valle Highway/101 Recycled Water Pipeline

Infrastructure ENGINEERING CORPORATION

14271 Danielson Street
Poway, California 92064
T 858.413.2400 F 858.413.2440
www.iecorporation.com

City of Solana Beach
Preliminary Design Services for Recycled Water Pipeline Extension

PROJECT OVERVIEW

FIGURE
E-2

Figure 2-13: Component 5 Encinitas Ranch/Requeza Street Recycled Water Pipeline

Encinitas Map

SDWD:
Requeza Recycled Water Main Extension
8" PVC Main

DISCLAIMER:

This map should not be used for Engineering, Survey, or Site-Specific Analysis.

Every reasonable effort has been made to assure the accuracy of the data provided; nevertheless, some information may not be accurate. The City of Encinitas assumes no liability or responsibility arising from the use of or reliance upon this information.

- Map Coordinates: Stateplane NAD83 Feet, CA Zone 6
- Parcel lines are not survey accurate, and some parcels can be positionally off up to +/- 40 feet
- Photo flight dates: July 2009. 4 inch pixel resolution. Digital true color.
- Orthophoto and Topo positional accuracy meet the precision adequate to support National Map Accuracy Standards for 1" = 100' mapping.

N

0 200 Feet

1 inch = 200 feet

Project Physical Benefits

The primary and secondary benefits of the project are, respectively, generating new Water Supply via recycled water and providing Water Quality improvements via stormwater management. These benefits are important to the sustainability of the urban setting and the protection of natural habitats.

The primary benefit is Water Supply through the expansion of the local recycled water systems for Santa Fe Irrigation District (SFID), San Dieguito Water District (SDWD), and Olivenhain Municipal Water District (OMWD), who are all served by the San Elijo WRF. The project will increase recycled water use for irrigation demands by providing a drought-tolerant local water supply. The recycled water diversion from the San Elijo Ocean Outfall also decreases pollutant loading to the Pacific Ocean. The baseline was calculated as the average volume of recycled water delivered by San Elijo JPA over the last three years. Annual deliveries ranged between 1,355 AFY and 1,561 AFY between FY2012/13 and FY 2014/15, for an average delivery of 1,477.5 AFY. The baseline is shown as a static value because no additional capital expenditures for recycled water have been committed at this time beyond the proposed project. The value of recycled water demands for this benefit was calculated from the City of Solana Beach's *Preliminary Design Report for Recycled Water Extension* and internal analysis performed by OMWD and SDWD based on existing irrigation usage. Over the life of the project, the *Integrated Water Resource Solutions for Carlsbad Watershed* project will deliver 5,900 AF of additional recycled water to customers.

Table 2-31: Primary Physical Benefit – Water Supply
Integrated Water Resource Solutions for Carlsbad Watershed

Project Name: *Integrated Water Supply and Water Quality Solutions for Carlsbad Watershed*
Type of Benefit Claimed: Water Supply – Recycled water delivered to new customers
Units of the Benefit Claimed: AFY
Anticipated Useful Life of Project (years): 60

(a)	(b)	(c)	(d)
Year	**Without Project**	**With Project**	**Change Resulting From Project (c) – (b)**
2018	1,477.5 AFY	1,510.8 AFY	33.3 AFY
2019	1,477.5 AFY	1,544.2 AFY	66.7 AFY
2020-2077	1,477.5 AFY	1,557.5 AFY	100 AFY

Comments: The anticipated useful life of the recycled water pipelines is 60 years. All four proposed recycled water pipelines will be completed in late 2017, with delivery of recycled water anticipated in 2018. Because onsite retrofits may occur following completion of the pipeline, this analysis assumes phasing of the recycled water deliveries by 33% in each year 2018-2020. There will be no phasing out of the recycled water benefit.

Sources: *Component 3 Manchester Avenue Recycled Water Pipeline* (11 AFY) – Pers. Comm. Adam Hoch, Consulting Engineer, 7/29/15. Based on OMWD analysis of irrigation demands along Manchester Avenue.

Component 4 Via de la Valle/Highway 101 Recycled Water Pipeline (38 AFY) – City of Solana Beach. *Preliminary Design Report for Recycled Water Extension*. May 2015. Pg. 4.

Component 5 Encinitas Ranch/Requeza Street Recycled Water Pipelines (35 AFY) - Pers. Comm. Adam Hoch, Consulting Engineer, 7/29/15. Based on SDWD analysis of irrigation demands along Requeza and in/adjacent to Encinitas Ranch HOA.

The secondary benefit of the project is Water Quality improvement through implementation of LID facilities along Highway 101 and at the San Elijo WRF. This would improve surface runoff to Cottonwood Creek and San Elijo Lagoon, respectively. The baseline was calculated from onsite stormwater quality data collected and analyzed at the San Elijo WRF laboratory. The value of the Water Quality Improvement was calculated based on San Elijo JPA's *Facility Plan Update for the San Elijo JPA's San Elijo WRF* and the City of Encinitas' *Cottonwood Creek Watershed LID Retrofit Plan – Draft*.

Table 2-32: Secondary Physical Benefit – Water Quality Improvement
Integrated Water Resource Solutions for Carlsbad Watershed

Project Name: *Integrated Water Supply and Water Quality Solutions for Carlsbad Watershed* **Type of Benefit Claimed:** Water Quality – Total suspended solids (TSS) reduction from LID facilities **Units of the Benefit Claimed:** mg/L **Anticipated Useful Life of Project (years):** 60 years			
(a)	**(b)**	**(c)**	**(d)**
Year	**Without Project**	**With Project**	**Change Resulting From Project (c) – (b)**
2018-2077	92 mg/L	2.8 mg/L	-89.2 mg/L
Comments: The anticipated useful life of the LID facilities is 60 years. Both of the LID components will be completed in mid-2017, with operation beginning in the second half of the year. This analysis assumes 100% accrual of the water quality benefit (in terms of concentration) throughout the 2018-2077 lifetimes of the facilities. There will be no phasing out of the water quality benefit. Sources: San Elijo JPA Laboratory. *Stormwater #2 12/2/14, Stormwater #3 12/2/14*. Reviewed December 30th 2014. San Elijo JPA. April 2015. *Facility Plan Update for the San Elijo JPA's San Elijo WRF*. City of Encinitas and SWRCB. Prepared by Tetra Tech et al. 2015. *Cottonwood Creek Watershed LID Retrofit Plan – Draft*. RBF Consulting. August 2014. *30% Plans for Construction of North Coast Highway 101 Streetscape*. Environmental Services Division Department of Environmental Resources – Prince George's County, MD. *Bioretention Manual*. December, 2007. pg. 7.			

Technical Analysis of Physical Benefits Claimed

Project Need and Conditions

In the midst of one of the most severe droughts on record in California, Californians are being asked to conserve water on an unprecedented level. In response, cities, water districts, and wastewater agencies are pursuing water conservation on all fronts – including expanding conservation programs, increasing recycled water production, exploring potable reuse feasibility, and studying alternate local water supplies via desalination, brackish, and groundwater supplies. At the same time, water resource priorities within the State and San Diego County remain high with adoption of new drought regulations, and storm water regulations. SEJPA and its partners often collaborate on water infrastructure projects with goals that broach water conservation and water quality and move the region toward water sustainability.

San Elijo JPA is responsible for collecting, treating, and disposing of wastewater within its service area that includes the City of Solana Beach, portions of the City of Encinitas, portions of the community of Rancho Santa Fe, and the City of Del Mar. The San Elijo WRF is a tertiary treatment facility that has a secondary capacity of 5.25 mgd and a tertiary capacity of 3.02 mgd. Secondary-treated wastewater that is not treated to tertiary levels and reused is discharged to the ocean through the San Elijo Ocean Outfall. Expansion of San Elijo JPA's recycled water system will both beneficially reuse the wastewater and will offload the ocean outfall. San Elijo WRF is also enrolled for coverage under State Water Resources Control Board (SWRCB) Order No. 97-03-DWR (NPDES CAS 000001), the statewide general permit covering stormwater runoff from industrial facilities.

San Elijo JPA sells recycled water to four water purveyors: SFID, SDWD, OMWD, and the City of Del Mar. The purveyors then sell the recycled water to end customers located within their individual service areas. The San Elijo JPA owns the majority of the recycled water infrastructure system including treatment, storage, and pipelines

for all the facilities (with the exception of those in OMWD's service area). In 2013, San Elijo JPA added an advanced water treatment (AWT) facility at San Elijo WRF that provides highly treated recycled water using microfiltration and reverse osmosis processes. The facility operates in parallel to the existing sand filtration system thus providing operational flexibility and treatment redundancy. The AWT facility allows the San Elijo JPA to control the level of total dissolved solids (TDS) to 900 mg/l or less in the recycled water. The improved water quality has allowed the San Elijo JPA to serve new markets, including industrial systems such as cooling towers that are sensitive to mineral deposits. While San Elijo JPA is prepared to increase recycled water production, it also needs to expand its recycled water distribution system in order to utilize the recycled water and offset potable water demands.

SFID's water supply mix is: 48% imported water via SDCWA; 48% local surface water; and 4% recycled water.[1] SDWD's water supply mix is: 25% imported water via SDCWA; 68% local surface water; and 7% recycled water.[2] OMWD's water supply mix is: 88% imported water via SDCWA and 12% recycled water.[3] In order to reduce demand for imported water supplies, which are unreliable, these water districts are implementing water conservation and recycled water projects.

Carlsbad Watershed features a significant number of the San Diego IRWM Region's coastal lagoons. Approximately half of the 211-square mile Carlsbad Watershed is urbanized, with a high percentage of the undeveloped land in private ownership. Urban and agricultural runoff is a critical concern within the Carlsbad Watershed, and can impact both the coastal lagoons and local beaches.[4] The San Elijo Lagoon, which is adjacent to the San Elijo WRF, provides a vital and unique ecosystem in the Carlsbad Watershed. San Elijo Lagoon is noted for being surrounded by steep coastal bluffs that cause sediment issues in the lagoon due to erosion; sedimentation and sand deposition require regular dredging of the lagoon to maintain its connectivity with the ocean. The lagoon also contains the most extensive stands of freshwater marsh vegetation in the watershed.[5] San Elijo Lagoon is on the Clean Water Act 303(d) list of impaired water bodies for eutrophication, indicator bacteria, and sedimentation/siltation. Installation of LID facilities at the San Elijo WRF site will reduce potential loading to the lagoon.

Cottonwood Creek, which also receives storm water from the project area, is on the Clean Water Act 303(d) list of impaired water bodies for dichlorodiphenyltrichloroethane (DDT), selenium, and sedimentation/siltation. The Pacific Ocean shoreline at the Cottonwood Creek outlet (Moonlight State Beach) is on the 303(d) list for total coliform. Stakeholders in the Carlsbad Watershed have been working together on successful efforts to reduce pollutant loading into Cottonwood Creek, including upstream best management practices (BMP) and development of plans to implement an urban runoff treatment facility to further reduce pollutant loading to the beach.[6]

San Elijo Lagoon (above); Students learning about water conservation and water quality (right)

[1] Santa Fe Irrigation District. 2011. *2010 Urban Water Management Plan*.
[2] San Dieguito Water District. 2011. *2010 Urban Water Management Plan*.
[3] Olivenhain Municipal Water District. 2011. *2010 Urban Water Management Plan*.
[4] San Diego RWMG and RAC. 2013. *2013 San Diego IRWM Plan*. Chapter 5: Watersheds.
[5] Carlsbad Watershed Network (CWN). 2002. *Carlsbad Watershed Management Plan*. February 2002.
[6] James Rasmus and Kathy Weldon. 2003. *Moonlight Beach Urban Runoff Treatment Facility*.

Without-Project Conditions

Without *Integrated Water Resource Solutions for the Carlsbad Watershed*, approximately 100 AFY of additional treated wastewater from the San Elijo JPA would continue to be discharged to the Pacific Ocean through the San Elijo Ocean Outfall. The irrigation demands along the Manchester Avenue, Via de la Valle, Encinitas Ranch, and Requeza Street alignments would continue to use potable water, primarily from imported sources. Within the combined OMWD, SDWD, and SFID service areas, approximately 1,477.5 AFY of recycled water will continue to be served to local customers for non-potable irrigation and industrial purposes by these agencies with San Elijo JPA supplies.

Without the LID facilities along Highway 101 and at the San Elijo WRF, impervious surfaces would remain in place, thereby allowing non-point source contaminants and bacteria to continue to enter San Elijo Lagoon, Cottonwood Creek, and Moonlight Beach at current rates. Storm water quality from the local drainage systems will remain at 92 mg/L of TSS as discharged to San Elijo Lagoon and Cottonwood Creek/Moonlight Beach. If the proposed project is not implemented, the Municipal Separate Storm Sewer System (MS4) parties will need to develop and implement alternative BMPs to address loading to these water bodies.

Without the public outreach components, students from Title I low-income schools in Escondido would not receive water conservation and water quality education to enable water use behavior changes. The field trips offered to both Encinitas and Escondido area students would not occur. SELC would need to either seek alternative funding to provide these services, modify their education program to reduce costs (such as eliminating the field trip portion of the program), serve fewer schools, or cease providing their education and outreach program to local schools.

Methods Used to Estimate the Physical Benefits

Primary Benefit – Water Supply

The primary benefit is generating recycled water supply of 100 AFY through better utilization of recycled water production at the San Elijo WRF. The expansion of recycled water use will replace potable water demands for several HOAs, the Coastal Rail Trail, Mira Costa College, religious centers, businesses, and other customers. Customer demands for the proposed recycled water pipeline alignments include:

- *Component 1 Manchester Avenue Recycled Water Pipeline* (11 AFY)[7] – based on OMWD analysis of irrigation demands along Manchester Avenue.
- *Component 2 Via de la Valle/Highway 101 Recycled Water Pipeline* (38 AFY)[8] – based on May 2015 *Preliminary Design Report*. Note that the report estimated irrigation demands as 44 AFY, which have been discounted to account for irrigation efficiencies.
- *Component 3 Encinitas Ranch/Requeza Street Recycled Water Pipelines* (51 AFY)[9] – based on SDWD analysis of irrigation demands along Requeza and in/adjacent to Encinitas Ranch HOA.

This results in beneficial use of 100 AFY of water currently discharged to the Pacific Ocean through San Elijo Ocean Outfall. The recycled water use will offset potable demand, and represents better use and management of a drought-tolerant water supply.

$$11\ AFY + 38\ AFY + 51\ AFY = \mathbf{100\ AFY}$$

[7] Pers. Comm. Adam Hoch, Consulting Engineer, 7/29/15. Based on OMWD analysis of irrigation demands along Manchester Avenue.
[8] Infrastructure Engineering Corporation. *Preliminary Design Report for Recycled Water Extension*. May 2015. Pg. 4
[9] Pers. Comm. Adam Hoch, Consulting Engineer, 7/29/15. Based on SDWD analysis of irrigation demands along Requeza and in/adjacent to Encinitas Ranch HOA.

Secondary Benefit - Water Quality

The secondary benefit is Water Quality improvement through removal of 89 mg/L of TSS within urban runoff draining to Cottonwood Creek/Moonlight Beach and San Elijo Lagoon. The benefit comes from the installation of LID facilities as part of the Highway 101 Greenstreet and San Elijo WRF LID Project components.

Bioretention areas are small-scale, shallow, vegetated areas with engineered soil media and plant-based filtration devices that remove pollutants through a variety of physical, biological, and chemical treatment processes. Such BMPs usually consist of a media bed, ponding area, mulch layer, and planting soil media and may or may not include an underdrain. The depressed area is planted with small- to medium-sized vegetation including trees, shrubs, and groundcover that can withstand urban environments and tolerate periodic inundation and dry periods. Pretreatment of storm water flowing into bioretention BMPs is recommended to remove large debris, trash, and larger particulates. Permeable pavements work by allowing streets, parking lots, sidewalks, and other hardscape to retain their natural infiltration capacity while maintaining the structural and functional features of the materials they replace. Permeable pavements contain small voids that allow water to drain through the pavement to an aggregate reservoir and then infiltrate into the soil.[10]

The Highway 101 Streetscape and Greenstreet projects improve water quality by reducing stormwater runoff through the use of pervious pavement and bioswales.

The runoff water treated by bioretention facilities reportedly removes 97% of the TSS in the treated flow.[11] According to laboratory records from the San Elijo WRF, local surface runoff assumed to have an average TSS concentration of 92 mg/L for a 0.5 inch storm event.[12] The LID facilities would reduce the runoff TSS concentration from 92 mg/L to 2.8 mg/L, removing 89.2 mg/L of TSS.

The bioretention facilities will have a similar positive effect in decreasing nitrate, heavy metals, and bacteria concentrations as well. The Highway 101 Greenstreet Retrofit is a recommended project in the *Cottonwood Creek Watershed LID Retrofit Plan – Draft* and is designed to reduce peak runoff by 4.6%, total runoff by 3.5%, and coliforms reaching the Cottonwood Creek by an estimated 45%. The bacterial reduction is significant, given that both Cottonwood Creek and Moonlight Beach are on the 303(d) list for total coliform and Moonlight Beach experiences heavy recreational use of by both local residents and visitors. However, this analysis presents TSS reduction, which can be reported in mg/L format.

[10] Tetra Tech et al. 2015. *Cottonwood Creek Watershed LID Retrofit Plan – Draft.*
[11] Environmental Services Division Department of Environmental Resources – Prince George's County, MD. *Bioretention Manual*. December, 2007.
[12] San Elijo JPA Laboratory. *Stormwater #2 12/2/14, Stormwater #3 12/2/14*. Reviewed December 30th 2014.

$$\left(\frac{TSS\ mg/L\ sample\ \#1 + TSS\ mg/L\ sample\ \#2}{2}\right) * \%\ TSS\ removed\ via\ biorentention = TSS\frac{mg}{L} reduction$$

$$\left(\frac{58\frac{mg}{L} + 126\frac{mg}{L}}{2}\right) * 97\% = \mathbf{89.2\ mg/L}$$

New Facilities, Policies, and Actions Required to Obtain Physical Benefits

The physical benefits of the *Integrated Water Resource Solutions for Carlsbad Watershed* will require construction of all the project components. These components include design, permitting, and construction of approximately 19,834 LF of recycled water pipeline along four separate alignments to serve local irrigation demands. The Coastal Rail Train is already plumbed to allow for irrigation with recycled water, but the remaining new customers will need to implement onsite retrofits, in order to receive and distribute the recycled water. Onsite retrofits will include upgrades to irrigation equipment, installation of a new recycled water meter, and staff training.

The project also includes construction of the Highway 101 Streetscape elements in the City of Encinitas, including recycled water irrigation improvements and biorentention facilities. The bioretention areas along Highway 101 and at San Elijo WRF will need regular maintenance to ensure effective percolation and treatment of storm flows.

Potential Adverse Physical Effects of the Project and Mitigation

There may be temporary adverse effects during construction of the various project components, such as noise, traffic, or air quality impacts. A Categorical Exemption is planned for the Highway 101 Greenstreet and San Elijo WRF LID components because no adverse physical impacts are anticipated. The four recycled water pipelines – Manchester Avenue, Via de la Valle, Encinitas Ranch, and Requeza Street – will be addressed in a Mitigated Negative Declaration (MND), which will mitigate any potential environmental impacts. The Highway 101 Streetscape component, however, is expected to have unavoidable adverse impacts related to traffic (through lane closures), hazards (disruption of evacuation routes), and air quality (from excavation) and an Environmental Impact Report (EIR) is being prepared to address those issues. Ultimately, the distribution of additional recycled water and treatment of storm water pollution are anticipated to have long-term benefits, not adverse effects, to the region.

In the future, San Elijo JPA, SFID, and OMWD each intend to implement potable reuse projects that route wastewater flows for advanced treatment and ultimate delivery into the potable drinking water system. Continued expansion of the non-potable water distribution system could result in near-term construction-related adverse impacts, and then lie as stranded assets if tertiary treated water is no longer available to customers. However, San Elijo JPA and its partners have committed to continue recycled water deliveries to current customers in order to offset potable demands during the drought and while potable reuse regulations are still being developed and adopted.

Long-Term Drought Preparedness

Integrated Water Resource Solutions for the Carlsbad Watershed will help to achieve long-term drought preparedness through three of the methods described in Table 1 of the *2015 Guidelines*: reuse and recycling, long-term water-use reduction, and system interties. The project will distribute 100 AFY of recycled water, which will directly offset potable water use and increase use of a local, drought-resistant supply of water. The project will construct reliable recycled water infrastructure, which will help achieve long-term reductions in water use and also includes a system intertie between OMWD and San Elijo JPA recycled water infrastructure just east of Interstate 5 along Manchester Avenue.

Direct Water-Related Benefit to DACs

Although the project area is only 3% DAC by population (see **Table 7-2** in *Attachment 7 Disadvantaged Communities*), the *Integrated Water Resource Solutions for Carlsbad Watershed* project would still benefit DACs located within San Elijo JPA's service area. The project provides directly address DAC needs through outreach that will specifically target DAC residents. This outreach will include implementation of state-approved curriculum for students in grades K-12, and conducting field trips for schools in Encinitas and Escondido to the San Elijo

Lagoon. Over 70% of the students reached by this program attend Title I schools, which serve students from predominantly low-income households (313 out of 434 students reached).

Project Performance Monitoring Plan

Benefits of the *Integrated Water Resource Solutions for Carlsbad Watershed* project will accrue as described in **Tables 2-31** and **2-32** above. **Table 2-33** describes the methods that will be used to measure the quantified benefits of this project. San Elijo JPA and its project partners will monitor water supply benefits by collecting and reporting monthly water meter data for new customers along the four proposed recycled water pipelines. The City of Encinitas and San Elijo JPA will monitor water quality benefits by collecting and reporting annual water quality data for the LID components.

Table 2-33: Project Monitoring for *Integrated Water Resource Solutions for Carlsbad Watershed*

Proposed Physical Benefits	Measurement Tools and Methods	Targets
Water Supply – Recycled Water	*Manchester Avenue Recycled Water Pipeline* – OMWD will provide monthly data from the recycled water irrigation meters for all connected customers. *Via de la Valle/Highway 101 Recycled Water Pipeline* – SFID will provide monthly data from the recycled water irrigation meters for all connected customers. *Encinitas Ranch/Requeza Street Recycled Water Pipelines* – SDWD will provide monthly data from the recycled water irrigation meters for all connected customers.	100 AFY of recycled water delivered (11 AFY from Manchester Avenue, 38 AFY from Via de la Valle, 35 AFY from Encinitas Ranch, and 16 AFY from Requeza Street)
Water Quality Improvement	*Highway 101 Greenstreets* – The City of Encinitas will provide water quality data for locations upstream and downstream from the biorentention facilities once per year. *San Elijo WRF LID* – San Elijo JPA will provide water quality data for locations upstream and downstream from the biorentention facilities once per year.	89.2 mg/L reduction in TSS concentration at each location

Cost Effectiveness Analysis

The *Integrated Water Resource Solutions for Carlsbad Watershed* project will achieve two quantifiable physical benefits described in the sections above, and summarized in **Table 2-31 and 2-32**. During project development, alternatives to the preferred project included in this application were considered and, ultimately, rejected. **Table 2-34** provides a cost effectiveness analysis consistent with Table 7 of the *2015 PSP*.

Table 2-34: Cost Effective Analysis for *Integrated Water Resource Solutions for Carlsbad Watershed*

Cost Effective Analysis	
Question 1 Physical Benefits Summary	*Types of benefits provided as shown in Table 2-31 and 2-32.* Water Supply – 100 AFY of recycled water delivery Water Quality – 89.2 mg/L of TSS reduction in stormwater
Question 2 Alternatives Considered	*Have alternative methods been considered to achieve the same types and amounts of physical benefits as the proposed project been identified?* Yes
	If no, why? If yes, list the methods (including the proposed project) and estimated costs. For Components 1-2, the City of Encinitas developed a *Cottonwood Creek Watershed LID Retrofit Plan – Draft* to consider the various BMP alternatives available for managing non-point source pollution and selecting a preferred set of implementation actions. Costs outlined in Chapter 3 of the Retrofit Plan for the top eight candidate sites ranges from $22,510 for a BMP with 4% projected efficacy to $2.5 million for a BMP with a 21% projected efficacy (calculated as average annual bacteria removal/cost). Cost is always a significant factor in selecting storm water BMPs. For Components 3-5, each water district conducted a master planning process to consider market demand for recycled water, alternative alignments to deliver recycled water to the highest priority customers, and selection of a preferred alignment to best meet the district's goals. Cost is always a significant factor for the water districts in selecting the preferred alignments. In OMWD's *Northwest Quadrant/ Village Park Recycled Water Study*,[13] three scenarios describe alternatives to serve RW to the Village Park area. There is no preferred alternative, all of them cost more than they make. Scenario 1 is the least expensive. 1. In Scenario 1, the recycled water pipelines would be built to serve 198 AFY from the Mahr Reservoir. The program would have a capital cost of $5.07 million, with an annual cost of $1,020/AF. 2. In Scenario 2, the recycled water pipelines would be built to serve 393 AFY from the Wanket Reservoir. The program would have a capital cost of $11.01 million, with an annual cost of $1,020/AF. In SFID's *Eastern Service Area Recycled Water Facilities Plan*,[14] five alternative recycled water pipe infrastructure plans are proposed, corresponding with three source options. Option 1 is preferred alternative, predicted lowest in total project cost per AF. 1. San Elijo WRF hook up would provide a buildout recycled water yield of 689 AFY through 8.4 miles (44,600 LF) of pipeline. The project will cost $18.73 million in capital expenditure. 2. City of San Diego North City Water Reclamation Plant (NCWRP) hook up through the City's San Dieguito recycled water system termination point. SFID would receive 689 AFY of RW through 6.6 (35,100 LF) miles of pipeline. This benefit would cost $17.59 million in capital expenditure. 3. City of San Diego NCWRP hook up through the OMWD pipeline paralleling SFID's Eastern Service Area boundary. This option would supply 744 AFY of recycled water through 9.4 miles of pipeline. The project would cost $20.08 million in capital expenditure. 4. CSDs Demineralization would deliver 360 AFY of recycled water from Rancho Santa Fe CSD through 3.4 miles (17,700 LF) of pipeline. The project would cost $5.93 million in capital expenditure.

[13] OMWD. *Northwest Quadrant/ Village Park Recycled Water Study-Olivenhain Municipal Water District*. April 22, 2011.
[14] SFID. *Santa Fe Irrigation Eastern Service Area Recycled Water Facilities Plan*. September 2, 2011.

Cost Effective Analysis	
	5. CSD Blend option would deliver 432 AFY of recycled water from Rancho Santa Fe CSD through 4.7 miles (24,800 LF) of pipeline. The project would cost $9.17 million in capital expenditure. No master planning document is available for SDWD's Component 5. The San Elijo JPA's *Recycled Water Optimization and Expansion Study* discussed options for maintaining and expanding the plant. However, this study did not specifically address the proposed LID Project.
Question 3 Preferred Alternative	*If the proposed project is not the least cost alternative, why is it the preferred alternative? Provide an explanation of any accomplishments of the proposed project that are different from the alternative project or methods.* For Components 1-2, the selected LID (bioswale and permeable pavers) components are not the least cost alternative. However, the City of Encinitas chose to complete the Greenstreet improvements in tandem with installation of recycled water plumbing, given the timing of improvements being conducted by the partner agencies. These improvements are expected to significantly improve stormwater runoff into Cottonwood Creek and Moonlight Beach. For Component 3, the proposed Manchester Avenue alignment is not the least cost alternative. Rather, it is part of Scenario 2 described above. However, degraded water quality at the Mahr Reservoir since the 2011 study was completed has limited OMWD's ability to market that recycled water to new customers. Rather, OMWD has chosen to partner with San Elijo JPA to source recycled water via the Wanket Reservoir, in order to effectively convert customers to recycled water and contribute to meeting the State's emergency drought regulations. For Component 4, the proposed Via de la Valle/Highway 101 alignment is the least cost alternative, as it is sourced from San Elijo JPA. The project helps the agency to reduce potable water demands by converting customers to recycled water. The proposed project is a suite of recycled water supply, storm water treatment, and public outreach components that collectively meet the partners' goals of potable water conservation, water quality improvement, and climate change resiliency.

Project 7: UCSD Water Conservation and Watershed Protection

Local Project Sponsor: University of California San Diego (UCSD)
Partners: San Diego Coastkeeper, WildCoast, Urban Corps of San Diego, and Tijuana River National Estuarine Research Reserve (TRNERR)

Project Summary

The project will expand water reuse at UCSD's cooling tower, reuse HVAC system water, replace turf, monitor/treat stormwater, and implement a watershed protection program.

Project Map

Figure 2-14 shows the *UCSD Water Conservation and Watershed Protection* project area, the service areas of the project sponsor, the project facilities and the project's relation to groundwater basins and surface water, disadvantaged communities (DACs) and proposed monitoring locations. **Figure 2-15** shows the expanded recycled and reclaimed water facilities at the UCSD campus that will be constructed by this project.

Clockwise from left: Recycled water pipeline installation at UCSD campus, view of Tijuana River Valley, and trash in the Tijuana River

Project Description

Through the *UCSD Water Conservation and Watershed Protection* project, UCSD will support its leadership role in regional water resource protection by partnering with community-based organizations – San Diego Coastkeeper, WildCoast, and Urban Corps of San Diego – to reduce potable water use, improve irrigation efficiencies, increase public awareness and education on water conservation and watershed pollution, reduce non-point source pollution, and restore watershed habitats. This project will provide benefits to the following sensitive natural resources: Tijuana River National Estuarine Research Reserve (TRNERR); Tijuana River Regional Park and Border Field State Park; Tijuana River Mouth Marine Protected Area (MPA); La Jolla Shores Area of Special Biological Significance (ASBS); and San Diego Bay.

Water conservation and watershed protection will be achieved by the following project components:

Component 1 Central Utilities Plant (CUP) Reclaimed Water Cooling Tower Retrofit: This component will extend recycled water lines across the UCSD campus to the Central Utilities Plant Cooling Towers. By bringing recycled water to the Plant and retrofitting the cooling tower equipment and controls, 70% of current potable water use in the towers will be replaced with recycled water. This will reduce potable water use by 27,500,000 gallons per year in 2016 and 60,000,000 gallons per year in 2017 and beyond.

Component 2 Air Handling Unit Condensate Collection and Reuse: This element includes retrofitting two buildings on campus to reuse Heating-Ventilation-Air Conditioning (HVAC) condensation water for irrigation savings of approximately 1 million gallons of potable water a year.

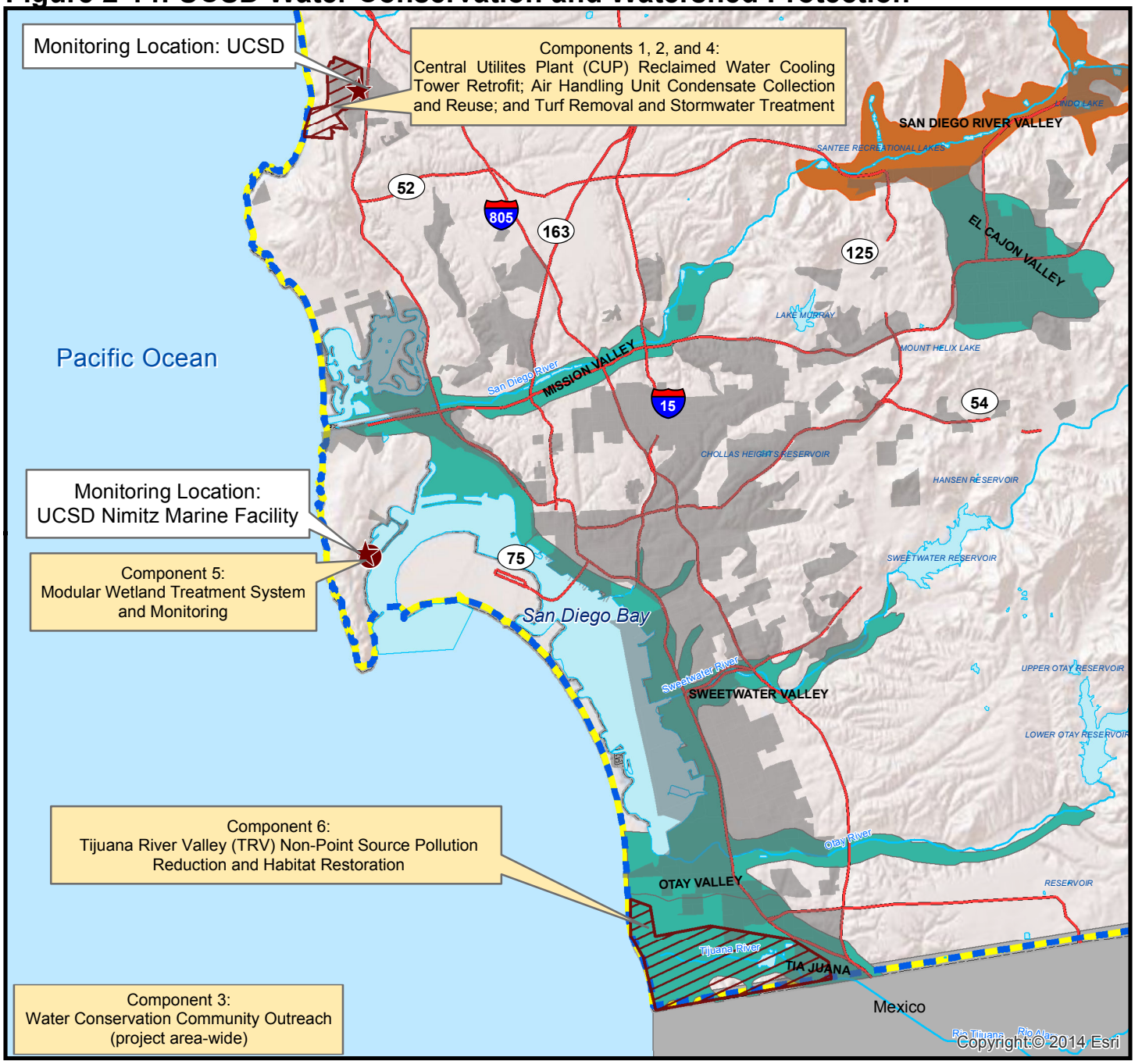
Component 3 Water Conservation Community Outreach: This component will engage stakeholders and increase public awareness of measures they can implement to conserve water. Coastkeeper will conduct education and outreach to inform residents (including UCSD students), businesses and decision makers about the region's water supply, the need for and benefits of conservation, and the actions that can be taken to lower water use in the region.

Component 4 Turf Removal and Stormwater Treatment: This component will replace turf with storm water treatment landscaping at two locations on campus to reduce irrigation, prevent non-storm water flows, and treat stormwater runoff from roads and a parking lot. This will reduce pollutants discharged into the Penasquitos Watershed and the La Jolla Shores ASBS, such as total suspended solids (TSS) and bacteria. The Revelle Parking Lot Retrofits include turf removal and bioretention areas to collect and infiltrate stormwater runoff from the lot. At the UCSD Entrance, turf will be replaced with drought tolerant landscaping and a bioretention basin to reduce stormwater runoff and the discharge of pollutants.

Component 5 Modular Wetland Treatment System and Monitoring: This component includes installing a Modular Wetland Stormwater Treatment System at the UCSD Nimitz Marine Facility. The system will treat stormwater runoff from a concrete swale that discharges directly into the San Diego Bay. Monitoring of storm water runoff upstream and downstream from this system will be performed to evaluate the effectiveness of this system at removing heavy metals and sediment from runoff.

Component 6 Tijuana River Valley (TRV) Non-Point Source Pollution Reduction and Habitat Restoration: This element will provide non-point source pollution reduction and habitat restoration. WildCoast/Urban Corps/TRNERR will remove trash, debris, and invasive non-native species in the TRV to reduce or eliminate the discharge of pollutants into the Tijuana Watershed. This project will engage underserved community members and youth in stewardship and restoration of habitat in the TRV and prevent pollutants from entering coastal ecosystems. The project will engage an estimated 5,000 volunteers in the removal of 80 tons of waste, 1,000 tires and also restore 1 acre of habitat in the TRV over 24 months.

Figure 2-14: UCSD Water Conservation and Watershed Protection



Coordinates: 32.87272, -117.24099

Legend

- San Diego IRWM Region
- Funding Area Boundary
- Freeway
- Waterbody
- County
- DAC Area*
- Medium Priority Groundwater Basin
- Very Low Priority Groundwater Basins
- Benefit Area: 7 UCSD Water Conservation and Watershed Protection (Note: 3 project sites)
- Monitoring Location
- Modular Wetland

0 1.75 3.5 7

Miles

N

*Note: DAC as determined by census tract and block group data for the year 2013, from the American Community Survey 2009-2013 5-year results. DAC determined based on definition of median household incomes below 80% of the statewide MHI or $48,875.

Sources: U.S. Census 2013 ACS 5-year estimates; San Diego Association of Governments (SANDAG) - GIS Data Warehouse
Document Path: N:\Projects GIS\0188-003 SDIRWM Plan Update\Prop84_Rnd4\MXD\Project maps\2-8_UCSDProject29072015.mxd

Figure 2-15: UCSD's Recycled Water Distribution System

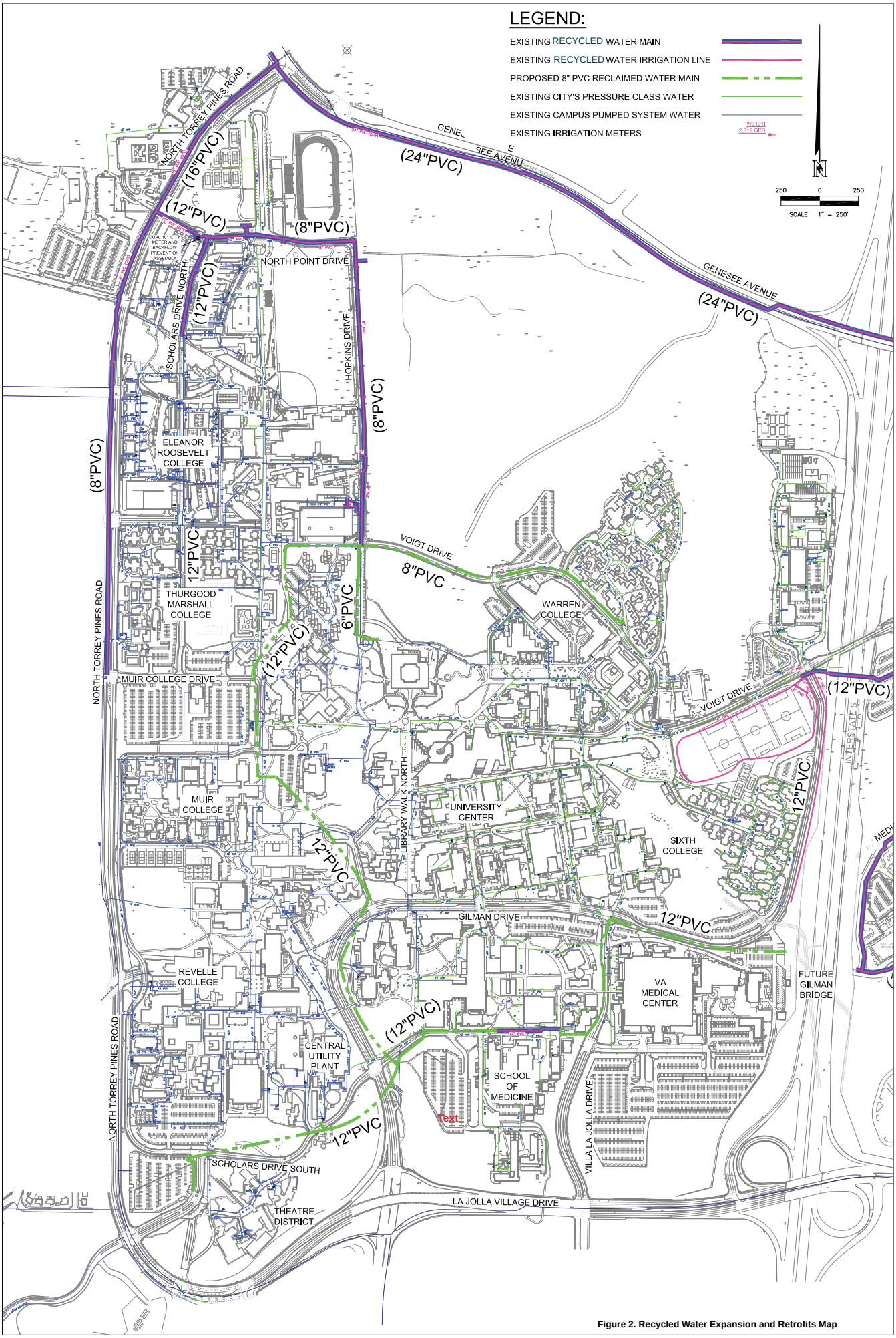


Figure 2. Recycled Water Expansion and Retrofits Map

Project Physical Benefits

The primary and secondary benefits of the project include 1) water supply (acre feet per year [AFY]) from recycled municipal water, HVAC condensate reuse, and turf conversion, and 2) water quality (mg/L) improvement from reduced heavy metals in stormwater runoff.

The water supply benefit comes from a combination of recycled water use for the non-potable cooling tower demand, reuse of HVAC condensate and RO reject water, and) conservation savings from turf removal. Current recycled water use at the UCSD campus averages 97 AFY. The baseline is shown as a static value because no additional capital expenditures for recycled water have been committed at this time beyond the proposed project. The anticipated useful life of the recycled water system serving the CUP Cooling Tower is 60 years. The Turf Removal component is anticipated to have a 20 year useful life; this useful life is longer than expected at residential properties (and used in this Proposal's Conservation Program) because it is located on an institutional campus where there will not be owner turnover. The value of recycled water offset (184 AFY at buildout) comes from the *Industrial Engineering Report for Recycled Water System-University of California San Diego Central Utilities Plan,* completed in June 2015. Potable water use will be further decreased with condensate collection from HVAC systems to be used for landscape irrigation. The value of condensate reuse (16.2 AFY at buildout) comes from the *University of California, San Diego Building Air Handling Unit Condensate Collection Feasibility Study* (September 2014) and the *Condensate Collection at Bonner Hall – Basis of Design* (July 2015). Finally, turf removal and replacement with bioswales will provide for water conservation (2.3 AFY). This value is based on the *UCSD Revelle Stormwater and Turf Removal Project Cost Estimate*. Over the course of the project life, the *UCSD Water Conservation and Watershed Protection* project will create an additional 11,514 AF of reclaimed water for non-potable reuse. Cumulative potable water savings over the life of the project (2016 to 2076) total 11,322 AF.

Table 2-35: Primary Physical Benefit – Water Supply
UCSD Water Conservation and Watershed Protection

Project Name: UCSD Water Conservation and Watershed Protection
Type of Benefit Claimed: Water Supply – from recycled water, HVAC condensate reuse, and turf removal
Units of the Benefit Claimed: AFY
Anticipated Useful Life of Project (years): 20-60 years

(a)	(b)	(c)	(d)
Year	**Without Project**	**With Project**	**Change Resulting From Project (c) – (b)**
2016	97 AFY	181 AFY	84 AFY
2017	97 AFY	281 AFY	184 AFY
2018	97 AFY	284 AFY	187 AFY
2019-2037	97 AFY	300 AFY	203 AFY
2038	97 AFY	297 AFY	200 AFY
2039-2076	97 AFY	281 AFY	184 AFY

Comments: The baseline recycled water use at UCSD is 97 AFY. When the CUP Recycled Water Project is completed, the recycled water will be blended into the system slowly over time starting at 10% recycled water to 90% potable water. By the end of 2016, 27.5 MG per year of potable water will be saved (84 AFY). It is anticipated that the water blend used in the cooling towers will consist of 70% recycled water and 30% potable water, saving 60 MG per year of potable water (184 AFY) in 2017 and beyond. The anticipated useful life of the recycled water system is 60 years. The HVAC condensate component will be completed in 2018, with benefits (16.2 AFY) accruing starting in 2019 for 20 years. The turf removal component will be completed in 2017, with benefits (2.3 AFY) accruing starting 2018 for 20 years; this useful life is longer than expected at residential properties because it is located on an institutional campus where there will not be owner turnover.

Sources: Michael Baker International/RBF Consulting. *Industrial Engineering Report for Recycled Water System-University of California San Diego Central Utilities Plan*. June 3, 2015.

Energy Systems Engineering, Inc. *UCSD Central Utility Plant, Reclaimed Water Cooling Tower Retrofit* – Design Drawings. April 6, 2015.

Energy Systems Engineering, Inc. *University of California, San Diego Building Air Handling Unit Condensate Collection Feasibility Study*. September 2014. Pg. 3-2

Energy Systems Engineering, Inc. *Condensate Collection at Bonner Hall – Basis of Design*. July 13, 2015.

Energy Systems Engineering, Inc. *UCSD Building AHU Condensate Collection* – Design Drawings. August 28, 2014.

Nolte Vertical Five, Inc. *UCSD Revelle College Hardscape Runoff Improvements – Design Drawings*.

TBD Consultants. April 2015. *UCSD Revelle Stormwater and Turf Removal Project Cost Estimate.*

The Water Quality improvement benefit will result from reduction in heavy metals through runoff treatment by a modular treatment wetland. This will significantly reduce toxic heavy metals exposure, specifically zinc (-0.746 mg/L reduction) to fish resulting from stormwater runoff to San Diego Bay. The baseline for this benefit is the current concentration of runoff entering the San Diego Bay at the Nimitz Marine Facility (1.02 mg/L). The value of water quality improvement is based on stormwater quality data collected at the Nimitz Marine Facility and performance data reported in the *Modular Wetland Stormwater Treatment System Product Information.*

Table 2-36: Secondary Physical Benefit – Water Quality
UCSD Water Conservation and Watershed Protection

Project Name: UCSD Water Conservation and Watershed Protection **Type of Benefit Claimed:** Water Quality Improvement – reduction in zinc concentration to San Diego Bay **Units of the Benefit Claimed:** mg/L **Anticipated Useful Life of Project (years):** 20 years			
(a)	**(b)**	**(c)**	**(d)**
Year	**Without Project**	**With Project**	**Change Resulting From Project (c) – (b)**
2018-2037	1.02 mg/L	0.335 mg/L	-0.746 mg/L
Comments: The baseline for this benefit is the current concentration of runoff entering the San Diego Bay at the Nimitz Marine Facility (1.02 mg/L). The modular treatment wetlands will be installed in late 2017. The estimated useful life of the modular wetlands is 20 years (2018-2037). Sources: Pers. Comm. – Kimberley O'Connell, July 2015, UCSD Nimitz Strm Data.xls. Modular Wetlands. 2015. *Modular Wetland Stormwater Treatment System Product Information*. Nolte Vertical Five, Inc. *UCSD MARFAC Stormwater Project, Phase 2 – Design Drawings*.			

Technical Analysis of Physical Benefits Claimed

Project Need and Conditions

UCSD, one of the largest water users in the City of San Diego, is partnering with municipal and tribal governments, agencies, and community-based organizations to support regional water conservation and watershed protection efforts. Potable water use reduction projects on the campus, water quality improvements in local surface waters, and stakeholder engagement in water conservation support the San Diego IRWM Region's response to the ongoing drought.

Potable water supply is provided to UCSD's private water system from the City of San Diego. The City of San Diego's water supply mix is: 84% imported water via San Diego County Water Authority; 12% local surface water; 4% recycled water; and a negligible amount of groundwater.[15] In order to reduce demand for imported water supplies, which are occasionally limited, customers such as UCSD are implementing water conservation and recycled water projects. Generally, the existing cooling tower and irrigation systems at the UCSD campus are connected to the potable water system that is sourced from the City of San Diego. UCSD's Central Utilities Plant (CUP) provides chilled water for the campus utilizing chillers and cooling tower systems. The cooling system includes the use of cooling towers to transfer heat. The existing cooling towers are located in an outdoor yard and are currently supplied with make-up water via an 8-inch domestic water pipeline.[16] Campus cooling tower make-up comprise a large proportion of water use on campus; employing new technologies, such as recycled water, within the cooling towers will allow UCSD to better manage local water resources.

Wastewater collected on campus is sent to the City of San Diego's metropolitan sewer system, treated at the Point Loma Wastewater Treatment Plant, and ultimately discharged to the Pacific Ocean. Many of UCSD's large classroom and laboratory buildings generate condensate from the cooling coils of air conditioning units that is currently discharged to the sewer.[17] Currently, onsite laboratories use treated potable water for scientific experiments. With minimal treatment, the condensate could be reused for reverse osmosis/deionized (RO/DI) laboratory water, thereby offsetting ocean discharges and potable water demands.

Stormwater runoff is a water quality issue in the San Diego region. Stormwater flows in the Peñasquitos Watershed, where the main UCSD campus is located, have resulted in poor water quality along the Pacific Ocean shoreline. The watershed discharges into two Areas of Special Biological Significance (ASBS): La Jolla Ecological

[15] City of San Diego. 2011. *2010 Urban Water Management Plan*.
[16] Michael Baker International/RBF Consulting. *Industrial Engineering Report for Recycled Water System-University of California San Diego Central Utilities Plan*. June 3, 2015.
[17] Energy Systems Engineering, Inc. *University of California, San Diego Building Air Handling Unit Condensate Collection Feasibility Study*. September 2014.

Reserve and San Diego-Scripps. The La Jolla Ecological Reserve ASBS is approximately 1.7 miles of shoreline adjacent to the City of San Diego (offshore from UCSD campus) and contains 453 acres of marine habitat, including the La Jolla State Marine Conservation Area.[18] The key pollution threats to La Jolla Ecological Reserve ASBS are from stormwater runoff from development, roadways, and parking lots. There are 184 direct discharges of urban runoff into La Jolla Ecological Reserve ASBS. Nine are naturally occurring streams or gullies with the majority of discharges coming from pipes or holes through seawalls, draining bluffs, and landscaped areas. The Pacific Shoreline is on the Clean Water Act 303(d) list of impaired waters for total coliform and fecal coliform.[19] The San Diego Regional Water Quality Control Board (RWQCB) has adopted a regional Total Maximum Daily Load (TMDL) for *Indicator Bacteria: Revised Project 1: Twenty Beaches and Creeks in San Diego Region (including Tecolote Creek)*[20] due to the severity of bacteria loading into local waterways, including the La Jolla Ecological Reserve ASBS. Although bacteria is a primary concern for the region, water quality improvements (such as bioswales or modular wetlands) will also help to address other non-point source pollutants that impair local waters.

Similarly, in the Pueblo Watershed, where the Nimitz Marine Facility is located, stormwater flows carry pollutants in urban runoff from residential areas, streets and roadways, shipyard operations, commercial and industrial areas, and construction. The San Diego Bay and shoreline is on the Clean Water 303(d) list for sediment toxicity, Enterococcus, fecal coliform, total coliform, copper, chlordane, and polynuclear aromatic hydrocarbons (PAHs).[21] The San Diego RWQCB has adopted TMDLs for *Shelter Island Yacht Basin Dissolved Copper*[22] and for *Chollas Creek Copper, Lead, and Zinc.*[23] The bay bottom provides habitat for many aquatic organisms and functions as an important component of aquatic ecosystems. However, the bay bottom sediment serves as a repository for persistent and toxic chemicals causing toxicity to marine life and benthic community impairments. The modular wetlands will help to address pollutants collected by the Nimitz Marine Facility hardscape and discharged to San Diego Bay.

Watershed protection is needed in the Tijuana River Valley (TRV) area, which is heavily impacted by cross border trash, pollution, and invasive species, which impacts wildlife and access. There is a need for ongoing small-scale volunteer-driven restoration to help mitigate these impacts and to engage the surrounding low-income communities in stewardship of these protected areas. Waste tires, excessive sedimentation, trash and invasive species pose a public health risk to people living and recreating in the TRV, as well as the TRV estuary's sensitive habitats and the wildlife that depend on them. By removing waste tires and increasing native plant cover, the project will improve water quality, public safety, and habitat for endangered birds. By providing paid job training for underserved young adults in the Urban Corps youth development program, the project helps meet the needs of local DACs for workforce development and employment opportunities. Low-income communities often lack access to open space and opportunities for nature-based recreation, and this project works to engage these community members in stewardship of open space areas.

Without-Project Conditions

Without the *UCSD Water Conservation and Watershed Protection Project*, recycled water use would not be expanded on the UCSD campus and building retrofits to allow for HVAC condensation and RO reject water reuse would not occur. UCSD would continue to use approximately 2,148 AFY potable water per year, and the 202.7 AFY of potable water per year to be saved by the project would continue to be purchased from the City of San Diego, which comprises 84% from imported sources. The CUP cooling towers and onsite irrigation systems would continue to use potable water, and the campus would continue to only use

Watershed protection achieved through nonpoint source pollution reduction, habitat restoration, and stormwater treatment in the Peñasquitos, Pueblo, and Tijuana Watersheds – including the Tijuana River National Estuarine Research Reserve (TRNERR), Tijuana River Regional Park and Border Field State Park, Tijuana River Mouth Marine Protected Area (MPA), La Jolla Ecological Reserve ASBS, and San Diego Bay – would not occur. Without turf removal and the modular wetland components of the project, stormwater treatment would not occur and the

[18] San Diego RWMG and RAC. 2013. *2013 San Diego IRWM Plan*. Chapter 5: Watersheds.
[19] San Diego RWMG and RAC. 2013. *2013 San Diego IRWM Plan*. Chapter 5: Watersheds.
[20] San Diego RWQCB. Adopted February 2010. *Indicator Bacteria: Revised Project 1: Twenty Beaches and Creeks in San Diego Region (including Tecolote Creek) TMDL.*
[21] San Diego RWMG and RAC. 2013. *2013 San Diego IRWM Plan*. Chapter 5: Watersheds.
[22] San Diego RWQCB. Adopted February 2005. *Shelter Island Yacht Basin Dissolved Copper TMDL.*
[23] San Diego RWQCB. Adopted June 2007. *Chollas Creek Copper, Lead, and Zinc TMDL.*

existing concentration of non-point source pollutants, including bacteria and heavy metals, would continue to contaminate San Diego Bay.

Methods Used to Estimate the Physical Benefits

Primary Benefit – Water Supply

The primary benefit of this project is the 200 AFY of new non-potable water supply created through use of recycled water at the CUP Cooling Towers and reuse of HVAC condensate water for landscape irrigation at two campus buildings. Existing recycled water facilities will be expanded to blend the new supplies into the campus non-potable delivery system.

Component 1: When the CUP Reclaimed Water Cooling Tower Retrofit is completed, the recycled water will be blended into the system slowly over time starting at 10% recycled water to 90% potable water. By the end of 2016, 27.5 MG per year of potable water will be saved (84 AFY). It is anticipated that the water blend used in the cooling towers will consist of 70% recycled water and 30% potable water, saving 60 MG of potable water per year (184 AFY) in 2017 and beyond.[24] The recycled water demand of 60 MG/year (184 AFY) will serve the cooling towers in two phases: 27.5 MG/year in 2016 and 60 MG/year in 2017.

$$60\frac{MG}{year} * 3.07\frac{AF}{MG} = \mathbf{184.1\ AFY}$$

Component 2: The HVAC Condensate Collection and Reuse component will generate 5.3 MG/year (16.2 AFY) for reuse in the non-potable distribution system, which feeds both the cooling towers and landscape irrigation. The condensation harvesting will be implemented at two buildings at the UCSD campus, which currently send all of the proposed flow to the sewer. In total, these two buildings will collect over 2.8 million gallons of condensate per year, along with 2.4 million gallons of RO reject water:

1. Bonner Hall: 2.1 MG of condensate plus 2.4 MG of RO reject water from the RO/DI system, for a total of 4.5 MG/year; and
2. Natural Sciences Building: collect 775,494 gal/yr of condensate.[25]

The Basis of Design document[26] outlines calculation methodology for condensate and RO reject at Bonner Hall. RO-reject water volume is based on RO-product water meter data, and that the HVAC condensate water volume is estimated based on air temperatures (weather data from North Island Naval Air Station) and the AHU operating schedule. As noted in that document, the amount of available condensate varies seasonally as a reflection of weather changes, temperature, and moisture content in the air.

$$4.5\frac{MG}{yr} + 775{,}494\frac{gal}{yr} = 5.28\frac{MG}{yr} * 3.07\frac{AF}{MG} = \mathbf{16.2\ AFY}$$

Component 3: The Water Supply benefit also includes water conservation achieved through reduced irrigation demands for potable water via the Turf Removal component. As described in the California Urban Water Conservation Council (CUWCC) report *Turf Removal and Replacement: Lessons Learned*, turf removal is an important tool for moving towards more sustainable landscaping which offers irrigation efficiency, runoff reduction, green waste reduction, pesticide and fertilizer reduction, and habitat improvement.[27] The turf removal project will be implemented at the Revelle Parking Lot and the UCSD Entrance. Approximately 31,500 square feet (sq ft) of land area will be addressed, 3,700 sq ft of which is the existing parking lot and 27,800 sq ft of which is turf. Annual water savings were estimated at approximately 34 gallons per square foot, based on the CUWCC report on

[24] Pers. Comm. Kimberly O'Connell, UCSD, Environmental Health and Safety, Environmental Affairs. 7/30/15.
[25] Energy Systems Engineering, Inc. *University of California, San Diego Building Air Handling Unit Condensate Collection Feasibility Study*. September 2014.
[26] Energy Systems Engineering, Inc. *Condensate Collection at Bonner Hall – Basis of Design*. July 13, 2015.
[27] California Urban Water Conservation Council. Briana Seapy. March 2015. *Turf Removal and Replacement: Lessons Learned*.

lessons learned from turf removal.[28] Following the turf removal project, savings are anticipated to be 945,200 gallons per year or 2.9 AFY.

$$\frac{Water\ Savings}{Area} * Area\ Converted = Water\ Saved\ from\ Turf\ Removal$$

$$34\frac{gal}{sq\ ft * yr} * 27{,}800\ sq\ ft = 945{,}200\frac{gal}{yr} * \frac{1AF}{325{,}851\ gal} = \mathbf{2.9\ AFY}$$

Total water savings benefits from this project is the sum of the benefits realized by each of these three components, or 203.2 AFY.

Secondary Benefit - Water Quality

The project will improve water quality by installing a Modular Wetland System at the UCSD Nimitz Marine Facility and by replacing turf with stormwater treatment landscaping at two locations on the campus to reduce irrigation demand, prevent non-stormwater overflow, and treat stormwater runoff. At the Revelle Parking Lot and UCSD Entrance, turf will be replaced with drought tolerant landscaping and bioretention basins to reduce stormwater runoff and the discharge of pollutants.

The modular treatment wetlands includes three major components:

1. Pre-treatment will include separation of trash, sediment, and debris before entering the pre-filter cartridges;
2. Biofiltration will include horizontal subsurface flow through the treatment media; and
3. Discharge will include flow control to a level lower than the media capacity.[29]

Installation of the modular treatment wetland at the Nimitz Marine Facility will specifically reduce the zinc concentration by 0.124 mg/L in storm runoff.[30] As reported by UCSD, existing stormwater runoff from the Nimitz Marine Facility is calculated to have an average 1.02 mg/L of zinc (based on 18 sampling events 11/2002 – 02/2014).[31] The modular treatment wetland is designed to remove 69% of the inflow zinc concentration,[32] resulting in an effluent zinc concentration of 0.335 m/L after a removal of 0.746 mg/L of zinc. Heavy metals are usually found in water in low concentrations. However, 0.746 mg/L of zinc removal is significant, representing a large reduction in toxicity to fish. The modular wetland will also remove 50% of the inflow copper concentration (equates to 0.035 mg/L of removal), as well as reducing TSS, phosphorous, and nitrogen concentrations.

$$1.081\frac{mg}{L} * 69\% = \mathbf{0.746}\frac{\boldsymbol{mg}}{\boldsymbol{L}}$$

New Facilities, Policies, and Actions Required to Obtain Physical Benefits

The physical benefits of the *UCSD Water Conservation and Watershed Protection Project* will require construction of all the project components. Recycled water lines will be extended across the UCSD campus to the CUP Cooling Towers and the cooling tower equipment and controls will be retrofitted. The UCSD HVAC Condensation Collection and Reuse element will install systems to collect and reuse water condensation from HVAC units, along with RO reject water from laboratory water purification systems, at two campus buildings. In addition to these project elements, UCSD will construct a feeder control system to ensure that the injection of the combined HVAC/RO water does not increase total dissolved solids (TDS) levels in the non-potable system above allowable limits.

The project will also install a modular wetland treatment system and replace turf with stormwater treatment landscaping at two locations on the campus. The modular treatment wetlands will be installed at Nimitz Marine

[28] CUWCC. 2015. *Turf Removal & Replacement: Lessons Learned*. March.
[29] Modular Wetlands. 2015. *Modular Wetland Stormwater Treatment System Product Information*.
[30] North American Lake Management Society. *Fundamentals of Urban Runoff Management – Technical and Institutional Issues.* 2007. Pg. 3-58.
[31] Pers. Comm. – Kimberley O'Connell, July 2015, UCSD Nimitz Strm Data.xls.
[32] MWS Linear. *Modular Wetlands Advanced Stormwater Biofiltration*.

Facility, and will need regular cleanout of the pre-treatment chambers (by hand or vac truck). The bioretention areas in the Revelle Parking Lot Retrofits and UCSD Entrance will need regular maintenance to ensure effective percolation and treatment of storm flows.

Potential Adverse Physical Effects of the Project and Mitigation

There are no anticipated adverse physical effects from this project. There may be temporary construction-related effects associated with installation of recycled water lines, HVAC condensation building retrofits, turf replacement, and stormwater treatment features. However, these effects are anticipated to be minor and temporary in nature. Such impacts could include noise, air quality, or odors associated with use of construction equipment. Any such construction would be completed in compliance with applicable local and State regulations. A Categorical Exemption was prepared for this project.

In the future, the City of San Diego intends to implement potable reuse projects that route wastewater flows for advanced treatment and ultimate delivery into the potable drinking water system. Continued expansion of the non-potable water distribution system could result in near-term construction-related adverse impacts, and then lie as stranded assets if tertiary treated water is no longer available to customers. However, the City of San Diego has committed to continue recycled water deliveries to current customers in order to offset potable demands during the drought and while potable reuse regulations are still being developed and adopted.

Long-Term Drought Preparedness

The project provides three of the drought-related benefits listed in Table 1 of the *2015 Guidelines*: water conservation, reuse, and recycling. The CUP cooling tower and HVAC reuse components dramatically increases UCSD's supply of non-potable water and reduces potable water usage by 203.2 AFY. The community outreach components help to achieve the long-term reduction of water use by improving the likelihood of success of regional water supply strategies and water conservation by promoting a more informed public.

Direct Water-Related Benefit to DACs

As shown in **Table 7-1** (see *Attachment 7 Disadvantaged Communities*), the cumulative *UCSD Water Conservation and Watershed Protection* project area is 39% DAC by population. The *UCSD Water Conservation and Watershed Protection* project will directly address two of the urban DAC needs identified in the 2013 IRWM Plan[33]: surface water quality and flooding/creek constriction. The project will improve surface water quality by reducing pollutant loading to San Diego Bay and the La Jolla ASBS, as well as reducing stormwater runoff. The San Diego Bay abuts many urban DAC neighborhoods, and pollution in the Bay has been identified in the *2013 IRWM Plan* as a threat to subsidence fishing that provides food to DACs.[34] The project also includes trash removal in the TRV, helping to reduce creek constriction, thereby reducing flooding risks in DACs along the creek.

[33] RWMG. 2013. *2013 San Diego Integrated Regional Water Management Plan*. September.
[34] RWMG. 2013. *2013 San Diego Integrated Regional Water Management Plan*. September.

Project Performance Monitoring Plan

Benefits of the *UCSD Water Conservation and Watershed Protection* project will accrue as described in **Tables 2-35** and **2-36** above. **Table 2-37** describes the methods that will be used to measure the quantified benefits of this project. UCSD will monitor water supply benefits by collecting and reporting monthly water meter data for the CUP Cooling Tower and HVAC Condensate Reuse components. UCSD will take "pre" and "post" construction photos of the Turf Removal component. UCSD will monitor water quality benefits by collecting and reporting annual water quality data for the Modular Wetland System component.

Table 2-37: Project Monitoring for *UCSD Water Conservation and Watershed Protection*

Proposed Physical Benefits	Measurement Tools and Methods	Targets
Water Supply	For the *CUP Cooling Tower* component: UCSD will provide monthly potable and non-potable water meter data for the CUP cooling tower make-up. For the *HVAC Condensate Reuse* component: UCSD will provide monthly data from the feeder control system into the non-potable water system. For the *Turf Removal* component: UCSD will provide "pre" and "post" construction photos of the turf areas that are removed. On-going photo documentation of the site will provide confirmation that the converted area and bioswale are functioning as designed.	203.2 AFY reduction in potable water use (184.1 AFY from the Cooling Tower, 16.2 from HVAC Reuse, and 2.9 from Turf Removal)
Water Quality	For the *Modular Wetlands* component: UCSD will provide water quality data for locations upstream and downstream from the modular wetlands treatment system once per year.	0.746mg/L reduction in zinc concentration

Cost Effectiveness Analysis

The *UCSD Water Conservation and Watershed Protection* project will achieve two quantifiable physical benefits described in detail in the sections above, and summarized in **Table 2-35 and 2-36**. During project development, alternatives to the preferred project included in this application were considered and, ultimately, rejected. **Table 2-38** provides a cost effectiveness analysis consistent with Table 7 of the *2015 PSP*.

Table 2-38: Cost Effective Analysis for *UCSD Water Conservation and Watershed Protection*

Cost Effective Analysis	
Question 1 Physical Benefits Summary	*Types of benefits provided as shown in Table 2-35 and 2-36.* Benefit 1: Water Supply – 203.2 AFY from recycled water, HVAC condensate reuse, and turf removal Benefit 2: Water Quality – 0.746 mg/L reduction in zinc concentration to San Diego Bay
Question 2 Alternatives Considered	*Have alternative methods been considered to achieve the same types and amounts of physical benefits as the proposed project been identified?* Yes
	If no, why? If yes, list the methods (including the proposed project) and estimated costs. Various potential demands have been considered for expansion of the non-potable water system on campus (including cooling towers and irrigation). Once condensate was identified as a potential water supply source, alternatives were considered for how to use this new supply. Four alternatives were considered for use of collected condensate. These alternatives were: 1. Condensate make-up to lab ultra-pure water systems in lieu of RO system make-up 2. Reclaimed water self-generation by mixing collected condensate with RO-reject and injecting into the campus reclaimed water main line 3. Irrigation as controlled by building-local irrigation controllers 4. CUP steam system make-up No cost alternative information is available, as other considerations helped to identify the preferred alternative.
Question 3 Preferred Alternative	*If the proposed project is not the least cost alternative, why is it the preferred alternative? Provide an explanation of any accomplishments of the proposed project that are different from the alternative project or methods.* UCSD has been working hard to identify least-cost alternatives for the non-potable water system that serves the main campus. This proposed project is a collection of those least-cost solutions. Alternative 2 (listed above) is preferred for the Bonner Hall condensate due to the proximity to the campus' reclaimed water main. This alternative also allows for use of the collected condensate in the CUP cooling towers as this reclaimed water is blended with potable to meet the cooling tower needs. Alternative 3 is preferred for the Natural Sciences building, because recycled water lines do not extend to this area of campus, and nearby irrigation currently utilizes potable water.[35]

[35] Pers. Comm. Kimberly O'Connell. UCSD, Environmental Health and Safety, Environmental Affairs. Benefits analysis for UCSD grant projects (e-mail). 7/23/15.

Project 8: Escondido Advanced Water Treatment for Agriculture

Local Project Sponsor: City of Escondido
Partners: Escondido Growers for Agricultural Preservation (EGAP), Vista Irrigation District, City of San Diego, and Rincon Del Diablo Municipal Water District

Project Summary

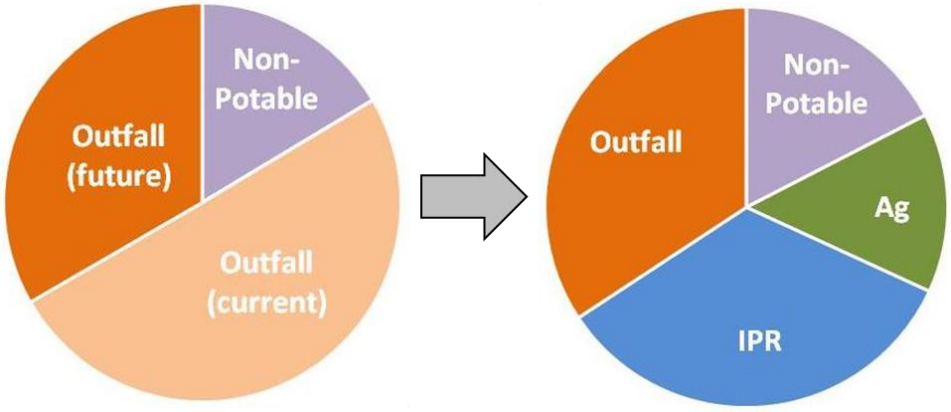
The project will construct a new advanced water treatment facility to improve the water quality of recycled water delivered to agricultural customers in Escondido.

Project Maps

Figure 2-16 shows the *Escondido Advanced Water Treatment for Agriculture* project area, the service areas of the project sponsor, the project facilities and the project's relation to groundwater basins and surface water, disadvantaged communities (DACs) and proposed monitoring locations. **Figure 2-17** shows the site plan for the proposal microfiltration reverse osmosis (MFRO) Facility.

Avocado orchards to be served by the MFRO Facility in eastern City of Escondido

Local avocado growers discuss water quality and irrigation needs of their groves



This project will diversify the City of Escondido's water reuse and discharge operations, and prepare the City for future indirect potable reuse

Project Description

The City of Escondido (Escondido) desires to become less reliant on imported water by improving the diversity and reliability of its water supply from local resources. Compared to imported supplies, recycling water provides a long-term sustainable, reliable, and drought proof water supply at a reasonable and more predictable cost to local agricultural users. The City of Escondido is also committed to a long-term program to implement potable reuse. On April 2, 2014, the City of Escondido's City Council endorsed a plan to develop an Indirect Potable Reuse (IPR) System. Rather than investing in a costly land and ocean outfall project that releases secondary effluent from Hale Avenue Resource Recovery Facility (HARRF) to the Pacific Ocean, the City Council has elected to invest in drought proof water supplies using advanced treated recycled water. Currently, the land outfall from HARRF is facing capacity issues. If wastewater discharges are not offset from the facility, the City will be required to invest in a costly upgrade to the land outfall. Through the Reuse Program, the City Council has elected to move water reuse forward and invest its resources in drought proof water supplies instead of investing additional funding in a business-as-usual manner.

The agricultural community in Escondido grows high value crops such as citrus and avocados which are very sensitive to salts (specifically chlorides) which are common in recycled water and consistently present in Escondido's existing recycled water supply. The Escondido was awarded Prop 84-Round 2 funds for a recycled water line extension to the agricultural users and a short reach of brine line (that will be constructed in a common trench with the recycled water line), but since that time, salt and salinity management issues have come into focus with the drought in California. The salt content in Escondido's recycled water has increased due to increased use of higher salinity Colorado River for potable demands; this additional salt loading is anticipated to significantly impact growers in Escondido that rely upon locally-produced recycled water for irrigation purposes.

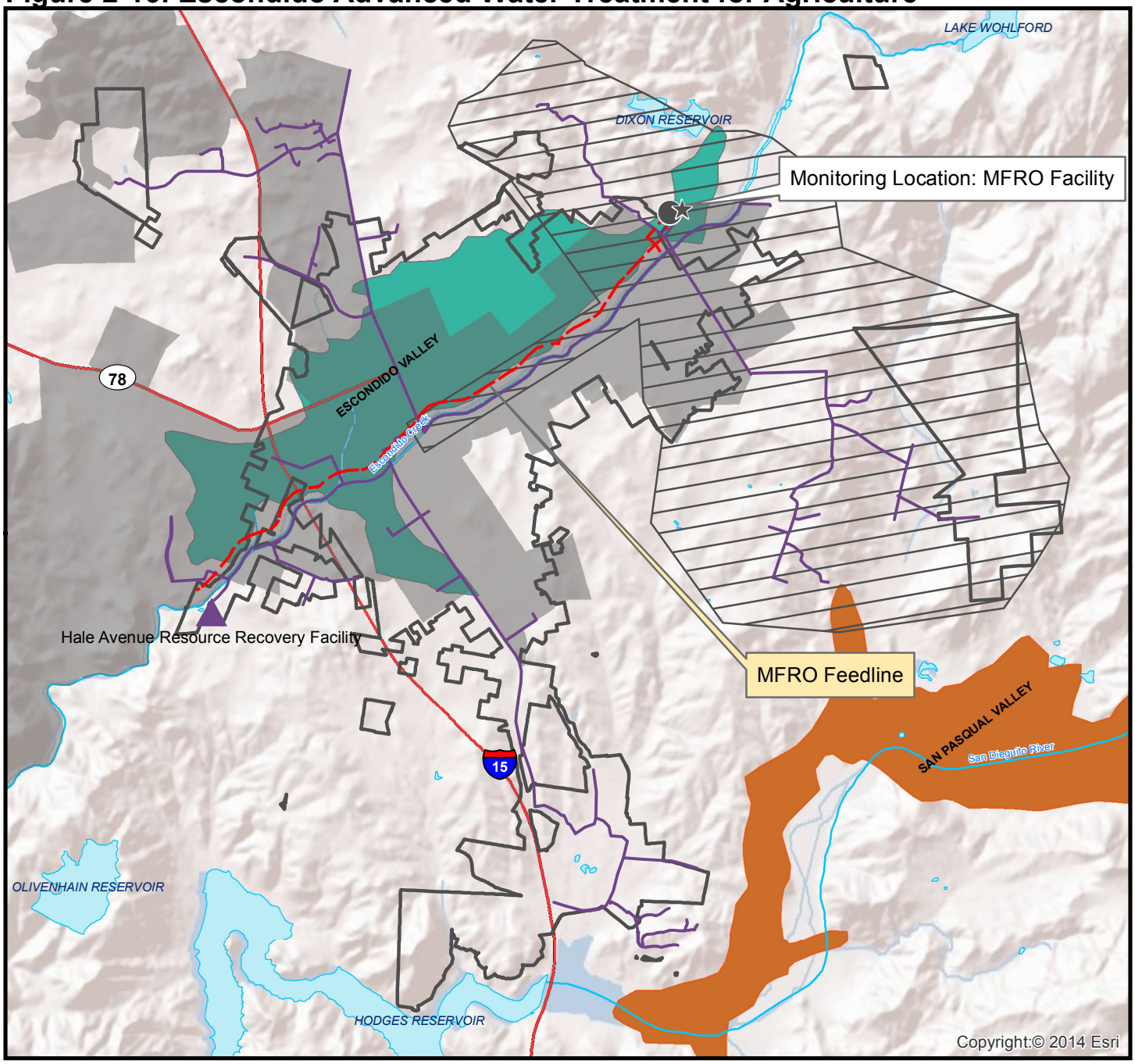
The *Escondido Advanced Water Treatment for Agriculture* project calls for Escondido to construct a microfiltration and reverse osmosis (MFRO) Facility to treat recycled water to agricultural customers' standards by reducing chloride concentrations. This will improve the quality of recycled water and allow growers to continue to use highly reliable and locally-produced recycled water for irrigation. Furthermore, improving the quality of recycled water will decrease overall irrigation water demands, because additional water needed for salt flushing will no longer be required. Data has shown that for some soil types, higher salinity recycled water requires approximately 20% more water to enable salt flushing.[36] As such, without the project, an additional 20% (approximately 880 AFY) over existing agricultural demands of 4,440 AFY would be required for salt flushing.

The MFRO Facility will provide advanced treatment for Title 22 quality reuse water that is produced at the HARRF. The facility will utilize membrane filtration to produce 2.0 mgd of treated water. Since MFRO treated water is a higher quality water supply than what is required for agriculture irrigation, Title 22 quality reuse water from HARRF will be blended with MFRO treated product water to produce water with a quality suitable for agricultural reuse. In order to distribute the MFRO water to agricultural users in the north and east areas of Escondido, Escondido is constructing the MFRO feed line from HARRF to the MFRO Facility, the brine pipeline from the MFRO Facility to HARRF, and distribution piping to the customers (all partially funded via Prop 84-Round 2 IRWM grant).

The *Escondido Advanced Water Treatment for Agriculture* project also is the important initial phase of a larger program by Escondido to develop approximately 8,000 AFY of new supply through IPR. The MFRO Facility is a key initial step in Escondido's larger IPR System that will promote water recycling and provide a long-term, reliable source of high quality water for the region's agricultural community. The MFRO Facility will meet the real, immediate needs of these agricultural users and provides a means to evaluate advanced treatment processes. The system is also set up to allow pilot testing for Escondido's planned IPR System; the pilot scale evaluations planned at the MFRO Facility will provide insight into the planned growth of the City's non-potable reuse and IPR systems.

[36] Water Quality for Agriculture by R. S. Ayers and D.W. Westcott, Food and Agriculture Organization of the United Nations Irrigation and Drainage Paper, 29 Rev.1, 1994

Figure 2-16: Escondido Advanced Water Treatment for Agriculture



Coordinates: 33.11786, -117.09172

Legend

- Freeway
- Waterbody
- DAC Area*
- Medium Priority Groundwater Basin
- Very Low Priority Groundwater Basins
- Benefit Area: 8 Escondido Advanced Water Treatment for Agriculture
- Proposed Microfiltration Reverse Osmosis (MFRO) Facility
- City of Escondido Service Area
- Hale Avenue Resource Recovery Facility
- Monitoring Location
- Brine Pipeline
- Existing Recycled Water Pipeline

0 0.5 1 2

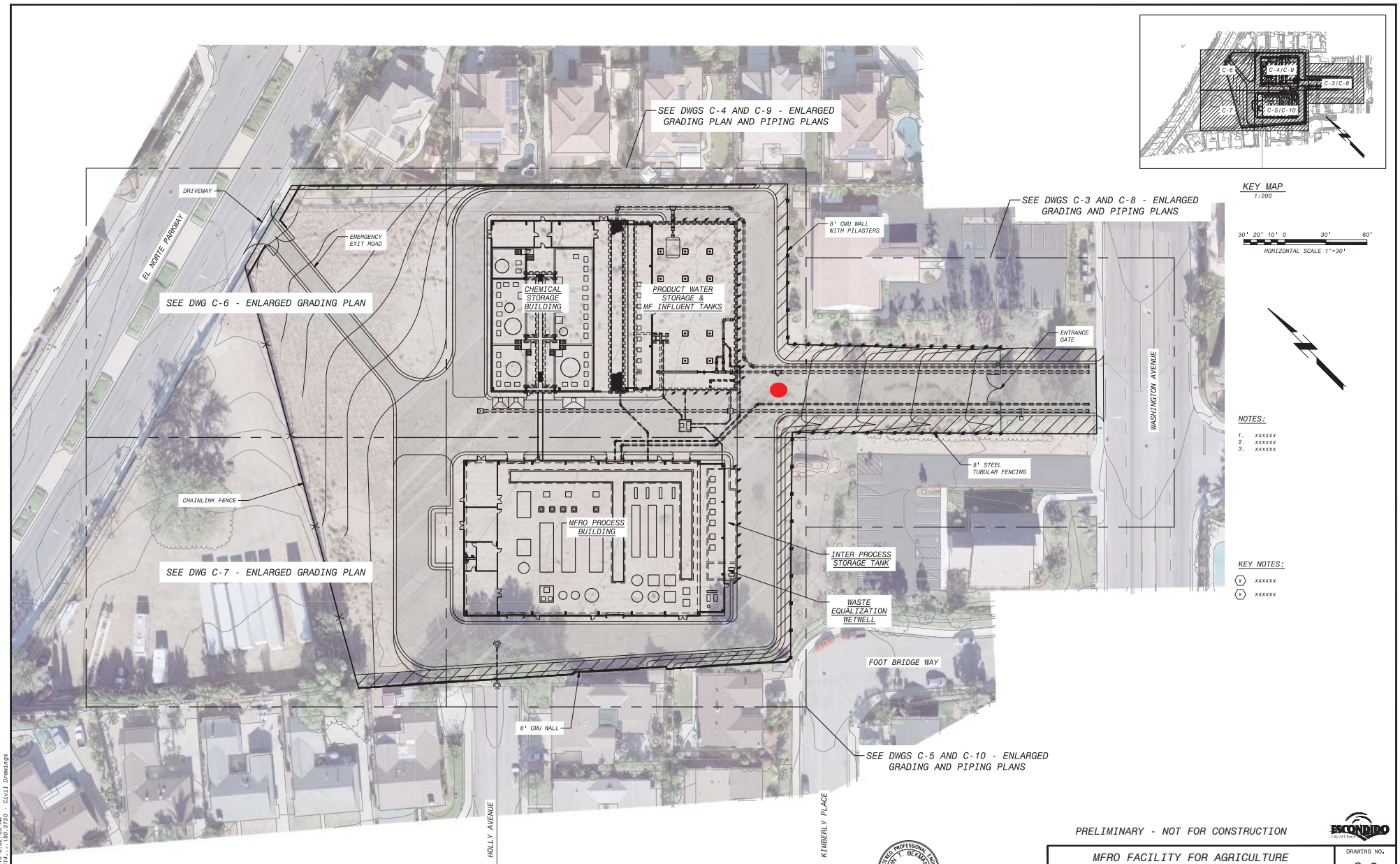
Miles

N

*Note: DAC as determined by census tract and block group data for the year 2013, from the American Community Survey 2009-2013 5-year results. DAC determined based on definition of median household incomes below 80% of the statewide MHI or $48,875.

Sources: U.S. Census 2013 ACS 5-year estimates; San Diego Association of Governments (SANDAG) - GIS Data Warehouse
Document Path: N:\Projects GIS\0188-003 SDIRWM Plan Update\Prop84_Rnd4\MXD\Project maps\2-9_EscondidoProject29072015_smallpipes.mxd

Figure 2-17: Escondido Advanced Water Treatment for Agriculture - MFRO Site Plan



PRELIMINARY - NOT FOR CONSTRUCTION

ESCONDIDO City of Choice

REGISTERED PROFESSIONAL ENGINEER JOHN T. BERRAMENDI No. C59947 Exp. 6/30/15 CIVIL STATE OF CALIFORNIA

BLACK & VEATCH Building a world of difference

Black & Veatch Corporation

MFRO FACILITY FOR AGRICULTURE

DRAWING NO. C-2

CITY OF ESCONDIDO

FIGURE 3
MFRO SITE PLAN

Sheet X of X

CONSTRUCTION RECORD	REFERENCES	Date	By	REVISIONS	App'd	Date	BENCH MARK
Contractor							ADVANCE 2170 NORTH 2003370.219 EAST 6307740.483 ELEV 720.277 2" CMON PIPE WITH DISC STAMPED "ESCE 1882 2170" ON TOP OF A CURT SLOPE
Inspector							
Date Completed							ELEVATION 806.75 NAD 29 DATUM; US FEET

SCALE	Office	Designed By	Drawn By	Checked By
Horizontal 1:30	Filmed	BOS	AG	
Vertical 1:30	Traffic	Plans Prepared Under Supervision Of		
		Date	R.C.E. No.	

Submitted

By

Deputy Director of Utilities

TRE284435 3/11/2015 8:32:53 AM
PW FLDR: 185814...\50.3130 - Civil Drawings

Project Physical Benefits

The two quantified physical benefits are (1) Water Quality Improvement (mg/L) associated with salt removal and (2) Water Supply (acre feet per year [AFY]) conserved as a result of the water quality improvements. Creating a usable water supply for agricultural users is important given the current ongoing drought and the value of agricultural to the Region's culture and economy. The project would also decrease total salt loading to the local environment by removing this constituent from water that is applied for irrigation purposes.

The water quality improvement benefit comes from reducing the total dissolved solids (TDS) concentration of recycled water that is delivered to agricultural customers through MFRO treatment. The baseline water quality was the existing TDS levels of recycled water currently provided to customers from HARRF (943 mg/L) and the with-project water quality is the anticipated TDS levels of recycled water that will be provided once the project is implemented (486 mg/L). Both of these values were provided in the *Draft MFRO and AWT Facilities: Conceptual Design Memorandum.* **Table 2-39** provides a summary of the resulting change. Note that Escondido has committed to producing blended water with TDS concentration of 500 mg/L, but 486 mg/L was used for this calculation as the approximate average of the values presented in the *Conceptual Design Memorandum* and as described below.

Table 2-39: Primary Physical Benefit – Water Quality
Escondido Advanced Water Treatment for Agriculture

Project Name: *Escondido Advanced Water Treatment for Agriculture*
Type of Benefit Claimed: Water Quality - TDS removed from agricultural water supply
Units of the Benefit Claimed: mg/L
Anticipated Useful Life of Project (years): 60 years

(a)	(b)	(c)	(d)
Year	**Without Project**	**With Project**	**Change Resulting From Project (c) – (b)**
2017-2076	943 mg/L	486 mg/L	-457 mg/L

Comments: The magnitude of water quality benefits associated with the project are based on the difference between existing and post-project TDS levels. The anticipated useful life of the project is 60 years, beginning upon completion of the MFRO Facility in mid-2017. The baseline is TDS levels in existing HARRF recycled water supply and the with-project condition is projected TDS levels from the MFRO Facility.

Sources: City of Escondido. 2014. *Draft MFRO and AWT Facilities: Conceptual Design Memorandum*. November 21, 2014. Prepared by Black & Veatch.

The water supply benefit is a direct result of water quality improvements that will reduce water waste. Removal of salts from recycled water used for agricultural irrigation will reduce additional water demands associated with salt flushing, because the recycled water provided by the project will have improved water quality and therefore eliminate the need for flushing of the avocado trees' root zone. The water demand for salt flushing is based on a Food and Agriculture Organization of the United Nations Irrigation and Drainage Paper titled *Water Quality for Agriculture* and from a City of Escondido report titled *Water Quality Consideration for Irrigation of Avocados.* Per the City of Escondido report, "irrigation practice is to apply a leaching fraction of 10% to 30% to the crop evapotranspiration needs."[37] The baseline water use was therefore calculated as the amount of Title 22 recycled water supply required to meet the irrigation needs of the plants plus the additional leaching fraction. Plant irrigation needs total 4,440 AFY, and an average 20% leaching fraction (880 AFY) was applied to this value to account for salt flushing. In total, farmers would need to apply 5,320 AFY to their crops if using recycled water from HARRF, rather than 4,400 AFY of blended HARRF and MFRO product water. Cumulatively, over the 60-year life of this project, potable water use would be reduced by 52,580 AF.

[37] City of Escondido. 2015. *Water Quality Consideration for Irrigation of Avocados*. Prepared by Black & Vetch and Brown & Caldwell.

Table 2-40: Secondary Physical Benefit – Water Supply
Escondido Advanced Water Treatment for Agriculture Project

Project Name: *Escondido Advanced Water Treatment for Agriculture* **Type of Benefit Claimed:** Water Supply – water conserved by avoiding salt flushing **Units of the Benefit Claimed:** AFY **Anticipated Useful Life of Project (years):** 60 years			
(a)	**(b)**	**(c)**	**(d)**
Year	**Without Project**	**With Project**	**Change Resulting From Project (c) – (b)**
2017	2,660 AFY	2,220 AFY	-440 AFY
2018-2076	5,320 AFY	4,440 AFY	-880 AFY
Comments: Water savings comes from TDS removal, thereby allowing for efficient use of irrigation water and avoidance of salt flushing. The project is anticipated to be completed in mid-2017, resulting in 50% the total water supply benefit for 2017, and full benefits for every year thereafter through the 60-year life of the project. The baseline is existing agricultural demands projected to be served by HARRF if salt flushing is necessary, and the with-project condition is the reduced demands necessary if TDS levels are reduced and additional supply is no longer needed for salt flushing (i.e., irrigation only used to meet plant's evapotranspiration needs). Sources: City of Escondido. 2014. *Draft MFRO and AWT Facilities: Conceptual Design Memorandum*. November 21, 2014. Prepared by Black & Veatch. City of Escondido. 2015. *Water Quality Consideration for Irrigation of Avocados*. Prepared by Black & Veatch and Brown & Caldwell.			

Technical Analysis of Physical Benefits Claimed

Project Need and Conditions

One of the major stressors to the agricultural community Escondido is salinity in their available water supplies. Salinity is known to impact certain salt-sensitive crops, including avocados.[38] Salt loading is an increasing issue in current drought conditions, wherein the Region's imported water sources are primarily comprised of high-salinity Colorado River water due to shortages and restrictions associated with State Water Project (SWP) water.[39] Salinity in local water sources threatens the longevity of agricultural operations in drought conditions, because additional water is required to flush soils. This soil flushing is particularly challenging in times when water is scarce, water rates have increased, and future water availability is uncertain. Research by the Food and Agriculture Organization of the United Nations demonstrates that when higher salinity water is applied to salt-sensitive crops, approximately 20% more water is applied to the crops to enable salt flushing. [40]

The second major stressor to the agricultural community is water availability. On May 14, 2015, the San Diego County Water Authority (SDCWA) implemented water supply restrictions associated with the drought. These restrictions included a supply allocation for agricultural users paying the Transitional Special Agricultural Water Rate (TSAWR). Agricultural users that participate in the TSAWR are exempt from paying storage and other charges from SDCWA, and in exchange receive a lower level of water service during water shortages or emergencies.[41] Most of the commercial growers located within Escondido pay the TSAWR and are therefore under allocation restrictions; the current allocation is 2,750 AFY, which is 15% less than deliveries received in

[38] Gustafson, C.D. 1962. *The Salinity Problem in Growing Avocados.* Available: http://www.avocadosource.com/CAS_Yearbooks/CAS_46_1962/CAS_1962_PG_100-105.pdf
[39] Murphy, Susan. 2014. *San Diego Diversifies Water Supplies, But Increases Reliance on Colorado River.* Available: http://www.kpbs.org/news/2014/mar/11/colorado-river/
[40] Water Quality for Agriculture by R. S. Ayers and D.W. Westcott, Food and Agriculture Organization of the United Nations Irrigation and Drainage Paper, 29 Rev.1, 1994
[41] San Diego County Water Authority. 2012. *Water Authority Extends Temporary Agricultural Water Rebate Program for Two Years.* Available: http://www.sdcwa.org/water-authority-extends-temporary-agricultural-water-rate-program-two-years

2014.[42] Given water reliability issues and associated water restrictions with water purchased from SDWCA (largely imported water), agricultural users in Escondido have become increasingly interested in using recycled water to increase water reliability. However, the use of recycled water presents the agricultural users with salinity issues, because recycled water generally contains greater levels of salts and chlorides compared to potable water. While recycled water can provide a reliable local water source for agricultural users, especially in times of drought, this water source is not sustainable on a long-term basis if it contains salinity levels that threaten the health of crops.

Escondido currently has a recycled water program, and delivers tertiary-treated recycled water that meets requirements of Title 22 of the California Code of Regulations to customers. Recycled water in the City of Escondido is currently produced at the HARRF, an 18 mgd wastewater treatment facility that currently produces 3 mgd of recycled water for landscape and industrial use.[43] The City has been actively undergoing efforts to expand its recycled water facilities and maximize reuse of water produced at HARRF.

In April 2014, the City of Escondido City Council voted to approve a $290 million project to implement the Recycled Water and Potable Reuse Program (Reuse Program) in the City of Escondido, which would dramatically increase reuse within the City's service area and maximize use of local supplies. The Reuse Program is multi-phased and planned to be implemented over a 20-year period.[44] In general, the Reuse Program includes the following components, which are summarized below and shown on the **Figure 2-18**:

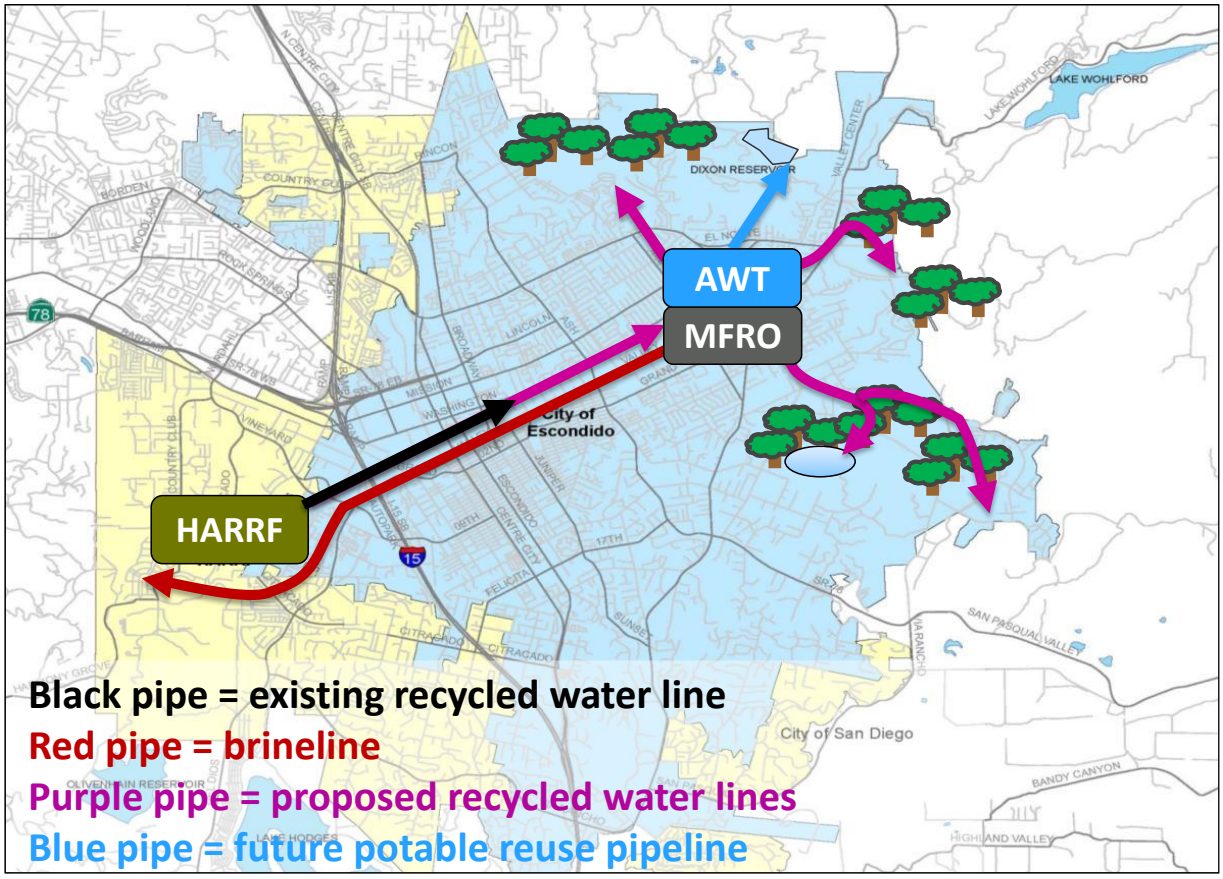
1. Pipeline extension from the existing recycled water system to a decentralized MFRO Facility
2. A brine reject waste return pipeline (brineline) from the MFRO Facility to HARRF
3. New recycled lines to deliver water from the MFRO Facility to agricultural users
4. Full-scale advanced water treatment (AWT) facility and distribution pipelines to Dixon Reservoir for future potable reuse

Given the long-term nature of this program, the City intends to implement the Reuse Program in multiple phases that build upon one another and address high-priority issues first. The initial phase includes implementation of the MFRO Facility for agricultural users. The AWT Facility will be implemented during a later phase after successful operation of the MFRO Facility and further development of potable reuse regulations for surface water augmentation.[45]

Construction and operation of the MFRO Facility to deliver advanced-treated recycled water to agricultural customers is considered a priority step of the Reuse Program, because it will help to ensure the longevity and sustainability of agricultural operations in Escondido. The San Diego Region has a long history of agriculture, which is an important part of San Diego's history and cultural and is also an important part of the local economy. In 2013 alone, it is estimated that the value of agriculture in San Diego County totaled $1,850,307,291.[46] Agricultural value is significant in the City of Escondido, which contains a large portion of the Region's avocado crops; local estimates demonstrate that avocado crop revenues in the City of Escondido exceeded $40 million and that a large portion of this revenue was spent locally, making agriculture a significant contributor to the City's economy and local food production.[47] The City recognizes the importance of agriculture to its local economy, and has partnered with a local agricultural group, the Escondido Growers for Agricultural Preservation (EGAP), to implement the *Escondido Advanced Water Treatment for Agriculture* project in a way that addresses the two major stressors to the agricultural community described above.

[42] Escondido Growers for Agricultural Preservation (EGAP). 2015. *SDCWA Water Cut Back & Penalties.* Available: http://growescondido.org/blog/
[43] City of Escondido. 2011. *City of Escondido 2010 Urban Water Management Plan.*
[44] City of Escondido. 2014. *City Council Update – Recycled Water and Potable Reuse Program, April 2, 2014.*
[45] City of Escondido. 2014. *Draft MFRO and AWT Facilities: Conceptual Design Memorandum*. November 21, 2014.
[46] County of San Diego. 2013. *2013 Crop Statistics and Annual Report.* Available: http://www.sandiegocounty.gov/content/dam/sdc/awm/docs/2013%20Crop%20Report%20-%20Copy.pdf
[47] Escondido Growers for Agricultural Preservation (EGAP). 2015. Escondido's Ag History. Available: http://growescondido.org/purpose/the-egap-mission/

Figure 2-18: City of Escondido Proposed Water Reuse Program Schematic



Graphic of City of Escondido Reuse Program from *City Council Update – Recycled Water and Potable Reuse Program.* The MFRO would be funded under this Proposal, while the other components of the Water Reuse Program would be funded separately.

Cumulatively, the issues of salinity and the need for reliable local water supplies have led the City to propose constructing the MFRO Facility as a first step in the Reuse Program. The MFRO Facility will be designed to meet long-term agricultural water demands of 4,440 AFY and also to reduce constituents of concern for agricultural users to improve productivity and reduce water waste.[48] A *Feasibility Study* was prepared for the Reuse Program, which evaluated water quality requirements for the City's agricultural users, with an emphasis on avocado production as one of the most important crops in Escondido. The Feasibility Study analyzed the quality of recycled water that is currently produced at HARRF and determined agricultural water quality objectives for the MFRO Facility, establishing limits for water quality parameters that, if exceeded, would diminish crop productivity.[49] Further, a *Conceptual Design Memorandum* analyzed the projected water quality that would be produced from implementation of MFRO considering the quality of product water (from HARRF). **Table 2-41** shows an overview of the existing water quality of recycled water from HARRF, target agricultural water quality objectives, and projected water quality results from implementation of MFRO technology.

[48] City of Escondido. 2014. *Draft MFRO and AWT Facilities: Conceptual Design Memorandum*. November 21, 2014. Prepared by Black & Veatch.
[49] City of Escondido. 2014. *Potable Reuse Program. Task 1: Feasibility Study*. August, 2014.

Table 2-41: Existing and Proposed Water Quality Parameters

Water Quality Constituent	Average Existing Quality at HARRF (mg/L)	Agricultural Water Quality Objectives (mg/L)	Projected MFRO Water Quality (mg/L)
Total Dissolved Solids (TDS)	923	540-600	38
Chlorides	188	80-100	8

Source: City of Escondido. 2014. *MFRO Facility Water Quality Data*. Available: http://growescondido.org/wp-content/uploads/mfro-facility-water-quality-data.pdf

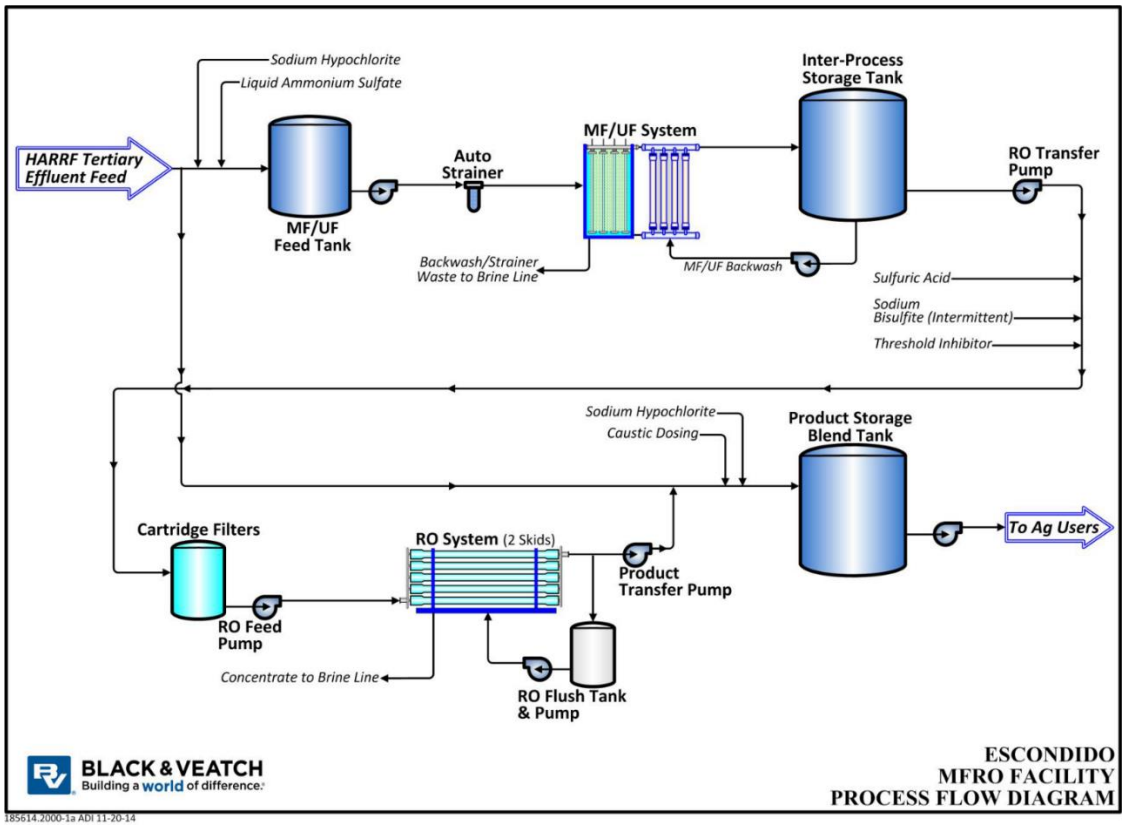
As shown in **Table 2-41**, due to the effectiveness of MFRO technology (and the ability of the RO process to remove salts), the MFRO system would be able to substantially reduce both TDS and chlorides from the HARRF product water, at levels well below what is required for agricultural operations. The treatment provided by the MFRO is highly effective, but is also expensive, as it requires a substantial amount of energy to operate. Therefore, the City will treat a portion of the water used for agricultural reuse with MFRO technologies and then blend that product water with HAARF tertiary treated water to a level that meets agricultural standards. In total, the facility will utilize MFRO technologies sized for a total production capacity of 2.0 million gallons per day (mgd), producing 2,240 AFY of water. The remaining 2,200 AFY of demands will be met with recycled water from HARRF to fulfill the total agricultural demand of 4,440 AFY. Recycled water from HARRF will be blended with MFRO treated product water on-site at the MFRO Facility prior to delivery; this operational strategy will maximize reuse of recycled water, ensure water quality objectives are met, and reduce operational costs.[50] **Figure 2-19** shows a schematic of a process flow diagram that illustrates the treatment train and blending proposed for the *Escondido Advanced Water Treatment for Agriculture* project.

While the MFRO Facility will provide immediate benefits associated with water supply, water quality, and support for the local agricultural community, it will also set the City of Escondido up for implementation of the full-scale Reuse Program that is anticipated to provide approximately 8,000 AFY of new supply through IPR via surface water augmentation at Dixon Reservoir. Water quality and systems testing at the MFRO Facility will allow the City of Escondido to monitor and project water quality for future use at the AWT and potential introduction into the Dixon Reservoir.[51]

On a long-term basis, the Reuse Program is anticipated to not only resolve local issues associated with water supply reliability, but is also designed to offload flows from HARRF. Currently, secondary-treated wastewater that is treated at HARRF and not recycled is disposed of to the Pacific Ocean via a 14-mile long land outfall pipeline that connects to an ocean outfall pipeline near San Elijo Lagoon (the San Elijo Ocean Outfall).[52] The average daily flow from HARRF is currently 15.6 mgd, and the land outfall pipeline has experienced ongoing capacity issues. One solution that was proposed to address capacity issues at the HARRF land outfall is to replace it with a larger land outfall along the entire 18-mile stretch from HARRF to the San Elijo Lagoon; however, this potential solution has not yet been implemented due to its substantial capital cost and issues associated with construction within environmentally sensitive areas along Escondido Creek.[53] Given the uncertainties associated with environmental approvals needed to expand the land outfall and capital anticipated costs, the City of Escondido has extensively analyzed ways to increase reuse to offload flows to HARRF and defer the need to upgrade the land outfall. One of the benefits of the overall Reuse Program is that it is anticipated to defer the need to upgrade the HARRF land outfall until 2050.[54] Therefore, through the Reuse Program, the City Council has elected to move water reuse forward and invest its resources in drought proof water supplies instead of investing additional funding in business-as-usual conditions.

[50] City of Escondido. 2014. *Draft MFRO and AWT Facilities: Conceptual Design Memorandum*. November 21, 2014. Prepared by Black & Veatch.
[51] City of Escondido. 2014. *Draft MFRO and AWT Facilities: Conceptual Design Memorandum*. November 21, 2014. Prepared by Black & Veatch.
[52] City of Escondido. 2015. *Hale Avenue Resource Recovery Facility.* Available: http://www.escondido.org/harrf.aspx
[53] City of Escondido. 2014. *City Council Update – Recycled Water and Potable Reuse Program, April 2, 2014.*
[54] City of Escondido. 2014. *Draft MFRO and AWT Facilities: Conceptual Design Memorandum*. November 21, 2014. Prepared by Black & Veatch.

Figure 2-19: MFRO Facility Process Flow



Process Flow Diagram for City of Escondido MFRO Facility from *Draft MFRO and AWT Facilities: Conceptual Design Memorandum.*

Without-Project Conditions

Without the *Escondido Advanced Water Treatment for Agriculture* project, agricultural users in the City of Escondido would continue to use high-salinity recycled water on crops. Therefore, agricultural operations would continue to use 20% more water than is needed to meet demands, because they would need additional water to flush salt from soils. To meet 4,440 AFY in actual crop-related water demands, 5,320 AFY of recycled water from HARRF would need to be delivered to farmers. Without advanced treatment, additional TDS and chlorides would not be removed from local water sources, and these constituents would continue to impact and potentially damage salt-sensitive crops, as well as watersheds downstream. TDS has been identified as a water quality issue in all watersheds in the San Diego IRWM Region, and the Carlsbad Watershed (where the project is located) has multiple waterbodies on the 303(d) list for TDS.[55] Under these conditions, desalted recycled water produced by the MFRO Facility would not be available and an additional 880 AFY of HARRF recycled water (beyond basic crop needs) would continue to be used for over-irrigation. Without the MFRO Facility, a local recycled water source would not be used efficiently, continuing reliance on imported water and overuse of water to mitigate salt build-up would continue. Furthermore, without the project, HARRF would continue to discharge an average of 15.6 mgd of treated wastewater to the Pacific Ocean and the City of Escondido would not move forward in its efforts to implement the Reuse Program and offset flows to HARRF.

[55] RWMG. 2013. 2013 San Diego Integrated Regional Water Management Plan. September.

Methods Used to Estimate the Physical Benefits

Primary Benefit – Water Quality

The primary benefit of the project is removal of constituents that are known to diminish the productivity of salt-sensitive crops, such as avocados. These constituents include TDS, chloride, sodium adsorption ratio, electrical conductivity, boron, and pH.[56] For purposes of this analysis, the physical benefit that has been quantified is a reduction in TDS; TDS was chosen because it is the primary constituent of concern for salt-sensitive crops. Furthermore, the removal of TDS that will occur from implementation of the project will also reduce salt loading to local groundwater and surface water sources, and will therefore provide broad water quality benefits to the region.

The quantification of this benefit was calculated by analyzing the existing TDS concentration in recycled water provided by HARRF (943 mg/L) and comparing that to the projected TDS concentration in MFRO Facility water that will be distributed to agricultural customers. The MFRO Facility water will be a combination of both recycled water produced at HARRF and desalted water produced by the MFRO Facility; therefore, the water quality of both water sources and their relative magnitude (AFY) were taken into consideration for this analysis.

Design of the facility shows that the capacity of the MFRO Facility will be 2 mgd, and will therefore produce a total of 2,240 AFY of water.[57] With implementation of MFRO treatment, it is anticipated that the product water from the MFRO Facility will have an average TDS concentration of 38 mg/L.[58] The remaining water necessary to meet with-project agricultural water demands of 4,440 AFY will be provided from recycled water produced at HARRF; it is anticipated that 2,200 AFY of recycled water with a TDS concentration of 943 mg/L will be provided for the project. Taking the concentration and water supply contributions of these water sources into account, it is anticipated that the overall TDS levels of water delivered to agricultural users will be 486 mg/L. This number is expected to vary seasonally, but the City has committed to maintaining water quality such that maximum TDS level is 500 mg/L.[59] The anticipated TDS concentration of 486 mg/L is within the range described in the *Conceptual Design Memorandum*, and is considered a reasonable estimate for this analysis. As explained previously, the water quality target for salt-sensitive crops for TDS is 540-600 mg/L, demonstrating that the project will provide water that is suitable for agricultural users and will not require salt flushing. The benefit is the difference between the TDS levels in existing supplies from HARRF (943 mg/L) and the with-project TDS levels of water that will be delivered to agricultural users (486 mg/L), for a total reduction of 457 mg/L.

$$\frac{\left((943\frac{mg}{L} * 2{,}200\ AFY)\ + (38\frac{mg}{L} * 2{,}240\ AFY)\right)}{4{,}440\ AFY} = 486\frac{mg}{L}$$

$$943\frac{mg}{L} TDS\ from\ HARRF - 486\frac{mg}{L} TDS\ from\ MFRO\ blended\ supply = \mathbf{457\frac{mg}{L}\ TDS\ reduction}$$

Secondary Benefit – Water Supply

The secondary benefit of the project is conservation of 880 AFY of recycled water. The project achieves these water savings through water quality improvements that eliminate the need for wasteful water practices, salt flushing, which are necessary to protect crop health. With implementation of the MFRO Facility, the salt (TDS) content of existing available recycled water supplies produced at HARRF will be reduced to meet water quality objectives established for salt-sensitive crops. Data has shown that for some soil types, application of high-salinity water sources requires approximately 20% more water than evapotranspiration demand to enable salt flushing. [60]

Recycled water system planning by Escondido shows that agricultural demands for crop irrigation are 4,440 AFY. Without the project, agricultural customers will irrigate salt-sensitive crops such as avocados with high-salinity

[56] City of Escondido. 2014. *MFRO Facility Water Quality Data*. Available: http://growescondido.org/wp-content/uploads/mfro-facility-water-quality-data.pdf
[57] City of Escondido. 2015. *Draft MFRO Facility for Agriculture: Basis of Design Report*. March 25, 2015.
[58] City of Escondido. 2014. *Draft MFRO and AWT Facilities: Conceptual Design* Prepared by Black & Veatch.*randum*. November 21, 2014.
[59] Pers. Comm. Jim Rasmus, Black and Veatch (consultant to City of Escondido on this project). 30 July 2015.
[60] R. S. Ayers and D.W. Westcot, Food and Agriculture Organization of the United Nations Irrigation and Drainage Paper, 29 Rev.1. 1994. *Water Quality for Agriculture*. And Brown and Caldwell. 2015. *Water Quality Consideration for Irrigation of Avocados*.

recycled water. Based on research for salt-sensitive crops, it is anticipated that an additional 20% over existing crop demands will be required for salt flushing to protect the productivity of salt-sensitive crops. Therefore, when agricultural users use high-salinity recycled water, they will require an additional 20% above existing demands, for a total demand of 5,320 AFY (4,440 AFY + ~20% 4,440 AFY).

Escondido's *Draft MFRO and AWT Facilities: Conceptual Design Memorandum* and *Draft MFRO Facility for Agriculture: Basis of Design Report* established water quality parameters the project, which will be met by blending MFRO product water with existing recycled water produced at HARRF, to reduce TDS, chlorides, and other constituents that require salt flushing. With implementation of the project, salt flushing will no longer be required and overall demands will remain at 4,440 AFY necessary to meet crop-related water needs. Implementation of the project will conserve approximately 880 AFY of additional recycled water that would have been required for salt flushing. The project will be implemented after the first quarter of 2017; therefore, in 2017 only 75% of total savings will be met. Full-scale project benefits of 880 AFY in conservation will be achieved from 2018 through the 60-year life of the project.

$$5{,}320\ AFY - 4{,}440\ AFY = \mathbf{880\ AFY}$$

New Facilities, Policies, and Actions Required to Obtain Physical Benefits

The physical benefits of the *Escondido Advanced Water Treatment for Agriculture Project* will require several components to be constructed. As explained previously, HARRF is an existing wastewater treatment facility that currently produces tertiary-treated recycled water suitable for irrigation in accordance with Title 22 of the California Code of Regulations. The City of Escondido received a Prop 84-Round 2 IRWM grant (via the North San Diego Water Reuse Coalition) that is supporting construction of pipeline facilities for delivery of recycled water produced at HARRF to the farmers. Facilities that are being constructed with the Round 2 grant include: 1) the recycled water pipeline extension from HARRF to the MFRO Facility site, 2) the brineline from the MFRO Facility site to HARRF, and 3) recycled water distribution pipelines to supply water from the MFRO Facility site to agricultural water users. These facilities are currently being constructed and are therefore not included as part of the *Escondido Advanced Water Treatment for Agriculture* project.

The MFRO Facility site is currently owned by the City of Escondido. Additional work is required at this site and at HARRF to provide project-related benefits. Facilities that need to be constructed to deliver project-related benefits include the additional construction activities described in *Attachment 3, Work Plan* and include yard piping and sitework at the MFRO Facility site, the MFRO process building, an inter-process storage tank, a chemical storage building, product water storage and microfiltration feed tanks, and additional minor improvements at HARRF.

In addition to the proposed project, customers receiving recycled water from the project will need to complete on-site retrofits and permitting in order to connect to the recycled water system. These activities would occur on private property and are the responsibility of individual property owners; costs and work associated with these onsite retrofits are not included as part of the project.

Potential Adverse Physical Effects of the Project and Mitigation

There could be temporary adverse physical effects during construction of the pipelines and MFRO Facility required for implementation of the project. However, the project qualifies for evaluation under a Mitigated Negative Declaration (MND) for CEQA, and would therefore not have any significant and unavoidable physical impacts. Any impacts associated with the project are anticipated to be short-term in nature and mitigated to less-than-significant levels if necessary. There are no anticipated long-term, significant adverse effects expected from project implementation.

In the future, the City of Escondido intends to implement potable reuse projects that route wastewater flows for advanced treatment and ultimate delivery into the potable drinking water system. Continued expansion of the non-potable water distribution system could result in near-term construction-related adverse impacts, and then lie as stranded assets if tertiary treated water is no longer available to customers. However, the City of Escondido has committed to continue MFRO product water deliveries to agricultural customers in order to offset potable demands during the drought and while potable reuse regulations are still being developed and adopted. In the future, this MFRO Facility will become part of the larger Reuse Program.

Long-Term Drought Preparedness

On April 2, 2014, the City of Escondido's City Council endorsed a plan to develop a Reuse Program, which will provide a long-term drought-proof source of water supply. The *Escondido Advanced Water Treatment for Agriculture Project* is an important first step in Escondido's Reuse Program that will provide immediate water conservation and water quality benefits through advanced treatment of recycled water to meet water quality objectives for salt-sensitive crops that are of high economic value to the Region. In addition to providing immediate benefits, the MFRO Facility will also allow Escondido to conduct pilot testing on product water and analyze ways in which Escondido can move forward with surface water augmentation at Dixon Reservoir.

The project directly provides long-term drought preparedness by achieving the following: 1) promote water conservation and recycling 2) improve landscape and agricultural irrigation efficiencies; and 3) achieve long-term reduction of water use. Through the implementation of advanced treatment, Escondido will produce recycled water for agricultural users that meets water quality parameters necessary to ensure the productivity of salt-sensitive crops. The MFRO product water will replace existing demands for recycled water, which has high levels of salinity and chlorides that have been proven to require soil flushing, and will therefore result in conservation of 20% of water over irrigation demands. The advanced treated water will result in long-term conservation and reduced water use as it will eliminate the need for soil flushing. Reducing the need for this water-wasteful practice will also improve agricultural irrigation efficiency. In total, the project will both ensure that a long-term, reliable source of water is available for agricultural users, and will ensure that the quality of this water meets the needs of salt-sensitive crops that are an important part of the Region's local economy.

Furthermore, implementation of this project will move Escondido forward in overall long-term plans to implement IPR, which is anticipated to provide up to 8,000 AFY of locally-produced, drought-proof potable water. The current proposal for IPR in Escondido's service area would be via surface water augmentation at Dixon Reservoir. Regulations are not currently in place for surface water augmentation; however, Escondido is still interested in exploring treatment alternatives and methodologies for meeting anticipated regulatory standards for potable reuse. The MFRO Facility will provide an opportunity for Escondido to conduct advanced treatment pilot testing and determine design parameters that would be necessary to move forward with surface water augmentation.

Direct Water-Related Benefit to DACs

As shown in **Table 7-1**, the *Escondido Advanced Water Treatment for Agriculture* project serves an area that is 49% DAC by population. The project directly addresses two of the urban DAC needs described in *Attachment 7 Disadvantaged Communities:* water rates and food security/irrigation costs[61]. Water rates for agricultural users can impact their ability to maintain farmland, while high irrigation costs can affect the types of foods that DAC residents have access to (either through their ability to grow themselves or through costs to consumers). While all customers are affected by water rates and irrigation costs, these impacts are felt more strongly by DAC residents who have fewer funds with which to accommodate cost increases. U

This project provides direct benefits to water rates, food security and irrigation costs by producing recycled water suitable for agricultural purposes. Recycled water is a drought-proof local supply, meaning it is highly reliable, even in times of drought. In addition, recycled water is generally cheaper for customers than potable water, and conversion to recycled water can result in cost savings to customers. Because the water produced by the *Escondido Advanced Water Treatment for Agriculture* project would be used to irrigate crops, this project will also address food security and irrigation cost issues that are of concern to urban DACs.

Project Performance Monitoring Plan

Benefits of the *Escondido Advanced Water Treatment for Agriculture* project will accrue as described in **Tables 2-39** and **2-40** above. **Table 2-42** describes the methods that will be used to measure the quantified benefits of this project. The City of Escondido will monitor water supply benefits by collecting and reporting monthly output and delivery data for the MFRO Facility. The City of Escondido will also monitor the water quality of the HARRF recycled water to be used for blending and the MFRO product water that is put into the distribution line and sent to agricultural customers.

[61] RWMG. 2013. 2013 San Diego Integrated Regional Water Management Plan. September.

Table 2-42: Project Monitoring for *Escondido Advanced Water Treatment for Agriculture*

Proposed Physical Benefits	Measurement Tools and Methods	Targets
Water Supply	The City of Escondido will collect monthly water production data of water delivered to customers from the MFRO Facility. All water delivered by the project will represent a 20% reduction in total agricultural demands, because this water will be of high enough quality that it does not require soil flushing. The City of Escondido will report to DWR when the MFRO Facility comes online, and will provide an estimation of the water conserved based on how much water is delivered to agricultural customers per year.	4,440 AFY of water delivered (indicating 880 AFY of water conserved)
Water Quality	The City of Escondido will collect monthly water quality data of water delivered to customers from the MFRO Facility; this water will be comprised of a blend of tertiary-treated recycled water produced at HARRF and MFRO product water. The City of Escondido will report to DWR when the MFRO Facility comes online, and will provide an estimation of the water quality improvements achieved from the project by comparing the quality of existing recycled water produced at HARRF and the blended water that will be delivered to agricultural customers. The City of Escondido will also assure that water quality of the blended water falls within the range established for salt-sensitive plants, thereby assuring that the need to flush soils is eliminated.	457 mg/L of TDS removed from product water

Cost Effectiveness Analysis

The *Escondido Advanced Water Treatment for Agriculture* project will achieve two quantifiable physical benefits described in detail in the sections above, and summarized in **Table 2-39 and 2-40**. During project development, alternatives to the preferred project included in this application were considered and, ultimately, rejected. **Table 2-43** provides a cost effectiveness analysis consistent with Table 7 of the *2015 PSP*.

Table 2-43: Cost Effective Analysis for *Escondido Advanced Water Treatment for Agriculture*

Cost Effective Analysis	
Question 1 Physical Benefits Summary	*Types of benefits provided as shown in Table 2-39 and 2-40.* Water Supply – 880 AFY of water conserved Water Quality Improvement – 457 mg/L of TDS removed from product water
Question 2 Alternatives Considered	*Have alternative methods been considered to achieve the same types and amounts of physical benefits as the proposed project been identified?* Yes.
	If no, why? If yes, list the methods (including the proposed project) and estimated costs. The *Conceptual Design Memorandum* completed for the project included an analysis of alternative site plans for the MFRO Facility.[62] These alternatives were considered due to phasing associated with the overall Reuse Program and considering that in a future phase of the program, the AWT Facility (for potable reuse) will be co-located with the MFRO Facility. Alternative site plan layouts were based on preliminary equipment, storage and building footprint requirements and other site considerations.

[62] City of Escondido. 2014. *Draft MFRO and AWT Facilities: Conceptual Design Memorandum*. November 21, 2014. Prepared by Black & Veatch.

Cost Effective Analysis	
	Alternatives that were considered include: • Alternative 1A: locate the MFRO Facility on the east side of the site • Alternative 1B: locate the MFRO Facility on the west side of the site • Alternative 2A: demonstrates co-location of the MFRO Facility and AWT Facility with the MFRO Facility on the east side of the site • Alternative 2B: demonstrates co-location of the MFRO Facility and AWT Facility with the MFRO Facility on the west side of the site The purpose of the alternative analysis was not to compare costs, but rather, to determine potential feasibility options and evaluate pros and cons of the site location of the MFRO Facility, considering potential co-location with the AWT Facility in the future. The Final Design of the MFRO Facility, which will be completed in November 2015, will select a location for the MFRO Facility based upon cost, access, environmental impacts, and other considerations. The *Conceptual Design Memorandum* demonstrated that the relative costs of the alternative were very similar given the small size of the site. Therefore, the budget included in this Proposal assumes that either 1A or 1B will be constructed, and includes contingency figures to cover construction of either alternative. The *Feasibility Study* for the Reuse Program considered several treatment alternatives for reducing TDS and chloride to levels that would allow agricultural application for salt-sensitive crops. Three types of technologies are typically used for demineralization: ion exchange, RO, or electrodialysis reversal (EDR). The latter two are generally better-suited to reducing TDS than ion exchange. A combined MFRO facility allows for future expansion for potable reuse, and is only slightly more expensive than EDR. MFRO systems also have lower operation and maintenance (O&M) costs compared to EDR. Specific costs were not provided in the Feasibility Study for the selection of MFRO as the preferred alternative, because of the additional benefits provided of flexibility for future potable reuse and the lower O&M costs. The *Basis of Design Report* refined the potential treatment equipment alternatives, noting that the pressurized MFRO membrane configuration was selected due to lower construction cost for at least two reasons: 1) the systems will not require expensive coated steel or stainless steel membrane tanks and 2) for slab on grade construction, the system will not need a taller process structure to enclose the submerged membrane tanks.[63] Additionally, the report noted that new buildings will be designed to be utilitarian, low maintenance, and low in construction cost.
Question 3 Preferred Alternative	*If the proposed project is not the least cost alternative, why is it the preferred alternative? Provide an explanation of any accomplishments of the proposed project that are different from the alternative project or methods.* No, the proposed project is not the least cost alternative. The MFRO approach to TDS treatment was selected despite the slightly higher cost to the EDR alternative because of lower O&M costs and added flexibility for future expansion to potable reuse. Design is currently underway for construction of the MFRO Facility. The *Basis of Design Report* acknowledges that the low-cost alternative for the pressurized microfiltration/ultrafiltration (MF/UF) membrane configuration has been recommended. A site alternative has not yet been decided, but will be decided in the Final Design Plans. Based upon a preliminary assessment of the site, costs for the alternatives are anticipated to be relatively similar. Therefore, ultimate selection of an alternative will be based upon feasibility for access, long-term operation, and environmental considerations.

[63] City of Escondido. 2015. *Draft MFRO Facility for Agriculture: Basis of Design Report*. March 25, 2015. Pg 4-9.

Project 9: Padre Dam Advanced Water Treatment – Phase IA Expansion

Local Project Sponsor: Padre Dam Municipal Water District (Padre Dam MWD)
Partner: Helix Water District, County of San Diego, and City of El Cajon

Project Summary

The project will expand the Ray Stoyer Water Reclamation Facility by 4 mgd to deliver recycled water for irrigation and allow for future potable reuse.

Project Maps

Figure 2-20 shows the *Padre Dam Advanced Water Treatment – Phase IA Expansion* project area, the service areas of the project sponsor, the project facilities and the project's relation to groundwater basins and surface water, disadvantaged communities (DAC) and proposed monitoring locations. **Figure 2-21** shows the proposed layout of the expanded Ray Stoyer Water Reclamation Facility (WRF). **Figure 2-22** shows the recycled water distribution system serving the Fanita Ranch community.

Padre Dam MWD's Ray Stoyer WRF currently treats 2 mgd of wastewater

Project Description

The *Padre Dam Advanced Water Treatment – Phase IA Expansion* will construct an expansion of Padre Dam MWD's Ray Stoyer Water Reclamation Facility (WRF) to produce up to 6 mgd of recycled water, along with a pump station and distribution piping to deliver 0.9 mgd of recycled water for irrigation uses. Padre Dam MWD receives all of its potable water supplies from the San Diego County Water Authority (SDCWA). Water reliability for the San Diego region is threatened by a lack of sufficient local supply. The San Diego IRWM Region has made increasing local supplies a priority for the Region, and set a goal to diversify local water supply portfolio. Increasing recycled water production and use creates a new, drought proof local supply.

Padre Dam MWD currently produces 5 mgd of wastewater within its service area. Of this total, 2 mgd of wastewater is tertiary treated at the Ray Stoyer WRF to produce recycled water, while the rest is discharged into the City of San Diego's collection system to be treated at the Point Loma Wastewater Treatment Plant (WWTP), along with the solids generated at the WRF. The WRF treatment process consists of primary sedimentation, biological phosphorous and nitrogen removal, secondary clarification, and tertiary treatment to produce recycled water. Currently, 1 mgd of recycled water is discharged to the recreational Santee Lakes and 0.8 mgd is delivered to recycled water customers. Through this project, the Ray Stoyer WRF's treatment capacity will be expanded from 2 mgd to 6 mgd, enough to treat 100% of the projected wastewater within Padre Dam MWD's service area by 2040. Expansion of the Ray Stoyer WRF will include the following improvements, all located within the existing plant footprint:

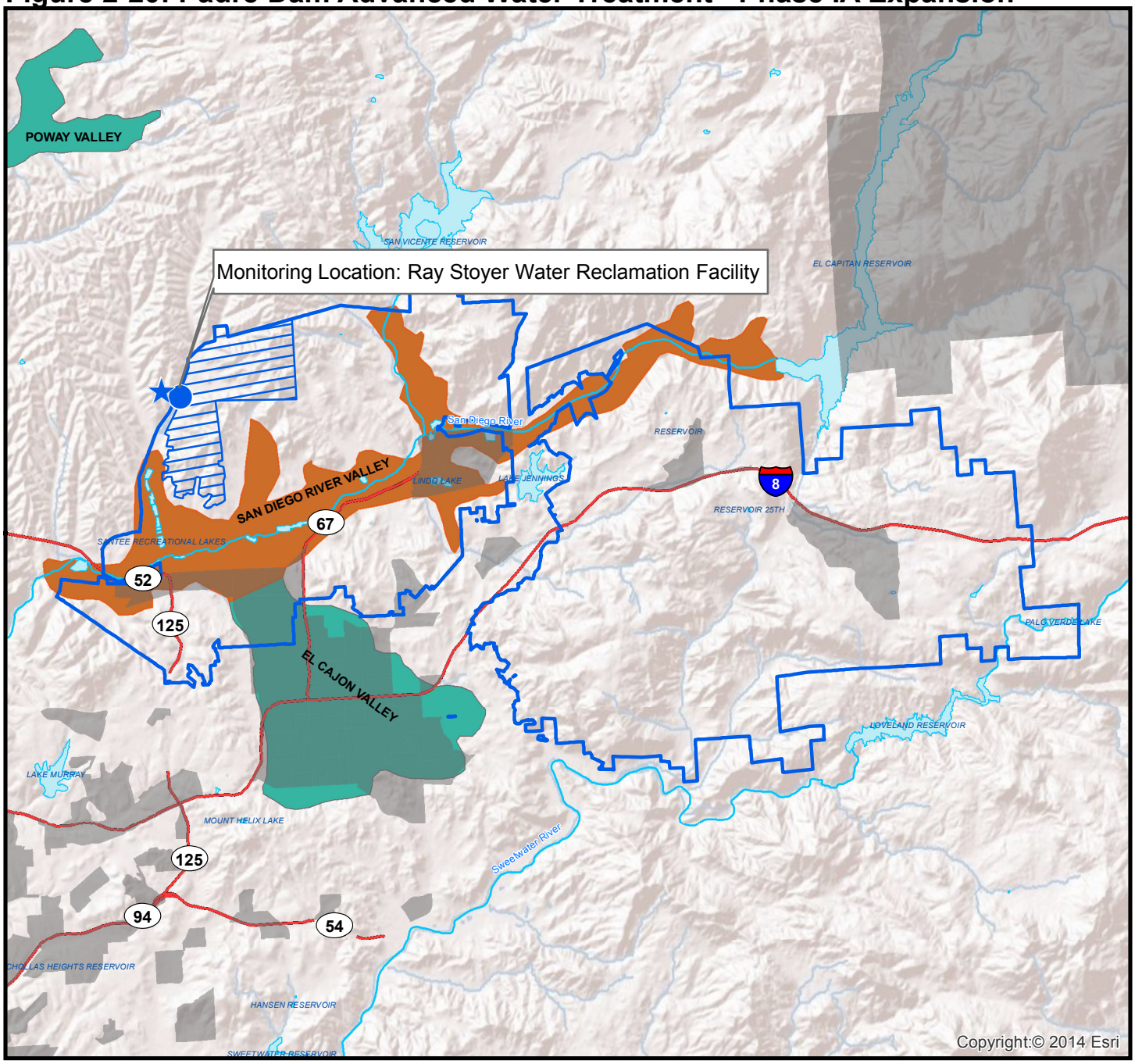
1. The existing Influent Pump Station (IPS) capacity will be increased from 2 mgd to 6 mgd by replacing existing pumps with higher capacity pumps and piping configuration.
2. A new headworks and grit facility will be constructed, and sized for the expansion. Three new primary clarifiers, identical to the two existing clarifiers, will be constructed.
3. The existing biological treatment process will be converted to provide nitrification and denitrification using a Modified Ludzack-Ettinger (MLE) process. The conversion will allow achieving 6 mgd of treatment within the existing secondary treatment process tanks.
4. Existing tertiary treatment train will be expanded by 1 mgd to have a total treatment capacity of to 6 mgd.
5. Sludge and brine produced at Ray Stoyer WRF will be trucked to nearby Sycamore Landfill for final disposal.

Upon completion of the WRF expansion, 0.9 mgd of additional recycled water will be used at Fanita Ranch, which is a 2,600-acre, multiuse planned development located in the northwest portion of the City of Santee, between Fanita Parkway and Cuyamaca Street. The development includes approximately 1,380 single-family residences, and a mix of other land uses including commercial, parks, open space, a 10-acre lake, and a fire station. Padre Dam MWD will provide water, recycled water, and wastewater collection services to the development. Recycled water will be used for the irrigation of the roadway medians, slopes, fire protection zones, and parks, and for lake recharge. Delivery of recycled water to the development will require additional new piping, storage reservoir, and pumping within the development boundary. Pumping capacity of the existing recycled water pump station located within Ray Stoyer WRF will need to be increased, along with pipeline connections to the pump station. These improvements are required to be covered by the developer according to Padre Dam MWD's Recycled Water Policy.[64] No improvements will be required to the existing recycled water pipelines.

Padre Dam MWD has partnered with Helix Water District, County of San Diego, and City of El Cajon to form the East County Regional Water Reuse Program. The objective of the program is to evaluate the feasibility of using the region's recycled wastewater for indirect potable reuse (IPR) as a new source for meeting future water demands. The program will be implemented in two phases. In Phase IA, the program will generate additional recycled water through a WRF expansion. In Phase IB, advanced water treatment will create a new source of potable water via groundwater recharge and extraction for potable use at Santee Basin; this will provide approximately 4% of the East County Regional Water Reuse Program partner's drinking water demand (2.2 mgd). Phase II of the program will increase that potable reuse supply to 24% by adding surface water augmentation at Lake Jennings Reservoir (11.6 mgd). This project also includes conducting a 3-dimensional hydrodynamic and water quality modeling of the reservoir at Lake Jennings. This model will be utilized to determine residence time and mixing for advanced treated water in the reservoir. Results will be used to assess the feasibility of Phase II of the East County Regional Water Reuse Program, which would utilize surface water augmentation for IPR.

[64] *Padre Dam MWD Rules and Regulations SECTION 3 CONSTRUCTION OF WATER AND SEWER SYSTEMS.*

Figure 2-20: Padre Dam Advanced Water Treatment - Phase IA Expansion



Coordinates: 32.88489, -116.99604

Legend

- Freeway
- Waterbody
- DAC Area*
- Medium Priority Groundwater Basin
- Very Low Priority Groundwater Basins
- Ray Stoyer Water Reclamation Facility
- Benefit Area: 9 Padre Dam Advanced Water Treatment - Phase IA Expansion
- Padre Dam Municipal Water District Service Area
- Monitoring Location

0 1.25 2.5 5

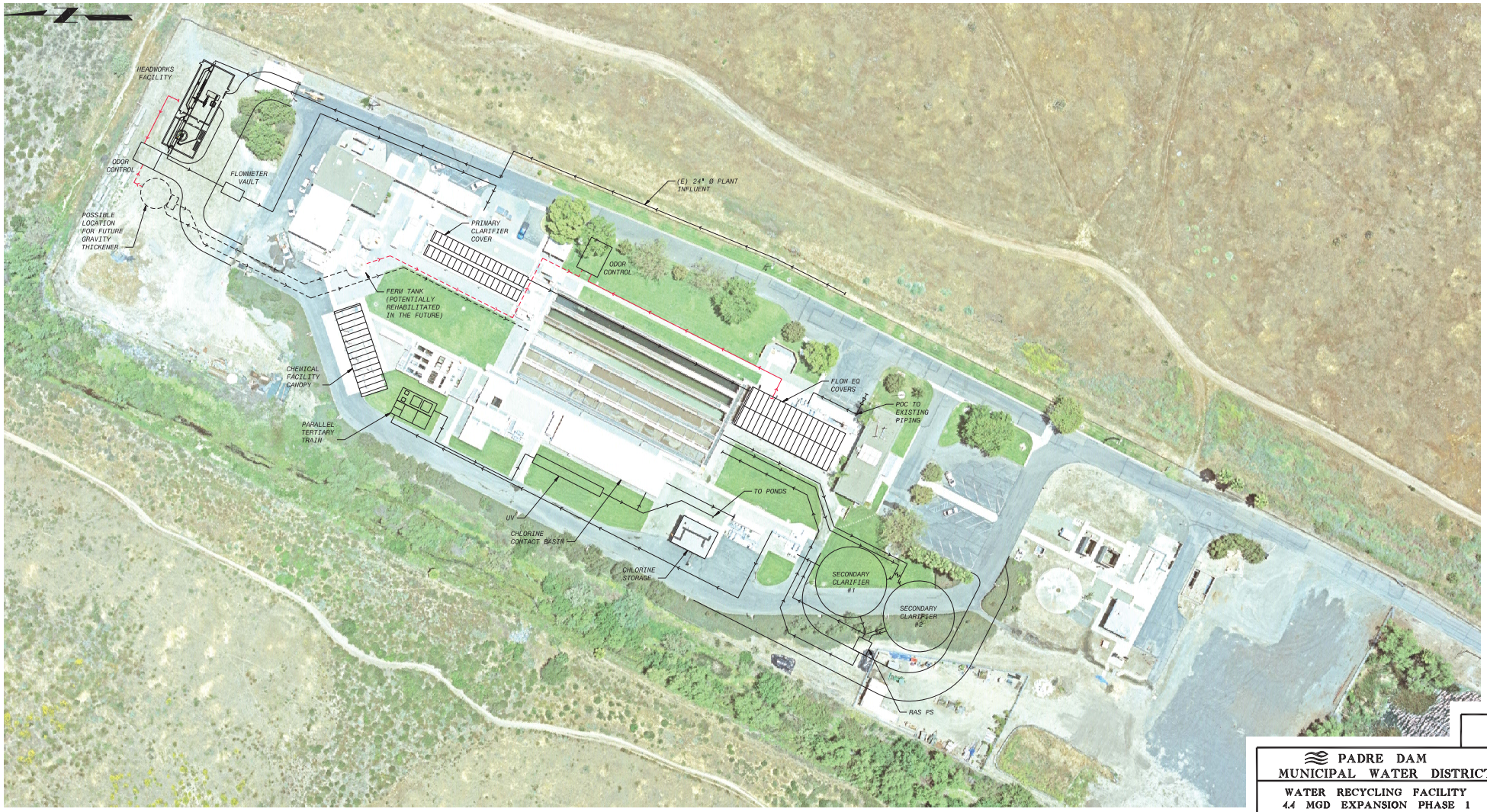
Miles

N

*Note: DAC as determined by census tract and block group data for the year 2013, from the American Community Survey 2009-2013 5-year results. DAC determined based on definition of median household incomes below 80% of the statewide MHI or $48,875.

Sources: U.S. Census 2013 ACS 5-year estimates; San Diego Association of Governments (SANDAG) - GIS Data Warehouse
Document Path: N:\Projects GIS\0188-003 SDIRWM Plan Update\Prop84_Rnd4\MXD\Project maps\2-10_PadreDProject28072015.mxd

Figure 2-21: Ray Stoyer Water Reclamation Facility Improvements - Phase IA



LEGEND:

- PROPOSED FOUL AIR PIPING
- FUTURE FOUL AIR PIPING
- PROPOSED LIQUID PROCESS PIPING
- FUTURE LIQUID PROCESS PIPING

50' 25' 0 50' 100'
1"=50'

Black & Veatch
San Marcos, California

DRAWING REFERENCES:

SIGNATURE OF THESE PLANS IS NOT A COMMITMENT TO SERVE

REV	DATE	DESCRIPTION	BY	APPD

DESIGN BY: | SCALE:
DRAWN BY: | CHECKED BY:
CONSTRUCTION MANAGER REVIEW: | DIRECTOR OF OPERATIONS AND WATER QUALITY REVIEW:
RECOMMENDED BY:

PADRE DAM MUNICIPAL WATER DISTRICT

WATER RECYCLING FACILITY
4.4 MGD EXPANSION PHASE 1

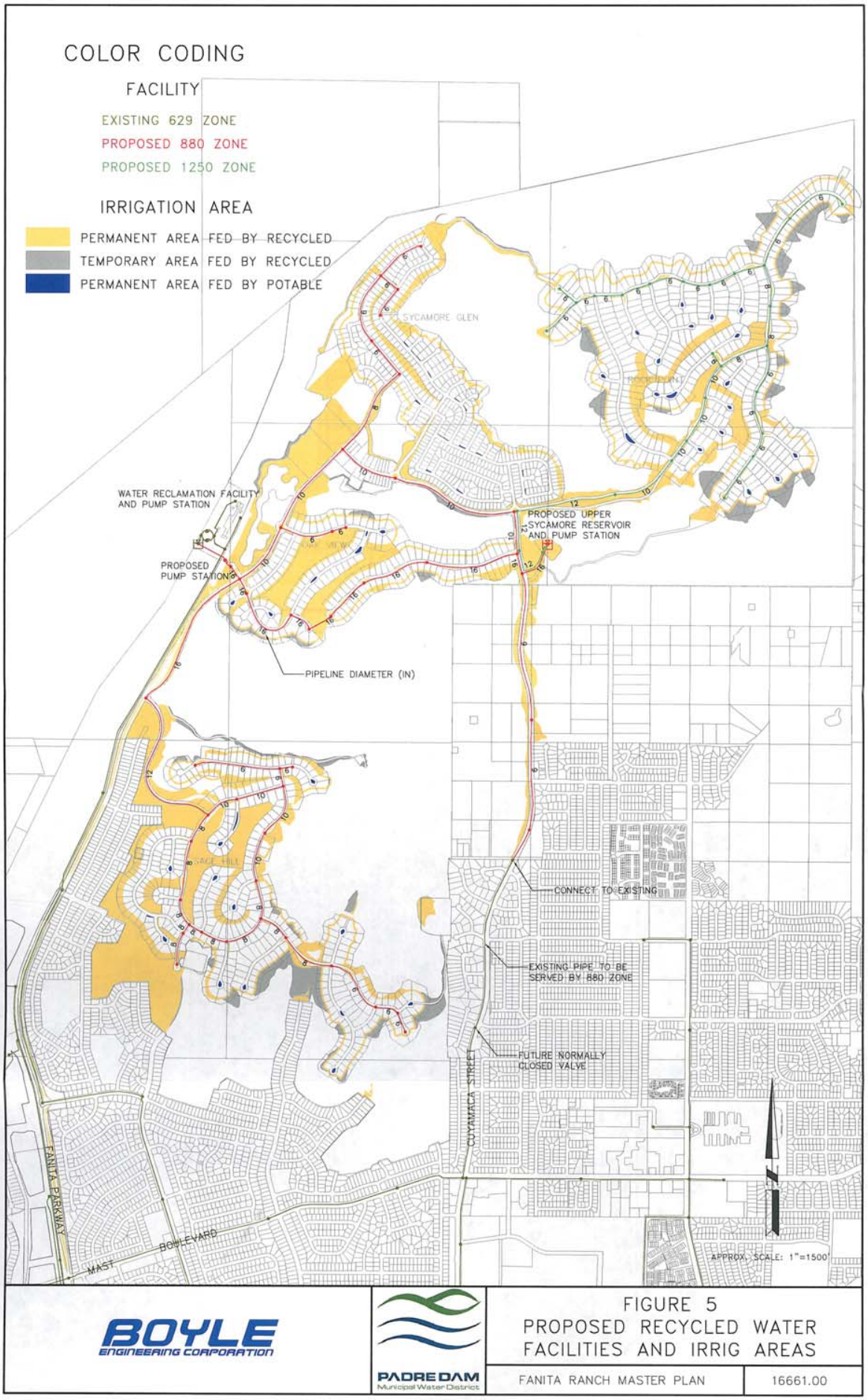
PARALLEL TRAIN MODE

DIRECTOR OF ENGINEERING AND PLANNING DATE
RCE # _____ EXP_____
SHEET OF XXX XXX
PLANS VALID FOR ONE YEAR FROM SIGNATURE

210014
JOB NO ID
DRAWING NO

$$$$$$$$$$$$$DGNSPEC$$$$$$$$$$$$$
$$$$$$$SYTIME$$$$$$ $DATE$ $$$$$$$USER$$$$$$ PEN TBL: $$$$PENTABLE$$$$

Figure 2-22: Fanita Ranch Development Recycled Water Pipelines



Project Physical Benefits

The two quantified physical benefits are (1) Water Supply in acre feet per year (AFY) and (2) Water Quality improvement for effluent discharge in mg/L. Creating a new source of water is important given the current ongoing drought, in that it is a drought-proof water supply that would fulfill the irrigation water demands of 1,008 AFY. The project would also decrease the total suspended solids (TSS) loading discharged to the Pacific Ocean at Point Loma WWTP.

The water supply benefit results from the expansion of the Ray Stoyer WRF and subsequent delivery of 0.9 mgd to Fanita Ranch. The anticipated useful life of the treatment plant expansion and piping is 60 years. The value of the water supply benefit (1,008 AFY) is based on the *Draft Fanita Ranch Water, Recycled, Water, and Wastewater Master Plan.* Over the course of the project life, this project will supply a total of 60,488 AF of recycled water.

Table 2-44: Primary Physical Benefit – Water Supply
Padre Dam Advanced Water Treatment – Phase IA Expansion

Project Name: *Padre Dam Advanced Water Treatment – Phase IA Expansion* **Type of Benefit Claimed:** Water Supply – Recycled municipal wastewater **Units of the Benefit Claimed:** AFY **Anticipated Useful Life of Project (years):** 60 years			
(a)	**(b)**	**(c)**	**(d)**
Year	**Without Project**	**With Project**	**Change Resulting From Project (c) – (b)**
2020-2079	0 AFY	1,008 AFY	1,008 AFY
Comments: The operation and delivery of 0.9 mgd of recycled water are anticipated to accrue when the Fanita Ranch development is complete and outdoor areas begin irrigation, which is planned for 2020. This analysis assumes that recycled water delivery to Fanita Ranch (Sycamore Glen, Oak View, and commercial areas) will begin in 2020 and extend for 60 years. Source: Boyle Engineering. *Draft Fanita Ranch Water, Recycled, Water, and Wastewater Master Plan*. October 2006. p10			

The water quality benefit results from the diversion of 0.9 mgd of wastewater effluent from the Point Loma WWTP and subsequent ocean discharge. This benefit is the water quality improvement for the 0.9 mgd that would have been sent to Point Loma WWTP, but is instead being used for irrigation and non-potable uses at Fanita Ranch development. The anticipated life of the project is the same 60 years as for the recycled water system operation. The value of the water quality benefit is based on the *Waste Discharge Requirements and National Pollutant Discharge Elimination System Permit for the City of San Diego E.W. Blom Point Loma Metropolitan Wastewater Treatment Plant Discharge to the Pacific Ocean Through the Point Loma Ocean Outfall* (WDR/NPDES Permit).

Table 2-45: Secondary Physical Benefit – Water Quality
Padre Dam Advanced Water Treatment – Phase IA Expansion

Project Name: *Padre Dam Advanced Water Treatment – Phase IA Expansion* **Type of Benefit Claimed:** Water Quality **-** TSS reduction in wastewater discharge **Units of the Benefit Claimed:** mg/L **Anticipated Useful Life of Project (years):** 60 years			
(a)	**(b)**	**(c)**	**(d)**
Year	**Without Project**	**With Project**	**Change Resulting From Project (c) – (b)**
2020-2079	75 mg/L	0 mg/L	-75 mg/L
Comments: 0.9 mgd of wastewater effluent will no longer reach the Point Loma WWTP once the Fanita Ranch recycled water system is operational, effectively reducing the concentration in that 0.9 mgd of flow from a maximum permitted concentration of 75 mg/L to 0 mg/L. The baseline is the maximum permitted concentration of TSS from the Point Loma WWTP under its current Waste Discharge Requirements (WDRs)/National Pollutant Discharge Elimination System (NPDES). This analysis assumes the diversion will offload Point Loma WWTP starting in 2020 and extend for 60 years. Source: San Diego-Regional Water Quality Control Board. 2009. *Order No. R9-2009-0001, NPDES No CA0107409, Waste Discharge Requirements and National Pollutant Discharge Elimination System Permit for the City of San Diego E.W. Blom Point Loma Metropolitan Wastewater Treatment Plant Discharge to the Pacific Ocean Through the Point Loma Ocean Outfall, San Diego County.* p13			

Technical Analysis of Physical Benefits Claimed

Project Need and Conditions

Padre Dam MWD receives 100% of its potable water from the San Diego County Water Authority (SDCWA). The District's total water supplies include 89% imported water from SDCWA and 11% recycled water.[65] All of the supplies from SDCWA are imported from the State Water Project (SWP) and Colorado River. The current drought has reduced allocations from the SWP to 20% for this year, up from 5% last year, and water reliability is a priority for the Region. The *2013 San Diego IRWM Plan* set a goal to diversify the Region's local water supply portfolio. Increasing recycled water production and use creates a new, drought-proof local supply.

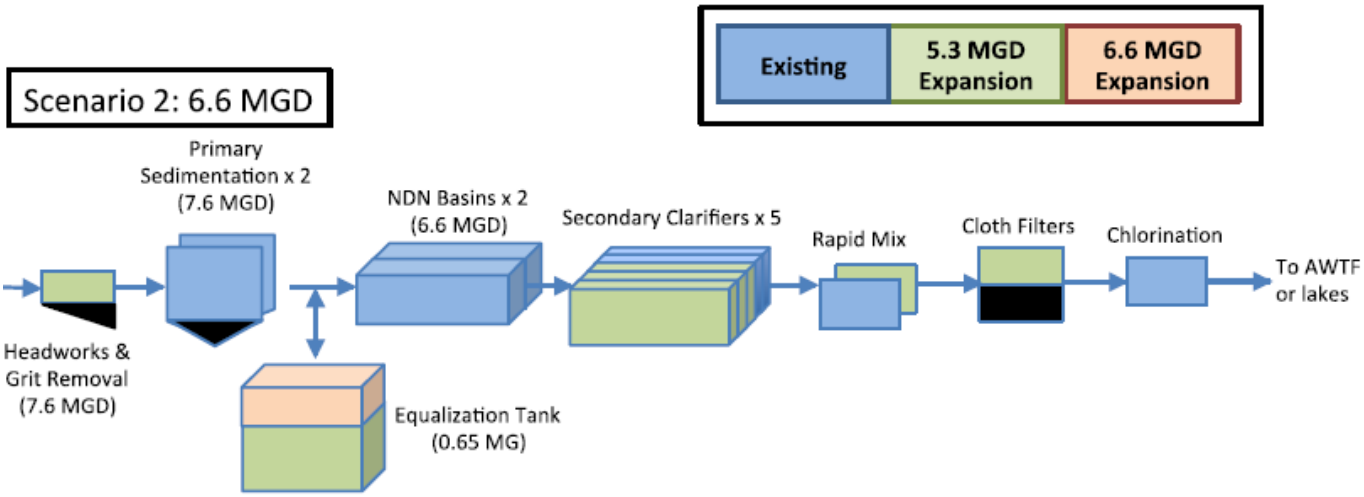
Wastewater collected within the Padre Dam MWD service area, which includes the City of Santee and portions of Lakeside and El Cajon, either flows to the Ray Stoyer WRF or passes through diversion structures that bypass flow to the City of San Diego's Metropolitan Sewer System (Metro System), where it is treated at the Point Loma WWTP and discharged to the Pacific Ocean. The City of San Diego is in the process of negotiating a revised WDR/NPDES permit with the RWQCB to maintain the existing waiver for discharge of primary effluent to the Pacific Ocean with the implementation of their Pure Water Program (potable reuse) that is anticipated to start by 2025. It will be critical for the City of San Diego to reduce wastewater flows to Point Loma WWTP and associated mass emissions to the Pacific Ocean within the timeline expected to be set by the RWQCB in order to avoid significant capital investment (for WWTP upgrades) and successfully implement the Pure Water Program, where up to 83 mgd of new water source would be generated through reservoir augmentation.

The expansion of the Ray Stoyer WRF will enable the Padre Dam MWD to produce and deliver up to 6 mgd of tertiary treated recycled water either to local non-potable customers or to a future IPR project. The *Ray Stoyer WRF Planning Study*,[66] prepared by Padre Dam MWD in 2014, evaluated how much additional flow could be treated by the Ray Stoyer WRF with minimal capital additions and increases in overall plant footprint. The Ray Stoyer WRF currently consists of primary sedimentation, biological nutrient removal (BNR), secondary clarification, and tertiary treatment. The tertiary effluent is discharged to the recreational Santee Lakes, and subsequently to the San Diego River, or sold to recycled water customers. The existing 2 mgd capacity of the facility is limited by strict nutrient removal requirements for live stream discharge. In the future, as Padre Dam MWD wishes to increase their production of IPR water, live stream discharge can be stopped and it may be

[65] Padre Dam MWD. 2011. *2010 Urban Water Management Plan*.
[66] Padre Dam MWD. 2014. *Ray Stoyer WRF Planning Study*. Prepared by Trussell Technologies, Inc.

possible to operate the existing biological basin without phosphorous removal. The two alternatives considered in the *Planning Study* included 1) expansion by retaining the existing BNR process and 2) expansion by converting the existing treatment process to nitrification/denitrification process. In both cases, the addition of bar screens and grit removal chambers prior to primary sedimentation is recommended. Additionally, flow equalization is recommended for both cases to provide constant flow to the BNR basins. The WRF expansion, as proposed in *Attachment 3 Work Plan*, will provide 6 mgd using the Scenario 2 treatment train. **Figure 2-23** shows a flow diagram of the proposed WRF expansion.

Figure 2-23: Flow Schematic of the Expanded Ray Stoyer WRF



Source: Padre Dam MWD. 2014. *Ray Stoyer WRF Planning Study*. Prepared by Trussell Technologies, Inc.

Padre Dam MWD has partnered with Helix Water District, County of San Diego, and the City of El Cajon to form the East County Regional Water Reuse Program. The objective of the program is to evaluate the feasibility of using the East County subregion's recycled wastewater for IPR as a new source for meeting future water demands. The program will be implemented in two phases. With Phase I, the program will generate a new source of potable water via groundwater recharge at Santee Subbasin (San Diego River Valley Groundwater Basin) to provide approximately 4% of the East County Regional Water Reuse Program partners' drinking water demands (2.2 mgd). This Proposal contains Phase IA of the program, which are the initial steps to developing a new source of advanced treated water for the East County. Phase II of the program will increase potable reuse supplies to meet 24% of the partners' demands by adding surface water augmentation at Lake Jennings Reservoir (10.8 mgd).

Although regulatory requirements governing groundwater replenishment with recycled water have been adopted (effective June 2014)[67], the regulatory framework for surface water augmentation is under development by the SWRCB's Division of Drinking Water, to be finalized by December 31, 2016.[68] The general form of the regulations has largely taken shape and provides important direction for potable reuse projects, such as future phases of the *Padre Dam Advanced Water Treatment – Phase IA Expansion*.

The Point Loma WWTP treats wastewater from the City of San Diego's Metro Wastewater System using primary treatment, and operates under a waiver. Given the past concerns regarding the permit, it is anticipated Point Loma WWTP will need to be upgraded to provide secondary treatment. To reduce the challenges and costs of a future upgrade, and/or delay the need for an upgrade, efforts are being made to reduce flows to Point Loma WWTP and to improve the quality of wastewater reaching the plant. This proposed project would offload 0.9 mgd of wastewater flow that is subject to ocean discharge under the waiver.

[67] State Water Resources Control Board. Division of Drinking Water's Recycled Water Information. http://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/RecycledWater.shtml
[68] State Water Resources Control Board. Division of Drinking Water's Recycled Water Information. http://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/RecycledWater.shtml

Without-Project Conditions

Without the *Padre Dam Advanced Water Treatment – Phase IA Expansion* project, the Ray Stoyer WRF would not be expanded. As such, the facility would remain at its tertiary capacity of 2 mgd, while continuing to discharge the remaining wastewater produced within the Padre Dam MWD service area into the City of San Diego's Metro System to be treated at the Point Loma WWTP for final discharge to the Pacific Ocean. Without this project, 0.9 mgd wastewater would continue to be conveyed to Point Loma WWTP, and would continue to be treated only to 75 mg/L TSS. Existing recycled water production would remain, with 1 mgd discharged to the recreational Santee Lakes and 0.8 mgd delivered to existing recycled water customers. There would be fewer local water supplies to offset potable water demands and imported water, if available, would continue to be purchased to meet the needs of the customers served by the project. The uncertainty associated with imported water supply reliability makes establishing local water sources imperative. Without this project, the benefits of having 100% recycled wastewater within the Padre Dam MWD service area could not be realized and other local water sources would need to be identified to meet future water needs.

Methods Used to Estimate the Physical Benefits

Primary Benefit – Water Supply

The primary benefit is creating and delivering recycled water supply (0.9 mgd or 1,008 AFY[69]) to be used for non-potable purposes. This recycled water will be created by the increase in capacity of the Ray Stoyer WRF from 2 mgd to 6 mgd of recycled water production.[70] The recycled water demand of 0.9 mgd comes from 641.5 gpm average annual demand for Fanita Ranch irrigation in the *Draft Fanita Ranch Water, Recycled Water, and Wastewater Master Plan*, thereby displacing potable water that would otherwise be used.

The *Master Plan* states that recycled water will be provided by the Ray Stoyer WRF, with a build-out irrigation demand of 2.5 AFY on roadway medians, slopes, fire protection zones, parks, and lake recharge. The proposed project includes recycled water service to the Sycamore pressure zone (880 Zone) only, as the Sycamore Glen, Oak View, and commercial areas will be completed first. The development will provide the required infrastructure improvements to directly connect into the existing recycled water distribution system. The connection will be at two points, one approximately a tenth of a mile from the development at a point off of the Fanita Parkway adjacent to the Ray Stoyer WRF and another on Cuyamaca Street. The Fanita Ranch developer will build the pipeline connections to the existing recycled water pump station located at the Ray Stoyer WRF.

$$0.9\ MGD * \frac{AF}{0.3259\ MG} * \frac{365\ days}{year} = \mathbf{1,008\ AFY}$$

Secondary Benefit – Water Quality

Based on the permitted TSS limits for Point Loma WWTP effluent discharge to the Pacific Ocean, the secondary benefit is a water quality improvement (-75 mg/L of TSS[71]) of 0.9 mgd wastewater effluent discharges from Padre Dam MWD to Point Loma WWTP. The 0.9 mgd of recycled water would be distributed to Fanita Ranch has an associated reduction in 0.9 mgd flow to the City of San Diego's Metro Wastewater System which ends up treated at the Point Loma WWTP for final discharge to the Pacific Ocean. According to the effluent limitations contained in the Point Loma WWTP's current WDR/NPDES Permit (Order No. R9-2009-0001), the monthly average TSS concentration in effluent to the Pacific Ocean is 75 mg/L and annual average TSS loading is 13,599 metric tons per year. Offloading 0.9 mgd of wastewater from Point Loma WWTP would reduce Padre Dam MWD's contribution of discharges to the Pacific Ocean by 0.9 mgd at a TSS concentration of 75 mg/L. This reduction is important for the region as the City of San Diego is in the process of negotiating a revised WDR/NPDES permit with the RWQCB to maintain the existing waiver for discharge of primary effluent to the Pacific Ocean with the implementation of their Pure Water Program (potable reuse). It will be critical for the City of San Diego to reduce wastewater flows

[69] Boyle Engineering Corporation. *Draft Fanita Ranch Water, Recycled Water, and Wastewater Master Plan*. October, 2006.
[70] Padre Dam MWD. *Padre Dam Water Recycling Facility Expansion Project, Phase 1: Basis of Design Workbook*. August, 2012. Prepared by Black & Veatch.
[71] San Diego-Regional Water Quality Control Board. 2009. *Order No. R9-2009-0001, NPDES No CA0107409, Waste Discharge Requirements and National Pollutant Discharge Elimination System Permit for the City of San Diego E.W. Blom Point Loma Metropolitan Wastewater Treatment Plant Discharge to the Pacific Ocean Through the Point Loma Ocean Outfall, San Diego County.*

to Point Loma WWTP and therefore to reduce TSS mass emissions to the Pacific Ocean within the timeline expected to be set by the RWQCB in order to successfully implement the Pure Water Program.

$$75\frac{mg}{L} reduction\ in\ TSS\ for\ 0.9\ mgd\ no\ longer\ discharged\ from\ Point\ Loma\ WWTP\ to\ the\ Pacific\ Ocean$$

New Facilities, Policies, and Actions Required to Obtain Physical Benefits

The physical benefits of the *Padre Dam Advanced Water Treatment – Phase IA Expansion* will require construction of all the project components. The existing Influent Pump Station (IPS) pumping capacity will be increased from 2 mgd to 6 mgd by replacing existing pumps will be replaced with higher capacity pumps to provide total pumping capacity of 6 mgd. A new headworks and grit facility will be constructed, and sized for the expansion. Three new primary clarifiers, identical to the two existing clarifiers, will be constructed. The existing biological treatment process will be converted to provide nitrification and denitrification using a MLE process. Existing tertiary treatment train will be expanded to generate additional 1 mgd of recycled water. Screenings removed at the Ray Stoyer WRF will be trucked to nearby Sycamore Landfill for final disposal. Sludge produced at the facility will continue to be discharged in the City of San Diego's Metro Wastewater System and treated at the Point Loma WWTP. Design, permitting, and construction of these project components will be completed.

Delivery of recycled water to Fanita Ranch will require additional new piping and pumping within the development boundary. These improvements are required to be covered by the developer according to Padre Dam MWD's Recycled Water Policy.[72] Padre Dam MWD has completed the *Draft Fanita Ranch Water, Recycled Water, and Wastewater Master Plan* identifying needed system improvements to serve the development. All agreements and policies are in place for the water use agreements between Padre Dam MWD and Fanita Ranch.

Potential Adverse Physical Effects of the Project and Mitigation

There may be temporary environmental impacts during expansion of the Ray Stoyer WRF and other project components. Noise, air quality, and traffic impacts could result from construction activities. Mitigation measures included in the Mitigated Negative Declaration will address all of these potential concerns and ensure that the project will not have a significant impact on the environment.

Diversion of wastewater flows from the Metro System could have unforeseen impacts on the City of San Diego's Pure Water Program, however, as facility sizing is currently underway based on existing and projected flows in that system. Construction of reservoir augmentation facilities and conveyance piping will need to consider the future 10.8 mgd diversion expected with the East County Regional Water Reuse Program.

In the future, Padre Dam MWD intends to implement potable reuse projects that route wastewater flows for advanced treatment and ultimate delivery into the potable drinking water system. Continued expansion of the non-potable water distribution system could result in near-term construction-related adverse impacts, and then lie as stranded assets if tertiary treated water is no longer available to customers. However, Padre Dam has committed to continue recycled water deliveries to its customers in order to offset potable demands during the drought and while potable reuse regulations are still being developed and adopted. In the future, this Ray Stoyer WRF expansion will become part of the larger Reuse Program.

Long-Term Drought Preparedness

This project will promote long-term drought preparedness by helping to achieve three methods in Table 1 of the *2015 Guidelines*: recycling, reuse, and development of a potential new local potable water source via potential future surface water augmentation at Lake Jennings. The project will increase recycled water use by providing 0.9 mgd recycled water to the Fanita Ranch Development, offsetting potable demands for irrigation and other non-potable purposes. Both of these actions contribute to long-term drought preparedness by diversifying local water supplies and offsetting potable supplies, which are 100% imported supplies in the Padre Dam MWD service area. A diversified water supply helps to provide a buffer against impacts from potential reductions in imported water delivery. Unlike local surface water, recycled water is a drought-proof supply, and would be available even during times of drought.

[72] *Padre Dam MWD Rules and Regulations SECTION 3 CONSTRUCTION OF WATER AND SEWER SYSTEMS.*

Direct Water-Related Benefit to DACs

The *Padre Dam Advanced Water Treatment – Phase IA Expansion* project will indirectly address DAC needs in the areas of affordable water costs and lack of information about water, though the project area is only 11% DAC by population (see **Table 7-1** in *Attachment 7 Disadvantaged Communities*). Increases in water rates can disproportionately affect DACs compared to non-DACs within Padre Dam MWD's service area because they have fewer financial resources to accommodate increases to the costs of basic needs – in this case water. As identified in the *2013 IRWM Plan*, outreach efforts may not reach DACs, and extra effort should be made to ensure that outreach and education is also provided to DACs and their residents. Water rate benefits will be realized because the project will increase local water supply reliability, which helps to protect against water rate increases associated with the need for expensive water supply alternatives. Outreach efforts for this project will be directed to everyone served by Padre Dam MWD, including DAC residents. However, because this outreach will not be targeted specifically to DACs, the outreach benefit is considered indirect.

Project Performance Monitoring Plan

Benefits of the *Padre Dam Advanced Water Treatment – Phase IA Expansion* project will accrue as described in **Tables 2-44** and **2-45** above. **Table 2-46** describes the methods that will be used to measure the quantified benefits of this project. Padre Dam MWD will monitor water supply benefits by collecting and reporting monthly recycled water meter data for Fanita Ranch. Padre Dam MWD will report water quality benefits by calculating the reduction in wastewater effluent to Point Loma WWTP and the TSS concentration of ocean discharges.

Table 2-46: Project Monitoring for *Padre Dam Advanced Water Treatment – Phase IA Expansion*

Proposed Physical Benefits	Measurement Tools and Methods	Targets
Water Supply	Padre Dam MWD will provide monthly recycled water water meter data for Fanita Ranch common areas, including roadway medians, slopes, fire protection zones, parks, and lake recharge. Padre Dam MWD will report on when each new meter comes online and begins irrigation.	0.9 mgd (1,008 AFY)
Water Quality Improvement	Padre Dam MWD will provide effluent water quality (TSS) data for ocean discharges from Point Loma WWTP, along with flow monitoring data for wastewater effluent sent to the Metro System. This will be used, in concert with recycled water supplied to customers by the expanded Ray Stoyer WRF, to calculate the reduction in TSS concentration discharged to the Pacific Ocean attributable to this project.	75 mg/L reduction in TSS (Note: TSS concentration may fluctuate based on Point Loma WWTP treatment performance)

Cost Effectiveness Analysis

The *Padre Dam Advanced Water Treatment – Phase IA Expansion* project will achieve two quantifiable physical benefits described in the sections above, and summarized in **Table 2-44 and 2-45**. During project development, alternatives to the preferred project included in this application were considered and, ultimately, rejected. **Table 2-47** provides a cost effectiveness analysis consistent with Table 7 of the *2015 PSP*.

Table 2-47: Cost Effective Analysis for *Padre Dam Advanced Water Treatment – Phase IA Expansion*

Cost Effective Analysis	
Question 1 Physical Benefits Summary	*Types of benefits provided as shown in Table 2-44 and 2-45.* Water Supply – 1,008 AFY of recycled water Water Quality – 75 mg/L TSS removed from ocean discharge
Question 2 Alternatives Considered	*Have alternative methods been considered to achieve the same types and amounts of physical benefits as the proposed project been identified?* Yes
	If no, why? If yes, list the methods (including the proposed project) and estimated costs. The *Ray Stoyer WRF Facility Planning Study* was completed in July 2014.[73] The purpose of this study was to determine the maximum expansion capacity of the WRF within its current footprint. Two WRF expansion alternatives were evaluated: 1) expansion by retaining the existing BNR process and 2) expansion by converting the existing treatment process to MLE process. No project cost estimate was performed as part of this study because this was a capacity/ footprint-focused feasibility study rather than a cost-based feasibility study.
Question 3 Preferred Alternative	*If the proposed project is not the least cost alternative, why is it the preferred alternative? Provide an explanation of any accomplishments of the proposed project that are different from the alternative project or methods.* The proposed project is the least cost alternative. The *Ray Stoyer WRF Facility Planning Study* determined that Alternative 1 achieves a maximum treatment capacity of 5.3 mgd, while Alternative 2 achieves 6.6 mgd within the existing WRF footprint. Alternative 2 was selected for the proposed project since 6 mgd of treated water required for the proposed project can be produced with Alternative 2 within the existing WRF boundary. Alternative 2 allows the Padre Dam MWD to expand treatment capacity of the existing WRF without expanding the treatment plant footprint by using the existing concrete structures with some mechanical modifications and adding more tankage. This is the more cost-effective option as compared to Alternative 1 where additional land purchase would be required in addition to comparable process improvements.

[73] Padre Dame MWD. 2014. *Ray Stoyer WRF Planning Study*. July. Prepared by Trussell Technologies.

Project 10: Safari Park Drought Response and Outreach

Local Project Sponsor: Zoological Society of San Diego
Partner: San Diego Unified School District and San Diego County Office of Education

Project Summary

The project will achieve potable water savings through turf conversion and expansion of existing wastewater treatment facility to reclaim and reuse wastewater at Safari Park.

Project Maps

Figure 2-24 shows the *Safari Park Drought Response and Outreach* project area, the service areas of the project sponsor, the project facilities and the project's relation to groundwater basins and surface water, disadvantaged communities (DACs) and proposed monitoring locations. **Figure 2-25** shows where each type of irrigation conversion will occur at the Safari Park, along with the location of the turf conversion.

Water education programs are provided to local schools at the Safari Park

Safari Parks' existing wastewater treatment plant

Irrigation conversions have been installed in much of the Safari Park already

Project Description

The *Safari Park Drought Response and Outreach* project will achieve potable water savings through turf conversion and associated irrigation efficiencies, and expand the existing wastewater treatment facility to reclaim and reuse wastewater for non-potable use at the Safari Park. The project will offset 72 acre-feet per year (AFY) potable water, and improve water quality returned to the San Pasqual Valley Groundwater Basin.

Founded in 1916, the not-for-profit Zoological Society of San Diego (Zoological Society) is a conservation organization dedicated to the science of saving endangered plant and animal species worldwide. As the largest zoo-based multidisciplinary research organization in the world, the Zoological Society operates three world-class facilities: San Diego Zoo; San Diego Zoo Safari Park; and San Diego Zoo Institute for Conservation Research. Together, these facilities are home to 4,000 rare and endangered animals representing more than 800 species and more than 700,000 exotic plants. More than 5 million people visited the Zoo and Safari Park in 2014, with an economic impact on the San Diego region at nearly $900 million in 2014.

The Safari Park is a 1,800 acre leasehold from the City of San Diego, generally surrounded by open space to the north end and agricultural-zoned land to the south.[74] The Safari Park contains several animal enclosures, botanical gardens, visitor attractions, and research facilities. The major attraction for Park visitors is the Africa Tram tour. A 30 minute expedition around the large African animal habitats in an open-air, covered vehicle along a 2.4 mile, 13-ft wide roadway. These free-range habitats house antelopes, giraffes, buffalo, cranes, and rhinoceros. The tram tour exposes the visitors to the natural habitat of the majority of the Park's diverse animal species.

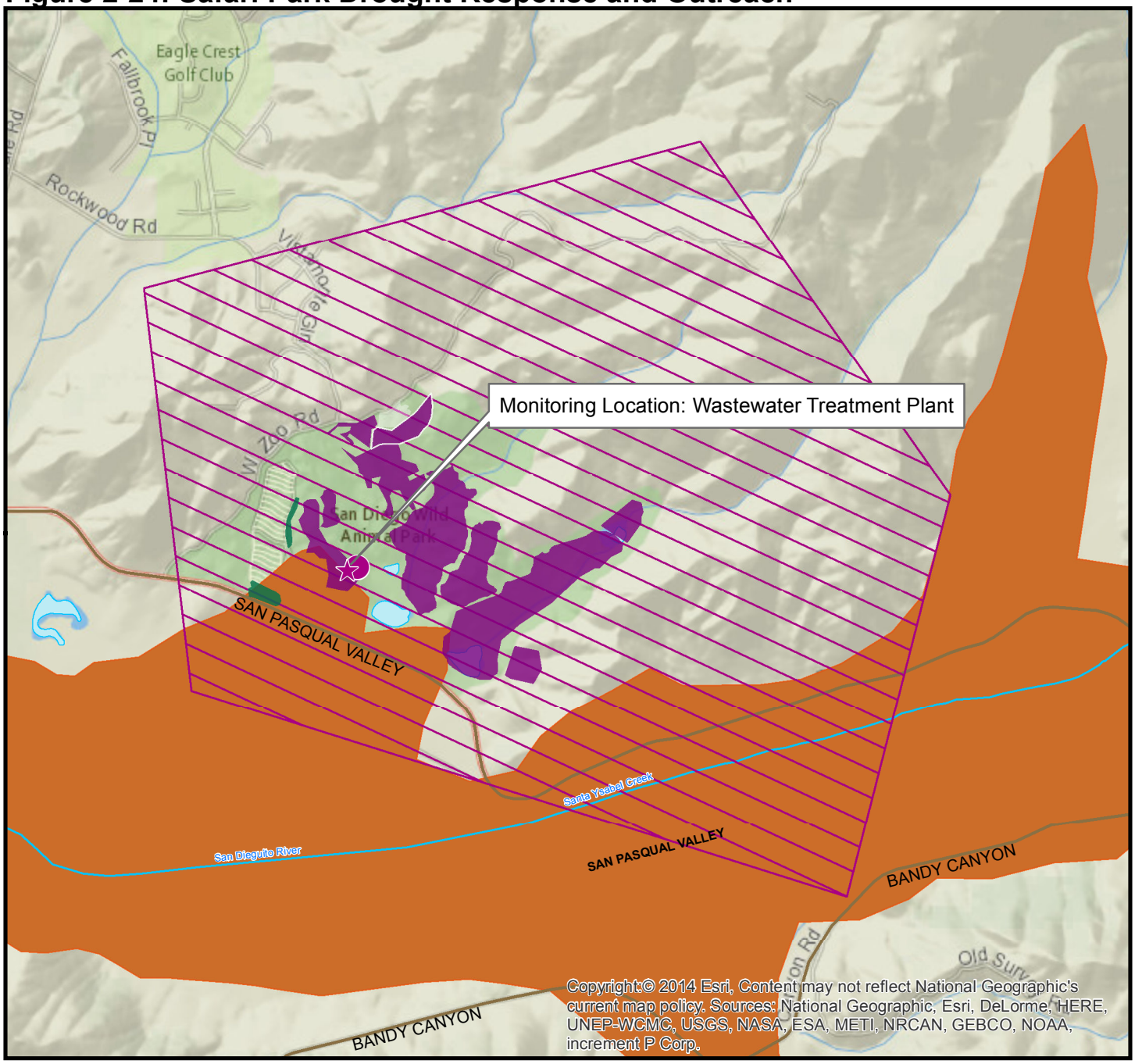
The Zoological Society is committed to protecting the San Diego Region's valuable water resources through the implementation of projects that will improve water quality and reduce local water consumption. The project goal is to eliminate the need for imported potable water at Safari Park to irrigate--a direct response to California Governor Jerry Brown's mandate to cut water consumption by 25%. This project will save 72 AFY at the Safari Park by:

1) *Removing 2.9 acres of irrigation intensive turf area and replacing it with themed water-wise landscaping* – turf removal will be focused in areas with high visibility to best communicate the Zoological Society's commitment to a conservation ethic.
2) *Upgrading the existing on-site wastewater treatment plant (WWTP) from secondary to tertiary treatment* – this upgrade would enhance process treatment for the current average discharge rate of 0.075 million gallons per day (mgd), with the ability to expand tertiary treatment capacity in the future to 0.150 mgd. Both domestic sewage and surface pond water would be treated using membrane treatment for exhibit and irrigation use.
3) *Connecting existing effluent producing areas to the upgraded system* – the WWTP expansion will be designed to accept pumped flows from the Heart of Africa (HOA) Pond and the South Africa Pond during "off-peak" periods for reducing solids and sulfates in the pond water.
4) *Constructing new pipelines and pumps to distribute tertiary-treated recycled water within the Park* – treated water will be reused either for irrigation on portions of the Park that currently use potable water, or for direct return back to the HOA and South Africa Ponds with the intent of improving the pond water quality and animal health.
5) *Increasing storage and management of the newly tertiary treated water* – the surface elevation of the Reclamation Pond will be increased to better manage recycled water for irrigation.

This project will enable the Safari Park to become more sustainable, cost-effective, and energy efficient. By tertiary treating wastewater at the Park, the project would improve the quality of water that flows back into the San Pasqual Valley Groundwater Basin and Hodges Reservoir by removing bacteria, dissolved, and suspended solids. This project will provide water conservation messaging and outreach to more than 5 million annual guests to the Safari Park, members of the Zoological Society, thousands of students and teachers at hundreds of disadvantaged San Diego County schools, and more than 23 million online visitors. The Zoological Society will partner with the San Diego Unified School District to provide hands-on water education and conservation programs to 48,850 students from disadvantaged schools throughout San Diego County through the Save Our Aquatic Resources (SOAR) Program and the Price Watershed Program. The Zoological Society also will offer an extensive outreach program, including tours, to various stakeholders, including disadvantaged community groups, non-profit organizations, water agencies, and community and agricultural groups.

[74] The Zoological Society of San Diego. 2006. *San Diego Wild Animal Park Draft Water Master Plan*.

Figure 2-24: Safari Park Drought Response and Outreach



Coordinates: 33.09649, -116.99831

Legend

- Waterbody
- Major Roads
- DAC Area*
- Medium Priority Groundwater Basin
- Benefit Area: 10 Safari Park Drought Response and Outreach
- Safari Park Wastewater Treatment Plant
- Safari Park Irrigation Conversions
- Safari Park Turf Replacement
- ★ Monitoring Location

0 0.2 0.4 0.8

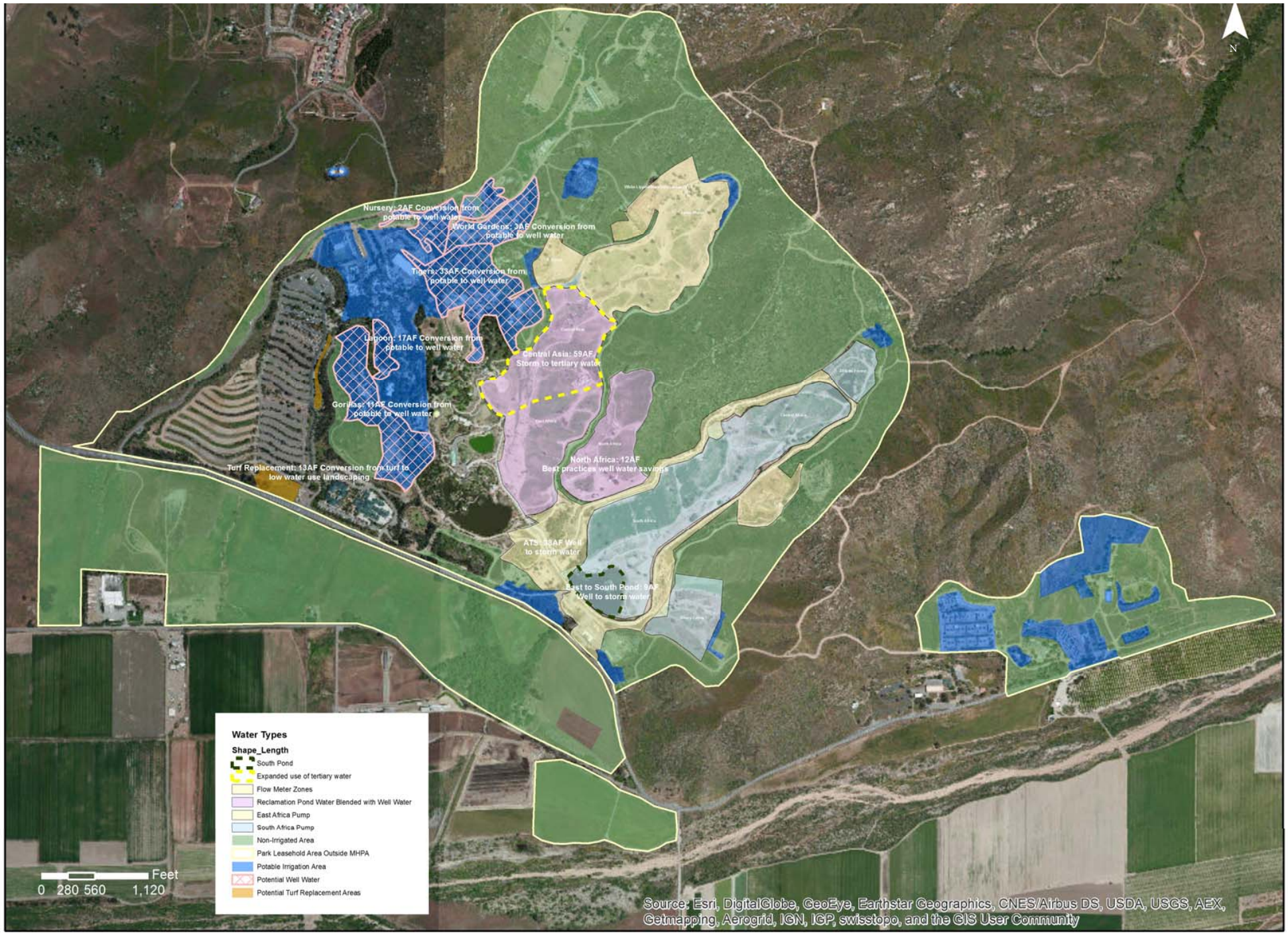
Miles

N

*Note: No DAC were found within or near the project area, therefore no DACs are displayed on this map.

Sources: U.S. Census 2013 ACS 5-year estimates; San Diego Association of Governments (SANDAG) - GIS Data Warehouse
Document Path: N:\Projects GIS\0188-003 SDIRWM Plan Update\Prop84_Rnd4\MXD\Project maps\2-11_SafariPProject29072015.mxd

Figure 2-25: Proposed Irrigation Changes at the San Diego Zoo Safari Park



Project Physical Benefits

The primary (Water Supply) and secondary (Water Quality improvement) benefits of the *Safari Park Drought Response and Outreach* project are described in Tables 2-5 and 2-6 below.

The primary benefit of this project is a drought-proof recycled water supply that will allow for more sustainable operation of the Safari Park. This is achieved through maximizing use of this new locally-produced recycled water source and implementing multiple irrigation conversions that shift existing Park demands from potable water sources. In addition, the water savings from conversion of turf to water-wise landscaping will increase supply resiliency through decreased demand on potable water sources. The baseline water use was calculated as amount of potable water currently being used in the Safari Park irrigation system. According to Safari Park staff, the Safari Park purchases 501.57 AFY potable water from the City of Escondido.[75] The anticipated useful life of the WWTP expansion is 60 years and the irrigation conversions is 20 years. For the purposes of this analysis, a useful life of 20 years was used. The value of the benefit (72 AFY) was based on information provided by Safari Park staff, calculated from a combination of flow meters, controller schedules, and fill valves. Over the 20-year project life, the *Safari Park Drought Response and Outreach Project* will offset 1,440 AF of potable water.

Table 2-48: Primary Physical Benefit – Water Supply
Safari Park Drought Response and Outreach Project

Project Name: *Safari Park Drought Response and Outreach*
Type of Benefit Claimed: Water Supply – Potable Water Saved
Units of the Benefit Claimed: AFY
Anticipated Useful Life of Project (years): 20 years

(a)	(b)	(c)	(d)
Year	**Without Project**	**With Project**	**Change Resulting From Project (c) – (b)**
2018	502 AFY	466 AFY	-36 AFY
2019-2037	502 AFY	430 AFY	-72 AFY
2038	502 AFY	466 AFY	-36 AFY

Comments: The project schedule shows completion of irrigation conversions and tertiary water production in mid-2018. This half-year benefit would occur at the end of life as well, assuming a 20 year life of project. Without project baseline is shown as total current potable water purchases by the Safari Park from the City of Escondido.

Sources: Pers. Comm. Robyn Badger and Charles Fleuret. Zoological Society of San Diego. "Water Grant Savings Worksheet_2015-06-26.xls"

The water quality benefit of decreased nitrate loading to the HOA and East Africa Ponds will significantly improve surface water quality, ensuring that neither nitrates nor sulfates harm the health of animals that have access to the water. Data collected by the Safari Park following the first major rain event of the year shows that during storm events, nutrient-loaded surface water can overflow from the East Africa Pond offsite to Santa Ysabel Creek and downstream to Hodges Reservoir, exacerbating eutrofication in those surface waters.[76] The baseline water quality was based on the existing nitrate concentration in the HOA Pond, as reported in the Safari Park's *Water Master Plan*. The anticipated useful life of this water quality improvement is 60 years, which is the assumed lifetime of the WWTP expansion. The value of the benefit (-7.1 mg/L) was calculated based on information from a reverse osmosis (RO) vendor, Severn Trent Services, on nitrate removal efficacy.[77]

[75] Pers. Comm. Robyn Badger and Michael Ahlering. Zoological Society of San Diego. Email. 24 July 2015.
[76] Pers. Comm. Robyn Badger. Zoological Society of San Diego. Email. 3 August 2015.
[77] Severn Trent Services. *Tetra® Denite®*. https://www.severntrentservices.com/Wastewater_Treatment_Tertiary_and_Wastewater_Treatment_Systems/TETRA__Denite__prod_379.aspx Note: Used a lower-bound estimate of performance based on case-studies.

Table 2-49: Secondary Physical Benefit – Water Quality
Safari Park Drought Response and Outreach Project

Project Name: *Safari Park Drought Response and Outreach* **Type of Benefit Claimed:** Water Quality - Nitrate Reduction **Units of the Benefit Claimed:** mg/L **Anticipated Useful Life of Project (years):** 60 years			
(a)	**(b)**	**(c)**	**(d)**
Year	**Without Project**	**With Project**	**Change Resulting From Project (c) – (b)**
2018-2077	8.64 mg/L	1.55 mg/L	-7.1 mg/L
Comments: Water quality benefit will go into effect mid-2018 upon completion of the WWTP expansion, and end mid-2077. The water quality improvement will be constant throughout that timeframe. Without project baseline water quality was based on the existing nitrate concentration in the HOA Pond, as reported in the Safari Park's *Water Master Plan*. Sources: Zoological Society of San Diego. 2006. *San Diego Wild Animal Park Draft Water Master Plan*. February 2006. pg. 3-10 *Penn State. Nitrates in Drinking Water.* http://extension.psu.edu/natural-resources/water/drinking-water/water-testing/pollutants/nitrates-in-drinking-water Severn Trent Services. *Tetra® Denite®*. https://www.severntrentservices.com/Wastewater_Treatment_Tertiary_and_Wastewater_Treatment_Systems/TETRA__Denite__prod_379.aspx Note: Used a lower-bound estimate of performance based on case-studies.			

Technical Analysis of Physical Benefits Claimed

Project Need and Conditions

The project is a targeted response to California Governor Jerry Brown's mandate to reduce potable water use by 25% statewide. The Safari Park receives potable water from the City of Escondido in the City's 900 Zone. The City of Escondido's water supply is 15% local surface water, 10% recycled water, and 75% from San Diego County Water Authority (SDCWA), which sells primarily imported water.[78] As part of the State Water Resources Control Board's emergency conservation regulations, in response to the Governor's mandate, the City of Escondido was directed to reduce potable water use by 20% through February 2016. Both recycled water development and conservation would contribute to an offset of potable use and would help the City of Escondido achieve compliance with State mandates. Matching quality of water to appropriate types of use throughout the Safari Park (and the Region) is imperative to saving potable water for more critical use by the Region's population.

The Safari Park's existing WWTP is located northwest of the NOA exhibit, hidden from Park visitors. The WWTP is permitted by the *Waste Discharge Requirements (WDRs) for the Zoological Society of San Diego , San Diego Wild Animal Park, San Diego County* (Order No. 99-04, Addendum #1) to discharge up to 0.150 mgd of "disinfected secondary-23 recycled water" to restricted use sites. Current treatment averages about 0.075 mgd, with a peak rate of about 0.100 mgd. The WWTP consists of a headworks facility, a flow equalization basin, extended aeration and sedimentation basins, chlorine contact tank, sludge holding tank, and a sludge drying bed.[79] Raw wastewater enters the WWTP through the headworks, then enters the aeration tank. Effluent from the aeration tank passes over weirs to the settling basins. After clarification in the settling basins, the effluent flow is measured in a weir box before entering the chlorine contact tank for chlorine solution disinfection. Disinfected secondary effluent is conveyed to a manhole, then to the Reclamation Pond for storage before being disposed by spray irrigation in specific areas in the East and North Africa Plains animal exhibits. This spray use is area restricted from public access per the WDRs.

[78] City of Escondido. 2011. *2010 Urban Water Management Plan*.
[79] The Zoological Society of San Diego. 2006. *San Diego Wild Animal Park Draft Water Master Plan*.

Sludge from the aeration tank is wasted to the sludge aeration tank for aerobic digestion. The aeration blowers for the digester are periodically stopped so that the effluent can be routed to the chlorine contact tank and excess sludge pumped to the sludge drying beds. After drying, the sludge is disposed by a waste hauler to a landfill.[80]

Many of the existing Safari Park ponds are unsightly with, at times, associated unpleasant odors. The dense dark green pond water is indicative of the large algae population caused by high nutrient loadings from animal waste. The HOA Pond and South Africa Pond currently perform as a treatment lagoon to stabilize organic wastewater loads.[81] Biological degradation of settled organic solids occurs in the anaerobic pond bottoms, and nutrients released by bacteria are then used by algae in photosynthesis. However, the ponds were not designed to provide wastewater treatment and, therefore, operate poorly giving rise to odors and high coliform levels. Although animal water troughs are replenished with potable water, the animals routinely drink from the ponds. As a result, improving water quality in the ponds and streams is of high priority for the Safari Park staff.

Surface water quality within the San Dieguito River watershed is impacted by runoff from residential, commercial, industrial, and transportation land uses. Pollutants of concern within the watershed include nutrients, pathogens, salinity, pesticides, metals/metalloids, and other organics.[82] The San Pasqual Valley groundwater basin is typically recharged via infiltration of precipitation and excess irrigation waters. Data collected by the Safari Park following the first major rain event of the year shows that during storm events, nutrient-loaded surface water can overflow from the East Africa Pond offsite to Santa Ysabel Creek and downstream to Hodges Reservoir, exacerbating eutrofication in those surface waters.[83] Hodges Reservoir is on the Clean Water Act 3030(d) list for color, manganese, nitrogen, pH, phosphorus, mercury, and turbidity. Proposed treatment and storage improvements will allow the Zoological Society to filter stored water in onsite ponds, thereby improving the quality of water that percolates through onsite drainages back into the groundwater basin and ultimately to downstream surface waters.

The San Diego IRWM Region recognizes the importance of protecting water quality in Santa Ysabel Creek/San Dieguito River and Hodges Reservoir, because of its purpose as a drinking water reservoir and its ongoing water quality issues. The Zoological Society has a proven track record with the California Department of Water Resources (DWR) and SDCWA through construction of the *Safari Park Biofiltration Wetland and Education Project*, funded through a Prop 50 IRWM grant, which also contributed to water quality improvement from the Park's onsite ponds.

Without-Project Conditions

Without the *Safari Park Drought Response and Outreach Project*, the Safari Park's WWTP would continue to produce 0.075 mgd of secondary-23 recycled water. Currently, the quality of the treated water dictates that it only be used for irrigation within a limited area and the amount of treated water exceeds the irrigation needs for the limited area in which this water can be used. All remaining animal exhibit and landscape areas would continue to be irrigated with potable water and groundwater. Additionally, during wet weather events, the Reclamation Pond storing the treated water can overflow into the watershed, causing nitrogen loading to the groundwater basin and local surface waters (including Hodges Reservoir). Turf areas would not be replaced with water-wise landscaping, and would continue to require large amounts of potable water for irrigation. The current water conservation outreach education would not be expanded to reach more people, including school groups from DACs.

Without expansion of the WWTP, the Zoological Society would need to identify an alternate solution to managing the water quality of the HOA and East Africa Ponds. Blending of pond water with groundwater (pumped from onsite wells) or potable water (from City of Escondido) could help to dilute pollutants within the ponds; however, this solution would not remove nutrients and pathogens like RO treatment will. Additionally, this potential alternative would increase potable demands for the Park. The Zoological Society would continue to purchase potable water from the City of Escondido, to the tune of at least 502 AFY, which does not incorporate the potential increase in potable demands that could be required for alternative solutions to manage water quality of the HOA and East Africa Ponds. Over the 25-year project life, this totals 12,539 AF.

[80] The Zoological Society of San Diego. 2006. *San Diego Wild Animal Park Draft Water Master Plan*.
[81] The Zoological Society of San Diego. 2006. *San Diego Wild Animal Park Draft Water Master Plan*.
[82] San Diego RWMG and RAC. 2013. *2013 San Diego IRWM Plan*.
[83] Pers. Comm. Robyn Badger. Zoological Society of San Diego. Email. 3 August 2015.

Methods Used to Estimate the Physical Benefits

Primary Benefit – Water Supply

The primary physical benefit is 72 AFY of conserved water and recycled water supply, which is the sum of 66 AFY of recycled water to be used for animal exhibits and landscape irrigation and 6 AFY of conservation from turf conversions. Expansion of the WWTP and production of tertiary-treated recycled water will offset the use of potable water purchased through City of Escondido for irrigation and exhibit uses.

The project will convert multiple landscape and exhibit areas from groundwater or pond water to recycled water, then convert other exhibit areas from potable sources to groundwater, along with a suite of other irrigation efficiency measures. Following all of these conversions, the Safari Park will achieve a potable water reduction of 66 AFY by reconfiguring its onsite irrigation system and maximizing the new recycled water supply. The following table identifies each of the irrigation conversions that are planned, as provided by Safari Park staff.[84]

Table 2-50: Proposed Irrigation Conversions for *Safari Park Drought Response and Outreach Project*

	Gallons	AFY	Data Source
Pond Water Saved (To be Served by Recycled Water)			
Central Asia – Pumzika Point, Electric Road	16,264,800	59	Controller Schedules
Total Recycled Water Served		*59 AFY*	
Groundwater Saved (Offset by Conservation or Pond Water)			
Turf Reduction – reduced irrigation demands	4,395,060	13	Controller Schedules
African Tram System – to be served by East Africa Pond	12,321,612	38	Flow meter
East to South Pond – to be served by South Africa Pond	2,880,000	9	Fill Valve
North Africa – implement irrigation efficiencies	3,834,000	12	Controller Schedules
Total Groundwater Saved		*72 AFY*	
Potable Water Saved (To to be Served by Groundwater)			
Tigers – Tiger Trail, Protea Garden, Condor Ridge, Conifer	10,731,882	33	Flow meter/ Controller Schedule
Gorillas – Aloe Hill, Bird Show, Chidren's Playground, Samburu, Upper HOA	3,628,155	11	Controller Schedules
Nursery – Nursery, Shade House, Greenhouse	750,850	2	Controller Schedules
World Gardens – Baja, Native Plant, OW Succulent, Mum Racks	954,450	3	Controller Schedules
Lagoon-Main Lagoon	5,419,629	17	Flow meter/estimate
Total Potable Water Saved		*66 AFY*	

The conservation savings achieved through replacement of turf with water-wise (xerophytic) landscaping will offset groundwater pumped from onsite wells. The Safari Park estimates that approximately 167,000 square feet (sq ft) of turf will be replaced with waster-wise plantings. Following the turf removal project, savings are anticipated to be 4,395,060 gallons per year or 13.0 AFY, based on estimates from Park staff.[85] This is slightly lower than, but within reasonable range of, the annual water savings that are estimated in the CUWCC report on lessons learned from turf removal[86] (approximately 34 gallons per square foot, which would be 17.5 AFY).

[84] Pers. Comm. Robyn Badger and Charles Fleuret. Zoological Society of San Diego. "Water Grant Savings Worksheet_2015-06-26.xls"
[85] Pers. Comm. Robyn Badger and Charles Fleuret. Zoological Society of San Diego. "Water Grant Savings Worksheet_2015-06-26.xls"
[86] CUWCC. 2015. *Turf Removal & Replacement: Lessons Learned*. March.

With the production of a new recycled water supply and implementation of the irrigation conversions described above, the Safari Park will ultimately offset 66 AFY in potable water demands from the City of Escondido and 6 AFY in groundwater pumping.

$$(72\ AFY\ Groundwater\ Savings - 66\ AFY\ New\ Groundwater\ Demand) = \mathbf{6\ AFY\ Net\ Groundwater\ Savings}$$

$$66\ AFY\ Potable\ Water\ Savings\ + 6\ AFY\ Net\ Groundwater\ Savings\ = \mathbf{72\ AFY\ Water\ Supply\ Conserved}$$

Secondary Benefit - Water Quality

The secondary physical benefit of the *Safari Park Drought Response and Outreach* project is removal of 7.1 mg/L of nitrate (NO_3) in the Heart of Africa (HOA) Pond. This benefit comes from the treatment of HOA Pond water with RO in the upgraded WWTP treatment train. RO technology is reported to achieve at least 82%[87] of nitrate-nitrogen removal through membrane filtration. Upgrading the WWTP to tertiary treatment will also improve water quality by removing additional bacteria, dissolved and suspended solids, and sulfates, in addition to nutrients, thereby allowing it to be discharged to the HOA and East Africa Ponds and applied in areas currently irrigated by potable water and/or groundwater.

According to the Safari Park's *Water Master Plan*, the historical HOA Pond water nitrogen concentration was 1.95 mg/L as nitrate-nitrogen[88] or 8.64 mg/L as nitrate. The RO treatment would reduce the HOA Pond water nitrate concentration to 1.55 mg/L of nitrate-nitrogen, removing 7.1 mg/L of nitrate.

$$8.64\frac{mg}{L}NO3 * 82\%\ RO\ removal\ efficiency = \mathbf{7.1}\frac{\boldsymbol{mg}}{\boldsymbol{L}}\ \boldsymbol{NO3\ reduction}$$

New Facilities, Policies, and Actions Required to Obtain Physical Benefits

The physical benefits of the *Safari Park Drought Response and Outreach* project will require construction of all the project components. New equipment and facilities to be constructed include upgrading the existing secondary WWTP to tertiary include an RO membrane treatment system, a new 120,000 sq ft evaporation pond, and a 4-inch linear foot (LF) PVC brine line. A new 1 horsepower (HP) pump, two 4-inch 600 LF PVC piping will be installed from the WWTP to the HOA Pond, as well as an intake structure. A new 0.5 HP low-head pump will be installed from the East Africa Pond to the HOA Pond. Irrigation conversions include a total of 4,860 LF of conduit to be converted to accommodate recycled water for irrigation. The Safari Park will need to obtain an updated WDRs for distribution of tertiary treated recycled water onsite, but that is also included in *Attachment 3 Work Plan*. No additional facilities, policies, or actions are necessary to obtain the project's physical benefits.

Potential Adverse Physical Effects of the Project and Mitigation

Implementation of the *Safari Park Drought Response and Outreach* project may produce temporary adverse impacts associated with construction and expansion of the treatment facility and other project components. However, these are anticipated to be minor and short-term in nature. The *Safari Park Drought Response and Outreach* project is incorporated in the Safari Park Future Construction Program Resource Protection Ordinance (RPO) Permit LDRNO: 99-0153 SCH#99081105; the certified Environmental Impact Report (EIR) includes implementation of BMPs included in the Park's WDRs to ensure that downstream water quality impacts are minimized.

[87] Severn Trent Services. *Tetra® Denite®*. https://www.severntrentservices.com/Wastewater_Treatment_Tertiary_and_Wastewater_Treatment_Systems/TETRA__Denite__prod_379.aspx Note: Used a lower-bound estimate of performance based on case-studies.
[88] Zoological Society of San Diego. 2006. *San Diego Wild Animal Park Draft Water Master Plan*. February 2006.

Long-Term Drought Preparedness

The *Safari Park Drought Response and Outreach* project will help to achieve long-term drought preparedness by employing three methods from Table 1 of the *2015 Guidelines*: conservation, reuse and recycling, and long-term reduction of water use. Conversion from turf to water-wise landscaping will directly conserve water by reducing irrigation needs. Upgrades to the Safari Park's WWTP will increase the level of treatment for recycled water production, enabling additional applications and use of the recycled water produced at the WWTP, and expanding the Safari Park's delivery of recycled water. Coupled with the outreach and education that will be implemented by this project, a long-term reduction in water use will be achieved. This long-term reduction will be achieved by influencing individuals to change their water-use behaviors, making water conservation a habitat and instilled value (which makes it likely to become long-term behaviors). Further, the Safari Park's converted landscaping is anticipated to be protected into perpetuity, and no changes are anticipated that would lead to an increase in water use.

Direct Water-Related Benefit to DACs

Although this project does not meet the definition of a DAC project as provided by DWR in the *2015 PSP* (see *Attachment 7 Disadvantaged Communities*), it does provide some benefits to DACs, indirectly meeting three of the urban DAC needs identified in the *2013 IRWM Plan*:[89] funding, water rates, and outreach. As described in the *2013 IRWM Plan*, outreach to DACs is critical to affecting water conservation behaviors of residents of DACs, who do not always receive the same level of appropriate outreach and education opportunities as non-DACs. The *Safari Park Drought Response and Outreach* project's outreach and education will reach DACs through school programs and visits to the Safari Park and its website by DAC residents. The project will also reach a large number of non-DAC individuals and communities. There is no reasonable method for breaking down the visitor population to DAC and non-DAC populations due to the large volume of non-local visitors. Further, the outreach portion of the project, which will reach DACs, would be indirect because it is not specifically targeted to DACs, and will reach many more non-DACs than DACs. In addition to DAC Outreach, the Safari Park Drought Response and Outreach project will indirectly provide protection against water rate increases by improving water supply reliability in the Region, which helps to buffer against water rate hikes associated with securing additional water supplies. Funding will be provided for educational programs that will reach students from DACs. These students attend schools that may not be able to pay additional fees to attend such programs. Providing funding for programs through this grant reduces the need to charge, or amount of, participation fees for schools who would like to attend the education programs.

Project Performance Monitoring Plan

Benefits of the *Safari Park Drought Response and Outreach* project will accrue as described in **Tables 2-48** and **2-49** above. **Table 2-51** describes the methods that will be used to measure the quantified benefits of this project. The Zoological Society will monitor water supply benefits by collecting and reporting monthly non-potable water meter data for the landscape irrigation. The Zoological Society will collect and report water quality data from the influent and effluent piping at the WWTP.

[89] RWMG. 2013. 2013 San Diego Integrated Regional Water Management Plan. September.

Table 2-51: Project Monitoring for *Safari Park Drought Response and Outreach*

Proposed Physical Benefits	Measurement Tools and Methods	Targets
Water Supply	The Zoological Society will monitor water supply benefits by collecting and reporting monthly non-potable water meter data for the landscape irrigation that has been converted from potable sources (Tigers, Gorillas, Nursury, World Gardens, and Lagoon). The Zoological Society will also provide before and after water meter records for the irrigated areas where turf will be replaced, along with 10 years of meter records showing the maintenance of lower water demands.	66 AFY of non-potable use from irrigation conversions 13 AFY of conservation from turf conversions
Water Quality Improvement	The Zoological Society will collect and report monthly water quality data from the influent and effluent piping at the WWTP, consistent with the reporting submitted to the Regional Water Quality Control Board per the WDRs.	7.1 mg/L reduction in NO_3 concentration

Cost Effectiveness Analysis

The *Safari Park Drought Response and Outreach* project will achieve two quantifiable physical benefits described in detail in the sections above, and summarized in **Table 2-48 and 2-49**. During project development, alternatives to the preferred project included in this application were considered and, ultimately, rejected. **Table 2-52** provides a cost effectiveness analysis consistent with Table 7 of the *2015 PSP*.

Table 2-52: Cost Effective Analysis for *Safari Park Drought Response and Outreach*

Cost Effective Analysis	
Question 1 Physical Benefits Summary	*Types of benefits provided as shown in Table 2-48 and 2-49.* Water Supply – 72 AFY of potable water offset Water Quality - 7.1 mg/L NO_3 reduction
Question 2 Alternatives Considered	*Have alternative methods been considered to achieve the same types and amounts of physical benefits as the proposed project been identified?* Yes
	If no, why? If yes, list the methods (including the proposed project) and estimated costs. The Safari Park's *Water Master Plan* (Chapter 5) contains a list of 25 projects that would address water resource issues within the Park. Projects were identified to: reduce potable water consumption, improve water quality in exhibit ponds, enhance water circulation to maintain a dry season flow in streambeds, decrease erosion on plains, improve reliability of the irrigation system, and improve animal welfare. Each of the projects met one or a combination of these objectives. Both the WWTP expansion (estimated $2.05 million) and South Africa Pond water quality improvements (estimated $470,000; includes additional measures not in this project) were determined to be high priority projects. Project costs for the 25 projects ranged from $30,000 to $2.05 million.
Question 3 Preferred Alternative	*If the proposed project is not the least cost alternative, why is it the preferred alternative? Provide an explanation of any accomplishments of the proposed project that are different from the alternative project or methods.* No, the proposed project is not the least cost alternative. However, the WWTP expansion will provide the Safari Park with 1) the ability to provide supplemental source of irrigation and reduce potable water consumption, 2) reduced dependency on the groundwater-fed irrigation system, 3) potential water savings of up to 150,000 gpd at full treatment plant capacity and will provide unrestricted use of recycled water, and 4) improved water quality in the Reclamation Pond will enhance the visitor experience, as well as improve animal health. All of these benefits make the project a clear priority for the Park.

Water Quality and Habitat Program

Project 11: San Diego River Healthy Headwaters Restoration

Local Project Sponsor: U.S. Forest Service (USFS)
Partners: American Conservation Experience (ACE), City of San Diego, Back Country Land Trust (BCLT), San Diego River Park Foundation (SDRPF), San Diego River Conservancy, Animal and Plant Health Inspection Service (APHIS), and County of San Diego

Project Summary

The project includes invasive species removal, restoration, and rehabilitation of impacted sites in the San Diego River watershed to improve habitat, water supply, and quality.

Project Maps

Figure 2-26 shows the *San Diego River Healthy Headwaters Restoration* area, the service areas of the project sponsor, the project facilities and the project's relation to groundwater basins and surface water, disadvantaged communities (DAC) and proposed monitoring locations. **Figure 2-27** shows the level of infestation and precise reaches that invasive species are known or presumed to exist that will be treated through this project.

Erosion (left) and invasive weeds (right) at impacted sites in the El Capitan Catchment

Pre- (left) and post- (right) invasive weed removal by USFS

Project Description

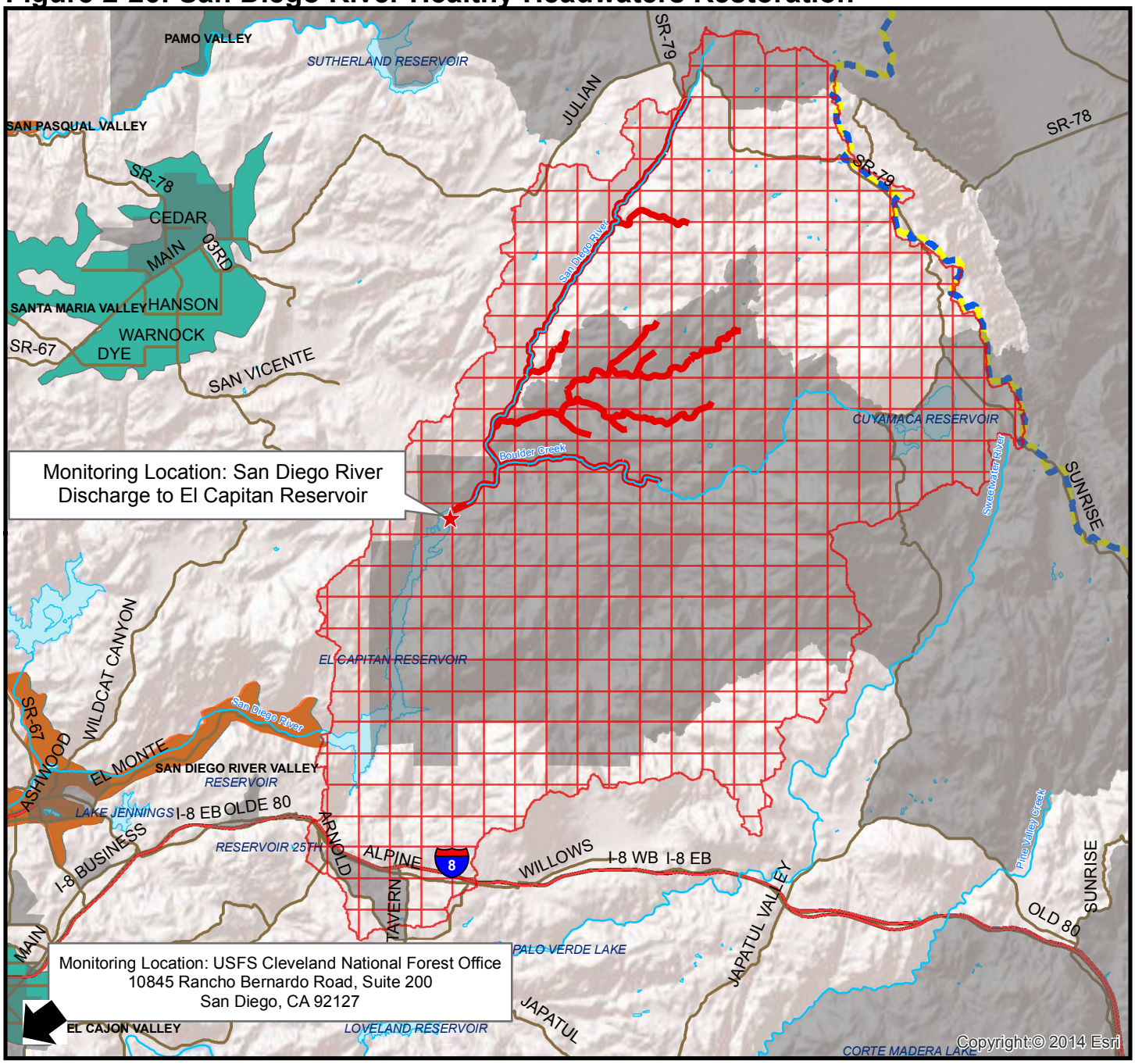
The *San Diego River Healthy Headwaters Restoration* project includes invasive species removal and addresses unauthorized trails, routes, and sites. These activities will improve water quality, enhance riparian habitats, restore hydrologic function, reduce fire hazard, and reduce anthropogenic sediment contribution from sites within the El Capitan Reservoir catchment of the larger San Diego River (SDR) watershed. Since the invasive species that will be removed consume and evapotranspirate significantly higher volumes of water than native species, the project will have a significant water supply benefit.

The first project component is invasive weed removal in the El Capitan Reservoir catchment across land owned by the City of San Diego (City), cooperating private and Tribal entities, and USFS. The goal is to eliminate invasive plant seed sources. Invasive weeds can decrease water supply, are highly flammable, provide poor habitat and food for native species, and can be easily spread. Weed populations are known to exist throughout the catchment, although their specific location and density are less known. The City of San Diego will lead the effort to conduct a basin-wide assessment so as to strategically treat weeds throughout the catchment. A known arundo (*Arundo donax*) population of about 2.5 acres at the reservoir will be treated. Because of the terrain, USFS will simultaneously record and treat weed populations utilizing field crews and/or partnering with the American Conservation Experience (ACE) crews. The City will work with SDRPF to conduct weed treatments (primarily arundo) around El Capitan Reservoir. SDRPF will use volunteers to conduct much of the work, engaging the local population through stewardship opportunities. It will also conduct outreach to the various communities within the El Capitan Reservoir catchment. Methods will include one-on-one connections, information tables at community events, flyers, and targeted mailings. The main focus of SDRPF's education/outreach efforts will be to increase awareness, public knowledge, and participation in long-term watershed health and restoration efforts. BCLT will continue outreach, coordination, and treatment efforts within the Alpine community. They have been successful in engaging private landowners to treat invasive weeds, reduce fire hazards and restore impacted sites. To achieve long-term success and sustainability, it is imperative to engage the public and gain its support.

The second project component is invasive terrestrial and aquatic species removal. Invasive species such as feral pigs (*Sus scrofa*) destroy habitat through wallowing and rooting in riparian areas. The foraging and wallowing behavior of pigs can markedly increase the turbidity of water supplies, but more importantly, the pigs can transmit and excrete a number of infectious waterborne organisms that are pathogenic to humans. Feral pigs have a wide range of travel and have been observed from as far north as the SDR watershed down to the U.S.-Mexico border, across a variety of political jurisdictions. Potential problems for the SDR watershed include water contamination, trampling riparian habitat, bank destabilization, and increased sedimentation and detritus. The project will include oversight of treatment efforts to ensure treatments are being implemented and managed cooperatively. The aquatic species removal effort will include removal of detrimental, invasive aquatic species (e.g., bullfrogs [*Lithobates catesbeianus*] and green sunfish [*Lepomis cyanellus*]) above natural aquatic organism barriers. This is especially important because there are both threatened and endangered species and USFS sensitive species in the SDR watershed.

The third project component addresses unauthorized routes, hiking trails, and recreation sites located in the SDR watershed that are chronic sediment contributors, alter runoff, and have denuded slopes and sanitation issues. Restoration of impacted sites, decommissioning, and improving drainage on routes would improve hydrologic processes affected by the sites, reduce sedimentation and improve water quality and habitat. In total, there are 10 miles of routes and two acres of impacted area that will be addressed through this work plan, which total approximately 62 acres of habitat improved. The USFS will also improve public information kiosks at 4 sites (16 panels) to include information on water-wise gardening using native plants, tips on recreating to minimize watershed impacts, fire history of the SDR Watershed, and wilderness values in the SDR watershed.

Figure 2-26: San Diego River Healthy Headwaters Restoration



Coordinates: 32.88479, -116.7902

0 1.5 3 6

Miles

N

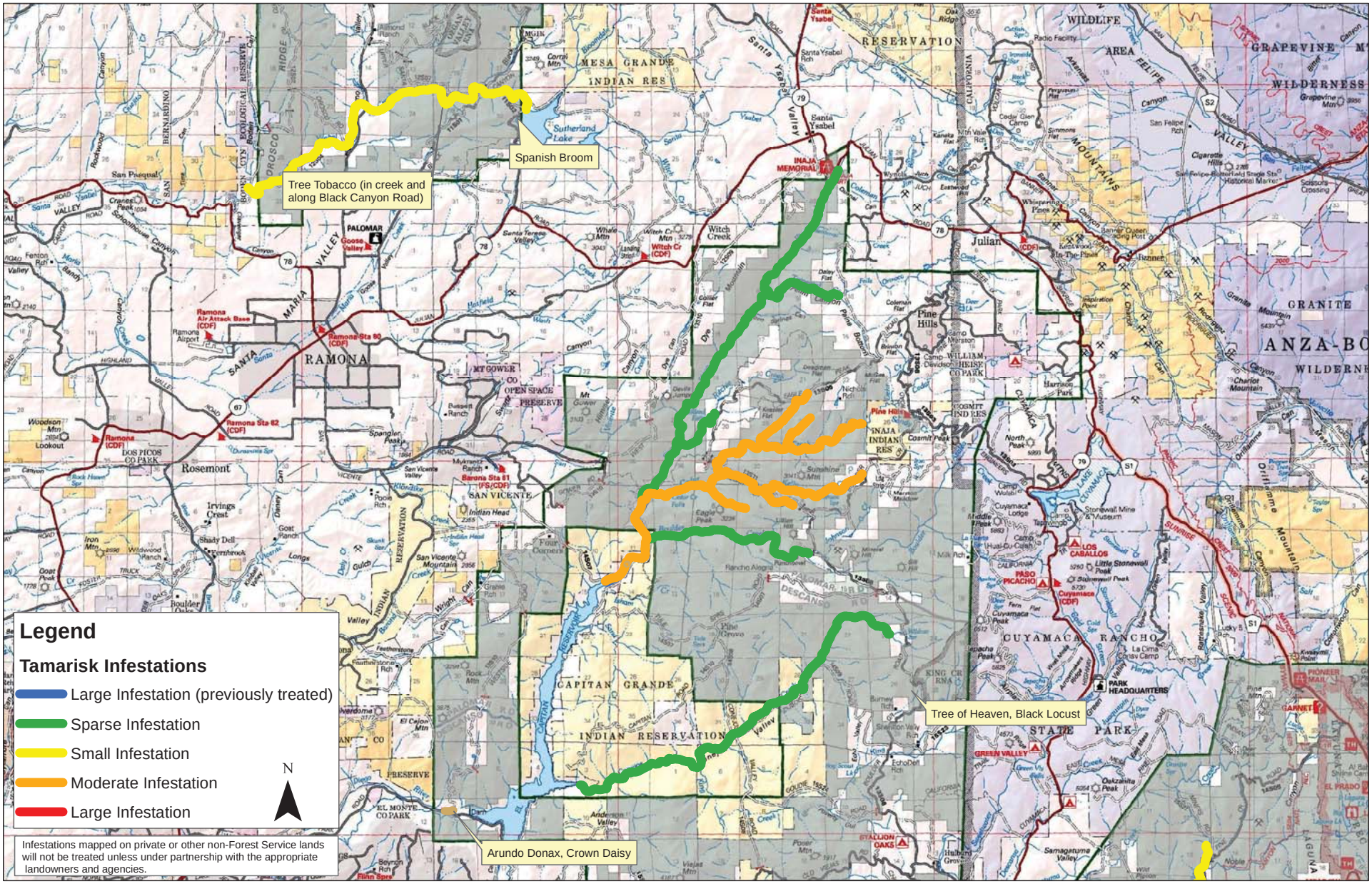
Legend

- San Diego IRWM Region
- Funding Area Boundary
- Freeway
- Waterbody
- DAC Area*
- Medium Priority Groundwater Basin
- Very Low Priority Groundwater Basin
- Benefit Area: 11 San Diego River Healthy Headwaters Restoration
- Monitoring Location
- Riparian Habitat Restoration

*Note: DAC as determined by census tract and block group data for the year 2013, from the American Community Survey 2009-2013 5-year results. DAC determined based on definition of median household incomes below 80% of the statewide MHI or $48,875.

Sources: U.S. Census 2013 ACS 5-year estimates; San Diego Association of Governments (SANDAG) - GIS Data Warehouse
Document Path: N:\Projects GIS\0188-003 SDIRWM Plan Update\Prop84_Rnd4\MXD\Project maps\2-12_USDAProject30072015.mxd

Figure 2-27: Cleveland National Forest Invasive Weed Management Planning Map - Palomar Ranger District



Project Physical Benefits

Tables 2-53 and **2-54** provide summaries of the primary (Habitat Improved) and secondary (Water Supply) physical benefits anticipated to be achieved through implementation of the *San Diego River Healthy Headwaters Restoration* project. The *San Diego River Healthy Headwaters Restoration* project will improve 335 acres of habitat, and increase water available for capture in El Capitan Reservoir by 1,988 AFY. These benefits will protect native species (including potential threatened and endangered species) and improve water supply reliability, while reducing conflicts between native species and human needs.

The primary physical benefit of the project is 335 acres of improved riparian and transitional habitat within the El Capitan Reservoir catchment of the San Diego River watershed. Improved native riparian habitat will occur through weed treatment and removal (primarily arundo (*Arundo donax*) and tamarisk (*Tamarix spp*.)), as well as restoration of unauthorized trails and related sites (addressing erosion and sedimentation) and removal of terrestrial and aquatic invasive species (such as feral pigs (*Sus scrofa*) and green sunfish (*Lepomis cyanellus)* and bullfrogs (*Lithobates catesbeianus*). The removal of weeds and other invasive species will allow for the rehabilitation of riparian habitat within the El Capitan Reservoir catchment, providing habitat for native species. Restoration of unauthorized sites will improve drainage and hydrologic processes, reduce sedimentation, and improve overall water quality and habitat. The anticipated useful life of the habitat improvements is greater than 50 years, assuming the partners will return within the first 2 years for retreatment (as is their practice). Previous restoration efforts by USFS have demonstrated that once weed seeds are removed from an area, reestablishment is avoided in the long-term. The value of this benefit (335 acres) was based on USFS and partner estimates of the land area that will be improved by invasive weed removal. Note that an additional 62 acres of Cleveland National Forest habitat will be improved through unauthorized site rehabilitation, which improves erosion and sedimentation within drainages, but they are *not* included in the Habitat Improved benefit in **Table 2-53** because they would not contribute to the Water Supply benefit in **Table 2-54**.

The baseline for this benefit was calculated as the acreage of riparian habitat improved to date by the project partners in the El Capitan Reservoir catchment; the benefit would then be the increase in habitat improved by this project. Thus far, three efforts have been identified that have removed invasive plant species on a total of 777 acres in the Cleveland National Forest: 1) USFS Cleveland National Forest division has removed 771 acres from 2008-2013,[1] 2) SDRPF is committed to improving 4.4 acres through removal of invasive plants adjacent to El Capitan Reservoir via a Prop 84-Round 2 IRWM grant,[2] and 3) BCLT has treated 2 acres of arundo on 15 different parcels of land. This baseline of 777 acres is currently our best estimate, given our knowledge of recent invasive species removal projects in the catchment.

[1] Cleveland National Forest. *Land Management Plan Monitoring and Evaluation Report-Fiscal Year 2013*. October 2014.
[2] RMC Water and Environment. *San Diego Integrated Regional Water Management: Implementation Grant Proposal – Round 2: Attachment 7-Technical Justification of Projects*. 3/27/2013.

Table 2-53: Primary Physical Benefit – Habitat Improved
San Diego River Healthy Headwaters Restoration

Project Name: San Diego River Healthy Headwaters Restoration
Type of Benefit Claimed: Habitat Improved – Through invasive weed removal
Units of the Benefit Claimed: Acres
Anticipated Useful Life of Project: >50 years

(a)	(b)	(c)	(d)
Year	**Annual Without Project**	**Annual With Project**	**Annual Change Resulting from Project (c) – (b)**
2011	777 acres	777.5 acres	0.5 acres
2012	777 acres	778 acres	1 acres
2013	777 acres	778.5 acres	1.5 acres
2014	777 acres	779 acres	2 acres
2015	777 acres	779.5 acres	2.5 acres
2016	777 acres	888 acres	111 acres
2017	777 acres	998 acres	221 acres
2018	777 acres	1,107 acres	330 acres
2019-2068	777 acres	1,112 acres	335 acres

Comments: The total area of improved habitat comes from direct and indirect habitat improvement from invasive weed treatment. The anticipated useful life of the project activities is greater than 50 years, assuming the partners will return within the first 2 years for retreatment (as is their practice). The baseline is calculated from the USFS Cleveland National Forest efforts to-date to manage invasive weeds, along with known partner commitments to manage invasive weeds. The City of San Diego weed removal (Task 12.1A; 11.4 acres) is phased in over 3 years beginning in 2017 (33% per year). The BCLT weed removal (Task 12.1B; 7 acres) began in 2011 with about 0.5 acre per year until 2015. Beginning in 2016, work is phased in over 4 years (1.5 acres in 2016 and 1 acre per year in 2017-2019). The USFS weed removal (Task 12.1C; 314 acres) is phased in over 3 years beginning in 2016 (33% per year. The SDRPF weed removal (Task 12.1D; 2.5 acres) is planned for 2016 (100% per 2016). There will be no phasing out of benefits.

Source: Cleveland National Forest. *Land Management Plan Monitoring and Evaluation Report-Fiscal Year 2013*. October 2014.

The secondary physical benefit of the project is 1,988 acre feet per year (AFY) of water conserved. Native weeds such as Arundo and Tamarisk are significantly more water intensive (uptake and evapotranspiration) than native vegetation. According to research conducted by USFS, arundo uses 20 AFY/acre and tamarisk uses 5 AFY/acre more water than native vegetation. The baseline is from these sources: *Tamarisk Control in the Desert of Southern California* and *Arundo donax Distribution and Impact Report*. Known invasive weed removal efforts included in the baseline are: 1) 771 acres by USFS, assumes tamarisk with 5 AFY/acre savings; 2) 4.4 acres by SDRPF, assumes arundo with 20 AFY/acre savings, and 3) 2 acres by BCLT, assumes 20 AFY/acre savings. Total baseline water use by the 777 acres of habitat already improved is 3,983 AFY. Total baseline water use by the additional 335 acres of habitat currently populated with invasive weeds is 3,328 AFY (21 acres arundo with 20 AFY/acre savings and 314 acres tamarisk with 5 AFY/acre savings). The replacement of these invasive weeds with native vegetation will, therefore, conserve water and result in increased runoff into El Capitan Reservoir. The water conservation benefit (1,988 AFY) is calculated from the 335 acres of invasive weed removal that are proposed by this project. Over the useful life of the project, a total of 11,920 acre feet (AF) of water would be available for capture in the El Capitan Reservoir.

Table 2-54: Secondary Physical Benefit – Water Supply
San Diego River Healthy Headwaters Restoration

Project Name: San Diego River Healthy Headwaters Restoration **Type of Benefit Claimed:** Water Supply – water conserved through invasive removal **Units of the Benefit Claimed:** AFY **Anticipated Useful Life of Project:** >50 years			
(a)	**(b)**	**(c)**	**(d)**
Year	**Annual Without Project**	**Annual With Project**	**Annual Change Resulting from Project**
2011	3,995 AFY	3,985 AFY	10 AFY
2012	4,007 AFY	3,987 AFY	20 AFY
2013	4,019 AFY	3,989 AFY	30 AFY
2014	4,031 AFY	3,991 AFY	40 AFY
2015	4,043 AFY	3,993 AFY	50 AFY
2016	5,081 AFY	4,428 AFY	653 AFY
2017	6,138 AFY	4,866 AFY	1,273 AFY
2018	7,195 AFY	5,303 AFY	1,892 AFY
2019-2068	7,311 AFY	5,323 AFY	1,988 AFY
Comments: The baseline is calculated from the USFS Cleveland National Forest efforts to-date to manage invasive weeds, along with known partner commitments to manage invasive weeds, multiplied by estimated water savings. The amount of water conserved was determined by the amount of acres of arundo and tamarisk to be removed by the project. Per the Lovich et. al. and California Invasive Plant Council reports, arundo uses 20 AFY per acre more water than native vegetation and tamarisk uses 5 AFY per acre more water than native vegetation, therefore that amount of water is conserved when replaced with native vegetation. The water savings benefits are phased in accordance with the invasive weed treatment activities described in the previous table. Sources: Lovich et al. 1994. *Tamarisk Control in the Desert of Southern California*. California Invasive Plant Council. March 2011. *Arundo donax Distribution and Impact Report*. Page 47-48.			

Technical Analysis of Physical Benefits Claimed

Project Need and Conditions

The upper San Diego River (SDR) watershed contains water bodies that provide source water for the City's El Capitan Reservoir, the largest local water supply source in San Diego County. The El Capitan Reservoir catchment drains 188 square miles, provides valuable resources to multiple beneficial uses, and has multiple lands owners (City of San Diego, Tribal Lands, private land owners, USFS Cleveland National Forest, State, etc.). Beneficial uses include municipal, agricultural, and industrial water supply; recreation; and use by aquatic, wildlife, and rare and endangered species. These beneficial uses are negatively affected by widespread non-native invasive species (terrestrial, aquatic, weeds) and non-point source sedimentation off impacted sites throughout the catchment.

El Capitan Reservoir is on the Clean Water Act 303(d) list for color, manganese, pH, phosphorus, and nitrogen.[3] The streams and creeks that drain into El Capitan Reservoir are relatively healthy, but are under continued threat of degradation from both natural and man-made sources. This project will unite affected agencies in taking action to remove invasive species, a problem that extends across property boundaries and affects all water users. Over the years many organizations (nonprofit, Federal, State, private, etc.) have worked to eradicate invasive species in this watershed. The goal of this project is to unify efforts to eliminate seed sources (invasive weeds) and non-native remnant populations (feral pigs, invasive aquatics). The foraging and wallowing behavior of pigs can markedly increase the turbidity of water supplies, but more importantly, they can transmit and excrete a number

[3] San Diego RWMG and RAC. 2013. *2013 San Diego IRWM Plan*.

of infectious waterborne organisms that are pathogenic to humans. Their persistence in drinking water catchments also makes them potentially significant reservoirs for zoonotic pathogens. Significant feral pig populations pose a threat to water quality by reducing the health of waters and potentially serving as a vector for contamination of surface water supply and associated risks to human health. Feral pigs have a wide range of travel and have been observed from as far north as SDR watershed down to the border, across a variety of political boundaries. Potential problems for the SDR watershed include water contamination, trampling riparian habitat, bank destabilization, and increased sedimentation and detritus. Invasive species are degrading riparian habitat, negatively impacting water quality, increasing fire hazard, and competing with natives for scarce resources.

Feral pigs (above) cause substantial damage to local ecosystems (left) through their rooting behaviors

El Capitan Reservoir is the largest reservoir in San Diego County, and as such, represents an important component of local water supply reliability and storage, especially as regards the Emergency Storage Project (ESP). The ESP is designed to connect key water storage, treatment, and conveyance facilities to move water supplies around in the event of an emergency. The current drought has resulted in reduced delivery of SWP water (5% of allocations in 2014, and 20% of allocations in 2015), at a time when local supplies are diminished due to reduced rainfall. In the past, SDCWA, the Region's water wholesaler, has been able to supplement SWP and allocated Colorado River supplies with additional Colorado River water acquired through agreements with other agencies. However, under the current drought, SDCWA has been unable to acquire additional Colorado River supplies, and overall imported water supplies have been limited. Increasing ability to capture local supplies can improve water supply reliability by providing a buffer against potential cutbacks on imported water deliveries. Even in times of drought, when rainfall is limited, removing thirsty invasive species can still provide additional water supply, because more water will reach the reservoir, even if it is less than in normal years.

The 2003 Cedar Fire burned the entire El Capitan Reservoir watershed management area, and the *San Diego River Watershed Management Plan* concludes that water quality issues associated with sediment loading and nutrient cycling will persist for many years.[4] Several actions in this project would help minimize accelerated erosion and sediment contribution to streams, improve riparian habitat and water quality, and restore channel systems to more natural conditions, thereby improving habitat. Additionally, there are multiple unauthorized routes, hiking trails, and recreation sites located in the upper San Diego River watershed that are chronic sediment contributors, alter runoff, and have denuded slopes and sanitation issues. Restoration of impacted sites, decommissioning, and improving drainage on routes would improve hydrologic processes affected by the sites and reduce anthropogenic sedimentation.

San Diego County is one of the most biodiverse areas in the country, making habitat improvement an important benefit in the Region.[5] A California Natural Diversity Database (CNDDB) query for the project area found a total of 59 species (36 plants and 22 animals) reported within or near the project area.[6] These species may utilize the restored habitat created by the project, and are presented in **Table 2-55** as species whose populations could

[4] San Diego River Watershed Working Group. 2005. *San Diego River Watershed Management Plan*. Prepared by Anchor Environmental, et al. Section 2.3 Surface Water Quality, page 15.
[5] Regional Water Management Group. 2013. 2013 San Diego Integrated Regional Water Management Plan. September.
[6] California Natural Diversity Database. Rarefind 5. Database query within Project Area. Accessed 23 July 2015. Available with subscription: https://map.dfg.ca.gov/rarefind/view/RareFind.aspx

benefit from the habitat improvements implemented by this project. Because weed removal will enable native plants and animals both to repopulate the restored areas, both animals and plants are shown in **Table 2-55**.

Table 2-55: Wildlife Species Listed in CNDDB Within or Near the Project Area

Animals		
Federal- or State-Listed Threatened, Endangered, or Candidate Species		
Townsend's Big-Eared Bat	Least Bell's Vireo	Coastal California Gnatcatcher
Arroyo Toad	Southwestern Willow Flycatcher	
Non-Listed Species		
American Badger	Large-Blotched Salamander	Red-Diamond Rattlesnake
California Mountain Kingsnake (San Diego Population)	Northwestern San Diego Pocket Mouse	Rosy Boa
Coast Horned Lizard	Orangethroat Whiptail	Southern California Rufous-Crowned Sparrow
Coast Range Newt	Pallid Bat	Western Mastiff Bat
Coastal Whiptail	Prairie Falcon	Western Pond Turtle
Dulzura Pocket Mouse	Purple Martin	
Plants		
Non-Listed Species		
Baja Navarretia	Long-Spined Spineflower	San Diego Button-Celery
Chaparral Nolina	Mission Canyon Bluecup	San Diego Goldenstar
Cuyamaca Larkspur	Moreno Currant	San Diego Gumplant
Cuyamaca Raspberry	Orcutt's Brodiaea	San Diego Milk-Vetch
Dean's Milk-Vetch	Parish's Meadowfoam	San Diego Thorn-Mint
Delicate Clarkia	Prairie Wedge Grass	Short-Sepaled Lewisia
Dunn's Mariposa-Lily	Purple Stemodia	Southern Jewelflower
Felt-Leaved Monardella	Ramona Horkelia	Southern Mountains Skullcap
Gander's Ragwort	Robinson's Pepper-Grass	Tecate Cypress
Hammitt's Clay-Cress	Round-Leaved Filaree	Tecate Tarplant
Laguna Mountains Jewelflower	Salt Spring Checkerbloom	Vanishing Wild Buckwheat
Lakeside Ceanothus	San Bernardino Aster	Velvety False Lupine
Lemon Lily		

Source: California Natural Diversity Database (CNDDB). RareFind 5 query within Project Area (23 July 2015).

Without-Project Conditions

Without the *San Diego Healthy Headwaters Restoration* project, invasive species would continue to negatively affect the El Capitan Reservoir catchment, the largest local surface water supply source in the County. The streams and creeks that drain into El Capitan Reservoir are relatively healthy, but are under continued threat of degradation from both natural and man-made sources. Without the restoration activities of this project, the catchment would continue to suffer the impacts of invasive species (specifically invasive weeds, feral pigs, and non-native aquatic species), which can include decreased species diversity, degraded riparian habitat, increased sedimentation impacting water quality, high water demands and evapotranspiration reducing inflows into El Capitan reservoir, and a lower groundwater table. Without this project, the existing 335 acres of known invasive weed populations would remain, and could even grow in size. These invasive weeds would continue to consuming excess surface water, and without this project, 3,328 AFY in surface water that could drain to El Capitan Reservoir to support the Region's drinking water supply, would continue to be consumed by these weed populations.

Additionally, the unauthorized routes, hiking trails, and recreation sites located in the San Diego River watershed that are chronic sediment contributors, alter runoff, and have denuded slopes and sanitation issues would remain. Continued existence and use of unauthorized recreation could expand these trails and sites and worsen existing erosional areas. The impacts of invasive species, degraded habitat, and unauthorized use of trails would continue to degrade water quality in the El Capitan Reservoir.

Methods Used to Estimate the Physical Benefits

Primary Benefit – Habitat Improved

The primary physical benefit of the project is 335 acres of improved habitat resulting from invasive weed treatment and removal. USFS uses a one-to-one calculation of habitat restored per acre of invasive weed treatment. The project will treat 50 miles of stream corridor (primarily within 50 feet of the channel) for a benefit of 300 acres of restored habitat. An additional 14 acres of known tamarisk population will also be treated, for a total of 314 acres of habitat improvement. The City has committed to 11.4 acres of invasive weed removal, BCLT has committed to 7 acres of invasive weed removal, and SDRPF has committed to 2.5 acres of invasive weed removal. In total, 335 acres of wetland and riparian habitat will be improved as a result of the project.

USFS uses a standard calculation of 6 acres of habitat restored per every mile of route and trail improvement. Thus, an additional 62 acres of upland habitat will improved by USFS (Task 12.2) through 10 miles of trails and routes to be restored and an 2 acres of impacted sites to be improved. Some of the proposed storm-proofing and decommissioning sites are adjacent to streams (ephemeral, intermittent), have stream crossings, or contribute drainage to streams via gullies. Forest roads are the biggest contributors of sediment to streams in the headwaters, as they can significantly alter hydrologic processes in streams, such as peak flows by increasing the number of connected concentrated flow paths (road ditches, gullies). However, these additional 62 acres were not included in the Habitat Improved benefit in **Table 2-53** because they wouldn't contribute to the Water Supply benefit in **Table 2-54**.

$$11.4\ acres + 7\ acres + 314\ acres + 2.5\ acres = \mathbf{335\ acres}$$

Secondary Benefit – Water Supply

The secondary physical benefit of the project is 1,988 AFY of water conserved. The California Invasive Plant Council reports that arundo uses approximately 24 AFY/acre.[7] Lovich et al. reports that tamarisk uses approximately 9 AFY/acre.[8] Based on the California Invasive Plant Council report, this analysis assumes that riparian vegetation and replacement of weeds on treated lands will use approximately 4 AFY/acre.[9] As such, treatment of invasive weed stands will conserve approximately 20 AFY/acre for arundo and 5 AFY/acre for tamarisk. The City (Task 12.1A) will treat 11.4 acres, primarily arundo. BCLT (Task 12.1B) will treat 7 acres, primarily arundo. The USFS (Task 21.1C) will treat up to 314 acres; to be conservative, this analysis assumes conservation savings at the tamarisk uptake rate. SDRPF (Task 12.1D) will remove 2.5 acres, primarily Arundo. A total of 21 acres of arundo will be removed, for a conservation savings of 418 AFY. The USFS's removal of up to 314 acres of Tamarisk will conserve 1,570 AFY.

$$\left(21\ acres\ arundo * 20\frac{AFY}{acre}\right) + \left(314\ acres\ tamarisk * 5\frac{AFY}{acre}\right) = \mathbf{1,988\ AFY}$$

New Facilities, Policies, and Actions Required to Obtain Physical Benefits

No facilities, policies or actions are necessary to obtain the expected benefits provided by the *San Diego River Healthy Headwaters Restoration* project, beyond those permits and CEQA compliance included in *Attachment 3 Work Plan*. The benefits will begin to be realized as soon as the invasive weed treatment, species removal, and unauthorized site rehabilitation begins.

Potential Adverse Physical Effects of the Project and Mitigation

The *San Diego River Healthy Headwaters Restoration* project may result in temporary environmental impacts during project implementation. Potential impacts to special-status vegetation communities or species may occur during treatment or removal, but mitigation measures are included as part of the USACE Regional General Permit to reduce those impacts. Any impacts associated with the project are anticipated to be short-term in nature. It is not anticipated that any significant, long-term adverse physical effects would result from implementation of this project.

[7] California Invasive Plant Council. March 2011. *Arundo donax Distribution and Impact Report*. Page 48.
[8] Lovich et al. 1994. *Tamarisk Control in the Desert of Southern California*.
[9] California Invasive Plant Council. March 2011. *Arundo donax Distribution and Impact Report*. Page 48.

Long-Term Drought Preparedness

The *San Diego River Healthy Headwaters Restoration* project will achieve long-term drought preparedness in two ways: 1) Achieve long-term reduction of water use, and 2) Promote water conservation, conjunctive use, reuse, or recycling. Invasive weeds such as Arundo have been shown to use significantly more water than native species (20 AFY/acre more than native vegetation). Tamarisk also uptakes more water than native vegetation (5 AFY/acre more than native vegetation). Removing Arundo and Tamarisk will expand the volume of surface runoff draining into El Capitan Reservoir, which serves as a drinking water supply source for the City. Invasive plants create a host of adverse environmental effects, including displacement of native plants and reduction in habitat and forage for wildlife (including federally listed threatened and endangered species); reduction in water quantity; potential reduction in soil productivity; and potential increase in the intensity and frequency of wildfires.

The educational components of the project (USFS and SDRPF) will include information on water conservation, water-wise landscaping, weed eradication, and native plants. The focus will be on long-term watershed health and how to achieve those goals. Education efforts by SDRPF are expected to connect with 20% of the population in the upper San Diego River watershed (Upper San Diego River, Boulder Creek, Cedar Creek subwatersheds).

Direct Water-Related Benefit to DACs

Per the analysis in *Attachment 7, Table 7-1*, the *San Diego River Healthy Headwaters Restoration* project site is 56% DAC by area. This project directly addresses two of the urban DAC issues identified in the 2013 IRWM Plan,[10] and summarized in *Attachment 7 Disadvantaged Communities*: surface water quality and flooding/impervious surfaces. The direct surface water quality benefit is achieved through invasive species removal and restoration of unauthorized recreation trails that contribute to water quality issues in the San Diego River watershed. It directly provides flooding/creek constriction benefits through removal of invasive species which could cause creek constriction.

Project Performance Monitoring Plan

Benefits of the *San Diego River Healthy Headwaters Restoration* project will accrue as described in **Tables 2-53** and **2-54** above. **Table 2-56** describes the methods that will be used to measure the quantified benefits of this project.

USFS and its project partners will monitor habitat improvement benefits by identifying and mapping invasive plant species populations, sediment management activities, and nuisance wildlife populations that are addressed during the project, as well as conduct follow-up surveys to understand regrowth/repopulation and to evaluate success of treatments. Polygons of successfully treated areas will be used to estimate water savings. The SDRFP will conduct surveys within the outreached communities to assess and monitor outreach success.

[10] RWMG. 2013. *2013 San Diego Integrated Regional Water Management Plan*. September.

Table 2-56: Project Monitoring for *San Diego River Healthy Headwaters Restoration*

Proposed Physical Benefits	Measurement Tools and Methods	Targets
Habitat Improved	USFS will compile monitoring information from its activities within the Cleveland National Forest and its project partners (BCLT, City of San Diego, and SDRPF) activities on watershed and reservoir lands. USFS and its partners will identify and map treated invasive plant species populations, sediment management activities, and nuisance wildlife populations using GIS and aerial photography. USFS and its project partners will conduct follow-up surveys annually (either in person or via aerial photography) to understand regrowth/repopulation.	335 acres of invasive weed removal (plus 62 acres of unauthorized site rehabilitation)
Water Supply	USFS and partners will map treated areas, creating a GIS based record of site characteristics (type of weeds/density). Mapped treatment areas and follow-up treatment/site visits will help the USFS determine the actual number of acres where invasive weeds were successfully eradicated. Based on the final acres, the USFS will use the same formulas discussed in the application for estimating final water savings from the project.	1,988 AFY

Cost Effectiveness Analysis

The *San Diego River Healthy Headwaters Restoration* project will achieve two quantifiable physical benefits described in detail in the sections above, and summarized in **Table 2-53 and 2-54**. During project development, alternatives to the preferred project included in this application were considered and, ultimately, rejected. **Table 2-57** provides a cost effectiveness analysis consistent with Table 7 of the *2015 PSP*.

Table 2-57: Cost Effective Analysis for *San Diego River Healthy Headwaters Restoration*

Cost Effective Analysis	
Question 1 Physical Benefits Summary	*Types of benefits provided as shown in Table 2-53 and 2-54.* Benefit 1: Habitat Improved – 335 acres through invasive removal and sediment management Benefit 2: Water Supply – 1,988 AFY water conserved through invasive removal
Question 2 Alternatives Considered	*Have alternative methods been considered to achieve the same types and amounts of physical benefits as the proposed project been identified?* No
	If no, why? If yes, list the methods (including the proposed project) and estimated costs. No alternatives were explicitly considered. The USFS *Land Management Plan Monitoring and Evaluation Report: Cleveland National Forest FY 2013* includes multiple strategies undertaken by USFS to manage forest lands for water quality, habitat, fire management, and public use goals. The watershed management activities included in this project (invasive removal and unauthorized trail rehabilitation) are proven methods that were established in the USFS *Land Management Plan* and are implemented to varying degrees in each fiscal year. Implementation is based on available funding, typically from grants or agreements with partners. No alternatives were explicitly considered.
Question 3 Preferred Alternative	*If the proposed project is not the least cost alternative, why is it the preferred alternative? Provide an explanation of any accomplishments of the proposed project that are different from the alternative project or methods.* There is no least cost alternative identified for this project. The Forest Hydrologist (Emily Fudge) from the Cleveland National Forest selected the suite of activities within this Proposal to best leverage State grant dollars to address key water quality impairments in San Diego River, upstream tributaries, and downstream El Capitan Reservoir resulting from Forest and headwater lands.

Project 12: Sweetwater Reservoir Wetlands Habitat Recovery

Local Project Sponsor: Sweetwater Authority (SWA)
Partner: California Conservation Corps and Urban Corps of San Diego County

Project Summary

The project will restore and enhance habitat near Sweetwater Reservoir, including 75 acres Least Bell's Vireo habitat, enabling full use of Sweetwater Reservoir for storage.

Project Maps

Figure 2-28 shows the *Sweetwater Reservoir Wetlands Habitat Recovery* project area, the service area of the project sponsor, the project facilities and the project's relation to groundwater basins and surface water, disadvantaged communities (DAC) and proposed monitoring locations. **Figure 2-29** shows the areas that will be restored and the areas that will be protected in place through this project.

Views of Habitat Recovery Project area at Sweetwater Reservoir

Project Description

The *Sweetwater Reservoir Wetlands Habitat Recovery Project* (HRP) is an integrated, multi-benefit project that achieves the San Diego IRWM Program's goals of protecting and enhancing our natural resources, protecting and enhancing water quality, and improving the reliability of regional water supplies. The project supports the recovery and long-term improvement of habitat function and value for the endangered least Bell's vireo (LBV) in Sweetwater Reservoir, a public drinking water supply reservoir. After the 2007 Harris Fire burned approximately 90 acres of existing LBV habitat within the upper limits of the reservoir, Sweetwater Authority (SWA) initiated a recovery strategy to correct the site's underlying limitations and reclaim riparian wetlands for LBV. The project will provide a natural environmental buffer for flow attenuation and bioremediation to maximize wetland function for water quality benefits within Sweetwater Reservoir and subsequent treatment as the public drinking water supply. The HRP will also enable additional imported water storage capacity at Sweetwater Reservoir, positively affecting the regional water supply.

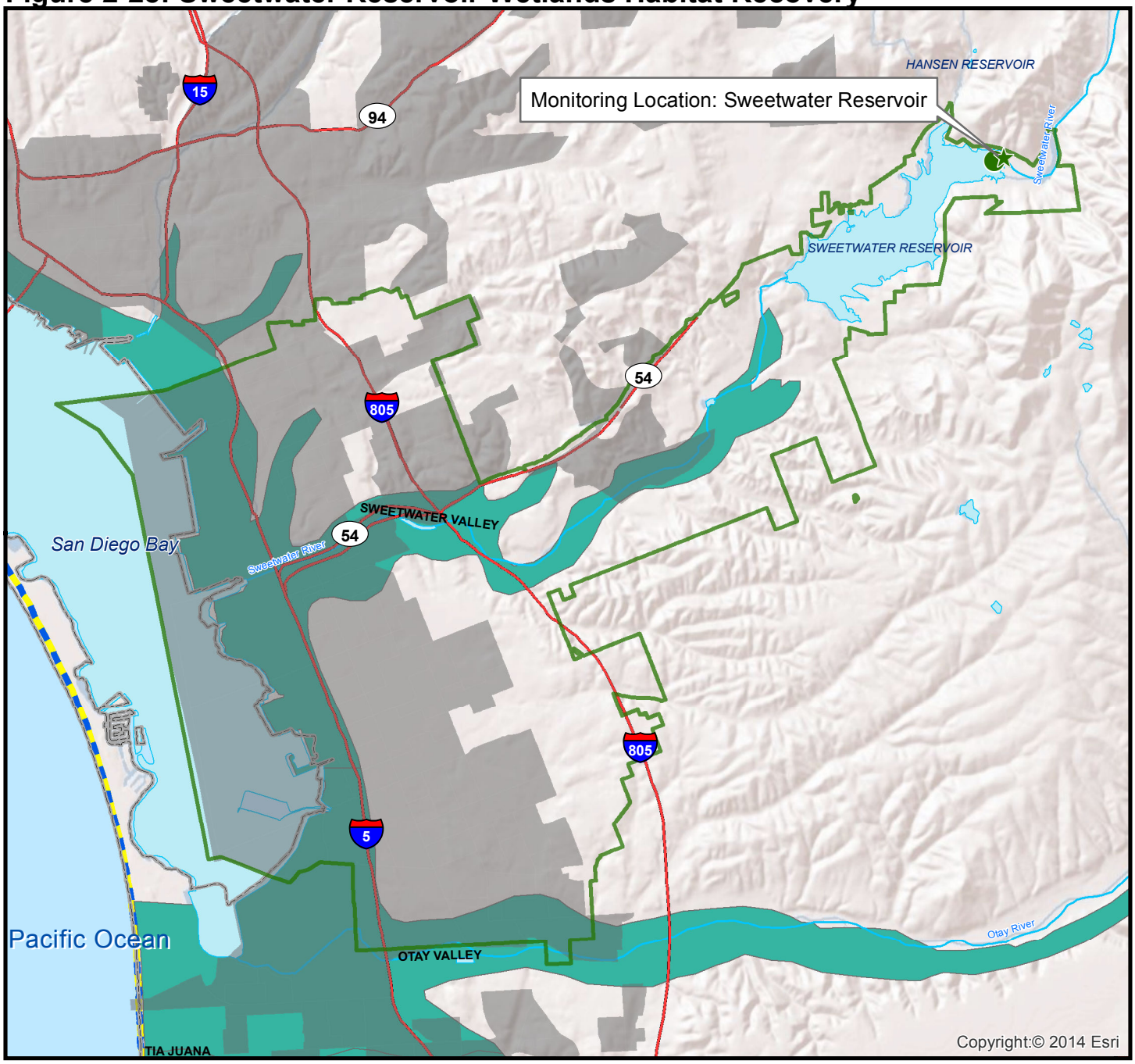
Technical studies conducted in 2009-2010 produced a conceptual design for the HRP in 2011. Grading design, plans and specifications, environmental compliance, and regulatory permitting also commenced in 2011. HRP construction is scheduled to begin in 2016 and will include major site grading, temporary irrigation, and planting. A five-year maintenance and monitoring period after construction will be followed by perpetual site management by SWA to ensure project success, although work pursuant to this Proposal will end by October 31, 2019.

The HRP involves mass grading within the Sweetwater River/Sweetwater Reservoir floodplain to create a braided channel system and improve hydrologic functionality. The multichannel design and bridge installation will spread river flow more evenly to improve habitat quality in areas lacking sufficient hydrology. Within the 112.7-acre project area, the HRP will restore and enhance approximately 112.5 acres of riparian and 0.2 acre of transitional habitats and will result in a net increase of 74.6 acres of habitat, specifically for the endangered LBV, over current conditions. The expanded preserve will be recorded, protected, and managed under a Conservation Easement.

In addition to habitat restoration and water quality benefits, HRP implementation will enhance imported water storage capabilities in Sweetwater Reservoir and contribute to regional water reliability. The project will allow for periods of storage in the reservoir above the 230-foot elevation when excess imported water is available. Currently, SWA is restricted from storing any imported water above this elevation because of potential impacts to LBV habitat. The operational limit was required by the permitting agencies in 1994 and effectively removes reservoir storage capacity equivalent to 7,873 acre-feet (AF) at Sweetwater Reservoir. Implementation of the HRP will permit normal Sweetwater Reservoir storage operations (total capacity of 28,079 AF) and allow storage of imported water when supply is plentiful. This additional 7,873 AF of storage capacity represents up to one half of the water processed through the Perdue Water Treatment Plant annually and will provide additional water supply reliability during drought conditions.

The *Sweetwater Reservoir Wetlands Habitat Recovery Project* will: 1) re-establish the river-floodplain connection to create hydrology that is in dynamic equilibrium with the Sweetwater River and Sweetwater Reservoir inundation area; 2) restore and enhance large areas of LBV habitat, thereby improving habitat function and value for the species; 3) allow for normal Sweetwater Reservoir storage operations and ensure the ability to store additional imported water when regionally available; and 4) maximize wetland function for water quality benefits within Sweetwater Reservoir.

Figure 2-28: Sweetwater Reservoir Wetlands Habitat Recovery



Coordinates: 32.70707, -116.97062

Legend

- San Diego IRWM Region
- Funding Area Boundary
- Freeway
- Waterbody
- County
- DAC Area*
- Very Low Priority Groundwater Basin
- Benefit Area: 12 Sweetwater Reservoir Wetlands Habitat Recovery
- Sweetwater Authority Service Area
- Monitoring Location

0 0.75 1.5 3

Miles

N

*Note: DAC as determined by census tract and block group data for the year 2013, from the American Community Survey 2009-2013 5-year results. DAC determined based on definition of median household incomes below 80% of the statewide MHI or $48,875.

Sources: U.S. Census 2013 ACS 5-year estimates; San Diego Association of Governments (SANDAG) - GIS Data Warehouse
Document Path: N:\Projects GIS\0188-003 SDIRWM Plan Update\Prop84_Rnd4\MXD\Project maps\2-13_SweetwaterProject30072015.mxd

Figure 2-29: Sweetwater Reservoir Wetlands Habitat Recovery Areas

HMP Riparian Habitat Limits - Proposed (212.6 acres)

HMP Protect in place (99.9 acres)

HRP Restoration (112.7 acres) *

* Acreage does not include restoration of the staging area outside of the HMP boundary

Project Physical Benefits

Tables 2-58 and **2-59** provide summaries of the primary (Habitat Improved) and secondary (Water Supply) benefits anticipated to be achieved through implementation of the *Sweetwater Reservoir Wetlands Habitat Recovery* project.

The primary physical benefit of the project is the restoration and enhancement of 112.7 acres of habitat (**Table 2-58**), with an emphasis on LBV habitat. Of this 112.7 acres, 0.2 acres will be transitional habitat, and 112.5 acres will be riparian habitat. An additional 99.9 acres will be protected in place by this project, and will be covered by the overall Conservation Easement of 212.6 acres.[11] This additional 99.9 acres are not claimed as a benefit of the project because they are existing habitat that will be legally protected, but not improved or restored. It is anticipated that the entire preserve area (212.6 acres) would be maintained into perpetuity, although unforeseen circumstances may impact the life of the project, so a 50-year anticipated useful life has been used for this analysis. Habitat benefits will begin accruing immediately after project completion because species are unlikely to utilize the new habitat while construction is underway due to disturbances from equipment and human activities.

The baseline was calculated as the existing habitat with connectivity to the project area. In addition to the 99.9 acres that will be protected in place, the project area is also adjacent to two conservation areas that currently provide habitat for a variety of native species. SWA protects lands adjacent to and south of the reservoir, while both this land and the eastern portion of the project area are adjacent to the San Diego National Wildlife Refuge (SDNWR). SDNWR is managed by the U.S. Fish and Wildlife Service, and spans 11,470 acres.[12] Only a portion of SDNWR is physically connected to Sweetwater Reservoir (either directly or through connection with locally-conserved areas). For the baseline, only the 6,500 acres of SDNWR that has connectivity to the project area was considered as "existing habitat". A geographic information system (GIS) analysis of the locally-conserved area adjacent to the reservoir was also completed, and was determined to be approximately 625 acres. Together, the existing habitat with connectivity to the reservoir is estimated at approximately 7,225 acres.

Table 2-58: Primary Physical Benefit – Habitat Improved
Sweetwater Reservoir Wetlands Habitat Recovery

Project Name: Sweetwater Reservoir Wetlands Habitat Recovery **Type of Benefit Claimed:** Habitat Improved – Restoration **Units of the Benefit Claimed:** Acres **Anticipated Useful Life of Project**: 50 years			
(a)	**(b)**	**(c)**	**(d)**
Year	**Annual Without Project**	**Annual With Project**	**Annual Change Resulting from Project**
2019-2068	7,225 acres	7,337.6 acres	112.7 acres
Comments: The project life is assumed to be 50 years. Benefits would begin accruing immediately following project completion. Per *Attachment 5 Schedule*, construction would be complete in August 2019, with benefits beginning to accrue in September 2019. 100% of the project benefit would therefore be realized from 2019-2068. Without project baseline was calculated as the estimated existing open space/habitat with physical connectivity to the project area ("protect in place" acreage within the project area, locally-conserved land adjacent to the reservoir, and SDNWR land adjacent to the reservoir). Sources: USFWS. 2014. *San Diego National Wildlife Refuge Draft Comprehensive Conservation Plan/Environmental Assessment*. June.			

[11] Pers. Comm. Peter Famolaro, Watershed Manager, Sweetwater Authority (revised project scope).
[12] USFWS. 2014. *San Diego National Wildlife Refuge Draft Comprehensive Conservation Plan/Environmental Assessment*. June.

The secondary physical benefit of the project is Water Supply from the Sweetwater Reservoir's increased operational storage capacity of 7,873 AF (**Table 2-59**). The *Sweetwater Reservoir Water Storage and Habitat Management Program Risk Assessment* notes that it takes three to five years for restored riparian habitat to develop enough to support nesting LBV.[13] Although habitat benefits, which include species beyond LBV, would be realized immediately following project completion, the water supply benefit would not be realized until LBV are able to begin to utilize the restored habitat, so that the LBV population will not be harmed as water levels in the reservoir rise. Water supply benefits are therefore assumed to begin a little more than three years after the project is complete, approximately 3 years into the project's 50-year life. The baseline "without project" for this benefit is the reservoir capacity available at the current maximum depth of 230-foot elevation of the reservoir. Per SWA's capacity curves for Sweetwater Reservoir, at 230-foot elevation, the surface area of the reservoir is 794.7 acres, and capacity is 20,225 AF.[14] The significant increase in the imported water storage capacity of the reservoir by 7,873 AF represents approximately 30-50% of the water processed through the Perdue Water Treatment Plant annually and will provide an additional 4 to 6-month supply. SWA could purchase up to the full 7,873 AF annually from San Diego County Water Authority (SDCWA), as available, to replenish the Sweetwater Reservoir. The additional usable storage volume will provide a greater buffer to the region when hydrologic cycles induce rapid drought conditions.

Table 2-59: Secondary Physical Benefit – Water Supply
Sweetwater Reservoir Wetlands Habitat Recovery

Project Name: Sweetwater Reservoir Wetlands Habitat Recovery **Type of Benefit Claimed:** Water Supply – Imported water storage **Units of the Benefit Claimed:** AFY **Anticipated Useful Life of Project**: 50 years			
(a)	**(b)**	**(c)**	**(d)**
Year	**Annual Without Project**	**Annual With Project**	**Annual Change Resulting from Project**
2019	20,225 AFY	20,225 AFY	0 AFY
2020	20,225 AFY	20,225 AFY	0 AFY
2021	20,225 AFY	20,225 AFY	0 AFY
2022-2068	20,225 AFY	28,098 AFY	7,873 AFY
Comments: The increased imported water storage capacity will be created by the increased allowable water level of Sweetwater Reservoir to 239-foot elevation from 230-foot elevation. This increase would be allowed because LBV would have alternate habitat available as a result of this project. The project life is assumed to be 50 years, but the benefit will only begin accruing after the first three years because the habitat needs to mature enough to provide appropriate structure for LBV to nest before reservoir levels could rise above the 230-foot elevation. The baseline was calculated as the existing maximum allowable imported water storage capacity of the reservoir, which is the reservoir capacity at 230-foot elevation, or 20,225 AF. Sources: SWA. 1983. *Existing Stage / Area / Capacity Curves for the Sweetwater Reservoir*. November. SWA. 2011. *2010 Urban Water Management Plan*.			

Technical Analysis of Physical Benefits Claimed

Project Need and Conditions

The *Sweetwater Reservoir Wetlands Habitat Recovery Project* will contribute to local and regional species protection and water management goals utilizing an integrated approach. Sweetwater Reservoir was constructed in 1888 and has an approximate capacity of 28,098 AF. The Sweetwater River watershed is approximately 230 square miles and Sweetwater Reservoir receives flows from Loveland Reservoir, located approximately 17 miles upstream.[15] SWA operates the Robert A. Perdue Water Treatment Plant (Perdue Plant) located adjacent to

[13] SWA. 2010. *Sweetwater Reservoir Water Storage and Habitat Management Program Risk Assessment*. June.
[14] SWA. 1983. *Existing Stage/Area/Capacity Curves for the Sweetwater Reservoir*. November.
[15] SWA. 2011. *2010 Urban Water Management Plan*.

Sweetwater Reservoir. The Perdue Plant has a treatment capacity of 30 million gallons per day (MGD) and is capable of treating surface runoff stored at Sweetwater Reservoir or imported raw water from SDCWA.

Sweetwater Reservoir is located adjacent to large protected areas and has become habitat for LBV. The Sweetwater Reservoir Habitat Management Program (HMP) was developed in 1994 as a means to balance Sweetwater Reservoir operating requirements with environmental protection and management of the endangered LBV and its habitat.[16] Since that time, SWA has been restricted from storing any imported water above the 230-foot elevation in Sweetwater Reservoir because of potential impacts to LBV habitat.

The upper end of Sweetwater Reservoir had historically been subjected to sand mining, and is still characterized by a deeply incised channel, mine pits, soil mounds, and haul roads. These topographic changes have affected the hydrology in the project area, and the dynamic nature of a riparian area has been lost or diminished.[17] In 2007, the Harris Fire burned a substantial amount of LBV habitat in the project area. This habitat was located in an area whose hydrology was altered by past mining activities, which lowered the groundwater table and altered inundation patterns. These changes to the natural hydrology of the project area have made it more difficult for this area to recover from the impacts of the fire.[18] Implementation of the HRP will improve river flow and groundwater conditions, creating a healthier and self-sustainable riparian habitat system in the Sweetwater Reservoir.

Habitat improvements are important in San Diego County because the county is one of the most biodiverse areas in the country.[19] A California Natural Diversity Database (CNDDB) query for the project area and the area immediately surrounding the reservoir found a total of 67 species (30 plants and 37 animals) reported within or near the project area.[20] These species may utilize the restored habitat created by the project, and are presented in **Table 2-60** as wildlife species whose populations could benefit from the habitat improvements implemented by this project. Note that the area included in the CNDDB query only included those areas of the existing habitat that were closest to the project area, and did not encompass all 7,225 acres of existing habitat because species furthest from the project area are least likely to utilize the habitat created by the project.

Table 2-60: Wildlife Species Listed in CNDDB Within or Near the Project Area

Animals		
Federal- or State-Listed Threatened, Endangered, or Candidate Species		
Arroyo Toad	Quino Checkerspot Butterfly	Swainson's Hawk
Coastal California Gnatcatcher	San Diego Fairy Shrimp	Townsend's Big-Eared Bat
Least Bell's Vireo	Southwestern Willow Flycatcher	
Non-Listed Species		
American Badger	Hoary Bat	Western Beach Tiger Beetle
Bell's Sage Sparrow	Long-Eared Myotis	Western Mastiff Bat
Big Free-Tailed Bat	Orangethroat Whiptail	Western Red Bat
California Horned Lark	Pocketed Free-Tailed Bat	Western Small-Footed Myotis
Coast Horned Lizard	Red-Diamond Rattlesnake	Western Spadefoot
Coastal Cactus Wren	San Diego Black-Tailed Jackrabbit	Western Tidal-Flat Tiger Beetle
Coastal Whiptail	San Diego Ringneck Snake	Yellow Warbler
Cooper's Hawk	So Ca Rufous-Crowned Sparrow	Yellow-Breasted Chat
Double-Crested Cormorant	Thorne's Hairstreak	Yuma Myotis
Hermes Copper Butterfly	Tricolored Blackbird	

Source: California Natural Diversity Database (CNDDB). RareFind 5 query within Project Area (23 July 2015).

In addition to habitat restoration, implementation of the HRP will enhance imported water storage capabilities in Sweetwater Reservoir and contribute to regional water reliability. Implementation of the HRP will permit normal Sweetwater Reservoir storage operations and allow storage of imported water when supply is plentiful. Currently,

[16] SWA. 2011. *Habitat Recovery Plan for the Sweetwater Reservoir Wetland Habitat Recovery Project*. April.
[17] SWA. 2011. *Habitat Recovery Plan for the Sweetwater Reservoir Wetland Habitat Recovery Project*. April.
[18] SWA. 2011. *Habitat Recovery Plan for the Sweetwater Reservoir Wetland Habitat Recovery Project*. April.
[19] Regional Water Management Group. 2013. 2013 San Diego Integrated Regional Water Management Plan. September.
[20] California Natural Diversity Database. Rarefind 5. Database query within Project Area. Accessed 23 July 2015. Available with subscription: https://map.dfg.ca.gov/rarefind/view/RareFind.aspx

imported water storage in the reservoir cannot exceed the 230-foot elevation because the inundation of riparian habitat was presumed to decrease the amount of available habitat and result in detriment to LBV. The increase in high quality riparian habitat will allow for the increase in storage capacity without negative impacts to the LBV. The *Sweetwater Reservoir Water Storage and Habitat Management Program Risk Assessment*[21] concluded that periodic inundation of LBV habitat due to reservoir operations will not significantly affect the long-term viability of the habitat or species. As such, adaptive management of reservoir operations could support removal of the 230-foot imported water restriction and conversion of the previously cleared managed reservoir to LBV habitat, thus increasing conserved and managed HMP lands. This will allow for periods of storage in the reservoir above the 230-foot elevation to a 239-foot elevation when excess imported water is available, contributing to regional water reliability.

Water supply reliability is a critical issue in California, to protect against drought and potential climate change impacts. Increased storage is a means to increase supply reliability and reduce impacts of drought because agencies would be able to store excess water from wet years to hold in reserve for dry years. By restoring additional habitat for LBV, SWA could lift the 230-foot elevation limit on Sweetwater Reservoir and help provide water supply reliability by increasing storage capacity.

Without-Project Conditions

The HRP has been an ongoing process, and significant effort has gone into developing the invasive species control, technical studies, a conceptual design, preparation of final grading design, plans and specifications, environmental compliance, regulatory permitting, and securing funds to perform the work. All of this work was completed to ensure the project would be successful and would not harm LBV, while still enabling improved reservoir management. Without this project, the work completed in Phase I and Phase II of the HRP would not come to fruition and the functions and values of regionally significant habitat for the endangered LBV and associated riparian species would not be reclaimed. The altered topographic landscape and faulty floodplain system left by historic sand mining operations would not be restored. Riparian and transition habitats in the Sweetwater Reservoir would remain degraded and dominated by invasive species, and would continue to struggle to recover from the 2007 Harris Fire. River flow and groundwater conditions would remain poor and the additional 7,873 acre-feet of storage capacity in the Sweetwater Reservoir would not be available for use.

Methods Used to Estimate the Physical Benefits

Primary Benefit – Habitat Improved

The primary physical benefit of the project is the restoration and enhancement of 112.7 acres of habitat. The project will restore and enhance 0.2 acres of transitional habitat and 112.5 acres of riparian habitat. The amount of habitat corresponds to the specific area defined by the topography and fluvial geomorphology in the project site. The proposed project has been scaled down from the *Sweetwater Reservoir Wetlands Habitat Recovery Project – Conceptual Restoration Plan*[22] and the *Sweetwater Reservoir Storage and Habitat Management Program Risk Assessment*[23] to 112.7 acres restored and 99.9 acres protect-in-place[24], for a total of 212.6 acres covered by the Conservation Easement.

$$112.5\ acres\ riparian\ habitat + 0.2\ acres\ transitional\ habitat = \mathbf{112.7\ acres}$$

Secondary Benefit – Water Supply

The secondary physical benefit of the project is water supply acquired through increased operational storage capacity of 7,873 AF. Under current conditions, SWA cannot increase Sweetwater Reservoir storage above 230-foot elevation without endangering LBV populations. This project will create habitat suitable for LBV, which will enable SWA to increase use of the reservoir to the 239-foot elevation. The increased storage capacity was

[21] Sweetwater Authority. 2010. *Sweetwater Reservoir Water Storage and Habitat Management Program Risk Assessment*. June.
[22] SWA. 2014. *Sweetwater Reservoir Wetlands Habitat Recovery Project – Conceptual Restoration Plan*. October 30.
[23] SWA. 2010. *Sweetwater Reservoir Water Storage and Habitat Management Program Risk Assessment*. June.
[24] SWA. 2015. *Sweetwater Reservoir Wetlands Habitat Recovery Project – Reduced Version 1*.

calculated using the "*Existing Stage/Area/Capacity Curves for Sweetwater Reservoir".*[25] According to SWA, the current total reservoir capacity at the 230-foot elevation is 20,225 AF. Capacity is provided in 2-foot elevation increments, so no capacity is given for 239-feet elevation. An average of the capacity at 238-foot elevation (27,118.9 AF) and 240-foot elevation (29,077.2 AF) was used to estimate capacity at 239-foot. At 239-foot elevation, total capacity of the reservoir is estimated at 28,098 AF, creating the additional capacity of 7,873 AF over a current maximum capacity at 230-foot elevation. According to SWA's *2010 Urban Water Management Plan*, SWA has no contracted volume limit for imported water purchased from SDCWA[26]; therefore, up to the full 7,873 AF could be purchased annually to replenish the Sweetwater Reservoir.

$$Capacity\ at\ 239\ feet - Capacity\ at\ 230 feet = Increase\ in\ storage\ capacity$$

$$28{,}098\ AFY - 20{,}225\ AFY = \mathbf{7{,}873\ AFY\ additional\ storage}$$

New Facilities, Policies, and Actions Required to Obtain Physical Benefits

To realize the physical benefits of habitat improvement and water supply from this project would require implementation of the project as described in the Work Plan (see *Attachment 3 Work Plan*). Project planning documents found that the project was feasible and would not result in a "take" of LBV. All permits required to complete the project are included in the Work Plan. This project would require major site grading to improve stream hydrology, planting of the new riparian habitat, and temporary irrigation for the restored areas to help establish vegetation. Restoration efforts will include a multi-channel design and bridge installation to improve hydrology and spread river flow more evenly to improve habitat quality. Once restoration is complete, habitat benefits will be realized, while water supply benefits will require some additional time to allow vegetation to establish sufficiently to provide nesting habitat for LBV.

Potential Adverse Physical Effects of the Project and Mitigation

The project may result in temporary environmental impacts during restoration activities required for implementation of the project. Potential impacts include those associated with sensitive vegetation communities, jurisdictional waters and wetlands, and special-status species. To evaluate these potential impacts, a Mitigated Negative Declaration (MND) was prepared for this project. Potential impacts were found for biological resources, cultural resources, noise, and mandatory findings of significance.[27] Due to the presence of special-status species (LBV) in the project area, there are potential impacts associated with restoration activities, including grading and vegetation removal. Mitigation measures will include coordination with a qualified biologist to minimize impacts to species of concern, strict adherence to construction footprint limits, pre-construction habitat assessments for certain species, temporary relocation of specific species of concern, and avoidance of breeding bird season for vegetation removal, clearing, and grubbing activities.

Cultural resources were found to potentially exist within the Area of Potential Effects(APE), and mitigation measures will include coordination with a qualified archaeologist to ensure sensitivity to cultural resources, monitoring by both a qualified archaeologist and a Native American observer during ground disturbing activities, stopping work in the event that cultural or paleontological resources are encountered until the archaeologist or a qualified paleontologist can determine the significance and how to handle the discovery, handling of human remains in accordance with California state law if human remains are found and in coordination with Native American Heritage Commission (NAHC) if said remains are found to be Native American.

The project would also create potentially significant noise impacts, due to the use of construction equipment and construction-related activities such as transporting workers, grading, recontouring of the channels and floodplain, and other construction activities. Mitigation measures that will be implemented include limiting construction activities to the hours allowed in San Diego County's noise standards, use of equipment that have working mufflers, turning off equipment when not in use, shielding or redirecting noises away from nearby residences, establishing staging areas away from sensitive receptors, and coordination with local property owners to provide information on construction times and how to file complaints.

Implementation of the mitigation measures as described in the MND would reduce any potential impacts of this project to less than significant. As such, any impacts associated with the project are anticipated to be short-term

[25] SWA. 1983. *Existing Stage/Area/Capacity Curves for the Sweetwater Reservoir*. November.
[26] SWA. 2011. *2010 Urban Water Management Plan*.
[27] ESA. 2014. *Sweetwater Reservoir Wetlands Habitat Recovery Project Final Initial Study/Mitigated Negative Declaration*.

in nature, and mitigated to less-than-significant levels. It is not anticipated that any significant, long-term adverse physical effects would result from implementation of this project.

Long-Term Drought Preparedness

The HRP will effectively address long-term drought preparedness in two ways: 1) increases water supply reliability, and 2) efficient groundwater basin management. This project will permit normal Sweetwater Reservoir storage operations (which have been limited by LBV protection), which will ensure the ability to store 7,873 AF of additional imported water when excess supply is available. This significant increase in water storage capacity represents approximately 30-50% of the amount of water processed through the Perdue Water Treatment Plant annually.[28] Having additional storage capacity will provide an additional buffer against potential supply shortages during periods of drought. The project also provides for efficient groundwater management because this project would improve water quality in the reservoir. Nutrient and pollutant uptake is expected to increase once riparian vegetation is established. Sweetwater Reservoir is upgradient of the San Diego Formation (SDF), a large, brackish aquifer that underlies several coastal alluvial aquifers and extends north to the San Diego River Valley and south to the United States/Mexico border.[29] The SDF is used as a water supply source by SWA and the City of San Diego through the Reynolds Groundwater Desalination Facility, which is currently being expanded to a capacity of 8,800 AFY.[30] The National City Wells also use SDF water as a supply. According to SWA's *2010 Urban Water Management Plan*, groundwater pumping from the SDF in 2010 was 5,351 AF, or 26% of total supply.[31] Protection of groundwater quality through improved water quality upstream of the aquifer will help manage groundwater for this important supply source to these two agencies.

Direct Water-Related Benefit to DACs

A DAC analysis was completed and is presented in *Attachment 7 Disadvantaged Communities*. This analysis determined which of the projects included in this proposal meet the criteria of a DAC project, as defined in the *2015 PSP* and the *2015 Guidelines*. The *Sweetwater Reservoir Wetlands Habitat Recovery* project is located adjacent to Sweetwater Reservoir, and so falls outside residential areas that can be classified as DAC or non-DAC. To address this disconnect between the project area and the benefit area, SWA's service area was used as a proxy for determining DAC status. **Table 7-1** (see *Attachment 7 Disadvantaged Communities*) shows that the majority (54%) of SWA's service area comprises DACs in National City and Chula Vista (refer to **Figure 2-13**). The project will benefit all customers served by SWA, including those customers that are in DACs. This project directly addresses two DAC needs in **Table 7-2** (see *Attachment 7 Disadvantaged Communities*): surface water quality and DAC outreach. Surface water quality will be improved through restoration of the area around the Sweetwater Reservoir that was burned during the Harris Fire. As described above, riparian areas are anticipated to increase uptake of nutrients and pollutants, improving water quality in the reservoir and groundwater basins. All outreach conducted for this project would address all SWA customers, including its DACs, which, as stated above, comprise the majority of the service area.

Project Performance Monitoring Plan

Benefits of the *Sweetwater Reservoir Wetlands Habitat Recovery* project will accrue as described in **Tables 2-58** and **2-59** above. **Table 2-61** describes the proposed methods that will be used to measure the quantified benefits of this project. The methods used here are the proposed methods and are intended as an example of how the project would be monitored. Final methods would be delineated in the Project Performance Monitoring Plan created under Task 9 of the Work Plan (see *Attachment 3 Work Plan*), which will further document how the habitat improvement and water supply benefits will be measured.

SWA and its project partners will monitor habitat improvement benefits through annual focused surveys and documentation of LBV populations. SWA will monitor water supply benefits by reporting imported water supply and/or local runoff volumes stored in the expanded Sweetwater Reservoir, and documenting reservoir elevations.

[28] Sweetwater Authority. 2015. *HRP Benefit: Increased Imported Water Storage Capacity in SWR*. July 2.
[29] MWD. 2007. *Groundwater Assessment Study: A Status Report on the Use of Groundwater in the Service Area of the Metropolitan Water District of Southern California*. Report Number 1308. September. Chapter 4: San Diego County Basins – South San Diego County Basins.
[30] RMC Water and Environment. 2014. *2014 IRWM Drought Solicitation Implementation Grant Proposal – San Diego IRWM Region*. July.
[31] Sweetwater Authority. 2011. *2010 Urban Water Management Plan*. June.

Because the actual volume of water stored in the reservoir will vary depending on season and supply availability (e.g., actual storage is less a few years into a drought when supplies are limited), SWA will use habitat monitoring data to also determine the potential maximum elevations allowable in the reservoir. As described above, it takes three to five years for riparian habitat to develop sufficient structure for LBV nesting activities. Should habitat surveys indicate that LBV are utilizing the restored habitat earlier or later than anticipated, or that portions of restored habitat are establishing at a different rate than other areas, SWA staff, in consultation with wildlife agencies as necessary, will determine how this affects the allowable elevation of the reservoir. Due to the time required for riparian habitat to grow and establish sufficiently for LBV nesting activities, interim targets have been developed based on riparian growth rates, and are presented in **Table 2-61**.

Table 2-61: Project Monitoring for *Sweetwater Reservoir Wetlands Habitat Recovery*

Proposed Physical Benefits	Measurement Tools and Methods	Targets		
		Years 1-3	Years 3-5	Years 5+
Habitat Improved	SWA will complete focused surveys and photo documentation for LBV and suitable habitat. The baseline for this benefit was described in planning documents, and no additional pre-project surveys are required to establish baseline. The annual focused surveys and photos will document presence of LBV and availability of habitat suitable to LBV nesting activities.	Continued growth and establishment of habitat (photo documentation of habitat health and development)	0-74.6 acres of LBV habitat	112.7 acres of total habitat, including 74.6 acres of LBV habitat
Water Supply	SWA staff will utilize habitat data to determine the maximum allowable capacity of the reservoir, based on availability of LBV habitat in the project area. These allowable elevations will be supplemented with actual reservoir measurements to document how much of the expanded capacity is utilized. The annual reports will compare this data with supply availability data (e.g., SWP allocations or restrictions).	230-foot allowable reservoir elevation (no increase in storage capacity)	230-239-foot allowable reservoir elevation (0 – 7,873 AFY additional storage)	239-foot allowable reservoir elevation (7,873 AFY additional storage)

Cost Effectiveness Analysis

The *Sweetwater Reservoir Wetlands Habitat Recovery* will achieve two quantifiable physical benefits described in detail in the sections above, and summarized in **Table 2-58 and 2-59**. During project development, alternatives to the preferred project included in this application were considered and, ultimately, rejected. **Table 2-62** provides a cost effectiveness analysis consistent with Table 7 of the *2015 PSP*.

Table 2-62: Cost Effective Analysis for *Sweetwater Reservoir Wetlands Habitat Recovery*

Cost Effective Analysis	
Question 1 Physical Benefits Summary	*Types of benefits provided as shown in Table 2-58 and 2-59.* Benefit 1: Habitat Improved – 112.7 acres restored and improved Benefit 2: Water Supply – 7,873 AFY increased storage capacity
Question 2 Alternatives Considered	*Have alternative methods been considered to achieve the same types and amounts of physical benefits as the proposed project been identified?* Yes.
	If no, why? If yes, list the methods (including the proposed project) and estimated costs. As described in the *Habitat Recovery Plan for the Sweetwater Reservoir Wetland Habitat Recovery Project*,[32] four design alternatives were considered, which were required to meet the following feasibility and LBV suitability criteria: • Grading to create access to adequate groundwater for establishing vegetation • Creating a streambed gradient that is in dynamic equilibrium through the site • Creating flow channels sized appropriately to convey stormflow without excessive erosion or vegetation loss • Maintaining adequate LBV habitat acreage per HMP and subsequent mitigation requirements • Feasible cost to SWA for both implementation and management • Soil import-export balance (as much as is feasible) The four alternatives were 1) Minimum Channel Design, 2) Tiered Shallow Basins Design, 3) Downstream Grade Structure Design, and 4) Multi-Channel Design. The preferred alternative was 4) Multi-Channel Design due to the project benefits and cost effectiveness. A cost effective analysis was not included in the final plan.
Question 3 Preferred Alternative	*If the proposed project is not the least cost alternative, why is it the preferred alternative? Provide an explanation of any accomplishments of the proposed project that are different from the alternative project or methods.* There is no least cost alternative identified for the project. However, the proposed project is a slight modification of the preferred alternative from the *Habitat Recovery Plan for the Sweetwater Reservoir Wetland Habitat Recovery Project*, and was selected, in part, due to cost effectiveness. SWA is committed to restoring the imported water storage capacity within the Sweetwater Reservoir, which can only be achieved by restoring LBV habitat. This proposed project accomplished those goals within a scaled down, lower cost, footprint.

[32] SWA. 2011. *Habitat Recovery Plan for the Sweetwater Reservoir Wetland Habitat Recovery Project*. April.

Project 13: Hodges Reservoir Natural Treatment System

Local Project Sponsor: City of San Diego (City)
Partners: Santa Fe Irrigation District (SFID), San Dieguito Water District (SDWD), San Dieguito River Valley Conservancy (SDRVC), and San Diego County Water Authority (SDCWA)

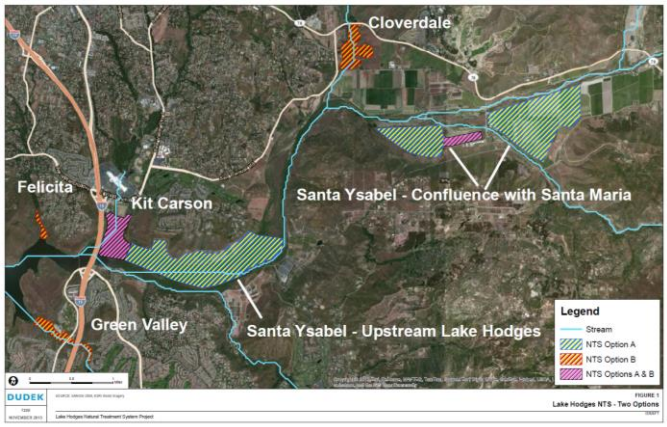
Project Summary

The project will implement a constructed biofiltration wetland at the Hodges Reservoir to treat seasonally degraded water quality in the reservoir.

Project Maps

Figure 2-30 shows the *Hodges Reservoir Natural Treatment System* project area, the service areas of the project sponsor, the project facilities and the project's relation to groundwater basins and surface water, disadvantaged communities (DAC) and proposed monitoring locations. Project location and details are provided in **Figure 2-31**.

The natural treatment system will improve water quality in Hodges Reservoir to maximize use of the reservoir for regional water supply



Conceptual design options from Hodges Reservoir Natural Treatment System Implementation Action Plan

Project Description

The *Hodges Reservoir Natural Treatment System* project, which builds on work funded by previous San Diego Region IRWM grants, will include the design and construction of a natural treatment system (NTS) to improve reservoir water quality. Hodges Reservoir, owned and operated by the City of San Diego, serves the San Dieguito Water District, Santa Fe Irrigation District, and the City of San Diego. Due to SDCWA's Emergency Storage Project, Hodges Reservoir is now connected to Olivenhain Reservoir and SDCWA's regional aqueduct system. However, seasonally degraded water quality in Hodges Reservoir has severely limited the reservoir's use as a regional water supply. Improving water quality in Hodges will allow for optimal water pumping and delivery flexibility in conjunction with the connectivity to the SDCWA's imported water system. Hodges Reservoir is identified as a Clean Water Act 303(d) impaired water body for nitrogen, phosphorus, color, manganese, turbidity, pH, and mercury. Pollution sources emanate from upstream urban development and from agricultural runoff, which is the dominant land use in its 250-square mile watershed. Declining water quality in Hodges Reservoir has placed increasing treatment challenges and costs on present users.

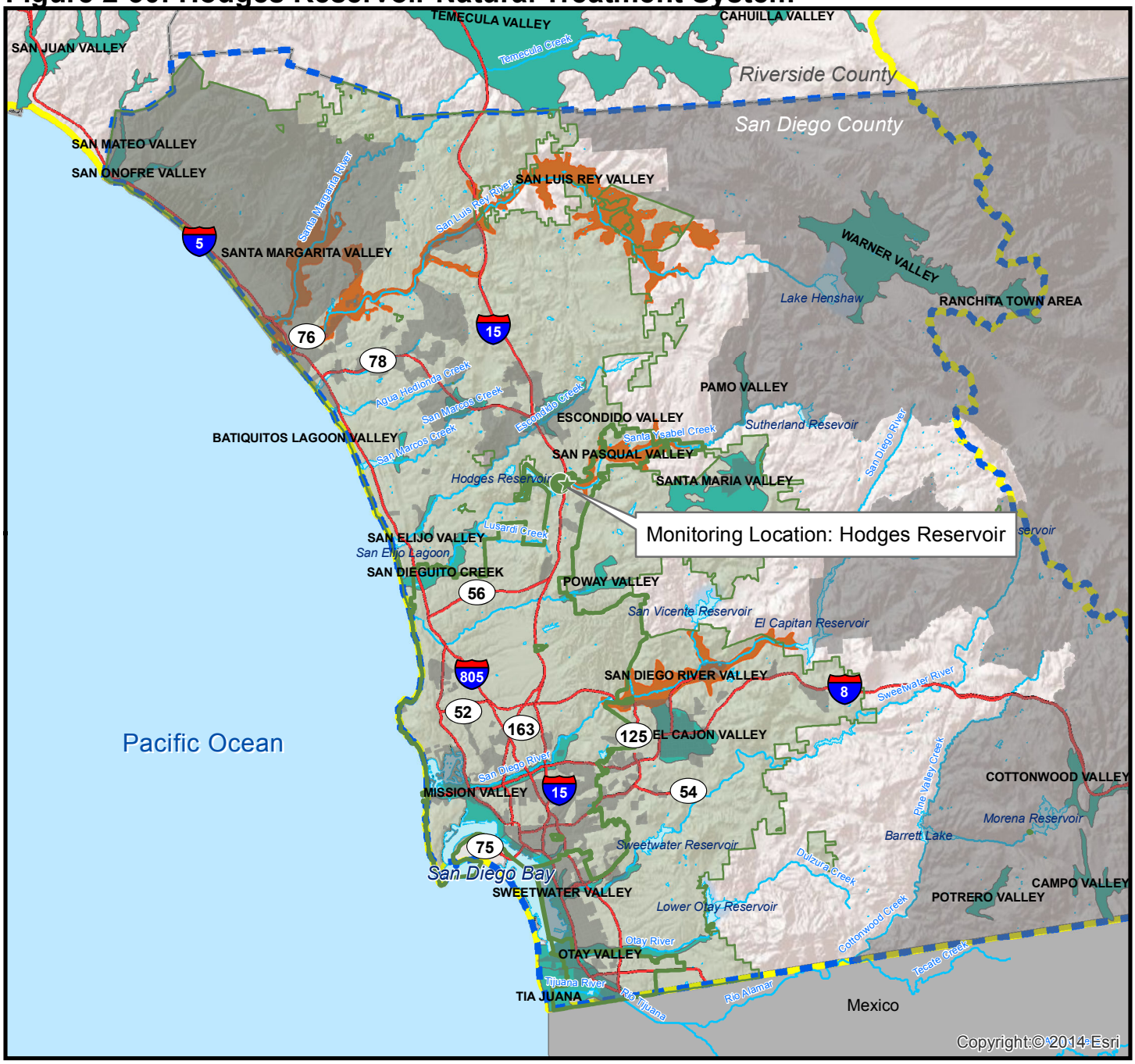
The project partners have pursued two studies associated with water quality in Hodges Reservoir. The *Hodges Reservoir Watershed Natural Treatment System Implementation Action Plan*,[33] prepared by SDRVC and funded by a Prop 50 IRWM grant, recommended a NTS consisting of three constructed treatment wetlands near the confluences of Felicita, Kit Carson, and Green Valley Creeks and Hodges Reservoir. The *Hodges Reservoir Water Quality Assessment Study: Conceptual Planning Report*,[34] prepared by the City and funded by a Prop 84-Round 1 IRWM grant, identified three recommendations for reducing nutrient loading and cycling in the reservoir, one solution being a constructed treatment wetlands that could be developed on the northern shore of Hodges Reservoir and used to filter nutrients from within the reservoir. The *Conceptual Planning Report* identified the three recommendations as: 1) hypolimnetic oxygenation system (construction funded via a Prop 84-Drought Round IRWM grant), 2) upper wetlands NTS (proposed herein), and 3) mid-lake vigorous epilimnetic mixing. The project partners share the following common goals that will be advanced by this project: to improve water quality, water supply reliability, habitat and species conservation, and open space and recreational resources.

The primary goal of the NTS is to improve water quality, specifically reducing nutrient loading, within Hodges Reservoir for the purposes of making the water impounded in the reservoir more treatable at downstream water treatment plants, thus making the water available as a water supply with reduced treatment costs. The project will involve construction of a NTS, which requires site grading and evacuation, installation of water control structures to establish desired hydraulic flow patterns, and placement and sealing of liners (if necessary), and installation of vegetation, irrigation, and hydraulic equipment.

The *Hodges Reservoir Natural Treatment System* project is currently being defined in a study that will combine the recommendations of the two aforementioned technical studies previously funded by IRWM grants to find the most productive and cost-effective NTS for the watershed. Therefore, this Proposal includes the development of design criteria, final design, and construction of a NTS. Construction of the *Hodges Reservoir Natural Treatment System* project will complement the *Regional Emergency Storage and Conveyance System Intertie Optimization* project (solution number one from the *Conceptual Planning Report* described above) funded by a Prop 84-Drought IRWM grant which will manage and control excessive algal productivity, internal nutrient cycling, and improve water quality in the reservoir by injecting pure oxygen to the deep portions of the reservoir. The project partners are now seeking funding for solution number two to compliment the first project. The project will also improve habitat and recreational opportunities in the reservoir as water quality improves.

[33] San Dieguito River Valley Conservancy. 2014. *Draft Hodges Reservoir Watershed Natural Treatment System Implementation Action Plan.* July.
[34] City of San Diego. 2014. *Lake Hodges Reservoir Water Quality Assessment Study: Final Conceptual Planning Report.* June.

Figure 2-30: Hodges Reservoir Natural Treatment System



Coordinates: 33.0577, -117.0796

0 4.75 9.5 19

Miles

N

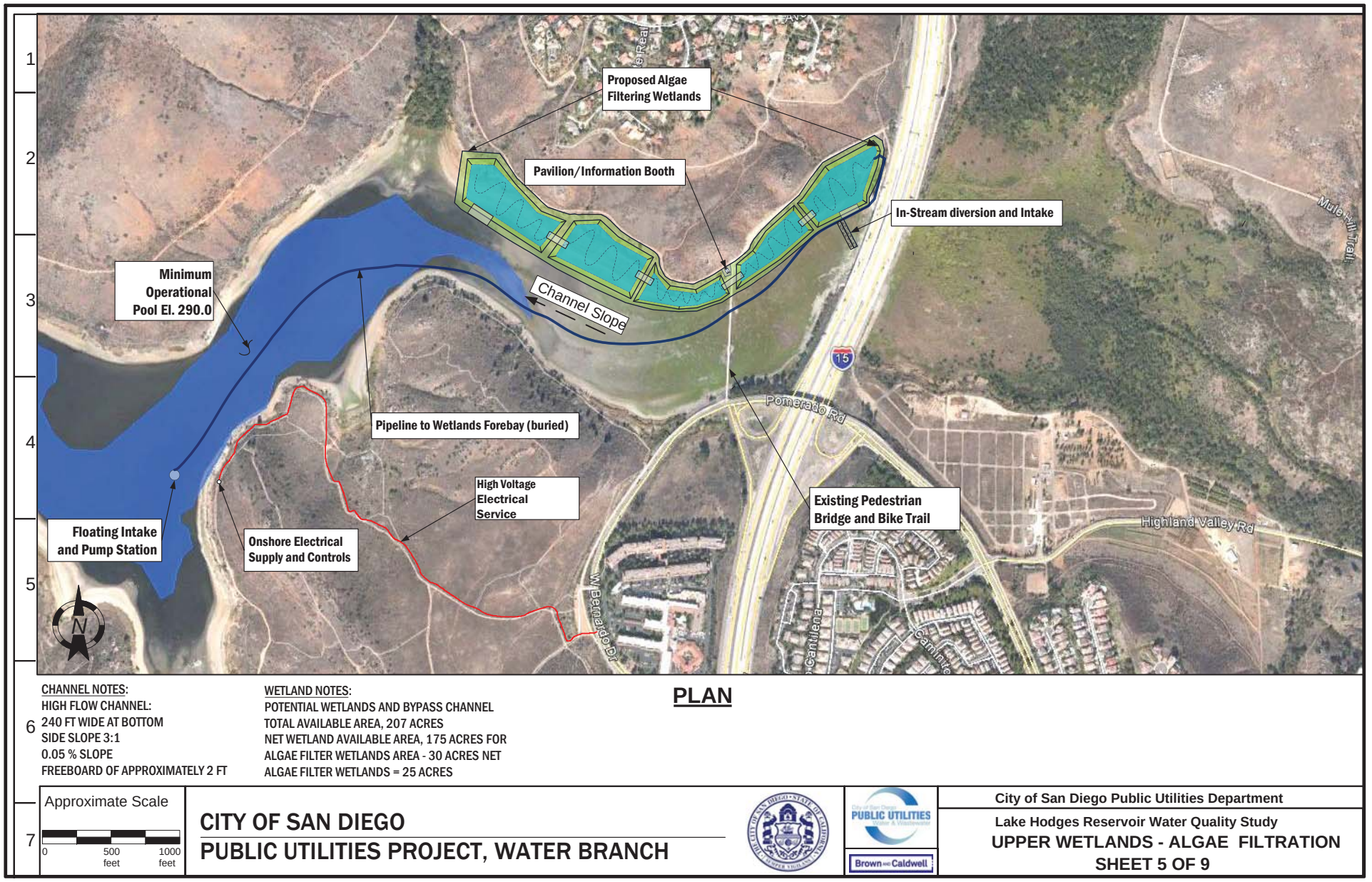
Legend

- San Diego IRWM Region
- Funding Area Boundary
- Freeway
- Waterbody
- County
- DAC Area*
- Medium Priority Groundwater Basin
- Very Low Priority Groundwater Basin
- Hodges Reservoir Natural Treatment System
- City of San Diego - Project Proponent
- Monitoring Location
- Benefit Area: 13 Hodges Reservoir Natural Treatment System (corresponds to San Diego County Water Authority)

*Note: DAC as determined by census tract and block group data for the year 2013, from the American Community Survey 2009-2013 5-year results. DAC determined based on definition of median household incomes below 80% of the statewide MHI or $48,875.

Sources: U.S. Census 2013 ACS 5-year estimates; San Diego Association of Governments (SANDAG) - GIS Data Warehouse
Document Path: N:\Projects GIS\0188-003 SDIRWM Plan Update\Prop84_Rnd4\MXD\Project maps\2-14_HodgesProject30072015.mxd

Figure 2-31: Potential Schematic of Hodges Reservoir Natural Treatment System



Project Physical Benefits

Tables 2-63 and **2-64** provide summaries of the primary (Water Quality) and secondary (Habitat Improved) physical benefits anticipated to be achieved through implementation of the *Hodges Reservoir Natural Treatment System*.

The primary physical benefit of the project is the removal of 10.7 mg/L of total suspended solids (TSS) in surface water flowing through the constructed 5-acre NTS (**Table 2-63**). The baseline for TSS concentration in Hodges Reservoir water was from the City of San Diego's *2010 Watershed Sanitary Survey*. Based on best management practice (BMP) efficacy rates reported in the *Hodges Reservoir Watershed Natural Treatment System Implementation Action Plan,* treatment of surface water by the constructed wetland will result in a discharge concentration of 5.1 mg/L TSS. Mass loading of 23,752 kg of TSS will be removed by the project annually, at a 1,792 acre feet per year (AFY) flow rate (per conceptual design criteria). The project is also expected to remove nitrogen and phosphorous, which will lessen algal production within the reservoir.

Table 2-63: Primary Physical Benefit – Water Quality
Hodges Reservoir Natural Treatment System

Project Name: Hodges Reservoir Natural Treatment System **Type of Benefit Claimed:** Water Quality - TSS reduction **Units of the Benefit Claimed:** mg/L **Anticipated Useful Life of Project:** 30 years			
(a)	**(b)**	**(c)**	**(d)**
Year	**Annual Without Project**	**Annual With Project**	**Annual Change Resulting from Project (c) – (b)**
2020-2049	15.8 mg/L	5.1 mg/L	-10.7 mg/L
Comments: The anticipated useful life of the NTS is 30 years, based on the *Draft Hodges Reservoir Watershed Natural Treatment System Implementation Action Plan.* According to *Attachment 5 Schedule*, post-construction activities would conclude in late 2019 with full operation of the NTS by 2020. The TSS removal derives from the filtration of water through the NTS and assumes a 1,729 AFY flow rate, also from the Action Plan. Without project baseline water quality data (15.8 mg/L) is from the City's *2010 Watershed Sanitary Survey* for streams draining into Hodges Reservoir. Sources: City of San Diego. 2011. *2010 Watershed Sanitary Survey*. (CDPH System Number 37-10020). San Dieguito River Valley Conservancy. 2014. *Draft Hodges Reservoir Watershed Natural Treatment System Implementation Action Plan*. July. Pg 18.			

The secondary physical benefit of the project is 3.75 acres of wetland habitat available in any given year at the NTS (**Table 2-64**). The benefits of habitat creation include habitat for native species such as the tricolored blackbird (*Agelaius tricolor*) and western pond turtle (*Actinemys marmorata*).[35] The fringes and slopes of the wetland basin will be designed to support riparian and coastal sage scrub vegetation communities, respectively. The area's baseline habitat of freshwater marsh is reported in the City of San Diego's Multiple Species Conservation Program *Habitat Management Plan Lake Hodges/San Pasqual Valley Open Space* report. The report notes 67 acres of freshwater marsh in Hodges Reservoir and San Pasqual Valley.[36] The existing freshwater marsh is near the boat ramp in Hodges Reservoir, near Sikes Adobe, and around the large pond next to Cloverdale Creek. The freshwater marsh is typified by perennial species including cattail, bulrush, and willows. Maintenance of the NTS in the form of vegetation removal would occur every 3–5 years and could be staggered so that approximately 25% of the available habitat is removed each year.[37] Therefore, construction of the NTS will make approximately 3.75 acres of freshwater marsh available to local wildlife species in any given year.

[35] City of San Diego. 2015. *Lake Hodges Natural Treatment System Conceptual Design*. March 2, 2015.
[36] Conservation Biology Institute. *Habitat Management Plan: Lake Hodges/San Pasqual Valley Open Space-Administrative Draft*. August 8, 2003.
[37] San Dieguito River Valley Conservancy. 2014. *Draft Hodges Reservoir Watershed Natural Treatment System Implementation Action Plan*. July.

Table 2-64: Secondary Physical Benefit – Habitat Improved
Hodges Reservoir Natural Treatment System

Project Name: Hodges Reservoir Natural Treatment System **Type of Benefit Claimed:** Habitat Improved – constructed wetlands **Units of the Benefit Claimed:** Acres **Anticipated Useful Life of Project:** 30 years			
(a)	**(b)**	**(c)**	**(d)**
Year	**Annual Without Project**	**Annual With Project**	**Annual Change Resulting from Project (c) – (b)**
2020-2049	67 acres	70.75 acres	3.75 acres
Comments: The anticipated useful life of the NTS is 30 years, based on the *Draft Hodges Reservoir Watershed Natural Treatment System Implementation Action Plan.* According to *Attachment 5 Schedule*, post-construction activities would conclude in late 2019 with full operation of the NTS by 2020. The proportion of the NTS available as habitat in any given year is based on the Action Plan's projected O&M program. Without project baseline freshwater marsh acreage (67 acres) was calculated from the City of San Diego's Multiple Species Conservation Program *Habitat Management Plan Lake Hodges/San Pasqual Valley Open Space* report. Sources: Conservation Biology Institute. 2003. *Habitat Management Plan: Lake Hodges/San Pasqual Valley Open Space-Administrative Draft*. August 8, 2003. San Dieguito River Valley Conservancy. 2014. *Draft Hodges Reservoir Watershed Natural Treatment System Implementation Action Plan*. July. Pg 18.			

Technical Analysis of Physical Benefits Claimed

Project Need and Conditions

The Hodges Reservoir watershed comprises 300 square miles extending from the reservoir east to Mesa Grande, north to Guejito Ranch, and south to Ramona. Flows from the upper 50 square miles of the watershed are interrupted at Sutherland Reservoir; as such, the effective watershed for Hodges Reservoir comprises 250 square miles from Sutherland Reservoir to Hodges Reservoir. Owned by the City of San Diego, Hodges Reservoir has a maximum capacity of 30,250 acre feet (AF) and provides surface water supply to the San Dieguito Water District, Santa Fe Irrigation District, and the City of San Diego. In 2012, SDCWA's Emergency Storage Project (ESP) connected Hodges Reservoir to Olivenhain Reservoir and SDCWA's regional aqueduct system. However, seasonally degraded water quality in Hodges Reservoir has severely limited the reservoir's use as a regional water supply. Improving water quality in Hodges will allow for optimal water pumping and delivery flexibility in conjunction with the connectivity to the SDCWA's imported water system.

Hodges Reservoir is identified as a Clean Water Act 303(d) impaired water body for nitrogen, phosphorus, color, manganese, turbidity, mercury and pH. Pollution sources emanate from upstream urban development and from agricultural runoff, which is the dominant land use in its 250-square mile watershed. The fundamental water quality issue in Hodges Reservoir is excessive algal production or eutrophication. High algal productivity impairs the reservoir's usability as a drinking water source because of taste and odor events, high levels of disinfection by-product precursors, filter clogging, high turbidity, and contribution to anoxic conditions in the reservoir's deeper water. Excessive loading of nutrients (in forms of nitrogen and phosphorous) and organic carbon—both external nutrient loading from the catchment and internal nutrient cycling within the reservoir—fuel high algae productivity.[38] SDRVC reports that in the 2010-11 and 2012-13 water years, the majority of the nutrient loading into Hodges Reservoir occurred during 2010-11 (a wet year) from Santa Ysabel Creek.[39] During that water year, Santa Ysabel Creek was estimated to have contributed approximately 18,330 pounds (lbs) of total phosphorous and 60,210 lbs

[38] City of San Diego. 2014. *Lake Hodges Reservoir Water Quality Assessment Study: Final Conceptual Planning Report.* June.
[39] San Dieguito River Valley Conservancy. 2014. *Draft Hodges Reservoir Watershed Natural Treatment System Implementation Action Plan.* July.

of nitrogen to the reservoir. Declining water quality in Hodges Reservoir has placed increasing treatment challenges and costs on present users.

In June 2014, the City of San Diego produced a *Lake Hodges Reservoir Water Quality Assessment Study: Conceptual Planning Report*. The *Conceptual Planning Report* identified three alternatives, one of which is a constructed wetlands and is proposed at the upper section of the reservoir. A floating pump station located along the south shoreline would pump water skimmed from the reservoir's top half meter through a pipeline laid on the reservoir bottom, to the eastern, upstream end of a constructed wetland located just west of the Interstate-15 bridge. Wetland depth would be about 2 feet and would provide about two days of residence time so that wetland plants, likely bulrushes, would filter out the algae. Smaller organisms living together with the plants would decompose the algae and filtered water would discharge back into the reservoir.[40] **Figure 2-31**, above, shows the wetlands conceptual design from the *Conceptual Planning Report*.

Hodges Reservoir is an important component of the regional water supply system and an important wildlife corridor for species located within the urbanized portions of San Diego County

In July 2014, the San Dieguito River Valley Conservancy produced a *Hodges Reservoir Watershed Natural Treatment System Implementation Action Plan* (Action Plan). The Action Plan identified and evaluated two potential conceptual NTS alternatives (see "Cost Effectiveness Analysis" below), noting that one of the primary constraints to development of an effective watershed treatment NTS is the availability of perennial water to support a constructed wetlands. The *Action Plan* evaluated construction of a large constructed wetland (designed to capture and treat up to the 2.5-year storm event) located upstream of Hodges Reservoir versus a series of small constructed wetlands (designed to treat base flow and smaller storm events) located at the confluences of the three tributaries draining urban watersheds (Kit Carson, Green Valley, and Felicita).[41]

The *Action Plan* and *Conceptual Planning Report* both concluded that the preferred alternative is a combined in-reservoir treatment wetlands (from the City's *Conceptual Planning Report*) with the Felicita and Kit Carson treatment wetlands (from the SDRVC's *Action Plan*). Hodges Reservoir provides a unique opportunity for development of a NTS because: 1) there is a large amount of public ownership along the stream courses feeding the lake; 2) there are wetland restoration projects underway in the watershed that establish the general feasibility of the area for NTS projects: and 3) the area's predominately rural character, with moderate urban development, increases the water quality improvement potential of a NTS. The project will complement programs underway to encourage the application of BMPs to agricultural activities in the watershed (see *Regional Drought Resiliency Program* in this Proposal).

The project will provide the framework for extending the water quality benefits anticipated from multiple watershed and water quality projects previously funded through the San Diego IRWM program. "Fixing" Hodges Reservoir

[40] City of San Diego. 2014. *Lake Hodges Reservoir Water Quality Assessment Study: Final Conceptual Planning Report.* June.
[41] San Dieguito River Valley Conservancy. 2014. *Draft Hodges Reservoir Watershed Natural Treatment System Implementation Action Plan.* July.

will not happen by one agency alone, but by a concerted effort by all stakeholders together. IRWM funded projects in the Hodges Reservoir watershed include:

1) *Lake Hodges Natural Treatment System Conceptual Design* (produced *Hodges Reservoir Watershed Natural Treatment System Implementation Action Plan*), SDRVC – Prop 50
2) *Biofiltration Wetland Creation and Education Program* (funded biofiltration wetlands at the upstream San Diego Zoo Safari Park), Zoological Society of San Diego – Prop 50
3) *Lake Hodges Water Quality and Quagga Mitigation Measures* (produced *Hodges Reservoir Water Quality Assessment Study: Conceptual Planning Report*), SDCWA – Prop 84-Round 1
4) *Regional Emergency Storage and Conveyance System Intertie Optimization*, City of San Diego (funded installation of reservoir oxygenation system) – Prop 84-Drought IRWM grant
5) *Safari Park Drought Response and Outreach Program,* Zoological Society of San Diego – this Proposal
6) *Hodges Reservoir Natural Treatment System,* City of San Diego – this Proposal

San Diego County is one of the most highly biodiverse areas of the country, with more endangered, threatened, and rare species than any other comparable area in the nation.[42] Wetland habitat created by this project could provide habitat for species that thrive in these areas, as well as species that forage or hunt in or around wetlands. This project will also improve water quality in Hodges Reservoir, providing higher quality habitat for aquatic species downstream of the constructed wetland. A California Natural Diversity Database (CNDDB) query for the project area had 37 species (22 plants and 15 animals) recorded as existing or with the potential to exist in the area surrounding Hodges Reservoir. Habitat improvements from the *Hodges Reservoir Natural Treatment System* project could help to support populations of the wildlife species listed in **Table 2-65**.

Table 2-65: Species Listed in CNDDB Within or Near the Project Area

Animals		
Federal- or State-Listed Threatened, Endangered, or Candidate Species		
Coastal California Gnatcatcher	Least Bell's Vireo	San Diego Fairy Shrimp
Swainson's Hawk		
Non-Listed Species		
Coast Horned Lizard	Nuttall's Scrub Oak	Southern California Rufous-Crowned Sparrow
Coastal Cactus Wren	Orangethroat Whiptail	Western Mastiff Bat
Dulzura Pocket Mouse	Red-Diamond Rattlesnake	Western Pond Turtle
Northwestern San Diego Pocket Mouse	San Diego Desert Woodrat	

Source: California Natural Diversity Database (CNDDB). RareFind 5 database query within Project Area (21 July 2015).

Without-Project Conditions

Without the *Hodges Reservoir Natural Treatment System* project, a wetland NTS would not be constructed to improve water quality of Hodges Reservoir. Currently, SDCWA's ESP allows connectivity between Hodges Reservoir and Olivenhain Reservoir, however, seasonally degraded water quality in Hodges Reservoir is not ideal for pump-back to Olivenhain Reservoir nor delivery to the regional water supply system. Treatment of Hodges Reservoir water (reduction of TSS and nutrients) will allow for easier and lower cost management of water supplies within the pumped storage operation and at downstream water treatment plants. Reservoir water quality would continue to impair the reservoir's usability as a drinking water source because of taste and odor events, high levels of disinfection by-product precursors, filter clogging, high turbidity, and contribution to anoxic conditions in the reservoir's deeper water. Without this and complimentary projects already completed or currently underway, the degraded water quality of Hodges Reservoir would continue to prevent water supplies from being optimally utilized

[42] San Diego RWMG and RAC. 2013. *2013 San Diego Integrated Regional Water Management Plan*. September.

for the region. Without the 5-acre NTS, wetlands habitat would also not be provided for wetland-associated species such as the tricolored blackbird (*Agelaius tricolor*) and the western pond turtle (*Actinemys marmorata*).

Methods Used to Estimate the Physical Benefits

Primary Benefit – Water Quality

The primary physical benefit of the project (Water Quality) is the removal of 10.7 mg/L of TSS from NTS discharges into Hodges Reservoir. Constructed wetlands are among the most effective BMPs for runoff pollutant removal, and they can also offer aesthetic and habitat value. Constructed wetlands use natural ecosystems to remove sediment, nutrients, pathogens, and other contaminants from low-flow natural and urban runoff, as well as smaller storm runoff. As runoff flows through the wetland, pollutant removal is achieved through settling and biological uptake within the constructed wetland.[43] The *Draft Hodges Reservoir Watershed Natural Treatment System Implementation Action Plan* concludes that the constructed wetlands NTS will provide substantial pollutant removal for urban and stormwater runoff entering Hodges Reservoir.

According to the City of San Diego's *2010 Watershed Sanitary Survey*, the TSS concentration of source waters draining to Hodges Reservoir (which would be captured and treated by the NTS) is 15.8 mg/L.[44] Based on extensive review of BMP efficacy, the *Draft Hodges Reservoir Watershed Natural Treatment System Implementation Action Plan* estimates a 68% decrease in TSS concentration as a result of treatment through a constructed wetlands. Treatment through the 5 acres of constructed wetland will result in a water quality improvement of -10.7 mg/L of TSS, assuming a flow rate of 1,792 AFY (per the conceptual design criteria). The treated water will have a resulting concentration of 5.1 mg/L. Mass loading of 23,752 kg of TSS will be removed by the project annually.

$$15.8\frac{mg}{L}\ TSS * 68\%\ TSS\ removal\ via\ NTS = \mathbf{10.7}\frac{\boldsymbol{mg}}{\boldsymbol{L}}\ \boldsymbol{TSS\ reduction}$$

The project will also result in a significant reduction in nitrogen and phosphorus concentrations in runoff entering Hodges Reservoir, albeit smaller reductions that in TSS. The Action Plan reports existing Total Nitrogen concentrations in the urban watersheds draining to Hodges Reservoir (Kit Carson, Felicita, and Green Valley) ranging from 0.65-3.60 mg/L.[45] At an estimated 33% removal rate (per the Action Plan), Total Nitrogen concentrations would be reduced by 0.21-1.19 mg/L. Similarly, the Action Plan reports Total Phosphorus concentrations in those same urban watersheds as ranging from 0.17-0.19 mg/L.[46] At an estimated 53% removal rate (per the Action Plan), Total Phosphorus concentrations would be reduced by 0.09-0.10 mg/L. These reductions are critical to managing the eutrophication issues faced by Hodges Reservoir managers; however, as they are slightly lower reductions, TSS removal has been presented herein as the primary benefit.

Secondary Benefit – Habitat Improved

The secondary physical benefit of the project is 3.75 acres of habitat created by the constructed wetland. The City (the local project sponsor) anticipates construction of a minimum 5-acre NTS, based on the two previous studies and scaled down due to funding limitations. Although a constructed wetlands would require maintenance in the form of vegetation and sediment removal and disposal, if properly managed with protection of wildlife (particularly nesting birds and amphibians), this habitat could provide substantial benefits to native wildlife species. Wetlands habitat could provide sufficient habitat for a nesting colony of tricolored blackbird (*Agelaius tricolor*), as well as habitat for western pond turtle (*Actinemys marmorata*).[47]

In general, it would be expected that freshwater marsh would require maintenance in the form of vegetation removal every 3–5 years and could be staggered so that approximately 25% of the available habitat is removed

[43] San Dieguito River Valley Conservancy. 2014. *Draft Hodges Reservoir Watershed Natural Treatment System Implementation Action Plan.* July.
[44] City of San Diego. 2011. *2010 Watershed Sanitary Survey*. (CDPH System Number 37-10020).
[45] San Dieguito River Valley Conservancy. 2014. *Draft Hodges Reservoir Watershed Natural Treatment System Implementation Action Plan.* July.
[46] San Dieguito River Valley Conservancy. 2014. *Draft Hodges Reservoir Watershed Natural Treatment System Implementation Action Plan.* July.
[47] San Dieguito River Valley Conservancy. 2014. *Draft Hodges Reservoir Watershed Natural Treatment System Implementation Action Plan.* July.

each year.[48] Therefore, approximately 3.75 acres of constructed wetlands habitat would be available to local wildlife species in any given year.

$$5\ acres\ habitat - \left(5\ acres * 25\% \frac{habitat\ mgmt}{year}\right) = \mathbf{3.75}\ \frac{\boldsymbol{acres\ habitat}}{\boldsymbol{year}}$$

New Facilities, Policies, and Actions Required to Obtain Physical Benefits

To obtain the benefits from the *Hodges Reservoir Natural Treatment System* project, the NTS consisting of one 5-acre wetland will be engineered, constructed, monitored, and maintained. This will include the installation of irrigation and hydraulic equipment as needed to maintain perennial flow and provide constant TSS and nutrient removal to reservoir waters. No additional facilities, policies or actions will be required to obtain the physical benefits from this project. However, ongoing maintenance in the form of vegetation and sediment removal and disposal will be necessary to ensure the pollutant removal efficacy of the NTS is maintained over time.

Potential Adverse Physical Effects of the Project and Mitigation

The project may result in temporary environmental impacts during the construction of the NTS, including air quality emissions, noise, and traffic from hauling, grading, and excavation activities. Potential impacts include changes in stream or reservoir hydrology, along with resulting flooding risks, and impacts to special-status vegetation communities and species. Significant permitting (from U.S. Army Corp of Engineers, California Department of Fish and Wildlife, and Regional Water Quality Control Board) will be necessary because the NTS will affect jurisdictional wetland and riparian areas. Construction of the wetland will likely require the replacement of existing native upland or riparian habitat as mitigation. *Attachment 3 Work Plan* includes the permitting and CEQA compliance tasks necessary to avoid, mitigate, or compensate for potential adverse physical effects of the project.

Long-Term Drought Preparedness

This project will help to achieve long-term drought preparedness by enabling the use of a system intertie between local runoff from the Hodges Reservoir catchment and the regional imported water supply system. The intertie also allows imported water to be stored and later withdrawn from Hodges Reservoir for the first time. SDCWA's ESP is a system of reservoirs, interconnected pipelines, and pumping stations designed to make water available to the San Diego region in the event of a disaster or an interruption in imported water deliveries. Improving water quality in the reservoir will provide immediate regional drought preparedness by enhancing local water supply reliability by making local supplies more readily available for use. However, it's important to note that this proposed project is one more contribution to an overall systematic solution to the water quality issues in Hodges Reservoir. The *2013 IRWM Plan* clearly outlined the water quality issues Hodges Reservoir and the projects proposed and underway to help resolve the issues.[49] The reservoir issues will be resolved through collaboration by all stakeholders and implementation of the multiple projects and actions.

Direct Water-Related Benefit to DACs

Although the *Hodges Reservoir Natural Treatment System* project will be implemented directly adjacent to Hodges Reservoir and will benefit the Region through improved emergency storage functionality, and the City through increasing water storage capacity. The direct benefits will be realized across the Region, specifically areas that are served by local water agencies. For this reason, SDCWA's service area has been used here as the appropriate proxy for DAC determination. SDCWA's service area is 26% DAC by area, and 30% DAC by population (see *Attachment 7*, **Table 7-1**). This project directly addresses one urban DAC issue identified in the 2013 IRWM Plan:[50] surface water quality. Surface water quality benefits are realized because the constructed wetland will remove pollutants, including TSS, from surface water inflow to Hodges Reservoir that contribute to water quality issues in the reservoir. Over time, the water quality benefit realized directly by this flow will improve overall water quality in the reservoir itself..

[48] San Dieguito River Valley Conservancy. 2014. *Draft Hodges Reservoir Watershed Natural Treatment System Implementation Action Plan.* July.
[49] San Diego RWMG and RAC. 2013. *2013 San Diego IRWM Plan*.
[50] RWMG. 2013. *2013 San Diego Integrated Regional Water Management Plan*. September.

Project Performance Monitoring Plan

Benefits will begin accruing as soon as NTS construction is complete. **Table 2-66**, below, describes the methods that will be used to measure the quantified benefits of this project. Note that these methods may change, pending development of the Project Performance Monitoring Plan under Task 9 of the Work Plan (see *Attachment 3 Work Plan*), and are presented as one option for measuring progress towards achieving the claimed benefits. Measurable targets for each benefit are also presented in the table.

As owner and operator of Hodges Reservoir, the City of San Diego will be responsible for monitoring and reporting water quality flowing into and out of the NTS, as well as vegetation/sedimentation maintenance activities that might impact habitat availability for wetland-dependent species.

Table 2-66: Project Monitoring for *Hodges Reservoir Natural Treatment System*

Proposed Physical Benefits	Measurement Tools and Methods	Targets
Water Quality Improvement	The City of San Diego will collect pre- and post-construction water quality data, at sampling points near the inlet and outfall of the NTS. Monitoring is needed to measure whether the NTS is meeting its objective(s) and to indicate biological integrity. The monitoring program will characterize the baseline hydrology and water quality of the proposed NTS area and its contributing watersheds. Water quality monitoring will consist of continuous flow and water level measurement, sampling to determine influent and effluent concentration of pollutants, and field measurement of general water quality parameters.	10.7 mg/L reduction in TSS concentration of flow through the constructed wetland (along with nutrient concentrations)
Habitat Improved	The City of San Diego will monitor post-construction wetlands habitat areas, in light of vegetation and sediment maintenance activities. During the establishment period, the City's contractor will be responsible for monitoring the landscape and providing routine maintenance. After establishment, the City will monitor and report on the acreage of vegetation management and/or removal within the 5 acre NTS.	3.75 acres of wetlands habitat availability within any given year

Cost Effectiveness Analysis

The *Hodges Reservoir Natural Treatment System* will achieve two quantifiable physical benefits described in detail in the sections above, and summarized in **Table 2-63 and 2-64**. During project development, alternatives to the preferred project included in this application were considered and, ultimately, rejected. **Table 2-67** provides a cost effectiveness analysis consistent with Table 7 of the *2015 PSP*.

Table 2-67: Cost Effective Analysis for *Hodges Reservoir Natural Treatment System*

Cost Effective Analysis	
Question 1 Physical Benefits Summary	*Types of benefits provided as shown in Table 2-63 and 2-64.* Water Quality – 10.7 mg/L TSS reduction Habitat Improved – 3.75 acres constructed wetland habitat
Question 2 Alternatives Considered	*Have alternative methods been considered to achieve the same types and amounts of physical benefits as the proposed project been identified?* Yes
	If no, why? If yes, list the methods (including the proposed project) and estimated costs. The *Hodges Reservoir Watershed Natural Treatment System Implementation Action Plan* considered detention basins, constructed wetlands, and swales as possible forms

Cost Effective Analysis	
	for a watershed NTS. Swales were eliminated from consideration because of their small treatment scale (maximum 10-50 acres), high geographic distribution, and high lifecycle costs (frequency of maintenance). Two options were further developed for water quality evaluation and hydrologic modeling. Option 1 consists of a large constructed wetland (designed to capture and treat up to the 2.5-year storm event) located upstream of Hodges Reservoir and a series of detention basins located along the main stem of Upper Santa Ysabel Creek and Santa Maria Creek. In order to sustain the constructed wetlands throughout the year, water would need to be pumped from Hodges Reservoir into the constructed wetland during dry periods. Option 1 was estimated to have a $115-240 million construction cost and $1.3-2.7 million annual maintenance cost. Option 2 consists of a series of smaller constructed wetlands located at the confluences of the three tributaries draining the urban watersheds directly into Hodges Reservoir. This NTS option would be designed to capture and treat the urban base flow and smaller storm events discharging from the Kit Carson, Green Valley, and Felicita urban watersheds. Option 2 was estimated to have a $1.3-2.7 million construction cost and $26,000-55,000 annual maintenance cost. The Action Plan concluded that Option 1 may provide substantially greater nutrient reduction during wet years when multiple storm events occur, whereas Option 2 would help reduce nutrient loading from base flow and small storm events. Option 2 was identified as the preferred alternative, primarily due to the substantial cost-benefit savings (less cost and complexity). The *Lake Hodges Reservoir Water Quality Assessment Study: Final Conceptual Planning Report* proposed an in-reservoir constructed wetland to improve water quality. A floating pump station with an algae-skimming intake would collect water from the surface of the reservoir which has the highest concentrations of algae. Water would be pumped to a constructed wetland along the shallow northern shore of the reservoir and then pass through a series of "cells" within the wetland at a minimum 2-day hydraulic residence time for optimal nutrient removal before discharging to the reservoir. The design concept developed for this constructed wetlands consists of a series of five wetland basins along the north shore of the reservoir, with an in-stream diversion/intake immediately downstream of I-15, and discharge located immediately east of Felicita Creek. The wetlands would occupy approximately 25 acres and have an estimated construction cost of $7.5-9.8 million. The Action Plan and Conceptual Planning Report both concluded that combining the in-reservoir treatment wetlands (from the City's Conceptual Planning Report) with the Felicita and Kit Carson treatment wetlands (from the SDRVC's Action Plan) is the selected preferred alternative.
Question 3 Preferred Alternative	*If the proposed project is not the least cost alternative, why is it the preferred alternative? Provide an explanation of any accomplishments of the proposed project that are different from the alternative project or methods.* No, this is not the least cost alternative for the project – Option 2 from the Action Plan has lower costs, but does not achieve the nutrient reduction goals of stakeholders as well. Extensive water quality and hydrologic analysis has been completed by stakeholders within the Hodges Reservoir catchment to identify a preferred NTS for best treating nutrient loading to the reservoir. During preparation of the Action Plan (by SDRVC) and the Conceptual Planning Report (by the City), a committee of SDRVC, City of San Diego, SFID, and SDCWA was established to reach consensus about a preferred approach. This Proposal includes that preferred approach.

Attachment 3

San Diego Integrated Regional Water Management

2015 IRWM Implementation Grant Proposal

Work Plan

Attachment 3 consists of the following items:

- ✓ **Work Plan.** This attachment includes a description of the tasks necessary to complete each project in this Proposal, including necessary deliverables, and the current status of each project.

Table of Contents

Introduction

This *2015 IRWM Implementation Grant Proposal* (Proposal) contains thirteen high-priority projects that were evaluated and selected by a subcommittee (the Project Selection Workgroup) of the Region's primary stakeholder body, the Regional Advisory Committee (RAC). The Project Selection Workgroup carefully evaluated each project to determine its potential to provide multiple benefits to the Region and ability to address Regional priorities. It also evaluated each project's readiness to proceed, previously completed work, and viability.

This attachment contains descriptions of the anticipated tasks necessary to complete each project in the Proposal, including the current status of the project (percent or % complete for each task), and any required permitting activities. The tasks and information provided for each project are consistent with project-related information provided in the *Attachment 4 Budget* and *Attachment 5 Schedule*.

Grant Administration

Grant Administrator: San Diego County Water Authority (SDCWA)
Partners: Local Project Sponsors – Padre Dam Municipal Water District, Zoological Society of San Diego, City of Escondido, San Elijo Joint Powers Authority, University of California San Diego, Groundwork San Diego, City of San Diego, The Water Conservation Garden, Rural Community Assistance Corporation, USDA Forest Service, and Sweetwater Authority

Project Description

SDCWA is the applicant for the *2015 IRWM Implementation Grant Proposal*, and will be responsible for contracting with DWR, contracting with project proponents (referred to here as "local project sponsors" or "LPS"), submitting all invoices, progress reports, and deliverables to DWR on behalf of LPS, ensuring compliance with all grant requirements, and coordinating with DWR and LPS. To date, SDCWA has served as the grant administrator for four successful IRWM Implementation Grants (Prop 50, Prop 84-Round 1, Prop 84-Round 2, and Prop 84-Drought Round) and one IRWM Planning Grant (Prop 84-Round 1).

A Work Plan for Grant Administration is provided in **Table 3-1** below. Consistent with the example provided in the *2015 PSP*, Grant Administration activities have been broken into 3 tasks: 1) Agreement Administration, 2) Invoicing, and 4) Progress Reports and Project Completion Reports.

Table 3-1: Work Plan for *Grant Administration*

Task and Description of Work to be Completed	Deliverables	%*
Row (a): Direct Project Administration		
1: Agreement Administration – SDCWA will lead reporting and compliance requirements associated with administration of the grant, and will coordinate with the LPS project managers responsible for implementing the projects included in this Proposal and any associated grant agreements. This involves grant progress reporting to the Regional Water Management Group (RWMG) and Regional Advisory Committee (RAC), as well as facilitation of periodic LPS meetings to discuss contract requirements and/or issues. SDCWA will develop a "webtool" solely dedicated to communicating, storing, and tracking this Grant Program's agreement compliance requirements. LPS will use the webtool to upload contract deliverables, invoice packets, and quarterly reports. SDCWA will execute individual contracts with LPS governing grant agreement requirements and the responsibilities for each party. This also includes labor compliance evaluation services to LPS related to their grant project.	• Executed Grant Agreement with DWR	0%
2: Invoicing – SDCWA will coordinate with LPS to compile invoices for submittal to DWR. This includes collecting invoice documentation from each LPS, reviewing the invoice materials for accuracy and adequacy for Grant Agreement criteria, coordinating necessary updates with LPS, and compiling the information into a DWR Invoice Packet. This task also includes tracking and monitoring the Grant Program's budget and LPS reimbursements.	• Invoices and backup documentation	0%
3: Progress Reports and Project Completion Reports – SDCWA will be responsible for compiling progress reports for submittal to DWR. SDCWA will coordinate with LPS staff to retain consultants as needed to prepare and submit progress reports and final project completion reports for each project, as well as the grant completion reports. Reports will meet generally accepted professional standards for technical reporting and the requirements terms of the contract with DWR outlined in provisions of the Final Grant Agreement. For example, progress reports will explain the status of the project and will include the following information: summary of the work completed for the project during the reporting period; activities and milestones achieved; and accomplishments and any problems	• Quarterly Project Progress Reports • Grant Program Completion Report	0%

Task and Description of Work to be Completed	Deliverables	%*
encountered in the performance of work. Project completion reports will include: documentation of actual work done, changes and amendments to each project, a final schedule showing actual progress versus planned progress, and copies of final documents and reports generated during the project.		
** The right-hand column displays % complete for each task.*		

Conservation Program

Project 1: Regional Drought Resiliency Program

Local Project Sponsor: San Diego County Water Authority (SDCWA)
Partners: California Department of Corrections and Rehabilitation (CDCR), Otay Water District, Mission Resources Conservation District (MRCD)

Project Description

SDCWA will expand current water conservation and sustainability programs to continue its efforts to reduce water use and improve water awareness in the community. The *Regional Drought Resiliency Program* project will conduct a correctional facility retrofit project to reduce water use in prisons, expand the existing turf replacement program and upgrade it to a sustainability program, continue efforts to improve agricultural irrigation efficiencies, and continue education and outreach programs that empower and enable individuals to implement changes in their personal lives to reduce water use. This project will conserve a total of 1,809 AFY potable water (14,494 AF over the project life) and help SDCWA and the Region meet its water conservation goals and reduce water use during drought. This project consists of six components.

Component 1: Correctional Facility Retrofit Project: In collaboration with CDCR and Otay Water District, this project provides financial incentives for the direct installation of water efficiency hardware upgrades at Donovan Correctional Facility (DCF), a 780-acre state prison facility located in unincorporated southern San Diego County. This project will purchase 600 electronic faucet controllers, 265 aerators, 44 faucet flow reducers, 188 low-flow showerheads with timers, 26 commercial toilets, 4 urinal flush valves, and 267 high-efficiency toilets and 23 urinals for public and employee areas at DCF to produce immediate water and embedded energy savings. The project is modeled after a successful pilot phase at the Bailey and Vista detention facilities that together reduced water use by more than 348 AFY.

Component 2: Electrical Conductivity (EC) Mapping and Soil Moisture Sensor Systems Project: This project will develop and use EC maps to install 200 soil moisture sensor systems that would enable approximately 100 farmers in SDCWA's service area to use precise irrigation management, rather than rely on calendars to make irrigation decisions.

Component 3: WaterSmart Field Services Program: This program (aka WaterSmart Checkup) will reduce water waste and increase water-use efficiency through water surveys and landscape audits. Participation in this program will be open to all users, but will target mid- to heavy water users across all markets. Field services provide water use data, savings recommendations, and resources to assist in reducing water use to participants. Approximately 8,300 field services will be conducted.

Component 4: Sustainable Landscapes Program: This program will promote outdoor water use efficiency in the residential and commercial, industrial, and institutional sectors by expanding existing financial incentives to replace an additional 1,270,588 square feet of turf with water-wise plant material and upgrade overhead sprinkler irrigation systems to high-efficiency irrigation systems. Due to changing regulatory and drought conditions, SDCWA may also add components to the existing turf rebate program to achieve multiple benefits from more sustainable landscape practices.

Component 5: WaterSmart Landscape Makeover Program: This program will provide homeowners with the education and skills necessary for successful conversion of turf into a WaterSmart landscape. A four-class series will provide an opportunity for hands-on learning necessary for a successful landscape retrofit, and will result in a landscape design ready for implementation. This series will be conducted five times and participants will commit to converting a minimum of 400 sq ft of turf, with an average conversion of 1,000 sq ft. Additional 3-hour workshops and online eLearning modules will also be developed that will be self-paced and available 24/7.

Component 6: Drought Outreach and Education: This program will communicate water-efficient practices and ensure compliance with local water use restrictions and state-mandated reductions; use media and community partners to leverage grant and operating funds and to increase the reach of conservation messaging; inform the public of programs that provide water-efficient landscape education; provide outreach to Hispanic, Pan-Asian and other minority communities with appropriate native language advertising and community events; offer programs for K-12 students, community leaders and other key audiences to establish a life-long conservation ethic; and conduct research to track changes in attitudes and monitor effectiveness.

A Work Plan for the *Regional Drought Resiliency Program*, including the anticipated tasks necessary to complete the project, deliverables, and current status of the project, is provided in **Table 3-2** below.

Table 3-2: Work Plan for *Regional Drought Resiliency Program*

Task and Description of Work to be Completed	Deliverables	%*
Row (a): Direct Project Administration		
1: Project Management - Work includes managing grant agreement, preparing and submitting supporting grant documents, coordination with the San Diego IRWM Program Manager (Grantee), perform responsibilities associated with the project such as coordinating with project team and managing consultants/contractors. Specific agreements that will be developed under this task include: • Development, review and execution of a Memorandum of Understanding (MOU) between the SDCWA and the State of California. • Development, review and execution of a Professional Service Agreement between the SDCWA and MRCD. • Development, review and execution of Letter Agreements between SDCWA and its member agencies.	• Environmental Information Form (EIF) • Financial Statements • Project Invoices and supporting documentation • Agreements between project partners, participating agencies, and others, as applicable	0%
2: Labor Compliance Program – None of the components included here qualify as public works projects, and therefore no labor compliance is needed.	• N/A	N/A
3: Reporting – Work includes preparing quarterly progress reports and project completion reports for submittal to DWR via Grantee.	• Quarterly Project Progress Reports • Project Completion Report	0%
Row (b): Land Purchase/Easement		
4: Land Purchase – No land acquisition is required for the proposed project.	• N/A	N/A
Row (c): Planning/Design/Engineering/Environmental Documentation		
5: Feasibility Studies – This project expands on existing programs and no feasibility studies are required.	• N/A	N/A
6: CEQA Documentation - This program does not qualify as a "project" under CEQA, and no environmental compliance documents are required.	• See EIF in Task 1	N/A
7: Permitting – None of the components include construction or other activities requiring permits for implementation. Installation activities for Component 1 will be conducted by DCF's existing Facility Planning, Construction, and Management section and do not require permits.	• N/A	N/A
8: Design - This project is an expansion of existing programs and no additional design or planning is required.	• N/A	N/A
9: Project Performance Monitoring Plan - Develop and submit a Project Performance Monitoring Plan (PPMP), including baseline conditions, monitoring systems to be used, methodology of monitoring, frequency of monitoring, and location of monitoring sites.	• Project Performance Monitoring Plan	0%

Task and Description of Work to be Completed	Deliverables	%*
Row (d): Construction/Implementation		
10: Contract Services • *Component 1: Correctional Facility Retrofit Project* - DCF has a Facility Planning, Construction and Management section that allows it to manage its real estate requirements in a comprehensive manner, including the retrofit of existing facilities. • *Component 2: EC Mapping and Soil Moisture Sensor Systems Project* – This component is covered under an existing Professional Services Agreement between SDCWA and MRCD for FYs 2016-18, which was approved in May 2015. • *Component 3: Field Services Program* - In May 2015, SDCWA executed a Professional Services Agreement with MRCD for implementation of the existing WaterSmart Field Services Program. Letter Agreements are also in place with participants in the regional program or self-performing the field services. • *Component 4: Sustainable Landscapes Program* - SDCWA executed a Professional Services Agreement with WaterWise Consulting, Inc. in June 2012 to administer its existing Turf Replacement Rebate Program. • *Component 5: WaterSmart Landscape Makeover Program* - SDCWA executed a Professional Services Agreement amendment and extension with DeLorenzo International in June 2015 to administer the existing WaterSmart Landscape Makeover Program. • *Component 6: Drought Outreach and Education* – SDCWA will issue a Request for Proposals (RFP) for research services, procure the services of a firm specializing in translation and minority outreach, media placement and strategy, and may procure services for social media strategy, graphic design, video production and website design.	• DCF Facility Planning, Construction, and Management for Component 1 • Existing Agreement with MRCD for Component 2 • Existing Agreement with MRCD for Component 3 • Existing Agreement with WaterWise Consulting, Inc for Component 4 • Existing Agreement with DeLorenzo International for Component 5 • RFP for Research Services for Component 6	80%
11. Construction Administration • *Component 1: Correctional Facility Retrofit Project* - Pre- and post-site inspections, procurement of a contractor to install water efficient devices, tracking and submitting of billable activities. DCF coordination of inmate schedules to allow for retrofit activities. Coordinate provisions for a secured construction staging area within the prison. • *Component 2: EC Mapping and Soil Moisture Sensor Systems Project* - Develop and distribute a project flyer to educate prospective participants about the benefits, participant obligations, scope, schedule and budget of the project. • *Component 3: Field Services Program* - Implementation administrative activities and costs are incorporated into Task 12.3. • *Component 4: Sustainable Landscapes Program* - Implementation administrative activities and costs are incorporated into Task 12.4. • *Component 5: WaterSmart Landscape Makeover Program* - Implementation administrative activities and costs are incorporated into Task 12.5. • *Component 6: Drought Outreach and Education* - Implementation administrative activities and costs are incorporated into Task 12.6.	• Pre- and post-site inspection report for Component 1 • Project flyer for Component 2	0%
12. Construction/Implementation Activities – Implementation of the faucets, showerheads, and toilets in Subtask 12.1 will be in compliance with professional plumbing standards. Implementation of turf conversions in Subtask 12.4 will be in compliance with the program guidelines and professional landscape standards.		

Task and Description of Work to be Completed	Deliverables	%*
Subtask 12.1: Correctional Facility Retrofit Project – This project will involve the purchase of 600 electronic faucet controllers, 265 aerators, 44 faucet flow reducers, 188 low-flow showerheads with timers, 290 high-efficient toilets and urinals, and 4 urinal flush valves for installation at DCF. This project is a partnership with CDCR and Otay Water District. Installation will be completed by Correctional Facility staff and contractors.	• Pre- and post-installation photos • Documentation of water saving hardware and fixtures purchases	0%
Subtask 12.2: EC Mapping and Soil Moisture Sensor Systems - This project will provide the grower with an EC map tool. EC maps will reduce overwatering during cool times of the year and underwatering during warmer periods. They will also identify the Available Water Holding Capacity (AWHC) of soils within SDCWA's service area to help direct management decisions for more efficient irrigation of an agricultural site. This task includes professional services to perform EC mapping, and purchase and placement of 200 soil moisture sensor systems. EC mapping will help create management zones in the field to direct management decisions about how much water to apply and when to initiate an irrigation event. It will help manage these zones to better control the timing of an irrigation event for specific areas of a field instead of simply treating the whole field to meet the needs of the weakest area. The EC maps will be used to identify the optimal location for the soil moisture sensor systems.	• Documentation of soil moisture sensor system purchases • Electrical conductivity maps • Site inspection reports	0%
Subtask 12.3: WaterSmart Field Services Program - This task includes all elements required to implement the Field Services Program: 1) website and database update; 2) application processing and scheduling; and 3) site audits and report generation. Website maintenance includes web hosting, security certificate/functionality, backend, and database components; adding invoice backup data to master database; and assisting with moving and modifying data if and when a new centralized database is developed. Application processing includes maintenance of email and toll-free and dedicated phone lines; manual or online intake processing; screening applications for eligibility; coordinating with member agency to verify account information, water-use data and if necessary, obtain approval; and contacting applicants to schedule service and provide reminders. Site audits and reporting activities include conducting field services and providing participants with a site report that identifies findings, recommendations, watering schedule, and a list of available incentives, programs and resources.	• Site reports for Home Water Use Evaluations • Site reports for Irrigation Checkups • Site reports for Full Audits	0%
Subtask 12.4: Sustainable Landscapes Program – This task includes the activities to continue implementation of the existing Turf Replacement Rebate Program. Due to changing regulatory and drought conditions, SDCWA may also add components to its existing Turf Replacement Rebate program to achieve multiple benefits from more sustainable landscape practices. Activities include managing the budget for all incentives, coordinating customer participation and compliance with program terms, reviewing and processing rebate applications and related submittals, providing progress reports, disbursing rebates to customers, conducting onsite inspections, and providing customer service. This task includes disbursement of rebates to convert approximately 1,270,588 sqe ft of turf to WaterSmart landscaping.	• Documentation of Sustainable Landscape rebates: pre- and post-conversion photographs from Sustainable Landscape rebates	0%
Subtask 12.5: WaterSmart Landscape Makeover Program - These tasks include all elements required to implement the WaterSmart Landscape Makeover Program, including program management; marketing and enrollment; event management and logistics; curriculum revision and	• Landscape Makeover Series and Landscape Design for Homeowners: quarterly reports	0%

Task and Description of Work to be Completed	Deliverables	%*
instruction; technical assistance; and online educational content. Specific activities include: • Conduct five "WaterSmart Landscape Makeover Workshop Series" which is a four-class series that provides homeowners with a comprehensive overview and skills necessary for the successful conversion of their traditional turf yard into a WaterSmart landscape. This requires a classroom, materials, and labor to prepare and teach the workshops. • Conduct four WaterSmart Landscape Design for Homeowners Workshops. Each workshop is a 3-hour, one-session class for customers who cannot commit to the four-class series. This requires a classroom, materials, and labor to prepare and teach the workshops. • Expand the reach of the core concepts of a WaterSmart landscape makeover through e-learning modules for homeowners who prefer to learn online. Activities include labor to prepare the e-learning modules and webhosting capabilities.	summarizing program participation • Landscape Makeover eLearning Modules: copy of 10 modules and quarterly report summarizing and online traffic	
<u>*Subtask 12.6: Drought Outreach and Education*</u> - This program will implement a broad range of drought outreach and education activities. Implementation activities include: • Provide programs and materials to promote understanding of water supplies and instill a conservation ethic. SDCWA will also partner with local museums or other attractions or community organizations to fund awareness programs and exhibits. • Secure ads, partners and sponsorships to promote awareness of water supply conditions and conservation. Use traditional media, social and digital media, and other tactics to increase awareness of water supply conditions and conservation, promote long-term water-saving behavior changes, and increase participation in rebates programs, Landscape Makeover classes, or other conservation programs. Materials may be translated into Spanish and/or targeted towards Latino and Pan-Asian communities. • Develop and produce educational and awareness materials, including brochures, websites, fact sheets, posters, and other tools to promote conservation and long-term water-saving behavior change. Materials could be used in presentations, community events and landscape classes, and shared with business, civic and environmental groups to extend the reach of the campaign, and may be translated into multiple languages. • Develop and procure promotional drought-related items such as buckets, reusable bags, hose nozzles, and moisture meters, as well as fact sheets, and table tents to distribute at community events, educational assemblies, tours, and via the SDCWA's drought website. • Conduct research to explore public attitudes toward water conservation and water efficiency communications, programs and other topics to help build greater understanding of how to achieve long-term water-saving behavior changes. This may involve development of surveys and other research materials, distribution and completion of surveys, analysis of data, and completion of a report on findings.	• Education Program: report number of programs and events completed, submit materials developed for programs • Advertising: documentation of advertising campaign and sponsorships • Educational Materials: brochures, fact sheets, and other educational materials • Translations: provide copies of all materials translated to Spanish or other languages • Outreach: submit outreach materials, which may include reusable bags, hose nozzles, moisture meters, and shower buckets • Research: public opinion poll report	0%
** The right-hand column displays % complete for each task.*		

Project 2: Conservation Home Makeover in the Chollas Creek Watershed

Local Project Sponsor: Groundwork San Diego (Groundwork)
Partner: U.S. Green Building Council (USGBC) and San Diego Sustainable Living Institute (SDSLI)

Project Description

The *Conservation Home Makeover in the Chollas Creek Watershed* project will build drought, pollution, food security, and climate change response/resiliency in southeastern San Diego through a combination of conservation home makeovers and an outreach/engagement campaign directed at youth and families. The project will install stormwater capture, greywater, and landscape upgrades in 50 low-income homes in the Encanto neighborhood (see **Figure 2-3**). It will mitigate the impact of drought through water conservation installations, water capture, and greywater reuse for food production and landscaping. The project will address the interlocking challenges of water, food, and energy in the Encanto neighborhood, a disadvantaged community (DAC), under the overarching crisis of water supply reliability.

Direct marketing to families will occur through neighborhood presentations, media, and door-to-door canvassing conducted by ENCPG and other project partners. It will be reinforced by a school-based effort targeting student conservation awareness and action at home, including training Groundwork's High School Green Team to assist in residential installations. Approximately 800 students from Encanto schools (Millennial Tech Middle School, Gompers Preparatory Academy, Horton, and Chollas Mead) will be instructed in about water conservation education, and knowledge and interest gains will be measured with pre- and post-tests. Age-appropriate water audit instruments will be used by students to assess their home water consumption, and students will assist in the marketing of the residential makeover activities. Older students will be trained in conservation installation and be invited to assist professional installers.

Groundwork and its partners will use data collected from this project, and the lessons learned, to expand future conservation home makeovers to reach additional neighborhoods. Outcomes and metrics from this project will be used for future advocacy for new governmental policies supporting and incentivizing low income families to participate in conservation. In addition to helping meet the region's water conservation and climate resiliency goals, and creating habitat for native species, families will reap the personal benefits of lower water bills, enhanced tree canopy shade, and wildlife-friendly drought tolerant landscapes (in what are currently concrete/asphalt dominant streets). Cultivation of pesticide-free fruit trees will also contribute to healthy food options and reduced food costs in these underinvested DACs characterized as "food deserts". The ongoing training of Green Team students will further contribute to lasting behavioral change and promote academic interest in environmental health and science. Project partners will deliver a menu of conservation goods and services to 50 owner-occupied Encanto homes, tailored to each residence based on a home water audit and resident landscape design-input.

USGBC will utilize software models and analytics to evaluate the siting, costs, and water benefits of the project with an eye to future project scalability throughout the Encanto neighborhood. Geographic Information System (GIS) scenario planning will be integrated with flow path modeling to calculate project outcomes related to stormwater diversion/capture, soil types, and vegetative coverage. Flow estimates will guide future project expansion into neighborhoods, as well as integration with Groundwork's drought response initiatives related to larger institutional BMPs in the Encanto area that are implemented by organizations such as CalTrans, City of San Diego, and San Diego Unified School District. USGBC will track and report on all project metrics and large scale impacts/implications, and will identify preferred rating systems/labels for comparing home outcomes.

SDSLI provides conservation training and installations throughout the region. For this project, they will install "laundry-to-landscape" gray water systems, water-saving devices (toilets, faucets), rain gardens and rainbarrels within the 50 Encanto homes. SDSLI will design and install drought tolerant and edible gardens within the re-landscaped areas, and also provide training to participating homeowners for the installations.

A Work Plan for the *Conservation Home Makeover in the Chollas Creek Watershed* project, including the anticipated tasks necessary to complete the project, deliverables, and current status of the project, is provided in **Table 3-3** below.

Table 3-3: Work Plan for *Conservation Home Makeover in the Chollas Creek Watershed*

Task and Description of Work to be Completed	Deliverables	%*
Row (a): Direct Project Administration		
1: Project Management – Project management activities include negotiating Memorandum of Agreements (MOAs) with partners based on sole source justification. This task includes compiling invoices for submittal to SDCWA (Grant Administrator) to submit to DWR, and other grant agreement requirements. This task also include coordination with SDCWA and project partners, and other project administration activities. Grant reporting is included under Task 3.	• Signed MOAs with Project Partners • Invoices and supporting documentation • Environmental Information Form (EIF)	0%
2: Labor Compliance Program – This project does not include construction activities and is not subject to Labor Compliance Program requirements.	• N/A	N/A
3: Reporting – This task involves submitting reporting documents as required for grant funding. These documents include quarterly progress reports and a project completion report.	• Quarterly Progress Reports • Project Completion Report	0%
Row (b): Land Purchase/Easement		
4: Land Purchase - This project will be implemented at individual residences in cooperation with the homeowners (see project participant contracting under Task 12.1). No land acquisition is required.	• N/A	N/A
Row (c): Planning/Design/Engineering/Environmental Documentation		
5: Feasibility Studies – No feasibility studies are required.	• N/A	N/A
6: CEQA Documentation – This project does not meet the definition of a "project" under CEQA and no documentation is required.	• See EIF in Task 1	N/A
7: Permitting – None of the implementation activities (turf conversion, rainbarrels, greywater) require permits. Because the greywater systems will be installed compliant with Chapter 16A Nonpotable Water Reuse Systems of the California Plumbing Code, no permitting is required. The Rainwater Capture Act of 2012 exempts rainbarrels from the State Water Resources Control Boards (SWRCBs) permitting authority.	• N/A	N/A
8: Design – Design of the overall pilot Conservation Home Makeover program has been completed. All site-specific planning and design work for this project will be completed under Task 12, because these efforts will be dependent on the individual homes selected for participation.	• See Task 12, below.	0%
9: Project Performance Monitoring Plan - This task will develop a Project Performance Monitoring Plan that will include baseline conditions in each category (water conservation, carbon sequestration, and carbon-offsets), the systems/calculators to be used, the methodology of monitoring (including a 10 year plan), the frequency of the monitoring, and the system for widely sharing the data for scaling up.	• Project Performance Monitoring Plan	0%
Row (d): Construction/Implementation		
10: Contract Services – Partners included in the MOA (Task 1) will implement the project and no contract services are required.	• N/A	N/A

Task and Description of Work to be Completed	Deliverables	%*
11. Construction Administration – Groundwork staff will oversee all grant activities, including liaison with participants, compliance of partners with MOAs, meeting grant deliverables, and development and coordination of participant surveys. Work related to grant administration and reporting is included under Tasks 1 and 3.	• Participant surveys	0%
12. Construction/Implementation Activities - Implementation of turf conversions in Subtask 12.6 will be in compliance with the program guidelines and professional landscape standards. Implementation of the greywater systems in Subtask 12.8 will be in compliance with Chapter 16A Nonpotable Water Reuse Systems of the California Plumbing Code.		
Subtask 12.1: Agreement Negotiation - Groundwork and its partners will conduct outreach to homeowners and homeowner associations to announce the conservation home makeover program. A total of ten presentations to Encanto community groups and NGOs will be completed, along with an area media campaign to raise awareness of the program. Groundwork will develop agreements and enter into agreements with 50 participating homeowners. Monthly newsletters detailing the progress of the project and information about project successes, proper maintenance of systems, benefits of the project, other water conservation tips, and similar projects in other regions will be sent to program participants.	• Documentation of media results and collection of all outreach materials, including 10 presentations to Encanto community groups • 50 signed participant agreements • Monthly newsletters	0%
Subtask 12.2: Education - Engage 400 students a year for two years in water and energy conservation education aligned with new State of California Standards to transfer knowledge about climate change, urban canopies, and drought. Develop lesson plans and materials for field trips, and vet them against State standards. Education programs will include a pre- and post-program knowledge evaluation.	• Student participation lists • Lesson plans and field trip materials • Pre/post knowledge evaluation results	0%
Subtask 12.3: Water Use Evaluations - Each participating homeowner will work with project staff to complete a home energy and water use evaluation, including vegetation coverage and type, to establish baseline data and ascertain conservation retrofitting possibilities. This task includes development of concept plans for each participating residence. Concept plans will include the vegetation changes, greywater systems, and energy systems proposed for each residence, and any other retrofits and changes necessary to implement the project at each site.	• 50 completed evaluations • 50 concept plans	0%
Subtask 12.4: Monitoring and Verification - Both systems and earthworks (trees, plants) will be inspected on a monthly basis by Groundwork staff for one year after installation. Energy/water savings data will also be collected during site visits for use in tracking and mapping under Subtask 12.5.	• Maintenance reports • Post-installation site visit records and photos	0%
Subtask 12.5: Tracking and Mapping - USGBC will analyze and report monthly on direct and indirect project benefits, starting from completion of first conversion component. Direct project benefits will be analyzed through baseline water/energy/tree canopy data compared to monthly monitoring data using I-tree and other on-line tools. Indirect benefits will be calculated through neighborhood-scale pre- and post-analyses using stormwater flow calculators such as Community Vis.	• Monthly and final direct and indirect benefit reports	0%

Task and Description of Work to be Completed	Deliverables	%*
Subtask 12.6: Landscape Earthwork Installation - SDSLI will review the landscaping portion of the home water use evaluations; meet with homeowners; present landscaping design concept plan; purchase planting materials; install landscaping; and advise homeowners in landscape management. Landscaping installation will include moving soil, installing plantings, connecting new water-efficient irrigation, and applying groundcover and/or mulch.	• Pre- and post-installation photos - 50 yard conversions	0%
Subtask 12.7: Rainbarrel Installation - SDSLI will review home water use evaluations; meet with homeowners; purchase rainbarrels; install rainbarrels; and advise homeowners in use of rainbarrel catchments for landscape management. Rainbarrel installation will include placing rainbarrels, rerouting and/or connecting downspouts, and plumbing rainbarrel into drip irrigation system.	• Pre- and post-installation photos - 50 rainbarrel installations	0%
Subtask 12.8: Greywater Installation - SDSLI will review home water use evaluations; meet with homeowners; purchase 50 greywater systems; install greywater systems; and advise homeowners in use of greywater detergents and maintenance, and use of water for landscape management. Greywater installation will include replumbing washing machines to new greywater piping, trenching and installation of greywater piping, and connection to subsurface irrigation.	• Pre- and post-installation photos - 50 laundry-to-landscape conversions	0%
Subtask 12.9: Conservation Home Retrofit Devices - Project partners will identify in-home conservation opportunities through retrofits, such as low-flow showerheads, faucets, and toilets. Identified fixtures will be changed out.	• Proof of device installation	0%
** The right-hand column displays % complete for each task.*		

Project 3: San Diego Water Conservation Program

Local Project Sponsor: City of San Diego
Partners: Water Conservation Garden (The Garden) and San Diego Sustainable Living Institute (SDSLI)

Project Description

The City of San Diego (City) will continue its existing incentive program for water-wise landscaping, develop and implement a pilot program for greywater system incentives, and partner with The Garden and SDSLI to provide a variety of related water conservation education and training courses that will result in conservation of 74.8 AFY of potable water. These efforts will help the City meet its water conservation goals, reduce water use in a time of drought, move the city to more sustainable water use practices, and engage and educate the public while providing the tools to successfully implement water conservation projects at home.

Landscape irrigation represents up to 50% or more of the total water consumed by single family residences in San Diego.[1] As such, the City of San Diego foresees great potential for water savings in outdoor irrigation at single family residences. This project will fund additional rebates for the City of San Diego's existing turf replacement rebate program, which was awarded Prop 84-Round 2 funding to develop and implement the program. Since its inception, the turf rebate program has been overwhelmingly popular, to the extent that available funds were exhausted in FY 2014-15. Applications for additional funds from FY2015-16 were accepted starting July 1, 2015, and were exhausted within the same day the rebate application period opened. Expansion of this proven, successful program is needed to meet the high demand for landscape and irrigation conversion incentives by City of San Diego customers. All of the program development for the turf rebate component is already in place. The turf replacement rebates provide a cash back incentive per sq ft for conversion from turf to water-wise landscaping, and requires installation of efficient irrigation systems (such as drip irrigation). To date, the existing turf rebate program has funded conversion of approximately 844,518 sq ft of turf. This program expansion will convert an additional 440,000 sq ft of turf to water-wise landscaping, resulting in a total water savings of 45.9 AFY and creation of 6.5 acres habitat for native species.

As drought conditions continue to challenge the region, the City will also develop a new rebate program for greywater systems as another incentive to encourage customers to conserve water. The greywater rebate pilot program will develop guidance for providing rebates to participants who install greywater systems in their homes to capture and safely reuse greywater from laundry machines or other sources. This guidance will include the process for applying for rebates, the rules homeowners must follow to qualify for rebates, eligible types of greywater systems, and provide information on how to safely install greywater systems in homes. This component also includes program administration and funds for the rebates themselves. This program is anticipated to offer 1,000 rebates, valued at $200 per rebate, and will result in water savings of 28.9 AFY.

Complementing these conservation efforts will be workshops and outreach regarding water-wise landscaping, irrigation efficiency, greywater systems, and water conservation. The Garden will add a new exhibit that showcases cutting-edge irrigation technologies that can contribute to reducing overall water use, which will reach an estimated 50,000 visitors per year. It will also provide outreach consisting of ten to twenty presentations over a two-year period at community venues such as churches, community events, schools, community organizations, and social clubs with a special emphasis on reaching disadvantaged communities (DACs). Several workshops, classes, and tours will be offered at The Garden focusing on topics such as landscape design, water-wise veggie gardens, and efficient irrigation methods utilizing the new irrigation exhibit.

In addition to the outreach conducted by The Garden, SDSLI will conduct water reuse workshops for the public that will include monthly hands-on training for greywater installation ("Laundry to Landscape") and workshops on rainwater harvesting five times a year. The greywater and other outdoor water conservation seminars will educate the public on how to properly install, maintain, and use these tools to reduce outdoor water use. SDSLI will also provide monthly Water Conservation Talks related to rainwater, groundwater, and landscape design as well as offer quarterly water harvesting neighborhood tours.

[1] City of San Diego. Drought Information and Resources – Drought Alert: Mandatory Water Use Restrictions. Website. Accessed 17 July 2015. Available: http://www.sandiego.gov/water/conservation/drought/prohibitions.shtml

A Work Plan for the *San Diego Water Conservation Program*, including the anticipated tasks necessary to complete the project, deliverables, and current status of the project, is provided in **Table 3-4** below.

Table 3-4: Work Plan for *San Diego Water Conservation Program*

Task and Description of Work to be Completed	Deliverables	%*
Row (a): Direct Project Administration		
1: Project Management – Project management activities include preparation and submittal of invoices and required documentation to SDCWA (Grant Administrator) to submit to DWR, coordination with SDCWA, and regular project management activities. It also includes establishment of contractual agreements between the City, The Garden and SDSLI. These agreements will outline coordination efforts to monitor progress and budget activity.	• Environmental Information Form (EIF) • Quarterly invoices and supporting documentation • Agreement between project partners • Financial Statements	0%
2: Labor Compliance Program – This project is not a public works project and a Labor Compliance Program is not required.	• N/A	N/A
3: Reporting – This activity includes preparation of quarterly project progress reports, and preparation of a project completion report.	• Quarterly Project Progress Reports • Project Completion Report	0%
Row (b): Land Purchase/Easement		
4: Land Purchase – No land acquisition is required for this project.	• N/A	N/A
Row (c): Planning/Design/Engineering/Environmental Documentation		
5: Feasibility Studies – No feasibility studies are required for this project. Research for the greywater rebates are being completed under Task 8.	• N/A	N/A
6: CEQA Documentation - This program does not qualify as a "project" under CEQA, and no compliance documents are required.	• See EIF under Task 1	N/A
7: Permitting – None of the implementation activities (turf conversion, greywater) require permits. Installation of The Garden irrigation exhibit does not involve activities requiring construction-related permits.	• N/A	N/A
8: Design – This task includes development of greywater rebate program guidelines for use in the pilot program. This includes research on similar programs, determination of rebate value, number of rebates, and development of the rebate process. This task also includes design of the physical space of the water-wise efficient irrigation exhibit at The Garden.	• Greywater rebate guidelines • Exhibit design drawings	0%
9: Project Performance Monitoring Plan - Activities associated with this task include those required to develop a Project Performance Monitoring Plan consistent with DWR's requirements and as required by the grant contract.	• Project Performance Monitoring Plan	0%
Row (d): Construction/Implementation		
10: Contract Services – Partnership agreements are included under Task 1. No other contracts are required for this project.	• N/A	N/A
11. Construction Administration - Construction Administrative activities and costs are incorporated into the Construction Activities Task (Task 12).	• N/A	N/A
12. Construction/Implementation Activities - Implementation of the greywater systems in Subtask 12.1 will be in compliance with Chapter 16A Nonpotable Water Reuse Systems of the California Plumbing Code. Implementation of turf conversions in Subtask 12.2 will be in compliance with the program guidelines and professional landscape standards.		

Task and Description of Work to be Completed	Deliverables	%*
Subtask 12.1: Greywater Rebate Program – This task will involve funding the pilot Greywater Rebate Program rebates themselves, as well as executing and managing of the rebate program by City staff consistent with the process developed under Task 8. Managing the rebate program involves reviewing and processing applications, tracking rebate funding, issuing rebates to program participants, and any relevant follow-up or pilot program evaluation. Approximately 1,000 greywater rebates are anticipated to be distributed through this pilot program.	• Issuance of rebate checks to customers	0%
Subtask 12.2: Turf Replacement Rebate Program - This task will involve funding the Turf Replacement Rebate Program rebates themselves, as well as continued execution and management of the rebate program by City staff. Managing the rebate program involves reviewing and processing applications, tracking rebate funding, issuing rebates to program participants, and any applicable follow-up with program participants. Approximately 440,000 square feet of turf conversion rebate are anticipated to be distributed through this program expansion.	• Issuance of rebate checks to customers • Pre- and post-conversion photographs	0%
Subtask 12.3: The Garden's Outreach/Workshops/Training - This task will include the activities related to the courses, presentations, seminars, the exhibit and training provided by The Garden. Exhibit work will include developing the exhibit's content, constructing the exhibit (electrical/lighting, carpentry, paint, awnings, seating, etc.), installing interpretive components such as signs and demonstration products and plants, and oversight of exhibit installation.	• Documentation of course, workshop, and training offerings • Documentation of irrigation efficiency exhibit	0%
Subtask 12.4: SDSLI's Outreach/Workshops/Training - This task includes the activities required to advertise and implement SDSLI's Laundry to Landscape Workshops, Rainwater Harvesting Classes, and Water Conservation for the Land Workshops, and conducting Water Harvesting Neighborhood Tours. Activities include workshop advertising and preparation, acquisition and preparation of workshop materials and equipment (e.g., mulch, rain barrels, pipe fittings, handouts, tour buses, etc.), conducting workshops and tours, and follow-up evaluations with participants.	• Documentation of course, workshop, and training offerings	0%
** The right-hand column displays % complete for each task.*		

Project 4: Ms. Smarty-Plants Grows Water-Wise Schools

Local Project Sponsor: The Water Conservation Garden (The Garden)
Partners: Otay Water District, Helix Water District, and K-12 Schools within La Mesa-Spring Valley and Lemon Grove School Districts

Project Description

The *Ms. Smarty-Plants Grows Water-Wise Schools* project builds upon an award-winning, nationally-recognized education program for children and adults, and builds on a successful pilot project with four schools. In December 2013, Ms. Smarty-Plants™ received the State of California Governor's Excellence in Environmental Leadership Award (GEELA) in recognition of the success of this innovative program. Through this project, The Garden will deliver this program at its expanded Education Center classroom, with tours of The Garden, and at school assemblies. The Garden is a non-profit organization that uses educational programs and exhibits to promote water conservation and water-wise practices.

The *Ms. Smarty-Plants Grows Water-Wise Schools* program will be expanded to target K-12 schools in the Otay Water District and Helix Water District service areas, with a special emphasis on Title I low-income schools in the disadvantaged communities (DACs) in the La Mesa-Spring Valley and Lemon Grove School Districts. Title I schools are those serving high numbers or high percentages of students from low-income families (schools with minimum of 40% of the student body from low-income families are eligible to receive U.S. Department of Education Title I funding for the entire school). Using The Garden – a living, breathing, hands-on demonstration garden that showcases six beautiful acres of innovative water conservation solutions as an outdoor classroom – program participants are transported to an environment where water conservation is "alive." The program engages students in learning about the adaptations of drought-tolerant plants, the role they play in conservation, and the value of water-wise landscaping in the region's local climate. Children are empowered to become part of the solution to the current water crisis in California by taking specific actions to change their behaviors related to how they use and value water. One of the goals of the Ms. Smarty-Plants program is to instill a conservation ethic in students who could translate this into conservation actions at home.

Component 1: The Garden will deliver the Ms. Smarty-Plants Grows Water-Wise Schools education program to 10,000-15,000 students at K-12 schools in Spring Valley and Lemon Grove that are served by the Otay Water District and Helix Water District. The education program involves critical thinking, hands-on exploration, water conservation education, citizen science, observation and investigation, spatial reasoning, and garden design. Some elements will include: 1) Lead school on a field trip tour of The Garden for ideas and design elements; 2) Perform a full School Assembly to kick off new garden and to excite students, teachers, and parents for "planting" day; and 3) Work with students and teachers on their onsite garden design and assist landscape designer with garden design.

Component 2: The Garden will identify and recruit twelve to fifteen K-12 schools identified in Component 1 to participate in the program to change out school grounds landscapes to water-wise plants, remove turf (approximately 20,000 sq ft per school), upgrade irrigation systems (such as installation of drip irrigation), and adopt water-wise practices throughout school operations (such as identifying opportunities for low-flow or water-saving devices, modifying behaviors to reduce water use, or prioritizing water leaks during maintenance activities). This component includes development of site design, planting, and irrigation plans for each participating school. Installation of the landscape conversion will be conducted by volunteers from the schools (teachers, parents, students).Each school will recruit a "Garden Champion" who will be the point person for the school, organizer of volunteers, and schedule keeper. Community members and businesses may also join and support the school's efforts. The project will provide each school with a landscape design consultation, an irrigation audit, and incentives/rebates for turf removal and irrigation upgrades. The Otay and Helix Water Districts will send out flyers and newsletter articles to their ratepayers about the participating school projects to encourage residents to consider making changes to their home landscapes.

Component 3: The Garden will expand its onsite classroom by approximately 750 sq ft to accommodate more students and provide additional workshops and classes. The expanded classroom will be located in the central portion of The Garden's site and will be used broadly to deliver water conservation and irrigation efficiency classes to both youth and adults. The expanded classroom would allow The Garden to host classes of 70 students, up from its current capacity of 32 students.

This project will directly reduce water use at participating schools, and encourage long-term behavioral changes in students and families to implement water-wise practices in their daily lives. This project will address regional water supply and water use concerns during drought, as well as directly reach DACs, empowering the public to make an active change in their water use behavior.

A Work Plan for the *Ms. Smarty-Plants Grows Water-Wise Schools* project, including the anticipated tasks necessary to complete the project, deliverables, and current status of the project, is provided in **Table 3-5** below.

Table 3-5: Work Plan for *Ms. Smarty-Plants Grows Water-Wise Schools*

Task and Description of Work to be Completed	Deliverables	%*
Row (a): Direct Project Administration		
1: Project Management – This task includes coordination with the region's Grant Administrator (SDCWA), submittal of invoices to DWR, and overseeing project tasks and timeliness of deliverables. This task also includes The Garden's supervision of Project Coordinator, Educator, and Landscape Designer for the project components.	• Invoices and supporting documentation • Environmental Information Form • Financial Statements	0%
2: Labor Compliance Program – This task involves a contract with Golden State to provide labor compliance consultation for classroom expansion construction.	• Labor compliance report • Proof of labor compliance, upon request	0%
3: Reporting – This task includes compilation of quarterly progress reports for submittal to DWR, along with the final project report to be produced at project completion.	• Quarterly progress reports • Project Completion Report	0%
Row (b): Land Purchase/Easement		
4: Land Purchase – No land needs to be purchased for this project. The project is located on land currently leased by The Garden from Cuyamaca College, and on-site activities would be implemented within this property.	• N/A	N/A
Row (c): Planning/Design/Engineering/Environmental Documentation		
5: Feasibility Studies - A Water Conservation Garden Facilities Programming Needs Plan was developed to assess immediate and future operation needs of The Garden. This work set the foundation for the project, but was not completed specifically for the project; rather it is a large-scale master planning document for The Garden.	• Water Conservation Garden Master Plan	100%
6: CEQA Documentation - Cuyamaca College's *2013 Facilities Master Plan encompassed an Environmental Impact Report* (EIR) in 2013, which included land within The Garden's boundaries. Because The Garden is not adjacent to a natural habitat area, and construction is proposed to take place within the area included in this EIR, no further environmental review is required.	• 2013 Facilities Master Plan EIR • Notice of Determination • No Legal Challenges Letter	100%
7: Permitting – The Garden anticipates the need to obtain structural, mechanical, electrical, plumbing, fire suppression, and solar panel permits from the applicable departments of the County of San Diego for the construction of the classroom component of this project.	• San Diego County – structural, mechanical, electrical, plumbing, fire suppression, and solar panel permits	0%
8: Design – Design work includes meeting with the project architect to develop plans for the classroom expansion, production of engineering and architectural drawings for the classroom expansion, and final design.	• Engineering and architectural set drawings (75% design) • 100% design drawings	75%

Task and Description of Work to be Completed	Deliverables	%*
9: Project Performance Monitoring Plan – The Garden will develop a Project Performance Monitoring Plan in cooperation with Otay Water District and Helix Water District, utilizing water meter readings before and after school landscape transitions then annually for 10 years thereafter for participating schools, compliant with DWR's monitoring requirements.	• Project performance monitoring plan	0%
Row (d): Construction/Implementation		
10: Contract Services – This task includes securing the services of a project architect for the classroom expansion component, releasing a competitive bid and selecting a contractor, and coordinating with the general contractor to determine appropriate subcontractors.	• As built-drawings and warranty • Copy of bid package	33%
11. Construction Administration – For the classroom expansion component, the Contractor will oversee and coordinate with all subcontractors, and be responsible for construction administration activities such as purchasing of materials, quality control, consultation with the project architect and engineer, and coordination with Cuyamaca College. Administrative deliverables will include a Project milestone schedule, equipment procurement list, operation and maintenance (O&M) manuals, and constructability and value engineering reviews. The Garden will coordinate with the Contractor for the classroom expansion.	• Project schedule • Equipment procurement checklist • Constructability reviews • Value engineering reviews • Close out punch list • O&M manuals • Owner training and start-up assistance • Notice of Completion	0%
12. Construction/Implementation Activities - Implementation of turf conversions in Subtask 12.2 will be in compliance with the program guidelines and professional landscape standards. Construction of the classroom expansion in Subtask 12.3 will be in compliance with California Building, Plumbing, and Electrical Codes, and California Office of Health and Safety (OSHA) standards for safety equipment.		
Subtask 12.1: Education and Outreach – The Garden will deliver the *Ms. Smarty-Plants Grows Water-Wise Schools* education program to 10-15,000 students at K-12 schools in service areas of Helix Water District and Otay Water District. Title I schools (serving predominately low-income students) in the La Mesa-Spring Valley and Lemon Grove School Districts will be targeted to bring the program to students from DACs. This task includes recruitment and training of a full-time educator to be "Ms. Smarty-Plants" and conduct classes, assemblies, workshops, and tours of The Garden. This task also includes evaluation of students' knowledge before and after attending the program, and an expanded web presence for the program (website, social media, and online advertising).	• List of classrooms and attendance levels of classes and workshops • Before and after student surveys • Screenshots of website	0%
Subtask 12.2: School Landscape Transitions – This subtask includes identification and recruitment of twelve to fifteen K-12 Title I schools to participate in the Water-Wise Schools program. This program will replace turf with water-wise landscaping (with a preference towards plants providing butterfly habitat), install irrigation system upgrades such as drip irrigation, and work with each participating school to identify and adopt water-wise practices throughout school operations (such as modifying behaviors to reduce water use). This component includes development of site design, planting, and irrigation plans for each participating school. Installation of the landscape conversion will be conducted by volunteers from the schools (teachers, parents, and students). Approximately 20,000 sq ft turf will be converted per school.	• Pre- and post-conversion photos • List of schools converted to water-wise landscaping	0%

Task and Description of Work to be Completed	Deliverables	%*
<u>*Subtask 12.3: Classroom Expansion*</u> – This task includes construction of the approximately 750 square foot expansion of the classroom at The Garden. Construction activities include site preparation (including demolition of portions of the existing structure that need to be removed for the new classroom), construction of the classroom itself (erecting the structure, installing electrical, mechanical, HVAC, doors/windows, finishes, etc.), final inspection, and clean-up.	• Pre- and post-construction photos • See Notice of Completion in Task 11	0%
** The right-hand column displays % complete for each task.*		

Rural Water Infrastructure Program

Project 5: Rural Disadvantaged Community Partnership Project – Phase III

Implementing Agency: Rural Community Assistance Corporation (RCAC)
Partners: Alter Terra, Indian Health Services (IHS), Bureau of Indian Affairs (BIA), San Diego County Water Authority (SDCWA), City of San Diego (City), San Diego County Department of Environmental Health (DEH), and State Water Resources Control Board (SWRCB)

Project Description

This project allows rural disadvantaged communities (DACs) in need of water treatment infrastructure and environmental clean-up to receive financial support and capacity building assistance through RCAC. The individual DACs will be responsible for direct project implementation, but RCAC will serve as the coordinator and will work individually with each DAC to ensure successful completion of each project. RCAC is a nonprofit organization that provides training, technical, and financial resources and advocacy for rural and tribal communities.

This project is a continuation of RCAC's *Rural DAC Partnership Project Phase I and Phase II*, which received IRWM Prop 84 funding under Round 1 and Round 2, respectively. RCAC has already established a Rural DAC Stakeholder Committee, which is made up of representatives from RCAC, IHS, SDCWA, the City, DEH, and SWRCB. The Committee identified 24 critical, shovel-ready projects benefitting DACs in the Region that could be eligible for funding. The Committee conducted additional refinement and prioritization and ultimately refined the list to 10 DAC components, which are requesting funding in this Proposal.

#	Brief Description
1	Pauma Reservation Water System • *Location*: Pauma Indian Reservation (population 150) • *Issue*: leaking water storage tank built in 1995 requires Tribe to pump more water than needed • *Resolution*: replace 111,000 gallon water storage tank that leaks as a result of a 2014 earthquake • *Current Status*: Preliminary Engineering Report has been completed by IHS
2	Campo Reservation South System • *Location*: Campo Indian Reservation (population 45) • *Issue*: Tribe has struggled with water supply shortages for several years • *Resolution*: install a new 6-inch well, pump, motor, and piping to address water supply issue • *Current Status*: IHS has conducted a preliminary cost assessment
3	San Pasqual Tribe Reclaimed Water Expansion • *Location*: San Pasqual Reservation (population 750) • *Issue*: reduce water costs by reducing demands for potable water via expansion of reclaimed water • *Resolution*: install 9,100 linear feet of pipe to bring reclaimed water to 45 households for irrigation • *Current Status*: Preliminary Engineering Report has been completed by BIA
4	San Pasqual Tribe Water Meters • *Location*: San Pasqual Reservation (population 750) • *Issue*: install water meters, which encourage conservation and reduce demand for imported water • *Resolution*: install water meters at all 245 houses on the reservation • *Current Status*: conceptual stage; due to simple nature of the project no preliminary work is needed
5	La Jolla Tribe Water Tank • *Location*: La Jolla Indian Reservation (population 265) • *Issue*: reduce frequent water shortages caused by insufficient water storage capacity • *Resolution*: design and construct a 80,000 gallon water storage tank • *Current Status*: conceptual stage

#	Brief Description
6	Quiet Oaks Mobile Home Park Nitrate Treatment • *Location*: Warner Springs (population 120) • *Issue*: groundwater exceeds Maximum Contaminant Level (MCL) for nitrate • *Resolution*: install a nitrate treatment system • *Current Status*: engineering and design specifications are complete
7	Willowside Terrace Water System Connection • *Location*: Alpine (population 100) • *Issue*: groundwater exceeds MCL for nitrate • *Resolution*: connect community to Padre Dam Municipal Water District (MWD) water system • *Current Status*: Preliminary Engineering Report complete
8	Richardson Beardsley Park Treatment • *Location*: Julian (population 28) • *Issue*: groundwater exceeds secondary MCL for iron and manganese • *Resolution*: install an iron and manganese treatment system • *Current Status*: engineering and design specifications are complete
9	Smuggler's Gulch Floating Trash Booms • *Location*: Tijuana River Valley • *Issue*: trash presents serious water quality and flood issues • *Resolution*: install trash removal system at the Smuggler's Gulch drainage • *Current Status*: conceptual stage
10	Tijuana River-San Diego Connector Restoration Project • *Location*: Tijuana River Valley • *Issue*: illegal dumping and trash present surface and groundwater quality issues in a seasonal stream • *Resolution*: conduct restoration, including bioswales, pervious pavers, plantings, and education • *Current Status*: conceptual stage

A Work Plan for the *Rural Disadvantaged Community Partnership Project – Phase III*, including the anticipated tasks necessary to complete the project, deliverables, and current status of the project, is provided in **Table 3-6** below.

Table 3-6: Work Plan for *Rural Disadvantaged Community Partnership Project – Phase III*

Task and Description of Work to be Completed	Deliverables	%*
Row (a): Direct Project Administration		
1: Project Management – Preparation of invoices, contract oversight, coordination of stakeholders, internal project management activities by RCAC and Alter Terra. Preparation of Local Project Partner (LPP) agreements between RCAC and the DACs and small systems involved in the project components.	• Quarterly invoices and supporting documentation • Signed subcontracts with LPPs • Financial Statements	0%
2: Labor Compliance Program – RCAC will assist DACs and their contractors to ensure proper compliance with labor compliance, as needed. Alter Terra will ensure proper compliance with labor compliance, as needed.	• Labor Compliance Reports • Proof of labor compliance, upon request	0%
3: Reporting – Preparation of quarterly project progress reports, draft and final project completion report, and other reporting requirements as needed by RCAC and Alter Terra.	• Quarterly Progress Reports • Project Completion Report	0%
Row (b): Land Purchase/Easement		
4: Land Purchase – No land acquisition is required as part of this project.	N/A	N/A

Task and Description of Work to be Completed	Deliverables	%*
Row (c): Planning/Design/Engineering/Environmental Documentation		
5: Feasibility Studies – The project components included in this application are small in scale and were vetted through the Rural DAC Stakeholder Committee. Given the small-scale nature of these projects and the fact that project needs have been well-established, no feasibility studies are required for the project components.	N/A	N/A
6: CEQA Documentation – For Components 1-8, RCAC will work with the DACs to ensure that necessary CEQA documentation is prepared. For Components 9 and 10, Alter Terra will ensure that CEQA compliance is achieved. For each tribal project, IHS and/or BIA work with tribe to ensure that necessary NEPA documentation is prepared. SDCWA will prepare a No Legal Challenges Letter for each component. All required Tribal notifications (per PRC §75102) will be completed during the CEQA process. The following environmental assessments are expected for each of the project components: 1. NEPA documentation is being completed by IHS; IHS will work with LPP to secure a CEQA letter of concurrence and IHS will file a CEQA Notice of Determination (NOD). 2. NEPA documentation is being completed by IHS; IHS will work with LPP to secure a CEQA letter of concurrence and IHS will file a CEQA NOD. 3. Environmental compliance complete through Phase I of the project 4. Due to the size and nature of this component, project does not constitute a "project" per CEQA or NEPA standards. 5. NEPA documentation is being completed by IHS; IHS will work with local entities to secure a CEQA letter of concurrence and IHS will file a CEQA NOD. Given that this project involves construction of a new tank, field surveys and other investigations will be required. 6. Due to the size and nature of this component, project will qualify for a Categorical Exemption. RCAC will work with local entities to file the Categorical Exemption. 7. RCAC will work with the Padre Dam MWD to determine an appropriate level of review; a Mitigated Negative Declaration (MND) is anticipated. 8. Due to the size and nature of this component, project will qualify for a Categorical Exemption. 9. Project will require an MND. 10. Project will require an MND.	• CEQA Concurrence Letters for Components 1, 2, and 5 • Categorical Exemptions for Components 6 and 8 • Mitigated Negative Declaration for Components 7, 9, and 10 • Tribal Notifications • Notices of Determination • No Legal Challenges Letters • CDFW Receipts (Filing Fee)	10%
7: Permitting – For components 1-8, RCAC will work with the DACs to ensure that necessary permits are secured and submitted to DWR per terms of the grant contract. For components 9 and 10, Alter Terra will ensure that permitting is completed. Anticipated permits are described below: 1. Project is located on Tribal land – no permits required 2. Project is located on Tribal land – no permits required 3. Project is located on Tribal land – no permits required 4. Project is located on Tribal land – no permits required 5. Project is located on Tribal land – no permits required 6. Project will require a Building Permit from the County of San Diego 7. Project will require a Building Permit from the County of San Diego 8. Project will require a Building Permit from the County of San Diego 9. Project will require a RWQCB 401 permit and a USACE 404 permit based upon discussions with the County of San Diego. 10. Project will require a RWQCB 401 permit and a USACE 404 permit based upon discussions with the County of San Diego.	• Building Permits for Components 6, 7, and 8 • RWQCB 401 and USACE 404 permits for Components 9 and 10	0%
8: Design– For each project, RCAC will work with the DACs and Alter Terra to ensure that necessary design work is completed and submitted to DWR per	• Preliminary Engineering Reports	10%

Task and Description of Work to be Completed	Deliverables	%*
terms of the grant contract. Design for several of the components is complete or underway, as described below: 1. IHS has completed a Preliminary Engineering Report; a Final Engineering Report (design) will be completed by IHS 2. IHS has completed a project cost estimate; Preliminary and Final Engineering Reports (design) will be completed by IHS 3. BIA has completed a preliminary estimate of costs; Preliminary and Final Engineering Reports (design) will be completed by BIA 4. Final design will be completed by RCAC 5. La Jolla Tribe staff engineers will complete design work 6. Preliminary Engineering and 100% Design has been completed 7. Preliminary Engineering has been completed; a contractor will be hired to complete 100% Design work 8. Preliminary Engineering and 100% Design has been completed 9. Project is in conceptual design, task involves design drawings for booms 10. Project is in conceptual design, task involves site design drawings	• Final Engineering Reports for Components 1-3 • Project Cost Estimates for Components 1-10 • Final Design plans and specifications for Components 1-10	
9: Project Performance Monitoring Plan – RCAC will work with the DACs and Alter Terra to develop and submit a Project Performance Monitoring Plan (PPMP). The PPMP will include baseline conditions, a brief discussion of monitoring systems, methodology of monitoring, frequency of monitoring, and location of monitoring points.	• Project Performance Monitoring Plan	0%
Row (d): Construction/Implementation		
10: Contract Services – Due to the small nature of the project components, contract services will be small-scale in nature and will be executed with assistance from RCAC for all project components.	• Notice to Proceed	0%
11. Construction Administration– For each project, RCAC will work with DAC and Alter Terra to provide construction management activities such as solicitation for bids and awards of contracts, coordination of construction schedule with DAC, regulatory agencies, and other stakeholders, will document construction with photographs, and attend construction meetings as needed. Once construction is complete, RCAC will secure a Notice of Completion for each project component.	• Notice of Completion	0%
12. Construction/Implementation Activities – For all components, RCAC will coordinate with the DACs and Alter Terra to provide technical support as necessary. Construction activities in Subtasks 12.1 through 12.8 will be in compliance with American Water Works Association (AWWA) standards for materials, construction, and testing of pipe, storage tanks, pumps, wells, and valves. Streambed improvements in Subtasks 12.9 and 12.10 will be in compliance with the RWQCB 401 and USACE 404 permits obtained in Task 7.		
Subtask 12.1: Pauma Reservation Water System – Project involves installing a new 110,000-gallon water storage tank on the Pauma Reservation. Activities include draining, abandoning, and demolishing the existing tank, constructing a new tank, conducting disinfection, then conducting leak and bacteriological testing and placing the tank back online once tests are complete and have demonstrated that the tank is operating properly.	• Photographic documentation • Engineers Certification	0%
Subtask 12.2: Campo Reservation South System – Project involves installing a new 6-inch well with all necessary pumps, piping, and other appurtenances on the Campo Reservation. Activities include mobilization, well drilling, installing the new well, conducting test pumping, well disinfection and water analysis, connecting the well to the existing water main through new 4-inch piping, and then completing demobilization. Activities also include modifying the pumphouse piping, bringing power to the site, and installing a disinfection chemical feed system. The well will be put back online once tests are complete and have demonstrated that the tank is operating properly.	• Photographic documentation • Engineers Certification	0%

Task and Description of Work to be Completed	Deliverables	%*
Subtask 12.3: San Pasqual Tribe Reclaimed Water Expansion – Project involves installing 9,100 linear feet of 4-inch PVC recycled water piping on the San Pasqual Reservation. The new pipeline will be an extension of an existing line that is supplied with recycled water from wastewater treatment facilities located at the Valley View Casino. Construction will also involve conducting cross-connection tests, checking that recycled water facilities are marked, and other post-installation tests to ensure proper operation of the system.	• Photographic documentation • Engineers Certification	0%
Subtask 12.4: San Pasqual Tribe Water Meters – Project involves installing 245 "smart" meters to replace existing traditional meters that require about two working days per month to manually read. Implementation activities include replacing existing traditional meters with 245 smart meters throughout the San Pasqual reservation. Testing will be conducted after installation to ensure proper operation of the new meters.	• Photographic documentation • Certification of Completion	0%
Subtask 12.5: La Jolla Tribe Water Tank – Project involves constructing an 80,000 gallon bolted steel water tank and associated distribution service lines on the Tribe to serve 71 homes/265 people on the western water system of the La Jolla Tribe (Private Water System #090605008). Activities include constructing the new tank, conducting disinfection, then conducting leak and bacteriological testing and placing the tank online once tests are complete and have demonstrated that the tank is operating properly.	• Photographic documentation • Engineers Certification	0%
Subtask 12.6: Quiet Oaks Mobile Home Park Nitrate Treatment – Project involves installing a nitrate treatment system on the existing groundwater well that provides water service to 120 residents in a rural mobile home park. A reverse osmosis (RO) treatment system to treat 25,000 gpd would be installed, including miscellaneous piping and electronic controls. Post-installation tests will be conducted to ensure proper operation of the system.	• Photographic documentation • Engineers Certification	0%
Subtask 12.7: Willowside Terrace Water System Connection – Project involves connecting a small, rural system within the Willowside Terrace Water Association (WTWA) to the Padre Dam MWD municipal water system. The connection would entail installation of 6,500 linear feet of 8-inch water pipelines to connect the WTWA distribution infrastructure to Padre Dam MWD's existing water main. Construction will involve mobilization, excavation and trenching, pipe installation, and conducting pressure tests and other post-installation tests to ensure proper operation of the system. Post-installation tests will be conducted to ensure proper operation of the system.	• Photographic documentation • Engineers Certification	0%
Subtask 12.8: Richardson Beardsley Park Treatment - Project involves installing an iron/manganese removal system on existing groundwater well that provides water service to 28 residents in Richardson Beardsley Park Mutual Water District. A packaged iron/manganese treatment system will be installed at the wellhead, including miscellaneous piping and electronic controls.	• Photographic documentation • Engineers Certification	0%
Subtask 12.9: Smuggler's Gulch Floating Trash Booms – Project involves manufacturing three floating trash booms from repurposed plastic. Once constructed, the trash booms will be installed during the post-coastal storm season when channel is free of debris. Construction will involve mobilization, grading, pouring a concrete slab/foundation, installing the trash booms, and demobilization. Trash will be removed from the booms to test operation.	• Photographic documentation • Engineers Certification	0%
Subtask 12.10: Tijuana River-San Diego Connector Restoration Project – Project involves removing trash and invasive species from the project area, followed by revegetation of the site and construction of two vegetated bioswales and 3,000 pervious pavers. Construction will involve mobilization, grading and excavation, installing liner(s), installing pervious pavers, planting, irrigation piping and controls, and demobilization. Project also involves environmental education and post-storm trash removal for three years.	• Photographic documentation • Engineers Certification	0%
** The right-hand column displays % complete for each task.*		

Water Reuse Program

Project 6: Integrated Water Resource Solutions for the Carlsbad Watershed

Local Project Sponsor: San Elijo Joint Powers Authority (San Elijo JPA)
Partners: City of Encinitas, City of Solana Beach, San Dieguito Water District (SDWD), Santa Fe Irrigation District (SFID), Olivenhain Municipal Water District (OMWD), and San Elijo Lagoon Conservancy (SELC)

Project Description

This project will implement multiple streetscape improvements and approximately 4.5 miles of recycled water pipeline along and adjacent to the Highway 101 corridor in the City of Encinitas and the City of Solana Beach to convert 100 AFY of irrigation from potable water to recycled water, and to decrease flows to the San Elijo Ocean Outfall. San Elijo JPA owns and operates the San Elijo Water Reclamation Facility (WRF), a 5.25 million gallons per day (mgd) wastewater treatment and 3.02 mgd water reclamation facility serving irrigation demands within the City of Del Mar, SDWD, SFID, and OMWD. In conjunction with project partners, San Elijo JPA is pursuing an integrated approach to water quality, water conservation, and climate change along and adjacent to the Highway 101 corridor in North San Diego County. This project includes the following eight elements:

Component 1: Highway 101 Streetscape - Located just north of Encinitas Boulevard, this project element will be constructed by the City of Encinitas and includes reconstruction of Highway 101 from A Street to North Court to include plumbing for recycled water.

Component 2: Highway 101 Greenstreet Retrofit – Led by the City of Encinitas, this component will construct LID streetscape improvements along Highway 101 in the City of Encinitas, which will reduce peak runoff by 4.6%, total runoff by 3.5%, and coliforms reaching the Cottonwood Creek, a 303(d)-listed body of water, by an estimated 45%. The LID elements will be located along Highway 101, just south of Encinitas Boulevard, between E Street and F Street.

Component 3: Manchester Avenue Recycled Water Pipeline – Led by OMWD, this component will extend Pipeline No. 1 east along Manchester Avenue in the City of Encinitas to serve Mira Costa College, homeowners associations (HOAs), religious centers, and other customers.

Component 4: Via de la Valle/Highway 101 Recycled Water Pipeline – Led by SFID, this component will extend Pipeline No. 2 west along Via De La Valle and then north on Highway 101 in Solana Beach, allowing for conversion of several HOAs, and the City's Coastal Rail Trail to recycled water.

Component 5: Encinitas Ranch / Requeza Street Recycled Water Pipelines – Led by SDWD, this component will extend Pipeline No. 3 east adjacent to Paseo De Las Flores in the City of Encinitas to allow for conversion of several HOAs, agricultural sites, and recreational trails to recycled water use. Pipeline No. 4 will also be extended along Requeza Street to serve multiple HOAs.

Component 6: San Elijo WRF LID Project – San Elijo JPA will construct low impact development (LID) facilities at the San Elijo WRF, which will reduce Total Suspended Solids (TSS) entering San Elijo Lagoon, a 303(d)-listed body of water.

Component 7: SELC Water Quality/Quantity Monitoring – SELC will conduct water quality and quantity monitoring in the San Elijo Lagoon. The San Elijo Lagoon, a 303(d) listed body of water that is adjacent to the San Elijo WRF, is a vital and unique ecosystem in the Carlsbad Watershed. This program element proposes to support existing water quality and quantity monitoring efforts in the San Elijo Lagoon and will provide funding for data collection and uploading efforts for two years.

Component 8: SELC Community Outreach - This program element will support an existing outreach effort by SELC, which transports students from middle through high school to key areas in the watershed, such as the Elfin Forest Recreational Reserve and the San Elijo Lagoon, to participate in water conservation/quality education using a state approved curriculum. The proposed support will reach approximately 434 students over two years, including 313 students from Title I low-income schools in Escondido (including Central Elementary, Lincoln Elementary, Farr Elementary, and Felicity Elementary).

A Work Plan for the *Integrated Water Resource Solutions for the Carlsbad Watershed* project, including the anticipated tasks necessary to complete the project, deliverables, and current status of the project, is provided in **Table 3-7** below.

Table 3-7: Work Plan for *Integrated Water Resource Solutions for the Carlsbad Watershed*

Task and Description of Work to be Completed	Deliverables	%*
Row (a): Direct Project Administration		
1: Project Management – Manage grant agreement including compliance with grant requirements, and preparation and submission of supporting grant documents and coordination with the SDCWA Grant Administrator. Prepare invoices including relevant supporting documentation for submittal to DWR via SDCWA. This task also includes administrative responsibilities associated with the project such as coordinating with partnering agencies, executing local project partner contracts, and managing consultants/contractors.	• Consultant and contractor contract agreements • Environmental Information Form • Financial Statements • Invoices and supporting documentation	2%
2: Labor Compliance Program – The Project's construction will be completed utilizing prevailing rates in order to comply with Labor Code Section 1771.3. The Project will have a Labor Compliance Program ID before the Project goes out to bid. Management of the program, including all reporting obligations on behalf of the contractor, will be ongoing and overseen by San Elijo JPA's third-party labor compliance consultant until completion of construction.	• Annual Reporting to DIR, as required • Proof of Labor Compliance, upon request	0%
3: Reporting – This task consists of preparing quarterly progress reports detailing work completed during the reporting period. This task will also involve preparing the Project Completion Report after project completion.	• Quarterly Project Progress Reports • Project Completion Report	0%
Row (b): Land Purchase/Easement		
4: Land Purchase – For *Component 5 Encinitas Ranch/Requeza Pipelines*, this task will involve preparation and Filing of easement documents.	• Final Easement Documents	N/A
Row (c): Planning/Design/Engineering/Environmental Documentation		
5: Feasibility Studies – No feasibility studies will be prepared for the proposed project.	N/A	N/A
6: CEQA Documentation – This task involves preparation of environmental documentation for each component of the project. All required Tribal notifications (per PRC §75102) will be completed during the CEQA process. • *Component 1 Highway 101 Streetscape* – Preparation and circulation of a Notice of Preparation and a draft Environmental Impact Report (EIR), filing Notices of Completion, and preparation of a letter stating no legal challenges (or addressing legal challenges). • *Component 2 Highway 101 Greenstreet Retrofit* – Preparation of a Notice of Exemption (NOE), filing NOE, and a letter stating no legal challenges (or addressing legal challenges). • *Component 3 Manchester Avenue Recycled Water Pipeline* – Preparation of an Initial Study and anticipated Mitigated Negative Declaration (MND), filing MND, and a letter stating no legal challenges (or addressing legal challenges). • *Component 4 Via de la Valle/Highway 101 Recycled Water Pipeline* – Preparation of an Initial Study and anticipated MND, filing MND, and a letter stating no legal challenges (or addressing legal challenges).	• Notice of Preparation for Component 1 • Draft and Final EIR for Component 1 • Notice of Exemption for Components 2 and 6 • Initial Study/MND for Components 3, 4, and 5 • Tribal Notifications • Notices of Determination • Letters of No Legal Challenges • CDFW Receipts (Filing Fee)	20%

Task and Description of Work to be Completed	Deliverables	%*
• *Component 5 Encinitas Ranch/Requeza Street Recycled Water Pipelines* – Preparation of an Initial Study and anticipated MND, filing MND, and a letter stating no legal challenges (or addressing legal challenges). • *Component 6 San Elijo WRF LID Project* – Preparation of a Notice of Exemption (NOE), filing NOE, and a letter stating no legal challenges (or addressing legal challenges).		
7: Permitting – Acquire all relevant permits as described in the subtasks below. No permit is necessary for construction of *Component 6 San Elijo WRF LID Project*, as it is entirely on San Elijo WRF property. • *Component 1 Highway 101 Streetscape* – Preparation of a local Coastal Development Permit (City of Encinitas), inclusive of a Citizen Participation Plan, and a North County Transit District (NCTD) Permit. • *Component 2 Highway 101 Greenstreet Retrofit* – Preparation of a local Coastal Development Permit. • *Component 3 Manchester Avenue Recycled Water Pipeline* – Preparation of a local Coastal Development Permit. • *Component 4 Via de la Valle/Highway 101 Recycled Water Pipeline* – Preparation of a local Coastal Development Permit and a NTCD Encroachment Permit. • *Component 5 Encinitas Ranch/ Requeza Street Recycled Water Pipeline* – Preparation of a local Coastal Development Permit.	• Coastal Development Permits for Components 1-5 • NCTD Encroachment Permit for Components 1 and 4	10%

8: Design – Complete preliminary design including geotechnical investigations, topographic survey, preliminary cost estimates, preliminary design reports, final design plans and specifications as described in the subtasks below.
• *Component 1 Highway 101 Streetscape* – Complete preliminary and final design including: preliminary plans, preliminary drainage study, preliminary cost estimate, storm water management plan, traffic impact analysis, final design plans. Completed work includes:
  ○ 30% Plans, Preliminary Drainage Study, and 30% Cost Estimate (Completed 8/19/2014)
  ○ Storm Water Management Plan (Completed 8/15/2014)
  ○ Traffic Impact Analysis (Completed 11/24/2014)
• *Component 2 Highway 101 Greenstreet Retrofit* – Complete preliminary and final design including the following supporting work: project cost estimate and final design plans and specification.
• *Component 3 Manchester Avenue Recycled Water Pipeline* – Complete preliminary and final design including the following supporting work: topographic survey, project cost estimate, and final design plans.
• *Component 4 Via De La Valle/Highway 101 Recycled Water Pipeline* – Complete preliminary and final design including the following supporting work: preliminary design report, topographic survey, project cost estimate, and final design plans and specification. Completed work includes:
  ○ Preliminary Design Report
• *Component 5 Encinitas Ranch/Requeza St Recycled Water Pipeline* – Complete preliminary and final design including the following supporting work: topographic survey, project cost estimate, and final design plans.
• *Component 6 San Elijo WRF LID Project* – Complete preliminary and final design including the following supporting work: project cost estimate, and final design plans and specification.
	• 30% Plans, Preliminary Drainage Study, and 30% Cost Estimate for Component 1
	• Storm Water Management Plan for Component 1
	• Traffic Impact Analysis for Component 1
	• Final Design Plans and Specifications for Component 1
	• Topographic Surveys for Components 2-5
	• Project Cost Estimates for Components 2-6
	• Final Design Plans and Specifications for Components 2-6
	• Preliminary Design Report for Component 4
	• Conceptual Design Tech Memo for Component 6
		20%

Task and Description of Work to be Completed	Deliverables	%*
9: Project Performance Monitoring Plan – This task involves developing and submitting a Project Performance and Monitoring Plan, including baseline conditions, monitoring systems to be used, methodology of monitoring, frequency of monitoring, location of monitoring points, and any other stipulations required by DWR in the Final Grant Agreement.	• Project Performance Monitoring Plan	0%
Row (d): Construction/Implementation		
10: Contract Services – Activities necessary to secure a contractor and award the contract including developing and bidding documents, preparing advertisement and contract documents for construction contract bidding, conducting a pre-bid meeting, opening and evaluating bids, selecting a contractor, awarding the contract, and issuing notices to proceed. Contract services will be necessary for the following components: *Component 1 Highway 101 Streetscape* *Component 2 Highway 101 Greenstreet Retrofit* *Component 3 Manchester Avenue Recycled Water Pipeline* *Component 4 Via De La Valle Recycled Water Pipeline* *Component 5 Encinitas Ranch/Requeza Street Recycled Water Pipelines* *Component 6 San Elijo WRF LID Project*	For each component: • Bid Documents • Proof of Advertisement • Notice of Award • Notice to Proceed	0%
11. Construction Administration – This task includes managing contractor submittal review, answering requests for information, and issuing work directives. Construction will be observed by a competent field inspector or construction manager who will document pre-construction conditions, maintain daily inspection reports, prepare change orders, address questions of the contractor, review the project schedule, review submittals and pay requests, and notify the contractor of deficient work. Construction administration will be necessary for the following components: *Component 1 Highway 101 Streetscape* *Component 2 Highway 101 Greenstreet Retrofit* *Component 3 Manchester Avenue Recycled Water Pipeline* *Component 4 Via De La Valle Recycled Water Pipeline* *Component 5 Encinitas Ranch / Requeza St Recycled Water Pipelines* *Component 6 San Elijo WRF LID Project*	For each component: • Notice of Completion	0%
12. Construction/Implementation Activities – Construction/Implementation includes mobilization and demobilization, demolition, trenching, shoring, excavation, paving, pipe installation, backfill and compaction, paving, landscaping, irrigation work, solar installation, and BMP installation as described in the following subtasks. Construction activities in Subtasks 12.1 and 12.2 will be in compliance with California Department of Transportation (CalTrans) standard specifications for materials, construction and testing. Construction activities in Subtasks 12.3 through 12.6 will be in compliance with American Water Works Association (AWWA) standards for materials, construction, and testing of pipe, storage tanks, pumps, and valves.		
Subtask 12.1: Highway 101 Streetscape – Construction includes mobilization, traffic control, demolition of pavement, curb and gutter, ac berms, ac pavement, concrete sidewalk, signs, mailboxes, guardrails, streetlights, pull boxes, stop signs, benches, trash cans, and trees. Approximately 3,000 cubic yards (CY) of cut and fill, 4,000 linear feet (LF) of storm drain, 18,000 sq ft of bioretention area, water appurtenance relocations and adjustments, 88,000 sq ft of sidewalk installation, 110,000 sq ft of asphalt replacement, 91,763 sq ft of irrigation system improvements, 1,000 LF of recycled water pipeline, 91,763 sq ft of soil, plantings, establishments, and 80 street lights will be installed along the Highway 101 corridor from A Street to North Court.	• Photographic Documentation • Engineer's Certification	0%

Task and Description of Work to be Completed	Deliverables	%*
Subtask 12.2: Highway 101 Greenstreet Retrofit – Construction includes 20 days of traffic control, construction BMPs, 60 LF of curb and gutter removal, 5,600 sq ft of asphalt removal, 370 LF of curb and gutter, 5,600 of permeable pavement, 100 CY of Structural Layer, 920 sq ft of Fine Grading, 370 LF Hydraulic Restriction Layer, 110 sq ft Mortared Cobble Energy Dissipater, 100 CY of Soil Media, 920 sq ft of Vegetation, and 8 CY of mulch.	• Photographic Documentation • Engineer's Certification	0%
Subtask 12.3: Manchester Avenue Recycled Water Pipeline – Construct 5,280 LF of PVC reclaimed water pipeline along Manchester Ave., including mobilization and demobilization, traffic control, trenching, excavation, bedding, and backfill, shoring (if required), PVC pipe and appurtenance installation and testing, dewatering, and paving.	• Photographic Documentation • Engineer's Certification	0%
Subtask 12.4: Via De La Valle/Highway 101 Recycled Water Pipeline – Construct 6,240 LF of PVC reclaimed water pipeline along Via de la Valle Avenue, including mobilization and demobilization, traffic control, trenching, excavation, bedding, and backfill, shoring (if required), PVC pipe and appurtenance installation and testing, and paving.	• Photographic Documentation • Engineer's Certification	0%
Subtask 12.5: Encinitas Ranch/Requeza Street Recycled Water Pipelines – Construct 7,250 LF of PVC recycled water pipeline adjacent to Paseo De Las Flores and Requeza St., including mobilization and demobilization, traffic control, trenching, excavation, bedding, backfill, shoring (if required), PVC pipe and appurtenance installation and testing, and paving. The Encinitas Ranch pipeline extension also requires construction of a booster pump station.	• Photographic Documentation • Engineer's Certification	0%
Subtask 12.6: San Elijo WRF LID Project – Construction includes mobilization/demobilization, demolition (asphalt, curb and gutter, and earthwork), grading, constructing new curb and gutter, sawcutting existing curb and gutter, installing permeable pavers, constructing bioretention areas, and constructing two car ports.	• Photographic Documentation • Engineer's Certification	0%
Subtask 12.7: SELC Water Quality/Quantity Monitoring – Implementation will include maintaining existing data monitoring equipment, replacing outdated data monitoring equipment, collecting data from existing data monitoring equipment, collecting grab samples, analyzing grab samples, preparing report on data monitored, and uploading data to CEDEN database.	• Water Quality / Quantity Monitoring Report	0%
Subtask 12.8: SELC Community Outreach – Implementation will include providing multiple field trips from schools in Encinitas and Escondido to the San Elijo Lagoon. SELC will provide programming on the living watershed to students K-12 via a state approved curriculum.	• Documentation of Number of Student's Reached	0%
** The right-hand column displays % complete for each task.*		

Project 7: UCSD Water Conservation and Watershed Protection

Local Project Sponsor: University of California San Diego (UCSD)
Partners: San Diego Coastkeeper, WildCoast, Urban Corps of San Diego, and Tijuana River National Estuarine Research Reserve (TRNERR)

Project Description

Through the *UCSD Water Conservation and Watershed Protection* project, UCSD will support its leadership role in regional water resource protection by partnering with community-based organizations – San Diego Coastkeeper, WildCoast, and Urban Corps of San Diego – to reduce potable water use, improve irrigation efficiencies, increase public awareness and education on water conservation and watershed pollution, reduce non-point source pollution, and restore watershed habitats. This project will provide benefits to the following sensitive natural resources: Tijuana River National Estuarine Research Reserve (TRNERR); Tijuana River Regional Park and Border Field State Park; Tijuana River Mouth Marine Protected Area (MPA); La Jolla Shores Area of Special Biological Significance (ASBS); and San Diego Bay.

Water conservation and watershed protection will be achieved by the following project components:

Component 1 Central Utilities Plant (CUP) Reclaimed Water Cooling Tower Retrofit: This component will extend recycled water lines across the UCSD campus to the Central Utilities Plant Cooling Towers. By bringing recycled water to the Plant and retrofitting the cooling tower equipment and controls, 80% of current potable water use in the towers will be replaced with recycled water. This will reduce potable water use by 27,500,000 gallons per year in 2016 and 60,000,000 gallons per year in 2017 and beyond.

Component 2 Air Handling Unit Condensate Collection and Reuse: This element includes retrofitting two buildings on campus to reuse Heating-Ventilation-Air Conditioning (HVAC) condensation water for irrigation savings of approximately 1 million gallons of potable water a year.

Component 3 Water Conservation Community Outreach: This component will engage stakeholders and increase public awareness of measures they can implement to conserve water. Coastkeeper will conduct education and outreach to inform residents (including UCSD students), businesses and decision makers about the region's water supply, the need for and benefits of conservation, and the actions that can be taken to lower water use in the region.

Component 4 Turf Removal and Stormwater Treatment: This component will replace turf with storm water treatment landscaping at two locations on campus to reduce irrigation, prevent non-storm water flows, and treat stormwater runoff from roads and a parking lot. This will reduce pollutants discharged into the Penasquitos Watershed and the La Jolla Shores ASBS, such as total suspended solids (TSS) and bacteria. The Revelle Parking Lot Retrofits include turf removal and bioretention areas to collect and infiltrate stormwater runoff from the lot. At the entrance of UCSD, turf will be replaced with drought tolerant landscaping and a bioretention basin to reduce stormwater runoff and the discharge of pollutants.

Component 5 Modular Wetland Treatment System and Monitoring: This component includes installing a Modular Wetland Stormwater Treatment System at the UCSD Nimitz Marine Facility. The system will treat stormwater runoff from a concrete swale that discharges directly into the San Diego Bay. Monitoring of storm water runoff upstream and downstream from this system will be performed to evaluate the effectiveness of this system at removing heavy metals and sediment from runoff.

Component 6 Tijuana River Valley (TRV) Non-Point Source Pollution Reduction and Habitat Restoration: This element will provide non-point source pollution reduction and habitat restoration. WildCoast/Urban Corps/TRNERR will remove trash, debris, and invasive non-native species in the TRV to reduce or eliminate the discharge of pollutants into the Tijuana Watershed. This project will engage underserved community members and youth in stewardship and restoration of habitat in the TRV and prevent pollutants from entering coastal ecosystems. The project will engage an estimated 5,000 volunteers in the removal of 80 tons of waste, 1,000 tires and also restore 1 acre of habitat in the TRV over 24 months.

A Work Plan for the *UCSD Water Conservation and Watershed Protection* project, including the anticipated tasks necessary to complete the project, deliverables, and current status of the project, is provided in **Table 3-8** below.

Table 3-8: Work Plan for *UCSD Water Conservation and Watershed Protection*

Task and Description of Work to be Completed	Deliverables	%*
Row (a): Direct Project Administration		
1: Project Management – The project management tasks consist of management of contracts, preparation of invoices and backup documentation, coordination with consultant, contractors, local project sponsors and project team. Maintenance of other administrative duties, including data management, oversight for environmental, engineering, legal and financial issues will also be covered.	• Invoices and supporting documentation • Environmental Information Form • Financial Statements	0%
2: Labor Compliance Program – UCSD requires all trade contractors to pay prevailing wages as established by the State of California through Labor Code, and to maintain certified payroll for said wages. This is a UC system-wide requirement and all construction contracts include this requirement in the contract language. The University of California has a Department of Industrial Relations-approved Labor Compliance Program in place.	• Labor Compliance Reports • Proof of labor compliance, upon request	20%
3: Reporting – This task consists of preparing quarterly progress reports detailing work completed during the reporting period as outlined in the Final Grant Agreement. This task will also involve preparing the Project Completion Report and submittal to SDCWA for DWR Project Manager's comment and review. The report shall be prepared and presented in accordance with the provisions of the Final Grant Agreement.	• Quarterly Project Progress Reports • Project Completion Report	0%
Row (b): Land Purchase/Easement		
4: Land Purchase – Not applicable.	N/A	N/A
Row (c): Planning/Design/Engineering/Environmental Documentation		
5: Feasibility Studies – Feasibility studies have been prepared for the Cooling Tower Retrofit and the HVAC Condensate Reuse tasks. • *Component 1 CUP Recycled Water Cooling Tower Retrofit:* A *Recycled Water Feasibility Study* (November 2013) verified pipe size for expansion of recycled water service on campus. • *Component 2 Air Handling Unit Condensate Collection and Reuse:* An *Air Handling Unit Condensate Collection and Reuse Feasibility Study* is currently in review by UCSD. Final draft will be completed prior to design drawing stage.	• Recycled Water Feasibility Study • Air Handling Unit Condensate Collection and Reuse Feasibility Study	90%
6: CEQA Documentation – UCSD has prepared CEQA documentation for the project related tasks for which CEQA documentation is required. • *Component 1 CUP Recycled Water Cooling Tower Retrofit:* Categorical Exemption (4/1/14) • *Component 4 Turf Removal and Stormwater Treatment:* Categorical Exemption (2/19/15) • *Component 5 Modular Wetland Treatment System and Monitoring:* Categorical Exemption (2/19/15)	• Notice of Exemptions for Component 1, 4, and 5	100%
7: Permitting – All relevant permits have been acquired for *Component 1 CUP Recycled Water Cooling Tower Retrofit*. No additional permits are necessary for the other project components. Completed permits include: • Industrial User Discharge Permit #02-0112-05-A – An *Industrial Engineering Report for Recycled Water System* was completed on June 3, 2015 to support permit acquisition.	• City of San Diego Industrial User Permit • Notice of Intent: General Construction Permit	100%

Task and Description of Work to be Completed	Deliverables	%*
• Notice of Intent: General Permit to Discharge Storm Water Associated with Construction Activity (WQ ORDER No. 2009-0009-DWQ)		

8: Design – This task includes preliminary and final design for the four construction components, as described below.
• *Component 1 CUP Recycled Water Cooling Tower Retrofit* – Final design for this component has been completed. An engineering report, including the design drawings, has been submitted to the County and City Health Department for approval. Completed works include:
  ○ Industrial Engineering Report for Recycled Water System, UC San Diego Central Utilities Plant (12/3/15)
  ○ Recycled Water Mains – Approved City & County Drawings (5/9/14)
• *Component 2 Air Handling Unit Condensate Collection and Reuse* – Draft Air Handling Unit Condensate Collection Drawings are currently in review by UCSD. Final design will need to be completed.
• *Component 3 Turf Removal and Stormwater Treatment* – Preliminary design drawings have been completed identifying the area of work and the stormwater system to be installed. Final design will need to be completed. Completed works include:
  ○ Stormwater Treatment Preliminary Design (May 2015)
• *Component 4 Modular Wetland Stormwater Treatment System* – Preliminary design drawings have been completed identifying the area of work and the wetland system to be installed. Final design will need to be completed. Completed works include:
  ○ Modular Wetland Treatment System Preliminary Design (May 2015)
	• Industrial Engineering Report for Recycled Water System (12/3/15)
	• Approved City & County Drawings (5/9/14)
	• Preliminary Design for HVAC Condensate Reuse
	• Stormwater Treatment Preliminary Design
	• Modular Wetland Stormwater Treatment System Preliminary Design
	• Final Design for Components 2, 4, and 5
		40%

9: Project Performance Monitoring Plan – This task involves developing and submitting a Project Performance and Monitoring Plan, including baseline conditions, monitoring systems to be used, methodology of monitoring, frequency of monitoring, location of monitoring points, and any other stipulations required by DWR in the Final Grant Agreement. • *Component 1 CUP Reclaimed Water Cooling Tower Retrofit* – Recycled water and potable water usage for the cooling tower make-up will be metered. Plant operators and the University meter shop staff will be able to monitor and provide usage data as requested. • *Component 4 Modular Wetland Stormwater Treatment System* – Stormwater runoff will be monitored upstream and downstream from the system once per year for 10 years after the system is installed to evaluate pollutant removal rates for heavy metals and sediment.	• Project Performance Monitoring Plan	0%
Row (d): Construction/Implementation		
10: Contract Services – This task will include activities necessary to secure a contractor and award the contract will be done under this task including developing bid documents, preparing advertisement and contract documents for construction contract bidding, conduct pre-bid meeting, bid opening and evaluation, selection of the contractor, award of contract, and issuance of notice to proceed.	• RFP Document • Contractor Bids and Qualifications • Award of Contract • Notice to Proceed	20%
11. Construction Administration – This task includes managing contractor submittal review, answering requests for information, and issuing work directives. Construction will be observed by a competent field inspector and/or construction manager who will oversee contractor activities, address questions of the contractor, review/update the project schedule, review submittals and pay requests, and notify the contractor of deficient work.	• Notice of Completion	0%

Task and Description of Work to be Completed	Deliverables	%*
12. Construction/Implementation Activities - Construction activities in Subtasks 12.1 and 12.2 will be in compliance with American Water Works Association (AWWA) standards for materials, construction, and testing of pipe, storage tanks, pumps, and valves. Implementation of turf conversions in Subtask 12.4 will be in compliance with professional landscape standards. Habitat restoration activities in Subtask 12.6 will be in compliance with industry best practices.		
Subtask 12.1: CUP Reclaimed Water Cooling Tower Retrofit - This task will bring recycled water from the City of San Diego's recycled water distribution system to the UCSD CUP via a newly installed 12-inch private recycled water main that stretches near a mile on campus. The mainline distribution system was permitted as part of a separate project. The CUP contains seven existing cooling towers with an average make-up water demand of approximately 435,600 gpd (or 488 AFY); this project will provide recycled water offset for 200 AFY. The recycled water piping for the connection to the cooling towers will be routed below grade into the mechanical yard and will continue below grade to the new above grade meter, pressure regulating valve, and flow control assembly. The existing domestic water feed to the cooling towers will remain connected to the cooling towers for blending with recycled water in the cooling tower basins. All cooling tower overflow and blow down waste streams drain to the existing sanitary sewer system. The towers will remain operational while the new piping gets installed. The piping work will be carried out in accordance with the procedures specified in the City of San Diego recycled water specifications.	• Pre- and post-construction photos or video • Construction as-builts • Recycled water and potable water meter data for cooling tower make-up usage after project is completed	0%
Subtask 12.2: Air Handling Unit Condensate Collection and Reuse - HVAC condensate will be collected and reused at two buildings on campus. For each building, the contractor will install an air handling unit (AHU) condensate collection and distribution system consisting of building main condensate collection tank(s), intermediate condensate collection receivers, small-bore PVC & copper piping, isolation and control valves, and a main condensate supply pump. The system will be interconnected with irrigation and/or lab water systems. Electrical power and control conduit will be installed to power devices, equipment, and control panels. The control system will be integrated with the existing irrigation system as well as the campus-wide building management system (BMS). The majority of the project will be inside building mechanical rooms. At each building the contractor will install a condensate collection system and associated controls. A typical system at each building will include PVC piping to route condensate to condensate collection tank(s). Two to five condensate receiver pumps will be used to transfer condensate from AHU to central condensate collection tanks. One or two pumps will be used to transfer condensate from collection tanks to the existing irrigation system. The contractor will verify the system's performance and provide initial data reads to ensure the controls system are installed as planned.	• Pre- and post-construction photos or videos • Construction as-builts • Condensate collection water meter data	0%
Subtask 12.3: Water Conservation Community Outreach – San Diego Coastkeeper will conduct education and outreach to inform residents (including UCSD students), businesses, and decision-makers about our region's water supply, need for and benefits of conservation, and actions that can be taken to lower water use. The scope of work includes: • 6 articles each: residential conservation, commercial conservation, statewide conservation, climate change and the water-energy nexus • Water conservation workshops and tours, one targeting residential conservation and one targeting commercial conservation. • Volunteer trainings for 40 individuals to detect and report water waste, and to provide information to peers about best practices to conserve	• Documentation of public outreach and stakeholder involvement activities and copies of articles and outreach materials	0%

Task and Description of Work to be Completed	Deliverables	%*
Door hangers and posters to inform individuals about the need for and resources available to achieve water conservation		
Subtask 12.4: Turf Removal and Stormwater Treatment –This task will replace turf with stormwater treatment landscaping at two locations on campus to reduce irrigation, prevent non-storm water flows, and treat stormwater runoff from roads and a parking lot. The Revelle Parking Lot Retrofits include turf removal and bioretention areas to collect and infiltrate stormwater runoff from the lot. At the UCSD Entrance, turf will be replaced with drought tolerant landscaping and a bioretention basin to reduce stormwater runoff and the discharge of pollutants. Removal of the turf and installation of bioswales will require excavation, removal of parking areas and curbs, installation of bioswale liner, fill, perforated piping, and concrete edging, installation of plantings and irrigation for berms, and construction of cleanout and curb inlet.	• Pre- and post-construction photos	0%
Subtask 12.5: Modular Wetland Treatment System and Monitoring - This task includes installing a Modular Wetland Stormwater Treatment System at the UCSD Nimitz Marine Facility. The system will treat stormwater runoff from a concrete swale that discharges directly into the San Diego Bay. Installation of the modular wetlands will include excavation, placement of the modular vault, and discharge connection to a stormwater pipe. Monitoring of storm water runoff upstream and downstream from this system will be performed to evaluate the effectiveness of this system at removing heavy metals and sediment from runoff. Effectiveness monitoring will be done to evaluate the concentrations of heavy metals and TSS in the stormwater runoff before and after it goes through the treatment system.	• Pre- and post-construction photos • Monitoring Reports	0%
Subtask 12.6: TRV Non-Point Source Pollution Reduction and Habitat Restoration – During a 24 month period, approximately one acre of mulefat scrub habitat will be restored through invasive species removal and planting of native species. An additional 4 acres (estimated) will be enhanced through trash and tire removal events. *Habitat Restoration*: TRNERR staff, TRNERR volunteers, and Urban Corps will carry out the restoration of one acre of mulefat scrub habitat located at Border Field State Park. During a 24 month period, an irrigation system will be installed, nine cubic yards of invasive weeds will be manually removed, and 620 native plants will be planted. *Trash and Watershed Cleanup*: WildCoast will engage the underserved communities around the park in stewardship activities and supplement Urban Corps cleanups with volunteers. WildCoast and Urban Corps will carry out 12 cleanup events. This will include at least four-cleanup events per Tijuana River Action Month (TRAM) and additionally four cleanup events outside of TRAM. At least two TRAMs will occur during project implementation, in accordance with the Project Schedule. WildCoast will also lead the organization, outreach and coordination for TRAM planning and volunteer outreach.	• Photo documentation of clean-up events and habitat restoration • Documentation of volunteer work at each event	0%
** The right-hand column displays % complete for each task.*		

Project 8: Escondido Advanced Water Treatment for Agriculture

Local Project Sponsor: City of Escondido
Partners: Escondido Growers for Agricultural Preservation (EGAP), Vista Irrigation District, City of San Diego, and Rincon Del Diablo Municipal Water District

Project Description

The City of Escondido (Escondido) desires to become less reliant on imported water by improving the diversity and reliability of its water supply from local resources. Compared to imported supplies, recycling water provides a long-term sustainable, reliable, and drought proof water supply at a reasonable and more predictable cost to local agricultural users. The City of Escondido is also committed to a long-term program to implement potable reuse. On April 2, 2014, the City of Escondido's City Council endorsed a plan to develop an Indirect Potable Reuse (IPR) System. Rather than investing in a costly land and ocean outfall project that releases secondary effluent from Hale Avenue Resource Recovery Facility (HARRF) to the Pacific Ocean, the Escondido City Council has elected to invest in drought proof water supplies using advanced treated recycled water. Currently, the land outfall from HARRF is facing capacity issues. If wastewater discharges are not offset from the facility, Escondido will be required to invest in a costly upgrade to the land outfall. Through the Reuse Program, the Escondido City Council has elected to move water reuse forward and invest its resources in drought proof water supplies instead of investing additional funding in a business-as-usual manner.

The agricultural community in Escondido grows high value crops such as citrus and avocados which are very sensitive to salts (specifically chlorides) which are common in recycled water and consistently present in Escondido's existing recycled water supply. Escondido was awarded Prop 84-Round 2 IRWM grant funds for a recycled water line extension to the agricultural users and a short reach of brine line (that will be constructed in a common trench with the recycled water line), but since that time, salt and salinity management issues have come into focus with the drought in California. The salt content in Escondido's recycled water has increased due to increased use of higher salinity Colorado River for potable demands; this additional salt loading is anticipated to significantly impact growers in Escondido that rely upon locally-produced recycled water for irrigation purposes.

The *Escondido Advanced Water Treatment for Agriculture* project calls for the City of Escondido to construct a microfiltration and reverse osmosis (MFRO) Facility to treat recycled water to agricultural customers' standards by reducing chloride concentrations. This will improve the quality of recycled water and allow growers to continue to use highly reliable and locally-produced recycled water for irrigation. Furthermore, improving the quality of recycled water will decrease overall irrigation water demands, because additional water needed for salt flushing will no longer be required. Data has shown that for some soil types, higher salinity recycled water requires approximately 20% more water to enable salt flushing.[2] As such, without the project, an additional 20% (approximately 880 AFY) over existing agricultural demands of 4,440 AFY would be required for salt flushing.

The MFRO Facility will provide advanced treatment for Title 22 quality reuse water that is produced at the HARRF. The facility will utilize membrane filtration to produce 2.0 MGD of treated water. Since MFRO treated water is a higher quality water supply than what is required for agriculture irrigation, Title 22 quality reuse water from HARRF will be blended with MFRO treated product water to produce water with a quality suitable for agricultural reuse. In order to distribute the MFRO water to agricultural users in the north and east areas of Escondido, the City is constructing the MFRO feed line from HARRF to the MFRO Facility, the brine pipeline from the MFRO Facility to HARRF, and distribution piping to the customers (all partially funded via Prop 84-Round 2 IRWM grant).

The *Escondido Advanced Water Treatment for Agriculture* project also is the important initial phase of a larger program by Escondido to develop approximately 8,000 AFY of new supply through IPR. The MFRO Facility is a key initial step in Escondido's larger IPR System that will promote water recycling and provide a long-term, reliable source of high quality water for the region's agricultural community. The MFRO Facility will meet the real, immediate needs of these agricultural users and provides a means to evaluate advanced treatment processes. The system is also set up to allow pilot testing for Escondido's planned IPR System; the pilot scale evaluations planned at the MFRO Facility will provide insight into the planned growth of Escondido's non-potable reuse and IPR systems.

[2] Water Quality for Agriculture by R. S. Ayers and D.W. Westcot, Food and Agriculture Organization of the United Nations Irrigation and Drainage Paper, 29 Rev.1, 1994

A Work Plan for the *Escondido Advanced Water Treatment for Agriculture* project, including the anticipated tasks necessary to complete the project, deliverables, and current status of the project, is provided in **Table 3-9** below.

Table 3-9: Work Plan for *Escondido Advanced Water Treatment for Agriculture*

Task and Description of Work to be Completed	Deliverables	%*
Row (a): Direct Project Administration		
1: Project Management – Project management work to be completed under this task will be performed by Escondido staff. The project management tasks consist of management of contracts, preparation of invoices and backup documentation, coordination with consultant and contractors and maintenance of other administrative duties, including data management, oversight for environmental, engineering, public involvement, legal and financial issues. Meetings and workshops are also included under Project coordination.	• Invoices and supporting documentation • Environmental Information Form • Financial statements	0%
2: Labor Compliance Program – Escondido will ensure compliance with applicable California Labor Code requirements, including preparation and implementation of a labor compliance program through contract agreements and field audits.	• Labor Compliance Reports • Proof of compliance, upon request	0%
3: Reporting – This task consists of preparing quarterly progress reports detailing work completed during the reporting period as outlined in the Final Grant Agreement. This task will also involve preparing the Project Completion Report and submittal of said report to DWR for DWR Project Manager's comment and review no later than 90 days after project completion. Quarterly project progress reports and the final project completion report will be prepared by Escondido's engineer.	• Quarterly Project Progress Reports • Project Completion Report	0%
Row (b): Land Purchase/Easement		
4: Land Purchase – The 3.25 acre MFRO Facility site is currently owned by the City. No additional land or easement is necessary to complete construction of the MFRO facility.	N/A	N/A
Row (c): Planning/Design/Engineering/Environmental Documentation		
5: Feasibility Studies – The City completed the *MFRO Facilities Plan* in 2014. No additional feasibility studies will be prepared.	• MFRO Facilities Plan	100%
6: CEQA Documentation –The MFRO Facility's engineering design and Mitigated Negative Declaration (MND) process is underway. The MND will be drafted, circulated for public review, and certified by the Escondido City Council. All required Tribal notifications (per PRC §75102) will be completed during the MND process. All associated CEQA mitigation measures shall be addressed and incorporated into the final design.	• Mitigated Negative Declaration • Tribal Notifications • Notice of Determination • No Legal Challenges Letter • CDFW Receipt (Filing Fee)	75%
7: Permitting – Permit will be submitted after plans and specifications are complete (expected completion date November 2015). A copy of the complete permits will be provided to the DWR. The following permits will be required for the Project: • National Pollutant Discharge Elimination System (NPDES) permit amendment for the brine discharge • Clean Water Action Section 401 Water Quality Certification from the San Diego Regional Water Quality Control Board (RWQCB) • Construction General Permit coverage from the State Water Resources Control Board • Various City Public Works permits for construction activities	• NPDES amendment for the brine discharge • Water Quality Certification • Construction General Permit • Various Public Works permits for construction activities	0%

Task and Description of Work to be Completed	Deliverables	%*
8: Design – Conceptual Design and Pre-Engineering Report of the MFRO facility have been completed. The MFRO facility design is underway with expected completion in November 2015.	• Conceptual Design • Pre-Engineering Report • Final design drawings and specifications	75%
9: Project Performance Monitoring Plan – This task involves developing and submitting a Project Performance and Monitoring Plan, including baseline conditions, monitoring systems to be used, methodology of monitoring, frequency of monitoring, location of monitoring points, and any other stipulations required by DWR in the Final Grant Agreement.	• Project Performance Monitoring Plan	0%
Row (d): Construction/Implementation		
10: Contract Services – Contract services during construction will include activities necessary to secure a contractor and award the contract will be done under this task including developing bid documents, preparing advertisement and contract documents for construction contract bidding, conduct pre-bid meeting, bid opening and evaluation, selection of the contractor, award of contract, and issuance of notice to proceed.	• RFP Document • Contractor Bids and Qualifications • Award of Contract • Notice to Proceed	0%
11. Construction Administration – This task includes documenting of pre-construction conditions, preparing change orders, responding to RFIs, preparing addendums, reviewing/ updating project schedule, reviewing contractor log submittals and pay requests, processing payments, forecasting cash flow, analyzing claims and dispute resolution, notifying contractor if work is not acceptable. This subtask also includes providing technical assistance during construction and preparation of record drawings.	• Monthly pay request review • Construction compliance reporting • Notice of Completion	0%
12. Construction/Implementation Activities – This task includes construction of the 2 mgd MFRO Facility and pipelines necessary for blending with HARRF water, and construction contracting costs. The blended product will provide 4,440 AFY of water for agricultural use. Construction of MFRO Facility and pipelines in Subtasks 12.2 through 12.7 will be in compliance with American Water Works Association (AWWA) standards for materials, construction, and testing of pipe, storage tanks, pumps, membranes, and valves.		
Subtask 12.1: Mobilization and Insurance Cost - This subtask includes an allowance for mobilization and insurance costs for the Project construction.	• Notice of Completion	0%
Subtask 12.2: Yard Piping and Sitework - This subtask includes installation of 1,152 linear feet (LF) of 6-in to 24-in yard piping and installation of 780 LF of 16-in to 24-in storm drain piping (187 LF of 12 inch PVC, 20 LF of 10 inch DIP, 80 LF of 18 inch DIP, 670 LF of 24 inch DIP, 15 LF of 24 inch PVC tank overflow, 60 LF of 8 inch PVC, and 120 LF of 6 inch PVC pipes for recycled water. 350 LF of 16 inch HDPE and 430 LF of 24 inch RCP pipes for storm drain). A surge tank, 13 process valves, various pipe fittings, and 5 magnetic flow meters will be installed. Sitework includes site clearing, 1,000 sq ft of site grading, 2,660 cubic yards (CY) of excavation and 2,110 CY of backfilling for yard piping, construction of sidewalks, driveways, asphaltic concrete pavement, 8 feet high fence, and concrete masonry wall around the site.	• Notice of Completion • Photographic documentation	0%
Subtask 12.3: MFRO Process Building - A 14,780 SF pre-engineered metal building will be constructed to house MF and RO process units. 4,570 CY of structural excavation and 980 CY of granular fill is required for the building construction. Plumbing, HVAC, thermal and moisture protection, and electrical connections will be provided to the building. MF process design flow is 1,736 gpm. Two skids of MF will be provided. RO transfer pumps will pump MF filtrate from the inter-process storage tank through the cartridge filters to the suction side of the RO feed pumps. Two 870 gpm capacity, 50 horsepower (HP) RO feed transfer pumps will be installed. In addition, two 200 HP RO feed pumps will boost the pressure of the RO feed water to the	• Notice of Completion • Photographic documentation	0%

Task and Description of Work to be Completed	Deliverables	%*
RO membranes. Two trains of 1 mgd permeate capacity RO system with 80% recovery rate will be installed. Instrumentation including flow meters, temperature and pressure transmitters, pressure switches, turbidity, pH, Cl2, and NH3 analyzers will be installed to MF/RO process units within the building. 870 LF of 6 to 16 inch diameter process piping will be installed.		
Subtask 12.4: Inter-Process Storage Tank - A concrete inter-process storage tank for MF effluent flow equalization will be constructed. The inter-process tanks will be sized for a 30-minute retention time between process MF and RO processes. Storage capacity of the tank is 53,000 gallons, tank diameter is 24 feet, and tank height is 16 feet. The construction will require 2,050 CY of excavation, 650 CY of fill, and 370 CY of concrete.	• Notice of Completion • Photographic documentation	0%
Subtask 12.5: Chemical Storage Building - A 15,800 sq ft pre-engineered metal building will be constructed to house the chemical storage tanks and feed system for the MF/RO process. The chemical storage building will include, two 3,000 gal capacity MF CIP tanks, 400 gal-citric acid totes, chemical tanks for sodium hypochlorite, sulfuric acid, sodium hydroxide, ammonium sulfate, sodium bisulfate, and calcium chloride, a 5,000 gal capacity RO CIP tank, heaters, and chemical transfer pumps.	• Notice of Completion • Photographic documentation	0%
Subtask 12.6: Product Water Storage and MF Feed Tanks - The MFRO Facility will include a product water transfer pump station to transfer water from the RO system to the Product Storage Blend Tank. Two 765 gpm capacity, 19 HP RO product water transfer pumps will be installed. The MFRO Facility product water will be blended with Title 22 recycled water to meet agriculture reuse water quality requirements. A 0.8 MG capacity buried below grade concrete storage blend tank will be installed for agriculture reuse storage. The agriculture pump station will supply agriculture reuse water to the Hogback Reservoir and agriculture distribution system. The pump station will consist of five pumps, each rated for 1,820 gpm to meet ultimate summer day demands	• Notice of Completion • Photographic documentation	0%
Subtask 12.7: HARRF Improvements - Some electrical and instrumentation and control hardware and software improvements will be required at HARRF including installation or upgrades to fiber optic patch panel, rack-mounted firewall router, MFRO workstation, and fiber optic network cable.	• Notice of Completion • Photographic documentation	0%
Subtask 12.8: Project Closeout - This subtask includes activities for overall project closeout, such as final inspections, construction checklists, site clean-up/demobilization, and other closeout activities.	• Notice of Completion	0%
** The right-hand column displays % complete for each task.*		

Project 9: Padre Dam Advanced Water Treatment – Phase IA Expansion

Local Project Sponsor: Padre Dam Municipal Water District (Padre Dam MWD)
Partners: Helix Water District, County of San Diego, and City of El Cajon

Project Description

The *Padre Dam Advanced Water Treatment – Phase IA Expansion* will construct an expansion of Padre Dam MWD's Ray Stoyer Water Reclamation Facility (WRF) to produce up to 6 million gallons per day (mgd) of recycled water, along with a pump station and distribution piping to deliver 0.9 mgd of recycled water for irrigation uses. Padre Dam MWD receives all of its potable water supplies from the San Diego County Water Authority (SDCWA). Water reliability for the San Diego region is threatened by a lack of sufficient local supply. The San Diego IRWM Region has made increasing local supplies a priority for the Region, and set a goal to diversify local water supply portfolio. Increasing recycled water production and use creates a new, drought proof local supply.

Padre Dam MWD currently produces 5 mgd of wastewater within its service area. Of this total, 2 mgd of wastewater is tertiary treated at the Ray Stoyer WRF to produce recycled water, while the rest is discharged into the City of San Diego's collection system to be treated at the Point Loma Wastewater Treatment Plant (WWTP), along with the solids generated at the WRF. The WRF treatment process consists of primary sedimentation, biological phosphorous and nitrogen removal, secondary clarification, and tertiary treatment to produce recycled water. Currently, 1 mgd of recycled water is discharged to the recreational Santee Lakes and 0.8 mgd is delivered to recycled water customers. Through this project, the Ray Stoyer WRF's treatment capacity will be expanded from 2 mgd to 6 mgd, enough to treat 100% of the projected wastewater within Padre Dam MWD's service area by 2040. Expansion of the Ray Stoyer WRF will include the following improvements, all located within the existing plant footprint:

1. The existing Influent Pump Station (IPS) capacity will be increased from 2 mgd to 6 mgd by replacing existing pumps with higher capacity pumps and piping configuration.
2. A new headworks and grit facility will be constructed, and sized for the expansion. Three new primary clarifiers, identical to the two existing clarifiers, will be constructed.
3. The existing biological treatment process will be converted to provide nitrification and denitrification using an MLE (Modified LudzackEttinger) process. The conversion will allow achieving 6 mgd of treatment within the existing secondary treatment process tanks.
4. Existing tertiary treatment train will be expanded by 1 mgd to have a total treatment capacity of 6 mgd (existing tertiary filters capacity is 5 mgd).
5. Sludge and brine produced at the Ray Stoyer WRF will be trucked to nearby Sycamore Landfill for final disposal.

Upon completion of the Ray Stoyer WRF expansion, 0.9 mgd of additional recycled water will be used at Fanita Ranch, which is a 2,600-acre, multiuse planned development located in the northwest portion of the City of Santee, between Fanita Parkway and Cuyamaca Street. The development includes approximately 1,380 single-family residences, and a mix of other land uses including commercial, parks, open space, a 10-acre lake, and a fire station. Padre Dam MWD will provide water, recycled water, and wastewater collection services to the development. Recycled water will be used for the irrigation of the roadway medians, slopes, fire protection zones, and parks, and for lake recharge. Delivery of recycled water to the development will require additional new piping, storage reservoir, and pumping within the development boundary. These improvements are required to be covered by the developer according to the Padre Dam MWD's Recycled Water Policy.[3] The Fanita Ranch developer will also build the pipeline connections to the existing recycled water pump station. No improvements will be required to the existing recycled water pipelines.

Padre Dam MWD has partnered with Helix Water District, County of San Diego, and City of El Cajon to form the East County Regional Water Reuse Program. The objective of the program is to evaluate the feasibility of using the region's recycled wastewater for indirect potable reuse (IPR) as a new source for meeting future water demands. The program will be implemented in two phases. In Phase IA, the program will generate additional recycled water through the Ray Stoyer WRF expansion. In Phase IB, advanced water treatment will create a new source of potable water via groundwater recharge and extraction for potable use at Santee Basin; this will provide

[3] *Padre Dam MWD Rules and Regulations SECTION 3 CONSTRUCTION OF WATER AND SEWER SYSTEMS.*

approximately 4% of the East County Regional Water Reuse Program partner's drinking water demand (2.2 mgd). Phase II of the program will increase that potable reuse supply to 24% by adding surface water augmentation at Lake Jennings Reservoir (11.6 mgd). This project also includes conducting a 3-dimensional hydrodynamic and water quality modeling of the reservoir at Lake Jennings. This model will be utilized to determine residence time and mixing for advanced treated water in the reservoir. Results will be used to assess the feasibility of Phase II of the East County Regional Water Reuse Program, which would utilize surface water augmentation for IPR.

A Work Plan for the *Padre Dam Advanced Water Treatment – Phase IA Expansion* project, including the anticipated tasks necessary to complete the project, deliverables, and current status of the project, is provided in **Table 3-10** below.

Table 3-10: Work Plan for *Padre Dam Advanced Water Treatment – Phase IA Expansion*

Task and Description of Work to be Completed	Deliverables	%*
Row (a): Direct Project Administration		
1: Project Management – Project administration work to be completed under this task will be performed by a Padre Dam MWD Project Manager (PM) with assistance from an Assistant PM. The project management tasks consist of management of contracts, preparation of invoices and backup documentation, coordination with consultant and contractors and maintenance of other administrative duties, including data management, oversight for environmental, engineering, public involvement, legal and financial issues. Meetings and workshops are also included under Project coordination.	• Monthly progress reports • Invoices • Environmental Information Form • Financial statements	5%
2: Labor Compliance Program – The Project's construction will be completed utilizing prevailing rates in order to comply with local labor compliance programs. The Project will have a Labor Compliance Program ID before the Project goes out to bid. Management of the program, including all reporting obligations on behalf of the contractor, will be ongoing and overseen by Padre Dam MWD staff until completion of construction and contractor agreement.	• Labor Compliance Reports	0%
3: Reporting – This task consists of preparing quarterly progress reports detailing work completed during the reporting period as outlined in the Final Grant Agreement. This task will also involve preparing the draft Final Project Completion Report and submittal of said report to DWR for DWR Project Manager's comment and review no later than 90 days after project completion. The report shall be prepared and presented in accordance with the provisions of the Final Grant Agreement. Other reporting obligations (regulatory or otherwise) will be scheduled accordingly.	• Quarterly Project Progress Reports • Draft and Final Project Completion Report	0%
Row (b): Land Purchase/Easement		
4: Land Purchase – Not applicable. The planned expansion improvements will fit in the existing footprint of the Ray Stoyer WRF and therefore land purchase is not needed for this project.	N/A	N/A
Row (c): Planning/Design/Engineering/Environmental Documentation		
5: Feasibility Studies – The *Ray Stoyer WRF Facility Planning Study* was completed in July 2014. A 3-dimensional hydrodynamic and water quality modeling of the Lake Jennings Reservoir will be conducted under this task. The Lake Jennings study will include field sampling to collect data required for model calibration including reservoir water sampling for temperature, pH, dissolved oxygen, conductivity, nutrients, organic matter, and chlorophyll a. The *Water, Recycled Water, and Wastewater Master Plan* was developed by Padre Dam specifically for the Fanita Ranch Development (dated November 2007), and the report includes the proposed recycled water pipelines and estimated demand.	• Ray Stoyer WRF Facility Planning Study • 3-dimensional Hydrodynamic and Water Quality Modeling for Lake Jennings Reservoir • *Water, Recycled Water, and Wastewater Master Plan* for the Fanita Ranch Development	0%

Task and Description of Work to be Completed	Deliverables	%*
6: CEQA Documentation – A Draft Mitigated Negative Declaration (MND) for the Ray Stoyer WRF expansion to 4 mgd was completed in 2009. Revisions to the Draft MND are currently being developed. The revised MND will be completed in time to start public review by August 1st, 2015. All required Tribal notifications (per PRC §75102) will be completed during the MND process. This subtask also includes preparation of mitigation and monitoring reporting plans, and preparation of necessary reporting documentation during and after construction is complete. The *Revised Fanita Ranch Environmental Impact Report (EIR)* was completed in May 2009 and includes the proposed recycled water pipelines to serve non-potable irrigation demands within the development.	• Updated MND • Tribal Notifications • Notice of Determination • CDFW Receipt (Filing Fee) • No Legal Challenges Letter • *Revised Fanita Ranch EIR* (May 2009)	50%
7: Permitting – This task involves preparation of necessary documentation to obtain permits from: • Regional Water Quality Control Board – Revised National Pollutant Discharge Elimination System (NPDES) and Waste Discharge Requirements (WDRs) for Ray Stoyer WRF • Regional Water Quality Control Board – General Construction Permit and Storm Water Pollution Prevention Plan (SWPPP) • San Diego County – Construction Permit • City of Santee – Building and Traffic Control Permit • San Diego Air Quality Management District (SDAQMD) – Construction Permit	• Revised NPDES and WDRs for Ray Stoyer WRF • Construction General Permit w/SWPPP • County of San Diego Construction Permit • City of Santee Building and Traffic Control Permit • SDAQMD Construction Permit	10%
8: Design – Ray Stoyer WRF expansion will be done through Design/Build (D/B) construction method. Tasks to secure the contract award include: preparing a geotechnical report, preparing and issuing RFQ document, RFQ qualification, D/B shortlisting, preparing a 10% design document to serve as a bridging document for bidding, issuing D/B RFP, D/B bid period, bid opening, bid evaluation, and contract negotiations. A construction contract award is planned by April 1, 2016.	• Geotechnical Report • 10% Design Package	0%
9: Project Performance Monitoring Plan – This task involves developing and submitting a Project Performance and Monitoring Plan, including baseline conditions, monitoring systems to be used, methodology of monitoring, frequency of monitoring, location of monitoring points, and any other stipulations required by DWR in the Final Grant Agreement.	• Project Performance Monitoring Plan	0%
Row (d): Construction/Implementation		
10: Contract Services – Contract services during construction will include surveying to provide line and grade for facilities to be constructed and geotechnical services to verify compaction of soils and strength of materials provided by the contract to meet specifications. In addition, activities necessary to secure a contractor and award the contract will be done under this task including developing bid documents, preparing advertisement and contract documents for construction contract bidding, conduct pre-bid meeting, bid opening and evaluation, selection of the contractor, award of contract, and issuance of notice to proceed.	• Post construction geotechnical report. • RFQ Document and Qualification • B/D Shortlist • D/B RFP Document • Contractor Bids and Qualifications • Award of Contract • Notice to Proceed	0%

Task and Description of Work to be Completed	Deliverables	%*
11. Construction Administration – This task includes the construction management of the existing plant expansion from 2 mgd to 6 mgd to produce Title 22 quality recycled water. This task also includes documenting of pre-construction conditions, preparing change orders, responding to RFIs, preparing addendums, reviewing/ updating project schedule, reviewing contractor log submittals and pay requests, processing payments, forecasting cash flow, analyzing claims and dispute resolution, contractor work approval/disapproval notification. This subtask also includes providing technical assistance during construction and preparation of record drawings.	• Notice of Completion	0%
12. Construction/Implementation Activities - Construction of WRF expansion, pump station, and pipelines in Subtasks 12.2 and 12.3 will be in compliance with American Water Works Association (AWWA) standards for materials, construction, and testing of pipe, storage tanks, pumps, and valves.		
Subtask 12.1: Design/Build - Final Design – Design/Build (D/B) consultant team will develop the interim (50% and 90%) and final design drawings and specifications, and cost estimate for the Project components.	• Final Design Drawings, Specifications, and Cost Estimate	0%
Subtask 12.2: Design/Build - IPS Expansion - The existing Influent Pump Station (IPS) directs wastewater flow to the Ray Stoyer WRF. Existing IPS pumping capacity will be increased from 2 mgd to 6 mgd by replacing existing low lift pumps with four new 3.5 mgd (350 horsepower) chopper pumps. These pumps would deliver 22.5 mgd of peak flow to the WRF. Two existing high lift pumps will also be replaced and a third pump added to provide total capacity of 6.5 mgd.	• Notice of Completion • Photographic documentation	0%
Subtask 12.3: Design/Build - WRF Expansion - The following new equipment and facilities will be constructed at the Ray Stoyer WRF under this construction task: • A new headworks and grit facility will be constructed, and sized for the expansion along with a flow diversion structure. Any flows greater than 6 mgd would be diverted to the equalization basin. • A flow equalization basin will be constructed on the eastern side of the WRF to ensure flows entering the treatment facilities are maintained at 6 mgd. • An additional 3.1 mgd of primary clarifier capacity, which would consist of three rectangular tanks with estimated dimensions of 104 feet long, 20 feet wide and 14 feet deep, would be constructed to the west of the existing primary clarifiers. The tanks would be covered for odor control as well as equipped with active odor control equipment. • The existing biological basins (including the existing Bardenpho Tank) at the WRF will be modified to perform nitrification and denitrification only. • An additional 4 mgd of secondary clarifier capacity would be constructed to the west of the existing secondary clarifiers. The four new basins would each be approximately 93 feet long, 20 feet wide and 9.5 feet deep and would be used to separate solids from liquids through the process of gravity sedimentation. Solids at the bottom of the clarifier are withdrawn by a sludge collection mechanism. • Two filters will be constructed to provide additional 1 mgd of capacity within the existing tertiary filtration facility located along the western portion of the project site. • Screenings removed at the Ray Stoyer WRF will be trucked to nearby Sycamore Landfill for final disposal. Sludge produced at the facility will be discharged in the Metro System and treated at the Point Loma WWTP.	• Notice of Completion • Photographic documentation	0%

Task and Description of Work to be Completed	Deliverables	%*
• Fanita Ranch Development will build a direct connection to the recycled water pump station located at the Ray Stoyer WRF (which is located adjacent to the development) and additional 12 miles recycled water distribution pipeline within the development. An additional pump will also be connected to the existing recycled water pump station located at the Ray Stoyer WRF by the developer. Contractor will operate the WRF facility for a period of 45 days in order to comply with Padre Dam MWD's NPDES and WDR permits. Performance testing will be completed after 90 consecutive days of discharge to the Santee Lakes at which time Padre Dam MWD will issue a Notice of Completion to the Contractor. During the time of performance testing, the Contractor can demobilize all equipment, materials and manpower that are not in support of the performance testing.		
** The right-hand column displays % complete for each task.*		

Project 10: Safari Park Drought Response and Outreach

Local Project Sponsor: Zoological Society of San Diego
Partners: San Diego Unified School District, San Diego County Office of Education, San Diego County Water Authority (SDCWA)

Project Description

Founded in 1916, the not-for-profit Zoological Society of San Diego (Zoological Society) is a conservation organization dedicated to the science of saving endangered plant and animal species worldwide. As the largest zoo-based multidisciplinary research organization in the world, the Zoological Society operates three world-class facilities: San Diego Zoo; San Diego Zoo Safari Park (Safari Park); and San Diego Zoo Institute for Conservation Research. Together, these facilities are home to 4,000 rare and endangered animals representing more than 800 species and more than 700,000 exotic plants, including thousands of threatened plants and hundreds of International Union for Conservation of Nature (IUCN) accessioned plants. The Safari Park itself is home to over 2,600 animals (more than 300 species) and 3,500 species of plants. In addition, over half of the Safari Park's land has been protected as habitat for native species. The Zoological Society's Native Seed Bank, located at the Safari Park, harvests and banks seeds to repopulate and remediate threatened habitat throughout California. In August 2014, the Zoological Society restored sensitive coastal sage scrub locally at Lake Hodges. More than 5 million people visited the Zoo and Safari Park in 2014. Approximately 72% of these visitors were from California. They have the largest zoological membership association in the world, representing more than 486,550 people. The Zoological Society's economic impact on the San Diego region was nearly $900 million in 2014.

The Zoological Society's core expenses, which include the costs of animal and plant care, exhibit and facilities maintenance, and on-going operating costs, are offset by self-generated revenues through admissions, memberships, and auxiliary activities. The Zoological Society is dependent on donations, private grants, and government grants to build new exhibits and projects or refurbish existing infrastructure.

The Zoological Society is committed to protecting the San Diego Region's valuable water resources through the implementation of projects that will improve water quality and reduce local water consumption. The project goal is to eliminate the need for imported potable water at Safari Park to irrigate--a direct response to California Governor Jerry Brown's mandate to cut water consumption by 25%. This project will save approximately 72 AFY at the Safari Park by:

1) removing 2.9 acres of irrigation intensive turf area and replacing with themed water-wise (xerophytic) landscaping,
2) upgrading the existing on-site wastewater treatment plant (WWTP) from secondary to tertiary treatment (80,000 gallons per day [gpd] capacity),
3) connecting existing effluent producing areas throughout the Park to the upgraded system,
4) increasing storage and management of the newly tertiary treated water, and
5) treating surface pond water for exhibit and irrigation use using membrane treatment.

This project would enable the Safari Park to become more sustainable, cost-effective, and energy efficient. By tertiary treating wastewater at the Park, the project would improve the quality of water that flows back into the San Pasqual Groundwater Basin and Hodges Reservoir by removing bacteria, dissolved, and suspended solids. This project will provide water conservation messaging and outreach to more than 5 million annual guests to the Safari Park, members of the Zoological Society, thousands of students and teachers at disadvantaged San Diego County schools, and more than 23 million online visitors. The Zoological Society will partner with the San Diego County Office of Education and San Diego Unified School District to provide hands-on water education and conservation programs to 48,850 students per year (through both the Save Our Aquatic Resources Program (SOAR) and Price Watershed Program) from disadvantaged schools throughout San Diego County. The Zoological Society also will offer an extensive outreach program, including tours, to various stakeholders, such as disadvantaged community groups, non-profit organizations, water agencies, and community and agricultural groups.

A Work Plan for the *Safari Park Drought Response Outreach* project, including the anticipated tasks necessary to complete the project, deliverables, and current status of the project, is provided in **Table 3-11** below.

Table 3-11: Work Plan for *Safari Park Drought Response Outreach*

Task and Description of Work to be Completed	Deliverables	%*
Row (a): Direct Project Administration		
1: Project Management – Project administration work to be completed under this task will include managing the grant agreement including compliance with grant requirements, preparation and submission of supporting grant documents, and coordination with IRWM Program Manager and Grant Administrator. This task also includes administrative responsibilities associated with the project such as, preparation of invoices and backup documentation, coordination with partnering agencies, consultant and contractors, and maintenance of other administrative duties, including data management, oversight for environmental, engineering, public involvement, legal and financial issues.	• Invoices and supporting documentation • Environmental Information Form • Financial Statements	0%
2: Labor Compliance Program – The Project's construction will be completed utilizing prevailing rates in order to comply with local labor compliance programs. Management of the program, including all reporting obligations on behalf of the contractor, will be ongoing and overseen by Zoological Society staff until completion of construction and contractor agreement.	• Labor Compliance Reports • Proof of labor compliance, upon request	0%
3: Reporting – This task consists of preparing quarterly progress reports detailing work completed during the reporting period as outlined in the final Grant Agreement. This task will also involve preparing the draft Final Project Completion Report and submittal of said report to SDCWA for DWR Project Manager's comment and review no later than 60 days after project completion.	• Quarterly Project Progress Reports • Project Completion Report	0%
Row (b): Land Purchase/Easement		
4: Land Purchase – Not applicable.	N/A	N/A
Row (c): Planning/Design/Engineering/Environmental Documentation		
5: Feasibility Studies – A Basis of Design Report will be prepared that evaluates various alternatives for expanding the existing WWTP from secondary to tertiary treatment for using the recycled water as irrigation at the park. The analysis includes a detailed review of the existing WWTP infrastructure and will include recommendations for the treatment process and expansion of the plant to achieve tertiary treatment. The recommended treatment process will be required to reduce nitrate and sulfate concentrations in the tertiary effluent. A Water Master Plan update will be prepared to identify future projects and goals of implementing these projects at the park to reduce the overall amount of water used and improve the water quality. A Nutrient Management Plan will be prepared that will determine the best practices for minimizing the quantity of nutrients discharging into the watershed as identified in the County 303d list.	• WWTP Effluent Characterization and Basis of Design Report • Safari Park Water Master Plan Update • Nutrient Management Plan	0%
6: CEQA Documentation – This project falls under the Safari Park's Resource Protection Ordinance (RPO) Permit 99-0153, which requires that the Zoological Society complies with the MMRP specified in the RPO Environmental Impact Report (EIR). This project is incorporated in this RPO, which authorizes a range of future actions, including on-going maintenance, renovation, replacement and/or expansion of existing facilities within the current 625.5 acre park footprint. An addendum will be completed for the RPO to ensure full coverage of this project.	• Safari Park Future Construction Program Resource Protection Ordinance Permit • Addendum to RPO	90%

Task and Description of Work to be Completed	Deliverables	%*
7: Permitting – This task involves preparation of necessary documentation to obtain the required permits from the Regional Water Quality Control Board (RWQCB) for the WWTP expansion and for the redistribution of the use of tertiary recycled water for irrigation at the Safari Park. Safari Park's existing Waste Discharge Requirements (WDR) permit would need to be modified / amended to use tertiary treated water in place of the current secondary treated water.	• Revised WDRs from RWQCB for WWTP and recycled water distribution	0%
8: Design – This task involves preparation of final design plans, specifications, and estimates for three major components: 1) the WWTP expansion, 2) the Heart of Africa (HOA) pump and pipeline to the WWTP, and 3) the reclamation pond expansion/storage optimization. Plans will be processed through the City of San Diego and will include civil, mechanical, electrical and structural drawings for the expansion. Plans will be prepared for pipeline improvements to convey the recycled water out to the areas of the park where it will be used as irrigation. The operational levels in the reclamation pond will be optimized to facilitate the distribution of the recycled water. Safari Park will be removing 167,000 sq ft of turf and replacing the lawn with water-wise xerophytic plants and mulch based upon the current theme used in the Safari Park parking lot and front entrance. To ensure the minimum necessary use of water once the plants area established, this task includes development of a planting plan for the turf conversion area.	• WWTP Expansion Final Design • HOA Pump and Pipeline to WWTP Final Design • Reclamation Pond Expansion/Storage Optimization Final Design • Final planting plan for turf conversion	0%
9: Project Performance Monitoring Plan – This task involves developing and submitting a Project Performance and Monitoring Plan (PPMP), including baseline conditions, testing and monitoring WWTP effluent to verify it is achieving the regulations for tertiary treated water for use as irrigation, frequency of monitoring, location of monitoring points, and any other stipulations required by DWR in the Final Grant Agreement. Baseline included in the PPMP will also include a determination of current water use in the area to be converted from turf.	• Project Performance Monitoring Plan	0%
Row (d): Construction/Implementation		
10: Contract Services - Contract services during construction will include coordination and selection of vendors to provide contract services including SCADA upgrades and materials testing and inspection services. Activities necessary to secure a contractor and award the contract will be done under this task including developing bid documents, preparing advertisement and contract documents for construction contract bidding, conduct pre-bid meeting, bid opening and evaluation, selection of the contractor, award of contract, and issuance of notice to proceed.	• RFP Documents for SCADA upgrades and materials testing and inspection services • Contractor Bids and Qualifications • Contractor Selection Documentation • Award of Contract(s) • Notice(s) to Proceed	5%
11. Construction Administration – This task includes documenting of pre-construction conditions, preparing change orders, responding to RFIs, reviewing/ updating project schedule, reviewing contractor log submittals and pay requests, processing payments, preparing addendums, forecasting cash flow, analyzing claims and dispute resolution, notifying contractor if work is not acceptable. This subtask also includes providing technical assistance during construction and preparation of record drawings.	• Pre- and post-construction photographs • Notice of Completion	0%
12. Construction/Implementation Activities - Construction of WRF expansion and recycled water pipelines in Subtask 12.1 will be in compliance with American Water Works Association (AWWA) standards for materials, construction, and testing of pipe, storage tanks, pumps, and valves. Implementation of turf conversions in Subtask 12.4 will be in compliance with professional landscape standards.		

Task and Description of Work to be Completed	Deliverables	%*
Subtask 12.1: Construction - The following new equipment and facilities will be constructed at under the project construction task: WWTP Upgrades • Upgrade existing secondary WWTP to provide tertiary treatment using membrane bioreactor. Upgraded WWTP will generate up to 0.08 mgd of recycled water for irrigation use in expanded areas of the Safari Park. • Co-located with the WWTP treatment plant, construct a reverse osmosis membrane treatment system that will treat up to 0.05 mgd water pumped to the WWTP from the Heart of Africa (HOA) Pond. • Concentrated brine from treatment of HOA Pond water will gravity flow to a new 120,000 sq ft evaporation pond via installation of a new 4 inch, 1500 linear feet (LF) PVC brine line. Increase/Manage Water Storage • HOA Pond water will be pumped to the WWTP via a new 1 horsepower (HP) pump and new 4 inch, 600 LF of PVC piping. Another 4 inch, 600 LF of gravity return line from WWTP to HOA Pond will be constructed in the same trench. An intake structure at the HOA Pond will also be constructed. • In addition, water from the East Africa Pond will be pumped with a new 0.5 HP low-head pump to the HOA pond for ultimate treatment. Treated water from the HOA pond will be returned to the HOA pond or used for irrigation, based upon animal welfare requirements and irrigation needs. • Storage of recycled water will be increased at the existing recycled water (REC) pond (43,560 SF) by raising the surface elevation of the pond in order to better manage the use of recycled water for irrigation. Irrigation Conversions The 0.08 mgd of recycled water will be used for irrigation in expanded areas of the Safari Park, which would allow for the conversion of irrigation systems from potable water source to well water in various locations throughout the Safari Park. Total of 4,860 LF of conduit will be converted (800 LF of 2" conduit, 720 LF of 2 1/2" conduit, 400 LF of 2" Class 315 PVC, 150 LF of 2 1/2" Class 200 PVC, 110 LF of 2 1/2" Class 315 PVC, 540 LF of 4" Class 315 PVC, 1820 LF of 6" C-900 PVC, 320 LF of 8" C-900 PVC). In addition, filtration units and flow meters will be installed at points of connections. Few equipment required for the line conversion task will be rented during the construction.	• Notice of Completion • Photographic and/or video documentation	10%
Subtask 12.2: Prepare O&M Manuals and As-builts – The O&M Manuals for the new treatment process and mechanical equipment will be prepared. As-built drawings for the new construction components will be prepared.	• O&M Manual • As-built diagrams	0%
Subtask 12.3: Public Outreach and Water Education Programs – Hands-on Water Education and Conservation Programs will be provided to students from schools, including disadvantaged school groups, throughout California. Public outreach will be provided to various stakeholders including guests to the Safari Park, San Diego Zoo Website and social media visitors, disadvantaged community groups, non-profit organizations, water agencies, and community and agricultural groups. Outreach includes extended "When in Drought" campaign and updated Safari Park maps and schedules with drought and water conservation messaging. Program supplies, including classroom visual aids, pocket microscopes, test tubes, learning materials, child safety goggles, student testing booklets, will be distributed to students as part of the Water Conservation Education Program implementation.	• "When in Drought" Outreach Materials • Water conservation education program materials and participation documentation • Safari Park maps and schedules	50%

Task and Description of Work to be Completed	Deliverables	%*
Subtask 12.4: Turf Conversion – The Zoological Society will replace turf with water-wise (xerophytic) landscaping and mulch. The Safari Park estimates that approximately 167,000 sq ft of turf will be replaced with water-wise plantings. The xerophytic plant selection will be based upon plants that have been used in the Safari Park's parking and entry area that are known to work well in the San Diego climate and will use minimal water once established.	• Before and after photo documentation	
** The right-hand column displays % complete for each task.*		

Water Quality and Habitat Program

Project 11: San Diego River Healthy Headwaters Restoration

Local Project Sponsor: USDA Forest Service (USFS)
Partner: American Conservation Experience (ACE), City of San Diego (City), Back Country Land Trust (BCLT), San Diego River Park Foundation (SDRPF), San Diego River Conservancy, Animal and Plant Health Inspection Service (APHIS), and County of San Diego

Project Description

The *San Diego River Healthy Headwaters Restoration* project includes invasive species removal and addresses unauthorized trails, routes, and sites. These activities will improve water quality, enhance riparian habitats, restore hydrologic function, reduce fire hazard, and reduce anthropogenic sediment contribution from sites within the El Capitan Reservoir catchment of the larger San Diego River (SDR) watershed. Since the invasive species that will be removed consume and evapotranspirate significantly higher volumes of water than native species, the project will have a significant water supply benefit.

The first project component is invasive weed removal in the El Capitan Reservoir catchment across land owned by the City of San Diego, cooperating private and Tribal entities, and USFS. The goal is to eliminate invasive plant seed sources. Invasive weeds can decrease water supply, are highly flammable, provide poor habitat and food for native species, and can be easily spread. The City will lead the effort to conduct a basin-wide assessment so as to strategically treat weeds throughout the catchment. A known arundo (*Arundo donax*) population of about 2.5 acres at the reservoir will be treated. Because of the terrain, USFS will simultaneously record and treat weed populations utilizing field crews and/or partnering with the American Conservation Experience (ACE) crews. The City will work with SDRPF to conduct weed treatments (primarily arundo) around El Capitan Reservoir. SDRPF will use volunteers to conduct much of the work, engaging the local population through stewardship opportunities. It will also conduct outreach to the various communities within the El Capitan Reservoir catchment. Methods will include one-on-one connections, information tables at community events, flyers, and targeted mailings. The main focus of SDRPF's education/outreach efforts will be to increase awareness, public knowledge, and participation in long-term watershed health and restoration efforts. BCLT will continue outreach, coordination, and treatment efforts within the Alpine community. They have been successful in engaging private landowners to treat invasive weeds, reduce fire hazards, and restore impacted sites. To achieve long-term success and sustainability, it is imperative to engage the public and gain its support.

The second project component is invasive terrestrial and aquatic species removal. Invasive species such as feral pigs (*Sus scrofa*) destroy habitat through wallowing and rooting in riparian areas. The foraging and wallowing behavior of pigs can markedly increase the turbidity of water supplies, but more importantly, the pigs can transmit and excrete a number of infectious waterborne organisms that are pathogenic to humans. Feral pigs have a wide range of travel and have been observed from as far north as the SDR watershed down to the U.S.-Mexico border, across a variety of political jurisdictions. Potential problems for the SDR watershed include water contamination, trampling riparian habitat, bank destabilization, and increased sedimentation and detritus. The project will include oversight of treatment efforts to ensure treatments are being implemented and managed cooperatively. The aquatic species removal effort will include removal of detrimental, invasive aquatic species (e.g., bullfrogs [*Lithobates catesbeianus*] and green sunfish [*Lepomis cyanellus*]) above natural aquatic organism barriers. This is especially important because there are threatened and endangered species in the SDR watershed.

The third project component addresses unauthorized routes, hiking trails, and recreation sites located in the SDR watershed that are chronic sediment contributors, alter runoff, and have denuded slopes and sanitation issues. Restoration of impacted sites, decommissioning, and improving drainage on routes would improve hydrologic processes affected by the sites, reduce sedimentation and improve water quality and habitat. In total, there are 10 miles of routes and two acres of impacted area that will be addressed through this work plan, which total approximately 62 acres of habitat improvement. The USFS will also improve public information kiosks at 4 sites (16 panels) to include information on water-wise gardening using native plants, tips on recreating to minimize watershed impacts, fire history of the SDR Watershed, and wilderness values in the SDR watershed.

A Work Plan for the *San Diego River Healthy Headwaters Restoration*, including the anticipated tasks necessary to complete the project, deliverables, and current status of the project, is provided in **Table 3-12** below.

Table 3-12: Work Plan for *San Diego River Healthy Headwaters Restoration*

Task and Description of Work to be Completed	Deliverables	%*
Row (a): Direct Project Administration		
1: Project Management – This task involves managing the grant agreement, including compliance with grant requirements, preparation and submission of supporting materials, and coordination with SDCWA's Grant Administrator. USFS will prepare invoices including relevant supporting documentation for submittal to DWR via SDCWA. This task also includes administrative responsibilities associated with the project such as coordinating with partnering agencies, and managing local project partners (LPPs).	• Environmental Information Form • Financial Statements • Submission of Invoices and supporting documentation • Coordination and Agreements with LPPs	0%
2: Labor Compliance Program – This task will involve determining and implementing, if applicable, a labor compliance program for removal of invasive weeds and impacted site restoration activities.	• Labor Compliance Reporting	0%
3: Reporting – This task involves collecting, tracking, and submitting progress reports for grant administration purposes, along with preparing and submitting a project completion report at contract closure.	• Quarterly Project Progress Reports • Project Completion Report	0%
Row (b): Land Purchase/Easement		
4: Land Purchase - Not applicable	N/A	N/A
Row (c): Planning/Design/Engineering/Environmental Documentation		
5: Feasibility Studies - Not applicable	N/A	N/A
6: CEQA Documentation - The San Diego River Conservancy will provide CEQA documentation for invasive weed treatment on City of San Diego and cooperating private and Tribal lands. USFS has completed NEPA / CEQA documentation for most of the project and remaining NEPA / CEQA compliance is in progress. All required Tribal notifications (per PRC §75102) will be completed during the CEQA process. • Invasive Weed Management on the Cleveland National Forest Environmental Assessment/Finding of No Significant Impact (EA/FONSI) – NEPA completed October 2014; CEQA compliance underway • Invasive Weed Management Mitigated Negative Declaration (MND), Administered by San Diego River Conservancy – CEQA to be completed February 2016 • Three Sister Trail Management EA and CEQA concurrence – to be completed September 2016 • Invasive Aquatic Species Removal NEPA/CEQA – to be completed September 2017	• Invasive Weed Management EA/FONSI (Oct 2014) • Invasive Weed Management MND • Feral Pig Damage Control Project EA and FONSI (Mar 2013) • CEQA Concurrence with Feral Pig Damage EA • Road Repair and Maintenance Memo (February 2011) • CEQA concurrence for Three Sisters Trail Management EA • NEPA/CEQA for Invasive Aquatic Species Removal • Tribal Notifications • No Legal Challenges Letters	50%

Task and Description of Work to be Completed	Deliverables	%*
	• Notice of Determination • CDFW Receipts (Filling Fee)	
7: Permitting - The San Diego River Conservancy will provide applicable permits for invasive weed treatment on City of San Diego and cooperating private and Tribal lands. Completed documents include: • U.S. Army Corps of Engineers (USACE) Regional General Permit (RGP) 41 "Streambank Alteration" Permit. Annual submittal of the USACE RGP, for removal of invasives within streambank areas, is required. • California Department of Fish and Wildlife (CDFW) Section 1602 Streambed Alteration Agreement (SAA) • Regional Water Quality Control Board (RWQCB) Section 401 Water Quality Certification	• USACE RGP 41 Permit • CDFW 1602 SAA • RWQCB 401 Water Quality Certification	95%
8: Design – A catchment-wide assessment of invasive weed populations will be produced in order to target invasive species removal activities in Task 12. The *El Capitan Reservoir Catchment Invasive Weeds Strategic Treatment Plan* will include primary and secondary target species (primary: arundo and tamarisk; secondary: Mexican Fan palm, French, Scotch, and Spanish broom). The resulting GIS database will aggregate existing known population data and include information from additional remote sensing assessment and ground investigations. The Strategic Treatment Plan will develop strategy parameters to protect water resources, considering but not limited to: habitat vulnerability, future threat and species movement, and cost effectiveness.	• El Capitan Reservoir Catchment Invasive Weeds Strategic Treatment Plan • GIS Database Mapping of Identified Populations	0%
9: Project Performance Monitoring Plan – The task includes the design of a project performance monitoring plan, including baseline conditions, monitoring methods, and data reporting.	• Project Performance Monitoring Plan	0%
Row (d): Construction/Implementation		
10: Contract Services – Not applicable. Work will be completed through development of participating agreements with implementing agencies and groups.	N/A	N/A
11. Construction Administration – This task will involve funding of a project consultant who will act as agreement manager, and will ensure adequate implementation standards are met, implementation schedule is kept, and cooperation between participating entities is continued. The USFS consultant will act as project reviewer and ensure on the ground treatment is completed up to standard. Agreements and work orders between the USFS and the project partners (per Task 1) will be put together by the USFS staff.	• Documentation of Project Consultant Contract	N/A
12. Construction/Implementation Activities – Invasive weed treatment and/or removal will be conducted in compliance with USDA Forest Service standards and/or the USACE RGP 41 and RWQCB 401 permits.		
Subtask 12.1: Invasive Weed Treatment - This task includes invasive weed treatment (ex. tamarisk, arundo, Spanish broom, etc.) in the El Capitan Reservoir catchment across City of San Diego, cooperating private and Tribal entities, and USFS lands. The project includes treatment of both known populations and estimated populations of invasive plants.	See subtasks below	0%
Subtask 12.1A: Catchment Wide Strategic Treatment Plan Implementation - This task includes invasive weed treatment (ex. tamarisk, arundo, Spanish broom, etc.) in the El Capitan Reservoir catchment across City of San Diego and cooperating private and Tribal lands as identified and prioritized in the Strategic Treatment Plan. Strategic treatment will occur across City of San Diego and cooperating private/Tribal lands with a goal of treating 11.4 acres of invasive	• Map and GIS layers of treated areas • Pre- and post-treatment photo documentation	0%

Task and Description of Work to be Completed	Deliverables	%*
weeds. Geographic information system (GIS) mapping of all treated areas will be developed in order to monitor them over time.		
Subtask 12.1B: Alpine Watershed Invasive Weed Treatment - BCLT will continue outreach to and complete weed treatments in cooperation with private land owners in the Alpine area. Actions include non-native removal and habitat restoration, herbicide treatment and monitoring, project equipment and insurance, public education and outreach, securing right of entry permits (private lands), compliance with Department of Pesticide regulations, mulching of non-native biomass, water quality testing, and maintenance of treated sites. Approximately 1,500 native plants will be installed in riparian habitat. Herbicide treatment of all non-native regrowth will occur for 2 years. Strategic treatment will occur across cooperating Private/Tribal lands with a goal of treating 7 acres of invasive weeds. Water testing will be implemented beginning on July 1, 2015. A water quality monitoring logbook will be used to record water samples at each site during monthly visit.	• Pre- and post-treatment photo documentation • Documentation of public education and outreach • Water quality monitoring logbook	25%
Subtask 12.1C: USFS Invasive Weed Treatment - Due to the nature of forest terrain, USFS will survey and treat invasive weeds on USFS lands simultaneously using ACE crews or other field going personnel. There are 4 acres of a previously identified tamarisk population and 10 acres of habitat restoration that will be treated. Approximately 314 acres of habitat improvement is expected to result from the USFS/ACE activities.	• Map and GIS layers of treated areas • Pre- and post-treatment photo documentation	0%
Subtask 12.1D: SDRPF Outreach, Education ,and Invasive Weed Treatment - SDRPF will conduct invasive weed removal on targeted City of San Diego and private lands within the El Capitan Reservoir drainage area. A previously identified arundo population of about 2.5 acres at the reservoir will be treated. SDRPF will also lead education efforts and outreach to private land owners in the upper SDR watershed (Upper San Diego River, Boulder Creek, El Capitan sub-watersheds). Printed outreach materials and interpretive features will be developed for reservoir users participating in non-contact recreation (boating and fishing).	• Survey results of local population • Pre- and post-treatment photo documentation • Printed outreach materials • Interpretive features	0%
Subtask 12.2: Impacted Site Management and Restoration - Several unauthorized routes, hiking trails, and recreation sites located in the SDR watershed would be either decommissioned or improved to minimize modification of runoff patterns and erosion. Heavily impacted sites would undergo extensive restoration to stabilize the hillside and regrow vegetation. Restoration activities will include hillside stabilization, placement of boards/small retaining walls to stabilize the hillside and trap sediment, recontouring some of the gullied sites, planting recontoured areas, rock placement, erosion control (wattles, straw bales), brushing/mulching for cover, and adding signage to deter unauthorized (off-trail) use. Ten miles of route would be treated, plus an additional 2 acres of impacted area, resulting in 62 acres of habitat improvement. This task also includes education and outreach of forest visitors through improved informational kiosk panels with themes. Additionally, USFS will develop a mobile interpretive tour using a smart phone/web-based application with links to topics on the mentioned topics and Forest Service points of interest.	• GIS mapping of restoration area • Pre- and post-restoration photo documentation • 16 kiosk panels • Web-based mobile interpretive tour	0%
Subtask 12.3: Invasive Wildlife Species Removal – This task includes removal of terrestrial and aquatic invasive wildlife species. Feral pig eradication efforts have been in effect for several years through the coordination of several agencies (USFS, APHIS, County of San Diego, City of San Diego, and Tribes). Feral pigs damage native habitats and negatively affect water quality; spread disease to other animals, livestock and humans; and compete with native species for limited food, water and cover. To further the feral pig eradication efforts across San Diego County, this work plan involves management of eradication activities,	• GIS mapping of treated areas • Report on numbers of pigs and other species eradicated (populations)	70%

Task and Description of Work to be Completed	Deliverables	%*
tracking of accomplishments, and transfer of information between partners to ensure coordinated activities. The second component of invasive species removal would involve eradication – trapping and killing – of invasive aquatic species that are located above natural aquatic organism barriers (e.g. bullfrog and green sunfish).		
** The right-hand column displays % complete for each task.*		

Project 12: Sweetwater Reservoir Wetlands Habitat Recovery

Local Project Sponsor: Sweetwater Authority (SWA)
Partners: California Conservation Corps and Urban Corps of San Diego County

Project Description

The *Sweetwater Reservoir Wetlands Habitat Recovery Project (HRP)* is an integrated, multi-benefit project that achieves the IRWM goals of protecting and enhancing our natural resources, protecting and enhancing water quality, and improving the reliability of regional water supplies. The project supports the recovery and long-term improvement of habitat function and value for the endangered least Bell's vireo (LBV) (*Viero bellii pusillus*) in Sweetwater Reservoir, a public drinking water supply reservoir. After the 2007 Harris Fire burned approximately 90 acres of existing LBV habitat within the upper limits of the reservoir, Sweetwater Authority (SWA) initiated a recovery strategy to correct the site's underlying limitations and reclaim riparian wetlands for LBV. The project will provide a natural environmental buffer for flow attenuation and bioremediation to maximize wetland function for water quality benefits within Sweetwater Reservoir and subsequent treatment as the public drinking water supply. The HRP will also enable additional imported water storage capacity at Sweetwater Reservoir, positively affecting the regional water supply.

Technical studies conducted in 2009-2010 produced a conceptual design for the HRP in 2011. Grading design, plans and specifications, environmental compliance, and regulatory permitting also commenced in 2011. HRP construction is scheduled to begin in 2016 and will include major site grading, temporary irrigation, and planting. A five-year maintenance and monitoring period after construction will be followed by perpetual site management by SWA to ensure project success, although work pursuant to this Proposal will end by October 31, 2019.

The HRP involves mass grading within the Sweetwater River/Sweetwater Reservoir floodplain to create a braided channel system and improve hydrologic functionality. The multichannel design and bridge installation will spread river flow more evenly to improve habitat quality in areas lacking sufficient hydrology. Within the 112.7-acre project area, the HRP will restore and enhance approximately 112.5 acres of riparian and 0.2 acre of transitional habitats and will result in a net increase of 74.6 acres of habitat, specifically for the endangered LBV, over current conditions. The HRP will also contribute to an expanded preserve, ultimately providing 212.6 acres of LBV habitat, an 82% increase over pre-Harris Fire conditions. The expanded preserve will be recorded, protected, and managed under a Conservation Easement.

In addition to habitat restoration and water quality benefits, HRP implementation will enhance imported water storage capabilities in Sweetwater Reservoir and contribute to regional water reliability. The project will allow for periods of storage in the reservoir above the 230-foot elevation when excess imported water is available. Currently, SWA is restricted from storing any imported water above this elevation because of potential impacts to LBV habitat. The operational limit was required by the permitting agencies in 1994 and effectively removes reservoir storage capacity equivalent to 7,873 acre-feet (AF) at Sweetwater Reservoir. Implementation of the HRP will permit normal Sweetwater Reservoir storage operations (total capacity of 28,098 AF) and allow storage of imported water when supply is plentiful. This additional 7,873 AF of storage capacity represents up to one half of the water processed through the Perdue Water Treatment Plant annually and will provide additional water supply reliability during drought conditions.

The project will: reestablish the river-floodplain connection to create hydrology that is in dynamic equilibrium with the Sweetwater River and Sweetwater Reservoir inundation area; restore and enhance large areas of LBV habitat, thereby improving habitat function and value for the species; allow for normal Sweetwater Reservoir storage operations and ensure the ability to store additional imported water when regionally available; and maximize wetland function for water quality benefits within Sweetwater Reservoir.

A Work Plan for the *Sweetwater Reservoir Wetlands Habitat Recovery* project, including the anticipated tasks necessary to complete the project, deliverables, and current status of the project, is provided in **Table 3-13** below.

Table 3-13: Work Plan for *Sweetwater Reservoir Wetlands Habitat Recovery*

Task and Description of Work to be Completed	Deliverables	%*
Row (a): Direct Project Administration		
1: Project Management – Project management, including compliance with grant requirements and preparation and submittal of supporting grant documents and coordination with IRWM Grant Administrator. Prepare invoices, including relevant supporting documentation for submittal to IRWM Grant Administrator. This task also includes administrative responsibilities associated with the project, such as coordinating with project partners and managing consultants/contractors.	• Quarterly invoices • Signed subcontracts or agreements with project partners • Financial Statements	0%
2: Labor Compliance Program – Sweetwater Authority will take all measures necessary to ensure compliance with applicable California Labor Code requirements, including preparation and implementation of a labor compliance program, or including any payments to the Department of Industrial Relations under Labor Code Section 1771.3.	• Labor Compliance Reports • Proof of labor compliance, upon request	0%
3: Reporting – This task involves submitting reporting documents as required for grant funding, including the project completion report. Quarterly reports will be initiated quarterly after contract execution; twelve quarterly project status reports are budgeted.	• Quarterly Project Progress Reports • Project Completion Report	0%
Row (b): Land Purchase/Easement		
4: Land Purchase – This task involves updating the Conservation Easement to expand the existing Habitat Management Program (HMP) preserve to 212.6 acres. • *Record Survey* - Contracted engineer services. A licensed surveyor will survey and prepare a legal description of the intended preserve. A Conservation Easement will be prepared and recorded for the 212.6-acre preserve. • *Recorded Conservation Easement* - Contracted legal services and staff labor. The Conservation Easement will detail compliance conditions and reference allowable management activities. • *Property Analysis Record* - Contracted consultant services, staff labor is not included. A Property Analysis Record, or PAR, has been developed to determine the long-term maintenance and monitoring costs necessary to manage the 212.6-acre preserve. The PAR will also be used in development of the Conservation Easement.	• Record Survey • Recorded Conservation Easement • Property Analysis Record	15%
Row (c): Planning/Design/Engineering/Environmental Documentation		
5: Feasibility Studies - Project feasibility studies were performed to examine the topographic and hydrologic characteristics of the project areas, examine soils and groundwater availability, and ultimately develop conceptual alternatives for habitat restoration. Thorough investigation was performed to determine the potential reservoir inundation and flood regime on least Bell's vireo and its habitat. The *Habitat Recovery Plan for the Sweetwater Reservoir Wetland Habitat Recovery Project* (2011) was completed in advance of the IRWM funding match start date, so no budget or schedule is included in this Proposal for Task 5.	• Habitat Recovery Plan for the Sweetwater Reservoir Wetland Habitat Recovery Project (2011)	100%

Task and Description of Work to be Completed	Deliverables	%*
6: CEQA Documentation – An Initial Study and Mitigated Negative Declaration (IS/MND) was prepared for the HRP, as well as an Addendum to the IS/MND. All required Tribal notifications (per PRC §75102) will be completed during the MND process. • *IS/MND* – The IS/MND was completed for the original project. This was supported by: (1) biological technical studies for the 430-acre study site, including vegetation mapping, general flora and fauna surveys, focused surveys for least Bell's vireo, willow flycatcher, California gnatcatcher, arroyo toads, bats, rare plants, and wetlands delineation; and (2) a cultural resource investigation. All potential impacts of the project were analyzed, and biological and cultural mitigation measures were found to reduce project impacts to a level below significance. • *IS/MND Addendum* – Due to project scaling, an Addendum is being prepared describing changes in the project. Impacts to vegetation communities and species will need to be reanalyzed, necessary figures produced, and mitigation measures adjusted. The Addendum will be presented to the SWA Governing Board requesting they adopt a resolution to approve, followed by filing a Notice of Determination.	• IS/MND • Addendum to IS/MND • Tribal Notifications • Notice of Determination • CDFW Receipt (filing fee) • No Legal Challenges Letter	70%
7: Permitting - Project impacts to jurisdictional wetlands/waters are regulated by state and federal agencies, as well as species impacts. Project permitting has been anticipated and initiated for the original project, and some revisions to this process will be needed due to project scaling. Additionally, an updated management plan will be needed for the improved and expanded preserve, as well as pre-construction surveys, and resource protection plans that could be affected during construction. • *Permit Applications and Facilitation* - Permit applications were submitted in November 2014 and are currently under review: Nationwide 27 Permit from US Army Corps of Engineers (USACE); Biological Opinion from US Fish and Wildlife Service (USFWS); 401 Water Quality Certification from San Diego Regional Water Quality Control Board (RWQCB); Lake or Streambed Alteration Agreement with California Department of Fish and Wildlife (CDFW); and Consistency Determination or Incidental Take Permit from CDFW. Revisions to the USACE, CDFW, and RWQCB applications will be necessary, as well as the Detailed Project Description and Conceptual Restoration Plan, due to project scaling. • *Habitat Management Program Update* - The original Habitat Management Program from 1994 will be revised to reflect the change in preserve strategy for the upper limits of Sweetwater Reservoir, including cessation of habitat clearing activities, removal of 230' elevation imported water restriction, reservoir level adaptive management guidelines, and updated habitat and species monitoring and management techniques. • *Pre-construction Biological Surveys* - Pre-construction biological surveys will be performed for the project staging area to verify the absence of Quino checkerspot butterfly, as well as completion of the nesting season for least Bell's vireo, California gnatcatcher, and other species. Results will be prepared in brief letter reports or memoranda to the wildlife agencies. • *Pond Turtle Clearance and Reintroduction Plan* - A pond turtle clearance and re-introduction plan will be prepared that includes the timing and location of pre-construction surveys, capture techniques, temporary captivity methods, and identification of relocation sites either within the project area following construction or in immediate upstream areas.	• USACE Nationwide 27 Permit • USFWS Biological Opinion • RWQCB 401 Water Quality Certification • CDFW Streambed Alteration Agreement • CDFW Consistency Determination • Habitat Management Program Update • Pre-construction Biological Surveys • Pond Turtle Clearance and Reintroduction Plan • SWPPP	20%

Task and Description of Work to be Completed	Deliverables	%*
• *Stormwater Pollution Prevention Plan (SWPPP)* - A SWPPP will be prepared prior to construction to describe BMPs necessary to protect water quality and beneficial uses of waters in or near the construction site.		

8: Design - Final engineering work has furthered the conceptual design and addressed project modifications as necessary. Work has involved the preparation of construction plans and specifications, earthwork calculations, engineers cost estimate, as well as additional hydraulic analysis to verify intended site conditions will be met. Work for the original project design was completed at the 90% level; however, revisions have been necessary due to project scaling.
• *90% Design* **-** Final design, construction plans, and specifications are at 90% level with original project design. Completed works include:
  ○ Hydraulic Analysis (Environmental Sciences Associates, 2013)
  ○ Updated Hydraulic Analysis (Environmental Sciences Associates, 2014)
• *Final Design* - Necessary engineering and habitat restoration design services are already under contact. A modified project footprint has been developed and will need to be analyzed to ensure intended site conditions will be met. Revised plans and specifications would then need to be completed, as well as earthwork calculations and engineers cost estimate. Finally, irrigation and planting layout schematics will be prepared for implementation by the staff and partnering Urban Corps and California Conservation Corps labor crews.
	• Hydraulic Analysis (2013 and 2014)
	• 90% plans and specifications (2015)
	• Final plans and specifications
	• Irrigation and planting layout schematics
		50%

9: Project Performance Monitoring Plan - Develop and submit a Project Performance Monitoring Plan. The Project Performance Monitoring Plan will include baseline conditions, a brief discussion of monitoring systems to be used, methodology of monitoring, frequency of monitoring, and location of monitoring sites.	• Project Performance Monitoring Plan	0%
Row (d): Construction/Implementation		
10: Contract Services - The SWA project team will review the bids and evaluate prospective contractors. The SWA Governing Board will award the bid, and the SWA Project Manager will prepare the Notice to Proceed. • *Preparation of bid packages* - Plans and Specifications under Task 8, along with contract and submittal requirements, will be packaged for competitive bid. The bid would be for necessary contracted services under Task 12. • *Advertisement* - The bid package will be advertised in compliance with SWA's procurement procedures. • *Bid opening, evaluation, and Board approval* - SWA staff will evaluate the qualifications and work plans of all prospective contractors with submitted proposals. With input from staff, the SWA Governing Board will ultimately select and approve the contractor. • *Bid award, notice to proceed, contractor bonding/insurance proofs* - SWA staff will provide notice of award and notice to proceed, along with securing necessary contractor bonding and insurance proofs before work can commence.	• Preparation of bid packages • Advertisement • Bid opening, evaluation, and Board approval • Bid award, notice to proceed, contractor bonding/insurance proofs	0%

Task and Description of Work to be Completed	Deliverables	%*
11. Construction Administration - The SWA Project Engineer will have lead responsibility in overseeing the contractor and site work. Safety is of paramount importance, and a Safety Officer will be established to report on the contracted crew for the duration of construction. • *Construction Management* - Construction management involves direct communication and coordination with the contractor regarding the contractual agreements, submittals, amendments, and invoicing, as well as adherence to worker and site safety requirements. • *Engineering Services/Inspection* - Engineering services and inspection will be conducted to ensure that the project is completed in conformance with the approved plans and specifications.	• Construction management • Engineering Services/Inspection	0%
12. Construction/Implementation Activities - Construction and grading activities associated with the HRP will be conducted in compliance with the USACE Nationwide 27, RWQCB 401, and CDFW Streambed Alteration Agreement permits obtained in Task 7.		
Subtask 12.1: Mobilization and Site Preparation– This subtask includes pre-construction meetings, worker education, site delineation and protection, plant materials salvage and staging, and large tree removal (for re-planting after grading), and pond dewatering. Photo documentation will be provided for each construction component.	• Pre-construction meetings • Photo documentation	0%
Subtask 12.2: Project Construction– Project construction includes environmental monitoring, river crossing road demolition, clear and grub vegetation, mass grading, erosion control and best management practices, soil preparation, river crossing bridges, irrigation materials and installation, irrigation water (up to two years), trail information kiosk, container plants and cuttings, plant installation, seed, and hydroseed application. This task includes demobilization. Post-construction monitoring and maintenance will extend beyond the IRWM funding period, and includes post-construction biological monitoring and reporting and post-construction maintenance.	• Pre- and post-construction photos	0%
** The right-hand column displays % complete for each task.*		

Project 13: Hodges Reservoir Natural Treatment System

Local Project Sponsor: City of San Diego
Partners: Santa Fe Irrigation District, San Dieguito Water District, San Dieguito River Valley Conservancy, and San Diego County Water Authority (SDCWA)

Project Description

The *Hodges Reservoir Natural Treatment System* project, which builds on work funded by previous San Diego Region IRWM grants, will include the design and construction of a natural treatment system (NTS) to improve reservoir water quality. Hodges Reservoir, owned and operated by the City of San Diego, serves the San Dieguito Water District, Santa Fe Irrigation District, and the City of San Diego. Due to SDCWA's Emergency Storage Project, Hodges Reservoir is now connected to Olivenhain Reservoir and SDCWA's regional aqueduct system. However, seasonally degraded water quality in Hodges Reservoir has severely limited the reservoir's use as a regional water supply. Improving water quality in Hodges will allow for optimal water pumping and delivery flexibility in conjunction with the connectivity to the imported water system. Hodges Reservoir is identified as a Clean Water Act 303(d) impaired water body for nitrogen, phosphorus, color, manganese, turbidity, pH, and mercury. Pollution sources emanate from upstream urban development and from agricultural runoff, which is the dominant land use in its 250-square mile watershed. Declining water quality in Hodges Reservoir has placed increasing treatment challenges and costs on present users.

The project partners have pursued two studies associated with water quality in Hodges Reservoir. The *Hodges Reservoir Watershed Natural Treatment System Implementation Action Plan*,[4] funded by a Prop 50 IRWM grant, recommended a NTS consisting of three constructed treatment wetlands near the confluences of Felicita, Kit Carson, and Green Valley Creeks and Hodges Reservoir. The *Hodges Reservoir Water Quality Assessment Study: Conceptual Planning Report*,[5] funded by a Prop 84-Round 1 IRWM grant, identified three recommendations for reducing nutrient loading and cycling in the reservoir, one solution being a constructed treatment wetlands on the northern shore of Hodges Reservoir. The *Conceptual Planning Report* identified the three options as: 1) hypolimnetic oxygenation system (partially funded via a Prop 84-Drought Round IRWM grant), 2) upper wetlands NTS (proposed herein), and 3) mid-lake vigorous epilimnetic mixing. The project partners share the following common goals that will be advanced by this project: to improve water quality, water supply reliability, habitat and species conservation, and open space and recreational resources.

The primary goal of the NTS is to improve water quality, specifically reducing nutrient loading, within Hodges Reservoir for the purposes of making the water impounded in the reservoir more treatable at downstream water treatment plants, thus making the water available as a regional water supply with reduced treatment costs. The project will involve construction of a NTS, which requires site grading and evacuation, installation of water control structures to establish desired hydraulic flow patterns, and placement and sealing of liners (if necessary), and installation of vegetation, irrigation, and hydraulic equipment.

The NTS is currently being defined in a study that will combine the recommendations of the two aforementioned technical studies previously funded by IRWM grants to find the most productive and cost-effective NTS for the watershed. Therefore, this Proposal includes the development of design criteria for an NTS, final design of an NTS, and construction of an NTS. Construction of the Hodges Reservoir Natural Treatment System Project will complement the Regional Emergency Storage and Conveyance System Intertie Optimization Project (solution number one from the *Conceptual Planning Report* described above) funded by a Prop 84-Drought Round IRWM grant which will manage and control excessive algal productivity, internal nutrient cycling, and production of methyl mercury and improve water quality in the reservoir by injecting pure oxygen to the deep portions of the reservoir. The project partners are now seeking funding for solution number two from the *Conceptual Planning Report* described above to compliment the first project by treating both Hodges Reservoir supplies and urban runoff from upstream communities. The project will also improve habitat and recreational opportunities in the reservoir as water quality improves.

[4] San Dieguito River Valley Conservancy. 2014. *Hodges Reservoir Watershed Natural Treatment System Implementation Action Plan.* December.
[5] City of San Diego. 2014. *Hodges Reservoir Water Quality Assessment Study: Conceptual Planning Report.* July.

A Work Plan for the *Hodges Reservoir Natural Treatment System* project, including the anticipated tasks necessary to complete the project, deliverables, and current status of the project, is provided in **Table 3-14** below.

Table 3-14: Work Plan for *Hodges Reservoir Natural Treatment System*

Task and Description of Work to be Completed	Deliverables	%*
Row (a): Direct Project Administration		
1: Project Management - The Project Management task will involve project administration and coordinating with partners and SDCWA per terms of the LPS Grant Agreement and will also involve developing information pertaining to the project (e.g. supporting documentation and invoices).	• Invoices • Supporting Documentation • Financial Statements	0%
2: Labor Compliance Program - The City has a Labor Compliance Program (LCP) in place that is compliant with the Department of Industrial Relations standards. The LCP is managed from a separate division of the City. This work plan is limited to Project Manager effort associated with LCP implementation for this project.	• Management of existing LCP (ID No. 2003.00323) • Proof of labor compliance, upon request	N/A
3: Reporting - Task 3 will involve preparation of quarterly progress reports, as well as a final report and post-completion report as required by DWR per terms of the Grant Agreement.	• Quarterly Project Progress Reports • Project Completion Report	0%
Row (b): Land Purchase/Easement		
4: Land Purchase - There are no easement acquisitions or right-of-ways that will be required for this program.	• Not Applicable	N/A
Row (c): Planning/Design/Engineering/Environmental Documentation		
5: Feasibility Studies - A consultant is evaluating the feasibility and cost-benefit of combining two conceptual Natural Treatment System (NTS) designs funded by two previous IRWM grants. The *Hodges Reservoir Combined In-Reservoir and Watershed Natural Treatment System – Technical Memo* combines the "in-reservoir" treatment wetlands with the Felicita and Kit Carson watershed treatment wetlands into a single facility that will provide recommended NTS parameters to include in design specifications for a design-build solicitation. This effort also includes update of the Hodges Catchment Hydrologic Model to ensure that the proposed design parameters will help to achieve the water quality improvement goals for the reservoir.	• Hodges Reservoir Combined In-Reservoir and Watershed Natural Treatment System – Technical Memo • Hydrologic Model	70%
6: CEQA Documentation - A Mitigated Negative Declaration (MND) will be developed to comply with CEQA. Early consultation will be conducted with interested and responsible agencies. All required Tribal notifications (per PRC §75102) will be completed during the MND process. Many of the technical studies that are needed to design the project will also inform the CEQA evaluation, including: hydrology (to understand flooding risks), water quality (to understand risks/improvements to downstream beneficial uses), biology (to understand impacts to special-status vegetation communities, species, and habitat conservation plans), and noise and aesthetics (to understand noise and visual affects to sensitive receptors). Once the MND is certified, a Notice of Determination will be submitted and a No Legal Challenges letter will be prepared.	• Mitigated Negative Declaration • Tribal Notifications • Hydrology and Water Quality Analysis • Biological Assessment • Noise and Aesthetic Evaluations • Tribal Notification • Notice of Determination • CDFW Receipt (filing fee) • No Legal Challenges Letter	0%

Task and Description of Work to be Completed	Deliverables	%*
7: Permitting - Permitting activities will involve acquiring applicable permits from wetland resource agencies: • U.S. Army Corps of Engineers (USACE), Section 404 Permit • Regional Water Quality Control Board, Section 401 Water Quality Certification • California Department of Fish and Wildlife, Section 1600 Streambed Alteration Agreement • City of San Diego, Site Development Permit Wetlands permits would be expected to be relatively streamlined as the project is primarily located within the operational capacity of the reservoir and adjacent non-jurisdictional uplands.	• USACE 404 Permit • RWQCB 401 Water Quality Certification • CDFW Streambed Alteration Agreement • City of San Diego Site Development Permit (as applicable)	0%
8: Design - The design of the combined NTS will follow the recommendations from the *Hodges Reservoir Combined In-Reservoir and Watershed Natural Treatment System – Technical Memo*. The Project Manager will solicit a Request For Proposals (RFP) for final design as part of a design-build contract. The Consultant selected will be responsible for the Final Design of the NTS. Design documents shall include grading and landscape construction drawings and technical specifications that address, but are not limited to, the following: A. Existing site conditions B. Excavation limits C. Location of benchmark D. Proposed structures E. Channel plan and profile F. High flow and low flow hydraulic grade line G. Types of materials (i.e., concrete, pipe, backfill, liner, vegetation, etc.) H. Types of equipment (i.e., pumps, valves, control panel, irrigation, etc.) I. Details of inlet, outlet, control structures and trash containment J. Access and staging areas K. Electrical service L. Security and signage M. Vector control (mosquitoes) N. City and SDCWA maintenance limits, such as cross hatched, detail or other O. Provide isolation sluice gate structures, or other to contain hazardous spills P. Grading requirements per applicable codes (Greenbook, City, County) Q. Subgrade for structures per City Construction Manual R. Concrete work requirements	• Topographic Survey • Plans and Specifications • Final Design	0%
9: Project Performance Monitoring Plan - This task includes efforts to prepare a project performance monitoring plan for submittal to DWR.	• Project Performance Monitoring Plan	0%
Row (d): Construction/Implementation		
10: Contract Services - The City will pursue a design-build contract in which the designer of the system would also provide construction services. Tasks to secure the contract award include: advertisement for bids, a pre-bid contractors meeting, bid opening, bid evaluation, selection of contractor with most cost-effective responsive bid, and issuance of a Notice to Proceed.	• Preparation and advertisement of bid packages • Bid opening, evaluation, and award • Notice to Proceed	0%

Task and Description of Work to be Completed	Deliverables	%*
11. Construction Administration - Construction administration services will include daily inspection, special inspections, labor compliance reporting, permitting review, and storm water compliance. Construction administration will also include coordinating construction activities, task and time management, correspondence with City of San Diego planners and engineers.	• Consultant Construction Management Services during Construction • Inspection forms • Notice of Completion	0%
12. Construction/Implementation Activities - Construction of the *Hodges Reservoir Natural Treatment System* may include grading of the site and the adjacent slopes, excavation, backfilling, diking and installing water control structures to establish desired hydraulic flow patterns. Construction will also include outreach through public service announcements, websites, community activities, speaking engagements, classroom demonstrations, field trips and other efforts. Construction and grading activities associated with the NTS will be conducted in compliance with the USACE 404, RWQCB 401, and CDFW Streambed Alteration Agreement permits obtained in Task 7.		
Subtask 12.1: Pre-Construction/Site Preparation - Pre-Construction/Site-Preparation will involve conferences, review of design and specifications, and all adequate activities to prepare the site and mobilize equipment for construction (e.g. staging area set-up, access road, excavation, subsoil preparation, application of seed, soil testing, weed eradication, erosion controls, best management practices evaluation).	• Pre-Construction Conference Agendas • Pre-Construction Conference Sign-in Sheets • Site Visit Agendas • Soil Testing Report	0%
Subtask 12.2: Wetlands Construction - Construction may include grading of the site and the adjacent slopes, excavation, backfilling, diking and installing water control structures to establish desired hydraulic flow patterns, depending on the final NTS selected. Installation of vegetation, irrigation and hydraulic equipment (e.g. pressure regulators, backflow devices, flow sensors, irrigation remote control valve, rotor heads, spray heads, bubbler heads, wiring for irrigation power and control) will also fall under this subtask. If synthetic liners are recommended, industry standards will be followed by the contractor for bedding material, sealing and material placement of top of the liners.	• Construction Progress Reports	0%
Subtask 12.3: Post-Construction - After an initial stabilization period, a gradual increase flows to the NTS will allow the NTS to adjust to water chemistry. It will be determined after initial flows whether a full or partial growing season will be allowed prior to max flow additions. Follow-up inspection of equipment installed will occur after installation and ongoing monitoring of the NTS will be performed by the City. Post-construction photographs and water quality will be taken. Monitoring is needed to measure whether the NTS is meeting its objective(s) and to indicate biological integrity. In order to develop an effective NTS, a monitoring program should be implemented that characterizes the baseline hydrology and water quality of the proposed NTS area and its contributing watersheds. During the establishment period, the contractor will be responsible for monitoring the landscape and provide routine maintenance. Water quality monitoring will consist of continuous flow and water level measurement, sampling to determine influent and effluent concentration of pollutant concentrations and field measurement of general water quality parameters and will be performed by City of San Diego staff.	• Project Performance Monitoring Plan • Monitoring Reports • Post-Construction Photographs • Flow Data • Water Chemistry Data	0%
Subtask 12.4: Public Outreach – This subtask will include public outreach through public service announcements, websites, community activities, speaking engagements, classroom demonstrations, field trips and other efforts.	• Documentation of Public Outreach Activities	0%
** The right-hand column displays % complete for each task.*		

Attachment 4

San Diego Integrated Regional Water Management

2015 IRWM Implementation Grant Proposal

Budget

Attachment 4 consists of the following items:

- ✓ **Budget.** This attachment includes a summary of the budget for the entire Proposal, as well as the budgets for each individual project included within the Proposal.

Table of Contents

Introduction

This *2015 IRWM Implementation Grant Proposal* includes thirteen high-priority projects that were evaluated and recommended by a working group of the Regional Advisory Committee (RAC), the primary stakeholder body for the San Diego IRWM Program. The local project sponsors (LPS) that will be implementing these projects have completed substantial work associated with each project. As such, the budgets provided herein are considered reasonable based on currently available information and the experience of San Diego County Water Authority (SDCWA), the LPS, and their project partners.

This attachment contains a roll-up budget of the entire Proposal consistent with Table 9 of the *2015 PSP* as well as project budget tables for each project consistent with Table 8 of the *2015 PSP*. The tasks and information provided for each project are consistent with project-related information provided in *Attachment 3 Work Plan* and *Attachment 5 Schedule*.

Proposal Budget Summary

Table 4-1 includes the Proposal Budget Summary consistent with Table 9 of the *2015 PSP*. As shown in **Table 4-1**, the total local cost-share (funding match) for the Proposal is 47%. No disadvantaged community (DAC) waivers are being requested for the thirteen projects included within the Proposal.

Table 4-1: Proposal Budget Summary for *San Diego 2015 IRWM Implementation Grant Proposal*

Individual Project Title		(a) Requested Grant Amount	(b) Cost Share: Non-State Fund Source (Funding Match)	(c) Cost Share: Other State Fund Source	(d) Total Cost	(e) % Funding Match
(GA)	Grant Administration	$933,943	$0	$0	$933,943	0%
(1)	Regional Drought Resiliency Program	$3,800,000	$1,614,780	$508,432	$5,923,212	27%
(2)	Conservation Home Makeover in the Chollas Creek Watershed	$542,000	$0	$0	$542,000	0%
(3)	San Diego Water Conservation Program	$866,000	$437,344	$0	$1,303,344	34%
(4)	Ms. Smarty-Plants Grows Water-Wise Schools	$652,000	$157,750	$0	$809,750	19%
(5)	Rural Disadvantaged Community Partnership Project – Phase III	$3,000,000	$2,027,350	$0	$5,027,350	40%
(6)	Integrated Water Resource Solutions for the Carlsbad Watershed	$2,500,000	$9,102,322	$0	$11,602,322	78%
(7)	UCSD Water Conservation and Watershed Protection	$1,435,000	$1,723,716	$0	$3,158,716	55%
(8)	Escondido Advanced Water Treatment for Agriculture	$2,000,000	$17,587,769	$0	$19,587,769	90%
(9)	Padre Dam Advanced Water Treatment – Phase IA Expansion	$6,000,000	$9,182,247	$21,106,300	$36,288,547	25%
(10)	Safari Park Drought Response and Outreach	$2,900,000	$967,000	$0	$3,867,000	25%
(11)	San Diego River Healthy Headwaters Restoration	$2,116,000	$929,000	$0	$3,045,000	31%
(12)	Sweetwater Reservoir Wetlands Habitat Recovery	$1,500,000	$1,723,629	$0	$3,223,629	53%
(13)	Hodges Reservoir Natural Treatment System	$2,886,472	$964,408	$0	$3,850,880	25%
Proposal Total		**$31,131,415**	**$46,417,315**	**$21,614,732**	**$99,163,462**	**47%**
DAC Funding Match Waiver Total		**$0**	**$0**	**$0**	**$0**	**-**
Grand Total		**$31,131,415**	**$46,417,315**	**$21,614,732**	**$99,163,462**	**47%**

Project Budgets

Project budget summaries for each of the thirteen projects included in this Proposal are provided in the following sections. Table 8 in the *2015 PSP* has been completed for each project, and a two-page description that describes how the budgets are reasonable based on current available information is provided for each project. Please note that Grant Administration is included here as a separate "project". Note that for some deliverables/activities, costs were rolled up due to page limitations, and a range of hourly rates/unit costs is provided. For these items, the number of hours/units is the total hours/units across all ranges, and the total cost is not the product of hourly rate/unit cost times number of hours/units, but rather the unit cost multiplied by the number of units for each sub-category that was rolled up. These budget descriptions are within the page limits allowed in the *2015 PSP*.

Grant Administration

Grant Administrator: San Diego County Water Authority (SDCWA)
Partners: Local Project Sponsors (Padre Dam Municipal Water District, Zoological Society of San Diego, City of Escondido, San Elijo Joint Powers Authority, University of California San Diego, Groundwork San Diego, City of San Diego, The Water Conservation Garden, Rural Community Assistance Corporation, USDA Forest Service, and Sweetwater Authority)

A project summary budget table consistent with a modified Table 8 in the *2015 PSP* is provided below as **Table 4-2** for Grant Administration by SDCWA for this *2015 IRWM Implementation Grant Proposal*.

Table 4-2: Total Project Budget for *Grant Administration*

Proposal Title: *San Diego 2015 IRWM Implementation Grant Proposal* **Project Title: Grant Administration** **Project serves a need of a DAC?:** ☐ Yes ☒ No **Funding Match Waiver request?:** ☐ Yes ☒ No					
		(a)	**(b)**	**(c)**	**(d)**
Category		**Requested Grant Amount**	**Cost Share: Non-State Fund Source* (Funding Match)**	**Cost Share: Other State Fund Sources***	**Total**
(a)	Direct Project Administration	$933,943	$0	$0	$933,943
	Task 1: Agreement Administration	$127,701	$0	$0	$127,701
	Task 2: Invoicing	$398,880	$0	$0	$398,880
	Task 3: Progress Reports and Project Completion Reports	$407,362	$0	$0	$407,362
(f)	**Grand Total**	**$933,943**	**$0**	**$0**	**$933,943**
***List sources of funding:** No funding match is being provided for Grant Administration. Grant Administration will be funded entirely through grant dollars.					

Row (a) Direct Project Administration

SDCWA has extensive experience administering IRWM grants on behalf of the San Diego IRWM Region. Based on this experience, 3% of the grant request ($933,943) has been set aside for grant administration by SDCWA. An explanation of costs associated with each task is provided below, along with hourly rates and an estimate of hours to complete each task. Note that some variation may occur due to rounding.

Task 1: Agreement Administration

Cost break down for this task is provided in the table below. The cost is calculated as the level of effort to execute the grant agreement with DWR, and the level of effort to execute each individual LPS contracts, based on SDCWA's experience in previous rounds. The Grant Administrator and Management Analyst each require 80 hours for DWR Grant Administration (contracting and coordination with DWR). The Grant Administrator requires approximately 32 hours per agreement to administer LPS agreements, facilitating LPS meetings, attending RAC and RWMG meetings, and administering other grant compliance requirements, with the Management Analyst

spending approximately 25 hours per LPS agreement. Total hours for the Grant Administrator for this task is 500 hours, and total hours for the Management Analyst is 400 hours. The IRWM Program Manager will spend a total of 100 hours reviewing the Grant Agreement and the LPS agreements, as well as attending meetings with DWR and LPS, as necessary. This task also includes webtool developer labor and supplies, which will allow LPS to submit grant compliance materials to SDCWA's grant administrator, and labor compliance evaluation services. IT staff will provide 300 hours of webtool development services, with actual materials and supplies for the webtool up to $12,101. Labor compliance evaluation will require 40 hours of consultant time at $200/hour, based on historical contracts. Hourly rates are based on salary and benefits, and represent an average rate anticipated over the grant administration period (2016-2020).

Table 4-3: Task 1 Costs for *Grant Administration*

Discipline / Activity		Hourly Rate	Number of Hours	Total Cost
Task 1: Agreement Administration				*$127,701*
	Grant Administrator	$82	500	$41,000
	Management Analyst	$74	400	$29,600
	IT Staff/Services	$90	300	$27,000
	IRWM Program Manager	$100	100	$10,000
	LPS Labor Compliance Evaluation Services	$200	40	$8,000
	Webtool Development	Materials and Supplies		$12,101

Task 2: Invoicing

Costs associated with invoicing include the time required to coordinate with LPS staff to obtain invoices, review each invoice packet from LPS, compile LPS invoices into DWR's invoice packet, review invoices for accuracy and adequacy for Grant Agreement criteria, and revise inadequate invoice packets. Based on SDCWA's grant administration experience, the Grant Administrator will require 2,240 hours (112 hours per quarter) to process and manage Invoice Packets for 13 LPS on a quarterly basis. The Management Analyst will require approximately 2,8,00 hours (140 hours per quarter) to work with 13 LPS to successfully meeting invoicing requirements for DWR. The IRWM Program Manager will spend a total of 80 hours (4 hours per quarter) overseeing invoicing efforts. The grant will be administered for five year (2016-2020) for a total of 20 invoice submittals on a quarterly basis.

Table 4-4: Task 2 Costs for *Grant Administration*

Discipline / Activity		Hourly Rate	Number of Hours	Total Cost
Task 2: Invoicing				*$398,880*
	Grant Administrator	$82	2,240	$183,680
	Management Analyst	$74	2,800	$207,200
	IRWM Program Manager	$100	80	$8,000

Task 3: Progress Reports and Project Completion Reports

Cost break down for preparation of quarterly project progress reports and project completion reports is provided in the table below. Based on SDCWA's grant administration experience, the Grant Administrator will require 2,800 hours (120 hours per quarter) over the grant contract period to administer and manage quarterly project progress reports and project completion reports from 13 LPS, as well as the Grant Program completion report. The Management Analyst will require approximately 2,240 hours (112 hours per quarter) to work with LPS and the Grant Administrator to process and manage progress reports for 13 LPS and their project completion reports, and to assist the Grant Administrator in preparing the Grant Program completion report. This task includes the necessary effort to work with LPS to develop and process any necessary amendments. The IRWM Program Manager will spend 120 hours (6 hours per quarter) overseeing project reporting efforts. The grant will be administered for five year (2016-2020) for a total of 20 progress report submittals.

Table 4-5: Task 3 Costs for *Grant Administration*

Discipline	Hourly Rate	Number of Hours	Total Cost
Task 3: Progress Reports and Project Completion Reports			*$407,362*
Grant Administrator	$80	2,800	$229,600
Assistant Management Analyst	$40	2,240	$165,762
IRWM Program Manager	$100	120	$12,000

Conservation Program

Project 1: Regional Drought Resiliency Program

Local Project Sponsor: San Diego County Water Authority
Partners: California Department of Corrections and Rehabilitation (CDCR), Otay Water District, and Mission Resources Conservation District (MRCD)

A project summary budget table consistent with Table 8 in the *2015 PSP* is provided below as **Table 4-6** for the *Regional Drought Resiliency Program* project. Note some difference may occur due to rounding. This project has a 27% funding match.

Table 4-6: Total Project Budget for *Regional Drought Resiliency Program*

Proposal Title: ***San Diego 2015 IRWM Implementation Grant Proposal***
Project Title: Regional Drought Resiliency Program
Project serves a need of a DAC?: ☒ **Yes** ☐ **No**
Funding Match Waiver request?: ☐ **Yes** ☒ **No**

	Category	(a) Requested Grant Amount	(b) Cost Share: Non-State Fund Source* (Funding Match)	(c) Cost Share: Other State Fund Sources*	(d) Total
(a)	Direct Project Administration	$74,498	$0	$0	$74,498
	Task 1: Project Management	$56,458	$0	$0	$56,458
	~~Task 2: Labor Compliance Program~~	$0	$0	$0	$0
	Task 3: Reporting	$18,040	$0	$0	$18,040
(b)	Land Purchase/ Easement	$0	$0	$0	$0
	~~Task 4: Land Purchase~~	$0	$0	$0	$0
(c)	Planning/ Design/ Environmental	$0	$9,020	$0	$9,020
	~~Task 5: Feasibility Studies~~	$0	$0	$0	$0
	~~Task 6: CEQA Documentation~~	$0	$0	$0	$0
	~~Task 7: Permitting~~	$0	$0	$0	$0
	~~Task 8: Design~~	$0	$0	$0	$0
	Task 9: Project Performance Monitoring Plan	$0	$9,020	$0	$9,020
(d)	Construction/ Implementation	$3,725,502	$1,605,760	$508,432	$5,839,694
	Task 10: Contract Services	$0	$5,760	$0	$5,760
	Task 11: Construction Administration	$107,070	$0	$0	$107,070
	Task 12: Construction/Implementation	$3,618,432	$1,600,000	$508,432	$5,726,865
	12.1: Correctional Facility Retrofit Project	*$565,976*	*$0*	*$508,432*	*$1,074,408*
	12.2: EC Mapping and Soil Moisture Sensor Systems	*$313,354*	*$0*	*$0*	*$313,354*
	12.3: WaterSmart Field Services Program	*$618,750*	*$0*	*$0*	*$618,750*
	12.4: Sustainable Landscapes Program	*$882,353*	*$1,600,000*	*$0*	*$2,482,353*
	12.5: WaterSmart Landscape Makeover Program	*$159,579*	*$0*	*$0*	*$159,579*
	12.6: Drought Outreach and Education	*$1,078,420*	*$0*	*$0*	*$1,078,420*
(e)	**Grand Total**	**$3,800,000**	**$1,614,780**	**$508,432**	**$5,923,212**

***List sources of funding:** Funding match for *Subtask 12.4* will be provided through a Turf Removal Rebate from Metropolitan Water District of Southern California, which has awarded $1,619,302 for turf removal at the Rancho Santa Fe Golf Club. This will fund removal of 890,651 sq. ft. of turf, and was acquired through participation in the proposed project. The remaining funding match is provided as in-kind labor from SDCWA for *Tasks 9 and 10*. Other State Fund Sources for *Subtask 12.1* are the costs of installation at DCF, which will be completed by DCF staff (State employees).

Row (a) Direct Project Administration Costs

Task 1: Project Management

Costs for project administration include time to complete administrative duties, implement partnering agreements and coordinate with project partners, and compilation and submittal of deliverables. SDCWA staff will dedicate 717 hours to this task with staff rates ranging between $60 and $85 per hour, depending on discipline. These hourly rates include salary plus benefits, and do not include overhead costs.

Task 2: Labor Compliance Program (LCP)

Not applicable – none of the components are public works projects requiring an LCP.

Task 3: Reporting

Costs for reporting include 240 hours of SDCWA staff time to complete quarterly and final project reports at staff rates ranging between $60 and $85 per hour, depending on discipline. Rates include salary plus benefits.

Row (b) Land Purchase/ Easement

Task 4: Land Purchase

Not applicable – none of the components will require land acquisition.

Row (c) Planning/ Design/ Engineering/ Environmental Documentation

Task 5: Feasibility Studies

Not applicable – each of the components are extensions of existing programs that have proven successful at conserving water and affecting water use in SDCWA's service area. No additional feasibility studies are required.

Task 6: CEQA Documentation

Not applicable – none of the components require CEQA.

Task 7: Permitting

Not applicable - no permits are anticipated to be required.

Task 8: Design

Not applicable - the project expands existing programs and no additional design work is required.

Task 9: Project Performance Monitoring Plan

A Project Performance Monitoring Plan will be developed by SDCWA staff, at an estimated effort of 20 hours per component, for a total of 120 hours effort, at rates consistent with those for Task 1. Total cost is $9,020.

Row (d) Construction/Implementation

Task 10: Contract Services

Costs associated with procuring contracts include time for SDCWA staff to issue an RFP and award a final contract for Component 6. This effort is estimated at 80 hours by a SDCWA Project Manager, at a rate of $72 per hour, for a total cost of $5,760. Components 1 through 5 are covered under existing contracts that govern the existing programs, and no additional costs will be incurred for contract procurement for those components.

Task 11: Construction Administration (Includes Subtasks 11.1 through 11.6)

Construction administration activities for Components 3, 4, 5, and 6 are incorporated into implementation activities in *Task 12* (*Subtasks 12.3, 12.4*, *12.5*, and *12.6*, respectively). Construction administration for Component 1 includes oversight of implementation and contractors, and coordination between contractor and DCF officials to ensure worker and prisoner safety during implementation. These efforts will involve a Project Manager and a Construction Manager for 347 hours each ($152/hour), for a total cost of $105,520 for *Subtask 11.1*. A Construction Manager will be responsible for conducting outreach to potential participants of Component 2 for 25 hours ($63/hour), for a total cost of $1,550 for *Subtask 11.2*. Total costs for *Task 11* are $107,070.

Task 12: Construction/Implementation (Includes Subtasks 12.1 through 12.6)

Costs associated with implementation of *Task 12* are provided in **Table 4-7**. These costs are broken down by component, and further into incentives, equipment/materials, and labor, as applicable. Costs are based on executed Professional Services Agreements, estimates from vendors and contractors, rebate values in program guidelines, and experience gained from the existing programs.

Table 4-7: Task 12 Costs for *Regional Drought Resiliency Program*

	Deliverables/Activity	Hourly Rate/Unit Cost	Number of Hours/Units	Total Cost
Subtask 12.1 Correctional Facility Retrofit Project				*$1,074,408*
	Electronic shower controls	$600/unit	188 units	$112,800
	Electronic faucet controls	$375/unit	600 units	$225,000
	Commercial toilets	$750/unit	26 units	$19,500
	Urinal flush valves	$206/unit	4 units	$823
	Flow reducers for faucets and aerators	$185/unit	309 units	$57,165
	High-efficient toilets	$500/unit	267 units	$133,500
	High-efficient urinals	$250/unit	23 units	$5,750
	Contingency	Approximately 2% of equipment costs		$11,438
	Hardware and Fixture Installation – DCF Staff	$43/hour	11,824 hours	$508,432
Subtask 12.2 EC Mapping and Soil Moisture Sensor Systems				*$313,354*
	Soil moisture sensor systems	$1,000/system	200 systems	$200,000
	Electrical conductivity mapping	$45/hour	2,130 hours	$95,854
	Site inspection	$45/hour	389 hours	$17,500
Subtask 12.3 WaterSmart Field Services Program				*$618,750*
	Project Management	$70-$78/hour	2,227 hours	$170,100
	Home Water Use Evaluation	$18.50-$62.50/unit	7,927 units	$348,544
	Irrigation Checkup	$156.50/unit	209 units	$32,654
	Full Audit	$328-$513/unit	166 units	$67,452
Subtask 12.4 Turf Replacement Program				*$2,482,353*
	Turf Rebates	$1.50/sq ft	470,588 sq ft	$705,882
	Turf Rebates	$2/sq ft	800,000 sq ft	$1,600,000
	Rebate Program Administration	$3,500/month + $150/completed rebate		$176,471
Subtask 12.5 WaterSmart Landscape Makeover Program				*$159,579*
	Landscape Makeover Workshop Series	$20,000/series	5 series	$100,000
	Landscape Design for Homeowners	$5,000/class	4 classes	$20,000
	Landscape Makeover eLearning Module	$3,958/module	10 modules	$39,579
Subtask 12.6 Drought Outreach and Education				*$1,078,420*
	Education Programs	$30,000	Classroom materials	$30,000
	Educational Materials	$15,500	Printed materials	$15,500
	Outreach Materials	$1.48-$3.40/item	24,000 items	$60,520
	Education Programs	$350-$2,500 /program	185 programs	$150,750
	Education Program Development	$70/hour	209 hours	$14,650
	Advertising	$560,000	Paid media	$560,000
	Develop Advertising and Translations	$115,000	Creative production	$115,000
	Educational Materials – Management	$70-$85/hour	563 hours	$44,000
	Educational Materials – Production	Variable	Digital design and video production	$38,000
	Research	$50,000	Research	$50,000
Task 12 Total				***$5,726,864***

Project 2: Conservation Home Makeover in the Chollas Creek Watershed

Local Project Sponsor: Groundwork San Diego (Groundwork)
Partners: U.S. Green Building Council (USGBC) and San Diego Sustainable Living Institute (SDSLI)

A project summary budget table consistent with Table 8 in the *2015 PSP* is provided below as **Table 4-8** for the *Conservation Home Makeover in the Chollas Creek Watershed* project. This project has a 0% funding match.

Table 4-8: Total Project Budget for *Conservation Home Makeover in the Chollas Creek Watershed*

Proposal Title: *San Diego 2015 IRWM Implementation Grant Proposal* **Project Title: Conservation Home Makeover in the Chollas Creek Watershed** **Project serves a need of a DAC?:** ☒ **Yes** ☐ **No** **Funding Match Waiver request?:** ☐ **Yes** ☒ **No**					
		(a)	**(b)**	**(c)**	**(d)**
Category		**Requested Grant Amount**	**Cost Share: Non-State Fund Source* (Funding Match)**	**Cost Share: Other State Fund Sources***	**Total**
(a)	Direct Project Administration	$20,741	$0	$0	$20,741
	Task 1: Project Management	$12,352	$0	$0	$12,352
	~~Task 2: Labor Compliance Program~~	$0	$0	$0	$0
	Task 3: Reporting	$8,389	$0	$0	$8,389
(b)	Land Purchase/ Easement	$0	$0	$0	$0
	~~Task 4: Land Purchase~~	$0	$0	$0	$0
(c)	Planning/ Design/ Environmental	$3,136	$0	$0	$3,136
	~~Task 5: Feasibility Studies~~	$0	$0	$0	$0
	~~Task 6: CEQA Documentation~~	$0	$0	$0	$0
	~~Task 7: Permitting~~	$0	$0	$0	$0
	~~Task 8: Design~~	$0	$0	$0	$0
	Task 9: Project Performance Monitoring Plan	$3,136	$0	$0	$3,136
(d)	Construction/ Implementation	$518,123	$0	$0	$518,123
	~~Task 10: Contract Services~~	$0	$0	$0	$0
	Task 11: Construction Administration	$67,228	$0	$0	$67,228
	Task 12: Construction/Implementation	$450,895	$0	$0	$450,895
	12.1: Agreement Negotiation	*$67,200*	*$0*	*$0*	*$67,200*
	12.2: Education	*$53,760*	*$0*	*$0*	*$53,760*
	12.3: Water Use Evaluations	*$3,750*	*$0*	*$0*	*$3,750*
	12.4: Monitoring and Verification	*$55,000*	*$0*	*$0*	*$55,000*
	12.5: Tracking and Mapping	*$27,125*	*$0*	*$0*	*$27,125*
	12.6: Landscape Earthwork Installation	*$120,560*	*$0*	*$0*	*$120,560*
	12.7: Rainbarrel Installation	*$43,750*	*$0*	*$0*	*$43,750*
	12.8: Greywater Installation	*$45,000*	*$0*	*$0*	*$45,000*
	12..9 Conservation Home Retrofit Devices	*$34,750*	*$0*	*$0*	*$34,750*
(e)	**Grand Total**	**$542,000**	**$0**	**$0**	**$542,000**
***List sources of funding:** This project is requesting a DAC waiver and all project costs will be borne by the grant.					

Row (a) Direct Project Administration Costs

Task 1: Project Management

Costs include time for Groundwork staff to complete project management duties (including preparation of invoices and grant agreement materials). A Groundwork Project Manager will dedicate 255 hours at a rate of $39.20/hour. Hourly rate was calculated based on salary plus benefits, and does not include overhead. This task also includes Groundwork staff time to execute MOAs with project partners, for a total of 60 hours at a rate of $39.20/hour. Total cost for this task is $12,352.

Task 2: Labor Compliance Program (LCP)

Not applicable.

Task 3: Reporting

Costs for reporting include time for Groundwork staff to complete grant reporting duties. A Groundwork Project Manager will dedicate 214 total hours to this task with a billing rate of $39.20/hour, for a total of $8,389.

Row (b) Land Purchase/ Easement

Task 4: Land Purchase

Not applicable.

Row (c) Planning/ Design/ Engineering/ Environmental Documentation

Task 5: Feasibility Studies

Not applicable.

Task 6: CEQA Documentation

Not applicable.

Task 7: Permitting

Not applicable.

Task 8: Design

Not applicable.

Task 9: Project Performance Monitoring Plan

Costs include a Groundwork Project Manager's time to develop a Project Performance Monitoring Plan compliant with DWR contract requirements. This effort will take 80 hours, at a rate of $39.20/hour, for a total cost of $3,136.

Row (d) Construction/Implementation

Task 10: Contract Services

Not applicable.

Task 11: Construction Administration

Costs include a Groundwork Project Manager's time to manage and oversee implementation activities conducted under Subtask 12.1 through 12.2. This effort is estimated as 1,715 hours at a rate of $39.20/hour, for a total cost of $67,228.

Task 12: Implementation

Implementation costs are a combination of Groundwork and project partner staff time, materials, and contracted labor. These costs are broken down by subtask in **Table 4-9**, and based on salary plus benefits and typical costs for standard materials. All effort and materials are based on implementation of the Conservation Home Makeover at 50 low-income residences.

Table 4-9: Task 12 Costs for *Conservation Home Makeover in Chollas Creek*

	Deliverables / Activity	Hourly Rate/Unit Cost	Number of Hours/Units	Total Cost
Subtask 12.1 Agreement Negotiation				*$67,200*
	Community Organizer	$22.40/hour	3,000 hours	$67,200
Subtask 12.2 Education				*$53,760*
	Educator	$22.40/hour	2,400 hours	$53,760
Subtask 12.3 Water Use Evaluation				*$3,750*
	Water Use Evaluation	$25/hour	150 hours (3 hrs each; 50 evaluations)	$3,750
Subtask 12.4 Monitoring and Verification				*$55,000*
	Maintenance	$25/hour	600 hours	$15,000
	Monitoring and Verification	$25/hour	1,600 hours	$40,000
Subtask 12.5 Tracking and Mapping				*$27,125*
	Tracking/Mapping	$25/hour	650 hours	$16,250
	Analysis	$25/hour	435 hours	$10,875
Subtask 12.6 Landscape Earthwork Installation				*$120,560*
	Trees	$100/tree	200 trees	$20,000
	Native Landscaping	$3/plant	9,520 plants	$28,560
	Design	$20/hour	1,200 hours (24 hrs/site; 50 sites)	$24,000
	Installation	$20/hour	2,400 hours (48 hrs/site; 50 sites)	$48,000
Subtask 12.7 Rainbarrel Installation				*$43,750*
	Rainbarrels	$800/rainbarrel	50 rainbarrels	$40,000
	Rainbarrel installation	$25/hour	150 hours	$3,750
Subtask 12.8 Greywater Installation				*$45,000*
	Greywater Systems	$800/system	50 systems	$40,000
	Greywater System Installation	$25/hour	200 hours	$5,000
Subtask 12.9 Conservation Home Retrofit Devices				*$34,750*
	Water Efficient Toilets	$200/toilet	100 toilets	$20,000
	Water Efficient Faucets	$50/faucet	150 faucets	$7,500
	Water Efficient Showerheads	$35/showerhead	100 showerheads	$3,500
	Water Efficient Device Installation	$25/hour	150 hours	$3,750
Task 12 Total				**$450,895**

Project 3: San Diego Water Conservation Program

Local Project Sponsor: City of San Diego
Partners: Water Conservation Garden (The Garden) and San Diego Sustainable Living Institute (SDSLI)

A project summary budget table consistent with Table 8 in the *2015 PSP* is provided below as **Table 4-10** for the *San Diego Water Conservation Program* project. This project has a 34% funding match.

Table 4-10: Total Project Budget for *San Diego Water Conservation Program*

Proposal Title: *San Diego 2015 IRWM Implementation Grant Proposal*
Project Title: San Diego Water Conservation Program
Project serves a need of a DAC?: ☒ **Yes** ☐ **No**
Funding Match Waiver request?: ☐ **Yes** ☒ **No**

	Category	(a) Requested Grant Amount	(b) Cost Share: Non-State Fund Source* (Funding Match)	(c) Cost Share: Other State Fund Sources*	(d) Total
(a)	Direct Project Administration	$40,000	$0	$0	$40,000
	Task 1: Project Management	$15,000	$0	$0	$15,000
	~~Task 2: Labor Compliance Program~~	$0	$0	$0	$0
	Task 3: Reporting	$25,000	$0	$0	$25,000
(b)	Land Purchase/ Easement	$0	$0	$0	$0
	~~Task 4: Land Purchase~~	$0	$0	$0	$0
(c)	Planning/ Design/ Environmental	$8,515	$20,000	$0	$28,515
	~~Task 5: Feasibility Studies~~	$0	$0	$0	$0
	~~Task 6: CEQA Documentation~~	$0	$0	$0	$0
	~~Task 7: Permitting~~	$0	$0	$0	$0
	Task 8: Design	$3,515	$20,000	$0	$23,515
	Task 9: Project Performance Monitoring Plan	$5,000	$0	$0	$5,000
(d)	Construction/ Implementation	$817,485	$417,344	$0	$1,234,829
	~~Task 10: Contract Services~~	$0	$0	$0	$0
	~~Task 11: Construction Administration~~	$0	$0	$0	$0
	Task 12: Construction/Implementation	$817,485	$413,830	$0	$1,234,829
	12.1: Greywater Rebate Program	*$150,000*	*$70,000*	*$0*	*$220,000*
	12.2: Turf Replacement Rebate Program	*$324,656*	*$347,344*	*$0*	*$672,000*
	12.3: The Garden's Outreach/Workshops/ Training	*$251,909*	*$0*	*$0*	*$251,909*
	12.4: SDSLI's Outreach/Workshops/Training	*$90,920*	*$0*	*$0*	*$90,920*
(e)	**Grand Total**	**$866,000**	**$437,344**	**$0**	**$1,303,344**

***List sources of funding:** All $433,830 in cost share will be funded by the City of San Diego's Public Utilities Department operating funds and is in-kind staff labor and direct rebate costs.

Row (a) Direct Project Administration Costs

Task 1: Project Management

Costs for project management include time to complete administrative duties. City staff will dedicate 250 hours to this task at an average hourly rate of $59.90. Total cost for this task is $15,000. Hourly rates were calculated based on salary plus benefits, and do not include overhead.

Task 2: Labor Compliance Program (LCP)

Not applicable – not a public works project requiring a LCP.

Task 3: Reporting

Cost for reporting will include time to complete reporting duties. City staff will dedicate 417 hours to this task at an average hourly rate of $59.90 (salary plus benefits). Total cost for this task is $25,000.

Row (b) Land Purchase/ Easement

Task 4: Land Purchase

Not applicable – no land purchases will be required to implement this project.

Row (c) Planning/ Design/ Engineering/ Environmental Documentation

Task 5: Feasibility Studies

Not applicable – this project expands an existing rebate, and no feasibility studies are required for this or other components.

Task 6: CEQA Documentation

Not applicable - no CEQA or other environmental documentation is required for this project.

Task 7: Permitting

Not applicable – none of the project activities require permits.

Task 8: Design

This task involves development of the greywater rebate guidelines. Based on the City's experience, this will require 334 hours of staff time, at an average rate of $59.90/hour. Costs also include landscape architectural drawings for the irrigation exhibit at The Garden, costing $3,515 for a contractor. The total cost for this task is $23,515.

Task 9: Project Performance Monitoring Plan

Work includes City staff time to develop a Project Performance Monitoring Plan. This effort is estimated to take 83 hours, at an average hourly rate of $59.90 (salary plus benefits), for a total cost of $5,000.

Row (d) Construction/Implementation

Task 10: Contract Services

Not applicable – no contracting is required for this project.

Task 11: Construction Administration

Not applicable – no construction is included in this project, and no construction administration is required.

Task 12: Construction/Implementation Activities

Costs for implementation include City staff time to implement the greywater and turf rebate programs, as well as staff time for The Garden and SDSLI to implement their outreach programs. **Table 4-11** provides a summary of the costs associated with implementation of each of the subtasks for implementation of this project.

Table 4-11: Task 12 Implementation Costs for *San Diego Water Conservation Program*

	Deliverables/Activity	Hourly Rate/Unit Cost	Number of Hours/Units	Total Cost
Subtask 12.1 Greywater Rebate Program				*$220,000*
	Greywater Rebates	$200/system	1,000 systems	$200,000
	City Staff to manage rebates	$59.90/hour	334 hours	$20,000
Subtask 12.2 Turf Replacement Rebate Program				*$672,000*
	Turf Rebates	$1.50 - $2.00/sq ft	440,000 sq ft	$660,000
	City Staff to Manage Rebates	$59.90/hour	200 hours	$12,000
Subtask 12.3 The Garden's Outreach/Workshops/Training				*$251,909*
	Irrigation Exhibit			
	Content Development	Labels, images, video production and support literature (staff and contractor)		$7,000
	Exhibit Installation	Contractor fee to install exhibit and staff/ contractor time to prepare site		$40,000
	Interpretive Components	Contractor fee for acquisition and production of items for the exhibit (products, printing labels, audio/visual materials, etc.)		$24,494
	Education/Outreach			
	Staff and Educator labor	$8/hour - $28/hour	6,800 hours	$141,396
	Presentations	$1,750- $875/presentation	10-20 presentations	$17,500
	Equipment, Supplies, and Literature Development	Non-labor expenses based on previous experience, plus overhead and contingency		$18,014
Subtask 12.4 SDSLI's Outreach/Workshops/Training				*$90,920*
	Laundry to Landscape			
	Materials – demonstration items and mulch	$405/workshop	24 workshops	$9,720
	Workshop prep, delivery and follow up	$50/hour; 24 hours/workshop	24 workshops	$28,800
	Rainwater Harvesting			
	Materials – barrel, pipe, fittings	$400/workshop	10 workshops	$4,000
	Workshop prep, delivery and follow up	$50/hour; 24 hours/workshop	10 workshops	$12,000
	Water Conservation for the Landowner			
	Materials – handouts	$50/workshop	11 workshops	$550
	Workshop prep, delivery and follow-up	$50/hour; 15 hours/workshop	11 workshops	$8,250
	Water Harvesting Neighborhood Tours			
	Materials – handouts	$100/tour	6 tours	$600
	Tour prep, tour costs (staff, speaker fee, bus rental) and follow-up	$50/hour; $1,000/bus; 70 hrs and 1 bus/tour	6 tours	$27,000
Task 12 Total				***$1,234,829***

Project 4: Ms. Smarty-Plants Grows Water-Wise Schools

Local Project Sponsor: The Water Conservation Garden (The Garden)
Partners: Otay Water District, Helix Water District, and K-12 Schools within La Mesa-Spring Valley and Lemon Grove School Districts

A project summary budget table consistent with Table 8 in the *2015 PSP* is provided below as **Table 4-12** for the *Ms. Smarty-Plants Grows Water-Wise Schools* project. This project has a 19% funding match.

Table 4-12: Total Project Budget for *Ms. Smarty-Plants Grows Water-Wise Schools*

Proposal Title: ***San Diego 2015 IRWM Implementation Grant Proposal***
Project Title: Ms. Smarty-Plants Grows Water-Wise Schools
Project serves a need of a DAC?: ☒ **Yes** ☐ **No**
Funding Match Waiver request?: ☐ **Yes** ☒ **No**

	Category	(a) Requested Grant Amount	(b) Cost Share: Non-State Fund Source* (Funding Match)	(c) Cost Share: Other State Fund Sources*	(d) Total
(a)	Direct Project Administration	$22,000	$44,000	$0	$66,000
	Task 1: Project Management	$0	$22,000	$0	$22,000
	Task 2: Labor Compliance Program	$22,000	$0	$0	$22,000
	Task 3: Reporting	$0	$22,000	$0	$22,000
(b)	Land Purchase/ Easement	$0	$0	$0	$0
	~~Task 4: Land Purchase~~	$0	$0	$0	$0
(c)	Planning/ Design/ Environmental	$22,413	$58,443	$0	$80,846
	Task 5: Feasibility Studies	$0	$35,788	$0	$35,788
	~~Task 6: CEQA Documentation~~	$0	$0	$0	$0
	Task 7: Permitting	$20,000	$0	$0	$20,000
	Task 8: Design	$0	$22,578	$0	$22,578
	Task 9: Project Performance Monitoring Plan	$2,413	$77	$0	$2,490
(d)	Construction/ Implementation	$607,587	$55,307	$0	$662,894
	Task 10: Contract Services	$18,000	$0	$0	$18,000
	Task 11: Construction Administration	$22,242	$0	$0	$22,242
	Task 12: Construction/Implementation	$567,345	$55,307	$0	$622,652
	12.1: Education and Outreach	*$247,725*	*$18,000*	*$0*	*$265,725*
	12.2: School Landscape Transitions	*$185,970*	*$12,000*	*$0*	*$197,970*
	12.3: Classroom Expansion	*$133,650*	*$25,307*	*$0*	*$158,957*
(e)	**Grand Total**	**$652,000**	**$157,750**	**$0**	**$809,750**

***List sources of funding:** Matching funds are provided through a number of local and private grants, local water districts, and The Garden's budget. The Garden's funds are raised through earned income, general contributions, and reserves. Funding for the architectural drawings (Task 8) was provided as in-kind labor from Bennett and Associates. Sources of local grants include Rice Family Foundation, Heller Foundation, San Diego Women's Foundation, Wells Fargo Foundation, SDG&E, Sempra Energy, Cal American Water, and Sprites, while local water agencies include City of San Diego, Sweetwater Authority, Helix Water District, Otay Water District, and SDCWA.

Row (a) Direct Project Administration Costs

Task 1: Project Management

Costs for project management include The Garden's staff time to manage grant contracting and administrative duties. These costs also include oversight of the Project Coordinator, Educator, and Landscape Designer. The Garden's staff will dedicate 714 hours to this task with a range of hourly rates from $26-36/hour. Total cost for this task is $22,000. Hourly rates were calculated based on salary and benefits, plus 5% overhead.

Task 2: Labor Compliance Program (LCP)

The Garden will contract with Golden State to develop and implement an LCP for the classroom expansion component. Based on experiences of similar projects, this cost is estimated at approximately 10% of the construction costs or $22,000.

Task 3: Reporting

Costs for reporting will include time to complete quarterly progress reports and final project report. The Garden's staff will dedicate 714 hours to this task with a range of hourly rates from $26-36/hour (salary and benefits, plus 5% overhead), for a total cost of $22,000.

Row (b) Land Purchase/ Easement

Task 4: Land Purchase

Not applicable – The Garden has a long-term lease with Cuyamaca College and the classroom will be built onsite.

Row (c) Planning/ Design/ Engineering/ Environmental Documentation

Task 5: Feasibility Studies

Costs associated with this task include costs to complete *The Water Conservation Garden Master Plan*. Costs are based on completed work and total $35,778.

Task 6: CEQA Documentation

All CEQA requirements for this project were met through Cuyamaca College's *2013 Facilities Master Plan EIR*. Because this EIR includes a number of non-project-related activities, costs incurred by Cuyamaca College to develop the 2013 EIR are not included in this project budget.

Task 7: Permitting

Work in this task involves obtaining structural, mechanical, electrical, plumbing, fire suppression, and solar panel permits for construction of the classroom expansion. These permits will be obtained by the Contractor in coordination with The Garden. Total costs are anticipated to be $20,000 for this effort.

Task 8: Design

Work in this task includes engineering and architectural design for the classroom expansion. These services are provided as in-kind labor from Bennett and Associates, who have provided a quote of $22,578 for these costs.

Task 9: Project Performance Monitoring Plan

The Garden will dedicate a total of 80 staff hours to develop a Project Performance Monitoring Plan at a range of hourly rates from $26-36/hour, for a total cost of $2,490 for this task.

Row (d) Construction/Implementation

Task 10: Contract Services

Costs for contract services include The Garden's staff time to secure a project architect for the classroom expansion, and put out a bid for a contractor. The Garden anticipates dedicating 500 hours to this task, at an hourly rate of $36/hour, for a total of $18,000.

Task 11: Construction Administration

Costs for this task are based on an estimate from Wheelihan Construction for construction management, supervision, and reporting. These efforts are estimated to cost $22,242.

Task 12: Construction/Implementation

Costs for construction and implementation include a combination of staff time for The Garden, construction contractor time, and materials. These costs are based on salaries for The Garden staff, contractor estimates, and The Garden's past experience with producing and implementing the Ms. Smarty-Plants program. A break-down of implementation and construction costs by component are presented in **Table 4-13**.

Table 4-13: Task 12 Implementation Costs for *Ms. Smart-Plants Grows Water-Wise Schools*

	Deliverables/Activity	Hourly Rate/Unit Cost	Number of Hours/Units	Total Cost
Subtask 12.1 Education and Outreach				*$265,725*
	Director of Education	$36/hour	600 hours	$21,600
	Program Coordinator	$26.25/hour	4,500 hours	$118,125
	Educator	$14.70/hour	6,000 hours	$88,200
	Bookkeeper	$8/hour	600 hours	$4,800
	Marketing Materials	Brochures, flyers, Ms. Smarty-Plants materials		$15,000
	Website Development and Update	Development and update fees		$6,000
	Social Media and Advertising	Social Media updates and advertising fees		$6,500
	Office supplies and equipment	Computer use and supplies for Ms. Smarty-Plants program		$5,500
Subtask 12.2 School Landscape Transitions				*$197,970*
	Director of Education	$36/hour	600 hours	$21,600
	Program Coordinator	$26.25/hour	1,500 hours	$37,375
	Landscape Designer	$30/hour	1,500 hours	$45,000
	Bookkeeper	$8/hour	600 hours	$4,800
	Incentives	$5,333/school	15 schools	$79,995
	Gardening tools	Spades, gloves, and clippers		$7,200
Subtask 12.3 Classroom Expansion				*$158,957*
	Site Set-Up	Contractor estimate		$4,900
	Demolition	Contractor estimate		$3,200
	Concrete	Contractor estimate		$5,300
	Metals	Contractor estimate		$33,000
	Carpentry	Contractor estimate		$19,000
	Insulation/Sealing	Contractor estimate		$5,700
	Doors and Windows	Contractor estimate		$46,000
	Finishes	Contractor estimate		$19,900
	Awning	Contractor estimate		$450
	Mechanical	Contractor estimate		$4,200
	Electrical	Contractor estimate		$7,200
	Site Clean-Up	Contractor estimate		$1,200
	Contingency	5% of Contractor Costs, including Construction Administration		$8,907
Task 12 Total				***$622,652***

Rural Water Infrastructure Program

Project 5: Rural Disadvantaged Community Partnership Project - Phase III

Local Project Sponsor: Rural Community Assistance Corporation (RCAC)
Partners: Alter Terra, Indian Health Services (IHS), Bureau of Indian Affairs (BIA), San Diego County Water Authority (SDCWA), City of San Diego (City), and State Water Resources Control Board (SWRCB)

A project summary budget table consistent with Table 8 in the *2015 PSP* is provided below as **Table 4-14** for the *Rural Disadvantaged Community Partnership Project - Phase III* project. This project has a 40% funding match.

Table 4-14: Total Project Budget for *Rural Disadvantaged Community Partnership Project - Phase III*

Proposal Title: *San Diego 2015 IRWM Implementation Grant Proposal*
Project Title: Rural Disadvantaged Community Partnership Project - Phase III
Project serves a need of a DAC?: ☒ Yes ☐ No
Funding Match Waiver request?: ☐ Yes ☒ No

	Category	(a) Requested Grant Amount	(b) Cost Share: Non-State Fund Source* (Funding Match)	(c) Cost Share: Other State Fund Sources*	(d) Total
(a)	Direct Project Administration	$97,950	$0	$0	$97,950
	Task 1: Project Management	$49,950	$0	$0	$49,950
	Task 2: Labor Compliance Program	$14,100	$0	$0	$14,100
	Task 3: Reporting	$33,900	$0	$0	$33,900
(b)	Land Purchase/ Easement	$0	$0	$0	$0
	~~Task 4: Land Purchase~~	$0	$0	$0	$0
(c)	Planning/ Design/ Environmental	$942,600	$133,600	$0	$1,076,200
	~~Task 5: Feasibility Studies~~	$0	$0	$0	$0
	Task 6: CEQA Documentation	$161,820	$13,700	$0	$175,520
	Task 7: Permitting	$129,630	$0	$0	$129,630
	Task 8: Design	$600,300	$119,900	$0	$720,200
	Task 9: Project Performance Monitoring Plan	$50,850	$0	$50,850	$50,850
(d)	Construction/ Implementation	$1,959,450	$1,893,750	$0	$3,853,200
	Task 10: Contract Services	$246,000	$0	$0	$246,000
	Task 11: Construction Administration	$222,900	$0	$0	$222,900
	Task 12: Construction/Implementation	$1,490,550	$1,893,750	$0	$3,384,300
	12.1: Pauma Reservation Water System	*$67,200*	*$220,300*	*$0*	*$287,500*
	12.2: Campo Reservation South System	*$65,600*	*$219,800*	*$0*	*$285,400*
	12.3: San Pasqual Tribe Reclaimed Water Expansion	*$328,000*	*$0*	*$0*	*$328,000*
	12.4: San Pasqual Tribe Water Meters	*$204,900*	*$100,000*	*$0*	*$304,900*
	12.5: La Jolla Tribe Water Tank	*$355,000*	*$0*	*$0*	*$355,000*
	12.6: Quiet Oaks Mobile Home Park Nitrate Treatment	*$60,850*	*$353,650*	*$0*	*$414,500*
	12.7: Willowside Terrace Water System Connection	*$6,000*	*$1,000,000*	*$0*	*$1,006,000*
	12.8: Richardson Beardsley Park Treatment	*$83,500*	*$0*	*$0*	*$83,500*
	12.9: Smuggler's Gulch Floating Trash Booms	*$184,500*	*$0*	*$0*	*$184,500*
	12.10: Tijuana River-San Diego Connector Restoration Project	*$135,000*	*$0*	*$0*	*$135,000*
(e)	**Grand Total**	**$3,000,000**	**$2,027,350**	**$0**	**$5,027,350**

***List sources of funding:** Category C funding match includes: $107,300 from IHS for NEPA/CEQA and design (projects 1 and 2); $20,000 from BIA for design (project 3). Category D funding match includes: $1,000,000 from SWRCB SRF (project 7); $100,000 from EPA (project 3); $440,100 from IHA (projects 1 and 2).

Row (a) Direct Project Administration Costs

Task 1: Project Management

Costs include time to complete administrative duties. RCAC and Alter Terra staff will dedicate 585 hours with staff rates at $75 and $120 per hour, depending on discipline. Total costs for Task 1 are $49,950.

Task 2: Labor Compliance Program (LCP)

Costs for labor compliance include time for RCAC and Alter Terra to work with local DACs to ensure labor compliance, which is anticipated to require 188 hours at a staff rate of $75 per hour. Total costs are $14,100.

Task 3: Reporting

Costs for reporting include 404 hours of RCAC and Alter Terra staff time to complete quarterly and final project reports at staff rates ranging between $120 and $75 per hour, depending on discipline. Total costs are $33,900.

Row (b) Land Purchase/ Easement

Task 4: Land Purchase: Not applicable.

Row (c) Planning/ Design/ Engineering/ Environmental Documentation

Task 5: Feasibility Studies: Not applicable.

Task 6: CEQA Documentation

CEQA and NEPA concurrence is required for all components at various levels. Details about each component are provided in **Table 4-15**. Note that hourly rates for RCAC staff range from $75 to $120 as described above.

Task 7: Permitting

Permitting is required for several components at various levels. Note that hourly rates for RCAC staff range from $75 to $120 as described above. Details about each component in **Table 4-15**.

Task 8: Design

Final design is required for all components at various levels. Note that hourly rates for RCAC staff range from $75 to $120 as described above. Details about each component in **Table 4-15**.

Table 4-15: Tasks 6-8 Costs for *Rural Disadvantaged Community Partnership Project - Phase III*

#	Task 6: CEQA	Task 7: Permitting	Task 8: Design
1	100 hours = $8,400	Not applicable	RCAC staff at 350 hours and IHS Engineer at 333 hours ($150/hr) = $79,800
2	100 hours = $8,400	Not applicable	RCAC staff at 214 hours and IHS Engineer at 333 hours ($150/hr) = $68,250
3	Not applicable	Not applicable	RCAC staff at 162 hours and a Tribe Engineer at 200 hours ($100/hr) = $33,500
4	Not applicable	Not applicable	RCAC staff at 120 hours = $9,900
5	490 hours = $40,800	Not applicable	RCAC staff at 130 hours and a Tribe Engineer at 400 hours ($75/hr) = $45,600
6	100 hours = $8,400	38 hours = $3,210	RCAC staff at 380 hours = $32,100
7	280 hours = $24,600	38 hours = $3,210	RCAC staff at 445 hours and Contractor at 2,500 hours (150/hr) = $412,650
8	56 hours = $4,920	38 hours = $3,210	RCAC staff at 100 hours = $8,400
9	$40,000 from Consulting firm	$60,000 from Consulting firm	Alter Terra staff with a billing rate of $75 will complete design in 200 hours = $15,000
10	$40,000 from Consulting firm	$60,000 from Consulting firm	Alter Terra staff with a billing rate of $75 will complete design in 200 hours = $15,000
Total	**$175,520**	**$129,630**	**$720,200**

Task 9: Project Performance Monitoring Plan

A Project Performance Monitoring Plan will be developed by RCAC (65 hours per Component 1-8, total 455 hours) and Alter Terra (total 160 hours) at rates consistent with those for Task 1. Total is $50,850.

Row (d) Construction/Implementation

Task 10: Contract Services

Costs for contract services will incorporate RCAC staff, including Project Manager at $120/hr (80 hours per project, total 800 hours) and RCAC support staff at $75/hr (200 hours per project, total 2,000 hours). Total is $246,000.

Task 11: Construction Administration

Construction administration activities will be completed by RCAC and Alter Terra. RCAC Project Manager ($120/hr) will allocate 20 hours and RCAC support staff ($75/hr) will allocate 60 hours for Components 1, 2, 3, 4, 5, 6, and 8. RCAC Project Manager will allocate 80 hours and RCAC support staff will allocate 200 hours for Component 7. Alter Terra will dedicate 1,000 hours of staff time for Components 9 and 10 (2,000 hours total) at a billing rate of $75/hr.

Task 12: Construction/Implementation

Costs associated with *Task 12* are provided in **Table 4-16**. Costs are based on preliminary cost estimates, estimates from vendors and contractors, and RCAC's experience working with local DACs.

Table 4-16: Task 12 Costs for *Rural Disadvantaged Community Partnership Project - Phase III*

	Deliverables/Activity	Hourly Rate/Unit Cost	Number of Hours/Units	Total Cost
Subtask 12.1 Pauma Reservation Water System				*$287,500*
	Water storage tank, foundation, water meter connection	$173,000/unit	1 unit	$173,000
	Tank demolition, piping, gate valves	$10,900/unit	5 units	$54,500
	Construction labor	$200/hour	300 hours	$60,000
Subtask 12.2 Campo Reservation South System				*$285,400*
	Well drilling, well casing, screen, grouting, filter	$100/unit	675 units	$67,500
	Well development, water main, fencing, piping, etc.	$272/unit	580 units	$157,900
	Pumphouse power, disinfection, close-out	$100/unit	600 units	$60,000
Subtask 12.3 San Pasqual Tribe Reclaimed Water Expansion				*$328,000*
	Piping and appurtenances	$200/unit	1,400 units	$280,000
	Piping installation and project close-out	$200/hour	240 hours	$48,000
Subtask 12.4 San Pasqual Tribe Water Meters				*$304,900*
	Meters, Miscellaneous parts	$645/unit	245 meters	$157,900
	Installation	$100/hour	1,470 hours	$147,000
Subtask 12.5 La Jolla Tribe Water Tank				*$355,000*
	80,000 gallon steel water tank, distribution service lines	$500/unit	550 units	$275,000
	Installation and project close-out	$100/hour	800 hours	$80,000
Subtask 12.6 Quiet Oaks Mobile Home Park Nitrate Treatment				*$414,500*
	RO Components (capacity of 25,000 gpd)	$175,500	1 unit	$175,500
	Misc Controls, Piping, Installation	$100/unit	2,390 unit	$239,000
Subtask 12.7 Willowside Terrace Water System Connection				*$1,006,000*
	6,900 LF 8-inch water main, valves, and appurtenances	$500/unit	1000 units	$500,000
	Installation and project close-out	$200/hour	2,530 hours	$506,000
Subtask 12.8 Richardson Beardsley Park Treatment				*$83,500*
	Iron/manganese treatment system	$59,500/unit	1 units	$59,500
	Installation and project close-out	$100/hour	240 hours	$24,000
Subtask 12.9 Smuggler's gulch Floating Trash Booms				*$184,500*
	Manufacture and install trash booms	$45,000/unit	3 units	$135,000
	Trash removal (3 years)	$75/hour	660 hours	$49,500
Subtask 12.10 Tijuana River-San Diego Connector Restoration Project				*$135,000*
	Bioswales, pervious pavers, native plants	$500/unit	171 units	$85,500
	Trash removal, planting vegetation	$75/hour	660 hours	$49,500
Task 12 Total				**$3,384,300**

Water Reuse Program

Project 6: Integrated Water Resource Solutions for the Carlsbad Watershed

Local Project Sponsor: San Elijo Joint Powers Authority (San Elijo JPA)
Partners: City of Encinitas, City of Solana Beach, San Dieguito Water District (SDWD), Santa Fe Irrigation District (SFID), Olivenhain Municipal Water District (OMWD), and San Elijo Lagoon Conservancy

A project summary budget table consistent with Table 8 in the PSP is provided below as **Table 4-17** for the *Integrated Water Resource Solutions for Carlsbad Watershed*. This project has a 78% funding match.

Table 4-17: Total Project Budget for *Integrated Water Resource Solutions for the Carlsbad Watershed*

Proposal Title: *San Diego 2015 IRWM Implementation Grant Proposal*
Project Title: Integrated Water Resource Solutions for the Carlsbad Watershed
Project serves a need of a DAC?: ☒ Yes ☐ No
Funding Match Waiver request?: ☐ Yes ☒ No

	Category	(a) Requested Grant Amount	(b) Cost Share: Non-State Fund Source* (Funding Match)	(c) Cost Share: Other State Fund Sources*	(d) Total
(a)	Direct Project Administration	$50,000	$75,000	$0	$125,000
	Task 1: Project Management	$25,000	$27,500	$0	$52,500
	Task 2: Labor Compliance Program	$0	$30,000	$0	$30,000
	Task 3: Reporting	$25,000	$17,500	$0	$42,500
(b)	Land Purchase/ Easement	$0	$10,000	$0	$10,000
	Task 4: Land Purchase	$0	$10,0000	$0	$10,000
(c)	Planning/ Design/ Engineering/ Environmental	$236,898	$1,452,433	$0	$1,689,331
	~~Task 5: Feasibility Studies~~	$0	$0	$0	$0
	Task 6: CEQA Documentation	$18,750	$153,783	$0	$172,533
	Task 7: Permitting	$29,775	$38,775	$0	$68,550
	Task 8: Design	$183,373	$1,259,875	$0	$1,443,248
	Task 9: Project Performance Monitoring Plan	$5,000	$0	$0	$5,000
(d)	Construction/ Implementation	$2,213,102	$7,564,889	$0	$9,777,991
	Task 10: Contract Services	$0	$9,600	$0	$9,600
	Task 11: Construction Administration	$44,807	$646,618	$0	$691,425
	Task 12: Construction/Implementation	$2,168,295	$6,908,671	$0	$9,076,966
	12.1: Highway 101 Streetscape	*$0*	*$5,097,596*	*$0*	*$5,097,596*
	12.2: Highway 101 Greenstreet Retrofit	*$148,070*	*$0*	*$0*	*$148,070*
	12.3: Manchester Avenue Recycled Water Pipeline	*$450,225*	*$750,075*	*$0*	*$1,200,300*
	12.4: Via De La Valle/Highway 101 Recycled Water Pipeline	*$600,000*	*$636,000*	*$0*	*$1,236,000*
	12.5: Encinitas Ranch/ Requeza St Recycled Water Pipelines	*$600,000*	*$425,000*	*$0*	*$1,025,000*
	12.6: San Elijo WRF LID Project	*$295,000*	*$0*	*$0*	*$295,000*
	12.7: SELC Water Quality/Quantity Monitoring	*$35,000*	*$0*	*$0*	*$35,000*
	12.8: SELC Community Outreach	*$40,000*	*$0*	*$0*	*$40,000*
(e)	**Grand Total**	**$2,500,000**	**$9,102,322**	**$0**	**$11,602,322**

***List sources of funding:** Funding match for Tasks 1, 2, 3, 9, and Component 6 will be provided by SEJPA CIP Fund. Funding match for Component 5 will be provided by private financing from the Encinitas Ranch HOA. Funding match for Components 1 and 2 will be provided by the City of Encinitas CIP Fund. Funding match for Component 3 will be provided by the OMWD CIP Fund. Funding match for Component 4 will be provided by the City of Solana Beach CIP Fund.

Row (a) Direct Project Administration Costs

Task 1: Project Management

Costs for project administration include time for a consultant to complete administrative duties. The proposed task budget of $52,500 is based on 420 total hours of a Principal Engineer at billing rate of $125/hr.

Task 2: Labor Compliance Program (LCP)

Costs associated with this task include time required by a consultant to prepare annual compliance reports and manage a LCP for a proposed budget of $30,000.

Task 3: Reporting

Costs for this task include time for a consultant to prepare the reporting needs. The proposed task budget of $42,500 is based on 340 total hours of a Principal Engineer at billing rate of $125/hr.

Row (b) Land Purchase/ Easement

Task 4: Land Purchase

Costs include staff time and fees for preparing and filing easements with the Encinitas Ranch Golf Course and the City of Encinitas for a packaged pump station and construction of a recycled water pipeline within an existing recreational trail. Task budget of $10,000 is based on historic efforts.

Row (c) Planning/ Design/ Engineering/ Environmental Documentation

Task 5: Feasibility Studies

Not applicable – no feasibility studies will be prepared for the proposed project.

Task 6: CEQA Documentation

Cost of this task is broken into subtasks following the six project components, as shown in the table below. Total task cost of $172,533 is based on consultant proposals, filing fees, and historical costs for similar work.

Task 7: Permitting

Under this task, all relevant permits will be acquired for five components of the project, as shown in **Table 4-18**. Total task cost of $68,550 is based on District/City staff time to prepare permits, based on historical efforts.

Task 8: Design

Cost of this task is broken into subtasks following the six project components, as shown in **Table 4-18**. Total task cost of $1,443,248 is based on consultant proposals and historical costs for similar work.

Table 4-18: Task 6, 7, and 8 Costs for *Integrated Water Resource Solutions for the Carlsbad Watershed*

Activity or Deliverable	Task 6: CEQA	Task 7: Permitting	Task 8: Design
Component 1 Highway 101 Streetscape	$117,433	$11,500	$874,125
Component 2 Highway 101 Greenstreet Retrofit	$50	$2,350	$37,123
Component 3 Manchester Avenue Recycled Water Pipeline	$25,000	$39,700	$135,000
Component 4 Via De La Valle/Highway 101 Recycled Water Pipeline	$15,000	$5,000	$152,000
Component 5 Encinitas Ranch/ Requeza St Recycled Water Pipelines	$15,000	$10,000	$200,000
Component 6 San Elijo WRF LID Project	$50	$0	$45,000
Totals	***$172,533***	***$68,550***	***$1,443,248***

Task 9: Project Performance Monitoring Plan

Costs for this task include time for a consultant to complete the PPMP. The proposed task budget of $5,000 is based on 40 total hours of a Principal Engineer at billing rate of $125/hr.

Row (d) Construction/Implementation

Task 10: Contract Services

Breakdown for the total task cost of $9,600 is provided in **Table 4-19**. Presented costs are planning level estimates based on historical efforts to prepare bid documents and notice of award documents.

Task 11: Construction Administration

Breakdown for the total task cost of $691,425 is provided in **Table 4-19**. Presented costs are planning level estimates based on historical efforts to manage contractor submittals review and answer requests for information.

Table 4-19: Task 10 and 11 Costs for *Integrated Water Resource Solutions for the Carlsbad Watershed*

Activity or Deliverable	Task 10: Contract Services	Task 11: Const. Admin.
Component 1 Highway 101 Streetscape	$900	$222,618
Component 2 Highway 101 Greenstreet Retrofit	$900	$14,807
Component 3 Manchester Avenue Recycled Water Pipeline	$1,000	$140,000
Component 4 Via De La Valle/Highway 101 Recycled Water Pipeline	$900	$144,000
Component 5 Encinitas Ranch/ Requeza St Recycled Water Pipelines	$900	$140,000
Component 6 San Elijo WRF LID Project	$5,000	$30,000
Totals	***$9,600***	***$691,425***

Task 12: Construction/Implementation

Breakdown for the total task cost of $9,076,966. Task 12.1 is based on 30% design drawings and engineering cost estimate. Tasks 12.2-12.6 are planning level engineering cost estimates based on the quantity takeoffs described in the Work Plan. Tasks 12.7-12.8 are planning level estimates based on historical efforts to conduct the specified water quality monitoring and community outreach efforts in the Work Plan.

Table 4-20: Task 12 Costs for *Integrated Water Resource Solutions for the Carlsbad Watershed*

	Deliverables/Activity	Hourly Rate/Unit Cost	Number of Hours/Units	Total Cost
Subtask 12.1: Highway 101 Streetscape				*$5,097,596*
	Demolition, Earthwork, Storm Drain	Import/export fill, 3,533 LF 12" storm drain, manholes, dry utilities		$4,230,596
	Recycled Water System for Irrigation	Irrigation piping and controls, backflow		$867,000
Subtask 12.2: Highway 101 Greenstreet Retrofit				
	Permeable Paving and Bioretention Basin	5,600 sq ft pavers, cut/fill, plantings		$148,070
Subtask 12.3: Manchester Avenue Recycled Water Pipeline				
	Manchester Avenue pipeline	6 customers; 11 AFY	5280 LF	$1,200,300
Subtask 12.4: Via De La Valle/Highway 101 Recycled Water Pipeline				
	Via De La Valle pipeline	13 customers; 38 AFY	6240 LF	$1,236,000
Subtask 12.5: Encinitas Ranch/ Requeza St Recycled Water Pipeline				
	Encinitas Ranch/Requeza St pipelines	12 customers; 54 AFY	7250 LF	$1,025,000
Subtask 12.6: San Elijo WRF LID Project				
	Treatment Control BMPs	Variable	2 BMPs	$295,000
Subtask 12.7: SELC Water Quality/Quantity Monitoring				
	Water Quality/Quantity Monitoring	Monitoring equipment and labor		$35,000
Subtask 12.8: SELC Community Outreach				
	Community Outreach	Fieldtrips and watershed education		$40,000
Task 12 Total				***$9,076,966***

Project 7: UCSD Water Conservation and Watershed Protection

Local Project Sponsor: University of California, San Diego (UCSD)
Partners: San Diego Coastkeeper, WildCoast, and Urban Corps of San Diego

A project summary budget table consistent with Table 8 in the PSP is provided below as **Table 4-21** for the *UCSD Water Conservation and Watershed Protection* project. This project has a 55% funding match.

Table 4-21: Total Project Budget for *UCSD Water Conservation and Watershed Protection*

Proposal Title: *San Diego 2015 IRWM Implementation Grant Proposal* **Project Title: UCSD Water Conservation and Watershed Protection** **Project serves a need of a DAC?:** ☒ Yes ☐ No **Funding Match Waiver request?:** ☐ Yes ☒ No					
	Category	**(a)** **Requested Grant Amount**	**(b)** **Cost Share: Non-State Fund Source* (Funding Match)**	**(c)** **Cost Share: Other State Fund Sources***	**(d)** **Total**
(a)	Direct Project Administration	$0	$6,323	$0	$6,323
	Task 1: Project Management	$0	$3,162	$0	$3,162
	~~Task 2: Labor Compliance Program~~	$0	$0	$0	$0
	Task 3: Reporting	$0	$3,162	$0	$3,162
(b)	Land Purchase / Easement	$0	$0	$0	$0
	~~Task 4: Land Purchase~~	$0	$0	$0	$0
(c)	Planning/ Design/ Environmental	$0	$398,747	$0	$398,747
	Task 5: Feasibility Studies	$0	$23,000	$0	$23,000
	Task 6: CEQA Documentation	$0	$4,475	$0	$4,475
	Task 7: Permitting	$0	$75,000	$0	$75,000
	Task 8: Design	$0	$293,743	$0	$293,743
	Task 9: Project Performance Monitoring Plan	$0	$2,529	$0	$2,529
(d)	Construction / Implementation	$1,435,000	$1,318,646	$0	$2,753,646
	Task 10: Contract Services	$0	$86,450	$0	$86,450
	Task 11: Construction Administration	$0	$86,450	$0	$86,450
	Task 12: Construction/Implementation	$1,435,000	$1,145,746	$0	$2,580,746
	12.1: CUP Reclaimed Water Cooling Tower Retrofit	*$0*	*$863,000*	*$0*	*$863,000*
	12.2: Air Handling Unit Condensate Collection and Reuse	*$400,000*	*$261,865*	*$0*	*$661,865*
	12.3: Water Conservation Community Outreach	*$75,000*	*$0*	*$0*	*$75,000*
	12.4: Turf Removal and Stormwater Treatment	*$800,000*	*$6,104*	*$0*	*$806,104*
	12.5: Modular Wetland Treatment System and Monitoring	*$74,560*	*$14,777*	*$0*	*$89,337*
	12.6: TRV Non-Point Source Pollution Reduction and Habitat Restoration	*$85,440*	*$0*	*$0*	*$85,440*
(e)	**Grand Total**	**$1,435,000**	**$1,723,716**	**$0**	**$3,158,716**
***List sources of funding:** Funding match is provided by UCSD Environment, Health, and Safety Department funds, Physical Planning Department funds, and UCSD Facilities Management Purchased Utilities Budget (a mix of non-resident tuition revenue, indirect cost recovery, student services fees, and recharges to non-State customers).					

Row (a) Direct Project Administration Costs

Task 1: Project Management

Costs for project administration include time for UCSD staff to complete administrative duties. UCSD staff will dedicate 50 total hours to this task with a billing rate of $63.23, for a total of $3,162. Hourly rates include salary plus benefits, and does not include overhead.

Task 2: Labor Compliance Program (LCP)

Costs for implementing UCSD's ongoing Labor Compliance program are not included herein. UCSD requires all trade contractors to pay prevailing wages as established by the state of California through Labor Code, and to maintain certified payroll for said wages. This is a UC system-wide requirement and all construction contracts include this requirement in the contract language. The University of California has an approved LCP per DIR's online listing of LCPs.

Task 3: Reporting

Costs for project administration include time for UCSD staff to complete administrative duties. UCSD staff will dedicate 50 total hours to this task with a billing rate of $63.23, for a total of $3,162.

Row (b) Land Purchase/ Easement

Task 4: Land Purchase

Not applicable.

Row (c) Planning/ Design/ Engineering/ Environmental Documentation

Task 5: Feasibility Studies

The *Recycled Water Feasibility Study* was completed in November 2013 by the City of San Diego at no charge to UCSD. A draft of the *Air Handling Unit Condensate Collection and Reuse Feasibility Study* has been completed and is currently undergoing final reviews. This study cost was $23,000 based on consultant invoices.

Task 6: CEQA Documentation

Categorical Exemptions were completed for Cooling Tower Retrofits (in April 2014), Turf Removal and Stormwater Treatment (in February 2015), and the Modular Wetland Treatment System (in February 2015), for a total cost of $4,475. UCSD staff dedicated 40 hours of Assistant Director time at a billing rate of $73.94/hr and 24 hours of Senior Planner time at a billing rate of $63.23/hr (salary plus benefits).

Task 7: Permitting

All relevant permits have been acquired for the project components. An *Industrial Engineering Report for Recycled Water System* was completed for a total cost of $65,500. This cost is based on consultant invoices. Preparation of the Notice of Intent for the General Construction Permit cost $9,500. Total Task 7 costs are $75,000.

Task 8: Design

Design costs for Components 1, 2, 3, and 4 were provided by consultant estimates and/or invoices. Total cost for this task is $293,743. Design costs for the Cooling Tower Retrofits are $35,500; design costs for the HVAC Condensate Reuse are $107,750; design costs for the Turf Removal and Stormwater Treatment are $123,693; and design costs for the Modular Wetland Treatment System are $26,800.

Task 9: Project Performance Monitoring Plan

Costs for this task include time for UCSD staff to prepare the monitoring plan for the Cooling Tower Retrofit and for the Modular Wetland Treatment System. The proposed task budget of $2,529 is based on 40 total hours of a Specialist III at billing rate of $63.23/hr.

Row (d) Construction/Implementation

Task 10: Contract Services

Breakdown for the total task cost of $86,450 includes $47,950 for the Cooling Tower Retrofit and $38,500 for the HVAC Condensate Reuse. Contract services cost is assumed to be approximately 5% of the relevant construction costs of the two project components, based on the consultant engineer estimate.

Task 11: Construction Administration

Breakdown for the total task cost of $86,450 includes $47,950 for the Cooling Tower Retrofit and $38,500 for the HVAC Condensate Reuse. Contract administration cost is assumed to be approximately 5% of the relevant construction costs of the two project components, based on the consultant engineer estimate.

Task 12: Construction/Implementation

Breakdown for the total task cost of $2,564,204 is provided in the table below, and are based on detailed estimates from consultants and contractors. For items without a bid or estimate, costs were based on project partners' experience implementing similar activities.

Table 4-22: Task 12 Costs for *UCSD Water Conservation and Watershed Protection*

	Deliverables/Activity	Hourly Rate/Unit Cost	Number of Hours/Units	Total Cost
Subtask 12.1: CUP Reclaimed Water Cooling Tower Retrofit				*$863,000*
	General Requirements	Contractor estimate		$20,800
	Plumbing	Contractor estimate		$269,700
	HVAC	Contractor estimate		$85,000
	Electrical	Contractor estimate		$154,700
	Earthwork	Contractor estimate		$52,200
	Site Improvements	Contractor estimate		$129,900
	Jobsite Management, Insurance/Bonding, Contingency	4%-9% each		$150,700
Subtask 12.2: Air Handling Unit Condensate Collection and Reuse				*$661,865*
	General Requirements	$90,000	1 unit	$90,000
	Mechanical and Plumbing	$323,800	1 unit	$323,800
	Electrical and Controls	$100,000	1 unit	$100,000
	Soft Costs, Contingency	15% each		$148,065
Subtask 12.3: Water Conservation Community Outreach				*$75,000*
	Community Engagement/ Education Staff	$85/hr	294.1	$25,000
	Director staff (executive, policy, program)	$125/hr	200	$25,000
	Communication Contractor	$63.25/hr	118.6	$7,500
	Outreach events Contractor	$28.75/hr	347.8	$10,000
	Outreach supplies	Variable		$7,500
Subtask 12.4: Turf Removal and Stormwater Treatment				*$806,104*
	Turf Replacement and Bioswale Construction	21,500 sq ft turf, 1 swale		$135,275
	Turf Replacement – Site requirements, jobsite management, insurance and bonding fee, contingency	Engineers estimate		$119,552
	Stormwater – General Requirements, Utilities	Storm drainage connection		$37,648
	Stormwater – Earthwork and Site Improvements	Grading and excavation, planting		$375,690
	Stormwater – Site requirements, jobsite management, insurance and bonding fee, contingency	Engineers estimate		$137,939
Subtask 12.5: Modular Wetland Treatment System and Monitoring				*$89,337*
	Journeyman and General Forman	Avg. $82.39/hr	182 hours	$15,000
	Treatment system materials and equipment	$60,184 for materials, $2,500 for equipment		$62,684
	Contingency and markup	15% of construction costs		$11,653
Subtask 12.6: TRV Non-Point Source Pollution Reduction and Habitat Restoration				*$85,440*
	WildCoast Staff	$22/hr	500 hours	$11,000
	TRNERR Staff	$26/hr	540 hours	$14,040
	Urban Corps Crew (Supervisor + 10 Crew Members)	$2,320/day	15 days	$34,800
	Plants, Irrigation Supplies, Mulch, Tools	$4,000/site	1 site	$4,000
	WildCoast Cleanup Cost	$1,800/event	12 events	$21,600
Task 12 Total				***$2,580,746***

Project 8: Escondido Advanced Water Treatment for Agriculture

Local Project Sponsor: City of Escondido
Partners: Escondido Growers for Agricultural Preservation (EGAP), Vista Irrigation District, City of San Diego, and Rincon Del Diablo Water District

A project summary budget table consistent with Table 8 in the PSP is provided below as **Table 4-23** for the *Escondido Advanced Water Treatment for Agriculture* project. This project has a 90% funding match.

Table 4-23: Total Project Budget for *Escondido Advanced Water Treatment for Agriculture*

Proposal Title: *San Diego 2015 IRWM Implementation Grant Proposal*					
Project Title: Escondido Advanced Water Treatment for Agriculture					
Project serves a need of a DAC?:	☒ **Yes**	☐ **No**			
Funding Match Waiver request?:	☐ **Yes**	☒ **No**			
		(a)	**(b)**	**(c)**	**(d)**
Category		**Requested Grant Amount**	**Cost Share: Non-State Fund Source* (Funding Match)**	**Cost Share: Other State Fund Sources***	**Total**
(a)	Direct Project Administration	$0	$131,936	$0	$131,936
	Task 1: Project Management	$0	$23,520	$0	$23,520
	Task 2: Labor Compliance Program	$0	$84,000	$0	$84,000
	Task 3: Reporting	$0	$24,416	$0	$24,416
(b)	Land Purchase/ Easement	$0	$0	$0	$0
	~~Task 4: Land Purchase~~	$0	$0	$0	$0
(c)	Planning/ Design/ Environmental	$0	$1,624,090	$0	$1,624,090
	Task 5: Feasibility Studies	$0	$300,000	$0	$300,000
	Task 6: CEQA Documentation	$0	$71,330	$0	$71,330
	Task 7: Permitting	$0	$105,000	$0	$105,000
	Task 8: Design	$0	$1,136,000	$0	$1,136,000
	Task 9: Project Performance Monitoring Plan	$0	$11,760	$0	$11,760
(d)	Construction/ Implementation	$2,000,000	$15,831,743	$0	$17,831,743
	Task 10: Contract Services	$0	$28,000	$0	$28,000
	Task 11: Construction Administration	$0	$212,000	$0	$212,000
	Task 12: Construction/Implementation	$2,000,000	$15,591,743	$0	$17,591,743
	12.1: Mobilization and Insurance	*$0*	*$514,118*	*$0*	*$514,118*
	12.2: Yard Piping and Sitework	*$0*	*$1,409,576*	*$0*	*$1,409,576*
	12.3: MFRO Process Building	*$2,000,000*	*$6,901,165*	*$0*	*$8,901,165*
	12.4: Inter Process Storage Tank	*$0*	*$412,231*	*$0*	*$412,231*
	12.5: Chemical Storage Building	*$0*	*$4,664,553*	*$0*	*$4,664,553*
	12.6: Product Water Storage and MF Feed Tanks	*$0*	*$1,324,225*	*$0*	*$1,324,225*
	12.7: HARRF Improvements	*$0*	*$13,301*	*$0*	*$13,301*
	12.8: Project Closeout	*$0*	*$352,574*	*$0*	*$352,574*
(e)	**Grand Total**	**$2,000,000**	**$17,587,769**	**$0**	**$19,587,769**

***List sources of funding:** Funding match sources include the City's Utility Enterprise Fund (Water and Wastewater). The City has adopted a resolution identifying rates as the pledge revenue for this match funding. The City is in the process of applying for a construction loan from the State Revolving Fund (SRF) to be supported by a rate increase. City Commission Resolution Number 2014-135 (a resolution authorizing the Utilities Director or his designee, to be the City's representative for the SRF Loan Program) and City Commission Resolution Number 2015-17R (a resolution establishing new water and wastewater service rates, charges and fees; authorizing future pass through of wholesale water and inflation charges; and reducing fees for past due notices). Should this SRF loan be approved, the City recognizes that some of these funds may not be eligible as funding match, and would ensure that 25% of total project costs are funded by non-State sources.

Row (a) Direct Project Administration Costs

Task 1: Project Management

City of Escondido staff will spend 168 hours (12 hours per month for 14 months) by an Engineer at a billing rate of $140/hr completing project management activities. Total costs are $23,520. Hourly rates were calculated based on salary plus benefits, and no overhead is included.

Task 2: Labor Compliance Program (LCP)

Costs associated with labor compliance include time required by a City staff to submit and manage a LCP, which is assumed as 560 hours (40 hours per month for 14 months) by a Senior Engineer ($150/hr), for a total of $84,000.

Task 3: Reporting

The City and its consultant will prepare quarterly project progress reports and project completion report at an estimated cost of $24,416 based on 112 hours (8 hours per month for 14 months) at a billing rate of $218/hr.

Row (b) Land Purchase/ Easement

Task 4: Land Purchase

Not applicable.

Row (c) Planning/ Design/ Engineering/ Environmental Documentation

Task 5: Feasibility Studies

The City completed the feasibility study for this project (*MFRO Facility for Agriculture, Basis of Design Report*) in 2014 at a cost of $300,000. This cost is based on the consultant contract and invoices.

Task 6: CEQA Documentation

The City and its consultant are currently preparing an MND for the project, for a total contract fee of $71,330.

Task 7: Permitting

A total of $105,000 is anticipated for obtaining the required permits for this projects, including:

1. NPDES permit amendment for the brine discharge,
2. Water Quality Certification from the San Diego Regional Water Quality Control Board,
3. Construction General Permit from State Water Board, and
4. Various City's Public Works permits for construction activities.

Associated permit cost is based on 5 permit applications (3 large efforts, plus 2 Public Works permits), for 150 hours of City staff time per permit at an Engineer billing rate of $140/hr. This estimate is based on City's past experience with obtaining these permits.

Task 8: Design

Conceptual Design ($86,000) and Pre-Engineering Report ($300,000) of the MFRO facility have been completed. The MFRO Facility final design ($750,000) is underway with expected completion November 2015. Total design cost is $1,136,000, based on consultant contracts and invoices.

Task 9: Project Performance Monitoring Plan

This task will be completed by City staff. Estimated effort is based on similar experiences and is anticipated to require 84 hours of City staff time at an Engineer billing rate of $140/hr, totaling at $11,760.

Row (d) Construction/Implementation

Task 10: Contract Services

Contract services will involve 200 hours of a City Engineer ($140/hr), for a total cost of $28,000.

Task 11: Construction Administration

This task will be completed by City staff. Construction administration is assumed to be $212,000, which is 1.2% of the construction cost ($17,591,743) for this 14 month effort. Industry Standard allows for a range 1 to 1.5% of construction cost for a project of this value and complexity.

Task 12: Construction/Implementation

Cost breakdown for this task is provided in the table below. Estimated costs are based on a consulting engineering cost estimate developed in collaboration with City staff.

Table 4-24: Task 12 Costs for *Escondido Advanced Water Treatment for Agriculture*

	Deliverables/Activity	Hourly Rate/Unit Cost	Number of Hours/Units	Total Cost
Subtask 12.1: Mobilization and Insurance				*$514,118*
	Mobilization and insurance costs	3% of construction cost		$514,118
Subtask 12.2: Yard Piping and Sitework				*$1,409,576*
	Electrical, Instrumentation, and Control	Engine-generators, transformers		$381,118
	Earthwork and Site Improvements	Cut/fill, clearing, surfacing, curb/gutter		$556,111
	Process Piping	Variable		$472,347
Subtask 12.3: MFRO Process Building				*$8,901,165*
	MFRO Process Building	Concrete, masonry, roofing, plumbing, HVAC, electrical		$2,434,740
	Earthwork and Site Improvements	Cut/fill, clearing, surfacing, curb/gutter		$695,600
	Process Piping	Variable		$570,825
	RO Transfer Pumps	$45,000	4 pumps	$190,000
	MF System	$2,640,000	1 MF system	$2,640,000
	RO System	$2,370,000	1 RO system	$2,370,000
Subtask 12.4: Inter Process Storage Tank				*$412,231*
	Concrete	Walls, slab, equipment pad		$375,672
	Earthwork	Excavation cut/fill		$36,559
Subtask 12.5: Chemical Storage Building				*$4,664,553*
	Chemical Storage Building	Concrete, masonry, roofing, plumbing, HVAC, electrical		$2,094,553
	Earthwork and Site Improvements	Cut/fill, clearing, surfacing, curb/gutter		$681,518
	Process Piping	Variable		$1,123,482
	Agricultural Pumps	$120,000	5 pumps	$600,000
	MF Feed Pumps	$55,000	3 pumps	$165,000
Subtask 12.6: Product Water Storage and MF Feed Tanks				*$1,324,225*
	Concrete	Walls, slab, equipment pad		$1,191,691
	Earthwork	Excavation cut/fill		$132,534
Subtask 12.7: HARRF Improvements				*$13,301*
	Electrical and Instrumentation	Panel, router, cabling		$13,301
Subtask 12.8: Project Closeout				*$352,574*
	Overall Project Closeout	Variable		$352,574
Task 12 Total				***$17,591,743***

Project 9: Padre Dam Advanced Water Treatment – Phase IA Expansion

Local Project Sponsor: Padre Dam Municipal Water District (Padre Dam MWD)
Partner: Helix Water District, County of San Diego, and City of El Cajon

A project summary budget table consistent with Table 8 in the PSP is provided below as **Table 4-25** for the *Padre Dam Advanced Water Treatment – Phase IA Expansion*. This project has a 25% funding match.

Table 4-25: Total Project Budget for *Padre Dam Advanced Water Treatment – Phase IA Expansion*

Proposal Title: ***San Diego 2015 IRWM Implementation Grant Proposal***
Project Title: Padre Dam Advanced Water Treatment – Phase IA Expansion
Project serves a need of a DAC?: ☐ **Yes** ☒ **No**
Funding Match Waiver request?: ☐ **Yes** ☒ **No**

	Category	(a) Requested Grant Amount	(b) Cost Share: Non-State Fund Source* (Funding Match)	(c) Cost Share: Other State Fund Sources*	(d) Total
(a)	Direct Project Administration	$0	$696,092	$0	$696,000
	Task 1: Project Management	$0	$650,010	$0	$650,010
	Task 2: Labor Compliance Program	$0	$6,045	$0	$6,045
	Task 3: Reporting	$0	$40,037	$0	$40,037
(b)	Land Purchase/ Easement	$0	$0	$0	$0
	~~Task 4: Land Purchase~~	$0	$0	$0	$0
(c)	Planning/ Design/ Environmental	$300,000	$1,532,001	$0	$1,832,001
	Task 5: Feasibility Studies	$300,000	$231,000	$0	$531,000
	Task 6: CEQA Documentation	$0	$200,001	$0	$200,001
	Task 7: Permitting	$0	$200,000	$0	$200,000
	Task 8: Design	$0	$891,000	$0	$891,000
	Task 9: Project Performance Monitoring Plan	$0	$10,000	$0	$10,000
(d)	Construction/ Implementation	$5,700,000	$6,554,154	$21,506,300	$33,760,454
	Task 10: Contract Services	$0	$84,400	$0	$84,400
	Task 11: Construction Administration	$0	$1,869,714	$0	$1,869,714
	Task 12: Construction/Implementation	$5,700,000	$5,000,000	$21,106,300	$31,806,300
	12.1: Design/Build - Final Design	*$0*	*$0*	*$2,081,000*	*$2,081,000*
	12.2: Design/Build - IPS Expansion	*$0*	*$0*	*$9,063,000*	*$9,063,000*
	12.3: Design/Build - WRF Expansion	*$5,700,000*	*$5,000,000*	*$9,962,300*	*$20,662,300*
(f)	**Grand Total**	**$6,000,000**	**$9,182,247**	**$21,106,300**	**$36,288,547**

***List sources of funding:** Funding match will be provided through a combination of U.S. Bureau of Reclamation Title XVI and WaterSmart grants, local agency funds and in-kind services, and a Padre Dam MWD secured funds. This project falls within an authorized Title XVI project and is therefore eligible for Title XVI dollars. Additional state funds will be pursued through the State Revolving Fund (SRF) program. Padre Dam MWD recognizes that these additional state dollars do not contribute towards local match, and they are included here in Column C.

Row (a) Direct Project Administration Costs

Task 1: Project Management

Padre Dam MWD staff will perform project management tasks. The cost estimate is based on 1,500 hours of a Project Manager at a billing rate of $104/hr, 3,700 hours of a Staff Engineer at a billing rate of $88/hr, and 3,062 hours of an Accountant at a billing rate of $55/hr. Hourly rates are based on salary plus benefits, and do not include overhead. Total costs for project management are anticipated to be $650,010, which equal less than 2% of the total project cost.

Task 2: Labor Compliance Program (LCP)

Costs associated with labor compliance include time required by a consultant to submit and manage a LCP, which is assumed as 10 hours of Project Manager work at a billing rate of $104/hr, 30 hours of Staff Engineer work at a billing rate of $88/hr, and 43 hours of Accountant work at a billing rate of $55/hr. The Task 2 total is $6,045.

Task 3: Reporting

Padre Dam MWD staff will perform reporting tasks. The cost estimate is based on 160 hours of a Project Manager at a billing rate of $104/hr, 219 hours of a Staff Engineer at a billing rate of $88/hr, and 75 hours of an Accountant at a billing rate of $55/hr. The Task 3 total is $40,037.

Row (b) Land Purchase/ Easement

Task 4: Land Purchase

Not applicable – Land acquisition is not required for this project.

Row (c) Planning/ Design/ Engineering/ Environmental Documentation

Task 5: Feasibility Studies

Costs for the Ray Stoyer WRF Facility Planning Study and the Lake Jennings Hydrodynamic and Water Quality Modeling total $531,000. The *Ray Stoyer WRF Facility Planning Study* was completed in July 2014 and its cost is based on actual expenditures. Consultants will be contracted to conduct the reservoir modeling; associated costs ($500,000) are based on cost of previous similar scoped studies completed by other agencies.

Task 6: CEQA Documentation

Padre Dam MWD is currently preparing revisions to a Draft Mitigated Negative Declaration (MND) for the project that was completed in 2009. CEQA documentation is being completed by consultants (contracted fee of $152,625) and Padre Dam MWD staff. Padre Dam MWD staff budget of $47,380 is estimated based on 200 hours of a Project Manager at a billing rate of $104/hr, and 302 hours of a Staff Engineer at a billing rate of $88/hr. Total cost for this task is anticipated to be $200,001.

Task 7: Permitting

A total of $200,000 is anticipated for obtaining the required permits for this projects including; $180,000 for NPDES and WDRs for Ray Stoyer WRF, $7,000 for Construction General Permit with SWPPP, $4,000 for County of San Diego Construction Permit, $5,000 for City of Santee Building and Traffic Control Permit, and $4,000 for San Diego AQMD Construction Permit. Associated permit costs are based on Padre Dam MWD's past experience with obtaining these permits.

Task 8: Design

The Ray Stoyer WRF expansion will be completed through a Design/Build construction method. Therefore, only 10% design package will be prepared under this task as a bridging document for bidding. Cost of the 10% design package ($815,000) is assumed to be 3% of the construction cost. In addition, a Geotechnical Report will be prepared by a consultant at an estimated cost of $76,000. This cost is based on Padre Dam MWD's past experience for contracting a geotechnical firm for similar scope projects. Total Task 8 costs are $891,000.

Task 9: Project Performance Monitoring Plan

This task will be completed by the Padre Dam MWD staff. Estimated effort cost is based on 42 hours of Project Manager at a billing rate of $104/hr and 64 hours of Staff Engineer work at a billing rate of $88/hr, totaling at $10,000.

Row (d) Construction/Implementation

Task 10: Contract Services

Surveying and post construction Geotechnical Report will be prepared by consultants at an estimated cost of $8,000 and $25,000, respectively. Other listed contract services will be completed by the Padre Dam MWD staff. Estimated effort cost is based on 234 cumulative hours of Project Manager at a billing rate of $104/hr and 308 cumulative hours of Staff Engineer work at a billing rate of $88/hr, for a total of $51,400. Total costs are $84,440.

Task 11: Construction Administration

This task will be completed by a consultant and Padre Dam MWD staff. Construction administration by the consultant is assumed to be 5% of the construction cost ($1,485,714). Padre Dam MWD effort is estimated based on 2,000 hours of Project Manager at a billing rate of $104/hr and 2,000 hours of Staff Engineer work at a billing rate of $88/hr, totaling at $384,000. Total Task 11 costs are $1,896,714.

Task 12: Construction/Implementation

Cost breakdown for Task 12 is provided in the table below. Since the construction will be done using D/B construction methods, final design will be completed under this task. Final design cost is assumed to be 6.5% of the construction cost, based on engineering cost estimate. Estimated IPS and WRF expansion cost estimates are based on engineering cost estimates from a consultant and includes 25% and 30% contingency, respectively.

Table 4-26: Task 12 Costs for *Padre Dam Advanced Water Treatment – Phase IA Expansion*

	Deliverables/Activity	Hourly Rate/Unit Cost	Number of Hours/Units	Total Cost
Subtask 12.1 – Design/Build - Final Design				*$2,081,000*
	100% Design for IPS and WRF Expansion	6.5% of construction cost		*$2,081,000*
Subtask 12.2 – Design/Build - IPS Expansion				*$9,063,000*
	Low lift pumps	$250,000/mgd	22.5 mgd capacity	$5,625,000
	High lift pumps	$250,000/mgd	6.5 mgd capacity	$1,625,000
	Construction Contingency	25%		$1,813,000
Subtask 12.3 – Design/Build - WRF Expansion				*$20,662,300*
	Headworks – 6 mgd capacity	2 grit chambers, 1 screen		$4,017,000
	Primary Clarifiers – 3.1 mgd capacity	740 cy concrete, fiberglass troughs, tank covers, clarifier mechanism, scum skimmer, sludge pumps, piping		$4,303,870
	Flow Equalization Basin – 0.8 MG capacity	1,218 cy concrete, 36 hp pump, piping		$3,187,110
	Aeration Basin Rehabilitation/Conversion – 6.6 mgd capacity	Fiberglass baffles, slide gates, mixers, bubble diffusers, 121 hp pump, piping		$3,362,150
	Secondary Clarifiers – 3.4 mgd capacity	741 cy concrete, fiberglass troughs, clarifier mechanism, scum skimmer, 73 hp pump, piping		$4,698,680
	Tertiary Filters–1.0 mgd capacity	Concrete, filter media, equipment		$1,093,490
	Fanita Ranch – Connection, 12 miles distribution pipeline, additional pump	Costs will be borne by Fanita Ranch developer and are not included herein		N/A
Task 12 Total				***$31,806,300***

Project 10: Safari Park Drought Response and Outreach

Local Project Sponsor: Zoological Society of San Diego
Partners: San Diego Unified School District, San Diego County Office of Education, and San Diego County Water Authority (SDCWA)

A project summary budget table consistent with Table 8 in the PSP is provided below as **Table 4-27** for the *Safari Park Drought Response and Outreach* project. This project provides a 25% funding match.

Table 4-27: Total Project Budget for *Safari Park Drought Response and Outreach*

Proposal Title: ***San Diego 2015 IRWM Implementation Grant Proposal***
Project Title: Safari Park Drought Response and Outreach
Project serves a need of a DAC?: ☒ Yes ☐ No
Funding Match Waiver request?: ☐ Yes ☒ No

	Category	(a) Requested Grant Amount	(b) Cost Share: Non-State Fund Source* (Funding Match)	(c) Cost Share: Other State Fund Sources*	(d) Total
(a)	Direct Project Administration	$28,436	$4,577	$0	$33,013
	Task 1: Project Management	$5,958	$0	$0	$5,958
	Task 2: Labor Compliance Program	$22,478	$0	$0	$22,478
	Task 3: Reporting	$0	$4,577	$0	$4,577
(b)	Land Purchase/ Easement	$0	$0	$0	$0
	~~Task 4: Land Purchase~~	$0	$0	$0	$0
(c)	Planning/ Design/ Environmental	$453,394	$0	$0	$453,394
	Task 5: Feasibility Studies	$125,110	$0	$0	$125,110
	Task 6: CEQA Documentation	$10,020	$0	$0	$10,020
	Task 7: Permitting	$10,030	$0	$0	$10,030
	Task 8: Design	$305,998	$0	$0	$305,998
	Task 9: Project Performance Monitoring Plan	$2,236	$0	$0	$2,236
(d)	Construction/ Implementation	$2,418,170	$962,423	$0	$3,380,593
	Task 10: Contract Services	$26,455	$78,392	$0	$104,847
	Task 11: Construction Administration	$48,270	$0	$0	$48,270
	Task 12: Construction/Implementation	$2,343,445	$884,031	$0	$3,227,476
	12.1: Construction	*$2,270,780*	*$218,876*	*$0*	*$2,489,656*
	12.2: Prepare O&M Manuals and As-builts	*$10,040*	*$0*	*$0*	*$10,040*
	12.3: Public Outreach and Water Education	*$0*	*$665,155*	*$0*	*$665,155*
	12.4: Turf Conversion	*$62,625*	*$0*	*$0*	*$62,625*
(e)	**Grand Total**	**$2,900,000**	**$967,000**	**$0**	**$3,867,000**

***List sources of funding:** Other sources of funding for *Task 12: Construction/Implementation* include Price Philanthropies Foundation, Bank of America Charitable Foundation, Issa Family Foundation, Hunter Industries, Hans and Margaret Doe Charitable Trust, Lucille Ellis Simon Foundation, Paula B. and Oliver W. Jones Family Foundation, Meglbagl Foundation, San Diego Foundation, Georges and Germaine Fusenot Charity Foundation, Safari Park Expense Budget, and Safari Park Labor Budget. Funding match for *Task 3: Reporting, Task 6: CEQA Documentation*, and *Task 10: Contract Services* is Safari Park's Labor Budget.

Row (a) Direct Project Administration Costs

Task 1: Project Management

Zoological Society of San Diego staff will perform these tasks. The cost estimate is based on 50 hours of an Architect at $83/hr, and 40 hours of a Senior Accountant at $45/hr. Hourly rates are calculated based on salary plus benefits. Costs for this task are $5,958.

Task 2: Labor Compliance Program (LCP)

Costs associated with the LCP include time for a consulting company to support performing LCP tasks for a total fee of $22,477. This fee estimate is based on 208 hours of Senior Analyst at $85/hr and 72 hours of Jobsite Interviewer at $57/hr.

Task 3: Reporting

Costs for reporting include time required by Zoological Society staff to complete reporting duties. An Architect with a billing rate of $83 per hour will dedicate 55 hours towards this task for a total of $4,577.

Row (b) Land Purchase/ Easement

Task 4: Land Purchase

Land acquisition is not required for this project.

Row (c) Planning/ Design/ Engineering/ Environmental Documentation

Task 5: Feasibility Studies

Total cost for this task is $125,110 for the *WWTP Effluent Characterization and Basis of Design Report* ($85,050), *Safari Park Water Master Plan Update* ($24,980), and *Salt and Nutrient Management Plan* ($15,080), and these activities will be completed by consultants. Cost estimates are based on the consultant fee proposal.

Task 6: CEQA Documentation

The project falls under the existing Safari Park Future Construction Program Resource Protection Ordinance (RPO) Permit and associated EIR. An amendment to the RPO will be completed for $10,020 based on 14 hours of a Senior Engineer at $230/hr and 40 hours of an Engineer at a $170/hr. No additional CEQA is required.

Task 7: Permitting

A total of $10,030 is anticipated for obtaining the required permits for this projects including; a permit from SWRCB for Tertiary WWTP and a permit from RWQCB for redistribution of recycled water for irrigation at Safari Park. Costs are based on 20 hours of a Senior Engineer at $230/hr, 30 hours of an Engineer at $170/hr, and 3 hours of an Administrator at $110/hr.

Task 8: Design

Total cost for design is $305,998, and includes design plans, specifications, and estimates ($220,030); electrical, geotechnical, and survey evaluations ($70,000); planning and design meetings ($3,968); and turf replacement design ($12,000). Costs are based on the consultant fee proposals and hourly rates of Safari Park staff and the hours estimated for planning and design meetings.

Task 9: Project Performance Monitoring Plan

This task will be completed by the Zoological Society staff. Estimated effort is 20 hours of Architect work at a billing rate of $83/hr, 10 hours of Architect Assistant work at a billing rate of $33/hr, and 5 hours of C&M Supervisor work at a billing rate of $48/hr, totaling at $2,236.

Row (d) Construction/Implementation

Task 10: Contract Services

Cost break down for this task includes $26,455 for materials testing and inspection services, along with $78,392 for SCADA upgrades. Cost estimates are based on a consultant fee proposal.

Task 11: Construction Administration

This task will be completed by the Zoological Society of San Diego staff for a total estimated cost of $48,270. The estimate is based on 80 hours of Senior Engineer work at $230/hr, 60 hours of Engineer work at $170/hr, 12 hours of Administrator work at $110/hr, 72 hours of Architect work at $83/hr, 72 hours of Architectural Assistant work at $33/hr, 108 hours of C&M Supervisor work at $48/hr, and 108 hours of Lead C&M D Step work at $44/hr.

Task 12: Construction/Implementation

Cost breakdown for this task is provided in the table below. Estimated costs are based on engineering cost estimate and includes 20% construction contingency.

Table 4-28: Task 12 Costs for *Safari Park Drought Response and Outreach*

	Deliverables/Activity	Hourly Rate/Unit Cost	Number of Hours/Units	Total Cost
Subtask 12.1 – Construction				*$2,489,656*
	MBR structure, equipment, piping, electrical, instrumentation, controls	Pipe, electrical equipment, materials	80,000 GDP	$880,000
	RO membrane treatment of HOA Pond water	$7.00/GDP	50,000 GDP	$350,000
	Upgrade Existing WWTP to Support Tertiary Operation	$0.75/GDP	80,000 GDP	$60,000
	4" brine discharge pipeline	$30.00/LF	1,500 LF	$45,000
	Brine evaporation pond construction	$1.20/SF	120,000 SF	$144,000
	Increase HOA Pond storage and intake structure	$0.50/SF plus 1 LS	43,560 plus 1 LS	$31,980
	Low head from East Africa Pond to HOA Pond	$30,000/HP	0.5	$15,000
	Pump from HOA Pond to WWTP-equipment	$30,000/HP	1.0	$30,000
	Pump installations - labor	$43.10	650	$27,998
	Pipeline from HOA Pond to WWTP and from WWTP to HOA Pond	$35.00/LF of 4" PVC pipe	600	$21,000
	Irrigation line conversions - materials	Pipes, fittings, wire, glue, conduit, paint, controllers		$160,533
	Irrigation line conversions- equipment, supplies	Equipment rentals, irrigation supplies		$102,396
	Irrigation line conversions - labor	$38.58 - $44.18	1340	$51,846
	Irrigation system conversions- labor	$43.10	2635	$113,579
	Contingency	Approx. 20% Construction Contingency		$456,324
Subtask 12.2 – Prepare O&M Manuals and As-builts				*$10,040*
	Prepare As-builts and O&M Manuals	$170.00 - $230.00	52	$10,040
Subtask 12.3 – Public Outreach and Water Education Programs				*$665,155*
	Water Conservation Education Program - materials	Props, Testing kits, Visual aids, Microscopes, Test tubes, Student booklets		$297,667
	Safari Park Maps/Schedules	$0.03/map	800,000	$20,800
	Water Conservation Education Program and Public Outreach	$18.20 - $150.00	11,026	$346,688
	Subtask 12.4 – Turf Conversion			*$62,625*
	Xerophytic Plantings and Mulch	0.375/ sq ft	167,000 sq ft	$62,625
	Task 12 Total			***$3,227,476***

Water Quality and Habitat Program

Project 11: San Diego River Healthy Headwaters Restoration

Local Project Sponsor: USDA Forest Service (USFS)
Partners: American Conservation Experience (ACE), City of San Diego, Back Country Land Trust (BCLT), San Diego River Park Foundation (SDRPF), San Diego River Conservancy, Animal and Plant Health Inspection Service (APHIS), and County of San Diego

A project summary budget table consistent with Table 8 in the PSP is provided below as **Table 4-29** for the *San Diego River Healthy Headwaters Restoration* project. The project has a 30% funding match.

Table 4-29: Total Project Budget for *San Diego River Healthy Headwaters Restoration*

Proposal Title: *San Diego 2015 IRWM Implementation Grant Proposal* **Project Title: San Diego River Healthy Headwaters Restoration** **Project serves a need of a DAC?:** ☒ **Yes** ☐ **No** **Funding Match Waiver request?:** ☐ **Yes** ☒ **No**					
		(a)	**(b)**	**(c)**	**(d)**
Category		**Requested Grant Amount**	**Cost Share: Non-State Fund Source* (Funding Match)**	**Cost Share: Other State Fund Sources***	**Total**
(a)	Direct Project Administration	$42,000	$0	$0	$42,000
	Task 1: Project Management	$11,000	$0	$0	$11,000
	Task 2: Labor Compliance Program	$10,000	$0	$0	$10,000
	Task 3: Reporting	$21,000	$0	$0	$21,000
(b)	Land Purchase/ Easement	$0	$0	$0	$0
	~~Task 4: Land Purchase~~	$0	$0	$0	$0
(c)	Planning /Design/ Environmental	$5,000	$125,000	$0	$130,000
	~~Task 5: Feasibility Studies~~	$0	$0	$0	$0
	Task 6: CEQA Documentation	$0	$24,000	$0	$24,000
	Task 7: Permitting	$0	$1,000	$0	$1,000
	Task 8: Design	$0	$100,000	$0	$100,000
	Task 9: Project Performance Monitoring Plan	$5,000	$0	$0	$5,000
(d)	Construction/ Implementation	$2,069,000	$804,000	$0	$2,873,000
	~~Task 10: Contract Services~~	$0	$0	$0	$0
	Task 11: Construction Administration	$237,000	$0	$0	$237,000
	Task 12: Construction/Implementation	$1,832,000	$804,000	$0	$2,636,000
	12.1: Invasive Weed Treatment	*$1,171,000*	*$230,000*	*$0*	*$1,401,000*
	12.1A: Catchment Wide Strategic Treatment Plan Implementation	*$286,000*	*$0*	*$0*	*$286,000*
	12.1B: Alpine Watershed Invasive Weed Treatment	*$475,000*	*$125,000*	*$0*	*$600,000*
	12.1C: USFS Invasive Weed Treatment	*$120,000*	*$70,000*	*$0*	*$190,000*
	12.1D: SDRFP Outreach, Education, and Invasive Weed Treatment	*$290,000*	*$35,000*	*$0*	*$325,000*
	12.2: Impacted Site Management and Restoration	*$596,000*	*$300,000*	*$0*	*$896,000*
	12.3: Invasive Wildlife Species Removal	*$65,000*	*$274,000*	*$0*	*$339,000*
(e)	**Grand Total**	**$2,116,000**	**$929,000**	**$0**	**$3,045,000**
***List sources of funding:** Funding sources include: 1) USFS: Fire settlement funds, appropriated funds; 2) ACE: non-state funding, in-kind match; 3) SDRPF: volunteer hours; 4) City of San Diego: appropriated funds; and 5) BCLT: volunteer time, 2nd Chance, SDG&E grants, TSDF grants, in-kind, BCLT reserves.					

Row (a) Direct Project Administration Costs

Task 1: Project Administration

Costs for project administration include time to complete administrative duties. Consulting staff will dedicate 110 hours to this task with a rate of $100 per hour. Hourly rates were calculated based on based past consultant contracts for similar services. Task 1 costs total $11,000.

Task 2: Labor Compliance Program (LCP)

Costs include development and implementation, if applicable, of a labor compliance program. Consulting staff will dedicate 100 hours to this task at a billing rate of $100 per hour (based past consultant contracts), totaling $10,000.

Task 3: Reporting

Costs for reporting include time to complete grant reporting duties. Consulting staff will dedicate 180 hours to this task at a billing rate of $100 per hour (based past consultant contracts). USFS staff will dedicate 60 hours at an average rate of $50 per hour. USFS staff hourly rates were calculated based on salary plus benefits, and overhead is not included. Task 3 costs total $21,000.

Row (b) Land Purchase/ Easement

Task 4: Land Purchase

Not applicable.

Row (c) Planning/ Design/ Engineering/ Environmental Documentation

Task 5: Feasibility Studies

Not applicable.

Task 6: CEQA Documentation

Costs associated with this task include completing and filing remaining CEQA and NEPA compliance documents, with 480 hours of USFS staff at an average rate of $50 per hour (salary plus benefits). Task 6 costs total $24,000.

Task 7: Permitting

Costs associated with this task include coordination with San Diego River Conservancy to obtain annual permits under U.S. Army Corps of Engineers (USACE) Regional General Permit (RGP) 41. USFS staff will dedicate 20 hours at an average rate of $50 per hour. Task 7 costs total $1,000.

Task 8: Design

Development of the *El Capitan Reservoir Catchment Invasive Weeds Strategic Treatment Plan* requires City staff at a rate of $225 per hour dedicating 16 hours, plus City staff at a rate of $70 per hour dedicating 18 hours. Additionally, GIS specialists will spend 221 hours at a rate of $143 per hour and 543 hours at a rate of $72 per hour. An environmental planner will spend 181 hours at a rate of $135 per hour. Finally, other direct costs will total $141. Total cost for development of the Strategic Treatment Plan will be $100,000.

Task 9: Project Performance Monitoring Plan

Consulting staff will spend 43 hours at a rate of $100 per hour and USFS staff will spend 14 hours at a rate of $50 per hour in this task. Total costs for Task 9 are $5,000.

Row (d) Construction/Implementation

Task 10: Contract Services

Not applicable.

Task 11: Construction Administration

USFS staff will spend 320 hours at a rate of $50 per hour and a consultant will spend 2,170 hours at a rate of $100 per hour in construction management. Additionally, construction and site visits will require field vehicle use for 129 days at a rate of $31 per day. Total costs for Task 11 include $237,000.

Task 12: Construction/Implementation

Costs on this task include all labor, materials and equipment for pre- and post-construction activities, plus public education and outreach. Estimates are supported by past work completed.

Table 4-30: Task 12 Costs for *San Diego River Healthy Headwaters Restoration*

	Deliverables/Activity	Hourly Rate/Unit Cost	Number of Hours/Units	Total Cost
Subtask 12.1 Invasive Weed Treatment				*$1,401,000*
City	*12.1A: Catchment Wide Strategic Treatment Plan Implementation*			*$286,000*
	Consultant estimate for invasive weed treatment	$25,000 per acre	11.4 acres	$286,000
BCTL	*12.1B: Alpine Watershed Invasive Weed Treatment*			*$600,000*
	Non-Native Removal and Habitat Restoration	Herbicide Treatment; Project Equipment and Insurance		$490,000
	Public Education and Outreach	Town Hall Meetings; Secure Right of Entry for 40 landowners		$50,000
	Dept. of Pesticide Regulation	QAC Licensing and Education		$6,000
	Mulching of non-native biomass	Greater Alpine Fire Safe Council		$18,000
	Water quality testing – Monthly sampling	$5,000/site	3 sites within Catchment Area	$15,000
	Maintenance of treated sites			$21,000
USFS	*12.1.C: USFS Invasive Weed Treatment*			*$190,000*
	Materials and equipment	Variable		$35,000
	USFS Staff	$50 per hour	160 hours	$8,000
	ACE – Initial treatment and re-entry	$14.75 per hour	7,254 hours	$107,000
	Contractor – Tamarisk treatment	Contract value		$40,000
SDRPF	*12.1.D: SDRPF Outreach, Education, and Invasive Weed Treatment*			*$325,000*
	Invasive plant removal	$26 per hour	2,038 hours	$53,000
		Equipment purchase and rental		$10,000
	Public education and outreach	$30 per hour	2,167 hours	$65,000
		Printing and delivery, handbook		$26,000
	Targeted mapping of private property	$31 per hour	5518 hours	$171,000
Subtask 12.2 Impacted Site Management and Restoration				*$896,000*
ACE	Impacted Site Restoration	Materials and equipment (in-kind)		$250,000
	ACE – Initial treatment and re-entry	$14.75 per hour	33,220 hours	$490,000
	Restoration materials, labor	Wattles, erosion control, lumber, fencing, rock		$46,000
	Aerial drops for restoration materials	$5,000 each	2 drops	$10,000
	Kiosk panels and materials	$2,500 each	16 panels	$40,000
	Web-based interpretive tour	Staff time and web site costs		$10,000
	Cedar Creek stormproofing	Contract funds from fire settlement		$50,000
Subtask 12.3 Invasive Species Removal				*$339,000*
	APHIS – Invasive Species Removal	Materials, staff time, vehicle costs		$274,000
	Materials	Trapping equipment		$10,000
	Consultant	$100/hour	300 hours	$30,000
	USFS Staff	$50/hour	100 hours	$5,000
	USFS Crew	$25/hour	800 hours	$20,000
Task 12 Total				**$2,636,000**

Project 12: Sweetwater Reservoir Wetlands Habitat Recovery

Local Project Sponsor: Sweetwater Authority (SWA)
Partners: California Conservation Corps and Urban Corps of San Diego County

A project summary budget table consistent with Table 8 in the PSP is provided below as **Table 4-31** for the *Sweetwater Reservoir Wetlands Habitat Recovery* project. The project has a 53% funding match.

Table 4-31: Total Project Budget for *Sweetwater Reservoir Wetlands Habitat Recovery*

Proposal Title: *San Diego 2015 IRWM Implementation Grant Proposal*
Project Title: Sweetwater Reservoir Wetlands Habitat Recovery
Project serves a need of a DAC?: ☒ Yes ☐ No
Funding Match Waiver request?: ☐ Yes ☒ No

	Category	(a) Requested Grant Amount	(b) Cost Share: Non-State Fund Source* (Funding Match)	(c) Cost Share: Other State Fund Sources*	(d) Total
(a)	Direct Project Administration	$30,000	$40,480	$0	$70,480
	Task 1: Project Management	$15,000	$25,680	$0	$40,680
	Task 2: Labor Compliance Program	$5,000	$5,000	$0	$10,000
	Task 3: Reporting	$10,000	$9,800	$0	$19,800
(b)	Land Purchase/ Easement	$30,000	$41,000	$0	$71,000
	Task 4: Land Purchase	$30,000	$41,000	$0	$71,000
(c)	Planning/ Design/ Environmental	$232,000	$387,909	$0	$619,909
	Task 5: Feasibility Studies	$0	$0	$0	$0
	Task 6: CEQA Documentation	$15,000	$167,786	$0	$182,786
	Task 7: Permitting	$47,000	$24,444	$0	$71,444
	Task 8: Design	$160,000	$191,179	$0	$351,179
	Task 9: Project Performance Monitoring Plan	$10,000	$4,500	$0	$14,500
(d)	Construction/ Implementation	$1,208,000	$1,254,240	$0	$2,462,240
	Task 10: Contract Services	$8,000	$6,240	$0	$14,240
	Task 11: Construction Administration	$40,000	$30,320	$0	$70,320
	Task 12: Construction/Implementation	$1,160,000	$1,217,680	$0	$2,377,680
	12.1: Mobilization and Site Preparation	*$90,000*	*$50,856*	*$0*	*$140,856*
	12.2: Project Construction	*$1,070,000*	*$ 1,166,824*	*$0*	*$ 2,236,824*
(e)	**Grand Total**	**$1,500,000**	**$1,723,629**	**$0**	**$3,223,629**

***List sources of funding:** Funding match will be from TransNet EMP ($100,000 for Task 12.2), FEMA ($13,840 for Task 12.2), and Sweetwater Authority ($1,609,789 for All Tasks).

Row (a) Direct Project Administration Costs

All lump sum contractor costs provided are based upon bid estimates provided to SWA in 2015.

Task 1: Project Administration

Costs for project administration include time to complete administrative duties. A SWA Biologist will dedicate 252 hours to this task with a rate of $140. A contractor will dedicate 54 hours at a rate of $100. Hourly rates were calculated based on salary plus benefits, and no overhead is included.

Task 2: Labor Compliance Program (LCP)

SWA will hire a contractor to complete labor compliance for the HRP. It is estimated that a contractor will require $10,000 for this task.

Task 3: Reporting

Cost for reporting will include time to complete reporting duties. A SWA Biologist will dedicate 60 hours to this task with a rate of $140, and a SWA Assistant Biologist will dedicate 120 hours with a rate of $95. Twelve quarterly project status reports are budgeted. Total costs for Task 3 are $19,800.

Row (b) Land Purchase/ Easement

Task 4: Land Purchase

Task 4 costs include $20,000 for preparation of a Record Survey by a contractor (licensed surveyor); $28,400 for preparation of a Recorded Conservation Easement by a SWA Biologist (60 hours at $140/hr) and a contractor (legal services; 200 hours at $100/hr); and $22,600 for a Property Analysis Record by a contractor (226 hours at $100/hr). Total costs for Task 4 are $71,000.

Row (c) Planning/ Design/ Engineering/ Environmental Documentation

Task 5: Feasibility Studies

The *Habitat Recovery Plan for the Sweetwater Reservoir Wetland Habitat Recovery Project* (2011) was completed prior to January 1, 2011 and is therefore not included in this budget.

Task 6: CEQA Documentation

Costs associated with preparing CEQA documentation include actual costs (environmental consultant services) necessary to complete the Mitigated Negative Declaration (MND) and supporting studies for the project and total $166,786. Costs to prepare the MND Addendum include those for a SWA Biologist with a rate of $140 dedicating 60 hours and a SWA Assistant Biologist with a rate of $95 dedicating 80 hours. Total costs are $182,786.

Task 7: Permitting

Costs for Permit Application and Facilitation include $19,080 for a contractor, costs for a SWA Biologist with a rate of $140 dedicating 77 hours, and an Assistant Biologist with a rate of $95 dedicating 58 hours. Costs for Habitat Management Program Update include those for a SWA Biologist with a rate of $140 dedicating 60 hours and an Assistant Biologist with a rate of $95 dedicating 24 hours. Costs for Pre-Construction Bio Surveys include $2,000 for a contractor, along with costs for a SWA Biologist ($140/hr dedicating 24 hours) and an Assistant Biologist ($95/hr dedicating 24 hours). Costs for Pond Turtle Clearance and Reintroduction include $2,240 for a contractor, and costs for a SWA Biologist with a rate of $140 dedicating 16 hours. Costs for the SWPPP include $7,780 for a contractor, along with costs for a SWA Biologist ($140/hr dedicating 4 hours), an Assistant Biologist ($95/hr dedicating 8 hours), and an Engineering Manager ($170/hr dedicating 4 hours). Total costs for Task 7 are $71,444.

Task 8: Design

Costs associated with 90% Design include actual costs necessary to complete the original design and construction plans and specifications for the project and total $261,459. Costs to prepare the revised (scaled down) Final Design include those for SWA staff to complete work, including 16 hours for an Engineering Manager ($170/hr), 16 hours for an Engineering Inspector ($110/hr), 32 hours for a Biologist ($140/hr), and 8 hours for an Assistant Biologist ($95/hr). Total costs for Task 8 are $351,179.

Task 9: Project Performance Monitoring Plan

Costs associated with preparing a Project Performance Monitoring Plan include $10,000 for a contractor and 24 hours for a SWA Biologist with a rate of $140 and 12 hours for an Assistant Biologist with a rate of $95 to prepare the Plan. Total costs for Task 9 are $14,500.

Row (d)* Construction/*Implementation

Task 10: Contract Services

Costs for Preparing the Bid Packages include a SWA Biologist ($140/hr) dedicating 12 hours, an Engineering Manager ($170/hr) dedicating 8 hours, and Clerical staff ($80/hr) dedicating 6 hours. Costs for Advertisement include $4,000 in materials and costs for Clerical staff ($80/hr) dedicating 6 hours. Costs for Bid Opening and Evaluation include a SWA Biologist ($140/hr) dedicating 12 hours and an Engineering Manager ($170/hr) dedicating 12 hours. Costs for Bid Award-NTP-Bonding include a SWA Biologist ($140/hr) dedicating 4 hours, an Engineering Manager ($170/hr) dedicating 4 hours, and Clerical staff ($80/hr) dedicating 16 hours. Total Task 10 costs are $14,240.

Task 11: Construction Administration

Costs for Construction Management include a SWA Engineering Manager ($170/hr) dedicating 60 hours, 48 hours for an Engineering Inspector ($110/hr), and 12 hours for Clerical staff ($80/hr). Costs for Engineering Services/Inspection include $12,000 for a contractor, a SWA Engineering Manager ($170/hr) dedicating 60 hours, and 288 hours for an Engineering Inspector ($110/hr). Total Task 11 costs are $70,320.

Task 12: Construction/Implementation

Construction activities will involve mobilization and site preparation, construction, and post-construction monitoring and maintenance of the HRP. Post-construction monitoring and maintenance will extend beyond the IRWM funding period, and includes biological monitoring and maintenance of the restoration site.

Subtask 12.1: Mobilization and Site Preparation – contractor costs for a number of pre-construction activities, administrative and field, that include pre-construction meetings, workers' education, site delineation and protection, plant materials salvaging and staging, large tree removal and off site temporary storage, and pond dewatering.

Subtask 12.2: Project Construction – contractor costs and materials for all construction activities including environmental monitoring, river crossing road demolition, clear and grub vegetation, mass grading, erosion control and best management practices, soil preparation, river crossing bridges, irrigation materials and installation, irrigation water (up to two years so it continues as a post-construction activity), train information kiosk, container plants and cuttings, plant installation, seed, and hydroseed application. This task includes demobilization.

Table 4-32: Task 12 Costs for *Sweetwater Reservoir Wetlands Habitat Recovery*

	Deliverables/Activity	Hourly Rate/Unit Cost	Number of Hours/Units	Total Cost
Subtask 12.1: Mobilization and Site Preparation				*$140,856*
	Pre-Construction Meetings/Education	Contractor and SWA Labor		$16,880
	Site Delineation and Protection	Contractor and SWA Labor		$26,820
	Plant Materials/Salvage/Staging	Corps and SWA Labor		$36,420
	Large Tree Removal/Transplant	$538 each	72	$38,736
	Pond Dewatering	Contractor Service		$22,000
Subtask 12.2: Project Construction				*$2,236,824*
	Environmental monitoring	Contractor and SWA Labor		$69,000
	River Crossing Road Demolition	$81/LF	900 LF	$72,900
	Clear and Grub Vegetation	$646/ac	36 ac	$23,256
	Mass Grading	$3.23/cy	180,000 cy	$581,400
	Erosion Control and BMPs	$2,268/ac	44 ac	$99,338
	Soil Preparation	$1,415/ac	30 ac	$42,450
	River Crossing Bridges	Materials and Contractor Labor		$400,000
	Irrigation Materials, Installation, Water	Contractor, Corps, SWA Labor		$378,000
	Trail Information Kiosk	Materials and SWA Labor		$9,780
	Container Plants and Cuttings	$2 each	125,580	$251,160
	Plant Installation	Corps and SWA Labor		$109,680
	Hydroseed Application and Seed	Contractor Service, 1,410 lbs seed		$199,860
Task 12 Total				**$2,377,680**

Project 13: Hodges Reservoir Natural Treatment System

Local Project Sponsor: City of San Diego
Partners: Santa Fe Irrigation District, San Dieguito Water District, San Dieguito River Valley Conservancy, and San Diego County Water Authority (SDCWA)

A project summary budget table consistent with Table 8 in the PSP is provided below as **Table 4-33** for the *Hodges Reservoir Natural Treatment System* project. This project will provide a 25% funding match.

Table 4-33: Total Project Budget for *Hodges Reservoir Natural Treatment System*

Proposal Title: *San Diego 2015 IRWM Implementation Grant Proposal* **Project Title: Hodges Reservoir Natural Treatment System** **Project serves a need of a DAC?:** ☒ **Yes** ☐ **No** **Funding Match Waiver request?:** ☐ **Yes** ☒ **No**					
		(a)	**(b)**	**(c)**	**(d)**
Category		**Requested Grant Amount**	**Cost Share: Non-State Fund Source* (Funding Match)**	**Cost Share: Other State Fund Sources***	**Total**
(a)	Direct Project Administration	$0	$318,400	$0	$318,400
	Task 1: Project Management	$0	$224,200	$0	$224,200
	Task 2: Labor Compliance Program	$0	$1,800	$0	$1,800
	Task 3: Reporting	$0	$92,400	$0	$92,400
(b)	Land Purchase/ Easement	$0	$0	$0	$0
	Task 4: Land Purchase	$0	$0	$0	$0
(c)	Planning/ Design/ Environmental	$220,000	$548,008	$0	$768,008
	Task 5: Feasibility Studies	$0	$161,408	$0	$161,408
	Task 6: CEQA Documentation	$0	$327,000	$0	$327,000
	Task 7: Permitting	$0	$50,000	$0	$50,000
	Task 8: Design	$220,000	$0	$0	$220,000
	Task 9: Project Performance Monitoring Plan	$0	$9,600	$0	$9,600
(d)	Construction/ Implementation	$2,666,472	$98,000	$0	$2,764,472
	Task 10: Contract Services	$0	$25,000	$0	$25,000
	Task 11: Construction Administration	$300,000	$0	$0	$300,000
	Task 12: Construction/Implementation	$2,366,472	$73,000	$0	$2,439,472
	12.1: Pre-Construction/Site-Preparation	*$40,000*	*$53,000*	*$0*	*$93,000*
	12.2: Wetlands Construction	*$2,268,972*	*$0*	*$0*	*$2,268,972*
	12.3: Post-Construction	*$50,000*	*$20,000*	*$0*	*$70,000*
	12.4: Public Outreach	*$7,500*	*$0*	*$0*	*$7,500*
(e)	**Grand Total**	**$2,886,472**	**$964,408**	**$0**	**$3,850,880**
***List sources of funding:** Funding match will be provided by in-kind services and capital funds from the City of San Diego, Public Utilities Department.					

Row (a) Direct Project Administration

Task 1: Project Management

Costs for project management include time to complete administrative duties. For preparation of invoices and internal project management, City staff will dedicate 978 hours with an hourly rate of $120. For project partner deliverables and coordination, City staff will dedicate 890 hours with an hourly rate of $120. Hourly rates were calculated based on salary plus benefits, and do not include overhead.

Task 2: Labor Compliance Program (LCP)

The City will ensure the existing LCP is managed for this project. Minimal City staff budget (15 hours of City staff at a rate of $120) is included here for coordination with the City's LCP manager.

Task 3: Reporting

Cost for reporting will include time to complete grant reporting duties. City staff will dedicate 770 hours to this task with an hourly rate of $120.

Row (b) Land Purchase/ Easement

Task 4: Land Purchase

Not applicable.

Row (c) Planning/ Design/ Engineering/ Environmental Documentation

Task 5: Feasibility Studies

Costs associated with this task include costs necessary to complete the two key elements of the project definition, which include a technical memorandum and a hydrologic model. Both efforts are underway and are being completed by consultants, with a contract cost of $79,408 for the technical memorandum and $82,000 for the hydrologic model. Total Task 5 costs are $161,408.

Task 6: CEQA Documentation

CEQA elements will include initial consultation with stakeholders and agencies and preparation of a Hydrology and Water Quality Analysis, a Biological Assessment, a Noise and Aesthetic Evaluation, and finally preparation of a Mitigated Negative Declaration. CEQA Documentation costs are estimated at $327,000.

Task 7: Permitting

Work in this task includes time required to obtain all permits listed in the Work Summary. Total costs are anticipated to be $50,000 for this effort based on the City's previous experience obtaining permits.

Task 8: Design

Work in this task includes the consulting fees for the preparation of a topographic survey ($40,000), as well as the final design ($150,000) with all the required plans and specifications ($30,000). These costs are based on consultant cost estimates.

Task 9: Project Performance Monitoring Plan

Cost for this task includes time for development of the PPMP by City staff for a total of 80 hours at an hourly rate of $120.

Row (d) Construction/Implementation

Task 10: Contract Services

Costs associated with construction contracting include time for City staff to issue bids and award a final contract. City staff will dedicate 208 total hours to this task with an hourly rate of $120.

Task 11: Construction Administration

Costs for construction administration include inspections, permitting review, storm water compliance, coordinating construction activities, task and time management, and coordination with City of San Diego planners and engineers. From previous experience, the construction management cost is estimated around 13 percent of construction costs, for a total of $300,000.

Task 12: Construction/Implementation

Costs for construction include costs for materials, equipment, and labor for mobilization, installing the project components, conducting outreach, and completing demobilization and post-construction work. Costs are based upon engineering estimates from the City based on implementation of similar projects and consultant estimates and total $2,439,472.

Table 4-34: Task 12 Costs for *Hodges Reservoir Natural Treatment System*

	Deliverables/Activity	Hourly Rate/Unit Cost	Number of Hours/Units	Total Cost
Subtask 12.1: Pre-Construction/Site-Preparation				*$93,000*
	Activities for site work	$68,000	Contracted	$68,000
	Staff of partner agencies deliverable review	Variable	100	$15,000
	Site visits and surveys	Variable	75	$10,000
Subtask 12.2: Construction				*$2,268,972*
	Constructed wetland system	Estimated based on planning level cost estimates for wetlands and scaled to appropriate size		$2,024,972
	Control building(s)	$200/sq ft	350 sq ft	$70,000
	Fencing	$500/LF	10 LF	$5,000
	Yard piping	$15/LF	5000 LF	$75,000
	Flow meters	$3000/meter	2 meters	$6,000
	Pump installation	$250/unit	80 units	$20,000
	Pump station piping	$1000/unit	60 units	$60,000
	Electrical installation	$400/unit	20 units	$8,000
Subtask 12.3: Post-Construction				*$70,000*
	Demobilization	$250/hr	200 hours	$50,000
	Inspections	$250/hr	80 hours	$20,000
Subtask 12.4: Public Outreach				*$7,500*
	Public Outreach – City staff	$120/hr	63 hours	$7,500
Task 12 Total				**$2,439,472**

Attachment 5

San Diego Integrated Regional Water Management

2015 IRWM Implementation Grant Proposal

Schedule

Attachment 5 consists of the following items:

- ✓ **Schedule.** This attachment includes a schedule for the entire Proposal, as well as schedules for each individual project included in this Proposal. A description of how each project schedule is realistic, reasonable, and accomplishable follows the Gantt charts of the schedules.

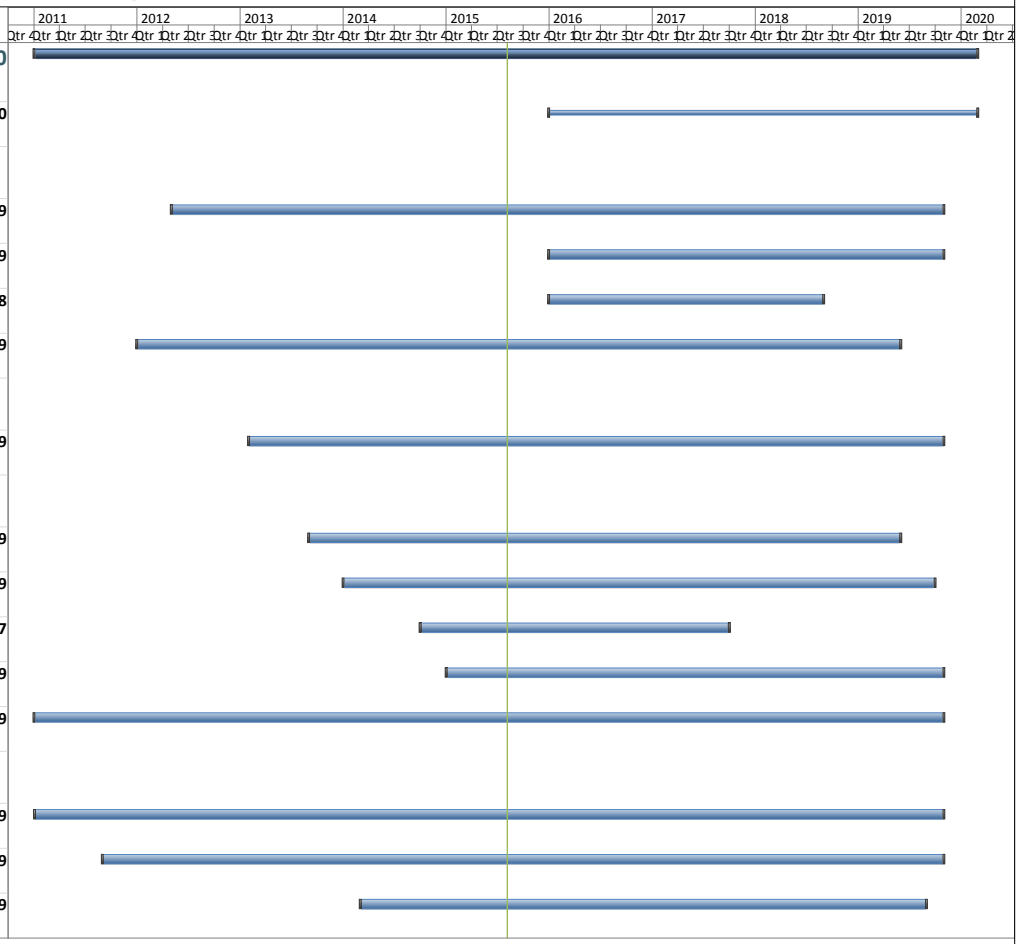
Table of Contents

Introduction

This Proposal includes thirteen projects, each of whose schedules are presented in individual project schedule Gantt charts and described below. The assumed Grant Award Date for all projects is December 31, 2015. Project activities began January 2011 with *Projects 10: Safari Park Drought Response and Outreach* and *11: San Diego River Healthy Headwaters Restoration*, and project activities will continue through October 2019 with completion of *Projects 1: Regional Drought Resiliency Program, 2: Conservation Home Makeover in the Chollas Creek Watershed, 5: Rural Disadvantaged Community Partnership Project, 9: Padre Dam Advanced Water Treatment – Phase IA Expansion*, *10: Safari Park Drought Response and Outreach,* and *11: San Diego River Healthy Headwaters Restoration*. As described below, project schedules are realistic, reasonable, and accomplishable for the tasks included in each project's Work Plan (see *Attachment 3 Work Plan*).

San Diego Integrated Regional Water Management (IRWM) Region
Proposition 84 Final Round Proposal Schedule

ID	Task Name	Duration	Start	Finish
1	*San Diego 2015 IRWM Implementation Grant Proposal*	2391 days	Sat 1/1/11	Fri 2/28/20
2	Grant Administration	1087 days	Thu 12/31/15	Fri 2/28/20
3	Conservation Program			
4	1. Regional Drought Resiliency Program	1959 days	Wed 5/2/12	Thu 10/31/19
5	2. Conservation Home Makeover in the Chollas Creek Watershed	1002 days	Thu 12/31/15	Thu 10/31/19
6	3. San Diego Water Conservation Program	698 days	Thu 12/31/15	Fri 8/31/18
7	4. Ms. Smarty-Plants Grows Water-Wise Schools	1935 days	Sun 1/1/12	Fri 5/31/19
8	Rural Water Infrastructure			
9	5. Rural Disadvantaged Communiity Partnership Project - Phase III	1764 days	Thu 1/31/13	Thu 10/31/19
10	Water Reuse Program			
11	6. Integrated Water Resource Solutions for the Carlsbad Watershed	1501 days	Sun 9/1/13	Fri 5/31/19
12	7. UCSD Water Conservation and Watershed Protection	1499 days	Wed 1/1/14	Mon 9/30/19
13	8. Escondido Advanced Water Treatment for Agriculture	784 days	Wed 10/1/14	Sat 9/30/17
14	9. Padre Dam Advanced Water Treatment - Phase IA Expansion	1261 days	Thu 1/1/15	Thu 10/31/19
15	10. Safari Park Drought Response and Outreach	2304 days	Sat 1/1/11	Thu 10/31/19
16	Water Quality and Habitat Program			
17	11. San Diego River Healthy Headwaters Restoration	2306 days	Mon 1/3/11	Thu 10/31/19
18	12. Sweetwater Reservoir Wetlands Habitat Recovery	2133 days	Wed 8/31/11	Thu 10/31/19
19	13. Hodges Reservoir Natural Treatment System	1440 days	Mon 3/3/14	Fri 8/30/19

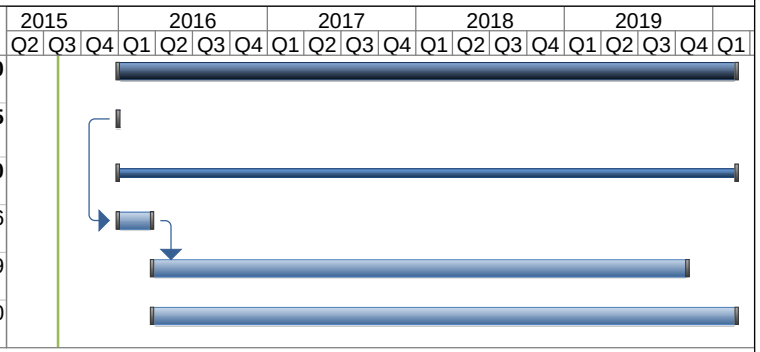


Project: _Overall Project Schedule
Date: Thu 8/6/15

Task | Summary | External Milestone | Inactive Summary | Manual Summary Rollup | Finish-only
Split | Project Summary | Inactive Task | Manual Task | Manual Summary | Deadline
Milestone | External Tasks | Inactive Milestone | Duration-only | Start-only | Progress

Grant Administration Schedule

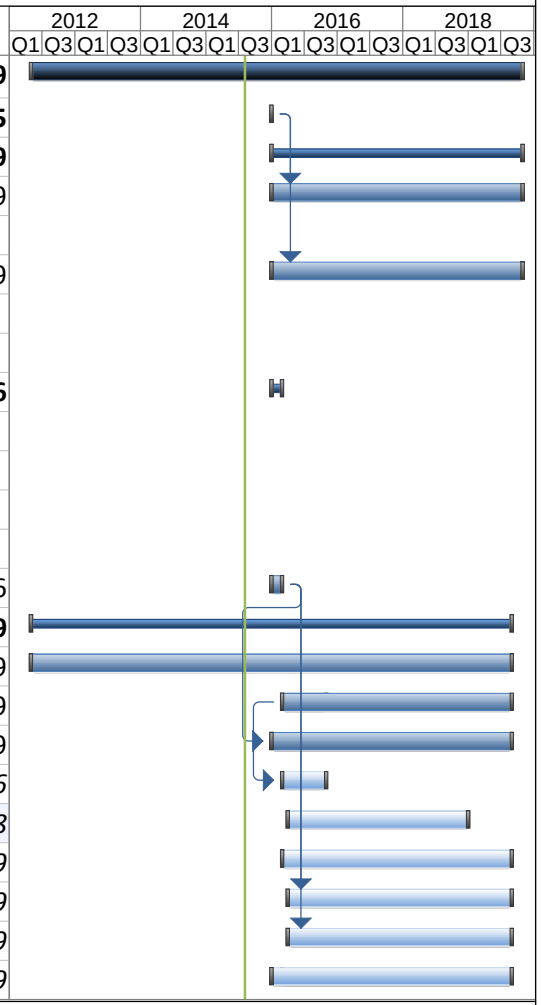
ID	Task Name	Duration	Start	Finish
1	**Grant Administration**	**1087 days**	**Thu 12/31/15**	**Fri 2/28/20**
2	**Grant Award Date**	**1 day**	**Thu 12/31/15**	**Thu 12/31/15**
3	**Row (a): Direct Project Administration**	**1087 days**	**Thu 12/31/15**	**Fri 2/28/20**
4	Task 1: Agreement Administration	60 days	Thu 12/31/15	Wed 3/23/16
5	Task 2: Invoicing	940 days	Thu 3/24/16	Wed 10/30/19
6	Task 3: Progress Reports and Project Completion Reports	1027 days	Thu 3/24/16	Fri 2/28/20



Task		External Milestone		Manual Summary Rollup	
Split		Inactive Task		Manual Summary	
Milestone		Inactive Milestone		Start-only	
Summary		Inactive Summary		Finish-only	
Project Summary		Manual Task		Progress	
External Tasks		Duration-only		Deadline	

Project 1: Regional Drought Resiliency Program Schedule

ID	Task Name	Duration	Start	Finish
1	**Regional Drought Resiliency Program**	**1959 days**	**Wed 5/2/12**	**Thu 10/31/19**
2	**Grant Award Date**	**1 day**	**Thu 12/31/15**	**Thu 12/31/15**
3	**Row (a): Direct Project Administration**	**1002 days**	**Fri 1/1/16**	**Thu 10/31/19**
4	Task 1: Project Management	1002 days	Fri 1/1/16	Thu 10/31/19
11	~~Task 2: Labor Compliance Program~~			
12	Task 3: Reporting	1002 days	Fri 1/1/16	Thu 10/31/19
13	**Row (b): Land Purchase/Easement**			
14	~~Task 4: Land Purchase~~			
15	**Row (c): Planning/Design/Engineering/Environmental**	**42 days**	**Fri 1/1/16**	**Sun 2/28/16**
16	~~Task 5: Feasibility Studies~~			
17	~~Task 6: CEQA Documentation~~			
18	~~Task 7: Permitting~~			
19	~~Task 8: Design~~			
20	Task 9: Project Performance Monitoring Plan	42 days	Fri 1/1/16	Sun 2/28/16
21	**Row (d): Construction/Implementation**	**1915 days**	**Wed 5/2/12**	**Sat 8/31/19**
22	Task 10: Contract Services	1915 days	Wed 5/2/12	Sat 8/31/19
29	Task 11: Construction Administration	915 days	Tue 3/1/16	Sat 8/31/19
36	Task 12: Construction/Implementation	958 days	Fri 1/1/16	Sat 8/31/19
37	*Subtask 12.1: Correctional Facility Retrofit Project*	*175 days*	*Tue 3/1/16*	*Mon 10/31/16*
38	*Subtask 12.2: EC Mapping and Soil Moisture Sensor Systems*	*717 days*	*Fri 4/1/16*	*Mon 12/31/18*
41	*Subtask 12.3: WasterSmart Field Services Program*	*915 days*	*Tue 3/1/16*	*Sat 8/31/19*
45	*Subtask 12.4: Sustainable Landscapes Program*	*892 days*	*Fri 4/1/16*	*Sat 8/31/19*
48	*Subtask 12.5: WaterSmart Landscape Makeover Program*	*892 days*	*Fri 4/1/16*	*Sat 8/31/19*
52	*Subtask 12.6: Drought Outreach and Education*	*958 days*	*Fri 1/1/16*	*Sat 8/31/19*

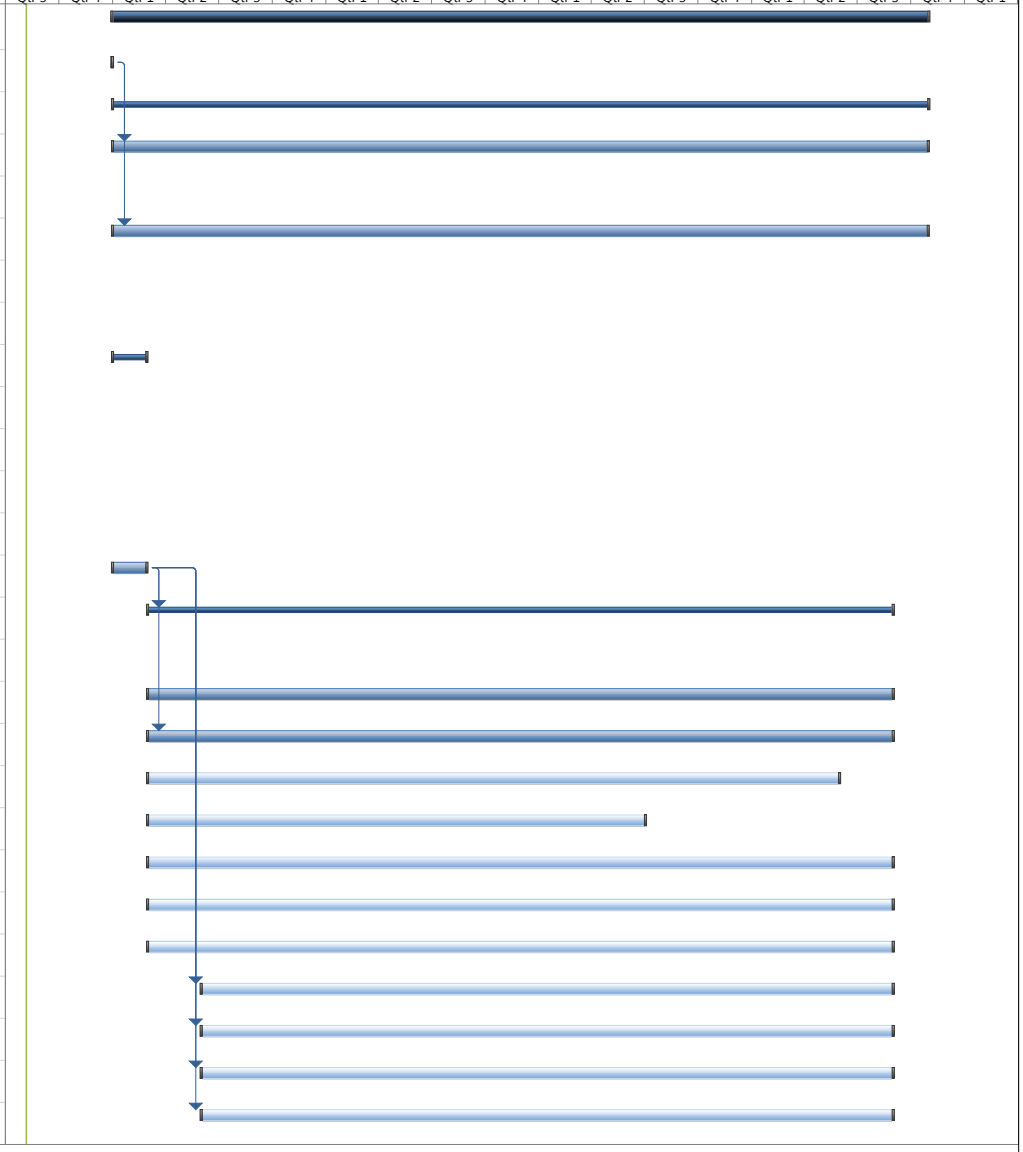


Date: Thu 8/6/15

Task		Inactive Milestone		Finish-only	
Split		Inactive Summary		External Tasks	
Milestone		Manual Task		External Milestone	
Summary		Duration-only		Progress	
Project Summary		Manual Summary Rollup		Deadline	
External Tasks		Manual Summary			
External Milestone		Start-only			

Project 2: Conservation Home Makeover in the Chollas Creek Watershed Schedule

ID	Task Name	Duration	Start	Finish
1	**Conservation Home Makeover in the Chollas Watershed**	**1002 days**	**Thu 12/31/15**	**Thu 10/31/19**
2	**Grant Award Date**	**1 day**	**Thu 12/31/15**	**Thu 12/31/15**
3	**Row (a): Direct Project Management**	**1001 days**	**Fri 1/1/16**	**Thu 10/31/19**
4	Task 1: Project Management	1000 days	Fri 1/1/16	Thu 10/31/19
5	~~Task 2: Labor Compliance Program~~			
6	Task 3: Reporting	1000 days	Fri 1/1/16	Thu 10/31/19
7	**Row (b): Land Purchase/Easements**			
8	~~Task 4: Land Purchase~~			
9	**Row (c): Planning/Design/Eng/Environmental**	**41 days**	**Fri 1/1/16**	**Sun 2/28/16**
10	~~Task 5: Feasibility Studies~~			
11	~~Task 6: CEQA Documentation~~			
12	~~Task 7: Permitting~~			
13	~~Task 8: Design~~			
14	Task 9: Project Performance Monitoring Plan	42 days	Fri 1/1/16	Sun 2/28/16
15	**Row (d): Construction/Implementation**	**915 days**	**Tue 3/1/16**	**Sat 8/31/19**
16	~~Task 10: Contract Services~~			
17	Task 11: Construction Administration	915 days	Tue 3/1/16	Sat 8/31/19
18	Task 12: Construction/Implementation	915 days	Tue 3/1/16	Sat 8/31/19
19	*Subtask 12.1: Agreement Negotiation*	*849 days*	*Tue 3/1/16*	*Sat 6/1/19*
20	*Subtask 12.2: Education*	*610 days*	*Tue 3/1/16*	*Mon 7/2/18*
21	*Subtask 12.3: Water Use Evaluations*	*915 days*	*Tue 3/1/16*	*Sat 8/31/19*
22	*Subtask 12.4: Monitoring and Verification*	*915 days*	*Tue 3/1/16*	*Sat 8/31/19*
23	*Subtask 12.5: Tracking and Mapping*	*915 days*	*Tue 3/1/16*	*Sat 8/31/19*
24	*Subtask 12.6: Landscape Earthwork Installation*	*849 days*	*Wed 6/1/16*	*Sat 8/31/19*
25	*Subtask 12.7: Rainbarrel Installation*	*849 days*	*Wed 6/1/16*	*Sat 8/31/19*
26	*Subtask 12.8: Greywater Installation*	*849 days*	*Wed 6/1/16*	*Sat 8/31/19*
27	*Subtask12.9: Conservation Home Retrofit Devices*	*849 days*	*Wed 6/1/16*	*Sat 8/31/19*

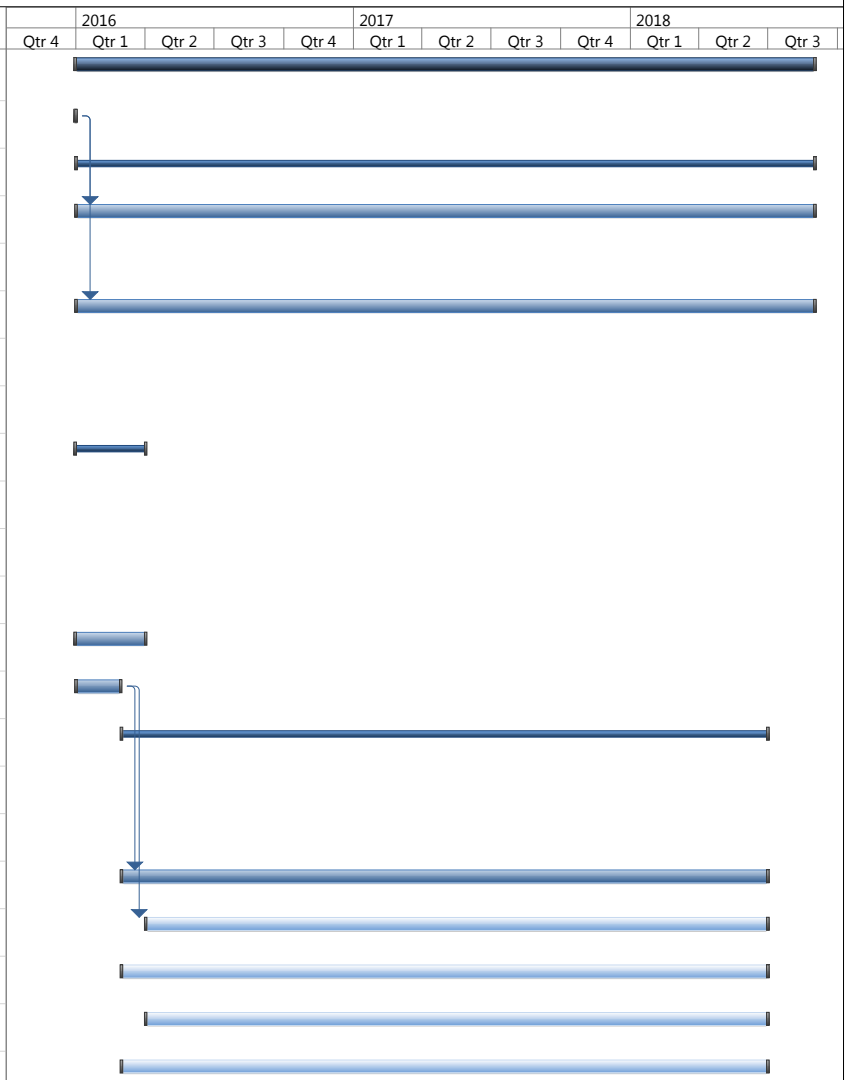


Date: Thu 8/6/15

Task	Project Summary	Manual Task	Start-only	Deadline			
Split	Inactive Task	Duration-only	Finish-only	Progress			
Milestone	Inactive Milestone	Manual Summary Rollup	External Tasks	Manual Progress			
Summary	Inactive Summary	Manual Summary	External Milestone				

Project 3: San Diego Water Conservation Program
Schedule

ID	Task Name	Duration	Start	Finish
1	**San Diego Water Conservation Program**	**698 days**	**Thu 12/31/15**	**Fri 8/31/18**
2	**Grant Award Date**	**1 day**	**Thu 12/31/15**	**Thu 12/31/15**
3	**Row (a): Direct Project Administration**	**697 days**	**Fri 1/1/16**	**Fri 8/31/18**
4	Task 1: Project Management	697 days	Fri 1/1/16	Fri 8/31/18
5	~~Task 2: Labor Compliance Program~~			
6	Task 3: Reporting	697 days	Fri 1/1/16	Fri 8/31/18
7	**Row (b): Land Purchase/Easement**			
8	~~Task 4: Land Purchase~~			
9	**Row (c): Planning/Design/Eng/Environmental**	**67 days**	**Thu 12/31/15**	**Fri 4/1/16**
10	~~Task 5: Feasibility Studies~~			
11	~~Task 6: CEQA Documentation~~			
12	~~Task 7: Permitting~~			
13	Task 8: Design	67 days	Thu 12/31/15	Fri 4/1/16
15	Task 9: Project Performance Monitoring Plan	42 days	Fri 1/1/16	Sun 2/28/16
16	**Row (d): Construction/Implementation**	**610 days**	**Tue 3/1/16**	**Sat 6/30/18**
17	~~Task 10: Contract Services~~			
18	~~Task 11: Construction Administration~~			
19	Task 12: Construction/Implementation			
20	*Subtask 12.1: Greywater Rebate Program*	*587 days*	*Sat 4/2/16*	*Sat 6/30/18*
21	*Subtask 12.2: Turf Replacement Rebate Program*	*610 days*	*Tue 3/1/16*	*Sat 6/30/18*
22	*Subtask 12.3: The Garden's Outreach/Workshops/Training*	*587 days*	*Sat 4/2/16*	*Sat 6/30/18*
23	*Subtask 12.4: SDSLI's Outreach/Workshops/Training*	*610 days*	*Tue 3/1/16*	*Sat 6/30/18*

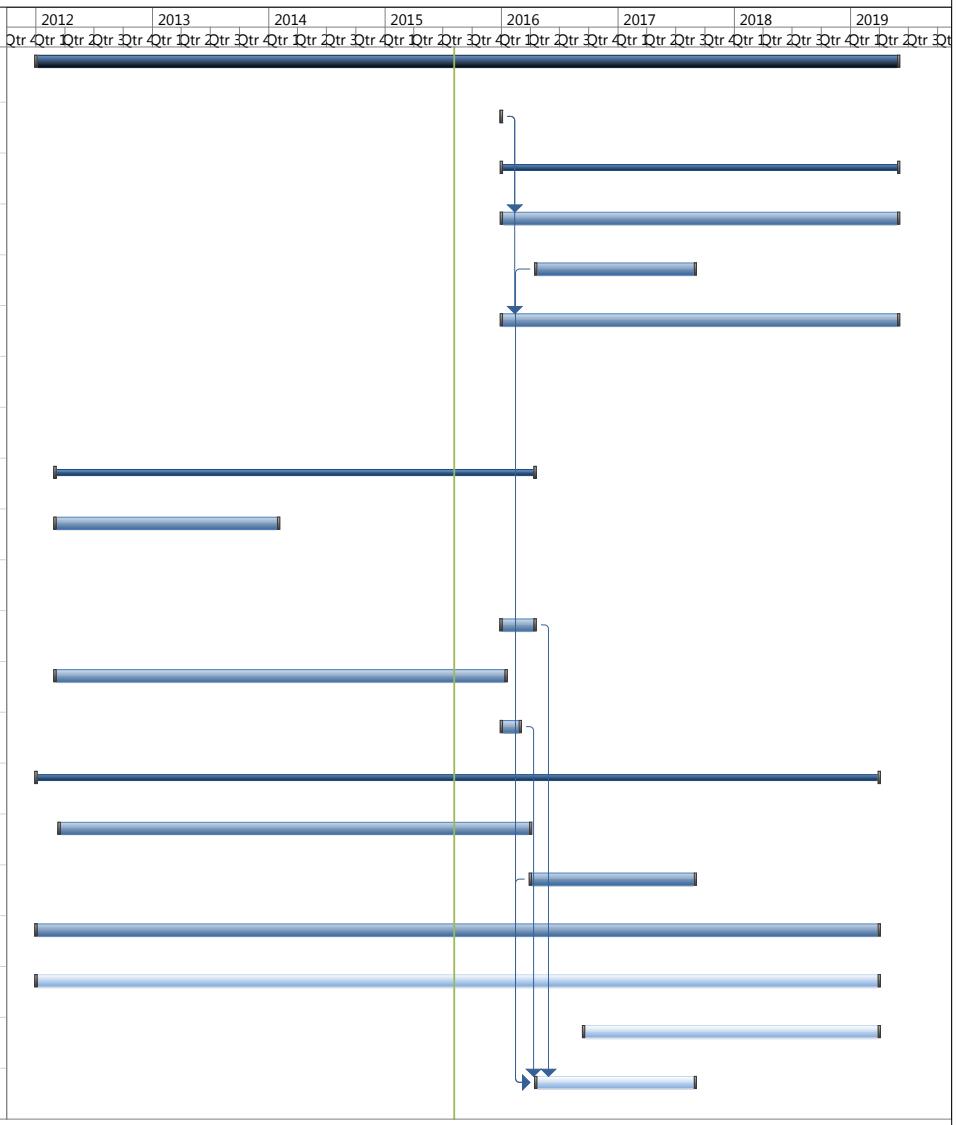


Date: Thu 8/6/15

Task	Inactive Task	Manual Summary Rollup	External Milestone
Split	Inactive Milestone	Manual Summary	Deadline
Milestone	Inactive Summary	Start-only	Progress
Summary	Manual Task	Finish-only	Manual Progress
Project Summary	Duration-only	External Tasks	

Project 4: Ms. Smarty-Plants Grows Water-Wise Schools
Schedule

ID	Task Name	Duration	Start	Finish
1	**Ms. Smarty-Plants Grows Water-Wise Schools**	**1935 days**	**Sun 1/1/12**	**Fri 5/31/19**
2	**Grant Award Date**	**1 day**	**Thu 12/31/15**	**Thu 12/31/15**
3	**Row (a): Direct Project Administration**	**891 days**	**Fri 1/1/16**	**Fri 5/31/19**
4	Task 1: Project Management	891 days	Fri 1/1/16	Fri 5/31/19
5	Task 2: Labor Compliance Program	359 days	Mon 4/18/16	Thu 8/31/17
6	Task 3: Reporting	891 days	Fri 1/1/16	Fri 5/31/19
7	**Row (b): Land Purchase/Easement**			
8	~~Task 4: Land Purchase~~			
9	**Row (c): Planning/Design/Eng/Environmental**	**1077 days**	**Thu 3/1/12**	**Fri 4/15/16**
10	Task 5: Feasibility Studies	502 days	Thu 3/1/12	Fri 1/31/14
11	~~Task 6: CEQA Documentation~~			
13	Task 7: Permitting	77 days	Thu 12/31/15	Fri 4/15/16
14	Task 8: Design	1012 days	Thu 3/1/12	Fri 1/15/16
16	Task 9: Project Performance Monitoring Plan	42 days	Fri 1/1/16	Sun 2/28/16
17	**Row (d): Construction/Implementation**	**1892 days**	**Sun 1/1/12**	**Sun 3/31/19**
18	Task 10: Contract Services	1058 days	Wed 3/14/12	Fri 4/1/16
19	Task 11: Construction Administration	370 days	Fri 4/1/16	Thu 8/31/17
20	Task 12: Construction/Implementation	1892 days	Sun 1/1/12	Sun 3/31/19
21	*Subtask 12.1: Education and Outreach*	1892 days	Sun 1/1/12	Sun 3/31/19
22	*Subtask 12.2: School Landscape Transitions*	663 days	Thu 9/15/16	Sun 3/31/19
23	*Subtask 12.3: Classroom Expansion*	359 days	Mon 4/18/16	Thu 8/31/17

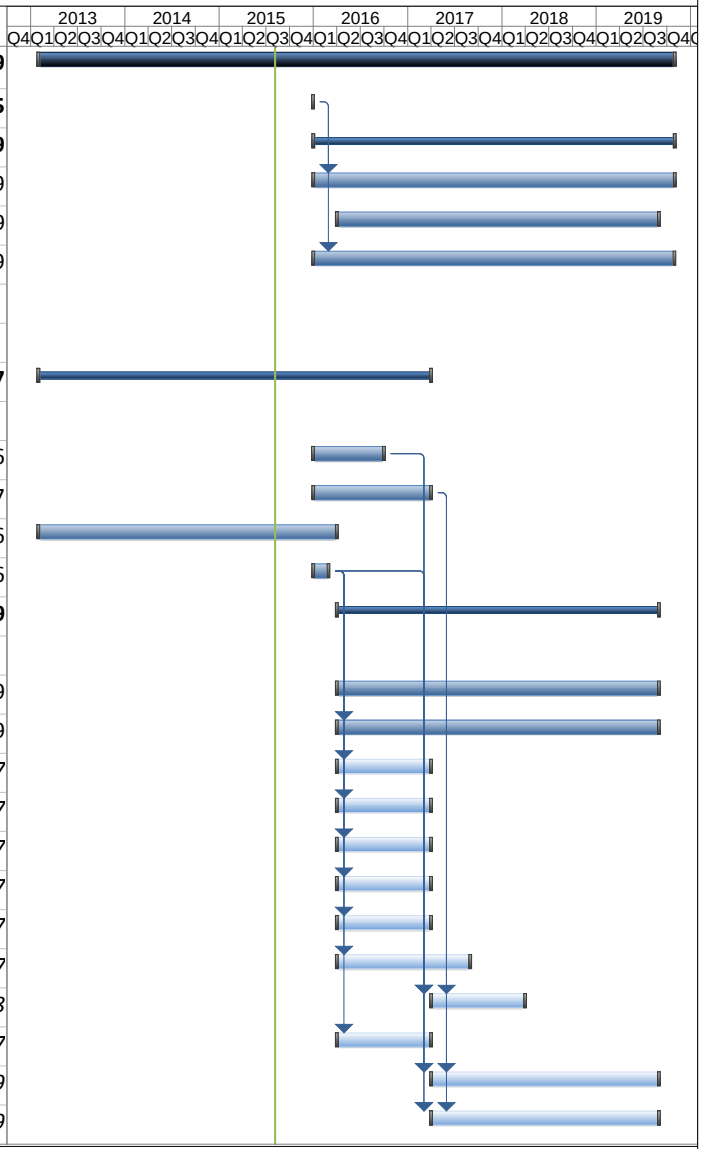


Date: Thu 8/6/15

Task	Inactive Task	Manual Summary Rollup	External Milestone		
Split	Inactive Milestone	Manual Summary	Deadline		
Milestone	Inactive Summary	Start-only	Progress		
Summary	Manual Task	Finish-only	Manual Progress		
Project Summary	Duration-only	External Tasks			

Project 5: Rural Disadvantaged Community Partnership Project - Phase III
Schedule

ID	Task Name	Duration	Start	Finish
1	**Rural Disadvantaged Community Partnership Project – Phase III**	**1764 days**	**Thu 1/31/13**	**Thu 10/31/19**
2	**Grant Award Date**	**0 days**	**Thu 12/31/15**	**Thu 12/31/15**
3	**Row (a): Direct Project Administration**	**1003 days**	**Fri 1/1/16**	**Thu 10/31/19**
4	Task 1: Project Management	1003 days	Fri 1/1/16	Thu 10/31/19
5	Task 2: Labor Compliance Program	893 days	Fri 4/1/16	Sat 8/31/19
6	Task 3: Reporting	1002 days	Fri 1/1/16	Thu 10/31/19
7	**Row (b): Land Purchase/Easement**			
8	~~Task 4. Land Purchase~~			
9	**Row (c): Planning/Design/Eng/Environmental**	**1089 days**	**Thu 1/31/13**	**Fri 3/31/17**
10	~~Task 5: Feasibility Studies~~			
11	Task 6: CEQA Documentation	198 days	Thu 12/31/15	Fri 9/30/16
12	Task 7: Permitting	328 days	Fri 1/1/16	Fri 3/31/17
13	Task 8: Design	827 days	Thu 1/31/13	Thu 3/31/16
14	Task 9: Project Performance Monitoring Plan	42 days	Fri 1/1/16	Sun 2/28/16
15	**Row (d): Construction/Implementation**	**893 days**	**Fri 4/1/16**	**Sat 8/31/19**
16	~~Task 10. Contract Services~~			
17	Task 11: Construction Administration	893 days	Fri 4/1/16	Sat 8/31/19
18	Task 12. Construction/Implementation	893 days	Fri 4/1/16	Sat 8/31/19
19	*Subtask 12.1: Pauma Reservation Water System*	*262 days*	*Fri 4/1/16*	*Fri 3/31/17*
20	*Subtask 12.2: Campo Reservation South System*	*262 days*	*Fri 4/1/16*	*Fri 3/31/17*
21	*Subtask 12.3: San Pasqual Tribe Reclaimed Water Expansion*	*262 days*	*Fri 4/1/16*	*Fri 3/31/17*
22	*Subtask 12.4: San Pasqual Tribe Water Meters*	*262 days*	*Fri 4/1/16*	*Fri 3/31/17*
23	*Subtask 12.5: La Jolla Tribe Water Tank*	*262 days*	*Fri 4/1/16*	*Fri 3/31/17*
24	*Subtask 12.6: Quiet Oaks Mobile Home Park Nitrate Treatment*	*370 days*	*Fri 4/1/16*	*Wed 8/30/17*
25	*Subtask 12.7: Wilowside Terrace Water System Connection*	*262 days*	*Sat 4/1/17*	*Sat 3/31/18*
26	*Subtask 12.8: Richardson Beardsley Park Treatment*	*262 days*	*Fri 4/1/16*	*Fri 3/31/17*
27	*Subtask 12.9: Smuggler's Gulch Floating Trash Booms*	*632 days*	*Sat 4/1/17*	*Sat 8/31/19*
28	*Subtask 12.10: Tijuana River-San Diego Connector Restoration Project*	*632 days*	*Sat 4/1/17*	*Sat 8/31/19*

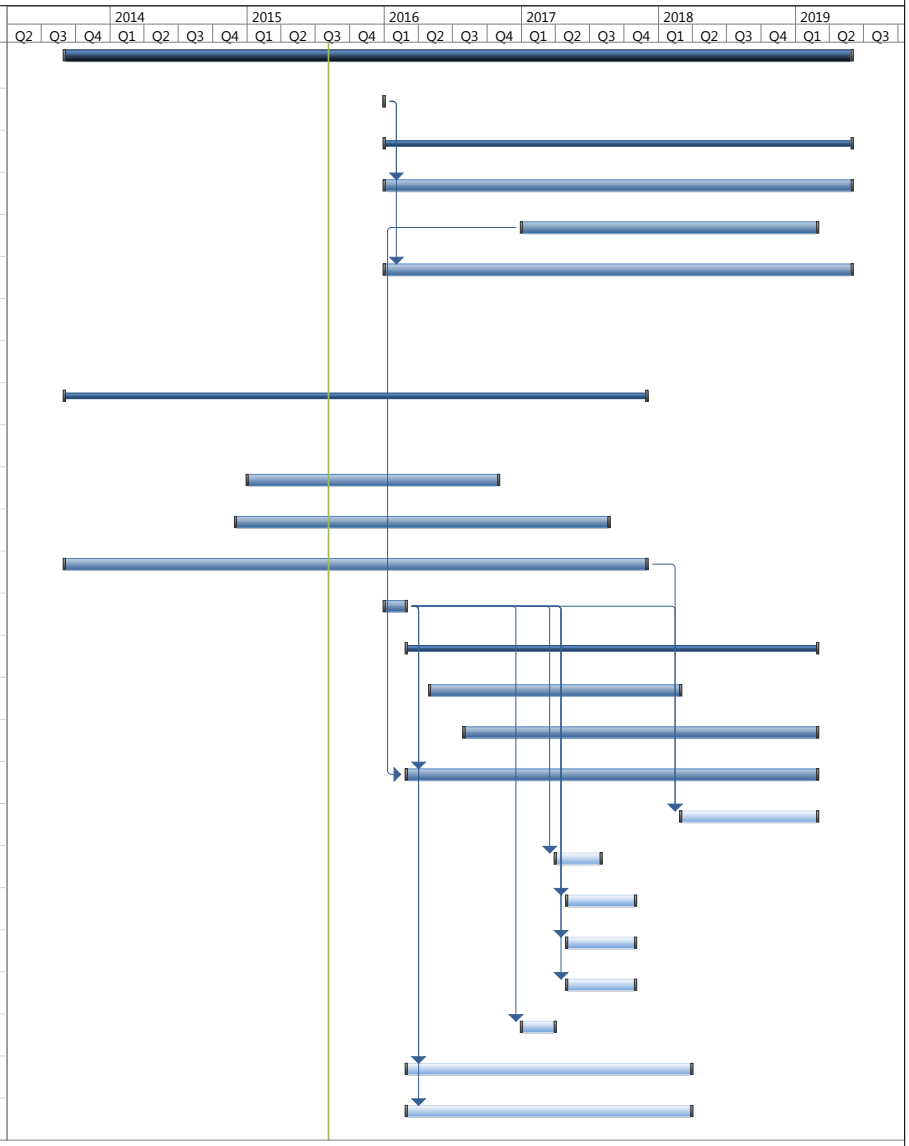


Project: 5.Project# Schedule
Date: Thu 8/6/15

Task	External Tasks	Duration-only	External Tasks		
Split	External Milestone	Manual Summary Rollup	External Milestone		
Milestone	Inactive Milestone	Manual Summary	Progress		
Summary	Inactive Summary	Start-only	Deadline		
Project Summary	Manual Task	Finish-only			

Project 6: Integrated Water Resource Solutions for the Carlsbad Watershed
Schedule

ID	Task Name	Duration	Start	Finish
1	**Integrated Water Resource Solutions for the Carlsbad Watershed**	**1501 days**	**Sun 9/1/13**	**Fri 5/31/19**
2	**Grant Award Date**	**1 day**	**Thu 12/31/15**	**Thu 12/31/15**
3	**Row (a): Direct Project Administration**	**891 days**	**Fri 1/1/16**	**Fri 5/31/19**
4	Task 1: Project Management	891 days	Fri 1/1/16	Fri 5/31/19
5	Task 2: Labor Compliance Program	565 days	Sun 1/1/17	Thu 2/28/19
6	Task 3: Reporting	891 days	Fri 1/1/16	Fri 5/31/19
7	**Row (b): Land Purchase/Easements**			
8	~~Task 4: Land Purchase~~			
9	**Row (c): Planning/Desgin/Eng/Environmental**	**1110 days**	**Sun 9/1/13**	**Thu 11/30/17**
10	~~Task 5: Feasibility Studies~~			
11	Task 6: CEQA Documentation	478 days	Thu 1/1/15	Mon 10/31/16
18	Task 7: Permitting	711 days	Mon 12/1/14	Mon 8/21/17
24	Task 8: Design	1110 days	Sun 9/1/13	Thu 11/30/17
31	Task 9: Project Performance Monitoring Plan	42 days	Fri 1/1/16	Sun 2/28/16
32	**Row (d): Construction/Implementation**	**784 days**	**Mon 2/29/16**	**Thu 2/28/19**
33	Task 10: Contract Services	478 days	Sun 5/1/16	Wed 2/28/18
40	Task 11: Construction Administration	674 days	Mon 8/1/16	Thu 2/28/19
47	Task 12: Construction/Implementation	784 days	Mon 2/29/16	Thu 2/28/19
48	*Subtask 12.1: Highway 101 Streetscape*	261 days	Thu 3/1/18	Thu 2/28/19
49	*Subtask 12.2: Highway 101 Greenstreet Retrofit*	87 days	Sat 4/1/17	Mon 7/31/17
50	*Subtask 12.3: Manchester Avenue Recycled Water Pipeline*	132 days	Mon 5/1/17	Tue 10/31/17
51	*Subtask 12.4: Via de la Valle/Highway 101 Recycled Water Pipeline*	132 days	Mon 5/1/17	Tue 10/31/17
52	*Subtask 12.5: Encinitas Ranch/Requeza Street Recycled Water Pipeline*	132 days	Mon 5/1/17	Tue 10/31/17
53	*Subtask 12.6: San Elijo WRF LID Project*	66 days	Sun 1/1/17	Fri 3/31/17
54	*Subtask 12.7: SELC Water Quality/Quantity Monitoring*	545 days	Mon 2/29/16	Fri 3/30/18
55	*Subtask 12.8: SELC Community Outreach*	545 days	Mon 2/29/16	Fri 3/30/18

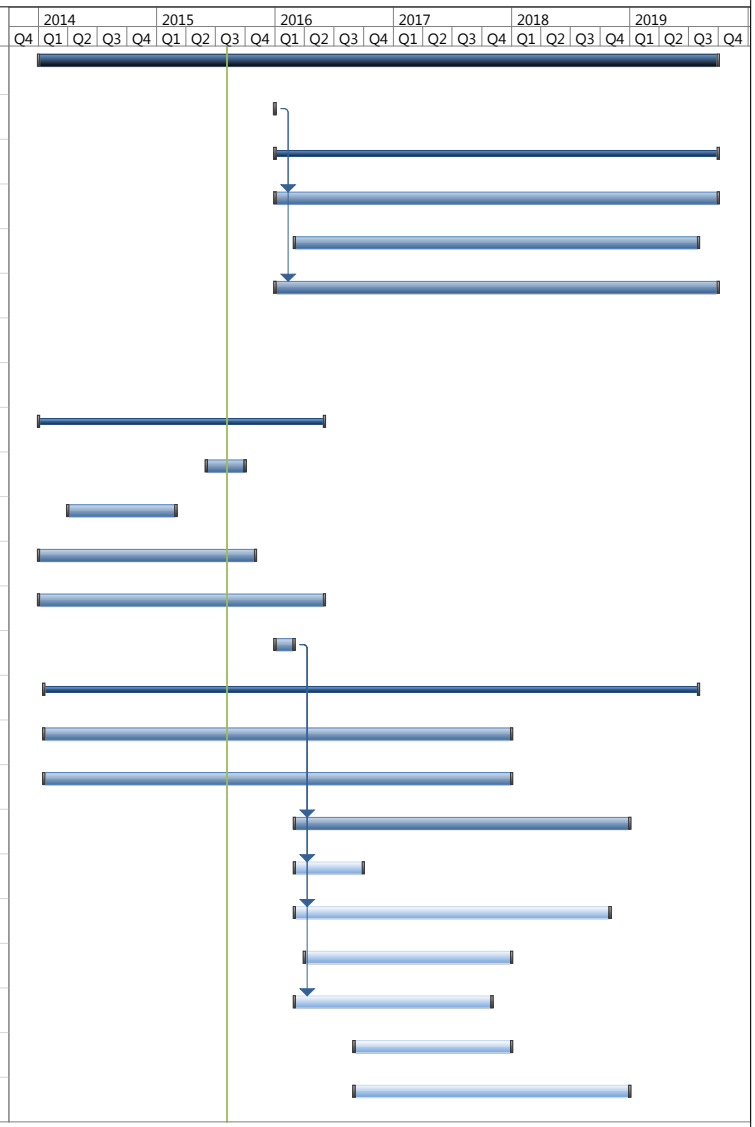


Date: Thu 8/6/15

Task	Inactive Task	Manual Summary Rollup	External Milestone
Split	Inactive Milestone	Manual Summary	Deadline
Milestone	Inactive Summary	Start-only	Progress
Summary	Manual Task	Finish-only	Manual Progress
Project Summary	Duration-only	External Tasks	

Project 7: UCSD Water Conservation and Watershed Protection Project Schedule

ID	Task Name	Duration	Start	Finish
1	**UCSD Water Conservation and Watershed Protection Project**	**1499 days**	**Wed 1/1/14**	**Mon 9/30/19**
2	**Grant Award Date**	**1 day**	**Thu 12/31/15**	**Thu 12/31/15**
3	**Row (a): Direct Project Administration**	**977 days**	**Fri 1/1/16**	**Mon 9/30/19**
4	Task 1: Project Management	977 days	Fri 1/1/16	Mon 9/30/19
5	Task 2: Labor Compliance Program	892 days	Tue 3/1/16	Wed 7/31/19
6	Task 3: Reporting	977 days	Fri 1/1/16	Mon 9/30/19
7	**Row (b): Land Purchase/Easements**			
8	~~Task 4: Land Purchase~~			
9	**Row (c): Planning/Design/Eng/Environmental**	**631 days**	**Wed 1/1/14**	**Wed 6/1/16**
10	Task 5: Feasibility Studies	86 days	Wed 6/3/15	Wed 9/30/15
13	Task 6: CEQA Documentation	240 days	Tue 4/1/14	Sat 2/28/15
17	Task 7: Permitting	479 days	Wed 1/1/14	Sun 11/1/15
19	Task 8: Design			
24	Task 9: Project Performance Monitoring Plan	42 days	Fri 1/1/16	Sun 2/28/16
25	**Row (d): Construction/Implementation**	**1444 days**	**Fri 1/17/14**	**Wed 7/31/19**
26	Task 10: Contract Services	1032 days	Fri 1/17/14	Sun 12/31/17
27	Task 11: Construction Administration	1032 days	Fri 1/17/14	Sun 12/31/17
28	Task 12: Construction/Implementation	892 days	Tue 3/1/16	Wed 7/31/19
29	*Subtask 12.1: CUP Reclaimed Water Cooling Tower Retrofit*	153 days	Tue 3/1/16	Thu 9/29/16
30	*Subtask 12.2: Air Handling Unit Condensate Collection and Reuse*	697 days	Tue 3/1/16	Wed 10/31/18
31	*Subtask 12.3: Water Conservation Community Outreach*	457 days	Fri 4/1/16	Sun 12/31/17
32	*Subtask 12.4: Turf Removal and Stormwater Treatment*	436 days	Tue 3/1/16	Tue 10/31/17
33	*Subtask 12.5: Modular Wetland Treatment System and Monitoring*	348 days	Thu 9/1/16	Sun 12/31/17
34	*Subtask 12.6: TRV Non-Point Source Pollution Reduction and Habitat Restoration*	608 days	Thu 9/1/16	Mon 12/31/18

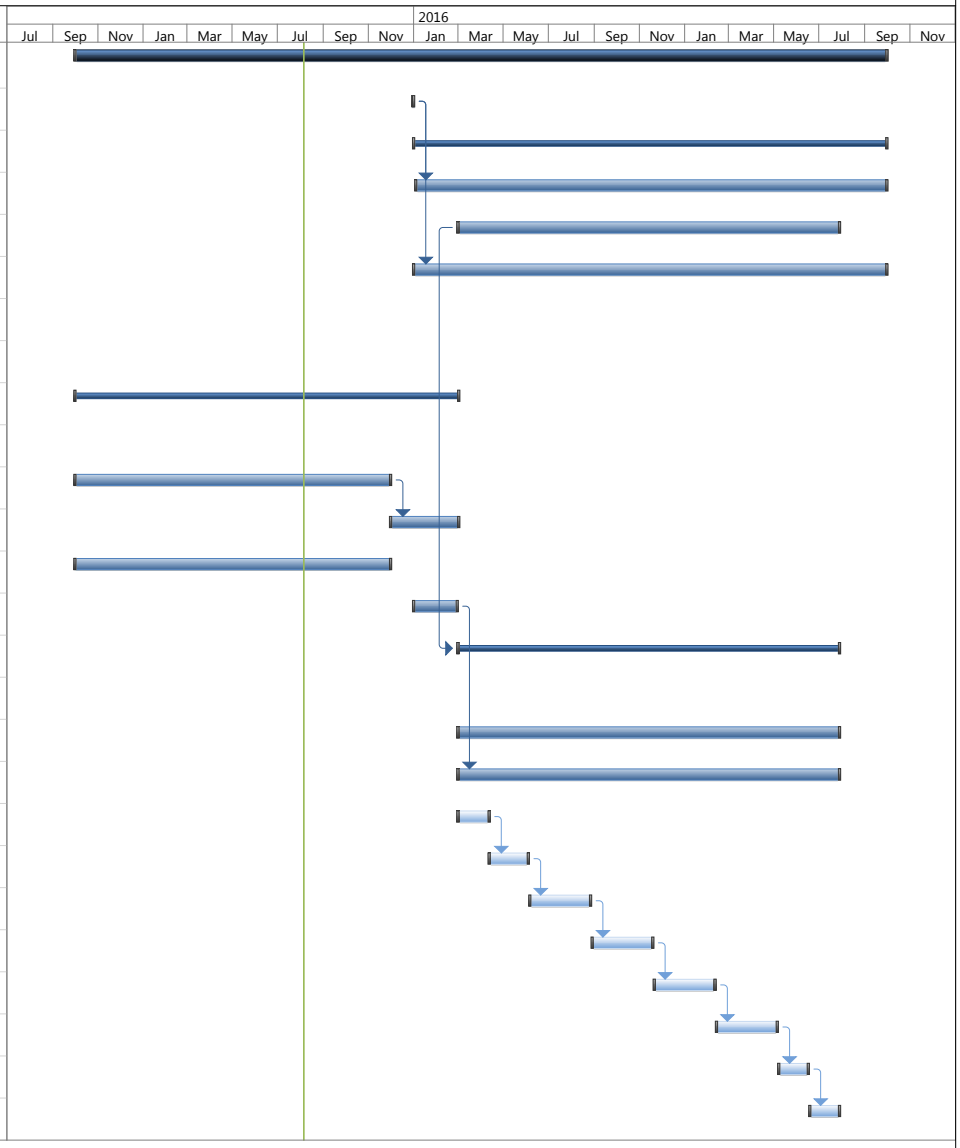


Date: Thu 8/6/15

Task	Inactive Task	Manual Summary Rollup	External Milestone
Split	Inactive Milestone	Manual Summary	Deadline
Milestone	Inactive Summary	Start-only	Progress
Summary	Manual Task	Finish-only	Manual Progress
Project Summary	Duration-only	External Tasks	

Project 8: Escondido Advanced Water Treatment for Agriculture Schedule

ID	Task Name	Duration	Start	Finish
1	**Escondido Advanced Water Treatment for Agriculture**	**784 days**	**Wed 10/1/14**	**Sat 9/30/17**
2	**Grant Award Date**	**1 day**	**Thu 12/31/15**	**Thu 12/31/15**
3	**Row (a): Direct Project Administration**	**457 days**	**Fri 1/1/16**	**Sat 9/30/17**
4	Task 1: Project Management	456 days	Mon 1/4/16	Sat 9/30/17
5	Task 2: Labor Compliance Program	369 days	Tue 3/1/16	Fri 7/28/17
6	Task 3: Reporting	457 days	Fri 1/1/16	Sat 9/30/17
7	**Row (b): Land Purchase/Easements**			
8	~~Task 4: Land Purchase~~			
9	**Row (c): Planning/Desgin/Eng/Environmental**	**370 days**	**Wed 10/1/14**	**Tue 3/1/16**
10	~~Task 5: Feasibility Studies~~			
11	Task 6: CEQA Documentation	304 days	Wed 10/1/14	Mon 11/30/15
13	Task 7: Permitting	66 days	Tue 12/1/15	Tue 3/1/16
14	Task 8: Design	304 days	Wed 10/1/14	Mon 11/30/15
18	Task 9: Project Performance Monitoring Plan	42 days	Fri 1/1/16	Sun 2/28/16
19	**Row (d): Construction/Implementation**	**369 days**	**Tue 3/1/16**	**Fri 7/28/17**
20	~~Task 10: Contract Services~~			
21	Task 11: Construction Administration	369 days	Tue 3/1/16	Fri 7/28/17
22	Task 12: Construction/Implementation	369 days	Tue 3/1/16	Fri 7/28/17
23	*Subtask 12.1: Mobilization and Insurance*	*30 days*	*Tue 3/1/16*	*Mon 4/11/16*
24	*Subtask 12.2: Yard Piping and Sitework*	*39 days*	*Tue 4/12/16*	*Fri 6/3/16*
25	*Subtask 12.3: MFRO Process Building*	*60 days*	*Mon 6/6/16*	*Fri 8/26/16*
26	*Subtask 12.4: Inter Process Storage Tank*	*60 days*	*Mon 8/29/16*	*Fri 11/18/16*
27	*Subtask 12.5: Chemical Storage Building*	*60 days*	*Mon 11/21/16*	*Fri 2/10/17*
28	*Subtask 12.6: Product Water Storage and MF Feed Tanks*	*60 days*	*Mon 2/13/17*	*Fri 5/5/17*
29	*Subtask 12.7: HARRF Improvements*	*30 days*	*Mon 5/8/17*	*Fri 6/16/17*
30	*Subtask 12.8: Project Closeout*	*30 days*	*Mon 6/19/17*	*Fri 7/28/17*

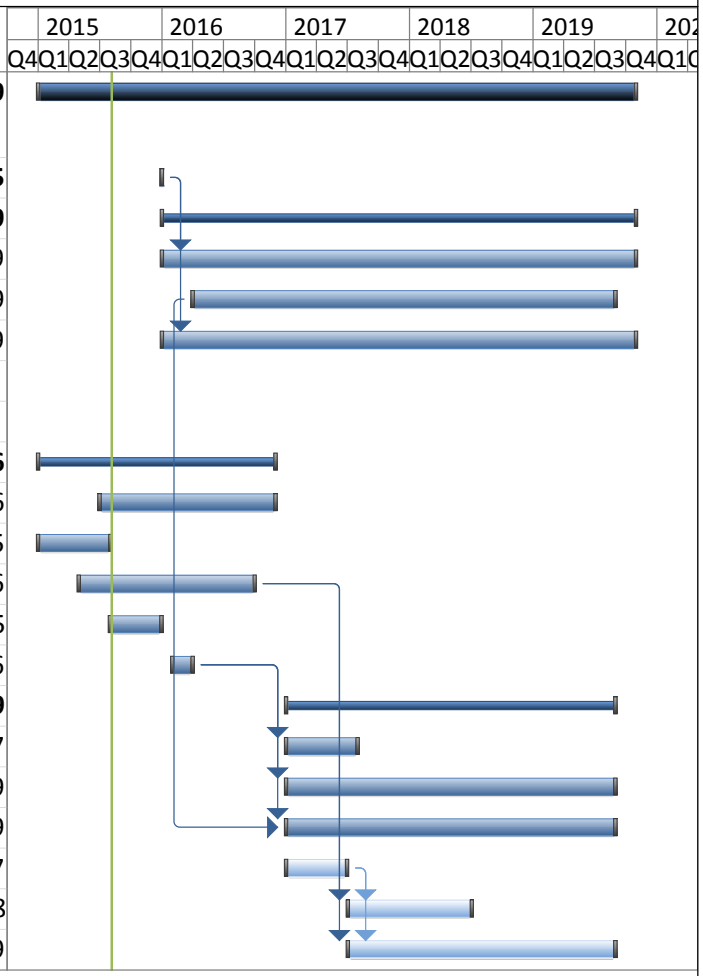


Date: Thu 8/6/15

Task	Inactive Task	Manual Summary Rollup	External Milestone
Split	Inactive Milestone	Manual Summary	Deadline
Milestone	Inactive Summary	Start-only	Progress
Summary	Manual Task	Finish-only	Manual Progress
Project Summary	Duration-only	External Tasks	

Project 9: Padre Dam Advanced Water Treatment - Phase IA Expansion Schedule

ID	Task Name	Duration	Start	Finish
1	**Padre Dam Water Recycling Facility, Phase IA Expansion**	**1261 days**	**Thu 1/1/15**	**Thu 10/31/19**
2	**Grant Award Date**	**1 day**	**Thu 12/31/15**	**Thu 12/31/15**
3	**Row (a): Direct Project Administration**	**1000 days**	**Fri 1/1/16**	**Thu 10/31/19**
4	Task 1: Project Management	1000 days	Fri 1/1/16	Thu 10/31/19
5	Task 2: Labor Compliance Program	892 days	Fri 4/1/16	Sat 8/31/19
6	Task 3: Reporting	1000 days	Fri 1/1/16	Thu 10/31/19
7	**Row (b): Land Purchase/Easements**			
8	~~Task 4: Land Purchase~~			
9	**Row (c): Planning/Design/Eng/Environmental**	**501 days**	**Thu 1/1/15**	**Thu 12/1/16**
10	Task 5: Feasibility Studies	372 days	Wed 7/1/15	Thu 12/1/16
11	Task 6: CEQA Documentation	153 days	Thu 1/1/15	Sat 8/1/15
12	Task 7: Permitting	371 days	Fri 5/1/15	Fri 9/30/16
13	Task 8: Design	109 days	Sat 8/1/15	Wed 12/30/15
14	Task 9: Project Performance Monitoring Plan	44 days	Mon 2/1/16	Thu 3/31/16
15	**Row (d): Construction/Implementation**	**695 days**	**Mon 1/2/17**	**Sat 8/31/19**
16	Task 10: Contract Services	151 days	Mon 1/2/17	Mon 7/31/17
17	Task 11: Construction Administration	696 days	Mon 1/2/17	Sat 8/31/19
18	Task 12: Construction/Implementation	696 days	Mon 1/2/17	Sat 8/31/19
19	*Subtask 12.1: Design/Build - Final Design*	130 days	Mon 1/2/17	Fri 6/30/17
20	*Subtask 12.2: Design/Build - IPS Expansion*	262 days	Mon 7/3/17	Tue 7/3/18
21	*Subtask 12.3: Design/Build - WRF Expansion*	566 days	Mon 7/3/17	Sat 8/31/19

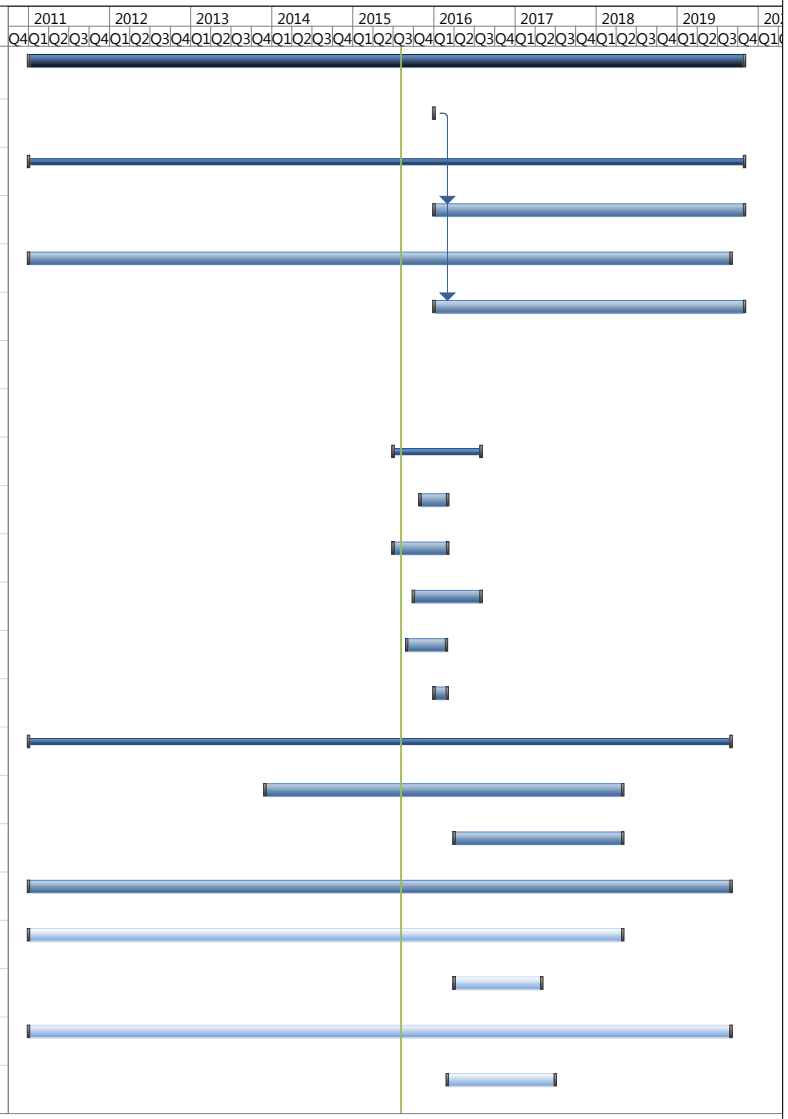


Date: Thu 8/6/15

Task		External Milestone		Manual Summary Rollup	
Split		Inactive Task		Manual Summary	
Milestone		Inactive Milestone		Start-only	
Summary		Inactive Summary		Finish-only	
Project Summary		Manual Task		Deadline	
External Tasks		Duration-only		Progress	

Project 10: Safari Park Drought Response and Outreach Program
Schedule

ID	Task Name	Duration	Start	Finish
1	**Safari Park Drought Response and Outreach Project**	**2305 days**	**Sat 1/1/11**	**Thu 10/31/19**
2	**Grant Award Date**	**1 day**	**Thu 12/31/15**	**Thu 12/31/15**
3	**Row (a): Direct Project Administration**	**2305 days**	**Sat 1/1/11**	**Thu 10/31/19**
4	Task 1. Project Management	1000 days	Fri 1/1/16	Thu 10/31/19
5	Task 2. Labor Compliance Program	2262 days	Sat 1/1/11	Sat 8/31/19
6	Task 3. Reporting	1000 days	Fri 1/1/16	Thu 10/31/19
7	**Row (b): Land Purchase/Easements**			
8	~~Task 4. Land Purchase~~			
9	**Row (c): Planning/Design/Eng/Environmental**	**284 days**	**Wed 7/1/15**	Sun 7/31/16
10	Task 5. Feasibility Studies	89 days	Fri 10/30/15	Wed 3/2/16
14	Task 6. CEQA Documentation	176 days	Wed 7/1/15	Wed 3/2/16
17	Task 7. Permitting	218 days	Thu 10/1/15	Sun 7/31/16
18	Task 8. Design	129 days	Tue 9/1/15	Fri 2/26/16
22	Task 9. Project Performance Monitoring Plan	42 days	Fri 1/1/16	Mon 2/29/16
23	**Row (d): Construction/Implementation**	**2260 days**	**Sat 1/1/11**	**Sat 8/31/19**
24	Task 10. Contract Services	1152 days	Sun 12/1/13	Mon 4/30/18
25	Task 11. Construction Administration	542 days	Fri 4/1/16	Mon 4/30/18
26	Task 12. Construction/Implementation	2262 days	Sat 1/1/11	Sat 8/31/19
27	*Subtask 12.1: Construction*	1912 days	Sat 1/1/11	Mon 4/30/18
28	*Subtask 12.2: Prepare O&M Manuals and As-Builts*	282 days	Fri 4/1/16	Sun 4/30/17
29	*Subtask 12.3: Public Outreach and Water Education Programs*	2262 days	Sat 1/1/11	Sat 8/31/19
30	*Subtask 12.4: Turf Conversion*	*349 days*	*Tue 3/1/16*	*Fri 6/30/17*

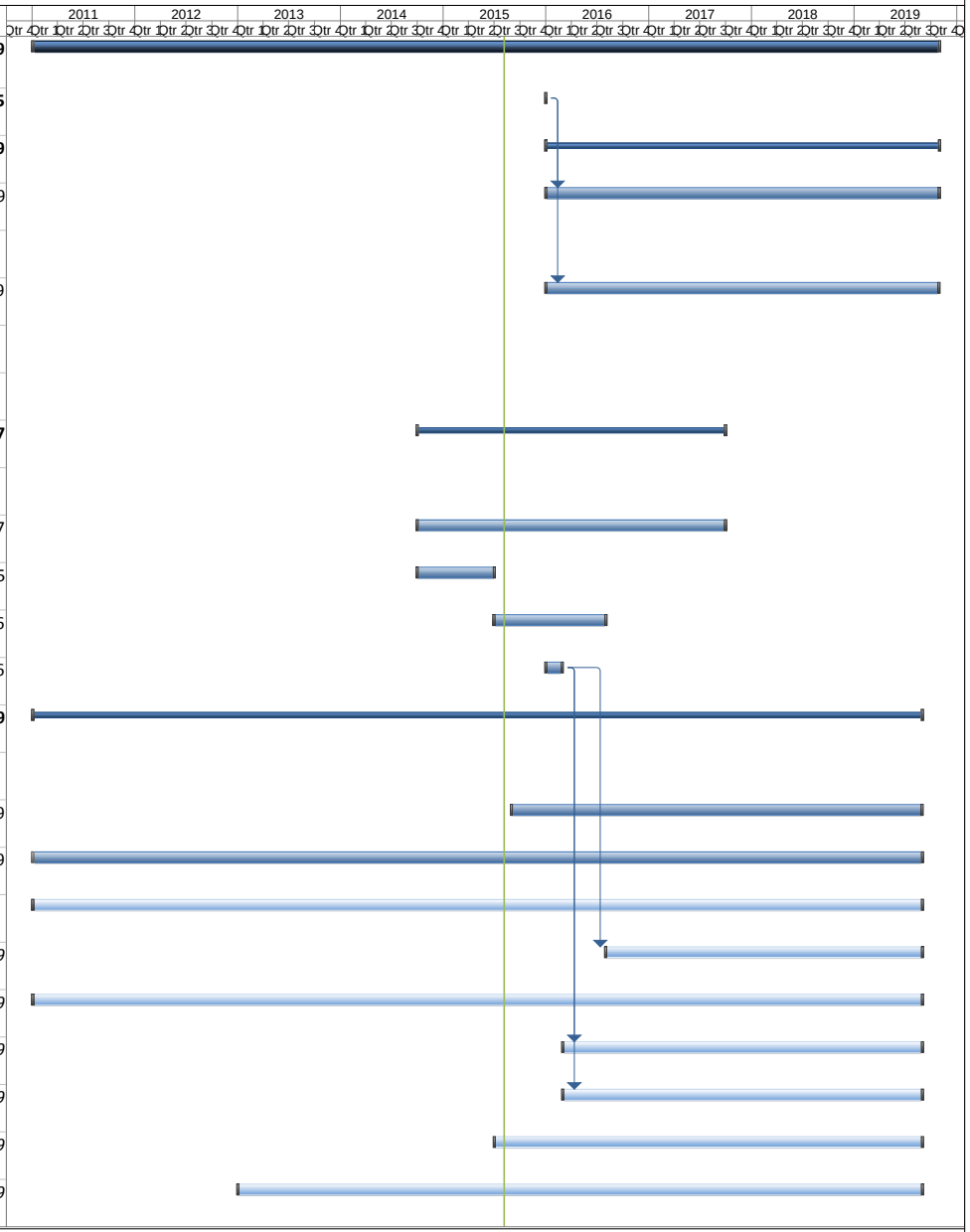


Date: Thu 8/6/15

Task	Inactive Task	Manual Summary Rollup	External Milestone
Split	Inactive Milestone	Manual Summary	Deadline
Milestone	Inactive Summary	Start-only	Progress
Summary	Manual Task	Finish-only	Manual Progress
Project Summary	Duration-only	External Tasks	

Project 11: San Diego River Healthy Headwaters Restoration
Schedule

ID	Task Name	Duration	Start	Finish
1	**San Diego River Healthy Headwaters Restoration**	**2306 days**	**Mon 1/3/11**	**Thu 10/31/19**
2	**Grant Award Date**	**1 day**	**Thu 12/31/15**	**Thu 12/31/15**
3	**Row (a): Direct Project Administration**	**1002 days**	**Fri 1/1/16**	**Thu 10/31/19**
4	Task 1: Project Management	1001 days	Fri 1/1/16	Wed 10/30/19
5	~~Task 2: Labor Compliance Program~~			
6	Task 3: Reporting	1000 days	Fri 1/1/16	Thu 10/31/19
7	**Row (b): Land Purchase/Easement**			
8	~~Task 4: Land Purchase~~			
9	**Row (c): Planning/Design/Eng/Environmental**	**784 days**	**Wed 10/1/14**	**Sat 9/30/17**
10	~~Task 5: Feasibility Studies~~			
11	Task 6: CEQA Documentation	784 days	Wed 10/1/14	Sat 9/30/17
12	Task 7: Permitting	196 days	Wed 10/1/14	Wed 7/1/15
13	Task 8: Design	284 days	Wed 7/1/15	Mon 8/1/16
14	Task 9: Project Performance Monitoring Plan	41 days	Fri 1/1/16	Sun 2/28/16
15	**Row (d): Construction/Implementation**	**2262 days**	**Mon 1/3/11**	**Sat 8/31/19**
16	~~Task 10: Contract Services~~			
17	Task 11: Construction Administration	1045 days	Tue 9/1/15	Sat 8/31/19
18	Task 12: Construction/Implementation	2262 days	Mon 1/3/11	Sat 8/31/19
19	*Subtask 12.1: Invasive Weed Treatment*			
20	*12.1A: Catchment Wide Strategic Treatment Plan Implementation*	*807 days*	*Mon 8/1/16*	*Sat 8/31/19*
21	*12.1B: Alpine Watershed Invasive Weed Treatment*	*2262 days*	*Mon 1/3/11*	*Sat 8/31/19*
22	*12.1C: USFS Invasive Weed Treatment*	*916 days*	*Tue 3/1/16*	*Sat 8/31/19*
23	*12.1D: SDRPF Outreach, Education, and Invasive Weed Treatment*	*916 days*	*Tue 3/1/16*	*Sat 8/31/19*
24	*Subtask 12.2: Impacted Site Management and Restoration*	*1089 days*	*Thu 7/2/15*	*Sat 8/31/19*
25	*Subtask 12.3: Invasive Wildlife Species Removal*	*1741 days*	*Tue 1/1/13*	*Sat 8/31/19*

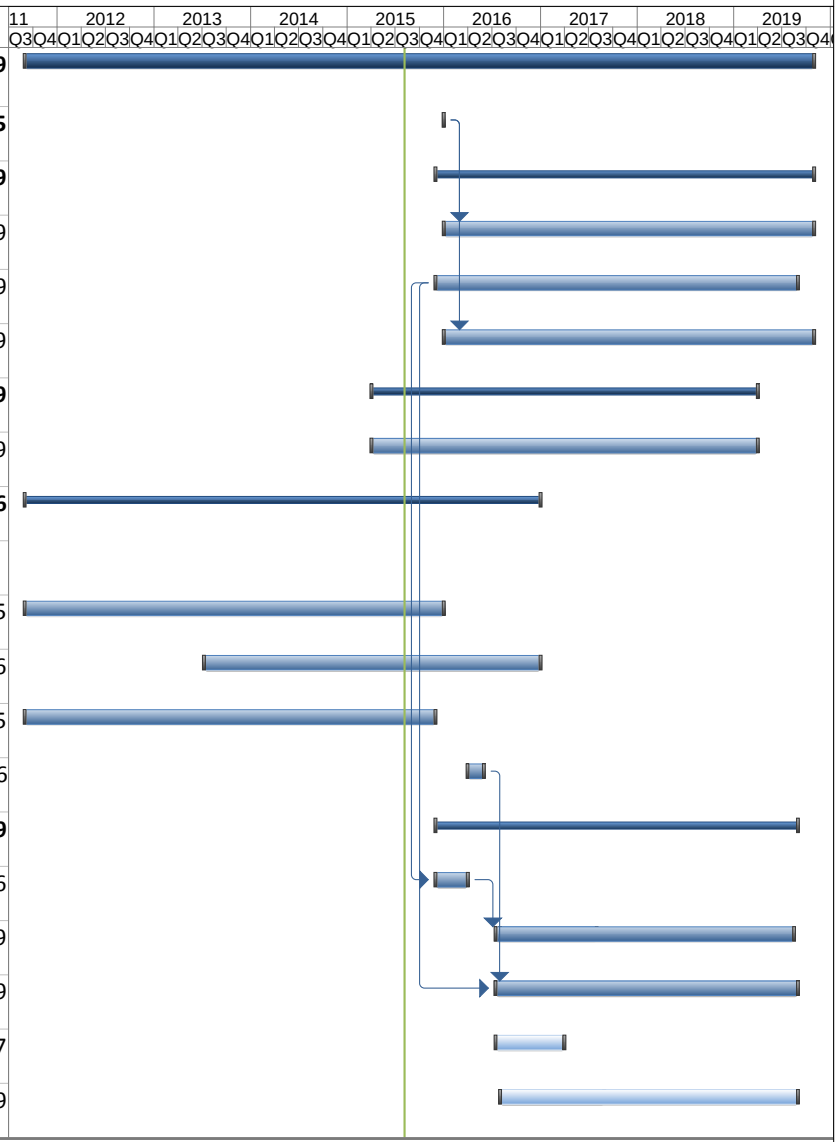


Date: Thu 8/6/15

Task
Split
Milestone
Summary
Project Summary
External Tasks
External Milestone
Inactive Milestone
Inactive Summary
Manual Task
Duration-only
Manual Summary Rollup
Manual Summary
Start-only
Finish-only
External Tasks
External Milestone
Progress
Deadline

Project 12: Sweetwater Reservoir Wetlands Habitat Recovery Project Schedule

ID	Task Name	Duration	Start	Finish
1	**Sweetwater Reservoir Wetlands Habitat Recovery**	**2133 days**	**Wed 8/31/11**	**Thu 10/31/19**
2	**Grant Award Date**	**1 day**	**Thu 12/31/15**	**Thu 12/31/15**
3	**Row (a): Direct Project Administration**	**1024 days**	**Tue 12/1/15**	**Thu 10/31/19**
4	Task 1: Project Management	1001 days	Fri 1/1/16	Thu 10/31/19
5	Task 2: Labor Compliance Program	980 days	Tue 12/1/15	Sat 8/31/19
6	Task 3: Reporting	1001 days	Fri 1/1/16	Thu 10/31/19
7	**Row (b): Land Purchase/Easement**	**1042 days**	**Fri 4/3/15**	**Mon 4/1/19**
8	Task 4: Land Purchase	1042 days	Fri 4/3/15	Mon 4/1/19
12	**Row (c): Planning/Design/Eng/Environmental**	**1393 days**	**Wed 8/31/11**	**Sat 12/31/16**
13	~~Task 5: Feasibility Studies~~			
14	Task 6: CEQA Documentation	1132 days	Wed 8/31/11	Thu 12/31/15
17	Task 7: Permitting	909 days	Tue 7/9/13	Sat 12/31/16
23	Task 8: Design	1109 days	Wed 8/31/11	Mon 11/30/15
26	Task 9: Project Performance Monitoring Plan	44 days	Thu 3/31/16	Tue 5/31/16
27	**Row (d): Construction/Implementation**	**980 days**	**Tue 12/1/15**	**Sat 8/31/19**
28	Task 10: Contract Services	88 days	Tue 12/1/15	Thu 3/31/16
33	Task 11: Construction Administration	806 days	Fri 7/15/16	Fri 8/16/19
36	Task 12: Construction/Implementation	817 days	Fri 7/15/16	Sat 8/31/19
37	*Subtask 12.1: Mobilization and Site Preparation*	186 days	Fri 7/15/16	Fri 3/31/17
44	*Subtask 12.2: Project Construction*	806 days	Mon 8/1/16	Sat 8/31/19

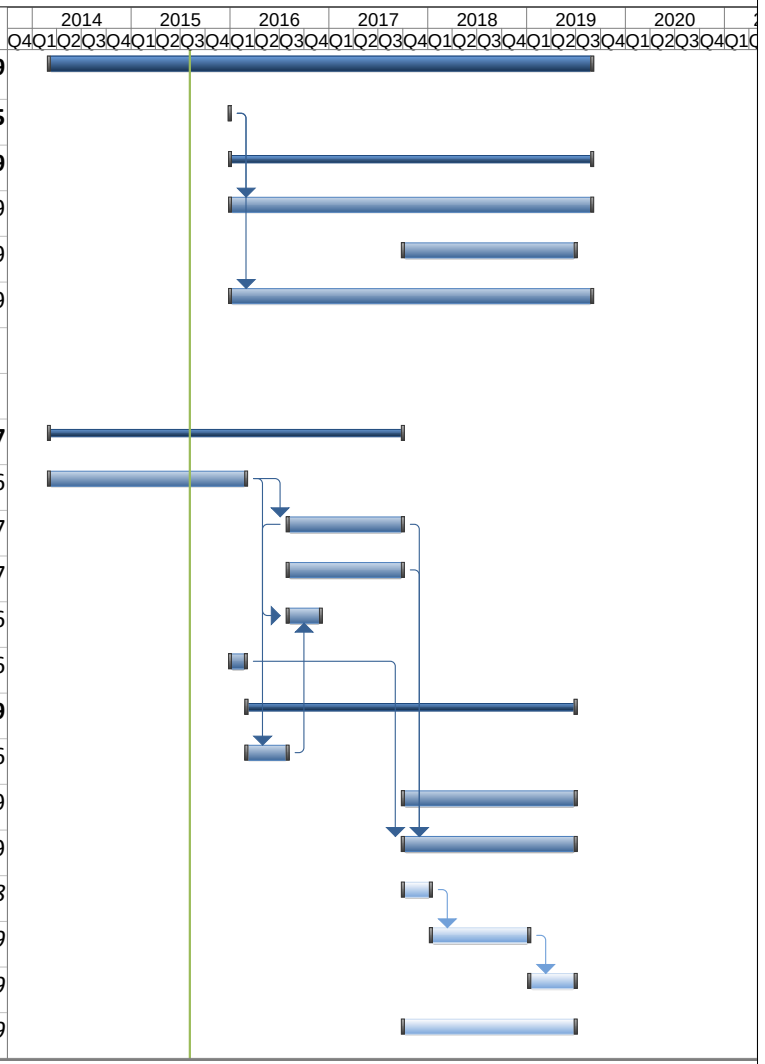


Date: Thu 8/6/15

Task	External Tasks	Duration-only	External Tasks		
Split	External Milestone	Manual Summary Rollup	External Milestone		
Milestone	Inactive Milestone	Manual Summary	Progress		
Summary	Inactive Summary	Start-only	Deadline		
Project Summary	Manual Task	Finish-only			

Project 13: Hodges Reservoir Natural Treatment System Project Schedule

ID	Task Name	Duration	Start	Finish
1	**Hodges Reservoir Natural Treatment System Project**	**1440 days**	**Mon 3/3/14**	**Fri 8/30/19**
2	**Grant Award Date**	**0 days**	**Thu 12/31/15**	**Thu 12/31/15**
3	**Row (a): Direct Project Administration**	**961 days**	**Fri 1/1/16**	**Fri 8/30/19**
4	Task 1: Project Management	961 days	Fri 1/1/16	Fri 8/30/19
5	Task 2: Labor Compliance Program	458 days	Sun 10/1/17	Sun 6/30/19
6	Task 3: Reporting	961 days	Fri 1/1/16	Fri 8/30/19
7	**Row (b): Land Purchase/Easement**			
8	~~Task 4: Land Purchase~~			
9	**Row (c): Planning/Design/Engineering/Environmental**	**937 days**	**Mon 3/3/14**	**Sat 9/30/17**
10	Task 5: Feasibility Studies	521 days	Mon 3/3/14	Mon 2/29/16
11	Task 6: CEQA Documentation	306 days	Mon 8/1/16	Sat 9/30/17
12	Task 7: Permitting	306 days	Mon 8/1/16	Sat 9/30/17
13	Task 8: Design	89 days	Mon 8/1/16	Thu 12/1/16
14	Task 9: Project Performance Monitoring Plan	41 days	Fri 1/1/16	Sun 2/28/16
15	**Row (d): Construction/Implementation**	**873 days**	**Wed 3/2/16**	**Sun 6/30/19**
16	Task 10: Contract Services	109 days	Wed 3/2/16	Sun 7/31/16
17	Task 11: Construction Administration	458 days	Sun 10/1/17	Sun 6/30/19
18	Task 12: Construction/Implementation	458 days	Sun 10/1/17	Sun 6/30/19
19	*Subtask 12.1: Pre-Construction/Site-Preparation*	*75 days*	*Sun 10/1/17*	*Thu 1/11/18*
20	*Subtask 12.2: Wetlands Construction*	*261 days*	*Fri 1/12/18*	*Thu 1/10/19*
21	*Subtask 12.3: Post-Construction*	*122 days*	*Fri 1/11/19*	*Sun 6/30/19*
22	*Subtask 12.4: Public Outreach*	*458 days*	*Sun 10/1/17*	*Sun 6/30/19*



Date: Thu 8/6/15

Task		Inactive Milestone		Finish-only	
Split		Inactive Summary		External Tasks	
Milestone		Manual Task		External Milestone	
Summary		Duration-only		Progress	
Project Summary		Manual Summary Rollup		Deadline	
External Tasks		Manual Summary			
External Milestone		Start-only			

Grant Administration

Grant Administration will be conducted by the San Diego County Water Authority (SDCWA), as the authorized grantee from the San Diego IRWM Region, from the assumed Grant Award Date of December 31, 2015 through contract completion on February 28, 2020. Task 1 will involve development and administration of the agreements with the California Department of Water Resources (DWR) and all local project sponsors (LPS). This task will begin on December 31, 2015 and conclude on March 23, 2016. Task 2 will involve review and compilation of all LPS invoices on a quarterly basis, along with processing any necessary amendments, and will span from March 24, 2016 through October 30, 2019 (when the final project is complete). Task 3 involves review and compilation of LPS quarterly reports, as well as a project completion reports, and will span from March 24, 2016 through February 28, 2020 when the Grant Program Completion Report is submitted. Grant Administration represents the longest "project" timeframe in this Proposal.

Conservation Program

Project 1: Regional Drought Resiliency Program

The *Regional Drought Resiliency Program* Project started on May 2, 2012 and will continue through October 31, 2019. The assumed Grant Award Date is December 31, 2015. At this time, Direct Project Administration will begin. Task 1 includes managing the grant agreement, preparing and submitting supporting grant documents, coordination with IRWM regional manager, administrative responsibilities associated with the project such as coordinating with the project team and managing consultants/contractors. The specific agreements to be developed under this task include Memorandums of Understanding (MOUs), Professional Services Agreements, and Letters of Agreement between SDCWA and member agencies. Task 3 includes preparing quarterly progress reports and project completion reports for submittal to DWR. Direct Project Administration will span the length of the entire project life (following grant award), from January 1, 2016 to October 31, 2019.

Planning/Design/Engineering/Environmental Documentation will span from January 1, 2016 to February 28, 2016. Task 9 includes the development of project baseline conditions, monitoring systems to be used, methodology of monitoring, frequency of monitoring, and location of monitoring sites. The development of the plan begins at the time of the grant award and will be complete on February 28, 2016, as this task must be complete in order to receive grant funding under Task 12.

Construction/Implementation will span from May 2, 2012 to August 31, 2019. Task 10 began in May 2012 and will continue until all of Task 12 is complete in August 2019. This task includes execution of existing Professional Service Agreements and the issuance of an RFP for research services, procuring the services of a firm specializing in translation and minority outreach, and may include procuring services for video production and website design. Task 11 includes pre- and post-site inspections, procurement of a contractor to install water efficient devices, tracking and submitting of billable activities and Donovan Correctional Facility (DCF) coordination of inmate schedules to allow for retrofit activities for Component 1, as well as developing a public awareness campaign for Component 2. Subtask 12.1 (Component 1 implementation) begins earlier and ends later than Subtask 12.2 (Component 2 implementation); as such, Task 11 will begin and end concurrently with retrofit activities for Component 1 under Subtask 12.1.

Task 12, includes six subtasks, one for each project component. Subtask 12.1: Correctional Facility Retrofit will begin on March 1, 2016 and will be complete on August 31, 2016. Subtask 12.1 includes the purchase of electronic faucet controllers, aerators, faucet flow reducers, low-flow showerheads with timers, high-efficiency toilets and urinals, and urinal flush valves for installation at DCF. Installation will be completed by CDCR staff and contractors. Task 12 starts directly after the Task 9 is complete as the grant funding for implementation activities cannot be distributed until Task 9 is complete. Subtask 12.2: EC Mapping and Soil Moisture Sensor Systems will begin on April 1, 2016 and continue through December 31, 2018. This component will provide agricultural growers with an EC map tool and soil moisture data to reduce overwatering during cool months and following wet weather events, while allowing irrigation rates to match the specific needs of individual sections of cropland. Subtask 12.3: WaterSmart Field Service Program includes website and database maintenance, application processing and scheduling, and site audits and report generation for the program. This component will begin on March 1, 2016 (after completion of Task 9) and will be complete on August 31, 2019. Subtask 12.4: Sustainable Landscapes

Program, and Subtask 12.5: WaterSmart Landscape Makeover Program will both begin April 1, 2016 and will be complete on August 31, 2019. Subtask 12.4 includes activities to continue implementation of the existing Turf Rebate Program. Subtask 12.5 includes administration and reporting, marketing and enrollment, event management and logistics, curriculum revision and instruction, technical assistance and online educational content in support of project implementation. Subtask 12.6: Drought Outreach and Education, will begin on January 1, 2016 and will be complete on August 31, 2019. All of Task 12 will be complete on or before August 31, 2019 to allow time for the final Project Completion Report (under Task 3) to be prepared and submitted by the project completion date of October, 31, 2019.

Project 2: Conservation Home Makeover in the Chollas Creek Watershed

The *Conservation Home Makeover the Chollas Creek Watershed* Project will start on December 31, 2015, the assumed Grant Award Date, and will continue through October 31, 2019. At the time of the grant award, Direct Project Administration will begin. Task 1 includes negotiating Memorandum of Agreements (MOAs) with project partners. Task 3 includes preparing quarterly progress reports, project completion report, and compiling invoices for submittal to DWR. Direct Project Administration will span the length of the entire project life, from January 1, 2016 to October 31, 2019.

Planning/Design/Engineering/Environmental Documentation will span January 1, 2016 to February 28, 2016. Task 9 includes development of project baseline conditions, monitoring systems to be used, methodology of monitoring, frequency of monitoring, and the system for widely sharing the data. The development of the plan will begin at the time of the grant award and will be complete on February 28, 2016, as this task must be complete in order to receive grant funding for activities under Task 12.

Construction/Implementation will span from March 1, 2016 to August 31, 2019. Task 11 includes oversight of project implementation activities, and development of participation surveys. For this reason, it will begin and end concurrently with all Task 12 activities.

Task 12 includes nine subtasks, one for each project component. Subtasks 12.1 through 12.5 will start directly after Task 9 is complete on March 1, 2016 because grant funding for implementation activities cannot be distributed until Task 9 is complete. The timeline presented here is based on assumptions regarding how many makeovers can be implemented per year, and anticipated participation rates, and represent the longest timeframe for implementation. Subtask 12.1: Agreement Negotiation will be complete on June 1, 2019, and includes outreach to homeowners and homeowner associations to announce the conservation home makeover program. Groundwork will develop and enter into 50 agreements with participating homeowners. Monthly newsletters will be created and sent to program participants. Subtask 12.2: Education will continue through July 2, 2018, and will engage students in water and energy conservation education. Lesson plans and materials for field trips will be developed. Programs will include a pre- and post-program knowledge evaluation. Subtasks 12.3 through 12.5 will all begin on March 1, 2016 and will be complete on August 31, 2019. Subtask 12.3: Water Use Evaluations includes working with participating homeowners to complete a home energy and water use evaluation. Staff will develop concept plans for vegetation changes, greywater systems, and energy systems for each participant. Subtask 12.4 includes monthly inspection of systems and earthworks for one year after installation. Energy and water savings data will be collected during site visits. Subtask 12.5 includes analysis and reporting on direct and indirect project benefits starting from completion of the first conversion component. Subtasks 12.6 through 12.9 will begin on June 1, 2016 in order to allow time for Memorandum of Agreements (under Task 1) to be established, and will all be complete on August 31, 2019. Subtask 12.6: Landscape Earthwork Installation includes reviewing the landscaping portion of the home water use evaluations, meeting with participants to present landscape design concept plans, purchasing planting materials, installing landscaping, and advising homeowners in landscape management. Subtask 12.7: Rainbarrel Installation includes review of home water evaluations, meeting with participants, purchasing and installing rainbarrels, and advising homeowners in use of rainbarrel catchment for landscape management. Subtask 12.8: Greywater Installation includes review of home water use evaluations, purchase and installation of greywater systems, and advising participants in use of greywater systems. Subtask 12.9: Conservation Home Retrofit Devices includes identifying in-home conservation opportunities through retrofits. All of Task 12 will be complete on or before August 31, 2019 to allow time for the final Project Completion Report (under Task 3) to be prepared and submitted by the project completion date of October, 31, 2019.

Project 3: San Diego Water Conservation Program

The *San Diego Water Conservation Program* Project will begin on December 31, 2015, the assumed Grant Award Date, and will continue through August 31, 2018. Upon award of the grant, Direct Project Administration will begin. Task 1 includes preparation and submittal of invoices and documentation to DWR and regular project management activities. Contractual agreements will be established between the City of San Diego, The Garden, and SDSLI. Task 3 includes preparing quarterly progress reports and project completion report for submittal to DWR. Direct Project Administration will span the length of the entire project life from January 1, 2016 to August 31, 2018.

Planning/Design/Engineering/Environmental Documentation will span from December 31, 2015 to April 1, 2016. Task 8 will begin on the grant award date and will be complete on April 1, 2016. This task includes development of greywater rebate program guidelines for use in the pilot program, as well as the design of the physical space of the water-wise efficient irrigation exhibit at The Garden. Task 9 includes activities required for the development of the Project Performance Monitoring Plan, which begins at the time of the grant award and will be complete on February 28, 2016. This task must be complete in order to receive grant funding under Task 12, so Subtasks 12.1 through 12.4 all begin after completion of Task 9, with two subtasks beginning immediately following Task 9 and two beginning after both Tasks 8 and 9 are complete.

Construction/Implementation will span from March 1, 2016 to June 30, 2018. Task 12 includes four subtasks, one for each project component. Subtask 12.1: Greywater Rebate Program, which will implement a pilot rebate program for greywater systems, and Subtask 12.3: The Garden's Outreach/Workshops/Training, which will install a new irrigation exhibit at The Garden and expand educational programs provided by The Garden, will be implemented after the Task 8 is complete. Subtask 12.2: Turf Replacement Rebate Program expands the City's existing turf rebates, so program design and administration are already in place, and implementation can begin immediately following the completion of Task 9. Subtask 12.4: SDSLI's Outreach/Workshops/Training will also begin immediately following completion of Task 9. Subtask 12.4 includes activities required to advertise and implement SDSLI's Laundry to Landscape Workshops, Rainwater Harvesting Classes, Water Conservation for the Land workshops and conducting Water Harvest Neighborhood Tours. All of Task 12 will be complete on or before June 30, 2018 to allow time for the final Project Completion Report (in Task 3) to be prepared and submitted by August, 31, 2018.

Project 4: Ms. Smarty-Plants Grows Water-Wise Schools

The *Ms. Smarty-Plants Grows Water-Wise Schools* Project began on January 1, 2012 and will continue through May 31, 2019. The assumed Grant Award Date is December 31, 2015. At this time, Direct Project Administration will begin. Task 1 includes preparation and submittal of invoices and documentation to DWR and oversight of project tasks and timeliness of deliverables. Task 3 includes preparing quarterly progress reports and project completion report for submittal to DWR. As such, Direct Project Administration will continue from January 1, 2016 to project completion on May 31, 2019. Task 2 will be implemented concurrent with Subtask 12.3: Classroom Expansion, starting on April 18, 2016 and ending on August 31, 2017. This task involves a contract with Golden State to provide labor compliance consultation for the classroom expansion construction.

Planning/Design/Engineering/Environmental Documentation spans from March 1, 2012 to April 15, 2016. Task 5, development of the *Water Conservation Garden Master Plan,* began in March 2012 and was completed on January 31, 2014. Task 7 includes structural, mechanical, electrical, plumbing, and fire suppression permitting for the construction of the classroom expansion in Subtask 12.3. The permitting process will begin at the Grant Award date and will be complete on April 15, 2016. Permits must be in place before construction of the classroom begins. As such, Subtask 12.3 will begin directly after the completion of Task 7. Task 8 began on March 1, 2012 and will be complete on January 15, 2016. This task includes the development of plans, production of engineering and architectural drawings and final design for the classroom expansion. As such, the design component will be complete before implementation of Subtask 12.3: Classroom Expansion begins. Task 9 includes activities required for the development of the Project Performance Monitoring Plan, and will begin at the time of the grant award and will be complete on February 28, 2016. This task must be complete in order to receive grant funding in Task 12.

Construction/Implementation spans from January 1, 2012 to March 31, 2019. Task 10 began on March 14, 2012 to secure the services of a project architect for the classroom expansion component, release a competitive bid,

select a contractor, and coordinate with the general contractor to determine appropriate subcontractors. This task will be complete on April 1, 2016. Task 11 will begin upon completion of Task 10 and includes oversight and coordination with all subcontractors and all construction administration activities. This task will be concurrent with the classroom expansion, and will be complete on August 31, 2017.

Task 12 includes three subtasks, one for each project component. Subtask 12.1: Education and Outreach, began on January 1, 2012 and will be complete on March 31, 2019. This task included delivery of the Ms. Smarty-Plants Grows Water-Wise Schools education program. Subtask 12.2: School Landscape Transitions, will begin on September 15, 2016 and will be complete on March 31, 2019. This task includes identification and recruitment of twelve to fifteen K-12 Title I schools (schools serving predominately low-income students) to participate in the program to replace turf with water-wise landscaping. Site design, planting and irrigation plans will be developed in this task. Subtask 12.3: Classroom Expansion, will begin on April 18, 2016 and will be complete on August 31, 2017. This task includes site preparation, construction, final inspection and clean-up for the expansion of a classroom at The Garden. Subtask 12.3 will be concurrent with Task 3 and will start after the Project Performance Monitoring Plan (in Task 9) is complete as the grant funding cannot be distributed until Task 9 is complete. Permits must also be in place for classroom construction to begin. As such, Subtask 12.3 will begin directly after Task 7 (the latest of the three predecessor tasks for Subtask 12.3) is complete. All of Task 12 will be complete on or before March 31, 2019 to allow time for the final Project Completion Report to be prepared and submitted by the project completion date of May 31, 2019.

Rural Water Infrastructure Program

Project 5: Rural Disadvantaged Community Partnership Project – Phase III

The *Rural Disadvantaged Community Partnership Project – Phase III* Project began on January 31, 2013 and will continue through October 31, 2019. The assumed Grant Award Date is December 31, 2015. At this time, Direct Project Administration will begin. Task 1 includes preparation of invoices, contract oversight, coordination of stakeholders, internal project management activities by RCAC and Alter Terra and the preparation of Local Project Partner (LPP) agreements between RCAC and the DACs. Task 3 includes preparing quarterly progress reports and project completion report for submittal to DWR. As such, Direct Project Administration will continue from January 1, 2016 to project completion on October 31, 2019. Task 2 will be concurrent with Task 12 starting on March 31, 2016 and ending on August 31, 2019. This task includes ensuring proper labor compliance, as needed.

Planning/Design/Engineering/Environmental Documentation spans from January 31, 2013 to March 31, 2017. Task 6, including completion of CEQA and NEPA documentation, notices, and No Legal Challenges Letters, will begin at the Grant Award Date and will be complete on September 30, 2016. Environmental documentation needs to be completed before implementation of Task 12 components. Certain Task 12 subtasks will begin work if no or minimal documentation under this task is needed, but Subtasks 12.7, 12.9, and 12.10 require adoption of Mitigated Negative Declarations (MNDs) and will not begin until the completion of Task 6. Task 7 includes building permits for Subtasks 12.6, 12.7, and 12.8 and Clean Water Act 401 and 404 permits for Subtasks 12.9 and 12.10. The permitting process will begin at the Grant Award date and will be complete on March 31, 2017. Permits must be in place before these components begin. Task 8 began on January 31, 2013 and will be complete on March 31, 2016. This task includes the development of plans, production of engineering and architectural drawings and the final design for all project components. As such, the design component will be complete before implementation of Task 12. Task 9 includes activities required for the development of the Project Performance Monitoring Plan, and will begin at the time of the grant award and will be complete on February 28, 2016, as this task must be complete in order to receive grant funding under Task 12.

Construction/Implementation spans from April 1, 2016 to August 31, 2019. Task 11 will begin on April 1, 2016 and includes construction management activities, coordination of construction schedule with DAC, regulatory agencies, and other stakeholders, documentation of construction with photographs, and attending construction meetings as needed. This task will be concurrent with Task 12 and will be complete on August 31, 2019.

Task 12 includes ten subtasks, one for each project component. Task 12 as a whole will be concurrent with Tasks 3 and 11. All subtasks, except Subtasks 12.7, 12.9 and 12.10, will begin on April 1, 2016. Subtasks 12.7, 12.9 and 12.10 will all begin on April 1, 2017, after completion of Tasks 6 and 7, as they require MNDs and permitting. Subtasks 12.1, 12.2, 12.3, 12.4 12.5, and 12.8 will all be complete on March 31, 2017, Subtask 12.6 will be

complete on August 30, 2017, Subtask 12.7 will be complete on March 31, 2018, and Subtasks 12.9 and 12.10 will be complete on August 31, 2019. All of Task 12 will start after the Project Performance Monitoring Plan (in Task 9) is complete as the grant funding cannot be distributed until Task 9 is complete. Additionally, all of Task 12 will be complete on or before August 31, 2019 to allow time for the Project Completion Report to be prepared and submitted by the project completion date of October 31, 2019.

Water Reuse Program

Project 6: Integrated Water Resource Solutions for the Carlsbad Watershed

The *Integrated Water Resource Solutions for the Carlsbad Watershed* Project began on September 1, 2013 and will continue through May 31, 2019. The assumed Grant Award Date is December 31, 2015. At this time, Direct Project Administration will begin. Task 1 includes preparation and submittal of invoices and documentation to DWR and administrative responsibilities associated with the project. Task 3 includes preparing quarterly progress reports and project completion report for submittal to DWR. As such, Direct Project Administration will continue from January 1, 2016 to project completion on May 31, 2019. Task 2 will be concurrent with construction components of Task 12, starting on January 1, 2017 and ending on February 28, 2019. This task includes oversight of labor compliance.

Planning/Design/Engineering/Environmental Documentation spans from September 1, 2013 to November 30, 2017. Task 6, including preparation of environmental documentation for the six project components, began in January 2015 and will be complete on October 31, 2016. Task 7 includes obtaining multiple permits for the first five project components. The permitting process began on December 1, 2014 and will be complete on August 21, 2017. Permits must be in place before construction begins. As such, project components requiring permits will begin after the completion of Task 7. Task 8 began on September 1, 2013 and will be complete on November 30, 2017. This task includes the development of final design plans for all six project components. The design components will be complete for each Task 12 subtask before implementation of each subtask. Subtask 12.2: Highway 101 Streetscape Construction, has the longest design timeframe, and will begin after the final designs are complete. Task 9 includes activities required for the development of the Project Performance Monitoring Plan, and will begins at the Grant Award Date and will be complete on February 28, 2016, as this task must be complete in order to receive grant funding under Task 12.

Construction/Implementation will begin on February 29, 2016 and will be complete on February 28, 2019. Task 10 will begin on May 1, 2016 to secure a contractor, award the contract, and issue notices to proceed. This task will be complete on February 28, 2018. Task 11 will begin on August 1, 2016 and includes managing contractor submittal review, answering requests for information, and issuing work directives. This task will end concurrently with the Task 12 on February 28, 2019.

Task 12 includes eight subtasks, one for each project component. Six of these are construction-related subtasks (Subtask 12.1 through 12.6) and two are implementation subtasks (Subtask 12.7 and 12.8). Subtask 12.1: Component 1 Highway 101 Streetscape will begin on March 1, 2018, after completion of Task 8, and will be complete on February 28, 2019. This task includes construction and installation of sidewalks, guardrails, streetlights, stormdrains, bioretention areas, recycled water pipelines and other streetscape improvements. Subtask 12.2: Highway 101 Greenstreet Retrofit Construction will begin on April 1, 2017 and will be complete on July 31, 2017. This task includes traffic control, curb and gutter replacement, replacement of asphalt with permeable pavement, and other related improvements. Subtask 12.3: Manchester Avenue Recycled Water Pipeline, Subtask 12.4: Via De La Valle Recycled Water Pipeline, and Subtask 12.5: Encinitas Ranch/Requeza Street Recycled Water Pipelines, will begin on May 1, 2017 and will be complete on October 31, 2017. These tasks include the construction of reclaimed water pipelines. Subtask 12.6: San Elijo WRF Low Impact Development (LID) Project, which will replace curb and gutter, install permeable pavement, bioretention areas, and other related improvements, will begin on January 1, 2017 and will be complete on March 31, 2017. Subtask 12.7: SELC Water Quality/Quantity Monitoring and Subtask 12.8: SELC Community Outreach will begin on February 29, 2016 and will be complete on March 30, 2018. Subtask 12.7 includes water quality and quantity monitoring in San Elijo Lagoon. Subtask 12.8 includes supporting an existing outreach effort by SELC, which transports students from middle school through high school to key areas in the watershed to participate in water conservation/quality education. All of Task 12 will start after the Project Performance Monitoring Plan (in Task 9).

Additionally, Construction Subtasks 12.1 through 12.6 will be concurrent with Task 3 and will begin after completion of all permitting and CEQA documentation in Tasks 6 and 7.

Project 7: UCSD Water Conservation and Watershed Protection

The *UCSD Water Conservation and Watershed Protection* Project began on January 1, 2014 and will continue through September 30, 2019. The assumed Grant Award Date is December 31, 2015. At this time, Direct Project Administration will begin. Task 1 includes management of contracts, preparation of invoices and backup documentation, coordination with consultant, contractors, local project sponsors and project team. Task 3 includes preparing quarterly progress reports and project completion reports for submittal to DWR. Direct Project Administration will continue from January 1, 2016 to project completion on September 30, 2019. Task 2 will be concurrent with Task 12 starting on March 1, 2016 and ending on July 31, 2019. This task includes ensuring proper labor compliance.

Planning/Design/Engineering/Environmental Documentation will span from January 1, 2014 to June 1, 2016. Task 5, including feasibility studies for the CUP Cooling Tower Retrofit and the HVAC Condensate Reuse components of the project, began on June 3, 2015 and will be complete on September 30, 2015. Task 6 began on April 1, 2014 and was completed on February 28, 2015. This task produced categorical exemptions for Subtasks 12.1, 12.4 and 12.5. Task 7 to acquire permits for Subtask 12.1, began on January 1, 2014 and will be complete on November 1, 2015. Task 8, to develop preliminary and final designs for Subtasks 12.1, 12.2, 12.3, and 12.4, began on January 1, 2014 and will be complete on June 1, 2016. Task 9 includes the development of the Project Performance and Monitoring Plan and will begins at the Grant Award Date and will be complete on February 28, 2016, as this task must be complete in order to receive grant funding under Task 12.

Construction/Implementation will span from January 17, 2014 to July 31, 2019. Task 10 began in January 2014 and will continue until December 31, 2017. Task 10 includes activities necessary to secure a contractor and award the contract. Task 11 includes managing contractor submittal review, answering requests for information, and issuing work directives, and will continue through December 31, 2017.

Task 12 includes six subtasks, one for each project component. Subtask 12.1: CUP Reclaimed Water Cooling Tower Retrofit will begin on March 1, 2016 and will be complete on September 29, 2016. Subtask 12.1 includes installation of recycled water piping for connection to the cooling towers. This task starts directly after Task 9. Subtask 12.2: Air Handling Unit Condensate Collection and Reuse, which will begin on March 1, 2016 and continue through December 31, 2018, involves the collection of HVAC condensate for reuse at two buildings on campus. Subtask 12.3: Water Conservation Community Outreach, which will begin on April 1, 2016 and will be complete on December 31, 2017, involves conducting education and outreach to inform residents, businesses, and decision makers about regional water supply issues and water conservation. Subtask 12.4: Turf Removal and Stormwater Treatment, which will begin on March 1, 2016 and will be complete on October 31, 2017, includes replacing turf with stormwater treatment landscaping at two locations on campus. Subtask 12.5: Modular Wetland Treatment System and Monitoring and Subtask 12.6: TRV Non-Point Source Pollution Reduction and Habitat Restoration will both begin on September 1, 2016 and will be complete on December 31, 2017. Subtask 12.5 involves installing a Modular Wetland Stormwater Treatment System at the UCSD Nimitz Marine Facility. Subtask 12.6 involves restoration of one acre of muleflat scrub habitat in TRV. All of Task 12 will be complete on or before July 31, 2019 to allow time for the final Project Completion Report to be prepared and submitted by the project completion date of September, 30, 2019.

Project 8: Escondido Advanced Water Treatment for Agriculture

The *Escondido Advanced Water Treatment for Agriculture* began on October 1, 2014 and will continue through September 30, 2017. The assumed Grant Award Date is December 31, 2015. At this time, Direct Project Administration will begin. Task 1 includes management of contracts, preparation of invoices and backup documentation, coordination with consultant and contractors and maintenance of other administrative duties. Task 3 includes preparing quarterly progress reports and project completion report for submittal to DWR. As such, Direct Project Administration will continue from January 1, 2016 to project completion on September 30, 2017. Task 2 will be concurrent with Task 12 starting on March 1, 2016 and ending on July 28, 2017. This task includes ensuring compliance with applicable California Labor Code requirements.

Planning/Design/Engineering/Environmental Documentation spans from October 1, 2014 to March 31, 2016. Task 6, including completion of a MND and notices, and Task 8, including final design drawings and specifications for the MFRO Facility, both began on October 1, 2014 and will be completed on November 30, 2015. Task 7 will begin upon completion of Task 6 on December 1, 2015 and will be complete on March 1, 2016. Permits must be in place before implementation of Task 12. Task 9 includes development of the Project Performance Monitoring Plan, and begins at the time of the grant award and will be complete on February 28, 2016, as this task must be complete in order to receive grant funding under Task 12.

Construction/Implementation spans from March 1, 2016 to July 28, 2017. Task 11 will begin on March 1, 2016 and includes documenting of pre-construction conditions, preparing change orders, responding to RFIs, preparing addendums, reviewing/ updating project schedule, reviewing contractor log submittals and pay requests, processing payments. This task will be concurrent with Task 12 and will be complete on July 28, 2017.

Task 12 includes eight subtasks, one for each project component. Task 12 as a whole will be concurrent with Tasks 3 and 11, and will begin directly following the completion of permitting (in Task 7) and the Project Performance Monitoring Plan (in Task 9) on March 1, 2016. The subtasks in Task 12 are sequential and begin directly after the previous subtask is complete. Subtask 12.1: Mobilization and Insurance will begin on March 1, 2016 and will be complete on April 11, 2016. Subtask 12.2: Yard Piping and Sitework will begin on April 12, 2016 and will be complete on June 3, 2016, Subtask 12.3: MFRO Process Building will begin on June 6, 2016 and will be complete on August 26, 2016. Subtask 12.4: Inter Process Storage Tank will begin on August 29, 2016 and will be complete November 18, 2016. Subtask 12.5: Chemical Storage Building will begin on November 21, 2016 and will be complete on February 10, 2017. Subtask 2.6: Product Water Storage and MF Feed Tanks will begin on February 13, 2017 and will be complete on May 5, 2017. Subtask 12.7: HARRF Improvements will begin on May 8, 2017 and will be complete on June 16, 2017. Subtask 12.8: Project Closeout will begin on June 19, 2017 and will be complete on July 28, 2017. All of Task 12 will be complete on or before July 28, 2017 to allow time for the final Project Completion Report to be prepared and submitted by the project completion date of September 30, 2017.

Project 9: Padre Dam Advanced Water Treatment – Phase IA Expansion

The *Padre Dam Advanced Water Treatment – Phase IA Expansion* Project began on January 1, 2015 and will continue through October 31, 2019. The assumed Grant Award Date is December 31, 2015. At this time, Direct Project Administration will begin. Task 1 includes management of contracts, preparation of invoices and backup documentation, coordination with consultant and contractors and maintenance of other administrative duties. Task 3 includes preparation of quarterly progress reports and project completion report for submittal to DWR. As such, Direct Project Administration will continue from January 1, 2016 to project completion on October 31, 2019. Task 2 will be concurrent with Task 12 starting on April 1, 2016 and ending on August 31, 2019. This task includes oversight of labor compliance.

Planning/Design/Engineering/Environmental Documentation spans from January 1, 2015 to December 1, 2016. Task 5: Feasibility Studies began on July 1, 2015 and will be complete on December 1, 2016. The *Ray Stoyer WRF Planning Study* was completed under this task and a 3-dimensional hydrodynamic and water quality modeling of the Lake Jennings Reservoir will be completed. Task 6: CEQA Documentation began in January 2015 and will be complete on August 1, 2015. Under this task, the MND for the Ray Stoyer WRF will be updated. Task 7: Permitting includes obtaining multiple permits for implementation of the project. The permitting process began on May 1, 2015 and will be complete on September 30, 2016. Permits must be in place before construction activities in Subtasks 12.2 and 12.3 begin. Task 8: Design began on August 1, 2015 and will be complete on December 30, 2015. This task includes preparing a geotechnical report and a 10% design package. Task 9: Project Performance Monitoring Plan includes activities required for the development of the Project Performance Monitoring Plan, and will begin on February 1, 2016 and will be complete on March 1, 2016, as this task must be complete in order to receive grant funding under Task 12.

Construction/Implementation will begin on January 2, 2017 and will be complete on August 31, 2019. Task 10 will begin on January 2, 2017 to secure a contractor, award the contract and issue a notice to proceed. This task will be complete on July 31, 2017. Task 11 will begin on January 2, 2017 and includes managing contractor submittal review, answering requests for information, and issuing work directives. This task will end concurrently with the Task 12 on August 31, 2019.

Task 12 includes three subtasks, one for each project component. Subtask 12.1: Design/Build – Final Design will begin on January 2, 2017, after completion of Tasks 8 and 9, and will be complete on June 30, 2017. This task includes interim and final design drawing and specifications, and development of construction cost estimates. Subtask 12.2: Design/Build – IPS Expansion, will begin on July 3, 2017 and will be complete on July 3, 2018. This task includes increasing the Influent Pump Station (IPS) from 2 mgd to 6 mgd through the addition of four new chopper pumps and upgrades to the high lift pumps. Subtask 12.2 will begin following completion of Subtask 12.1, so that final design is complete. Subtask 12.3: Design/Build – WRF Expansion, will begin on July 3, 2017, following completion of Task 12.1, when final design is completed, and will end on August 31, 2019. This task includes all construction that would occur at the Ray Stoyer WRF to expand it by 4 mgd. All of Task 12 will start after Task 9 is complete, and will begin after completion of all permitting and CEQA compliance in Tasks 6 and 7.

Project 10: Safari Park Drought Response and Outreach

The *Safari Park Drought Response and Outreach* Project began on January 1, 2011 and will continue through October 31, 2019. The assumed Grant Award Date is December 31, 2015. At this time, Tasks 1 and 3 will begin. Task 1 includes coordination with IRWM Grant Administrator and Program Manager, preparation of invoices and backup documentation, and other administrative duties. Task 3 includes preparation quarterly progress reports and project completion report for submittal to DWR. As such, Tasks 1 and 3 will continue from January 1, 2016 to project completion on October 31, 2019. Task 2 is concurrent with Task 12, which started on January 1, 2011 and will end on August 31, 2019. This task includes oversight of labor compliance. Direct Project Administration will span January 1, 2011 through October 31, 2019.

Planning/Design/Engineering/Environmental Documentation spans July 1, 2015 to July 31, 2016. Task 5 will begin on October 30, 2015 and will be complete on March 2, 2016. This task includes development of a *Basis of Design Report*, a *Water Master Plan Update*, and a *Nutrient Management Plan*. Task 6 began July 1, 2015 and will be complete on March 2, 2016. Under this task, the Safari Park's Resources Protection ordinance (RPO) Permit 99-0153, which documents the project's compliance with CEQA, will be updated. Task 7 includes obtaining permits for the WWTP expansion and tertiary water uses at the Safari Park, and amending its WDR. The permitting process will begin October 1, 2015 and will be complete on July 31, 2016. Permits must be in place before construction activities in Subtask 12.1 begin. Task 8, which will begin on September 1, 2015 and will be complete on February 26, 2016, includes preparing final design plans, specifications, and estimates for the Wastewater Treatment Plant (WWTP) expansion, Heart of Africa pump and pipeline to the WWTP, and reclamation pond expansion/storage optimization. This task also includes development of a planting plan for turf conversion. Task 9 includes activities required for the development of the Project Performance Monitoring Plan, and will begin at the Grant Award Date and will be complete on February 28, 2016, as this task must be complete in order to receive grant funding under Task 12.

Construction/Implementation began on January 1, 2011 and will be complete on August 31, 2019. Task 10 began December 1, 2013 to secure a contractor, award the contract, and issue a notice to proceed, and will be complete on April 30, 2018. Task 11 will begin on April 1, 2016 and includes managing contractors and construction documentation, and providing technical assistance during construction. This task will end concurrently with Subtask 12.1 on April 30, 2018.

Task 12 includes three subtasks, one for each project component. Subtask 12.1: Construction began on January 1, 2011 and will be complete on April 30, 2018. Early (pre-grant award) construction activities include the turf removal and replacement, which does not necessitate design, permitting, or CEQA. Task 12.1 also includes construction of the WWTP upgrades from secondary to tertiary treatment, construction of an evaporation pond for brine, water storage and management improvements, and irrigation conversions. All activities, except turf replacement, will be conducted after Task 9 is complete. Subtask 12.2: Prepare O&M Manuals and As-Builts will begin on April 1, 2016 and will be complete on April 30, 2017. This task includes development of manuals for the new treatment process and equipment, and as-built drawings for construction. Subtask 12.2 will begin following completion of Tasks 8 and 9, so that final design is complete. Subtask 12.3: Public Outreach and Water Education Programs began on January 1, 2011 and will be completed on August 31, 2019. This task includes continued provision of water and conservation education programs to students and the public, development of drought and water conservation messaging materials, and updates to Safari Park materials with drought and water conservation information. Subtask 12.4: Turf Conversion will begin on March 1, 2016 and will be complete on

June 30, 2017. Construction activities under Subtask 12.1 will be concurrent with Task 3 (except turf replacement already completed), and after all permitting and CEQA compliance in Tasks 6 and 7 are completed.

Water Quality and Habitat Program

Project 11: San Diego River Healthy Headwaters Restoration

The *San Diego River Healthy Headwaters Restoration* Project began on January 3, 2011 and will continue through October 31, 2019. The assumed Grant Award Date is December 31, 2015. At this time, Direct Project Management will begin. Task 1 includes coordination with the IRWM Grant Administrator and Program Manager, coordination with project partners, preparation of invoices and backup documentation, and other administrative duties. Task 3 includes preparation quarterly progress reports and project completion report for submittal to DWR. Tasks 1 and 3 will continue from January 1, 2016 to project completion on October 31, 2019.

Planning/Design/Engineering/Environmental Documentation activities span October 1, 2014 to September 30, 2014 and include Tasks 6, 7, 8, and 9. Task 6 began on October 1, 2014 and will be complete on September 30, 2017. This task includes the various California Environmental Quality Act (CEQA) documentation developed for this project (EA/FONSI, MND, EA and CEQA concurrence, and National Environmental Protection Act (NEPA)/CEQA, depending on the property where restoration activities and invasive removal will occur). Task 7 includes permitting for invasive weed treatment within and outside streambank areas. All necessary permits have already been acquired, and the permitting process began October 1, 2014 and was completed on July 1, 2015. Applicable permits must be in place before invasive removal and site restoration activities in Task 12 begin. Task 8 began on July 1, 2015 and will be complete on August 1, 2016, and includes completion of a catchment-wide assessment of the invasive weed populations and development of a *Strategic Treatment Plan*. Task 9 includes activities required for the development of the Project Performance Monitoring Plan. Task 9 will begin at the time of the grant award and will be complete on February 28, 2016, as this task must be complete in order to receive grant funding under Task 12.

Construction/Implementation began on January 3, 2011 and will be complete on August 31, 2019. Task 11 will begin on September 1, 2015 and includes management of partner agreements, and compliance with implementation standards and schedules. This task will end concurrently with Task 12 on August 31, 2019.

Task 12 includes three subtasks, one for each project component. Subtask 12.1: Invasive Weed Treatment began on January 3, 2011 and will be complete on August 31, 2019. This subtask has been broken down into four components (12.1A, 12.1B, 12.1C, and 12.1D) based on where the weed treatment will occur, and which project partner will be responsible for treatment in each area. The timing for these subtask components are independent of one another. Subtask 12.2: Impacted Site Management and Restoration began on July 2, 2015 and will be complete on August 31, 2019. This task includes restoration of heavily impacted unauthorized trails and recreation sites to protect against erosion and further degradation. Subtask 12.3: Invasive Wildlife/Species Removal began on January 1, 2013 and will be completed on August 31, 2019. This task includes removal of invasive wildlife such as feral pigs, bull frogs, and green sunfish.

Project 12: Sweetwater Reservoir Wetlands Habitat Recovery

The *Sweetwater Reservoir Wetlands Habitat Recovery* Project began on October 31, 2011 and will continue through October 31, 2019. The assumed Grant Award Date is December 31, 2015. At this time, Tasks 1 and 3 will begin. Task 1 includes compliance with grant requirements and coordination with project partners, the IRWM Grant Administrator, and consultants. Task 3 includes preparation quarterly progress reports and project completion report for submittal to DWR. As such, Task 1 and Task 3 will continue from January 1, 2016 to project completion on October 31, 2019. Task 2 will be implemented concurrent with Construction/Implementation tasks (Tasks 10, 11, and 12), and as such will begin December 1, 2015 and end August 31, 2019. Direct Project Management runs from December 1, 2015 to October 31, 2019.

Land Purchase/Easement activities began on April 3, 2015 to update the existing Conservation Easement to expand the Habitat Management Plan preserve by 122.7 acres. This task will be complete on April 1, 2019.

Planning/Design/Engineering/Environmental Documentation activities span August 31, 2011 to December 31, 2016. Task 6 began August 31, 2011 and will be complete on December 31, 2015. This task includes preparation

of an Initial Study/Mitigated Negative Declaration (IS/MND) for the Habitat Recovery Project, which was completed in March 2014, and preparation of an IS/MND Addendum, to reflect modifications to the project that have been made since. Task 7 includes permitting for habitat restoration, including permits necessary for working within jurisdictional wetlands and waters, as well as other permits that may be required. The permitting process began July 9, 2013 and will be completed on December 31, 2016. Applicable permits must be in place before construction activities in Task 12 begin. Task 8 began on August 31, 2011 and will be complete on November 30, 2015, and includes final design and engineering for the restoration work. Task 9 includes activities required for the development of the Project Performance Monitoring Plan. Task 9 will begin March 31, 2016 and be completed May 31, 2016. This task must be complete in order to receive grant funding under Task 12.

Construction/Implementation will begin December 1, 2015 and will be complete on August 31, 2019. Task 10 will begin on December 1, 2015, and be completed March 31, 2016. This task includes preparation of bid packages, evaluation of bids, bid awards, and issuing a notice to proceed for a contractor to complete the restoration work. Task 11 will begin on July 15, 2016 and contractor oversight, construction management, engineering services/inspection, and construction oversight by a Safety Officer. This task will end concurrently with Task 12 on August 31, 2019.

Task 12 includes two subtasks. Subtask 12.1: Mobilization and Site Preparation will begin on July 15, 2016 and will be complete on March 31, 2017. Activities include pre-construction meetings and trainings, site delineation and protection, site preparation, and photo documentation. Subtask 12.2: Project Construction will begin on August 1, 2016 and will be complete on August 31, 2019. This task includes stream realignment, removal of vegetation and replanting with native species, and other activities necessary for successful habitat restoration. This task also includes demobilization. Construction activities under Task 12 will be concurrent with Task 3, and implemented after completion of permitting and CEQA compliance in Tasks 6 and 7.

Project 13: Hodges Reservoir Natural Treatment System

The *Hodges Reservoir Natural Treatment System* Project began on March 3, 2014 and will continue through August 30, 2019. The assumed Grant Award Date is December 31, 2015. At this time, Direct Project Management will begin. Task 1 includes compliance with grant requirements and coordination with the Integrated Regional Water Management (IRWM) Grant Administrator. Task 3 includes preparation quarterly progress reports and project completion report for submittal to DWR. As such, Tasks 1 and 3 will continue from January 1, 2016 to project completion on August 30, 2019. Task 2 will be implemented concurrent with Task 12, and as such will begin October 1, 2017 and end June 30, 2019.

Planning/Design/Engineering/Environmental Documentation activities span March 3, 2014 to September 30, 2017. Task 5 began March 3, 2014 with development of the *Hodges Reservoir Combined In-Reservoir and Watershed Natural Treatment System – Technical Memo*, and also includes an update to the reservoir's hydrologic model. Task 5 will be complete February 29, 2016. Task 6 will begin August 1, 2016 and will be complete on September 30, 2017. This task includes preparation of a MND and associated technical studies. Task 7 includes permitting for work within wetlands, as well as other permits that may be required. The permitting process will begin on August 1, 2016, and will be complete September 30, 2017. Applicable permits must be in place before construction activities in Task 12 begin. Task 8 will begin August 1, 2016, and be complete December 1, 2016. Design work will include grading and landscape construction drawings and technical specifications. Task 9 includes activities required for the development of the Project Performance Monitoring Plan. Task 9 will begin January 1, 2016 and be completed February 28, 2016. This task must be complete in order to receive grant funding under Task 12.

Construction/Implementation will begin March 2, 2016 and will be complete on June 30, 2019. Task 10 will begin on March 2, 2016, and be completed July 31, 2016. This task includes preparation of bid packages, evaluation of bids, bid awards, and issuing a notice to proceed for a contractor to complete the restoration work. This project will be completed under a design-build contract, so while Task 10 will be completed in July 31, 2016, construction administration (Task 11) and construction activities (Task 12) cannot begin until Tasks 6, 7, 8, and 9 are complete. The same contractor will implement Task 8 and Task 12, and will be selected under Task 10. Task 11 will begin on October 1, 2017 and includes site inspections, LCP reporting, permitting review, stormwater compliance, coordination of construction activities, and coordination with City staff. This task will end concurrently with Task 12 on June 30, 2019.

Task 12 includes four subtasks. Subtask 12.1: Pre-Construction/Site Preparation will begin on October 1, 2017 and will be complete on January 11, 2018. This task includes conferences, review of design and specifications, site preparation, and mobilization of equipment. Subtask 12.2: Wetlands Construction will begin on January 12, 2018, following completion of Subtask 12.1 and will be complete on January 10, 2019. This task includes site grading and excavation, backfilling, diking, and installation of water control structures, as well as installation of vegetation and hydraulic equipment. Subtask 12.3: Post-Construction will occur immediately following Subtask 12.2, and will begin January 11, 2019. This subtask will be complete June 30, 2019. Activities include determining appropriate flow for desired water chemistry, equipment testing and inspection, and monitoring for establishment and biological integrity. Subtask 12.4: Public Outreach, will be implemented from October 1, 2017 through June 30, 2019, and includes public services announcements, websites, community activities, school presentations, and other outreach efforts. Construction activities under Task 12 will be concurrent with Task 3 and implemented after completion of permitting and CEQA compliance in Tasks 6 and 7.

Attachment 6

San Diego Integrated Regional Water Management

2015 IRWM Implementation Grant Proposal

Program Preferences

Attachment 6 consists of the following items:

- ✓ **Program Preferences.** This attachment contains information regarding how this *2015 IRWM Implementation Grant Proposal* meets the preferences described in Section II.F of the *2015 Guidelines*. This attachment also describes how the Proposal assists in addressing the Human Right to Water Policy (§CWC 106.3).

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Program Preferences Overview

Table 6-1 shows which Program Preferences are met by each of the thirteen projects included in the *2015 Implementation Grant Proposal*. Taken together, the thirteen projects address all eight Program Preferences and all eight Statewide Priorities.

Table 6-1: How Proposed Projects Meet Program Preferences, Statewide Priorities, and Human Right to Water

	Proposed Projects	Program Preferences								Statewide Priorities								
		1: Regional Projects	2: Integrate Water Mgmt	3: Resolve Conflict	4: Bay-Delta Objectives	5: Benefits DACs	6:Land Use Planning	7. IRWM Plan	8: Statewide Priorities	*Drought Preparedness*	*Reuse Water More Efficiently*	*Climate Change Response*	*Expand Env. Stewardship*	*Int. Flood Management*	*Protect Surface/ Groundwater*	*Improve Tribal Water/Nat. Res.*	*Ensure Equit. Dist. of Benefits*	Human Right to Water
1	Regional Drought Resiliency Program	✓	✓	✓	✓	✓		✓	✓	●	●	●			○		○	✓
2	Conservation Home Makeover in the Chollas Creek Watershed		✓	✓	✓	✓		✓	✓	●	●	●			○		●	✓
3	San Diego Water Conservation Program		✓	✓	✓	✓		✓	✓	●	●	●			○		○	✓
4	Ms. Smarty-Plants Grows Water-Wise Schools		✓	✓	✓	✓		✓	✓	●	●	●			○		●	✓
5	Rural Disadvantaged Community Partnership Project – Phase III		✓	✓	✓	✓		✓	✓	●	●	●	●	●	●	●	●	✓
6	Integrated Water Resource Solutions for the Carlsbad Watershed		✓	✓	✓	✓	✓	✓	✓	●	●	●	●	●	●		○	✓
7	UCSD Water Conservation and Watershed Protection		✓	✓	✓	✓	✓	✓	✓	●	●	●	●		●		●	✓
8	Escondido Advanced Water Treatment for Agriculture		✓	✓	✓	✓	✓	✓	✓	●	●	●			●		○	✓
9	Padre Dam Advanced Water Treatment – Phase I Expansion		✓	✓	✓	✓		✓	✓	●	●	●					●	✓
10	Safari Park Drought Response and Outreach		✓	✓	✓	✓		✓	✓	●	●	●			●		○	✓
11	San Diego River Healthy Headwaters Restoration		✓		✓	✓		✓	✓	●			●	●	●		○	✓
12	Sweetwater Reservoir Wetlands Habitat Recovery		✓	✓		✓		✓	✓	●			●	●	●		●	✓
13	Hodges Reservoir Natural Treatment System	✓	✓	✓	✓	✓		✓	✓	●		●	●		●		○	✓
Degree of Certainty Preferences Will Be Addressed		**H**	**H**	**H**	**M**	**H**	**M**	**H**	**H**	-	-	-	-	-	-	-	-	-
Magnitude and Breadth to Which Preference will be Addressed		**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	-	-	-	-	-	-	-	-	-

M = Medium, H = High, R = Regional; ○ indirectly related; ● directly related

Conservation Program

Project 1: Regional Drought Resiliency Program

The *Regional Drought Resiliency Program* will expand efforts to retrofit correctional facilities with water-saving devices, implement a sustainable landscapes program, and outreach to property owners on reducing water demands. This program addresses seven program preferences and five statewide priorities (**Table 6-1**). It is **fully certain** that this project will meet these preferences and priorities on a regional, state, or local level as described here.

Regional Project: The project will be implemented across the San Diego County Water Authority (SDCWA) service area, which spans much of the San Diego IRWM Region. Project benefits will be regional both in water savings and in decreased reliance on imported water.

Effectively Integrate Water Management: This project is integrated in three of the six ways defined in the *2013 IRWM Plan*: partnership, resource management, and sustainability integration. Partnership integration has occurred through the SDCWA's partnership with Otay Water District and the California Department of Corrections and Rehabilitation. The project also meets six objectives of the *2013 IRWM Plan*, meeting the Region's definition of resource management integration. It meets the Region's sustainability integration goals by implementing and promoting sustainable water use and conservation measures.

Resolve Water-Related Conflicts: The project will resolve water management conflicts by reducing potable water demands, which allows potable supplies to be used for potable needs, conflict over which increases during times of drought. Reduced potable demands also alleviates demands for imported water in the Region, thereby reducing conflicts related to use of SWP and Colorado River supplies. In addition, conservation achieved through this project will contribute towards the Governor's 25% statewide conservation mandate, which calls for SDCWA's member agencies to reduce water use by 12% to 36%.

Meet Bay-Delta Objectives: The project will meet the Water Supply and Ecosystem Restoration objectives of the CALFED Bay-Delta through reduced demand for imported water. Local imported water demand will be reduced through reduced potable water demands. Approximately one-third of the Region's imported water comes from the SWP. Because this project will offset up to 1,809 AFY imported water, it is anticipated that local demand for SWP will be reduced by approximately 600 AFY as a result of this project. Reduced SWP demands will directly reduce demand from the Bay-Delta.

Address DAC Needs: This project will conserve potable water for potable needs, increasing water supply reliability, including in times of drought. Conserved water could be used during shortages to address critical water supply needs in the Region, including those of DACs.

Part of an IRWM Plan that Reduces Reliance on Sacramento-San Joaquin Delta: The project is included in the *2013 IRWM Plan*, as described in Attachment 1. The *2013 IRWM Plan* was approved by DWR in June 2014, and passed the Plan Review Standard related to how the plan will help reduce dependence on the Delta (see **Appendix 1-4**). Supply diversification (including conservation/efficient use of resources) is a key part of the *2013 IRWM Plan*, and this project helps to increase conservation, reducing demand for imported water, and meeting Objective E of the *2013 IRWM Plan* (see *Attachment 1*).

Address Statewide Priorities: The project directly meets four statewide priorities: 1) Drought Preparedness; 2) Reuse Water More Efficiently; 3) Climate Change Response Actions, and 4) Ensure Equitable Distribution of Benefits; and indirectly meets one statewide priority: 1) Protect Surface/Groundwater Quality. Drought preparedness and using water more efficiently are addressed by the project's turf replacement, retrofit, landscape makeover and water use efficiency programs, which will reduce potable demands and increase water reuse to meet non-potable demands. Similarly, the project will address potential climate change impacts, which are anticipated to include increased reliability issues with imported water (the Region's largest source of potable supply) and climate change-driven drought by reducing water demands and increasing the public's water-use efficiency through education. As described in Attachment 7, SDCWA's service area is 26% DAC by area, and this project benefits SDCWA's service area equally, thereby ensuring an equitable distribution of benefits. The project indirectly protects surface and groundwater quality by reducing irrigation and associated runoff.

Project 2: Conservation Home Makeover in the Chollas Creek Watershed

The *Conservation Home Makeover in the Chollas Creek Watershed* project will install stormwater capture, greywater, and landscape upgrades in low-income homes in the Encanto neighborhood to reduce potable water demands and allow for sustainable home-food production in DACs. The project will address the Human Right to Water (below), six program preferences, and five statewide priorities (**Table 6-1**). It is **fully certain** that this project will meet these preferences and priorities on a regional, state, or local level as described here.

Effectively Integrate Water Management: The project includes three types of integration defined in the *2013 IRWM Plan*: partnership, resource management integration, and sustainability integration. Groundwork San Diego (Groundwork) has partnered with Grid Alternatives and the San Diego Sustainable Living Institute to implement the project, which will address seven *2013 IRWM Plan* objectives (resource management integration). Sustainability integration has been achieved by utilizing sustainable water and energy sources to promote food and water security in DACs, and move the Encanto neighborhood towards a more sustainable future.

Resolve Water-Related Conflicts: The project will help reduce conflicts over imported and potable water supplies through reduction of potable demands from installation of greywater systems. It also helps improve food security in DACs by using greywater to irrigate fruit trees, reducing conflicts related to potable water demands and costs.

Meet Bay-Delta Objectives: The project will help meet two of the CALFED Bay-Delta program objectives: Water Supply and Ecosystem Restoration. By reducing potable water demand 8.5 AFY, the project will directly offset local imported water demands. Approximately one-third of the Region's imported water comes from the SWP. Therefore, this project will directly reduce local demand from the Bay-Delta by 2.8 AFY.

Address DAC Needs: This project directly addresses a critical water supply DAC need because it is implemented exclusively in a DAC, and addresses water supply needs identified in the *2013 IRWM Plan* by utilizing an alternative to potable water for irrigation needs to support food security in underserved communities. The associated cost savings realized by homeowners from the project will make the costs of the remaining potable water necessary for human health and needs easier for residents to manage.

Part of an IRWM Plan that Reduces Reliance on Sacramento-San Joaquin Delta: The project is included in the *2013 IRWM Plan*, as described in *Attachment 1*. The *2013 IRWM Plan* was approved by DWR in June 2014, and passed the Plan Review Standard related to how the plan will help reduce dependence on the Delta (see **Appendix 1-4**). Supply diversification is a key part of the *2013 IRWM Plan*, and this project helps to increase local supply, reducing demand for imported water, and meeting Objective E of the *2013 IRWM Plan*.

Address Statewide Priorities: The project directly meets four statewide priorities: 1) Drought Preparedness; 2) Reuse Water More Efficiently; 3) Climate Change Response Actions; and 4) Ensure Equitable Distribution of Benefits and indirectly meets one statewide priority: 1) Protect Surface/Groundwater Quality. Through reduced potable water demand, the project will address drought preparedness by conserving potable supplies. The project will also use water more efficiently by reducing water waste and utilizing greywater to meet irrigation demands (which also provides drought preparedness). Reduced potable water demand and utilization of greywater supplies contributes towards adaptation for climate change by preparing the region for impacts of potential climate change-driven droughts and improving water supply reliability. This project will be implemented in a DAC, ensuring an equitable distribution of benefits. The project will indirectly address protection of surface/groundwater quality through proper installation and maintenance of greywater systems, reduced runoff, and reduced discharges to the ocean outfall.

Project 3: San Diego Water Conservation Program

The *San Diego Water Conservation* program will reduce potable water demand and conserve water through turf replacement, and greywater systems, and will fund education and outreach on irrigation enhancements and water use efficiency. The project will address the Human Right to Water (below), six program preferences, and five statewide priorities (**Table 6-1**). It is **fully certain** that this project will meet these preferences and priorities on a regional, state, or local level as described here.

Effectively Integrate Water Management: This project is integrated in three of the ways defined in the *2013 IRWM Plan*: partnership, resource management, and sustainability integration. Partnership integration has occurred through the City of San Diego's partnership with the Sustainable Living Institute and The Water Conservation Garden. The project also achieves sustainability integration through improving the sustainability of landscaping

using water-wise landscaping and greywater systems. The project also meets five objectives of the *2013 IRWM Plan*, meeting the Region's definition of resource management integration.

Resolve Water-Related Conflicts: The project will resolve water management conflicts by reducing potable water demands, allowing potable supplies to be used for potable needs, which is especially important during times of drought. Reduced potable demands also alleviates demands for imported water in the Region, thereby reducing conflicts related to use of SWP and Colorado River supplies.

Meet Bay-Delta Objectives: The project will meet the Water Supply and Ecosystem Restoration objectives of the CALFED Bay-Delta program through reduced demand for imported water. Imported water demand will be reduced through reduced potable water demands. This project will reduce local demand for imported water by 74.8 AFY. Approximately one-third of the Region's imported water comes from the SWP, so this project is expected to offset 24.7 AFY local demand from the SWP. Reduced local SWP demands will directly reduce local demand from the Bay-Delta, thereby supporting the Ecosystem Restoration and Water Supply objectives of the CALFED Bay-Delta program.

Address DAC Needs: This project will conserve potable water, which will then be available to address critical water supply needs in the Region (including DACs) to meet human health and sanitation needs. This conservation is especially important during times of drought when supplies are limited.

Part of an IRWM Plan that Reduces Reliance on Sacramento-San Joaquin Delta: The project is included in the *2013 IRWM Plan*, as described in *Attachment 1*. The *2013 IRWM Plan* was approved by DWR in June 2014, and passed the Plan Review Standard related to how the plan will help reduce dependence on the Delta (see **Appendix 1-4**). Supply diversification (including conservation/efficient use of resources) is a key part of the *2013 IRWM Plan*, and this project helps to increase conservation, reducing demand for imported water, and meeting Objective E of the *2013 IRWM Plan* (see *Attachment 1*).

Address Statewide Priorities: The project directly meets three statewide priorities: 1) Drought Preparedness; 2) Reuse Water More Efficiently; and 3) Climate Change Response Actions and indirectly meets two statewide priorities: 1) Protect Surface/Groundwater Quality; and 2) Ensure Equitable Distribution of Benefits. Drought preparedness and reusing water more efficiently are addressed by the project's turf replacement and greywater system rebates, which will reduce potable demands and increase water reuse to meet non-potable demands. Similarly, the project will address potential climate change impacts, which are anticipated to include increased reliability issues with imported water (the Region's largest source of potable supply) and climate change-driven drought. These issues will be addressed by reducing water demands and increasing local, drought-proof, non-potable supplies. The project indirectly protects surface and groundwater quality by reducing irrigation and associated runoff, and indirectly ensures equitable distribution of benefits by benefitting the Region as a whole, including DACs.

Project 4: Ms. Smarty-Plants Grows Water-Wise Schools

The *Ms. Smarty-Plants Grows Water-Wise Schools* program will implement water conservation education, turf conversion, irrigation efficiency, and water-wise practices at 12 to 15 schools that serve students from disadvantaged communities (DACs). The project will address the Human Right to Water (see below), six program preferences, and five statewide priorities (**Table 6-1**). It is **fully certain** that this project will meet these preferences and priorities on a regional, state, or local level as described here.

Effectively Integrate Water Management: This project is integrated in three ways, as defined in the 2013 IRWM Plan: partnership, resource management, and sustainability integration. Partnership integration has occurred through The Water Conservation Garden's partnership with the Helix Water District, Otay Water District, and local K-12 schools. The project also meets six objectives of the *2013 IRWM Plan*, meeting the Region's definition of resource management integration. Finally, the project meets the Region's definition of sustainability integration by promoting and implementing sustainable water practices and water conservation measures.

Resolve Water-Related Conflicts: The project will resolve water management conflicts by reducing potable water demands, which allows potable supplies to be used for potable needs, especially important during times of drought. It will also reduce water demands at schools which must balance recreation opportunities for students with local water conservation mandates resulting from the current drought. Helix and Otay Water Districts are each required to reduce water demands by 20%. Reduced potable demands also reduces demands for imported water in the Region, thereby reducing conflicts related to use of SWP and Colorado River supplies.

Meet Bay-Delta Objectives: The project will meet the Water Supply and Ecosystem Restoration objectives of the CALFED Bay-Delta through reduced demand for imported water. Imported water demand will be reduced through reduced potable water demands. Approximately one-third of the Region's imported water comes from the SWP, and because this project will reduce potable demands by 25 AFY, local demand for SWP supplies will be reduced by 8.3 AFY. Reduced local SWP demands will directly reduce local demand from the Bay-Delta.

Address DAC Needs: Water conservation benefits DACs in the Region by improving water supply reliability and conserving potable supplies for potable demands, including human health and sanitation needs. Critical water supply needs of DACs may be met by this conserved water during times of drought when supplies are limited.

Part of an IRWM Plan that Reduces Reliance on Sacramento-San Joaquin Delta: The project is included in the *2013 IRWM Plan*, as described in Attachment 1. The *2013 IRWM Plan* was approved by DWR in June 2014, and passed the Plan Review Standard related to how the plan will help reduce dependence on the Delta (see **Appendix 1-4**). Supply diversification (including conservation and efficient use of resources) is a key part of the *2013 IRWM Plan*, and this project helps to increase conservation, reducing demand for imported water, and meeting Objective E of the *2013 IRWM Plan* (see *Attachment 1*).

Address Statewide Priorities: The project directly meets three statewide priorities: 1) Drought Preparedness; 2) Reuse Water More Efficiently; 3) Climate Change Response Actions; and 4) Ensure Equitable Distribution of Benefits, and indirectly meets one statewide priorities: 1) Protect Surface/Groundwater Quality. Drought preparedness and using water more efficiently are addressed by the project's school landscaping improvements and conservation course, which will reduce potable demands and increase water reuse to meet non-potable demands. Similarly, the project will address potential climate change impacts, which are anticipated to include increased reliability issues with imported water (the Region's largest source of potable supply) and climate change-driven drought by reducing water demands and increasing local, drought-proof, non-potable supplies. The project will target Title I schools, which serve students from DACs, ensuring an equitable distribution of benefits. The project indirectly protects surface and groundwater quality by reducing irrigation and associated runoff.

Rural Water Infrastructure Program

Project 5: Rural Disadvantaged Community Partnership Project – Phase III

The *Rural Disadvantaged Community Partnership Project – Phase III* program will provide funding for ten sub-projects to improve water and wastewater infrastructure and address water quality concerns in underserved rural disadvantaged communities. The project will address the Human Right to Water (below), six program preferences, and seven statewide priorities (**Table 6-1**). It is **fully certain** that this project will meet these preferences and priorities on a regional, state, or local level as described here.

Effectively Integrate Water Management: This project is integrated in three ways, as defined in the 2013 IRWM Plan: partnership, resource management, and sustainability integration. Partnership integration has occurred through the Rural Community Assistance Corporation (RCAC) partnership with DACs implementing the ten sub-projects under this program. The project also addresses ten objectives of the *2013 IRWM Plan*, meeting the Region's definition of resource management integration. It achieves sustainability integration by implementing water reclamation infrastructure, constructing additional infrastructure, providing technical capacity building, and environmental improvements.

Resolve Water-Related Conflicts: The project will resolve water management conflicts by reducing potable water demands, which allows potable supplies to be used for potable needs, especially important during times of drought. The sub-projects are designed to meet critical water-related DAC needs, reducing conflicts associated with leaking, inadequate, aging, and/or contaminated water infrastructure. This will help to increase water supplies, improve supply reliability and water quality, and protect human health and safety. Another conflict that will be resolved by this project is providing water supplies adequate to meet needs while storing enough for emergencies such as wildfires. The trash removal and bioswale components will help reduce conflicts between urbanization and natural resources. Further, the technical capacity building aspect of this project will ensure long-term sustainability of these sub-projects, reducing future water-related conflicts

Address DAC Needs: This project will directly address critical water supply and water quality DAC needs, because the sub-projects were selected specifically to address such needs. Nine DACs will directly benefit from this project. Critical water supply and drinking water quality needs of rural DACs will be addressed by the subprojects

implemented as part of the *Rural Disadvantaged Community Partnership – Phase III* program. Water shortages will be addressed through construction of additional storage and replacement of leaking storage tanks. Groundwater supplies will be made more accessible through construction of a new well and additional pumping equipment. Critical drinking water quality needs will be addressed through replacement of a leaky storage tank that poses a risk of contamination, as well as groundwater treatment systems to remove excess nitrates, iron, and manganese that currently exceed MCL standards.

Part of an IRWM Plan that Reduces Reliance on Sacramento-San Joaquin Delta: The project is included in the *2013 IRWM Plan*, as described in Attachment 1. The *2013 IRWM Plan* was approved by DWR in June 2014, and passed the Plan Review Standard related to how the plan will help reduce dependence on the Delta (see **Appendix 1-4**). Supply diversification and efficient use of water resources are key parts of the *2013 IRWM Plan*, and this project helps to increase conservation and meet Objective E of the *2013 IRWM Plan* (see *Attachment 1*).

Address Statewide Priorities: The project directly addresses all eight statewide priorities: 1) Drought Preparedness; 2) Reuse Water More Efficiently; and 3) Climate Change Response Actions; 4) Expand Environmental Stewardship; 5) Practice Integrated Flood Management; 6) Protect Surface/Groundwater Quality; 7) Improve Tribal Water/Natural Resources; and 8) Ensure Equitable Distribution of Benefits. Drought preparedness and reusing water more efficiently are addressed by the project's reclaimed water infrastructure, which will reduce potable demands and increase water reuse to meet non-potable demands. Similarly, the project will address potential climate change impacts, such as water supply reliability, increased risk of wildfires, and climate change-driven drought, by reducing water demands; increasing local, drought-proof, non-potable supplies; and increasing quality of local potable water. The project protects surface and groundwater quality by treating water for iron and manganese and removing trash, and directly ensures equitable distribution of benefits by benefitting targeted DACs, including Tribal DACs and other tribal lands. Tribal project sites will be located in the Pauma, Campo, and La Jolla Indian Reservations, and the San Pasqual Reservation. Environmental stewardship is addressed through the bioswale and trash removal sub-projects.

Water Reuse Program

Project 6: Integrated Water Resource Solutions for the Carlsbad Watershed

The *Integrated Water Resource Solutions for the Carlsbad Watershed* project will implement recycled water and low impact development (LID) strategies to offset potable water demands, reduce urban runoff, and implement water quality monitoring. It will address the Human Right to Water (see below), and addresses seven program preferences and seven statewide priorities. It is **fully certain** that this project will meet these preferences and priorities on a regional, state, or local level as described here.

Effectively Integrate Water Management: The project includes all six types of integration defined in the *2013 IRWM Plan*: 1) partnerships with the Cities of Encinitas and Solana Beach, San Dieguito Water District, Santa Fe Irrigation District, Olivenhain MWD, and the San Elijo Lagoon Conservancy; 2) resource management through implementation of multiple IRWM Plan objectives; 3) beneficial use integration through support of multiple beneficial uses of waters in the project area; 4) geographical integration through implementation of the project across the Carlsbad and San Dieguito watersheds; 5) hydrological integration by providing three watershed services (infiltration, stream improvements, and reduced sedimentation); and 6) sustainability integration by increasing water recycling and recycled water use, and reducing pollutant loading to San Elijo Lagoon.

Resolve Water-Related Conflicts: This project will reduce water-related conflicts by increasing recycled water supply and use, reducing discharges to the San Elijo Ocean Outfall, and installing LID elements to reduce stormwater runoff, improving water quality in San Elijo Lagoon. These efforts will reduce potable water demands, allowing the offset water to be available for potable uses, including during times of drought, and reducing local demand for imported water. Improved water quality in San Elijo lagoon will support wildlife and recreation activities, and reduce potential beach closures due to water quality impairment.

Meet Bay-Delta Objectives: The project will address the Water Supply and Ecosystem Restoration objectives of the CALFED Bay-Delta program. Conserving water through managing demand will reduce demand for imported water. Approximately one-third of the Region's imported water is sourced from the SWP. By reducing local demand for imported water by 100 AFY, the project will directly reduce local demand from the Bay-Delta by 33 AFY.

Address DAC Needs: The project will indirectly address a critical water supply needs of a DAC by protecting water supply reliability in the Region through increased water reuse and associated offsetting of potable demand, which conserves potable water for potable needs.

Integrate Water Management with Land Use Planning: The project will integrate water management with land use planning through the installation of LID elements along Highway 101. These LID elements will reduce stormwater runoff and improve the quality of stormwater reaching San Elijo Lagoon.

Part of an IRWM Plan that Reduces Reliance on Sacramento-San Joaquin Delta: This project is included in the *2013 IRWM Plan* (see *Attachment 1*). The *2013 IRWM Plan* was approved by DWR in June 2014, and passed the Plan Review Standard related to how it will help reduce dependence on the Delta (see **Appendix 1-4**). Supply diversification is a key part of the *2013 IRWM Plan*, and this project helps to increase local supply, reducing demand for imported water, and meeting Objective E of the *2013 IRWM Plan*.

Address Statewide Priorities: The project directly meets six statewide priorities: 1) Drought Preparedness; 2) Reuse Water More Efficiently; 3) Climate Change Response Actions; 4) Expand Environmental Stewardship; 5) Practice Integrated Flood Management; and 6) Protect Surface/Groundwater Quality. The project indirectly meets one statewide priority: 1) Ensure Equitable Distribution of Benefits. Reducing potable demand through increased recycled water use allows for the offset potable water to be used for potable purposes during drought, and is a local, drought-proof supply, helping to reuse water more efficiently and address potential climate change impacts. The LID component will help reduce stormwater runoff, and improve the quality of discharges to the San Elijo Lagoon. In combination with the water quality monitoring at the lagoon, this project will both expand environmental stewardship and protect surface and groundwater quality. Regional supply reliability benefits from potable offsets will be realized across the Region, including DACs.

Project 7: UCSD Water Conservation and Watershed Protection

The *UCSD Water Conservation and Watershed Protection* project will expand water reuse at a University of California, San Diego (UCSD) cooling tower, reuse HVAC condensate water, replace turf, monitor/treat stormwater, and implement watershed protection (including trash boom and clean-ups) in Tijuana River Valley. This project will address the Human Right to Water (see below), meet seven program preferences, and address five statewide priorities (**Table 6-1**). It is **fully certain** that this project will meet these preferences and priorities on a regional, state, or local level as described here.

Effectively Integrate Water Management: The project is integrated in four of the ways defined in the *2013 IRWM Plan*: partnership, resource management, beneficial use, and sustainability integration. UCSD has partnered with San Diego Coastkeeper, Urban Corps of San Diego, WildCoast, and community-based organizations to implement the project components. The project will implement ten of the objectives of the *2013 IRWM Plan* (resource management integration) and support multiple beneficial uses. It also supports sustainability integration, by reusing water wisely, and implementing sustainability measures such as LID and turf replacement.

Resolve Water-Related Conflicts: The project will help resolve conflicts over imported water supplies by reducing demand for potable water by 203 AFY and promoting conservation. These efforts will reduce potable water demands, including during times of drought, and reducing demand for imported water. It will also monitor stormwater quality discharging to San Diego Bay and the La Jolla ASBS, and reduce pollutant loading to these two sites, helping to improve water quality. This will help protect ecosystems and reduce the potential for beach closures as a result of impaired water.

Meet Bay-Delta Objectives: The project will address the Water Supply and Ecosystem Restoration objectives of the CALFED Bay-Delta program. Conserving water through managing demand will reduce demand for imported water. Approximately one-third of the Region's imported water is sourced from the SWP. By reducing local imported water demand by 203 AFY, the project will directly reduce local demand from the Bay-Delta by 67 AFY.

Address DAC Needs: The project will indirectly address critical water supply needs of a DAC by protecting water supply reliability in the Region through increased water reuse and offsetting potable demand, which conserves potable water for potable needs.

Part of an IRWM Plan that Reduces Reliance on Sacramento-San Joaquin Delta: The project is included in the *2013 IRWM Plan*, as described in *Attachment 1*. The *2013 IRWM Plan* was approved by DWR in June 2014, and passed the Plan Review Standard related to how the plan will help reduce dependence on the Delta (see

Appendix 1-4). Supply diversification is a key part of the *2013 IRWM Plan*, and this project helps to increase local supply, reducing demand for imported water, and meeting Objective E of the *2013 IRWM Plan*.

Address Statewide Priorities: The project directly meets five statewide priorities: 1) Drought Preparedness; 2) Reuse Water More Efficiently; 3) Climate Change Response Actions; 4) Expand Environmental Stewardship; and 5) Protect Surface/Groundwater Quality. It indirectly meets one statewide priority: 1) Ensure Equitable Distribution of Benefits. The project address drought preparedness by reducing potable water demands through promoting conservation and provision of recycled/condensed water. The project will also help curb erosion and slow runoff flows. Climate change response actions will be met, because the project will help the region adapt to climate change by reducing reliance on imported water sources, which is a known climate change vulnerability in the Region. The project will protect surface water quality through reduced stormwater pollutant loading to San Diego Bay and the La Jolla ASBS. The project will also improve the Tijuana River Valley through trash and invasive species removal, expanding environmental stewardship. This project will improve water supply reliability, which benefits the Region as a whole, and indirectly ensures an equitable distribution of benefits.

Project 8: Escondido Advanced Water Treatment for Agriculture

The *Escondido Advanced Water Treatment for Agriculture* project will construct a new advanced water treatment facility to improve the water quality of recycled water delivered to agricultural customers in Escondido. It will address the Human Right to Water (below), as well as eight program preferences and five statewide priorities (**Table 6-1**). It is **fully certain** that this project will meet these preferences and priorities on a regional, state, or local level as described here.

Effectively Integrate Water Management: The project includes three types of integration defined in the *2013 IRWM Plan*: 1) resources management integration through implementation of multiple IRWM Plan objectives, 2) geographic integration through supporting reuse in two groundwater basins, and 3) sustainability integration through production of additional recycled water which supports water sustainability in the Region.

Resolve Water-Related Conflicts: This project will reduce conflicts over water supply by providing recycled water suitable for agricultural irrigation, thereby reserving potable water for drinking water and other purposes. Advanced water treatment will reduce the salt content of recycled water delivered to agricultural users, and will reduce salt loading to surface and groundwater. This will help improve groundwater quality in the San Pasqual basin (CASGEM-designated Medium Priority) that is high priority for salt and nutrient management. This project also helps to address conflicts between urban and agricultural users over water use during times of drought by utilizing a sustainable supply for agricultural irrigation. It will reduce future water use conflicts by laying the groundwork for future potable reuse in the area, improving water supply reliability and reducing local imported potable water demands.

Meet Bay-Delta Objectives: The project will address two of the CALFED Bay-Delta objectives: Water Supply and Ecosystem Restoration. Approximately one-third of the Region's imported water comes from the Bay-Delta through the SWP. By reducing imported water demand by 1,110 AFY, the project will directly reduce local demand from the Bay-Delta by 366 AFY.

Address DAC Needs: As described in *Attachment 7*, 49% of the project benefit area qualifies as DAC by population. This project will protect water supply reliability by reducing potable demands and increasing recycled and advanced treated water use, including for DACs within the project benefit area. Because this project will be implemented by the City of Escondido, it will protect supply reliability in the city as a whole, indirectly benefitting all DACs within the city itself, which is approximately 43% DAC by area. Offsetting potable demands helps to conserve potable water for human health and sanitation needs, particularly in times of drought when supplies may be limited.

Integrate Water Management and Land Use: This project effectively integrates water management and land use by providing reclaimed water suitable to meet agricultural needs. This allows continued agricultural land use without placing additional or undue demands on potable water supplies.

Part of an IRWM Plan that Reduces Reliance on Sacramento-San Joaquin Delta: This project is included in the *2013 IRWM Plan* (see *Attachment 1*). The *2013 IRWM Plan* was approved by DWR in June 2014, and passed the Plan Review Standard related to how the plan will help reduce dependence on the Delta (see **Appendix 1-4**). Supply diversification is a key part of the *2013 IRWM Plan*, and this project helps to increase local supply, reducing demand for imported water, and meeting Objective E of the *2013 IRWM Plan*.

Address Statewide Priorities: The project directly addresses four statewide priorities: 1) Drought Preparedness; 2) Reuse Water More Efficiently; 3) Climate Change Response Actions; and 4) Protect Surface/Groundwater Quality, and indirectly addresses one statewide priorities: 1) Ensure Equitable Distribution of Benefits. Through increased use of recycled water, expansion of a local-drought proof supply, and reduced potable water demand, the project will help with drought preparedness, and reuse water more efficiently. The project will also help address potential climate change impacts that may affect availability of imported water, such as drought or damage to imported water infrastructure that may result from changes in weather patterns. The project will directly address groundwater quality by improving the quality of recycled water applied through agricultural irrigation, reducing salt loading to the basin. The project will also indirectly ensure equitable distribution of benefits by offsetting potable water demands and ensuring that water supplies are available in the City of Escondido's service area, which includes DAC populations.

Project 9: Padre Dam Advanced Water Treatment – Phase I Expansion

The *Padre Dam Advanced Water Treatment – Phase I Expansion* will expand the Ray Stoyer Water Reclamation Facility by 4 mgd to deliver recycled water for irrigation and allow for future potable reuse. It will address the Human Right to Water (see below), meet six of the eight program preferences, and four of the eight statewide priorities, as shown in **Table 6-1**. It is **fully certain** that this project will meet these preferences and priorities on a regional, state, or local level as described here.

Effectively Integrate Water Management: This project is integrated in four of the ways defined in the *2013 IRWM Plan*: partnerships, resource management, sustainability, and beneficial use integration. This project includes partnerships between Padre Dam MWD and Helix Water District, County of San Diego, and City of El Cajon, and resource management integration through meeting multiple *2013 IRWM Plan* objectives. It also includes sustainability integration, because the recycled water created by the project is a local, drought-proof supply, resistant to the effects of climate change. Finally it includes beneficial use integration by supporting municipal/domestic supply and agricultural supply.

Resolve Water-Related Conflicts: The project will help resolve conflicts related to supply reliability by reducing demand for potable water by 1,008 AFY. In accordance with the Region's goal to reduce reliance on imported supplies, any potable water offsets will be used to offset local demand for imported water. In addition, the modeling and tracer study at Lake Jennings Reservoir will be used to help reduce potential conflicts associated with reservoir augmentation for potable reuse by providing a clear, scientifically-sound basis for decisions regarding use of the reservoir.

Meet Bay-Delta Objectives: The project will directly offset local demand for imported water through the creation of 1,008 AFY of recycled water for irrigation uses. Approximately one-third of the Region's imported water comes from the Bay-Delta through the State Water Project (SWP). This project will directly reduce local demand from the Bay-Delta by approximately 333 AFY, thereby supporting the Ecosystem Restoration and Water Supply objectives of the CALFED Bay-Delta program.

Address DAC Needs: This project indirectly provides DAC water supply benefits by developing a drought-proof local supply of non-potable water, which will offset potable demands, conserving potable water for potable needs for all customers within Padre Dam MWD's service area, including DACs. It also lays the groundwork for future potable reuse, which will further improve potable water supply reliability for DACs in Padre Dam MWD's and its partners' service areas.

Part of an IRWM Plan that Reduces Reliance on Sacramento-San Joaquin Delta: The project is included in the *2013 IRWM Plan*, as described in *Attachment 1*. The *2013 IRWM Plan* was approved by DWR in June 2014, and passed the Plan Review Standard related to how the plan will help reduce dependence on the Delta (see **Appendix 1-4**). Supply diversification is a key part of the *2013 IRWM Plan*, and this project helps to increase local supply, reducing demand for imported water, and meeting Objective E of the *2013 IRWM Plan*.

Address Statewide Priorities: The project directly meets four statewide priorities: 1) Drought Preparedness; 2) Reuse Water More Efficiently; 3) Climate Change Response Actions; and 4) Ensure Equitable Distribution of Benefits. Creation and use of a local, drought-proof supply will help Padre Dam MWD and Helix Water District weather droughts and potential impacts of climate change. Reuse of water for non-potable needs in the short-term and potable needs in the long-term will reduce reliance on imported water. Finally, because the water produced by the project off-sets district-wide potable water demands, associated supply reliability benefits will be

distributed equitably across Padre Dam MWD and Helix Water District's customer base, including the DACs served by both agencies.

Project 10: Safari Park Drought Response and Outreach

The *Safari Park Drought Response and Outreach* project will achieve potable water savings through turf conversion and expansion of existing wastewater treatment facility to reclaim and reuse wastewater at the Safari Park. It will address the Human Right to Water (below), meet six program preferences, and five statewide priorities (**Table 6-1**). It is **fully certain** that this project will meet these preferences and priorities on a regional, state, or local level as described here.

Effectively Integrate Water Management: This project is integrated in three of the ways defined in the *2013 IRWM Plan*: partnership, resource management, and sustainability integration. Partnership integration is achieved through the Zoological Society of San Diego (Zoological Society) partnership with SDCWA and coordinated outreach efforts with San Diego Unified School District, San Diego County Office of Education, and schools throughout San Diego County. The project also directly meets five *2013 IRWM Plan* objectives (resource management integration), and addresses sustainability by developing a new recycled water source that is a local, drought-proof supply, resistant to the effects of climate change.

Resolve Water-Related Conflicts: By increasing recycled water production at use at the Safari Park, the Zoological Society will reduce its demand for groundwater. Groundwater used at the Safari Park comes from the San Pasqual Basin, which is a medium priority basin under CASGEM, and is monitored by the City of San Diego. Reduced groundwater pumping will reduce conflicts over the basin and the use of groundwater in the area. Increased supply diversification with local sources also reduces local imported water demands, thereby reducing water supply conflicts associated with high imported potable water demands. This project also improves quality of the recycled water at the park, reducing water quality conflicts associated with storage pond overflows during wet weather events. This project is upstream of the Hodges Reservoir, which faces water quality issues.

Meet Bay-Delta Objectives: The project will reduce local demand for imported water by 72 AFY through the increased production and use of recycled water for irrigation and non-potable uses. Approximately one-third of the Region's imported water comes from the Bay-Delta. This project will directly reduce local demand from the Bay-Delta by 24 AFY, thereby supporting the Ecosystem Restoration and Water Supply objectives of the CALFED Bay-Delta program.

Address DAC Needs: As with other projects offsetting potable water demands in the Region, this project indirectly addresses DAC water supply needs by improving potable water supply reliability for all users in the Region, including DACs.

Part of an IRWM Plan that Reduces Reliance on Sacramento-San Joaquin Delta: The project is included in the *2013 IRWM Plan*, as described in *Attachment 1*. The *2013 IRWM Plan* was approved by DWR in June 2014, and passed the Plan Review Standard related to how the plan will help reduce dependence on the Delta (see **Appendix 1-4**). Supply diversification is a key part of the *2013 IRWM Plan*, and this project helps to increase local supply, reducing demand for imported water, and meeting Objective E of the *2013 IRWM Plan*.

Address Statewide Priorities: The project directly meets four statewide priorities: 1) Drought Preparedness; 2) Reuse Water More Efficiently; 3) Climate Change Response Actions; and 4) Protect Surface/Groundwater Quality; and indirectly address one priority: 1) Ensure Equitable Distribution of Benefits. Recycled water is a drought-proof local supply that reduces demand for imported potable water, conserving potable supplies for potable needs. Water recycling is specifically noted in the *2015 Guidelines* as a climate change response action, because it helps to reduce wastewater loads, energy demands and GHG emissions. The project will directly address surface water quality through increased use of recycled water in lieu of imported water. The use of recycled water which is more highly regulated than potable water, will result in reduced runoff and associated salt and nutrient loading into waterways. The project will also indirectly ensure equitable distribution of benefits by offsetting potable water demands and ensuring that potable water supplies are available in the San Diego Region, including DACs.

Water Quality and Habitat Program

Project 11: San Diego River Healthy Headwaters Restoration

The *San Diego River Healthy Headwaters Restoration* program includes invasive species removal, restoration, and rehabilitation of impacted sites in the San Diego River watershed to improve habitat, water supply, and quality. The project will address the Human Right to Water (below), five program preferences, and five statewide priorities (**Table 6-1**). It is **fully certain** that this project will meet these preferences and priorities on a regional, state, or local level as described here.

Effectively Integrate Water Management: This project is integrated in three of the ways defined in the *2013 IRWM Plan*: partnership, resource management, and sustainability integration. Partnership integration has occurred through the USDA Forest Service (USFS) partnership with the City of San Diego, Back Country Land Trust, San Diego River Park Foundation, Feral Pig Workgroup, and San Diego River Conservancy. The project also meets seven objectives of the *2013 IRWM Plan*, meeting the Region's definition of resource management integration. Sustainability integration is achieved through restoration of unauthorized recreation areas, protecting natural resources for future generation and reducing water quality impacts to the San Diego River. Other water quality improvements and habitat restoration efforts of this project will also promote the sustainability of the San Diego River and associated riparian and natural areas.

Resolve Water-Related Conflicts: This project will help address multiple water-related conflicts in the Region. *Section 5.7 San Diego River Watershed* of the 2013 IRWM Plan describes water management issues and conflicts specific to the San Diego River Watershed. Some of these conflicts include invasive species, which contribute to flooding, increase fire risks, and degrade native habitats, as well as sedimentation. Sedimentation and sediment build up in reservoirs is a problem throughout the Region, including the San Diego River Watershed. This project will remove invasive species, addressing flooding, fire, and native habitat concerns, and will reduce sediment loading to the river and its tributaries.

Meet Bay-Delta Objectives: The project will meet the Water Supply and Ecosystem Restoration objectives of the CALFED Bay-Delta because it will conserve up to 1,988 AFY water through invasive species removal. This conserved water will be used to offset local imported water demands, including water imported from the Bay-Delta through the SWP. Approximately one-third of the Region's imported water supply comes from the SWP, so this project will reduce local SWP demands by up to 656 AFY.

Address DAC Needs: This project increases local supply availability, thereby improving supply reliability in the Region. These conserved supplies can be used to meet critical water supply needs in the Region (including DACs), including during times of drought.

Part of an IRWM Plan that Reduces Reliance on Sacramento-San Joaquin Delta: The project is included in the *2013 IRWM Plan*, as described in Attachment 1. The *2013 IRWM Plan* was approved by DWR in June 2014, and passed the Plan Review Standard related to how the plan will help reduce dependence on the Delta (see **Appendix 1-4**). Supply diversification is a key part of the *2013 IRWM Plan*, and this project helps to increase local supply, reducing demand for imported water, and meeting Objective E of the *2013 IRWM Plan*.

Address Statewide Priorities: The project directly meets five statewide priorities: 1) Drought Preparedness, 2) Expand Environmental Stewardship; 3) Practice Integrated Flood Management; 4) Protect Surface/Groundwater Quality; and 5) Ensure Equitable Distribution of Benefits. The project will reduce the water consumed by invasive species, allowing additional surface water supplies to reach El Capitan Reservoir for storage and later use, helping prepare for drought. Environmental Stewardship is a keystone of the project, seen in the habitat restoration and invasive species removal. The removal of the invasive species and restoration of habit will help curb erosion and improve water quality. Invasive species removal also helps to reduce flooding, which is exacerbated when streams are constricted by invasive species. As described in Attachment 7, 56% of the *San Diego River Healthy Headwaters Restoration* project's direct benefit area qualifies as a DAC, ensuring equitable distribution of benefits by benefitting the Region as a whole, including DACs.

Project 12: Sweetwater Reservoir Wetlands Habitat Recovery

The *Sweetwater Reservoir Wetlands Habitat Recovery* project will restore and enhance habitat near Sweetwater Reservoir, including 75 acres Least Bell's Vireo habitat, enabling full use of Sweetwater Reservoir for storage.

The project will address the Human Right to Water (below), five program preferences, and five statewide priorities (**Table 6-1**). It is **fully certain** that this project will meet these preferences and priorities on a regional, state, or local level as described here.

Effectively Integrate Water Management: This project is integrated in three of the ways defined in the *2013 IRWM Plan*: partnership, hydrologic, and resource management integration. Partnership integration has occurred through the Sweetwater Authority (SWA) partnership with the SDCWA, California Conservation Corps, and Urban Corps of San Diego County. The project includes hydrologic integration, as it decreases erosion while separately improving the habitat-function of the channel. It also meets nine objectives of the *2013 IRWM Plan*, meeting the Region's definition of resource management integration.

Resolve Water-Related Conflict: The project increases water storage at Sweetwater Reservoir, reducing conflicts related to insufficient water storage or false water shortages caused by an inability to maximize storage in the reservoir when imported supplies are available. This project also integrates species protection and reservoir management by restoring Sweetwater River's ability to support riparian habitat while simultaneously improving functionality of the reservoir. This reduces conflicts between using water to protect threatened species (Least Bell's Vireo) and storing water to meet human needs.

Address DAC Needs: This project will increase supply storage at the Sweetwater Reservoir, providing water supply reliability for Sweetwater Authority customers. As described in Attachment 7, 54% of Sweetwater Authority's service area is DAC. A reliable water supply is crucial to meet critical water supply needs of DACs.

Part of an IRWM Plan that Reduces Reliance on Sacramento-San Joaquin Delta: The project is included in the *2013 IRWM Plan*, as described in Attachment 1. The *2013 IRWM Plan* was approved by DWR in June 2014, and passed the Plan Review Standard related to how the plan will help reduce dependence on the Delta (see **Appendix 1-4**). Supply diversification is a key part of the *2013 IRWM Plan*, and this project helps to increase storage capacity for additional supplies (both local and imported), meeting Objective E of the *2013 IRWM Plan*.

Address Statewide Priorities: The project directly meets five statewide priorities: 1) Drought Preparedness, 2) Expand Environmental Stewardship; 3) Practice Integrated Flood Management; 4) Protect Surface/Groundwater Quality; and 5) Ensure Equitable Distribution of Benefits. Increased storage at Sweetwater Reservoir will allow Sweetwater Authority to store additional water when available, and use it during times of drought when other supplies may be limited. Environmental Stewardship is a keystone of the project, seen in the habitat restoration improvement of the hydrological character of the channel. The restoration of habit will help curb erosion and improve water quality. The project directly ensures equitable distribution of benefits by benefitting Sweetwater Authority customers, 54% of whom are DACs.

Project 13: Hodges Reservoir Natural Treatment System

The *Hodges Reservoir Natural Treatment System* project will implement a constructed biofiltration wetland at Hodges Reservoir to treat seasonally degraded water quality in the reservoir and from upstream contributors. The project will address the Human Right to Water (below), seven program preferences, and five statewide priorities (**Table 6-1**). It is **fully certain** that this project will meet these preferences and priorities on a regional, state, or local level as described here.

Regional Project: In conjunction with the *Regional Emergency Storage and Conveyance System Intertie Optimization* project funded through a Prop 84-Drought Round IRWM grant, this project will help enable the Region to fully utilize its Emergency Storage Project (ESP), a regional water supply reliability project that will ensure the region's needs are met should an emergency disrupt imported water deliveries. Hodges Reservoir is a key component of the ESP, but cannot be utilized fully due to water quality issues. The project will help reduce nutrient loading to the reservoir, improving water quality in the reservoir, thereby helping to allow captured surface water to move from the reservoir into the Region's aqueducts.

Effectively Integrate Water Management: This project is integrated in three of the ways defined in the *2013 IRWM Plan*: partnership, resource management, and geographical integration. Partnership integration has occurred through the City of San Diego Public Utilities Department's partnership with Santa Fe Irrigation District, San Dieguito Water District, and SDCWA. The project also meets ten objectives of the 2013 IRWM Plan, meeting the Region's definition of resource management integration. By providing regional benefits, this project is also geographically integrated.

Resolve Water-Related Conflicts: The project will resolve water management conflicts by increasing availability of potable water to satisfy demands through improved water quality, especially important during times of drought when every drop is needed. It will resolve water management conflicts in times of drought by increasing the Region's ability to move water within its ESP system, and in wet years by allowing water to be moved from Hodges Reservoir to other storage sites in the regional system, thereby avoiding water lost to dam spills. Improvement of a local water source will reduce demands for imported water in the Region, thereby reducing conflicts related to use of SWP and Colorado River supplies.

Address DAC Needs: This project will benefit the entire Region, including DACs, by improving local water supply reliability, particularly in times of drought, when water stored in Hodges Reservoir would be moved into the regional system through the ESP, to meet critical water supply needs.

Part of an IRWM Plan that Reduces Reliance on Sacramento-San Joaquin Delta: The project is included in the *2013 IRWM Plan*, as described in Attachment 1. The *2013 IRWM Plan* was approved by DWR in June 2014, and passed the Plan Review Standard related to how the plan will help reduce dependence on the Delta (see **Appendix 1-4**). Supply diversification is a key part of the *2013 IRWM Plan*, and this project helps to increase local supply, reducing demand for imported water, and meeting Objective E of the *2013 IRWM Plan*.

Address Statewide Priorities: The project directly meets four statewide priorities: 1) Drought Preparedness; 2) Climate Change Response Actions; 3) Expand Environmental Stewardship; 4) Protect Surface/Groundwater Quality; and one indirectly: 1) Ensure Equitable Distribution of Benefits. Drought preparedness is addressed by the project's improvement of a local water supply, which will reduce potable demands and increase water reuse to meet non-potable demands. Similarly, the project will address potential climate change impacts by improving use of the ESP which could be used to meet water demand in the face of climate-change driven water emergencies. Creation of the wetland will expand environmental stewardship and protect surface water quality. The project will indirectly ensure equitable distribution of benefits by benefitting all users in the Region, including DACs.

Human Right to Water

Approximately 95% of the population of the San Diego IRWM Region is served by municipal water agencies, which all provide safe water for human consumption, cooking, and sanitary purposes. Therefore, any project that protects municipal water agency supplies (both quality and reliability) and water reliability will help address the Human Right to Water in the Region. Twelve of the thirteen projects in this Proposal will offset some amount of imported water, and all projects will improve water supply reliability in the Region. Imported water is less reliable than drought-proof local supplies, due to the potential for delivery restrictions in times of drought or service interruptions from catastrophic events such as earthquakes because the imported water distribution system crosses three earthquake faults before reaching the San Diego Region.

The *Rural Disadvantaged Community Partnership Project – Phase III* will implement water security projects in rural DACs that may not be served by a municipal water agency, directly addressing Human Right to Water in those communities. This project will improve drinking water quality and provide adequate water supply in the following ways to address the Human Right to Water:

- **Drinking water quality:** leaking storage tanks will be replaced, reducing risk of water supply contamination; nitrate, iron, and manganese treatment systems will be installed to treat groundwater exceeding MCLs for these constituents; and bioswales will be constructed to reduce pollutant loading of groundwater basins.
- **Adequate water supply:** leaking storage tanks will be replaced, reducing risks of tank failure and water loss; new tanks will be constructed to reduce water shortage frequency related to insufficient storage; new groundwater wells and pumping equipment will be installed to address on-going water supply shortages; recycled water use will be increased, reducing water costs and increasing potable supply availability; and potable water conservation will be expanded through improved understanding of water consumption rates.

This project will provide additional water-related benefits to DACs, including trash removal, improved surface water quality, flood protection through removal of creek constrictions, and increasing recreational areas.

Each of these four programs in the Proposal helps to reduce dependence on imported water and contributes to increased water supply reliability. Projects with conservation elements also contribute to maintaining affordability by reducing the need for securing additional, potentially costly, supplies. In so doing, these thirteen projects directly contribute to the Region's ability to address the Human Right to Water.

Attachment 7

San Diego Integrated Regional Water Management

2014 IRWM Drought Solicitation Implementation Grant Proposal

Disadvantaged Community Assistance

Attachment 7 consists of the following items:

- ✓ **Documentation of Presence and Needs of DACs**. Local DACs are defined and mapped using American Community Survey data from the U.S. Census. Critical water supply and water quality needs identified by local DAC representatives are summarized.
- ✓ **Description of Proposed Projects and Benefits to DACs.** The benefits to local DACs from the proposed projects are described.

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Funding Match Waiver

The cumulative funding match for the proposal is 47%. Two of the DAC projects provide funding match below the 25% requirement – *6: Conservation Home Makeover in the Chollas Creek Watershed* and *9: Ms. Smarty-Plants Grows Water-Wise Schools.* However, the remaining projects in this *2015 IRWM Implementation Grant Proposal* have sufficient funding match to result in an overall 47% cost share, and no funding match waiver is requested.

Presence of DACs

Defining DACs

A DAC is defined by DWR in the *2015 Integrated Regional Water Management Grant Program Guidelines* (*2015 Guidelines*) as a community earning less than 80% of the statewide median household income (MHI). The American Community Survey (ACS) of the U.S. Census comprises social and demographic data, including information regarding MHI estimates for the State of California and individual communities within the state. According to the *2015 Guidelines*, the most recent ACS data available show that 80% of statewide MHI is $48,875, meaning that any community with an MHI of $48,875 or less would qualify as a DAC. The MHI reported in the *2015 Guidelines* uses ACS data from 2009-2013. This 2009-2013 ACS data were mapped for the San Diego IRWM Region at both the block-group and census tract levels, with those block-groups and tracts qualifying as DAC shown in **Figure 7-1**. A combination of block-groups and tracts were used because this best captured the DACs in the Region, and was consistent with the way DACs were mapped in the *2013 San Diego IRWM Plan*. **Figure 7-1**, below, shows the location of projects included in this Proposal in relation to DACs in the Region, as defined in the *2015 Guidelines*. DACs are also shown on individual project maps included in *Attachment 2 Project Justification*.

Calculating DAC Presence Thresholds

The *2015 Integrated Regional Water Management Proposal Solicitation Package (2015 PSP)* states that DAC projects are those that "demonstrate that at least 25% of the project service area (by population or geography) will benefit a water-related need of a DAC". Project areas were mapped with the 2009-2013 ACS data for MHI and population, and an analysis was completed for each of the projects to determine the percent of the geographic area or population that qualified as a DAC. The results of this analysis is presented in **Table 7-1**, below.

A geographic analysis was conducted for each of the projects to determine how much of each project area overlays a designated DAC. The DAC percentage was calculated as the total area that qualifies as DAC within a project area, divided by the total project area. The following projects were determined to be DAC projects based on this geographic analysis: *1: Regional Drought Resiliency Program, 2: Conservation Home Makeover in the Chollas Creek Watershed, 11: San Diego River Healthy Headwaters Restoration*, and *12: Sweetwater Reservoir Wetlands Habitat Recovery*.

The findings of the geographic analysis found a few projects that failed to capture the nature of the population within the project area. For these projects, an additional population analysis was conducted to determine how much of the population served by the project resided in DACs. In most cases, this additional analysis was deemed necessary because of population density and distribution. The City of San Diego, for example, is geographically disbursed, but population density varies dramatically from the dense urban center to areas of large estates and large lots in the inland and northern reaches of the city. Most of the DACs are located in higher density areas. The population analysis was completed at the Census block-group level because it is a finer scale than the tract-level, reducing the degree of uncertainty that results from Census data boundaries being misaligned with project areas. For the population analysis, any Census block-group that fell at least partially within the project area was included in the analysis. The following projects were determined to be DAC projects based on this population analysis: *3: San Diego Water Conservation Program, 4: Ms. Smarty-Plants Grows Water-Wise Schools, 7: UCSD Water Conservation and Watershed Protection, 8: Escondido Advanced Water Treatment for Agriculture*, and *13: Hodges Reservoir Natural Treatment System*.

For three of the above projects, the DAC analysis area was slightly different from the direct project benefit area shown on **Figure 7-1**. The *Sweetwater Reservoir Wetlands Habitat Recovery* and *Hodges Reservoir Natural Treatment System* project areas cannot reasonably be classified as DACs because both of these projects will be implemented in and immediately adjacent to reservoirs. The *Sweetwater Reservoir Wetlands Habitat Recovery* project will benefit all customers within the Sweetwater Authority (SWA) service area (who owns and operates

Sweetwater Reservoir), providing benefits to DACs located within this area. The *Hodges Reservoir Natural Treatment System* project will provide benefits not only to the City of San Diego service area (who owns and operates Hodges Reservoir), but also to the larger SDCWA service area because of Hodges Reservoir's role in the regional water supply system. A geographic and/or population-based DAC analysis was therefore completed as described above for both of these projects using SWA and SDCWA service areas in lieu of the project area. Note that while the results of this analysis are included in **Table 7-1**, the larger benefit area for both projects (SWA and SDCWA services areas) are not included on **Figure 7-1**. The service area of SDCWA is shown in **Figure 7-1** because it is also the project area for the *Regional Drought Resiliency Program*. Additionally, Padre Dam MWD's *Padre Dam Advanced Water Treatment – Phase IA Expansion* lays the groundwork for future potable reuse, and expands water reuse in their service area. Because this project is a critical step to planned future potable reuse, which will benefit Padre Dam MWD's entire service area, the DAC analysis was completed for the entire Padre Dam MWD service area.

Two additional exceptions were made to the standard geographic and/or population analysis described above: *5: Rural Disadvantaged Community Partnership Project – Phase III* and *10: Safari Park Drought Response and Outreach*. The *Rural Disadvantaged Community Partnership Project – Phase III* used an alternate analysis to determine DAC project status. DAC mapping using 2009-2013 ACS data showed inconsistencies between local understanding of DACs and DACs shown in ACS data. Local experience has found that Census data are unreliable for tribal land (where many of the project's components will be implemented) due to response bias to U.S. Census forms. Rural DACs can be particularly difficult to capture using Census data, because these communities are small but located in larger Census tracts and block-groups that may also include non-disadvantaged communities. In conjunction with an advisory committee, RCAC uses local knowledge to vet which communities qualify as DACs for participation in the program. Under Phase II of this project, which received a Prop 84-Round 2 IRWM grant, Rural Communities Assistance Corporation (RCAC) developed a project evaluation process to determine which projects could be eligible for IRWM funding. RCAC has been working with IRWM stakeholders for several years to develop a team of experts that are collectively organized as the Rural DAC Stakeholder Committee, and include representatives from RCAC, Indian Health Services (IHS), San Diego County Water Authority (SDCWA), City of San Diego, County of San Diego Department of Environmental Health (DEH), and State Water Resources Control Board (SWRCB). The Committee used the following primary criteria to select DAC projects in 2015: location in an economically disadvantaged community; construction projects or planning projects that will lead to construction projects; positive impact to public health or the environment; critical need with respect to water quantity, water quality, water reliability, or the environment; high likelihood of project success; and ability to be completed within the allowable grant project period. All of the components included in the *Rural Disadvantaged Community Partnership Project – Phase III* are located in areas recognized as DACs by the agencies that make up the Rural DAC Stakeholder Committee.

The *Safari Park Drought Response and Outreach* project is located entirely within the boundaries of the San Diego Zoo Safari Park, which does not contain any households. Although the project will benefit Safari Park visitors, including those from DACs, and will conduct targeted outreach to schools, including Title I low-income schools that serve DACs, it also serves tourists and other residents of the Region. There is no reasonable proxy for determining how many visitors to the Safari Park are from DACs, and how many are not. This project was therefore excluded from all DAC analyses.

Table 7-1: Presence of DACs within Project Areas

Proposed Projects		Project Area (ac)	DAC Area (ac)	% DAC by Area	Project Area Population[1]	DAC Area Population[1]	% DAC by Population[1]
DAC Projects							
1	Regional Drought Resiliency Program	936,529	246,858	**26%**	3,100,501	930,066	30%
2	Conservation Home Makeover in the Chollas Creek Watershed	3,830	2,456	**64%**	-	-	-
3	San Diego Water Conservation Program	216,217	32,618	15%	1,503,916	426,221	**28%**
4	Ms. Smarty-Plants Grows Water-Wise Schools	220,171	4,003	2%	246,927	62,180	**25%**
5	Rural Disadvantaged Community Partnership Project – Phase III	MHI data presumed to be biased due to location on rural and Tribal lands. Alternative analysis used to determine DAC status. 100% of the project sites are DACs.					
7	UCSD Water Conservation and Watershed Protection	13,319	2,866	22%	81,672	31,652	**39%**
8	Escondido Advanced Water Treatment for Agriculture	8,327	1,550	19%	68,795	33,544	**49%**
11	San Diego River Healthy Headwaters Restoration	121,329	67,460	**56%**	-	-	-
12	Sweetwater Reservoir Wetlands Habitat Recovery[2]	23,351	12,602	**54%**	-	-	-
13	Hodges Reservoir Natural Treatment System[3]	936,529	246,858	**26%**	3,100,501	930,066	30%
Non-DAC Projects							
6	Integrated Water Resource Solutions for the Carlsbad Watershed	7,191	128	2%	64,763	2,252	3%
9	Padre Dam Advanced Water Treatment – Phase IA Expansion[4]	56,834	3,410	6%	154,679	16,954	11%
10	Safari Park Drought Response and Outreach	DAC analysis not completed. Project does not include residential areas and no reasonable proxy for visitor MHI is available.					

Note: **Bold text** indicates how project was determined as DAC project (either area or population).

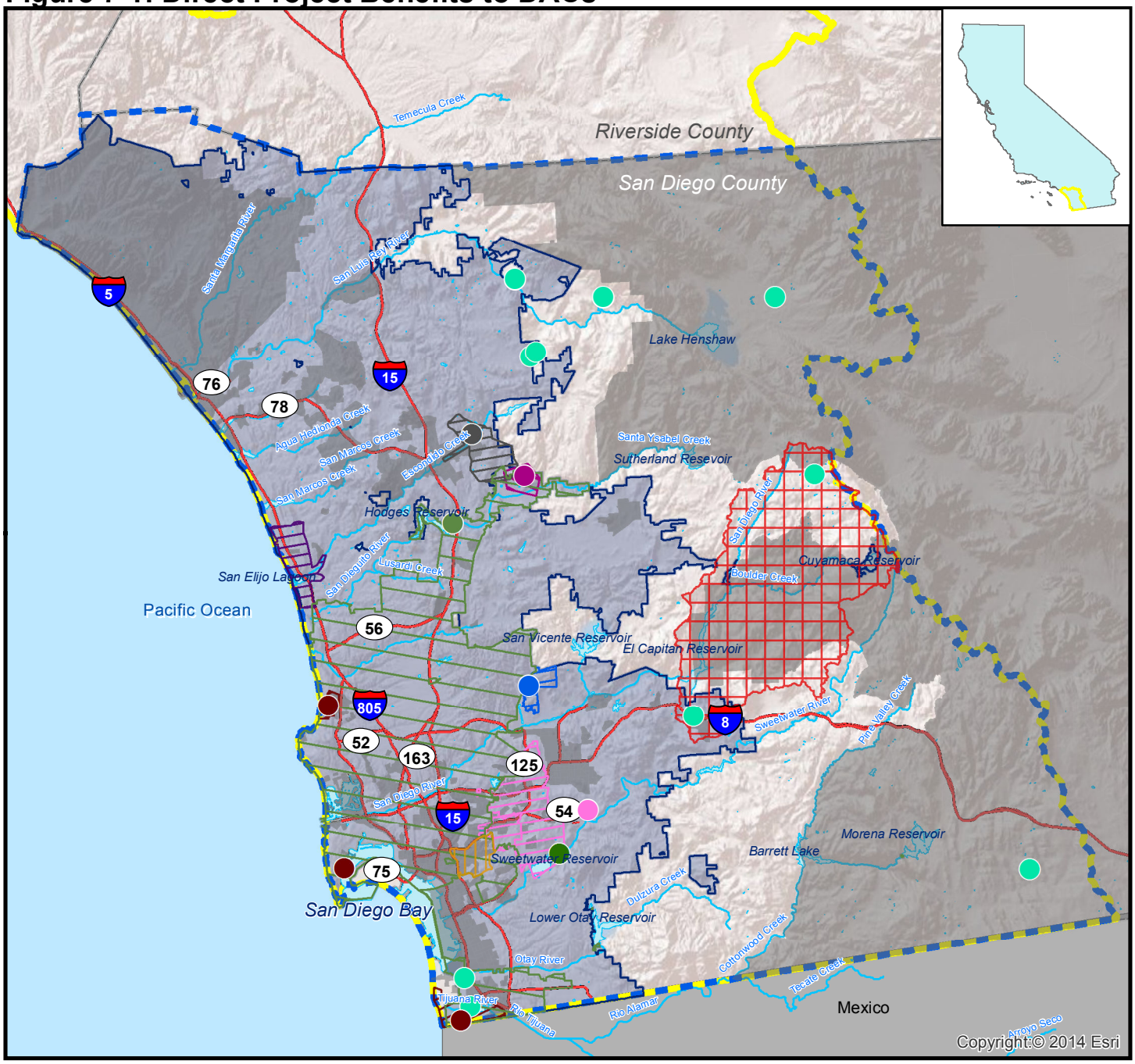
[1] Only completed for projects that failed to meet the 25% DAC threshold by geographic area

[2] Project completed on reservoir lands, but benefits all customers within SWA's service area. DAC status was determined using SWA service area.

[3] Project completed on reservoir lands, but benefits customers within the City of San Diego and SDCWA service areas. DAC status was determined using SDCWA service area.

[4] Project completed within residential area, but benefits all customers within Padre Dam MWD's service area. DAC status was determined using Padre Dam MWD service area.

Figure 7-1: Direct Project Benefits to DACs



Legend

- San Diego IRWM Region
- Funding Area Boundary
- Watershed
- Freeway
- Waterbody
- County
- Disadvantaged Community Area (DAC)*

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Miles

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DAC Projects

- 1 Regional Drought Resiliency Program
- 2 Conservation Home Makeover in the Chollas Creek Watershed
- 3 San Diego Water Conservation Program
- 4 Ms. Smarty-Plants Grows Water-Wise Schools
- 5 Rural Disadvantaged Community Partnership Project - Phase III (Note: 10 project sites)
- 7 UCSD Water Conservation and Watershed Protection (Note: 3 project sites)
- 8 Escondido Advanced Water Treatment for Agriculture
- 11 San Diego River Healthy Headwaters Restoration
- 12 Sweetwater Reservoir Wetlands Habitat Recovery
- 13 Hodges Reservoir Natural Treatment System

Non-DAC Projects

- 6 Integrated Water Resources Solutions for the Carlsbad Watershed
- 9 Padre Dam Advanced Water Treatment - Phase IA Expansion
- 10 Safari Park Drought Response and Outreach

*Note: DAC as determined by census tract and block group data for the year 2013, from the American Community Survey 2009-2013 5-year results. DAC determined based on definition of median household incomes below 80% of the statewide MHI or $48,875.

Sources: U.S. Census 2013 ACS 5-year estimates; San Diego Association of Governments (SANDAG) - GIS Data Warehouse
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Needs of DACs

The San Diego IRWM Region distinguishes between urban DACs and rural DACs, because the nature of water-related issues for these DAC populations is markedly different. Urban DACs are those DACs that are located within municipal service areas and therefore receive public water and wastewater services; urban DACs represent the majority of DACs (by population) in the Region shown in **Figure 7-1**. Rural DACs are those DACs that are generally located outside of the service area of SDCWA and are therefore not typically served by a local water or wastewater agency. *Chapter 3 Region Description* of the 2013 IRWM Plan discussed the issues, needs, and challenges facing both urban and rural DACs in the Region (excerpt included here as **Appendix 7-1**). This information has been summarized below.

Urban DAC Needs

Because urban DACs are located within water agency service areas, they receive safe drinking water and wastewater services through local agencies and municipalities. As such, their water resources needs are generally related to community development and surface water quality issues, rather than drinking water quality, drinking water supply, or wastewater disposal and treatment issues. **Table 7-2**, below, lists the Urban DAC needs as identified in *Section 3.3 Disadvantaged Communities* of the 2013 IRWM Plan (see **Appendix 7-1**).

Urban DACs have reported experiencing flooding due to creek constrictions, which can result from inadequately-sized drains and culverts, vegetation overgrowth (particularly invasive species such as *Arundo donax*), creek realignment, pollution, or illegal dumping. Urban DACs are also prone to flooding due to high runoff from impervious surfaces associated with urbanization and a lack of open space or other non-paved recreation areas. The high volume of stormwater runoff also contributes to the poor surface water quality in urban DACs, as it is often polluted and drains directly into creeks. Homelessness also contributes to water quality issues, especially in homeless encampments located alongside the Region's water bodies that are prone to becoming a place where trash and other illegally-dumped items accumulates.

Many urban DACs in the Region are located adjacent to San Diego Bay and near industrial areas associated with the Region's shipping industry. These urban DACs are substantially impacted by pollution of San Diego Bay waters. Bay pollution from industry, runoff, and other activities has negatively impacted subsistence anglers, many of whom are residents of urban DACs. Low-lying urban DACs near the Bay may also experience the effects of sea level rise as a result of climate change.

Section 3.3 Disadvantaged Communities of the 2013 IRWM Plan includes a description of project components that are a priority to urban DACs in the Region. Projects in this proposal that are located in urban areas implement many of these priority components, including education targeting DACs, creek restoration, stormwater management and pollution prevention, public safety (through removal of invasive species that attract homeless encampments and contribute to flooding, and trash removal), and passive recreation.

Rural DAC Needs

Unlike urban DACs, rural DACs generally do not receive municipal water and wastewater services, and therefore may not be consistently supplied with a safe, reliable source of drinking water or wastewater disposal. **Table 7-3**, below, lists the rural DAC needs as identified in *Section 3.3 Disadvantaged Communities* of the 2013 San Diego IRWM Plan (see **Appendix 7-1**).

Due to infrastructure limitations, source water quality, and other issues, the primary water-related concern of rural DACs is lack of a safe, reliable source of drinking water. Rural DACs often lack access to adequate infrastructure and financing, as well as the resources to adequately maintain existing system facilities. As a result, drinking water systems in rural DACs may face significant challenges in complying with both longstanding and new drinking water rules. Three key issues impede the sustainability of small community water systems:

1) Contamination of drinking water sources from wastewater intrusion, agricultural influences, and contaminant spills from industrial activities.
2) Seasonal weather changes resulting in floods or droughts that may require design options to bypass treatment during rain and storm events and identification of alternative water supplies (including water reuse) to increase capacity during droughts.

3) Deteriorating collection and distribution systems that may compromise source water quality and increase the cost of water treatment.

Water supply and water quality issues in rural DACs may be exacerbated by climate change, poor economies, and lack of community expertise. Inadequate water supply to support existing communities is a public health risk, especially considering that the rural portions of the Region are also those that are particularly susceptible to wildfires. The majority of drinking water maximum containment level (MCL) violations in the Region occur with small public water systems, and inadequate wastewater treatment can result in unplanned discharge events.

Rural DACs also face cost-related water quality issues because small DAC systems have fewer ratepayers to share the costs, and providing supplemental treatment processes to improve the quality of contaminated drinking water sources is costly. Further, rural DACs may lack the technical expertise and financial stability to access funding programs that could be implemented to address cost-related issues. This lack of technical capacity also contributes to the high cost of DAC projects through an inability to adequately perform operation and maintenance activities during the life of a system, further exacerbating issues and potentially resulting in system failures.

Another issue facing rural DACs is groundwater contamination, potentially from leaking septic tanks, illegal dumping, or wildfires. Leaking or improperly sited septic tanks pose a public health hazard, but rural DACs often struggle to find financial assistance to fund the conversion from septic to sewer, which is expensive given the distance between some rural systems and existing sewer infrastructure. Illegal dumping, especially of chemicals or hazardous wastes in creeks and watersheds, is a common problem reported in rural DACs. Drinking water supplies for some rural DACs have also been contaminated with ash from recent wildfires. The Region anticipates that the projected increase in wildfire frequency and intensity resulting from climate change will disproportionately affect rural DACs, which are more likely to be located near fire-prone areas and less likely to have the ability to defend against fires. Some rural DACs lack sufficient water supplies for fire protection, further increasing the danger.

Projects that Provide Water-Related Benefits to DACs

The San Diego IRWM Region considers projects that address the relevant urban or rural DAC needs described above as providing water-related benefits to a DAC. As defined in the *2015 PSP*, a project that provides a direct water-related benefit to a DAC, and whose project area (by geography or population) is at least 25% DAC, is considered a DAC project. **Table 7-2** and **Table 7-3** show which DAC needs are met by each of the projects included in this proposal, and identify which projects qualify as DAC projects when considering the 25% threshold calculated in **Table 7-1**, above. A more detailed description of how projects address DAC needs is provided in *Attachment 2 Project Justification*.

The following projects provide direct water-related benefits to DACs within the San Diego IRWM Region, and meet the 25% threshold to qualify as a DAC project:

- *1: Regional Drought Resiliency Program*
- *2: Conservation Home Makeover in the Chollas Creek Watershed*
- *3: San Diego Water Conservation Program*
- *4: Ms. Smarty-Plants Grows Water-Wise Schools*
- *5: Rural Disadvantaged Community Partnership Project – Phase III*
- *7: UCSD Water Conservation and Watershed Protection*
- *8: Escondido Advanced Water Treatment for Agriculture*
- *11: San Diego River Healthy Headwaters Restoration*
- *12: Sweetwater Reservoir Wetlands Habitat Recovery*
- *13: Hodges Reservoir Natural Treatment System*

The following projects provide indirect water-related benefits to DACs, or provide direct water-related benefits to DACs but fail to meet the 25% threshold to qualify as a DAC project:

- *6: Integrated Water Resource Solutions for the Carlsbad Watershed*
- *9: Padre Dam Advanced Water Treatment – Phase IA Expansion*
- *10: Safari Park Drought Response and Outreach*

Table 7-2: Projects Addressing Water-Related Urban DAC Needs

	Proposed Projects	Urban DAC Needs											
		Community Development	Surface Water Quality	Funding	Water Rates	Flooding/Creek Constriction	Flooding/Impervious Surfaces	San Diego Bay Pollution	Sea Level Rise & Low-Lying DACs	Food Security/Irrigation Costs	Technical Capacity	DAC Outreach	DAC Project?
Conservation Program													
1	Regional Drought Resiliency Program		○	●	○				○			●	Y
2	Conservation Home Makeover in the Chollas Creek Watershed	●	○	●	○		●	●		●	●	●	Y
3	San Diego Water Conservation Program		○	●	○			○	○			○	Y
4	Ms. Smarty-Plants Grows Water-Wise Schools			●	○		●					●	Y
Water Reuse Program													
6	Integrated Water Resource Solutions for the Carlsbad Watershed		●	○	○		○					●	N*
7	UCSD Water Conservation and Watershed Protection		●	○	○	●	○	●			○	○	Y
8	Escondido Advanced Water Treatment for Agriculture			○	●					●		○	Y
9	Padre Dam Advanced Water Treatment – Phase IA Expansion			○	○							○	N*
10	Safari Park Drought Response and Outreach			○	○							○	N*
Water Quality and Habitat Program													
11	San Diego River Healthy Headwaters Restoration		●	○	○	●						○	Y
12	Sweetwater Reservoir Wetlands Habitat Recovery		●	○	○							○	Y
13	Hodges Reservoir Natural Treatment System		●	○	○							○	Y

○ indirectly addresses; ● directly addresses
*Does not meet the 25% threshold to qualify as a DAC

Table 7-3: Projects Addressing Water-Related Rural DAC Needs

Proposed Projects	Rural DAC Needs												
	Drinking Water	Infrastructure	Financial Capacity	Technical Capacity	Small Community Water System Sustainability	Climate Change	Public Health	Adequate Water Supplies	Water Quality/MCL	Wastewater Treatment	Regulatory Burden	Wildfire	Illegal Dumping	DAC Project?
Rural Water Infrastructure Program														
Rural Disadvantaged Community Partnership Project – Phase III	●	●	●	●	●		●	●	●			●		Y

○ indirectly addresses; ● directly addresses

DAC Projects in this Proposal

The projects described below provide direct water-related benefits to DACs, as defined by the San Diego IRWM Region and described above, and meet the 25% threshold (by either area or population). These projects thereby meet the definition of a DAC Project provided in the *2015 PSP*. All of these projects provide funding benefits through their inclusion in this Proposal. Receipt of grant funds will offset costs to implement projects and help to overcome financial barriers to implementation. For those projects that meet the criteria for a DAC Project, a summary of the DAC benefits are provided below, while more in-depth discussion is provided in *Attachment 2 Project Justification*.

Project 1: Regional Drought Resiliency Program

The *Regional Drought Resiliency Program* benefits DACs because benefits will be distributed across SDCWA's service area, which is 26% DAC by area, and 30% DAC by population. This project would directly benefit urban DACs by providing funding support in the form of rebates for individual water conservation efforts. Component 6 would provide direct outreach benefits to urban DACs by increasing the target audience of drought and conservation messaging to include populations with limited English skills. Many of these targeted English-limited populations reside in DACs. It would also provide indirect benefits to urban DACs, including surface water quality benefits achieved through turf conversion, and reducing the impacts of climate change (through improved water supply reliability and reduction of local contribution to GHG emissions associated with water production and conveyance) that could disproportionately affect low-lying DACs within SDCWA's service area. In addition, this project, like the other projects in the Conservation Program, will help protect against higher water costs through reducing the need for future purchases of additional, potentially more expensive, water supplies that could lead to water rate increases.

Project 2: Conservation Home Makeover in the Chollas Creek Watershed

The *Conservation Home Makeover in the Chollas Creek Watershed* projectspecifically targets residences in the Encanto neighborhood of the City of San Diego. This neighborhood is located between Hwy. 805 to the west, Hwy. 94 to the north, Hwy. 125 to the east, and Division and Plaza streets to the south. As shown in **Figure 2-3** (see *Attachment 2 Project Justification*) and in **Table 7-1**, this area is 64% DAC by area as defined in the *2015 Guidelines*. As shown in **Table 7-2**, above, this project will directly address seven urban DAC issues. The project will cover the costs of purchasing and installing rainbarrels and greywater systems, as well as funding landscape makeovers to convert turf to water-wise landscaping. Installation of greywater systems through this project will help address food security and irrigation costs by diverting greywater from the sewer system for use in irrigation of fruit trees to be planted at each residence. The project will reduce runoff from residences, protecting against flooding and impervious surfaces, as well as reducing pollution reaching San Diego Bay. The project will provide technical training to project participants, which will help build technical capacity for proper system maintenance, support community development and job skills, and provide outreach to DACs. Data collected from the project can be used to support future expansion of the project, and to secure funding for such expansion through other grant programs, which helps to address the funding issue that so often plagues urban DAC projects in the Region. Indirect benefits of this project include improved surface water quality from reduced urban runoff, and protection against water rate increases by improving water supply reliability in the Region, and reducing potable water demands in a DAC.

Project 3: San Diego Water Conservation Program

The City of San Diego is 28% DAC by population, and the *San Diego Water Conservation Program* will be implemented throughout the City's service area. Direct and indirect benefits are therefore anticipated to be distributed across the city, including its DACs. Direct benefits to DACs include funding support through rebates available to program participants. These rebates will help to overcome financial barriers to participation in water conservation efforts. This project also provides indirect benefits to five urban DAC needs, including surface water quality benefits, reduced pollution to San Diego Bay, addressing needs of low-lying DACs, and DAC outreach. Reduced pollution and surface water quality benefits are realized through the reduction in urban runoff that is associated with conversion from turf to water-wise landscaping, and improved irrigation efficiency. Many DACs in the City of San Diego are in low-lying areas along the San Diego Bay and may be disproportionately affected by the impacts of climate change. This project helps improve water supply reliability, and reduces the City's GHG emissions associated with water production and conveyance. Reduced runoff also helps to reduce flood risks in

these low-lying DACs. The outreach component of this project will not specifically target DACs, but will reach DACs within the City's service area. Water rate benefits are realized through the increased regional water supply reliability from the project, which reduces demand, conserving water for other uses, and helping to diminish the need for securing more expensive, water supplies that could result in water rate increases. For DAC renters, water costs are passed along in the form of rent increases, so water conservation efforts that help minimize water cost increases also help to minimize rent hikes.

Project 4: Ms. Smarty-Plants Grows Water-Wise Schools

Ms. Smarty-Plants Grows Water-Wise Schools targets Title I schools in the La Mesa-Spring Valley and Lemon Grove School Districts, portions of which fall within the service areas of Otay Water District and Helix Water District. These school districts are considered the project area, and are 25% DAC by population. **Appendix 7-2** includes a list of all Title I schools located within these school districts, 12 to 15 of which will be selected for the water-wise school upgrades. Title I schools are those schools serving high numbers or high percentages of children from low-income families. The U.S. Department of Education allows schools with at least 40% of their student population from low-income families to apply for Title I funding assistance for the entire school. According to the National Center for Education Statistics, in the 2012-2013 and 2012-2014 school years, there were six Title I schools in the Lemon Grove School District, and thirteen Title I schools in the La-Mesa Spring Valley School District.[1] Because all targeted schools will be Title I schools, all benefits from this project will be realized by DACs. As shown in **Table 7-2**, this project will directly address three urban DAC issues: funding, flooding and impervious surfaces and outreach. The turf conversions will cut expenses for the cash-strapped schools by reducing irrigation requirements. The conversion to turf will promote porous surfaces by reducing the potential for paving over existing turf to reduce water consumption. In addition, the project will target DACs with its water conservation and water-wise landscaping outreach. The project will indirectly provide surface water quality benefits by reducing runoff and water waste at targeted schools, while it provides indirect water rate benefits by improving water supply reliability through reduced demand for potable water, which will help to protect against water rate increases associated with securing additional reliable water supplies.

Project 5: Rural Disadvantaged Community Partnership Project – Phase III

As shown in the project map provided as **Figure 2-7**, the *Rural Disadvantaged Community Partnership Project – Phase III* will implement ten project components in rural DACs. These components will directly address nine rural DAC issues (see **Table 7-3**). The ten components represent the following project types, whose DAC benefits are described here:

- *Recycled water infrastructure improvements*: these projects address infrastructure needs of rural DACs by improving their recycled water infrastructure, and reducing stresses on existing potable water infrastructure by offsetting potable demands
- *Potable water storage*: these projects address drinking water, infrastructure, adequate water supplies, public health, and wildfire needs of rural DACs, primarily by providing adequate storage for safe water supplies necessary to meet community needs
- *Smart meter installation*: these projects improve infrastructure and reduce stress on systems and supplies by helping residents better manage their water use
- *Regionalization/consolidation of neighboring water systems*: regionalization projects address infrastructure issues by building financial and technical capacity through consolidation and qualification for additional funding programs. These types of projects increase supply and treatment reliability, helping to protect public health and provide adequate and safe supplies.
- *Treatment system installation*: these projects address water quality/MCL issues, protecting drinking water quality and public health, improving infrastructure, and supporting small community water system sustainability.

[1] National Center for Education Statistics. CCD Public School Data 2012-2013, 2013-2014 School Years. Online database, accessed 16June 2015. Search Criteria: District ID 0620250 (La Mesa – Spring Valley School District).

- *Floating trash removal*: trash removal helps to address public health concerns associated with polluted waterways, and improves water quality.
- *Bioswale construction*: bioswales are an effective way to address water quality issues resulting from unfiltered runoff. This helps to protect public health by addressing water quality and MCL issues.

In addition to the project-specific benefits, RCAC will provide training to build technical capacity to support successful project implementation and continued successful operation of the sub-projects. This will also help support infrastructure and small community water system sustainability. This project builds on the existing efforts of RCAC, continuing to build relationships with and meet the needs of rural DACs who are often unable to access funding opportunities.

Project 7: UCSD Water Conservation and Watershed Protection

The *UCSD Water Conservation and Watershed Protection* project will directly address three urban DAC needs, and indirectly address another five. Urban DAC needs that are directly addressed include surface water quality, flooding/creek constriction, and sea-level rise and low-lying DACs. The project improves surface water quality by reducing pollutant loading to San Diego Bay and the La Jolla ASBS, as well as reduces stormwater runoff and pollutant loading through its LID project components. The project includes trash removal in the Tijuana River Watershed, helping to reduce creek constriction and associated flood risks. DAC outreach and technical capacity building will indirectly occur because select project components will utilize volunteers from DACs to assist with project implementation. Indirect water rate benefits will be realized through the project's contribution to regional water supply reliability, reducing the potential for increased water rates to secure additional reliable supplies. As shown in **Table 7-1**, the cumulative *UCSD Water Conservation and Watershed Protection* project area is 39% DAC by population.

Project 8: Escondido Advanced Water Treatment for Agriculture

As shown in **Table 7-1**, the *Escondido Advanced Water Treatment for Agriculture* project serves an area that is 49% DAC by population. It provides direct benefits to water rates and food security/irrigation costs by producing recycled water suitable for agricultural purposes. Recycled water is a drought-proof local supply, meaning it is highly reliable, even in times of drought. In addition, recycled water is generally cheaper for customers than potable water, and conversion to recycled water can result in cost savings to customers. Because the water produced by the *Escondido Advanced Water Treatment for Agriculture* project would be used to irrigate crops, this project will also address food security and irrigation cost issues that are of concern to urban DACs. Indirect benefits include DAC outreach and funding. Outreach will be conducted to agricultural customers regarding the safe, and appropriate, use of recycled water for agricultural irrigation. Because approximately 43% of the City of Escondido, by area, meets the definition of a DAC, any outreach within the City of Escondido will also indirectly reach those DACs in the City of Escondido that are also agricultural customers or workers. Funding benefits are provided through the use of grant funds to cover a portion of the project costs. The presence of DACs within the project area is shown in **Figure 2-16**.

Project 11: San Diego River Healthy Headwaters Restoration

Per the analysis in **Table 7-1**, the *San Diego River Healthy Headwaters Restoration* project site is 56% DAC by area. This project directly addresses two urban DAC issues (surface water quality and flooding/creek constriction), and indirectly addresses three (funding, water rates, DAC outreach). Urban DAC benefits include a direct surface water quality benefit, achieved through invasive species removal and restoration of unauthorized recreation trails that contribute to water quality issues in the San Diego River watershed and downstream El Capitan Reservoir. Flooding/creek constriction benefits are realized through removal of invasive species which could cause creek constriction. The project also indirectly provides DAC outreach benefits because its outreach will reach DACs, although it is not specifically targeted to DACs. Finally, the project provides indirect water rate benefits to DACs because it helps to increase the amount of surface water available at El Capitan Reservoir. Surface water is a cheap water supply, and increased availability of such supplies helps to reduce the need for purchases of alternative, expensive supplies, thereby protecting against associated water rate increases.

Project 12: Sweetwater Reservoir Wetlands Habitat Recovery

The *Sweetwater Reservoir Wetlands Habitat Recovery* project is located adjacent to Sweetwater Reservoir, and so falls outside residential areas that can be classified as DAC or non-DAC. The project directly benefits customers of SWA, and directly addresses DAC needs, as shown in **Table 7-2**. To address this disconnect between the project area and the benefit area, SWA's service area was used as a proxy for determining DAC status. **Table 7-1** shows that the majority (54%) of SWA's service area comprises DACs in National City and Chula Vista (refer to **Figure 2-28**). The *Sweetwater Reservoir Wetlands Habitat Recovery* project will benefit all customers served by SWA, including those customers that are in DACs. This project will improve water storage capacity at Sweetwater Reservoir, as well as restore wetlands alongside the reservoir. This project will directly address surface water quality and DAC outreach. Surface water quality will be improved through restoration of the area around the Sweetwater Reservoir that was burned during massive fires that struck the Region in 2007. Outreach for this project directed towards SWA customers will reach also indirectly reach DACs within SWA's service area.

Project 13: Hodges Reservoir Natural Treatment System

Although the *Hodges Reservoir Natural Treatment* project will be implemented directly adjacent to the Hodges Reservoir, it will benefit the Region as a whole through improved emergency storage and regional water supply functionality. The direct benefits will be realized regionally, in areas that receive municipal water supply through SDCWA's member agencies. As such, SDCWA's service area has been used here as the appropriate proxy for DAC determination. As noted above, SDCWA is 26% DAC by area and 30% DAC by population. As indicated in **Table 7-2**, this project will directly address surface water quality, and indirectly address sea level rise and low-lying DACs. Surface water quality will be improved at Hodges Reservoir through the biofiltration function of the constructed wetland. Improved water supply reliability provided by this project will also provide some protection against potential increases in water rates by reducing the need to secure expensive water supply alternatives. Outreach for this project directed towards City of San Diego customers will reach also indirectly reach DACs within the City's service area.

Non-DAC Projects Providing DAC Benefits

The projects described here provide some form of water-related benefit to DACs, but fail to meet the criteria of a DAC project because the DAC benefits are indirect, or do not meet the 25% threshold (refer to **Tables 7-1** and **7-2**). A brief description of how these projects benefit DACs, even though they are not DAC projects, is provided here because addressing DAC needs is a priority for the San Diego IRWM Region, which recognizes that even small contributions to DACs are valuable.

Project 6: Integrated Water Resource Solutions for the Carlsbad Watershed

The *Integrated Water Resource Solutions for the Carlsbad Watershed* project benefits DACs, although the project area is only 3% DAC by population. It does, however, provide direct DAC benefits through outreach that will specifically target students at Title I schools. As described above, Title I schools serve students from predominately disadvantaged areas. This outreach will include implementation of state-approved curriculum for students in grades K-12, and conducting field trips for schools in Encinitas and Escondido to the San Elijo Lagoon. The project also includes direct surface water quality benefits through reduced pollutant loading to San Elijo Lagoon, which may be utilized for recreational purposes by local DAC residents. Indirect DAC benefits from this project include improved regional water supply reliability associated with increased recycled water use, which helps to buffer against potential water rate hikes associated with securing additional reliable water supplies The project also provides indirect impervious surface benefits through the addition of LID components to reduce stormwater runoff and increase infiltration.

Project 9: Padre Dam Advanced Water Treatment – Phase IA Expansion

The *Padre Dam Advanced Water Treatment – Phase IA Expansion* project will indirectly benefit DACs, though the project area is only 11% DAC by population. Indirect benefits to DACs include potential protection from water rate increases and DAC outreach benefits. Water rate benefits will be realized because the project will increase local water supply reliability, which helps to protect against water rate increases associated with the need for expensive water supply alternatives. Outreach efforts for this project will be directed to everyone served by Padre Dam MWD, including DAC residents. However, because this outreach will not be targeted specifically to DACs, the outreach benefit is considered indirect.

Project 10: Safari Park Drought Response and Outreach

The *Safari Park Drought Response and Outreach* project will reach DACs through school programs and visits to the Safari Park and its website by DAC residents. The project will also reach a large number of non-DAC individuals and communities. There is no reasonable method for breaking down the visitor population to DAC and non-DAC populations due to the large volume of non-local visitors. Further, the outreach portion of the project would be indirect because it is not specifically targeted to DACs, and will reach many more non-DACs than DACs. In addition to DAC Outreach, the *Safari Park Drought Response and Outreach* project will indirectly provide protection against water rate increases by improving water supply reliability in the Region, which helps to buffer against water rate hikes associated with securing additional water supplies.

local regulatory oversight within the Region on drinking water wells, monitoring wells, small water systems, recycled water use, and the beach recreational water quality program. The County also regulates on-site wastewater systems through an agreement with the Regional Board.

Eighteen incorporated municipalities exist within the Region, including the Cities of Carlsbad, Chula Vista, Coronado, Del Mar, El Cajon, Encinitas, Escondido, Imperial Beach, La Mesa, Lemon Grove, National City, Oceanside, Poway, San Diego, San Marcos, Santee, Solana Beach, and Vista.

Physical and Hydrologic Characteristics

Each of the Region's east-west-trending watersheds flows from elevated regions in the east toward coastal lagoons, estuaries, or bays in the west. Each of the watersheds features similar habitats at similar elevations, and all watersheds share habitat restoration and protection needs. A significant majority of the volume of surface flow in each of the watersheds is comprised of runoff from seasonal precipitation that predominantly occurs during the winter and spring months. Surface flows during summer and fall months are typically low, and consist of urban runoff, agricultural runoff, and surfacing groundwater. Each of the watersheds has similar water quality characteristics and faces similar water quality problems.

Imported Water Supply

Imported water supplied by the Water Authority is the predominant source of supply within the Region. The Region's imported water supply infrastructure crosses watershed and jurisdictional boundaries and requires coordination among local agencies and entities to address water supply, water quality, and habitat issues. This broader perspective promotes funding for regional projects and increases the economy of scale for the Region's local supply development projects.

Wastewater Service

Wastewater generated in the Region is either locally recycled or exported to one of the regional ocean outfall disposal systems. The Region's urban wastewater agencies have organized – both through the formation of JPAs and through interagency contracts – into five multi-jurisdictional wastewater systems based around the Region's five deep-water ocean outfalls. This shared infrastructure requires a high level of collaboration and coordination between local agencies within the Region. Further, the Region's agencies are collaborating with the International Boundary and Water Commission to address trash and wastewater pollution in the shared Tijuana River watershed.

3.3 Disadvantaged Communities

Disadvantaged communities (DACs) are defined by DWR as communities with a combined Median Household Income (MHI) of less than 80% of the statewide MHI (DWR and SWRCB, 2007). The 2012 IRWM Guidelines define DACs based on data from the 2006-2010 American Community Survey. This defines DACs as Census tracts with an MHI of $48,706 (DWR, 2012). The San Diego IRWM Region has refined data, with projections of 2013 MHI by Census blocks, produced by Nielsen-Claritas. Per the Nielsen-Claritas projections, 2013 statewide MHI is $58,724, making the 80% criteria to define DACs as $46,979 (Nielsen-Claritas, 2013). The decrease in statewide MHI from 2010 to 2013 has caused some of the Region's communities to no longer be considered DACs per the State standards; however, due to the Region's concern with addressing the needs of DACs, both the 2010 and 2013 data has been included in this Plan. The DAC information presented in Figure 3-4A and Figure 3-4B and discussed in the following sections represents the best available data on the location and nature of economically disadvantaged communities in the Region and does not constitute final or complete representation of DACs due to the scale of the data available

Additional income survey and other reliable data sources that demonstrate the location and nature of DACs in the Region may be used to further refine the data set and can be used for purposes of justifying grant eligibility based on DAC service areas.

Several communities and rural areas within the Region have an average MHI that is less than 80% of Statewide. The 2013 IRWM Plan uses various geographical designations to analyze DACs, including cities, County of San Diego community planning areas, and City of San Diego community planning areas. However, the use of larger planning areas can at times cause smaller portions of the planning area that are economically disadvantaged to be overlooked. The RWMG recently analyzed MHI values on a Census block basis to identify smaller pockets of DACs for outreach purposes. Figure 3-4A illustrates the community planning areas (CPAs) within the Region that are considered economically disadvantaged according to either the 2010 MHI criteria at tract level and the 2013 projections at block level. Figure 3-4B shows those areas within the City of San Diego that are considered DACs by either the 2010 or the 2013 data. Figure 3-4A also demonstrates the location of DACs with respect to the Water Authority's service area, which is used to distinguish Urban and Rural DACs as described below. Based on the 2010 Census data, eight of the County's 18 incorporated cities are considered DACs or contain DACs; these cities are El Cajon, Imperial Beach, Oceanside, Carlsbad, Escondido, San Marcos, National City, and San Diego. Additionally, based on the same data, 24 of the 58 City of San Diego CPAs and 18 of the 23 County CPAs are considered DACs or contain areas that qualify as DACs (SANDAG, 2013). Analysis of the 2013 data reduces these down to 22 and 13, respectively (Nielsen-Claritas, 2013).

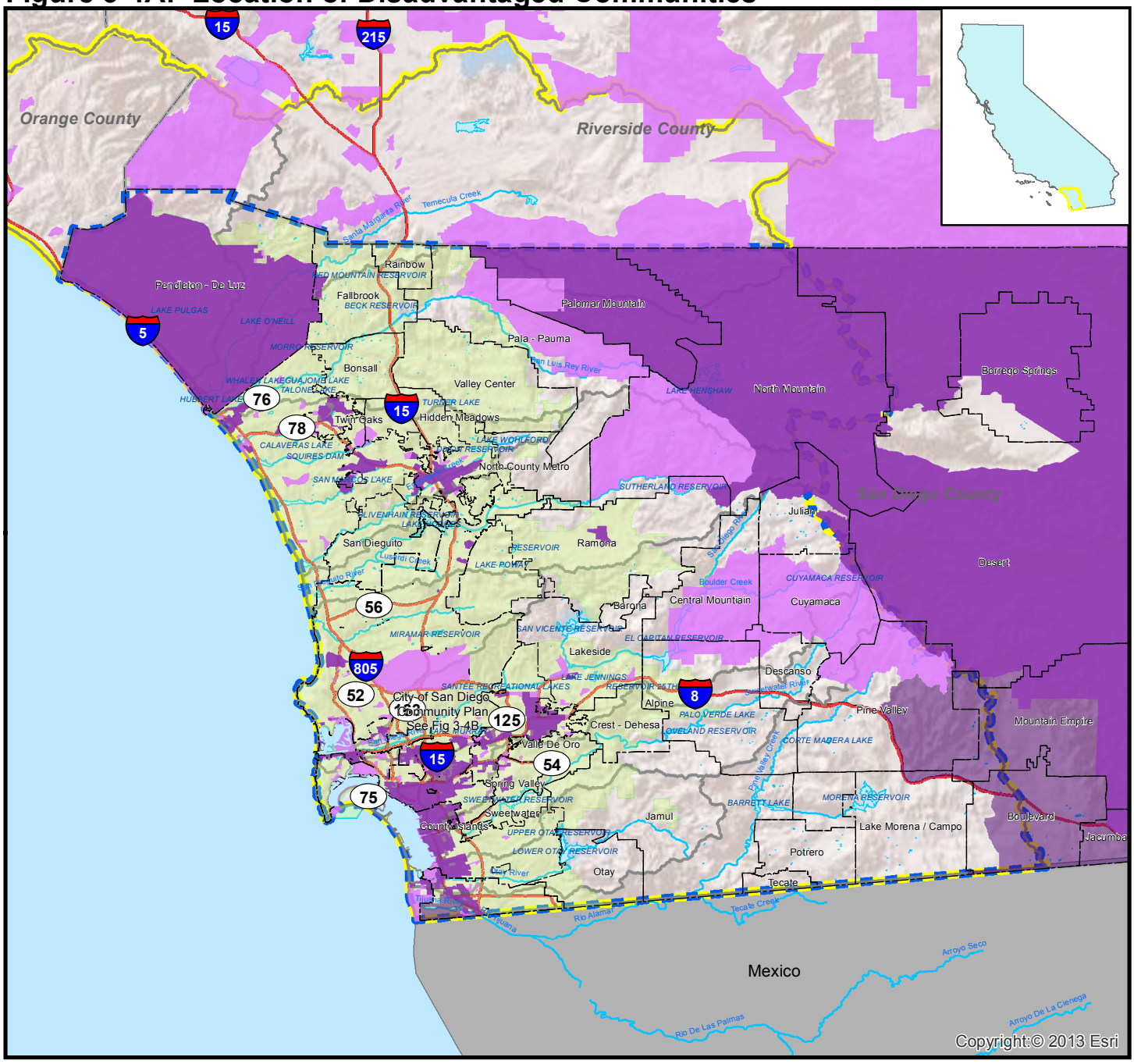
Chollas Creek is a widely acknowledged disadvantaged community with surface water quality issues.

Photo credit: Leslie Reynolds, Groundwork San Diego-Chollas Creek

Table 3-9 summarizes communities (by planning area) within the Region that meet DWR and State Board criteria for designation as DACs. The CPAs shown in the table are all CPAs in the Region that contain at least some DAC areas. Some CPAs are entirely or primarily DAC, while others (denoted by an asterisk) only contain small pockets of DACs. The table also shows how the DAC status for these areas has changed since 2000. The DACs are geographically distributed throughout the Region.

2010 Census data indicated that numerous Census tract neighborhoods in many of the Region's planning areas (both in incorporated and unincorporated areas) have MHIs that are less than 80% of the statewide MHI. Consistent with the recommendations of the *San Diego IRWM Public Outreach and Disadvantaged & Environmental Justice Community Involvement Plan,* actions are underway to outreach and collaborate with DACs throughout the Region.

Figure 3-4A: Location of Disadvantaged Communities



Legend

- 2013 Disadvantaged Communities
- 2010 Disadvantaged Communities
- San Diego County Water Authority
- Community Planning Area
- Watershed
- San Diego IRWM Region
- Funding Area Boundary
- Ocean
- Waterbody
- County
- River
- Freeway

Community Planning Areas (CPA) Containing Disadvantaged Communities (DAC)

Alpine CPA***
Bostonia County/Lakeside CPA***
Central Mountain CPA*
City of Carlsbad***
City of Oceanside***
County Islands CPA
Cuyamaca CPA*
Descanso CPA***
Desert CPA
Fallbrook CPA***
Fallbrook CPA***
Julian CPA
Mountain Empire CPA**
North County Metro CPA*
City of Escondido
City of San Marcos
North Mountain County CPA
Pala-Pauma CPA*
Palomar Mountain CPA
Pendleton-DeLuz CPA
Pine Valley CPA
Ramona CPA***
Spring Valley CPA
Twin Oaks CPA***

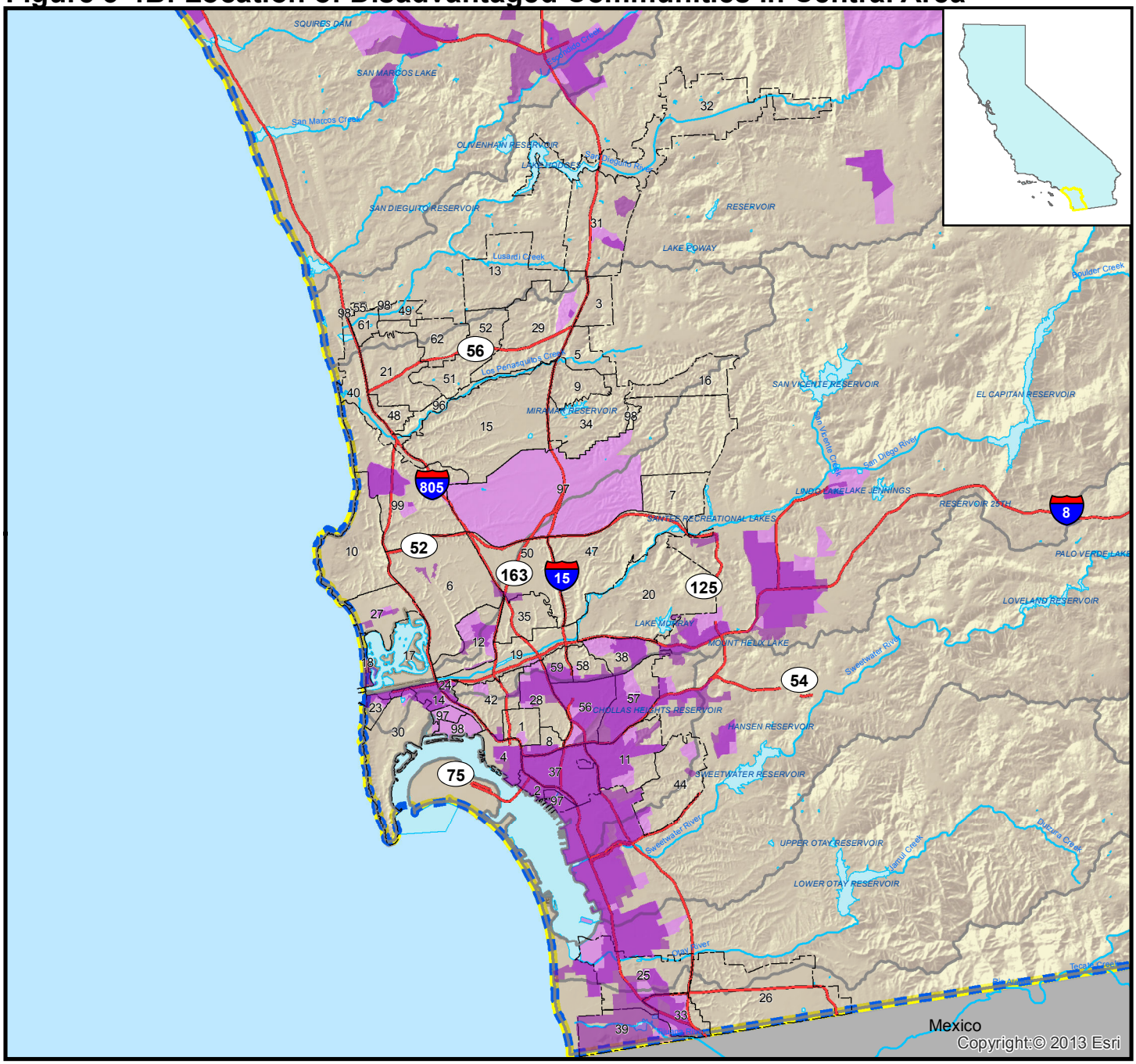
**Areas meeting 2010 DAC criteria but not 2013 criteria*
***Areas meeting 2013 DAC criteria but not 2010 criteria*
****Areas contining small pockets of DAC*

N

0 3 6 12
Miles

Sources: San Diego Association of Governments (SANDAG) - GIS Data Warehouse, 2010 Census Data.
DAC defined as a block group with a median household income (MHI) of less than $48,706 (80% of the Statewide MHI).
\\rmcsd\RMCSD\Projects GIS\0188-003 SDIRWM Plan Update\AdminDraftMaps\060713_JD\Fig3-4A_Location of DACs 060713.mxd

Figure 3-4B: Location of Disadvantaged Communities in Central Area



Legend

- 2013 Disadvantaged Communities
- 2010 Disadvantaged Communities
- Community Plan
- Watershed
- San Diego IRWM Region
- Funding Area Boundary
- Ocean
- City Boundaries
- Waterbody
- County
- River
- Freeway

Community Planning Areas (CPA) Containing Disadvantaged Communities (DAC)

2 - Barrio Logan CPA
6 - Clairemont Mesa CPA***
8 - Greater Golden Hill CPA
9 - Miramar Air Station CPA*
10 - La Jolla CPA***
11 - Encanto CPA
14 - Midway CPA
17 - Mission Bay Park CPA
23 - Pacific Beach CPA***
24 - Old San Diego CPA
25 - Otay Mesa CPA**
29 - Rancho Penasquitos CPA***
31 - Rancho Bernardo CPA***
33 - San Ysidro CPA
37 - Southeastern San Diego CPA
38 - College Area CPA
42 - Uptown CPA***
44 - Skyline-Paradise Hills CPA***
56 - City Heights CPA
57 - Eastern Area CPA
58 - Kensington-Talmadge CPA***
59 - Normal Heights CPA
98 - Harbor CPA
99 - University CPA***

Cities Defined as DACs:
City of National City
City of Imperial Beach*
City of El Cajon

N

0 1.25 2.5 5
Miles

*Areas meeting 2010 DAC criteria but not 2013 criteria
**Areas meeting 2013 DA C criteria but not 2010 criteria
***Areas containing small pockets of DAC

Sources: Sources: San Diego Association of Governments (SANDAG) - GIS Data Warehouse, 2010 Census Data.
DAC defined as a block group with a median household income (MHI) of less than $48,706 (80% of the Statewide MHI).
\\rmcsd\RMCSD\Projects GIS\0188-003 SDIRWM Plan Update\AdminDraftMaps\060713_JD\Fig3-4B_Location of DACs in SD 060713.mxd

Table 3-9: Economically Disadvantaged Communities

HU[1]	Name[2]	Disadvantaged City or Community Planning Area (CPA)[3]	Jurisdiction	2000 DACs	2010 DACs	2013 DACs
901 902	San Juan Santa Margarita	Pendleton-DeLuz CPA	County	•	•	•
902 903	Santa Margarita San Luis Rey	Palomar Mountain CPA	County		•	•
		Fallbrook CPA*	County		•	•
903	San Luis Rey	North Mountain County CPA	County	•	•	•
		Pala-Pauma CPA	County		•	
903 904	San Luis Rey Carlsbad	City of Oceanside*	City of Oceanside		•	•
		City of Carlsbad*	City of Carlsbad		•	•
904	Carlsbad	North County Metro CPA	County		•	
		Twin Oaks CPA*	County		•	•
		City of San Marcos	City of San Marcos		•	•
		City of Escondido	City of Escondido		•	•
906	Peñasquitos	Miramar Air Station CPA	City of San Diego		•	
		Mission Bay Park CPA	City of San Diego		•	•
		Rancho Peñasquitos CPA*	City of San Diego		•	•
		University CPA*	City of San Diego		•	•
		La Jolla CPA*	City of San Diego		•	•
		Clairemont Mesa CPA*	City of San Diego		•	•
		Pacific Beach CPA*	City of San Diego		•	•
905 906	San Dieguito San Diego	Ramona CPA*	County		•	•
907	San Diego	Bostonia County/Lakeside CPA*	County	•	•	•
		Central Mountain CPA	County		•	
		Julian CPA	County		•	•
		City of El Cajon	City of El Cajon	•	•	•
		Rancho Bernardo CPA*	City of San Diego		•	•
907 908	San Diego Pueblo	Normal Heights CPA	City of San Diego	•	•	•
		College Area CPA	City of San Diego	•	•	•
		Ocean Beach CPA	City of San Diego	•		
		Midway CPA	City of San Diego	•	•	•
		County Islands CPA	County		•	•
		Old San Diego CPA	City of San Diego	•	•	•
		Kensington-Talmadge CPA*	City of San Diego		•	•
907 909	San Diego Sweetwater	Alpine CPA*	County		•	
		Cuyamaca CPA	County		•	
		Descanso CPA*	County		•	
908	Pueblo	Barrio Logan CPA	City of San Diego	•	•	•
		Centre City CPA	City of San Diego	•		
		Spring Valley CPA	County		•	•
		City Heights CPA	City of San Diego	•	•	•
		Eastern Area CPA	City of San Diego	•	•	•
		Greater Golden Hill CPA	City of San Diego	•	•	•
		Greater North Park CPA	City of San Diego	•		
		Encanto CPA	City of San Diego	•	•	•
		Lindbergh Field CPA	City of San Diego	•	•	
		Southeastern San Diego CPA	City of San Diego	•	•	•
		Uptown CPA*	City of San Diego		•	•
908 909	Pueblo Sweetwater	City of National City	City of National City	•	•	•
		Skyline-Paradise Hills CPA*	City of San Diego		•	•

HU[1]	Name[2]	Disadvantaged City or Community Planning Area (CPA)[3]	Jurisdiction	2000 DACs	2010 DACs	2013 DACs
910 911	Otay Tijuana	City of Imperial Beach	City of Imperial Beach	•	•	•
		Otay Mesa - Nestor CPA	City of San Diego		•	•
911	Tijuana	San Ysidro CPA	City of San Diego	•	•	•
		Mountain Empire CPA	County	•		•
		Desert CPA	County		•	•
911 909	Tijuana Sweetwater	Pine Valley CPA	County		•	•
80% Statewide Median Household Income				*$37,520*	*$48,706*	*$46,979*

1 Numerical watershed (hydrologic unit) designation per Regional Water Quality Control Board (1994) and California Department of Water Resources *Hydrologic Data* (Bulletin 130).

2 Some planning areas fall within multiple watersheds

3 * denotes a CPA that contains small pocket(s) of DAC

DAC advocates have indicated that additional efforts to validate DACs in the Region are necessary, because U.S. Census data is often unable to capture the true economic conditions of various communities in San Diego County, particularly those communities with a high number of undocumented residents, tribal communities, or other residents that may not participate in providing information to the U.S. Census. For the 2013 IRWM Plan, this effort included using 2013 MHI projections on a Census block level for a refined understanding of DAC areas. Areas that may no longer qualify as DACs per the 2013 data, but are considered DACs with the 2010 data, remain areas of concern and will continue to be included in outreach efforts associated with the IRWM Program.

DAC Assistance

The RWMG has worked directly with many organizations that are involved with addressing water-related issues of DACs and environmental justice (EJ) communities within the Region, including: San Diego Coastkeeper, Environmental Health Coalition, Rural Community Assistance Corporation (RCAC), Jacobs Center for Neighborhood Innovation, Groundwork San Diego-Chollas Creek, WildCoast, and others. Outreach has focused on identifying DAC issues, needs, and concerns, as well as ensuring DAC and EJ representation on the RAC.

Within the San Diego IRWM Region, DACs are typically classified as either an Urban DAC – those DACs that are located within the Water Authority's service area (with municipal water and wastewater service), or a Rural DAC – those DACs that exist outside the bounds of a city or are not served by a Water Authority member agency. This distinction aids planners in addressing the true needs of DACs in the Region, as Rural DACs and Urban DACs face different issues and challenges. Some areas are rural in nature due to their distance from the Region's urban core, although they are served by large public water systems and therefore have characteristics of both Rural and Urban DACs. One such community, which includes Ramona, is provided water services by Ramona MWD, a Water Authority member agency.

In 2010, 2012, and 2013, targeted outreach to DACs was undertaken by the RWMG. The purpose of this outreach effort was to develop an understanding of the water needs in DACs within the Region, and increase awareness of IRWM funding opportunities.

Urban DACs Issues and Needs

As described above, Urban DACs fall within the service area of a water or wastewater agency. Of the communities in the Region that have been identified as DACs using both 2010 and 2013 data, the majority are Urban DACs. These include:

- Miramar Air Station CPA*
- Mission Bay Park CPA
- City of El Cajon
- Normal Heights CPA
- Old San Diego CPA
- Barrio Logan CPA
- Eastern Area CPA
- College Area CPA
- Midway CPA
- Twin Oaks CPA†
- North County Metro CPA*
  - City of Escondido
  - City of San Marcos
- Bostonia County/Lakeside CPA†
- City of Oceanside†
- City of Carlsbad†
- Pacific Beach CPA†
- Rancho Bernardo CPA†
- Uptown CPA†
- City Heights CPA
- Encanto CPA
- Lindbergh Field CPA*
- Southeastern San Diego CPA
- City of National City
- City of Imperial Beach
- San Ysidro CPA
- Otay Mesa-Nestor CPA**
- Greater Golden Hill CPA
- Ramona CPA†
- Spring Valley CPA
- County Islands CPA
- Fallbrook CPA†
- Rancho Peñasquitos CPA†
- University CPA†
- La Jolla CPA†
- Clairemont Mesa CPA†
- Kensington-Talmadge CPA†
- Skyline-Paradise Hills CPA†

** Area meeting 2010 DAC criteria but not 2013 criteria*
***Area meeting 2013 DAC criteria but not 2010 criteria*
†CPA containing only a small pocket(s) of DAC

Because Urban DACs are located within water agency service areas, their water resources needs are generally centered around community development and surface water quality issues, rather than drinking water quality or drinking water supply issues, as they receive safe drinking water through their water agency. DWR's definition of a critical water supply or water quality need of a DAC often fails to encompass what the Urban DACs (and their relevant planning agencies) consider a critical water supply or water quality need. Therefore it can be challenging to obtain funding for Urban DAC water projects, as they often do not qualify for the funding match waivers frequently provided for DAC projects. While Urban DACs in the Region receive safe drinking water from local water agencies, increases in water rates (refer to Section 3.10 for more information) can have a disproportionate impact on DAC residents, because they tend to spend a larger percentage of their income on water compared to those in higher-income communities. .

During rain events, Urban DACs often suffer from flooding due to creek constrictions, which can result from inadequately-sized drains and culverts, vegetation overgrowth (particularly *Arundo donax*), creek realignment, pollution, or illegal dumping. Urban DAC areas are also prone to flooding due to high runoff from impervious surfaces associated with urbanization and the typical lack of parks or other non-paved recreation areas in Urban DACs. In order to improve surface permeability while not restricting economic growth potential in Urban DACs, more assistance is necessary for de-channelization, hydro-modification, and to implement Low Impact Development (LID) projects to reduce stormwater runoff and associated flooding. These projects could also be used as an

Illegal dumping in creeks and watersheds is a common problem faced by Urban DACs.
Photo credit: Leslie Reynolds, Groundwork San Diego-Chollas Creek

Water quality concerns in urban creeks can result from illegal dumping, invasive species, and stormwater runoff.
Photo credit: Leslie Reynolds, Groundwork San Diego-Chollas Creek

opportunity to provide increased access to recreational areas, which is sorely lacking in most Urban DACs.

The high volume of stormwater runoff also contributes to the poor surface water quality in Urban DACs, as it is often polluted and drains directly into creeks. Although many of the residents of Urban DACs are aware of the pollution problems, and TMDLs have been developed for some streams that traverse Urban DACs, challenges remain.. For example, while TMDLs for metals and bacteria in Chollas Creek have been developed, illegal dumping (especially of large trash items such as mattresses) in creeks and watersheds is a common problem that causes water quality issues in Urban DACs. A large-trash collection program would help reduce these incidents and the public health and safety hazards they often represent. Watershed stakeholders have reported that homelessness presents water quality issues throughout the Region, especially in homeless encampments located alongside the Region's water bodies that are prone to becoming a place for trash and other illegally-dumped items to accumulate.

Pollution of San Diego Bay waters also substantially impacts Urban DACs, many of which are located adjacent to the Bay, near industrial areas. Bay pollution from industry, runoff, and other activities has negatively impacted subsistence fishermen, many of whom are residents of Urban DACs. Additionally, insufficient water quality monitoring has been completed in the San Diego Bay wetlands, again located near or in Urban DACs, to understand and address water quality issues. Low-lying Urban DACs near the Bay will also suffer disproportionately from the effects of sea level rise as a result of climate change. These areas will be more susceptible to floods and inundation from storm surges, which are anticipated to be larger and more frequent.

One of the biggest issues facing Urban DACs is food security. Food security is one of the highest priorities in these areas and must be addressed before full DAC involvement in other issues, including water quality. However, some urban DACs use community gardens to help offset food needs, and irrigation costs may impact their ability to care for such gardens.

Urban DACs, like their rural counterparts, frequently lack the financial and technological resources to design, implement, operate, and maintain water projects. Because of this, they require financial assistance for project implementation, particularly to support ongoing operation and maintenance (O&M) costs. Non-governmental organizations (NGOs) that propose projects in Urban DACs should consider the long-term stewardship of the projects in question, and determine post-project ownership of any acquired land at the outset of the projects, to ensure the resources necessary to achieve the long-term benefits associated with the projects. For creek restoration projects, or those projects that improve recreational or access opportunities, public safety should always be considered. In Urban DACs, there may be a need for additional park rangers or security officers to ensure public safety in recreation areas.

Effective water conservation, watershed, and stormwater management outreach and education is lacking in Urban DACs. In order to be most effective, outreach and education efforts should come from the community or peers, rather than top-down through an agency. Outreach efforts should also aim to raise awareness of the existence of surface waters in Urban DACs, which will assist in improving stewardship of these resources. These efforts should be tailored to the community and be multilingual.

Priority projects in Urban DACs include those with education, creek restoration, passive recreation, hydro-modification, stormwater management/pollution prevention, public safety, and those that address sea level rise adaptation components.

Rural DACs

Rural DACs are located outside of the jurisdictional boundaries of the Region's water and wastewater agencies, and are not provided municipal water supply or wastewater infrastructure. Of the communities in the Region that have been identified as DACs using both the 2010 and 2013 data, the following are Rural DACs:

- North Mountain County CPA
- Pala-Pauma CPA*
- Palomar Mountain CPA
- Pendleton-DeLuz CPA
- Pine Valley CPA
- Mountain Empire CPA**
- Alpine CPA*†
- Central Mountain CPA*
- Cuyamaca CPA*
- Descanso CPA*†
- Julian CPA
- Desert CPA

** Area meeting 2010 DAC criteria but not 2013 criteria*
***Area meeting 2013 DAC criteria but not 2010 criteria*
†CPA containing only a small pocket(s) of DAC

It should be noted that more rural communities may be designated as DACs following additional efforts that may be taken to characterize DACs in the Region.

Unlike Urban DACs, Rural DACs are not consistently supplied with a safe source of drinking water. Due to infrastructure, source water quality, and other issues, the primary water-related concern of Rural DACs is meeting drinking water needs with a safe, reliable source of drinking water. Rural DACs often lack access to much-needed infrastructure and financing, as well as the resources to adequately maintain existing system facilities. As a result, drinking water systems in Rural DACs often face significant challenges in complying with longstanding and new drinking water rules (EPA 2007).

Three major problems that impede the sustainability of small community water systems include:

1) contamination of drinking water source water from wastewater intrusion, agricultural influences, naturally occurring contaminants, and/or contaminant spills from industrial activities;
2) seasonal weather changes resulting in floods or droughts may require design options to bypass treatment during rain and storm events and identification of alternative water supplies (including water reuse sources) to increase capacity during droughts; and
3) deteriorating collection and distribution systems compromise source water quality and increase the cost of water treatment.

Rural communities within the San Diego IRWM Region's unincorporated areas have water supply and water quality issues that may be exacerbated by climate change, poor economies, and lack of community expertise. Inadequate water supply to support existing communities is a public health risk, especially considering that the rural portions of the Region are also those that are particularly susceptible to wildfires. The majority of drinking water maximum containment level (MCL) violations in the Region occur with small public water systems, and inadequate wastewater treatment can result in unplanned discharge events.

The infrastructure needs of Rural DACs are so extensive that there is not enough currently available funding to meet the needs of Rural DACs throughout the Region. CDPH has 41 small (less than 10,000 population) systems located in San Diego County on its 2013 State Revolving Fund (SRF) Priority Project List, with many systems listed for multiple improvements (CDPH 2013). The State Board has a similarly lengthy list of communities requesting funding from the Clean Water SRF for wastewater improvements. Additional challenges to obtaining funding for Rural DAC projects includes a regulatory burden that is often too difficult for Rural DACs to meet and difficulties in providing matching funds, both of which cause DAC projects to look unfavorable when compared to non-DAC projects during consideration for funding.

Aging storage tanks can lead to contamination of rural water supplies.

Photo credit: Dave Harvey, Rural Community Assistance Corporation

Rural DACs in the San Diego IRWM Region are faced with critical water supply issues in that some areas have inadequate water supplies to support existing connections. Rural DACs also face water quality issues associated with costs as it is costly to provide supplemental treatment processes to improve the water quality of contaminated drinking water source waters, and it is also difficult for small DAC systems to afford improvements because they have fewer ratepayers to share the costs. Further, Rural DACs may lack the technical expertise and financial stability to access funding programs that could be implemented to address cost-related issues. Because of the lack of internal capacity for small water systems, a supporting agency should provide capacity (such as engineering) to support necessary improvements for Rural DAC systems. The lack of technical

capacity and support from agencies also contributes to the high cost of DAC projects through an inability to adequately perform O&M activities during the life of a system.

Some of the other issues facing Rural DACs include groundwater contamination, potentially from leaking septic tanks. Leaking or improperly sited septic tanks also pose a public health hazard, though the conversion from septic to sewer is expensive, and Rural DACs often struggle to find assistance in funding such projects. The San Dieguito and San Diego groundwater basins have experienced contamination, as has the Otay/San Diego Formation, which is being considered by U.S. Geological Survey (USGS) for groundwater use. As described above, small water systems often lack the ability to treat contaminated water with a supplemental treatment process. Drinking water supplies for some Rural DACs have also been contaminated with ash from recent wildfires. It is anticipated that the projected increase in wildfire frequency and intensity resulting from climate change will inordinately affect Rural DACs, which are more likely to be located near fire-prone areas and less likely to have the ability to defend against fires. Some Rural DACs lack sufficient water supplies for fire protection, further increasing the danger.

Illegal dumping, especially of chemicals or hazardous wastes in creeks and watersheds, is a common problem reported in Rural DACs. Awareness of existing programs such as the County's permanent Household Hazardous Waste Collection Facilities in Ramona and El Cajon and the County's collection events that travel throughout unincorporated areas of the County can help to reduce illegal dumping and associated water quality impacts.

To meet the needs of Rural DACs, the San Diego IRWM Region will need to identify solutions that recognize that the needs of Rural DACs differ from those of Urban DACs. In order to be most effective, the Region may develop and implement targeted, multilingual outreach to Rural DACs that is tailored to the community being addressed. Finally, appropriate support must be provided to enable Rural DACs to develop projects, secure funding for projects, and properly operate and maintain their systems.

Community Support for DACs and Environmental Justice Communities

The U.S. EPA defines Environmental Justice as:

> *…the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies…It will be achieved when everyone enjoys the same degree of protection from environmental and health hazards and equal access to the decision-making process to have a healthy environment in which to live, learn, and work.*

In addition to the efforts of the San Diego IRWM Program, a variety of organizations in the IRWM Region work to address the needs of DACs and EJs:

San Diego Coastkeeper

The San Diego Coastkeeper's mission is to protect and restore fishable, swimmable, and drinkable waters in San Diego County. Coastkeeper enhances public awareness of water quality and other water-related issues through their extensive community outreach and participation program that involves hands-on stewardship activities such as beach cleanups and water quality sampling.

Rural Community Assistance Corporation

The Rural Community Assistance Corporation (RCAC) focuses its San Diego-based efforts in the rural portions of the Region that generally do not receive municipal water or wastewater services.

RCAC completes a variety of work to address the needs of DACs and EJs, including providing technical assistance, training, and funding support.

California Rural Water Association

California Rural Water Association (CRWA) works to provide on-site technical assistance and specialized training for rural water and wastewater systems. Similar to RCAC, CRWA focuses its work on the rural portions of the Region that do not receive municipal water or wastewater.

Environmental Health Coalition

The Environmental Health Coalition (EHC), founded in 1980, is a community-based organization founded in Barrio Logan, an Urban DAC. It works to achieve environmental and social justice through leader development, organizing, and advocacy. EHC focuses on green energy and jobs, healthy kids, border environmental justice, and toxic-free neighborhoods.

Groundwork San Diego

Groundwork San Diego–Chollas Creek works with the communities surrounding Chollas Creek to improve the creek and communities. It strives to create opportunities for people to learn new skills and take action, help businesses grow, and create safer and healthier neighborhoods. It achieves these goals through three overarching programs: 1) Environmental education, 2) Clean creeks and healthy habitats, and 3) Thriving communities.

Jacobs Center for Neighborhood Innovation

The Jacobs Center for Neighborhood Innovation seeks to create community change by teaming up with residents in under-invested communities. It seeks to empower residents to take ownership of the change they wish to see in their communities, and provide financial, technical, and other forms of support. The Jacobs Center works in Chollas View, Emerald Hills, Lincoln Park, Mountain View, Mount Hope, North Encanto, Oak Park, South Encanto, Valencia Park, and Webster.

Jacobs Center for Neighborhood Innovation serves an important role in improving creek conditions in Southeast San Diego.

Photo credit: Charles Davis, Jacobs Center for Neighborhood Innovation

Civic San Diego

Civic San Diego is a public non-profit founded by the City of San Diego following the dissolution of the Redevelopment Agency of the City of San Diego in 2012. Its main responsibility has been the redevelopment and subsequent revitalization of Downtown San Diego, though it also works in the surrounding neighborhoods, including four Urban DACS: Barrio Logan, City Heights, Southeastern, and San Ysidro.

Appendix 7-2: Title I Schools Eligible for Ms. Smarty-Plants Grows Waterwise Schools

The *Ms. Smarty-Plants Grows Waterwise Schools* will target 12 to 15 Title I schools in the Lemon Grove and La Mesa-Spring Valley School Districts for participation in their waterwise landscaping and waterwise operations upgrades program. A list of Title I schools for each of these school districts was pulled from the National Center for Education Statistics, available via the Common Core of Data database. These data are from the 2012-2013 and 2013-2014 school years. The list of targeted Title I schools may therefore change during project implementation to reflect updated data, but are not anticipated to alter substantially.

Title I schools are those schools serving high numbers or high percentages of students from low-income families. The percentage of students participating in lunch assistance programs (either receiving free or reduced lunch) can act as a proxy for the percentage of students from low-income communities. Schools with at least 40% of its population from low-income families is eligible to apply for Title I funding assistance school-wide.

Lemon Grove School District (State District ID 3768205) Title I Schools

State School ID	Grade Range	School Name	Title I School*	Title 1 School Wide*	Students*	Free Lunch*	Reduced Lunch*	% of Students Receiving Lunch Assistance
6038608	Pre-K to 8	Lemon Grove Academy For The Sciences And Humanities	Yes	Yes	1241	712	187	72%
6038624	Pre-K to 6	Monterey Heights Elementary	Yes	Yes	461	263	70	72%
6038632	Pre-K to 6	Mt. Vernon Elementary	Yes	Yes	559	312	99	74%
6038657	Pre-K to 6	San Altos Elementary	Yes	Yes	397	223	65	73%
6038665	Pre-K to 6	San Miguel Elementary	Yes	Yes	558	347	92	79%
6038673	Pre-K to 8	Vista La Mesa Academy	Yes	Yes	685	355	162	75%

Source: National Center for Education Statistics, Common Core Database, available: http://nces.ed.gov/ccd/schoolsearch/school_list.asp?Search=1&DistrictID=0620250
*Data from 2012-2013 school year

La Mesa-Spring Valley School District (State District ID 3768197) Title I Schools

State School ID	Grade Range	School Name	Title I School*	Title 1 School Wide*	Students*	Free Lunch*	Reduced Lunch*	% of Students Receiving Lunch Assistance
6038400	Kindergarten to 6	Avondale Elementary	Yes	Yes	552	355	58	75%
6038418	Kindergarten to 6	Bancroft Elementary	Yes	Yes	640	447	61	79%
6038434	Kindergarten to 6	Casa De Oro Elementary	Yes	Yes	367	228	31	71%
6038459	Kindergarten to 6	Highlands Elementary	Yes	Yes	497	251	56	62%
6038467	Kindergarten to 6	Kempton Street Elementary	Yes	Yes	723	539	60	83%
6038475	Kindergarten to 6	La Mesa Dale Elementary	Yes	Yes	512	259	69	64%
6038509	Kindergarten to 6	La Presa Elementary	Yes	Yes	411	260	58	77%
6067003	7 to 8	La Presa Middle	Yes	Yes	526	371	52	80%
6098446	Kindergarten to 6	Loma Elementary	Yes	Yes	490	228	48	56%
0115543	5 to 8	Quest Academy	Yes	No	22	10	0	45%
6038566	Kindergarten to 6	Rancho Elementary	Yes	Yes	470	236	84	68%
6038590	7 to 8	Spring Valley Middle	Yes	No	598	319	73	66%
6111207	Kindergarten to 6	Sweetwater Springs Elementary	Yes	Yes	578	251	64	54%

Source: National Center for Education Statistics, Common Core Database, available: http://nces.ed.gov/ccd/schoolsearch/school_list.asp?Search=1&DistrictID=0620250
*Data from 2012-2013 school year