



Attachment 3

Work Plan

Implementation Grant, Round 2

Coachella Valley IRWM

Implementation Grant Proposal

Coachella Valley Integrated Regional Water Management Implementation Grant Proposal – Round 2

Work Plan

Attachment 3 consists of the following item:

✓ **Work Plan**

Attachment 3 contains detailed information regarding the tasks that were and will be performed for each project constituting the proposal, as well as supporting documents such as regional and project maps, and existing data and studies.

This attachment contains summary descriptions of all the projects constituting the *Coachella Valley IRWM Implementation Grant Proposal – Round 2* and tasks necessary to complete each project in the proposal. This attachment demonstrates that the proposal is ready for implementation, and includes a brief discussion of the supporting studies, data, resources, and deliverables for each project, to ensure implementation of the proposal is based on sound scientific and technical principles. The tasks included in this Work Plan are also consistent with the major tasks and sub-tasks identified in the Budget (Attachment 4) and Schedule (Attachment 5) of this Proposal.

Introduction

The Coachella Valley Regional Water Management Group (CVRWMG) is comprised of the Coachella Water Authority (CWA), Coachella Valley Water District (CVWD), Desert Water Agency (DWA), Indio Water Authority (IWA), and Mission Springs Water District (MSWD). The IRWM regional boundary (Region) was selected because it is all-encompassing, and allows for the inclusion of all pertinent agencies and stakeholders interested in water management in the Coachella Valley. As such, besides the CVRWMG, the Coachella Valley IRWM planning process also includes input from key water-related stakeholders throughout the Region. The established governance structure for the Coachella Valley IRWM process is a collaborative, consensus-seeking process made up of the CVRWMG, Planning Partners, Issues Groups, and stakeholders.

The Coachella Valley IRWM Plan identifies five goals and thirteen objectives that were established to meet those goals. Each of the IRWM Plan goals and their corresponding objectives are listed in Table 3-1. The project prioritization process used to select from the Region's IRWM project list emphasized projects that contribute to these regional goals. Five projects were specifically selected by the CVRWMG and Planning Partners to meet the critical water resource issues and concerns of the Coachella Valley.

The five projects in this proposal will diversify water supply, improve water quality, and meet critical water and wastewater needs of disadvantaged communities (DACs), three critical issues in the Coachella Valley. Because groundwater is the primary source of water supply in the Coachella Valley, groundwater protection is a primary concern to regional stakeholders.

This proposal includes a suite of projects identified by the CVRWMG and Planning Partners to best meet the current challenges of Coachella Valley. The complete proposal offers an integrated solution to the Valley's water supply and water quality needs.



Table 3-1: Coachella Valley Region IRWM Plan Goals and Objectives

Goals	Objectives
1. Optimize water supply reliability.	A. Provide reliable water supply for residential and commercial, agricultural community, and tourism needs.
	B. Manage groundwater levels to reduce overdraft, manage perched water, and minimize subsidence.
	C. Secure reliable imported water supply, including restoring/improving reliability of State Water Project supply and securing other imported water supplies.
	D. Maximize local supply opportunities, including water conservation, water recycling and source substitution, and capture and infiltration of runoff.
2. Protect or improve water quality.	E. Protect groundwater quality and improve, where feasible.
	F. Preserve and improve surface water quality by maintaining integrity of agricultural drainage systems, protecting the quality of natural runoff used for potable supply, and reducing pollution in stormwater runoff.
3. Provide stewardship of our water-related natural resources.	G. Preserve local environment and restore, where feasible.
	H. Manage flood risks, including current acute needs and needs for future development.
4. Coordinate and integrate water resource management.	I. Optimize conjunctive use of available water resources.
	J. Maximize stakeholder involvement and stewardship in water resource management.
5. Ensure cultural, social, and economic sustainability of water in the Valley.	K. Address water-related needs of local Native American culture.
	L. Address water and sanitation needs of disadvantaged communities, including those in remote areas.
	M. Maintain affordability of water.

Proposal Goals and Objectives

The objective of this *Coachella Valley IRWM Implementation Grant Proposal* is to present a suite of projects that:

- Further the regional goals and objectives established in the IRWM Plan;
- Provide multiple benefits through integration of water management strategies; and
- Assist in meeting the Coachella Valley’s critical water supply and water quality needs.

Purpose and Need

The purpose and need of this Implementation Grant Proposal are intrinsically linked to the goals and objectives of the Coachella Valley IRWM Plan. This is evident in the fact that part of the criteria used by the CVRWGM and Planning Partners to select projects to include as part of this proposal was the ability of a project to meet the goals and objectives of the Coachella Valley IRWM Plan. Table 3-2 provides a summary of the five projects contained within this proposal, and their contribution to the IRWM Plan Objectives. For a full explanation of the purpose and need of each project, and how the purpose and need address the Coachella Valley IRWM Plan’s goals and objectives, please refer to the Proposed Work section of this attachment, which includes this type of project-specific information.



Table 3-2: Contribution to IRWM Plan Objectives

Proposed Project	Contribution to IRWM Plan Objectives												
	A	B	C	D	E	F	G	H	I	J	K	L	M
Non-Potable Water Use Expansion Program	●	●	●	●					○	○	○	○	●
Coachella Valley Salt and Nutrient Management Program	○	○		○	○					●	○	○	○
Groundwater Quality Protection Program – Sub-Area D-2	○	○		○	●					○		●	○
San Antonio del Desierto DAC Sewer Extension Project	○		●	○	●	○	○			●		●	○
Torres Martinez Avenue 64 Water Supply Connection Project	●	●								○	●	●	●

● = directly related ○ = indirectly related

Project List

The five projects in this proposal will diversify water supply, improve water quality, and meet critical water and wastewater needs of DACs, three critical issues in the Coachella Valley. Table 3-3 presents the specific projects included as part of the Proposal. An abstract, current project status, and implementing agency is provided for each project.

Table 3-3: Projects in Coachella Valley IRWM Implementation Grant Proposal – Round 2

Project	Description
1: Non-Potable Water Use Expansion Program	<p><i>Abstract:</i></p> <p>The <i>Non-potable Water Use Expansion Program</i> is a form of source substitution - the delivery of an alternate source of water to users who currently depend on groundwater pumping. The substitution of an alternate non-potable water source reduces groundwater extraction and allows the groundwater to remain in storage, thus reducing overdraft. It also matches source to use by providing untreated Colorado River water (Canal water) and recycled water for outdoor irrigation in lieu of higher quality groundwater.</p> <p>Canal water and recycled water are significant existing local resources that are underutilized for agricultural and golf course irrigation. Backbone distribution systems exist to deliver non-potable water, but funding is needed to connect potential customers to existing non-potable distribution systems and further reduce groundwater pumping.</p> <p>In the eastern portion of the Coachella Valley (generally east of Washington Street), the Coachella Canal (Canal) and its adjacent irrigation distribution system has delivered Colorado River water to the agricultural community since 1950. However, this system has not been fully utilized. In the western portion of the Coachella Valley, the backbone of the area’s non-potable water system, the Mid-Valley Pipeline (MVP), was completed in 2008, and has the capacity to serve approximately 50 golf courses.</p> <p>There are over 110 golf courses in the Coachella Valley with access to non-potable water. CVWD has entered a standardized non-potable water use agreement with 43 of these golf courses that requires them to meet at least 80% of their demand with non-potable water. Of these 43 courses, 14 receive water from the MVP system and 29 receive water from the Canal distribution system.</p> <p>This project would fund three west Valley golf course connections (connections to the MVP), one improvement to a pump station, and four east Valley golf course connections (to the Canal system).</p>
	<p><i>Status:</i></p> <p>Project planning and preliminary design has already been completed via the Mid-Valley Pipeline Final Concept Paper (CVWD 2005), and is currently considered to be at 30% design. Final design work is included in the scope of this project.</p>



Project	Description	
	<i>Sponsor:</i>	Coachella Valley Water District
2: Coachella Valley Salt and Nutrient Management Program	<i>Abstract:</i>	<p>The <i>Coachella Valley Salt and Nutrient Management Program</i> will implement the analytical and planning tasks needed to develop a SNMP for the Coachella Valley Groundwater Basin that is compliant with the State’s Recycled Water Policy. Key tasks to be undertaken by the CVRWMG include:</p> <ol style="list-style-type: none"> 1. <i>Establish a collaborative process</i> of Valley stakeholders interested in groundwater management, which will entail setting up working groups, conducting technical review meetings and conference calls, conducting stakeholder workshops, and program management. 2. <i>Characterize the groundwater basins</i>, including identifying the groundwater basins to be evaluated, collecting and reviewing existing groundwater data, documenting beneficial uses, characterizing groundwater quality and occurrences, identifying constituents of concern, and establishing baseline conditions. 3. <i>Identify salt/nutrient loading and trends</i> by first identifying salt/nutrient sources, and then quantifying salt/nutrient source loads and developing a plan for data gaps. 4. <i>Identify water management goals and potential strategies</i>, which would entail developing a list of potential management strategies, evaluating the feasibility of those potential management strategies, and then conducting an assimilative capacity analysis. 5. <i>Conduct anti-degradation process</i>, which includes assessing load reduction and water quality improvements, and identifying preferred management strategies. 6. <i>Finalize the SNMP</i>, which includes developing an implementation plan, identifying metrics and developing a monitoring plan, developing data management, reporting, and audit processes, determining CEQA/NEPA compliance needs, and producing the SNMP document. <p>Successful completion of the SNMP is necessary to ensure compliance with the Recycled Water Policy. Compliance with this policy is necessary for continued Colorado River RWQCB approval of recycled water permits in the Basin. Therefore, developing the SNMP will enable continued use and expansion of the Valley’s water recycling efforts, which are an important component of the Region’s groundwater management strategy.</p> <p>Development of the Coachella Valley SNMP would be a collaborative process driven by stakeholders that have already been identified during Phase I activities. This program allows the Region’s water and wastewater agencies to better manage salts and nutrients in the groundwater basin to preserve the high quality groundwater supply used for potable purposes.</p>
	<i>Status:</i>	This program does not require any design work. However, Phase I of the program has already been completed, and Phase II (described in this work plan) is ready for implementation.
	<i>Sponsor:</i>	Coachella Valley Water District on behalf of the CVRWMG



Project	Description	
<p>3: Groundwater Quality Protection Program – Sub-Area D-2</p>	<p><i>Abstract:</i></p>	<p>The City of Desert Hot Springs is classified as an economically disadvantaged community (DAC), located within the MSWD service area, which is located within the Colorado River Basin. This community overlays the Desert Hot Springs groundwater aquifer, a hot-water groundwater basin containing hot mineral water with temperatures exceeding 100 degrees Fahrenheit. This water serves as the economic basis of the City of Desert Hot Springs, because it draws visitors to the City’s numerous spa resorts and hotels.</p> <p>The Colorado River RWQCB’s <i>Basin Plan</i> notes septic system impacts to groundwater as a critical regional issue, and specifically states that septic systems within the Colorado River Basin have the potential to negatively impact groundwater. Portions of the City of Desert Hot Springs have septic tank densities that are 2.3 to 2.8 times higher than the density recommended by the RWQCB. As such, the high density of the septic systems potentially threaten the water quality of the local groundwater supply. These septic systems also potentially threaten the local economy, which is highly dependent on hot mineral water to support the spa and hotel industry.</p> <p>As a response to local issues associated with high-density septic systems, Assessment District 12 was approved by voters in 2004, providing approximately \$28 million of matching funds that expires in 2014. This money was used to fund engineering design of a wastewater collection system that will abate approximately 6,000 on-site septic systems. Design of 10 sub-areas that make up the Assessment District is complete, and funds are now needed for construction. Environmental compliance documentation was completed in 1998 and re-certified in 2007.</p> <p>The project area, Subarea D2, consists of 582 parcels and 382 existing on-site septic systems that will be converted to sewers. Wastewater collected by the MSWD sewer system would be sent to the existing Horton Wastewater Treatment Plant (WWTP), where it would be beneficially reused via percolation. Project construction includes installing 18,555 lineal feet of 8-inch vitrified clay pipe (VCP) sewer, 15,281 lineal feet of 4-inch VCP sewer laterals, 70 manholes, and all appurtenances. Final design work for Subarea D2 was completed in 2010, and construction is currently ready to bid. As such, this project is at 100% completion of design.</p>
	<p><i>Status:</i></p>	<p>This project is ready for implementation. 100% design for the project has been completed.</p>
	<p><i>Sponsor:</i></p>	<p>Mission Springs Water District</p>
<p>4: San Antonio del Desierto DAC Sewer Extension Project</p>	<p><i>Abstract:</i></p>	<p>The San Antonio del Desierto (St. Anthony) Mobile Home Park is located along Highway 111, south of Avenue 66 and north of Avenue 68 in the Coachella Valley in an unincorporated portion of Riverside County known as Mecca. This mobile home park, which contains approximately 400 residents, is considered an economically disadvantaged community (DAC) per requirements established by DWR. The mobile home park is owned by the Pueblo Unido CDC, which is in the process of acquiring legal permitting for the mobile home park in the form of a Conditional Use Permit (CUP) from the County of Riverside. One of the conditions of the CUP is that the mobile home park must convert to a sanitary wastewater system, as the mobile home park currently relies upon five (5) anaerobic wastewater treatment lagoons for wastewater treatment and disposal.</p> <p>The lagoons are in extremely close proximity (within 150 feet) to the mobile home park residents. Inadequate design of the lagoons, including lack of proper lining, location, and unstable dikes, urge the need to provide a sanitary and reliable wastewater disposal and</p>



Project	Description	
		<p>treatment system for residents of the mobile home park. Inadequate design of the lagoons not only provides concerns relating to the health and safety of mobile home park residents, but also presents water quality concerns within and surrounding the project area. Due to the project’s location within the eastern Coachella Valley, the project area is underlain by a shallow groundwater aquifer with a high water table. As such, inadequate lagoon conditions pose a potential threat to groundwater quality within the surrounding area as wastewater and associated contaminants from the lagoons could potentially contaminate the groundwater due to the lack of an adequate barrier lining the lagoons. Due to the proximity of the mobile home park to the CVWD’s sewer sanitary collection system, connecting to the CVWD municipal wastewater system is the best option for meeting project-related needs.</p> <p>The project proposes the installation of a gravity sewer pipeline, lift station, and a sewer force main pipeline that will collect wastewater from the St. Anthony Mobile Home Park. The project will provide sewer service to the residents and convey the wastewater to CVWD’s Water Reclamation Plant No. 4 (WRP-4).</p>
	<i>Status:</i>	Preliminary engineering for this project is currently underway. The project will be considered to be at the 30% design phase by September 2013.
	<i>Sponsor:</i>	Pueblo Unido Community Development Corporation (Pueblo Unido CDC)
<p>4: Torres-Martinez Avenue 64 Water Supply Connection Project</p>	<i>Abstract:</i>	<p>The <i>Torres-Martinez Avenue 64 Water Supply Connection Project</i> would provide funding to engineer the development of a new water supply for the Torres-Martinez Avenue 64 potable water system (PWS) located at the intersection of Avenue 64 and Monroe Street. This new supply source would be from the Coachella Valley Water District’s (CVWD) potable water system through the construction of 100 feet of 12-inch Ductile Iron (DI) water main and provide a master meter at the southeast corner of Monroe Street and Avenue 62.</p> <p>This new water main would improve the safety and reliability of the water supply and would connect at two points to PWS’s existing water distribution system that currently serves the subdivision, one for the domestic water supply and one for fire protection service. The community water system that feeds this subdivision that includes 33 single occupancy homes with an estimated 100 people and a church that is owned and operated by the Torres- Martinez DCI.</p> <p>The existing wells, pumping system, and storage tanks currently servicing the Avenue 64 PWS was evaluated through several studies and reported to be suffering from a lack of maintenance and upkeep. The conclusions in the <i>Preliminary Engineering Report</i> determined that “upgrades to the existing system would be prohibitively expensive, or would only solve some of the system’s many existing issues. In addition, the existing water source for the Tribal system would be permanently disconnected from the distribution system.” As such, the Report concludes that the most effective long-term solution to providing safe and reliable drinking water to the Avenue 64 Subdivision would be to connect to the CVWD municipal system, as proposed in this project.</p> <p>CVWD would own the short extension of 12-inch DI water main and the master meter. The Tribe would own and maintain the 4-inch PVC distribution system from the master meter throughout the subdivision.</p>
	<i>Status:</i>	A preliminary engineering report has been completed for the project. As such, this project is currently at the 10% (conceptual) design phase.
	<i>Sponsor:</i>	Torres-Martinez Desert Cahuilla Indians



Integrated Elements of Projects

Several of the projects included in this proposal are linked, and the coordinated implementation of each project is critical to the success of the proposal as a whole. The proposal has been crafted to maximize the linkages and integration between the projects within the proposal, and projects included in the proposal have been selected based on their ability to generate multiple benefits.

The *Non-potable Water Use Expansion Program* is directly connected to the *Coachella Valley Salt and Nutrient Management Program*, as implementation of recycled water programs would not be possible without development of a Salt and Nutrient Management Plan consistent with the Recycled Water Policy. Because source substitution is an important strategy for managing groundwater overdraft, implementation of both projects is critical for the Valley.

The *Groundwater Quality Protection Program – Subarea D2, Torres-Martinez Avenue 64 Water Supply Connection Project*, and *San Antonio del Desierto DAC Sewer Extension Project* all serve the Region’s DACs by providing healthy and sanitary municipal water and wastewater services. The Coachella Valley IRWM Plan identifies the critical need to serve the Region’s DACs (IRWM Plan Objective L) and this funding application helps the Region to accomplish that goal.

The two septic-to-sewer projects – *Groundwater Quality Protection Program – Subarea D2* and *San Antonio del Desierto DAC Sewer Extension Project* – also link to the *Coachella Valley Salt and Nutrient Management Program* in that they will be removing a source of nutrient and salt loading in the subbasin. Reducing this loading will help the Coachella Valley Groundwater Basin to meet overall *Basin Plan* objectives.

For a full explanation of the linkages and synergies between projects, please refer to the Proposed Work section of this attachment (below).

Regional Map

Figure 3-1 provides a regional map containing the location of proposed activities or facilities of the projects and the water resources that will be affected. Figure 3-2 provides a regional map containing the location of proposed activities or facilities of the projects and the DACs within the Region. Please note that monitoring locations are not relevant to the five projects within this proposal, and are therefore not shown on Figure 3-1 or Figure 3-2.

Completed Work

Each individual work plan for the five projects included in this proposal provides a description of both completed work (work that has been or is expected to be completed prior to the grant award date of September 30, 2013, and future work for each of the four projects included within this proposal.

Existing Data and Studies

Available data and studies have been collected and reviewed to support the feasibility and technical methods of the projects included within this proposal. For a list of the existing data and studies for each project, please refer to individual project work plans included in this attachment. The specific page numbers that provide information supporting the feasibility and technical methods of the projects included in this proposal are included as Appendices 3-1 through 3-5. Complete documentation of the existing data and studies included for each individual project have been submitted on a separate CD as part of this Implementation Grant Proposal.



Project Timing and Phasing

Some projects included in this proposal are multi-phases projects and can operate on a standalone basis while others are not. For project timing and phasing for each project please refer to individual project work plans included in the following section of this attachment.

Basin Plan Consistency

As explained previously, the projects in this proposal work to protect groundwater quality in a variety of ways, including through permanently removing sources of groundwater pollution that can be contained within septic system and wastewater lagoon effluent. The projects also work to maintain adequate groundwater levels and supplies within the Region by supporting activities that will maintain or increase source substitution to manage groundwater levels on a long-term basis. These groundwater quality and groundwater management benefits imparted by the projects ensure that this proposal will be consistent with the *Water Quality Control Plan for the Colorado River Basin* (Basin Plan), because they will help to protect beneficial uses that rely on the Region's groundwater.

In addition, the proposal includes a program (*Coachella Valley Salt and Nutrient Management Program*) that will help meet goals set forth in the State's Recycled Water Policy to ensure compliance with water quality objectives while protecting beneficial uses established in the Basin Plan.

CVIRWMP Project Locations with Groundwater Basin

Project Location

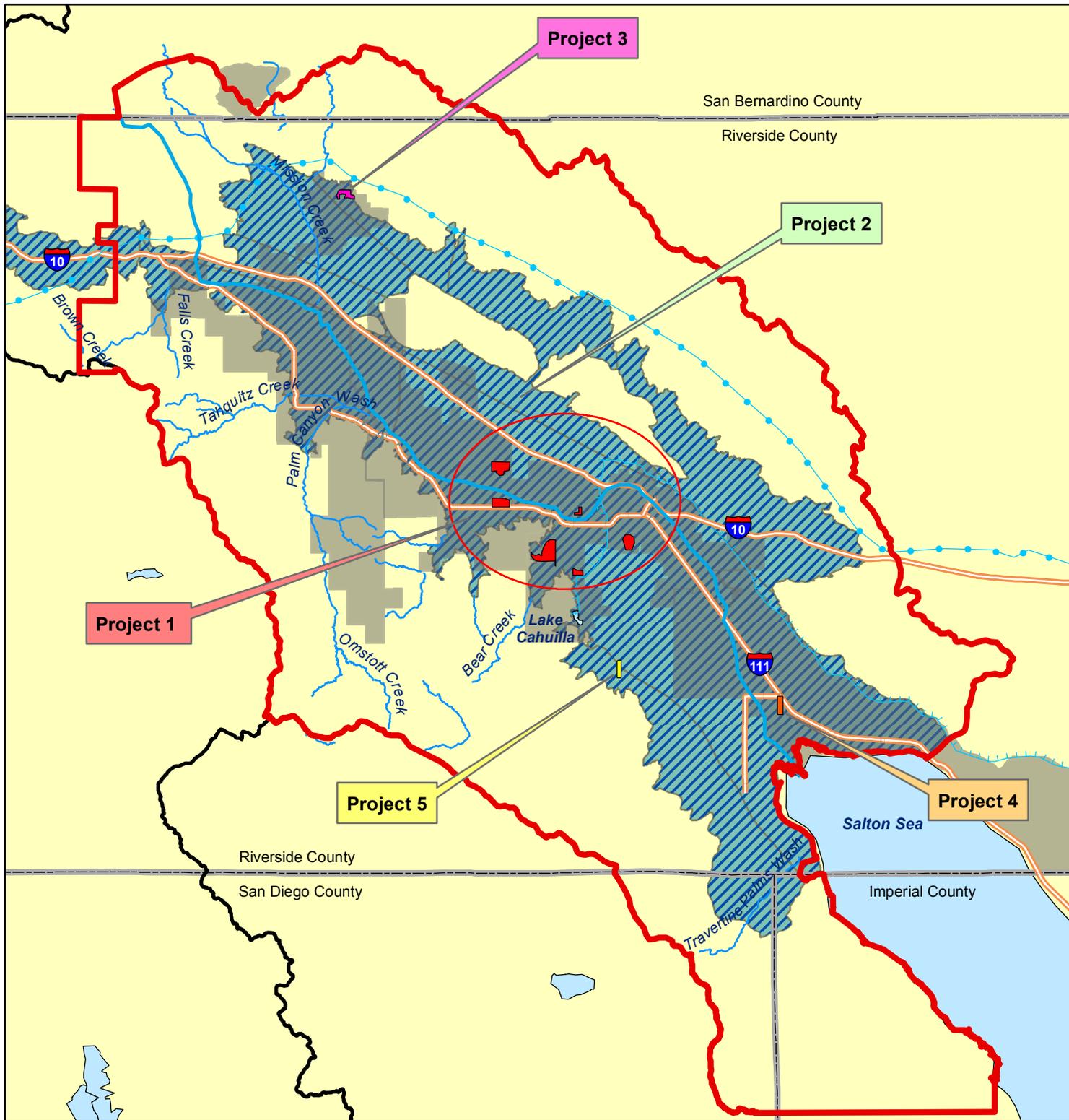
- Project 1: Non-Potable Water Use Expansion Program
- Project 2: Coachella Valley Salt and Nutrient Management Program
- Project 3: Groundwater Quality Protection Program - Sub-Area D-2
- Project 4: San Antonio del Desierto DAC Sewer Extension Project
- Project 5: Torres-Martinez Avenue 64 Water Supply Connection Project
- Colorado River Aqueduct
- Coachella and All American Canals
- Whitewater River Stormwater Channel
- River or Creek
- Interstate Hwys.
- Lakes
- Colorado River Funding Area
- Coachella Valley IRWM Region
- City or Unincorporated Community
- Groundwater Basin



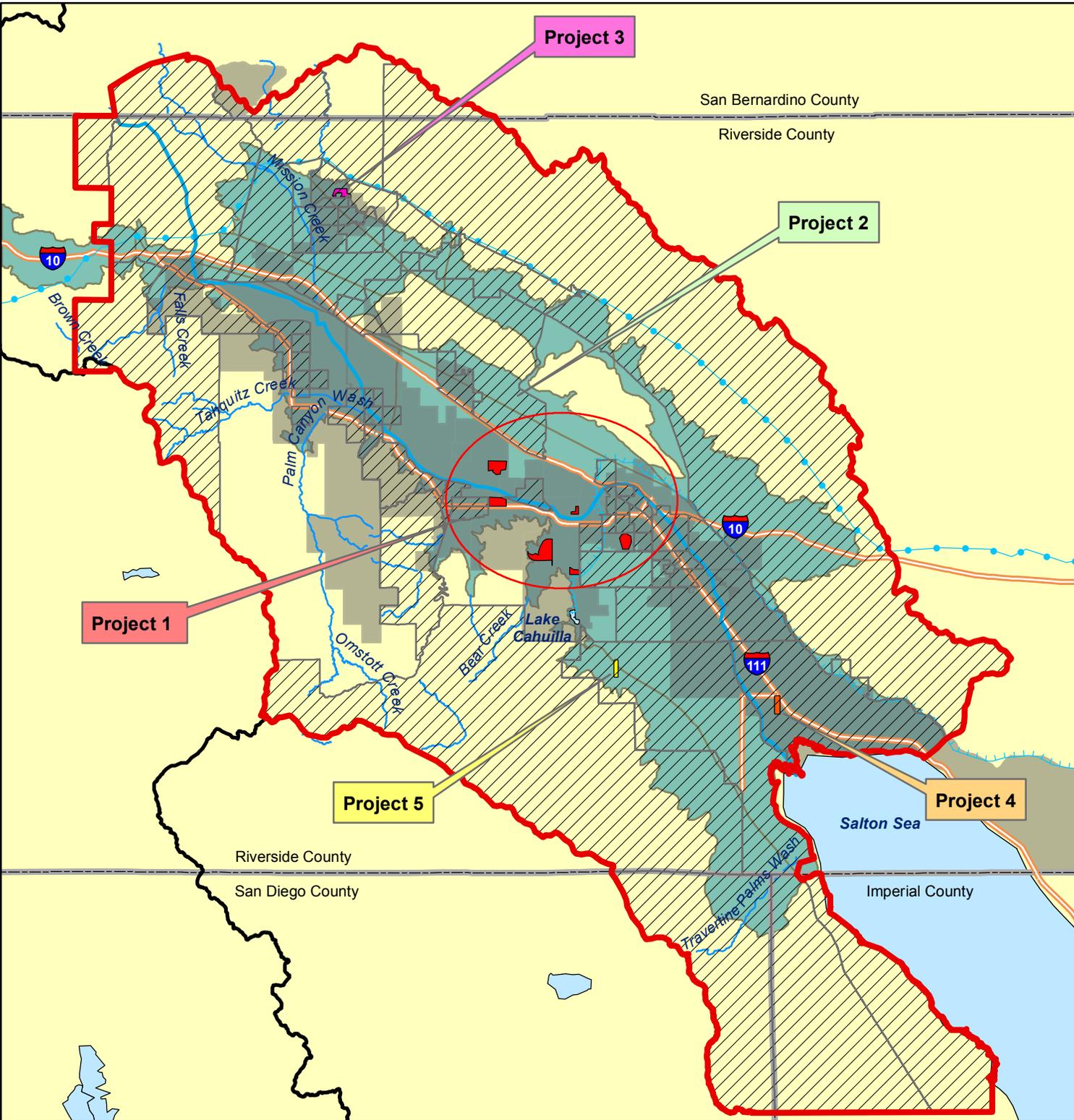
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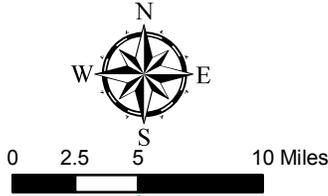
CVIRWMP Project Locations with Disadvantaged Communities



Project Location

- Project 1: Non-Potable Water Use Expansion Program
- Project 2: Coachella Valley Salt and Nutrient Management Program
- Project 3: Groundwater Quality Protection Program - Sub-Area D-2
- Project 4: San Antonio del Desierto DAC Sewer Extension Project
- Project 5: Torres-Martinez Avenue 64 Water Supply Connection Project
- Colorado River Aqueduct
- Coachella and All American Canals
- Whitewater River Stormwater Channel
- River or Creek
- Interstate Hwys.
- Lakes
- Colorado River Funding Area
- Coachella Valley IRWM Region
- City or Unincorporated Community
- Disadvantaged Communities

Disadvantaged communities are considered those who earned less than \$48,706 (80% Statewide MHI)





Proposed Work (Work Plan Tasks)

The following sections outline the specific activities that will be performed to implement each project in the *Coachella Valley IRWMP Implementation Grant Proposal – Round 2*. In addition, the following sections describe the specifics of each project with respect to project sponsors, project need, project purpose, project objectives, project partners, project abstract, linkages and synergies between projects, existing data and studies, project timing and phasing, and project mapping.

Project 1: Non-potable Water Use Expansion Program

I. Introduction

Project Sponsor

Coachella Valley Water District (CVWD) is the sponsor for the *Non-potable Water Use Expansion Program*.

Project Need

The groundwater supply of the Whitewater River Subbasin consists of a combination of natural runoff and returns from groundwater and imported water use. The supply is supplemented with artificial recharge with both State Water Project (SWP) exchange water and Colorado River water. Total inflows are estimated to be about 331,000 acre-feet per year (AFY). Outflows from the basin consist of pumping, flows to the agricultural drainage system, evapotranspiration by native vegetation, and subsurface outflow to the Salton Sea. Total basin outflows are estimated to be 441,000 AFY.¹

DWR's Bulletin 108 (1964) and Bulletin 118 (2003) both documented that the annual loss in storage (overdraft) for the Coachella Valley is an ongoing problem. The *Coachella Valley Water Management Plan Update* acknowledges that the overdraft condition of the Coachella Valley has caused groundwater levels to decline in many portions of the East Valley from La Quinta to the Salton Sea, and has raised concerns about water quality degradation and land subsidence. For the ten-year period of 2000 to 2009, an average of 110,000 AFY was removed from storage.²

The *Coachella Valley Water Management Plan Update* identifies source substitution as one of the primary tools to address the Coachella Valley's overdraft issue and specifically recommends maximizing use of local sources of non-potable water for agricultural and golf course irrigation.³ There are 50 golf courses within the Mid-Valley area, including the golf courses proposed as part of the *Non-potable Water Use Expansion Program*. Annual water use of these courses in 2015 will be approximately 50,200 AFY or 975 AFY per golf course. Minor irrigation water users in the area include homeowners associations, parks, and the Palm Desert High School. Figure 3-3 shows the monthly use of irrigation water in the Mid-Valley area.

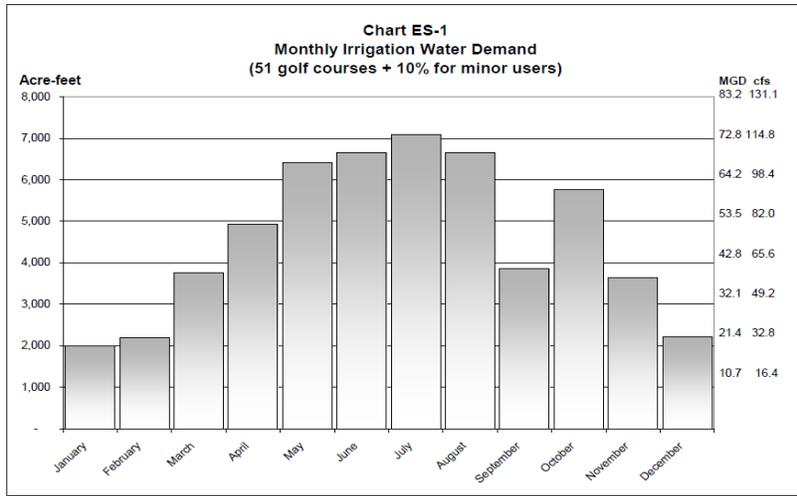
¹ CVWD. 2010. *Coachella Valley Water Management Plan Update*. Section 4.1.6 Overdraft Status, page 4-11.

² CVWD. 2010. *Coachella Valley Water Management Plan Update*. Section 4.1.6 Overdraft Status, page 4-11.

³ CVWD. 2010. *Coachella Valley Water Management Plan Update*. Section 6.5 Source Substitution, page 6-24.



Figure 3-3: Monthly Irrigation Water Demand in Mid-Valley⁴



Project Purpose

The purpose of the *Non-potable Water Use Expansion Program* is to reduce groundwater overdraft by providing non-potable water supply for agricultural and golf course irrigation in lieu of groundwater, which would reduce groundwater extraction and associated overdraft.

Project Abstract

The proposed *Non-potable Water Use Expansion Program* is a form of source substitution - the delivery of an alternate source of water to users who currently depend on groundwater pumping. The substitution of an alternate non-potable water source reduces groundwater extraction and allows the groundwater to remain in storage, thus reducing overdraft. It also matches source to use by providing untreated Colorado River water (Canal water) and recycled water for outdoor irrigation in lieu of higher quality groundwater.

Canal water and recycled water are significant existing local resources that are underutilized for agricultural and golf course irrigation. Backbone distribution systems exist to deliver non-potable water, but funding is needed to connect potential customers to existing non-potable water distribution systems and further reduce groundwater pumping.

In the eastern portion of the Coachella Valley (generally east of Washington Street), the Coachella Canal (Canal) and its adjacent irrigation distribution system have delivered Canal water to the agricultural community since 1950. However, this system has not been fully utilized. In the western portion of the Coachella Valley, the backbone of the area’s non-potable water system, the Mid-Valley Pipeline (MVP), was completed in 2008. It has the capacity to serve approximately 50 golf courses.

There are over 110 golf courses in the Coachella Valley with access to non-potable water. CVWD has entered a standardized non-potable water use agreement with 43 of these golf courses that requires them to meet at least 80% of their demand with non-potable water. Of these 43 courses, 14 receive water from the MVP system and 29 receive water from the Canal distribution system.

This project would fund three west Valley golf course connections (connections to the MVP), one improvement to the L4 Pump station, and four east Valley golf course connections (to the Canal system) that are more or less shovel ready:

⁴ Mid-Valley Pipeline Final Concept Paper, 2005.



Mid Valley Pipeline

1. Desert Horizons Country Club – this project extends the 24” distribution pipeline from the existing stub-out at the Coachella Valley Stormwater Channel to Fred Waring Drive and constructs a new pipeline and meter to the Desert Horizons Country Club.
2. Indian Springs Country Club – this project extends the 24” distribution pipeline from the existing stub-out at the Coachella Valley Stormwater Channel to Fiesta Drive and constructs a new pipeline and meter to the Indian Springs Country Club.
3. The Lakes Country Club – this project constructs two new sections of 12” pipeline and meters from the 24” high pressure pipeline and one new 12” pipeline and meter from the low pressure pipeline to the Lakes Country Club.

Canal System

4. *L4 Pump Station Improvements* – this project replaces the broken meter at Citrus Country Club and installs Variable Frequency Drives (VFDs) at the L4 Pump Station.
5. *L4 La Quinta Extensions* – this project extends Irrigation Lateral 120.8 from the relocated L4 Pump Station to Avenue 52 and includes three new meters for Canal water delivery to the La Quinta Country Club, the La Quinta Resort Mountain Course, and the La Quinta Resort Dunes Course.
6. *Indian Palms Golf Course* – this project extends the 12” Irrigation Lateral 117.8 from Monroe Street to the Indian Palms Golf Course.

The three golf courses located in the western portion of CVWD’s service area would receive 2,152 AFY of recycled water and 1,998 AFY of Canal water via the existing MVP. The four golf courses located in the eastern portion of the service area would receive a total of 3,900 AFY of Canal water. In total, the *Non-potable Water Use Expansion Program* will provide 8,050 AFY in non-potable water supplies.

Project Partners

The primary agency for the *Non-potable Water Use Expansion Program* is CVWD, the owner and operator of the Coachella Canal and the MVP. Indio Water Authority (IWA) and Coachella Water Authority (CWA) are interested in taking an active role in connecting potential customers within their service areas as well. All three agencies use the groundwater basin as their urban water supply source and benefit from the project regardless of their level of participation in making connections, since this project would help to reduce groundwater extraction and associated overdraft. Between 300,000 and 400,000 residents who depend on the groundwater basin for their drinking water will benefit from this project.

Project Timing and Phasing

The project is a portion or phase of a larger multi-phased project. The backbone facilities for the *Non-potable Water Use Expansion Program* are in place and the purpose of the program is to expand the number of connections to and delivery of non-potable water supplies. The MVP is designed to connect 50 golf courses. To date, 14 golf courses have been connected. Each additional connection provides approximately 975 AFY of non-potable water for irrigation use and thus preserves that same volume of groundwater in storage. The Coachella Canal delivers a Colorado River allotment of 400,000 afy and which will increase to 459,000 AFY by 2026. Water that is not used for irrigation is recharged, though ample capacity exists for new connections.

Project Map

Figure 3-4 is a map showing the project’s geographical location and surrounding work boundaries. Figures 3-5 – 3-10 are maps of the six (6) individual non-potable connections.

CVIRWMP Project Locations Non-potable Service Area

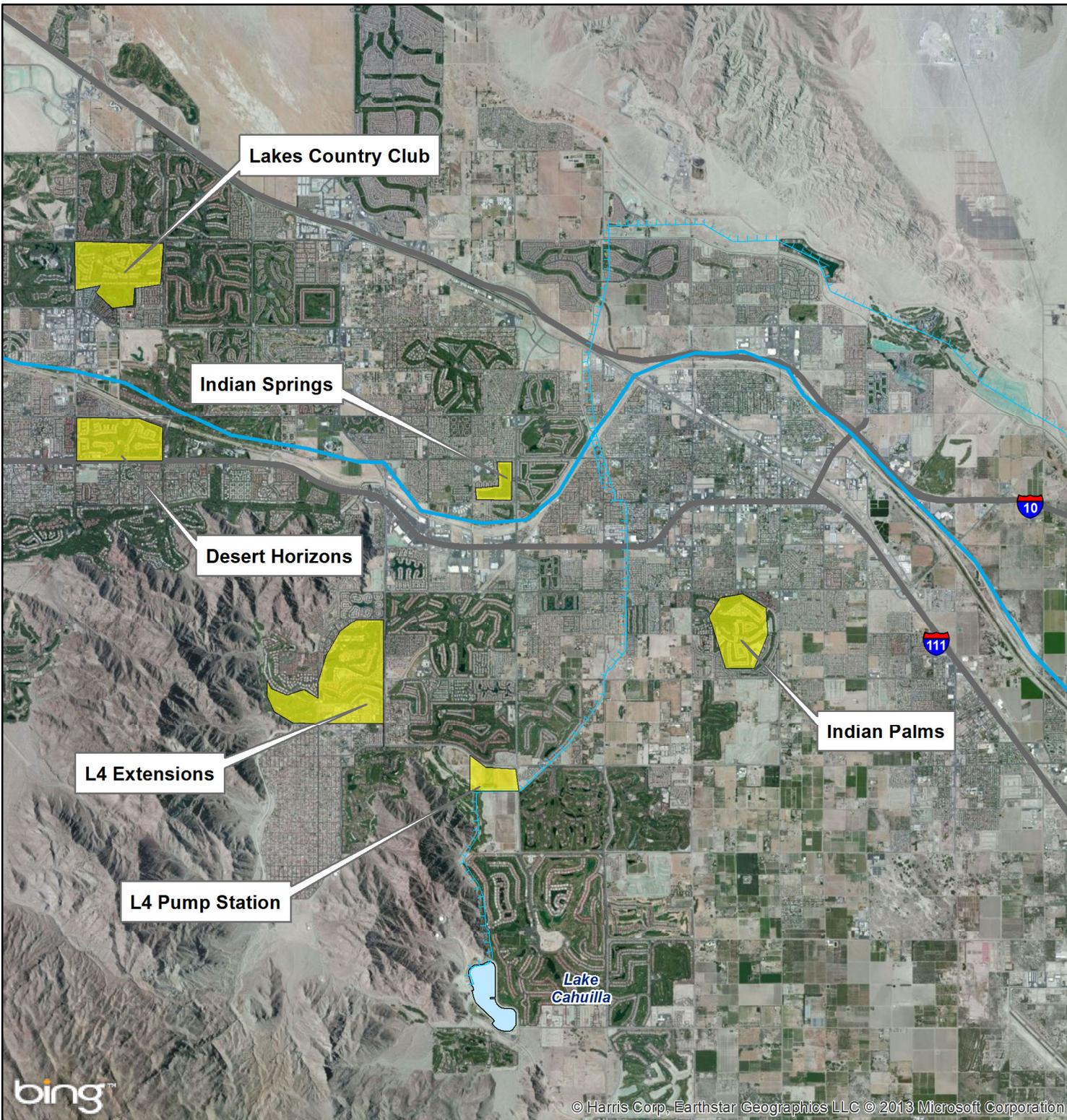
Legend

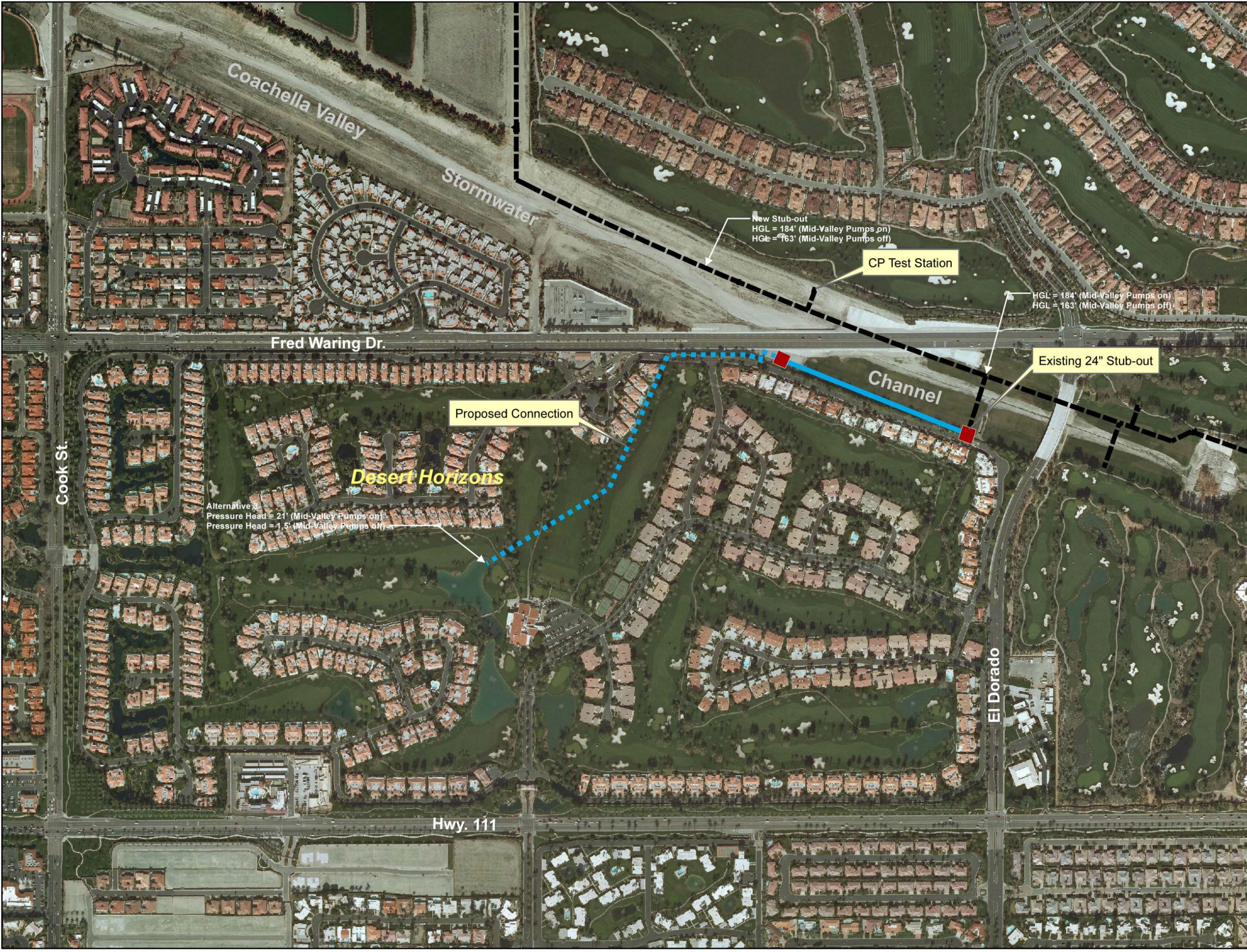
-  Non-potable connection Areas
-  Colorado River Aqueduct
-  Coachella and All American Canals
-  Whitewater River Stormwater Channel
-  Interstate Hwys.
-  Lakes

Disadvantaged communities are considered those who earned less than \$48,706 (80% Statewide MHI)

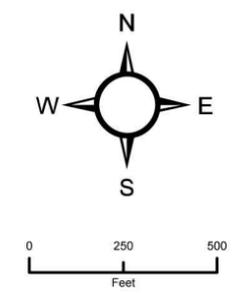


File Name: Fig 5-3_MHI.mxd
 File Location: L:\Projects GIS\0264-001_CoachellaIRWMP\mxds\
 Date Updated: November 2010
 Made By: DNF
 Department: RMC Water & Environment





- Legend**
- Meter/Connecting Point
 - - - Proposed Connection Desert Horizons
 - Proposed Connection CVWD 24" Pipeline
 - - - Mid_Valley_Pipeline_Alignment

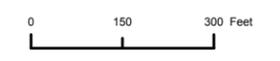


**Non-Potable Water Connections
for
Desert Horizons Golf Course**



Legend

- Meter/Connecting Point
- Mid_Valley_Pipeline_Alignment
- Existing Well_Site
- Proposed Connection Golf Course Pipeline
- Proposed Connection CWWD Pipeline



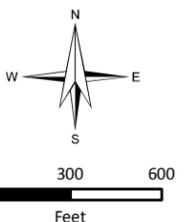
**Non-Potable Water Connections
for
Indian Springs Golf Course**





Legend

- New MWP Meter Connection
- 12" NPW
- 24" Low Pressure Nonpotable Water
- 24" High Pressure Nonpotable Water
- Lakes Country Club



**Non-Potable Water Connection
Lakes Country Club**



File Name: Lakes Country Club Non Potable Water Connection.mxd
 File Location: J:\ENGAD\GIS\Projects\Non Potable Water Lakes CC\Wxd\
 Date Updated: Monday, February 11, 2013 @ 4:52:59 PM
 Department: CVWD Engineering - GIS/CAD



52nd Ave

Citrus Country Club

SilverRock Golf Course

L4 Pump Station

Ave. 66

Jefferson Street

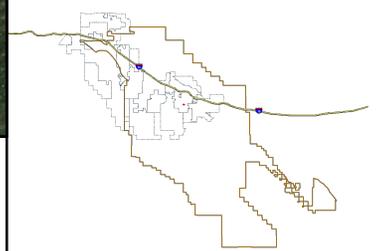


Lateral 117.8 - Indian Palms Entrance



- Riverside Parcels
- Imperial Parcels
- AllAnno
- Meter
- Fitting
- CustomerDeliveryPoint
- Canal Water Availability
- LinesForCustomerDeliveryPoints
- LeaderLine
- Lateral
- EvacuationChannel
- EasementLine
- CVWD Canal
- Street Centerlines
- Interstate
- Canal Mile Posts - Check Structure
- Canal Lateral 97.1 - Junctions
- Canal Lateral 97.1 - Pipelines
- Mid Valley Pipeline
- ID 1 Boundaries
- Coachella Valley City Limits
- CVWD Boundary
- Quarter Sections

210 ft



Coachella Valley Water District uses the most current and complete data available. However, GIS data and product accuracy may vary. GIS data and products may be developed from sources of differing accuracy, accurate only at certain scales, based on modeling or interpretation, incomplete while being created or revised, etc. Coachella Valley Water District reserves the right to correct, update, modify, or replace, GIS products without notification. Coachella Valley Water District cannot assure the accuracy, completeness, reliability, or suitability of this information for any particular purpose. Using GIS data for purposes other than those for which they were created may yield inaccurate or misleading results. The recipient may neither assert any proprietary rights to this information nor represent it to anyone as other than District-produced information. Coachella Valley Water District shall not be liable for any activity involving this information with respect to lost profits, lost savings or any other consequential damages.



NOV 27, 2009



Project Objectives

The *Non-potable Water Use Expansion Program* is seeking to achieve the following objectives:

- Reduce groundwater overdraft by providing non-potable water supplies to golf courses in lieu of groundwater pumping
- Match source to use by providing Canal water and recycled water for outdoor irrigation in lieu of higher quality groundwater
- Maximize use of local non-potable water resources

Table 3-4 provides an overview of the Coachella Valley IRWM Plan Objectives that are expected to be achieved through implementation of the *Non-Potable Water Use Expansion Program*.

Table 3-4: Contribution to IRWM Plan Objectives

Project	IRWM Objective												
	A	B	C	D	E	F	G	H	I	J	K	L	M
Non-Potable Water Use Expansion Program	•	•	•	•					○	○	○	○	•

- = Directly helps achieve objective
- = Indirectly helps achieve objective

The *Non-Potable Water Use Expansion Program* will contribute towards achieving the following CVIRWM Plan Objectives:

Objective A – Provide reliable water supply: The program will help to provide a reliable water supply for commercial/tourism needs (the golf course industry) via the provision of non-potable water consisting of Canal water and recycled water. Access to Canal water is secured by a contract, and CVWD is Priority 3a in California for Colorado River water delivered via the Coachella Canal. The Quantification Settlement Agreement (QSA) guarantees reliable delivery of 459,000 AFY of non-potable Colorado River water for the next 75 years (effective 2003). Use of recycled water under this project will provide a local water supply source that is not dependent upon imported water supplies.

Objective B – Manage groundwater levels: By expanding non-potable water service, this project will enable golf course customers to stop using potable groundwater for irrigation purposes. This will reduce groundwater pumping and overdraft via source substitution.

Objective C – Secure reliable imported water supply: By maximizing the capacity of non-potable water infrastructure, this project will offset the need to import additional SWP exchange water to the Region, and will therefore reduce net diversions from the SWP. This will help to improve the reliability of SWP water by reducing regional demands for this water source for non-potable uses.

Objective D – Maximize local supply opportunities: By expanding non-potable water service (including recycled water and Canal water), the project will provide local non-potable water for purposes of source substitution.

Objective I – Optimize conjunctive use: This project helps meets the Region’s conjunctive use goals by reducing localized groundwater pumping that can reduce the capacity of the basin. Therefore, the project will help maintain the ability to use the groundwater basin to store excess imported water for conjunctive use purposes.

Objective J – Maximize stakeholder involvement: This project will involve direct coordination between CVWD and non-potable water customers, and will help to provide education and awareness for



source substitution and the ability to use non-potable water for irrigation. Therefore, the project will help assist with increasing stewardship in water resource management through education and awareness.

Objective K – Address water-related needs of Tribes: This project will reduce groundwater pumping for irrigation purposes, therefore making local groundwater available for other users, including Native American tribes.

Objective L – Address needs of DACs: This project will reduce groundwater pumping for irrigation purposes, therefore making local groundwater available for other users, including DACs.

Objective M – Maintain affordability of water: Non-potable water provided by the project will be provided to golf courses at a reduced cost in order to incentivize the use of this water. Therefore, this project will directly help to maintain the affordability of water.

Project Integration

As septic to sewer conversion continues throughout the Coachella Valley, recycled effluent volumes will increase and their use can be maximized for outdoor irrigation. Additionally, this program protects water quality, since high quality groundwater is left in the aquifer while non-potable water with higher total dissolved solids (TDS) levels is used for irrigation instead of recharge. The *Non-Potable Water Use Expansion Program* is a critical program that allows Coachella Valley’s water agencies to protect the groundwater aquifer and slow groundwater overdraft.

Linkages and Synergies with Other Projects in the Proposal

This program would involve construction of facilities necessary to deliver additional non-potable water (including recycled water) to agricultural and golf course users. This program is directly connected to Project 2, the *Coachella Valley Salt & Nutrient Management Program*, as implementation of recycled water programs would not be possible without development of a Salt and Nutrient Management Plan consistent with the Recycled Water Policy.

Completed Work

The following work has been completed or is expected to be completed prior to the grant award date:

- Mid-Valley Pipeline Final Concept Paper (2005) established the feasibility of proceeding with the design and implementation of the non-potable delivery system.
- The backbone of the Mid-Valley Pipeline and irrigation system are complete.
- Agreements with new customers are standardized and implementable.
- CEQA work was completed via the *Coachella Valley Water Management Plan Update Supplemental Program Environmental Impact Report* (2010) and the *Mid-Valley Pipeline Environmental Impact Report* (2007). Proposed connections would consist of less than 1 mile of pipeline each and would require only a Categorical Exemption or Mitigated Negative Declaration.
- Connection details are generally standardized and easily implementable.

Existing Data and Studies

The following includes a list of data that have been collected and studies that have been performed that support the project site location, feasibility, and technical methods. These documents are also included as Appendix 3-1 to this attachment.



- Preliminary connection mapping for: Indian Palms, Desert Horizons, Indian Springs, and the Lakes and a nomination form for the L4 Pump Station
- Coachella Valley Water District (CVWD). 2010. *Coachella Valley WMP 2010 Update*. This comprehensive water management plan conducted by CVWD explains that non-potable water use via the Mid-Valley Pipeline and via delivery of Canal water is one of the Region’s strategies for managing groundwater overdraft (Page 6-32).
- Coachella Valley Water District (CVWD). 2005. *Final Concept Paper: Mid-Valley Pipeline*. This report is a conceptual paper that analyzed recycled water and Canal water supplies as well as non-potable demands, and determined an appropriate ratio of recycled water: Canal water blending that would be appropriate for the Mid Valley Pipeline. In addition, this paper explains why the Mid Valley Pipeline concept was developed, to provide non-potable water to golf courses within the middle portion of the Coachella Valley.
- Coachella Valley Water District (CVWD). 2012. *Non-Potable Water: Board Report, November 27, 2012*. This presentation, given to the CVWD Board of Directors in November of 2012 explains non-potable water provisions by CVWD, explains reduced rates provided to golf course users, and explicitly states (Slide 10) that CVWD is targeting golf courses adjacent to the existing distribution system.
- Coachella Valley Water District (CVWD). 2011. *2010 Urban Water Management Plan*. This planning document provides updated non-potable water demand projections, and explains the importance of offsetting pumping with non-potable water sources.

II. Project Work

Row (a) Direct Project Administration

Task 1: Project Administration

CVWD will be responsible for overall grant administration for the *Coachella Valley Proposition 84-Round 2 Implementation Grant Proposal*. This will include compiling invoices and progress reports from all of the project sponsors, coordinating with DWR and Finance Department staff as needed, and processing grant payments. CVWD’s Planning Manager will provide overall grant administration oversight and be the first point of contact for grant questions and issues, and CVWD’s Analyst will handle processing of the invoice and progress report materials.

CVWD will also be responsible for project administration. If IWA and CWA choose to participate in the *Non-Potable Water Use Expansion Program*, coordination will be via MOU. Work will be performed by the agencies, up to the Customer’s meter. Customers are responsible for costs on their side of the meter. CVWD’s Standard Agreement provides for amortization of customer costs over time. The grant will not cover these amortized costs.

Task 1 Deliverables:

- Fully executed MOUs between project partners (if applicable)
- Quarterly invoices and progress reports, including required deliverables
- Project Assessment and Evaluation Plan
- Project Completion Report



**Table 3-5: Row (a) Direct Project Administration
Non-Potable Water Use Expansion Program**

Activity or Deliverable	Schedule	Status	Completion of Task	
			Before Sept 2013	After Sept 2013
Task 1: Project Administration				
CVWD Grant Administration, including invoicing, quarterly reporting, and other materials required by DWR	October 2013-June 2017	Not yet begun		X

Task 2: Labor Compliance Program

CVWD will implement a Labor Compliance Program (LCP), as per the Department of Industrial Relations regulations, for the *Non-Potable Water Use Expansion Program*. CVWD will assume all LCP administration costs and they are not included in this work plan.

Task 3: Reporting

CVWD will prepare quarterly invoices and progress reports for submittal to DWR as part of the grant contract. CVWD will also prepare a project completion report upon completion of all grant-funded activities associated with the proposed project. CVWD will assume all reporting costs and they are not included in this work plan.

CVWD will also ensure that all of the data collected and analyzed to measure program performance (as described in Attachment 6) will be submitted to DWR and made available to the public and to the Region for future inclusion within the Data Management System as required in the Data Management Standard.

Row (b) Land Purchase/ Easement

Some golf courses have private streets, so easements may have to be negotiated. Also, the non-potable water meter is usually located near a golf course lake, so easements may have to be negotiated on these private lands. Permanent pipeline easements will not be required. Instead, CVWD will obtain construction easements to construct the connections and delivery points, then deed these over to the land owner for operations and maintenance. CVWD will assume all easement costs, and they are not included in this work plan.

Row (c) Planning/ Design/ Engineering/ Environmental Documentation

Task 4: Assessment and Evaluation

No planning, conceptual, or technical studies are included in this work plan. As described above, the Mid-Valley Pipeline Final Concept Paper (2005) established the feasibility of proceeding with the design and implementation of the non-potable delivery system.

Task 5: Project Design

Prior to initiation of this grant proposal, CVWD prepared preliminary assessments of the proposed pipeline connections to the MVP and Canal water delivery systems. These preliminary assessments considered various alternative alignments and provided recommendations regarding final design for the connections.

After initiation of the grant agreement, final design will be required to solidify design of the pipeline connections. This design will be completed in-house by CVWD’s Engineers for Connections 1-4 and 6, and by a combination of CVWD’s Engineers and contract engineers for Connection 5.



Task 5 Deliverables:

- Final design specifications for Connections 1-6

**Table 3-6: Row (c) Planning/ Design/ Engineering/ Environmental Documentation
Non-Potable Water Use Expansion Program**

Activity or Deliverable	Schedule	Status	Completion of Task	
			Before Sept 2013	After Sept 2013
Task 5: Project Design				
Connection 1: Desert Horizons	September 2014 – June 2015	Not yet begun		X
Connection 2: Indian Springs	January 2015 – October 2015	Not yet begun		X
Connection 3: The Lakes	June 2015 – February 2016	Not yet begun		X
Connection 4: L4 Pump Station Improvements	October 2013 – June 2014	Not yet begun		X
Connection 5: L4 La Quinta Extensions	October 2013 – June 2014	Not yet begun		X
Connection 6: Indian Palms	March 2014 – November 2014	Not yet begun		X

Task 6: Environmental Documentation

CVWD will assume all CEQA, NEPA, or other environmental documentation costs, and they are not included in this work plan.

Task 7: Permitting

CVWD will assume all permitting costs, and they are not included in this work plan.

Row (d) Construction/ Implementation

Task 8: Construction Contracting

CVWD will be responsible for construction contracting. However, no construction contracting tasks are included in this work plan.

Task 9: Construction

This project would fund three West Valley golf course connections (connections to the MVP), one improvement to the L4 Pump station, and four East Valley golf course connections (to the Canal system) that are more or less shovel ready:

Mid Valley Pipeline

1. *Desert Horizons Country Club* – this project extends the 24” distribution pipeline from the existing stub-out at the Coachella Valley Stormwater Channel to Fred Waring Drive and constructs a new pipeline and meter to the Desert Horizons Country Club.
2. *Indian Springs Country Club* – this project extends the 24” distribution pipeline from the existing stub-out at the Coachella Valley Stormwater Channel to Fiesta Drive and constructs a new pipeline and meter to the Indian Springs Country Club.



3. *The Lakes Country Club* – this project constructs two new sections of 12” pipeline and meters from the 24” high pressure pipeline and one new 12” pipeline and meter from the low pressure pipeline to the Lakes Country Club.

Canal System

4. *L4 Pump Station Improvements* – this project replaces the broken meter at Citrus Country Club and installs Variable Frequency Drives (VFDs) at the L4 Pump Station.
5. *L4 La Quinta Extensions* – this project extends Irrigation Lateral 120.8 from the relocated L4 Pump Station to Avenue 52 and includes three new meters for Canal water delivery to the La Quinta Country Club, the La Quinta Resort Mountain Course, and the La Quinta Resort Dunes Course.
6. *Indian Palms Golf Course* – this project extends the 12” Irrigation Lateral 117.8 from Monroe Street to the Indian Palms Golf Course.

Connection 1: Desert Horizons Country Club

Project construction under this task will include installation of water meter, pipelines, water level controllers, and other facilities, via a public works contract.

Connection 2: Indian Springs Country Club

Project construction under this task will include installation of water meter, pipelines, concrete panel, water level controllers, and other facilities, via a public works contract. Traffic control and striping will also be necessary on Fiesta Drive.

Connection 3: The Lakes Country Club

Project construction under this task will include installation of water meter, pipelines, power supply, air release valve, concrete vault, water level controllers, and other facilities, via a public works contract.

Connection 4: L4 Pump Station Improvements

Project construction under this task will include installation of water meter and variable frequency drives at the L4 Pump Station, via a public works contract.

Connection 5: L4 La Quinta Extensions

Project construction under this task will include installation of water meters and pipelines, via a public works contract.

Connection 6: Indian Palms Golf Course

Project construction under this task will include installation of water meter, pipelines, upstream tie-in, and other facilities, via a public works contract. Traffic control will also be necessary on Monroe Street.



**Table 3-7: Row (d) Construction/ Implementation
Non-Potable Water Use Expansion Program**

Activity or Deliverable	Schedule	Status	Completion of Task	
			Before Sept 2013	After Sept 2013
Task 9: Construction				
Connection 1: Desert Horizons	June 2015 – May 2016	Not yet begun		X
Connection 2: Indian Springs	October 2015 – September 2016	Not yet begun		X
Connection 3: The Lakes	February 2016 – February 2017	Not yet begun		X
Connection 4: L4 Pump Station Improvements	July 2014 – June 2015	Not yet begun		X
Connection 5: L4 La Quinta Extensions	July 2014 – June 2015	Not yet begun		X
Connection 6: Indian Palms Golf Course	December 2014 – November 2015	Not yet begun		X

Row (e) Environmental Compliance/ Mitigation/ Enhancement

Task 10: Environmental Compliance / Mitigation / Enhancement

No environmental mitigation or enhancement actions are included in this work plan.

Row (f) Construction Administration

Task 11: Construction Administration

CVWD will be responsible for construction management. However, no construction management tasks are included in this work plan.



Project 2: Coachella Valley Salt & Nutrient Management Program

I. Introduction

Project Sponsor

Coachella Valley Water District (CVWD) is the project sponsor for the Coachella Valley Salt & Nutrient Management Program. CVWD is representing the Coachella Valley Regional Water Management Group (CVRWMG) – made up of CVWD, DWA, MSWD, IWA, and CWA – in administering this project.

Project Need

The State of California adopted the Recycled Water Policy (Policy) that requires Salt and Nutrient Management Plans (SNMPs) be developed to manage salts, nutrients, and other contaminants of emerging concern on a watershed- or basin-wide basis. The Policy specifies that SNMPs be developed in a cooperative and collaborative manner among water and wastewater agencies and other salt/nutrient stakeholders. The SNMPs are intended to help streamline permitting of new recycled water projects while ensuring compliance with water quality objectives and protection of beneficial uses. For each groundwater basin, a SNMP is to be provided to the Regional Water Quality Control Board (RWQCB) no later than May 2014. An extension of up to 2 years may be granted by the RWQCB if the region demonstrates substantial progress by the May 2014 deadline.

In 2011, the Coachella Valley Regional Water Management Group (CVRWMG) began preliminary discussions about preparing a SNMP for the Coachella Valley Groundwater Basin. In order to either meet the May 2014 deadline or show substantial progress in developing its SNMP, the CVRWMG is working toward consensus on a SNMP strategy and scope of work by early to mid-2013.

Project Purpose

Using a collaborative process, this project will complete a SNMP for the Coachella Valley groundwater basin to satisfy State Recycled Water Policy requirements.

Project Abstract

The *Coachella Valley Salt & Nutrient Management Program* will implement the analytical and planning tasks needed to develop a SNMP for the Coachella Valley Groundwater Basin that is compliant with the State's Recycled Water Policy. Key tasks to be undertaken by the CVRWMG include:

1. *Establish a collaborative process* of Coachella Valley stakeholders interested in groundwater management, which will entail setting up working groups, conducting technical review meetings and conference calls, conducting stakeholder workshops, and program management.
2. *Characterize the groundwater basins*, including identifying the groundwater basins to be evaluated, collecting and reviewing existing groundwater data, documenting beneficial uses, characterizing groundwater quality and occurrences, identifying constituents of concern, and establishing baseline conditions.
3. *Identify salt/nutrient loading and trends* by first identifying salt/nutrient sources, and then quantifying salt/nutrient source loads and developing a plan for data gaps.
4. *Identify water management goals and potential strategies*, which would entail developing a list of potential management strategies, evaluating the feasibility of those potential management strategies, and then conducting an assimilative capacity analysis.
5. *Conduct anti-degradation process*, which includes assessing load reduction and water quality improvements, and identifying preferred management strategies.



6. *Finalize the SNMP*, which includes developing an implementation plan, identifying metrics and developing a monitoring plan, developing data management, reporting, and audit processes, determining CEQA/NEPA compliance needs, and producing the SNMP document.

Successful completion of the SNMP is necessary to ensure compliance with the State’s Recycled Water Policy. Compliance with this policy is necessary for continued Colorado River RWQCB approval of recycled water permits in the Basin. Therefore, developing the SNMP will enable continued use and expansion of the Valley’s water recycling efforts, which are an important component of the Region’s overall groundwater management strategy. Developing the SNMP is also an important component of one of the projects included in this grant proposal, the *Non-Potable Water Use Expansion Program*, which will be included in the SNMP analysis since it will have an impact on the salt and nutrient loading into the basin.

Development of the Coachella Valley SNMP would be a collaborative process driven by stakeholders that have already been identified during Phase I activities. This program allows the Region’s water and wastewater agencies to better manage salts and nutrients in the groundwater basin to preserve the high quality groundwater supply used for potable purposes.

Project Partners

The Coachella Valley Regional Water Management Group, which is made up of Coachella Valley Water District, Coachella Water Authority, Desert Water Agency, Indio Water Authority, and Mission Springs Water District, are partners in this project.

Project Timing and Phasing

As part of the development of the SNMP-related work that has been completed to date, the current CVRWGM and Stakeholders explored several of the issues that are likely to be addressed as part of the SNMP process. One of the challenges identified for this SNMP was the number of issues and size/scale of the SNMP, especially given the current Basin Plan’s lack of sub-basin distinction. Therefore, the SNMP process is being developed using a phased approach that will allow it to be completed over time in an incremental manner. The following defines the three plan development phases:

1. Phase I: Initial SNMP Scoping and Work Plan Development (funded through Proposition 84 Round 1 Planning Grant)
2. Phase II: SNMP Development (subject of this Round 2 funding application)
3. Phase III: SNMP Monitoring and Other Follow-Up Work such as additional monitoring and data collection (if necessary and dependent on outcomes of Phase II)

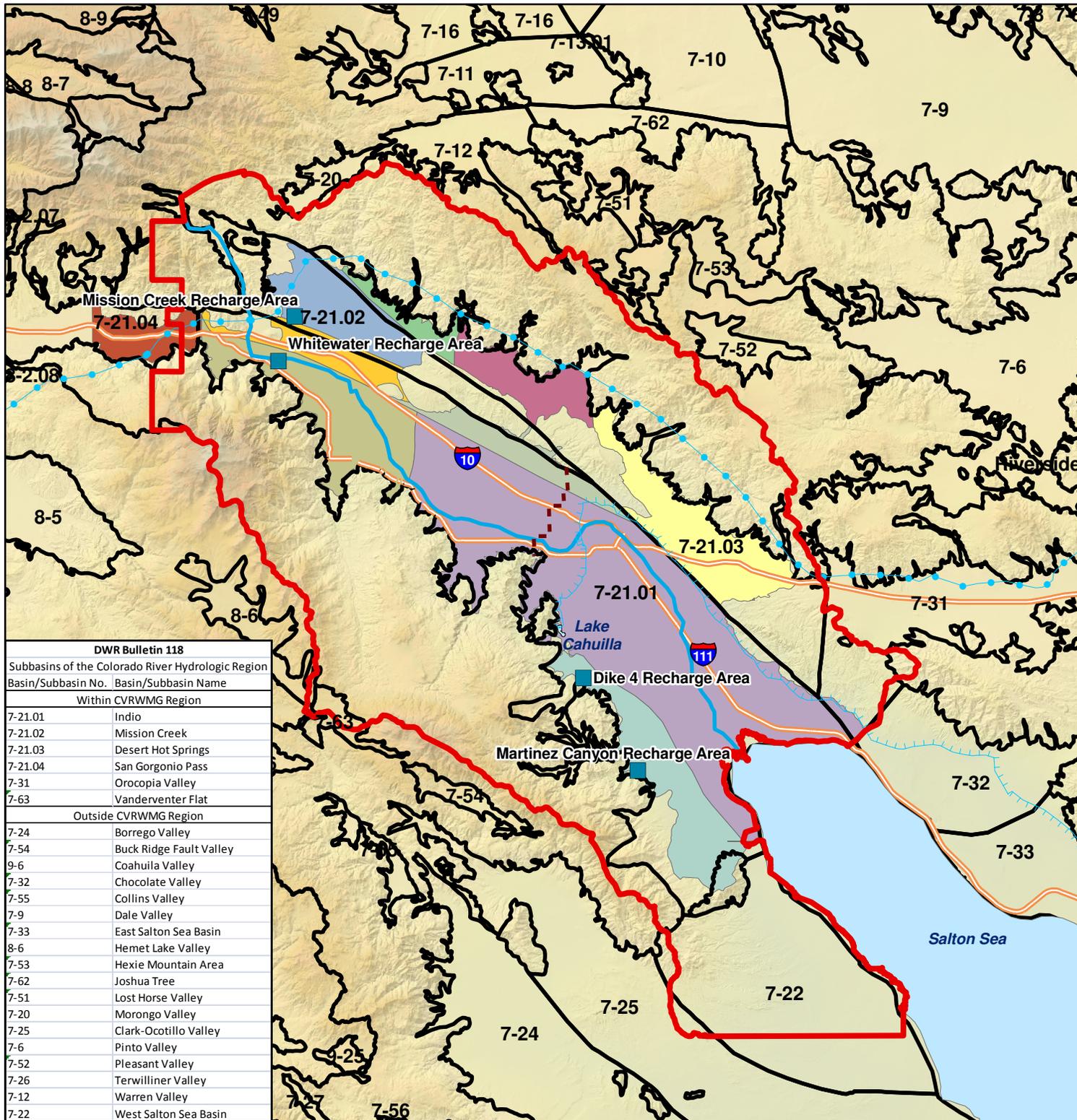
Phase I has already been funded and resulted in a series of stakeholders meetings and the creation of this work plan for Phase II. Phases I outline some possible tasks for Phase III, which will be further identified and defined as part of the Phase II effort.

Project Map

Figure 3-11 a is site map showing the project’s geographical location and surrounding work boundaries.

Groundwater Basins and Recharge Areas

Figure 2-1



- Recharge Area
- - - Division between Upper and Lower Valley
- Colorado River Aqueduct
- Coachella and All American Canals
- Whitewater River Stormwater Channel
- Interstate Hwys.
- Coachella Valley IRWM Region
- Groundwater Basins
- Hydrogeologic Subbasins in CV
- Fargo Canyon Sub Area
- Garnet Hill Sub Area
- Miracle Hill Sub Area
- Mission Creek Subbasin
- Oasis Sub Area
- Palm Springs Sub Area
- San Gorgonio Pass Subbasin
- Sky Valley Sub Area
- Thermal Sub Area
- Thousand Palms Sub Area

DWR Bulletin 118	
Subbasins of the Colorado River Hydrologic Region	
Basin/Subbasin No.	Basin/Subbasin Name
Within CVRWGM Region	
7-21.01	Indio
7-21.02	Mission Creek
7-21.03	Desert Hot Springs
7-21.04	San Gorgonio Pass
7-31	Orocofia Valley
7-63	Vanderverter Flat
Outside CVRWGM Region	
7-24	Borrego Valley
7-54	Buck Ridge Fault Valley
9-6	Coahuila Valley
7-32	Chocolate Valley
7-55	Collins Valley
7-9	Dale Valley
7-33	East Salton Sea Basin
8-6	Hemet Lake Valley
7-53	Hexie Mountain Area
7-62	Joshua Tree
7-51	Lost Horse Valley
7-20	Morongo Valley
7-25	Clark-Ocotillo Valley
7-6	Pinto Valley
7-52	Pleasant Valley
7-26	Terwilliner Valley
7-12	Warren Valley
7-22	West Salton Sea Basin

Source: DWR Bulletin 118 & 2009 Coachella Valley Water District Engineer's Report on Water Supply and Replenishment Assessment - Lower & Upper Whitewater River Subbasin Areas of Benefit





Project Objectives

The Coachella Valley Salt & Nutrient Management Program seeks to achieve the following objectives.

- Establish a collaborative process of Coachella Valley stakeholders to address groundwater management
- Characterize groundwater basins, identify salt/nutrient loading and trends, and evaluate management strategies
- Develop SNMP that supports management of groundwater quality

Table 3-8 provides an overview of the Coachella Valley IRWM Plan Objectives that are expected to be achieved through implementation of the Coachella Valley Salt and Nutrient Management Program.

Table 3-8: Contribution to IRWM Plan Objectives

Project	IRWM Objective												
	A	B	C	D	E	F	G	H	I	J	K	L	M
Coachella Valley Salt & Nutrient Management Program	○	○		○	○					●	○	○	○

- = Directly helps achieve objective
- = Indirectly helps achieve objective

The *Coachella Valley Salt & Nutrient Management Program* will contribute towards achieving the following IRWM Plan Objectives:

Objective A – Provide reliable water supply: Development of the Salt and Nutrient Management Plan will help to ensure that the Region can continue to use recycled water, which is a reliable, local, drought-proof water supply.

Objective B – Manage groundwater levels: This program will facilitate the permitting and use of recycled water, which will help the Region to continue to manage groundwater overdraft via source substitution with recycled water. Source substitution helps to reduce localized groundwater pumping, which could potentially help manage land subsidence.

Objective D – Maximize local supply: This program will assist Valley water purveyors in continuing and expanding use of recycled water supplies by achieving compliance with the State Water Resources Control Board's Recycled Water Policy.

Objective E – Protect groundwater quality: This program will assist Valley water purveyors in managing salt and nutrient loading to the groundwater basin in order to preserve the beneficial uses identified for the basin.

Objective J – Maximize stakeholder involvement: The State requires that SNMPs be developed in a cooperative and collaborative manner among water and wastewater agencies and other salt/nutrient stakeholders. This program will continue the collaborative stakeholder process established in Phase I to characterize groundwater basins, identify salt/nutrient loading and trends, identify water management goals and strategies, and draft a SNMP. This program will involve water and wastewater agencies, the golf industry, agricultural industry, and tribes. An outreach process will be utilized to collect data, understand stakeholder concerns, and reach consensus on a final plan.

Objective K – Address water-related needs of Tribes: Salt and nutrient management is a concern to the tribes who also utilize the groundwater supply. Collaboration with the tribes to address groundwater quality will improve relations among stakeholders in the Valley.



Objective L – Address Water and Sanitation Needs for DACs: This program will serve to protect groundwater quality in communities throughout the Region, including DACs. It will also provide evaluation of management strategies for salt and nutrient loading, which may reduce future conflicts over permitting and potential violations. Having a clear set of standards and management strategies in place will make it easier for communities to make planning decisions, and has the potential to make growth easier and more attractive for DACs.

Objective M - Maintain affordability of water: This project will facilitate continued use and expansion of recycled water supplies. Recycled water is generally provided to customers at a reduced rate to maximize incentives for using this water. Therefore, the program will help to maintain the affordability of water by facilitating the current and future use of a less-costly water supply source (recycled water).

Integrated Elements of Projects

The *Non-Potable Water Use Expansion Program* is a critical program that allows Coachella Valley’s water agencies to protect the groundwater aquifer and manage groundwater overdraft by implementing source substitution via the provision of non-potable water supplies for irrigation uses. As the *Coachella Valley Salt & Nutrient Management Program* will complete activities to ensure compliance with the Recycled Water Policy, this program will also ensure that the Region can continue to produce and use recycled water for important activities such as source substitution. Therefore, this program is linked to the *Non-Potable Water Use Expansion Program*, which will be included in the SNMP analysis since it will have an impact on the salt and nutrient loading into the basin.

Linkages and Synergies with Other Projects in the Proposal

This program is connected with other projects in this proposal, because this program will allow the Coachella Valley IRWM Region to maintain compliance with the state’s Recycled Water Policy. Therefore, this program will allow the Region to continue existing and future planned use of recycled water. This program is therefore connected to Project 1, the *Non-Potable Water Use Expansion Program*, as implementation of recycled water projects would not be possible without implementation of the *Coachella Valley Salt & Nutrient Management Program*.

Completed Work

The CVRWGM award for Planning Grant funding included a task for initial scoping of the *Coachella Valley Salt & Nutrient Management Program* to augment the Coachella Valley IRWM Plan Update. Since both the SNMP and the IRWM Plan Update are regional planning efforts, the CVRWGM has taken the lead to coordinate stakeholder outreach and involvement in these planning efforts. The grant was awarded, and the consulting team of RMC Water and Environment and Integrated Planning and Management, Inc. were contracted to initiate the scoping.

To date, three public workshops have been held on August 22, 2012, September 26, 2012, and November 28, 2012 with good interaction between stakeholders interested in the SNMP. Based on the direction from the CVRWGM, comments and concerns of the stakeholders, and input from the Colorado River RWQCB, this work plan has been developed for preparation of the Coachella Valley SNMP.

Existing Data and Studies

A multitude of data and studies have been completed that support the site location, feasibility, and technical methods for the *Coachella Valley Salt & Nutrient Management Program*. Those studies or reports most relevant to this program, and those which have provided specific information for development of this scope of work are listed below. These documents are also included as Appendix 3-2 to this attachment.



- State Water Resources Control Board (SWRCB). 2009. *Recycled Water Policy*. Available: http://www.waterboards.ca.gov/water_issues/programs/water_recycling_policy. This policy enacted by the State Water Resources Control Board provides the impetus for completing a SNMP for the Coachella Valley Groundwater Basin. Further, this policy specifies requirements and provisions that have been used to develop the scope of work presented herein.
- Coachella Valley Water District (CVWD). 2010a. *Coachella Valley Water Management Plan Update*. Page 5-7 and Page 5-8, Section 5.1.2.3, Salt/Nutrient Management Plans. This comprehensive water management plan conducted by CVWD mentions that local water and wastewater entities, together with local salt/nutrient contributing stakeholders to fund locally-driven and controlled SNMPS. The process described in the 2010 Coachella Valley Water Management Plan Update is consistent with the SNMP process described below.

II. Project Work

Row (a) Direct Project Administration

Task 1: Project Administration

CVWD will be responsible for administration of the *Coachella Valley Salt & Nutrient Management Program*. The CVRWMG partners already have an MOU in place (refer to Attachment 1) and will adopt amendments as needed to clarify roles and responsibilities for the salt and nutrient management effort. Project administration efforts will also include those required to complete DWR-required administration such as progress reporting, invoicing, completion of a Project Assessment and Evaluation Plan, and a Project Completion Report. CVWD will assume all project management-related costs. Although the following reporting deliverables will be submitted per the grant contract, those costs will not be tracked by CVWD and therefore are not included in budget (Attachment 4).

Task 1 Deliverables:

- Amendments to the MOU, as necessary
- Quarterly invoices and progress reports, including required deliverables
- Project Assessment and Evaluation Plan
- Project Completion Report

Table 3-9: Row (a) Direct Project Administration
Coachella Valley Salt and Nutrient Management Program

Activity or Deliverable	Schedule	Status	Completion of Task	
			Before Sept 2013	After Sept 2013
Task 1: Project Administration				
CVWD Project Administration	October 2013-December 2015	Not yet begun		X

Task 2: Labor Compliance Program

The project does not include construction of a public works project and therefore, does not require establishment of a Labor Compliance Program (LCP).

Task 2 Deliverables:

As no work for this task will be completed as part of the project, deliverables are not applicable.



Task 3: Reporting

CVWD will prepare quarterly invoices and progress reports for submittal to DWR as part of the grant contract. CVWD will also prepare a project completion report upon completion of all grant-funded activities associated with the proposed project. These reporting-related activities required for the DWR grant contract will be prepared by CVWD. All reporting costs are included under Task 1: Project Administration.

CVWD will also ensure that all of the data collected and analyzed to measure program performance (as described in Attachment 6) will be submitted to DWR and made available to the public and to the Region for future inclusion within the Data Management System as required in the Data Management Standard.

Task 3 Deliverables:

Deliverables associated with reporting are included under Task 1: Project Administration.

Row (b) Land Purchase/Easement

No easement acquisitions and/or right-of-ways will be required for project.

Land Purchase Easement Deliverables:

As no work related to a land purchase easement will be completed as part of the project, deliverables are not applicable.

Row (c) Planning/Design/Engineering/Environmental Documentation

Task 4: Assessment and Evaluation

Task 4 includes the six steps necessary for creating an SNMP for the Coachella Valley Groundwater Basin based on a collaborative stakeholder-driven planning process. Table 3-10 provides an overview of the program schedule, while Tables 3-11 through 3-17 provide detailed subtask schedule and status.

**Table 3-10: Row (c) Planning/ Design/ Environmental Documentation - Summary
Coachella Valley Salt and Nutrient Management Program**

Activity or Deliverable	Schedule	Status	Completion of Task	
			Before Sept 2013	After Sept 2013
Task 4: Assessment and Evaluation				
Subtask 4.1 Establish Collaborative Process	October 2013-December 2015	Not yet begun		X
Subtask 4.2 Conduct Basin Characterization	October 2013-January 2014	Not yet begun		X
Subtask 4.3 Identify Salt/Nutrient Loading and Trends	January 2014-April 2014	Not yet begun		X
Subtask 4.4 Identify Water Management Goals and Potential Strategies	April 2014-June 2014	Not yet begun		X
Subtask 4.5 Conduct Anti-Degradation Process	June 2014-September 2014	Not yet begun		X
Subtask 4.6 Finalize Phase 2 SNMP	September 2014-March 2015	Not yet begun		X



Subtask 4.1 Establish Collaborative Process

The primary purpose of this task is to refine the stakeholder process established during the Scoping and Work Plan Development (Phase I) to ensure that the process meets State's *Recycled Water Policy* requirements and represents the community. This will occur by engaging stakeholders in the SNMP development process, establishing plan goals and objectives, gathering input on technical analysis tasks, and collaboratively developing implementation and basin management measures. The CVRWMG will direct or lead the collaborative process.

Subtask 4.1.1 Develop Working Groups

Active participants in the SNMP process are assumed to fall into one of two groups intended to help guide and gain input for the SNMP.

- **Stakeholders.** This group will consist of those whose activities and operations may impact salt and nutrient management in the Basin, including agricultural interests, private well owners, environmental groups, regulatory staff, and the general public. The current stakeholder list developed by the CVRWMG as part of the IRWMP and SNMP Work Plan development process will be used as the initial list of stakeholders (see current list of Stakeholder in table below). Additional stakeholders will be solicited by the CVRWMG prior to initiation of the SNMP and throughout the SNMP development process. This can be done as part of the IRWMP public workshops or separately. The CVRWMG shall maintain the stakeholder list and coordinate all workshop notifications and deliverable distributions with stakeholders.
- **Technical Team.** This group consists of those who contribute technical information, conduct the technical analyses, develop the SNMP, and provide initial technical reviews prior to the Stakeholder meetings. The CVRWMG will be included within the Technical Team and will work with other Technical Team members to coordinate activities for maximum productivity. This group is proposed to consist of the staff and designated technical consultants from local water and wastewater agencies and municipalities as well as staff from the Colorado River Basin (Region 7) Regional Water Quality Control Board. The CVRWMG will work with stakeholders to identify any other key members that should be included in the Technical Team. This technical work may be conducted by CVRWMG agency staff, a consultant(s), or other combination that is acceptable to the stakeholders and approved by the CVRWMG. When decided, the final roles of the Technical Team members will require further clarification as to who is performing the work and who is reviewing and approving the work products.

Subtask 4.1.2 Conduct Technical Review Meetings

In addition to conducting the technical work, the Technical Team shall conduct six (6) Technical Review Meetings. The purpose of the meetings will be to discuss data collection efforts, review work in progress, review/discuss comments on work products, coordinate, prepare and follow-up from Stakeholder meetings, and to solicit input/direction from the CVRWMG. The Technical Team shall prepare all meeting notices, agendas, and meeting summaries. Technical Review Meetings are planned at the following project milestones:

- Project kick-off and data collection
- Groundwater characterization review
- Salt/Nutrient loading assessment review
- Establish goals and identify management strategies for the SNMP
- Review anti-degradation process and assess management strategies



- Develop implementation and monitoring plans

Subtask 4.1.3 Conduct Technical Review Conference Calls

The Technical Team shall conduct additional conference calls with all or sub-members of the Technical Team, as necessary, to discuss technical issues, preliminary analyses, etc. Any key decisions or major question should be brought up to the entire Technical Team or the CVRWMG as a separate sub-group of the Technical Team as necessary.

Subtask 4.1.4 Conduct SNMP Stakeholder Workshops

The Technical Team shall conduct five (5) stakeholder workshops for the purpose of presenting information, gathering input from stakeholders, and providing a forum for discussion of salt/nutrient issues. The Technical Team will prepare agendas, workshop notifications, sign-in lists, presentations, and summaries, and guide stakeholder discussion and technical presentations. The CVRWMG will review presentations prior to the workshops and provide comments to the Technical Team no later than three days prior to a workshop date. The Technical Team will distribute workshop notifications and materials prior to each workshop, and shall provide the following in support during each workshop:

- **Workshop 1 – Review Basin Characterization.** At end of **Task 2**, the Technical Team will prepare for and present an overview of the State Policy on SNMPS and key elements in developing the SNMP, the SNMP development process, elements/sections of the SNMP, salt/nutrient constituents that will be assessed, and an overview of current understanding of the groundwater basin and potential salt/nutrient sources in the Basin.
- **Workshop 2 – Review Salt / Nutrient Loading and Trends.** Following **Task 3**, the results of salt/nutrient loading analysis and assimilative capacity analysis will be presented by the Technical Team.
- **Workshop 3 –Input on SNMP Goals and Management Strategies.** During **Task 4**, the Technical Team will present a summary of the goals established for the SNMP and the potential salinity/nutrient management strategies to be analyzed, along with the process for analyzing these strategies. Stakeholder input shall be considered by the Technical Team and CVRWMG.
- **Workshop 4 – Review Anti-Degradation Process and Management Strategies,** Following **Task 5**, the Technical Team will present a summary of the evaluation of preferred management strategies and the results of the anti-degradation process.
- **Workshop 5 – Review Draft SNMP,** During **Task 6**, the Technical Team will present the Draft SNMP to the stakeholders after the CVRWMG has reviewed and commented on the Draft Plan. This workshop will be a forum to discuss and respond to stakeholder comments on the Draft Plan. The Technical Team shall present the collaborative process used in development of the Draft Plan and the SNMP’s key components.

Subtask 4.1.5 Program Management/Oversight of Technical Team

The CVRWMG will provide oversight and program management for the Technical Team in addition to the Technical Review Meetings and Stakeholder Workshops. These monthly meetings will ensure the continuation of the IRWM program and integrated planning, and will allow for creation of an SNMP in coordination with IRWM efforts.

Task 4.1 Deliverables:

- Technical Team and Stakeholder Working Group Lists
- Six (6) Technical Review Meetings



- Technical Team Conference calls, as necessary
- Five (5) SNMP Stakeholder Workshops
- For each Technical Team Review Meeting, Technical Team conference call, and Stakeholder workshop: announcements, agendas, meeting/conference call materials, including presentations and handouts, and summary notes.

Table 3-11: Row (c) Planning/ Design/ Environmental Documentation Costs
Coachella Valley Salt and Nutrient Management Program
Subtask 4.1: Establish Collaborative Process

Activity or Deliverable	Schedule	Status	Completion of Task	
			Before Sept 2013	After Sept 2013
Subtask 4.1: Assessment and Evaluation				
4.1.1 Develop Working Groups	October 2013 – October 2013	Not yet begun		X
4.1.2 Conduct Technical Review Meetings (6 total)	October 2013 – October 2014	Not yet begun		X
4.1.3 Conduct Technical Review Conference Calls	October 2013 – May 2015	Not yet begun		X
4.1.4 Conduct SNMP Stakeholder Workshops (5 total)	January 2014 – January 2015	Not yet begun		X
4.1.5 Program Management / Oversight of Technical Team	October 2013 – December 2015	Not yet begun		X

Subtask 4.2 Conduct Basin Characterization

This task will involve identifying and characterizing the groundwater basin being assessed and delineating the study area.

Subtask 4.2.1 Identify the Groundwater Basins Being Evaluated

The Technical Team will conduct work to define the groundwater basin and potential sub-basins or management areas, and identify the upstream tributary area that may contribute source loads to the basin. The study area will include all or portions of the San Gorgonio Pass, Whitewater (Indio), Garnet Hill, Murrieta, Mission Creek, and Desert Hot Springs groundwater sub-basins. Figure 11 shows the current project study area.

Any tributary lands that are suspected or known to influence groundwater flow or quality in the groundwater basin will be included. A determination of basis for the selected study area will be documented, and a Geographic Information Systems (GIS)-based map depicting the areal extent of the groundwater basin and proposed management areas, the proposed study area, and the tributary watershed will be prepared. This map will be posted on the CVRWGM website for public viewing.

Subtask 4.2.2 Identify, Collect, and Review Existing Groundwater Studies and Data

The Technical Team shall identify and review prior groundwater management studies, hydrogeologic assessments, or evaluations that have assessed issues relevant to salinity and nutrient planning and/or groundwater basin management within the study area. This work will include region-wide, local and basin-specific studies, as applicable and available. Information to be collected will include, but is not limited to:



- Areas of groundwater recharge (including direct and/or indirect groundwater discharges into the Salton Sea)
- Estimation of groundwater storage capacity (and other studies related to a basin-wide water balance)
- Public, private, and agricultural supplies, usage, and water quality information
- Location of recycled water irrigation/application
- Recycled water quality
- Storm water runoff quality and permitted outfalls
- Projected future water demands (including recycled water)
- Projected future wastewater and recycled water production
- Location and quantity/quality of brined disposal
- Land use plans from Coachella Valley Association of Governments

Technical data or assessments on which groundwater management studies were based will also be used. Appropriate agencies, groups, and co-permittees will be contacted to assist with identifying and obtaining these studies.

Subtask 4.2.3 Document Beneficial Uses

The Technical Team shall perform a preliminary analysis to identify and quantify existing and likely potential future uses of groundwater in the basin. This work will include identifying and characterizing existing and planned municipal supply wells or projects and quantified pumping in the Basin, identifying and characterizing private groundwater wells and users in the Basin, quantifying or estimating the irrigation pumping from private wells, identifying areas where groundwater-dependent habitat is known to exist, quantifying the amount of groundwater uptake required by the habitat, and identifying the actual listed Beneficial Use(s) within the basin and sub-basin areas from the Basin Plan. Existing documentation, where available, will be used, including water agency records, well surveys and well records, County of Riverside permit records, and other relevant data. GIS-based mapping will be used to identify the locations of municipal and private wells.

Work conducted under this task would provide preliminary indication of uses that may need to be protected. Should differences between current existing or potential future use and Basin Plan Beneficial Uses be identified, significant additional work and study, potentially up to a Use Attainability Analysis, would be required to modify the beneficial uses. Such a change requires an amendment to the current Basin Plan and is not included in this scope of work.

Subtask 4.2.4 Characterize Groundwater Quality and Occurrences

The Technical Team shall characterize existing and historic groundwater quantities and qualities within the Basin through review of existing studies and contact with agencies or groups engaged in ongoing data collection. The Technical Team will also identify and obtain additional data, as available, to fill identified data gaps. Work may include collecting, aggregating, and analyzing historic and current water quality data for the beneficial uses and objectives review, and for purposes of completing the salt/nutrient loading analysis and anti-degradation process. Geographic and depth-dependent distribution of concentrations will be assessed for the salinity and nutrient parameters of interest (determined in **Subtask 4.2.5**, below). GIS-based maps will be developed depicting groundwater quality, concentration contours, depth-to-water, groundwater flow directions, and key hydrogeologic features that may affect constituent transport. All



data will be accumulated into GIS- and/or Excel-based database for subsequent analyses. GIS-based mapping will be posted on the CVRWMP website for public viewing.

Subtask 4.2.5 Identify Salinity, Nutrient, and Constituents of Concern

The Technical Team shall identify recommended salinity and nutrient parameters to be addressed within the SNMP. The focus of this subtask shall be to identify constituents of concern relative to attainment of groundwater basin objectives and water quality standards as related to beneficial use for the groundwater basin. The recommended list of constituents of concern will be developed on the basis of prior groundwater studies, collected groundwater quality information, consultation with Regional Board staff, and discussions with study partners and stakeholders.

Anticipated constituents to be considered include total dissolved solids (TDS) and/or Specific Electrical Conductance or Electrical Conductivity (EC), and may include one or more individual ions such as chlorine, sulfates, or sodium if such constituents are determined to be of concern; nitrate-nitrogen; and potentially iron and/or manganese. During Stakeholder Workshop 1, the relevance of the aforementioned constituents and other potential constituents shall be discussed, and input regarding other potential constituents will be received.

As noted, the CVRWMP is encouraged to coordinate with its technical team to maximize use of prior studies that have assessed groundwater hydrogeology, groundwater quality, and beneficial uses within the Coachella Valley groundwater basin.

Subtask 4.2.6 Establish Baseline Conditions

Using the data collected and evaluated in the prior subtasks, a baseline period will be selected and baseline groundwater conditions identified using available data for that period. This baseline period will be utilized in subsequent tasks to establish basin assimilative capacity.

Task 4.2 Deliverables:

- Basin Study Area Map
- List of existing groundwater studies and hydrogeologic assessments in the Basin
- Well Listings in the Basin
- Well Location Map in the Basin
- Quantification of historical pumping (public and private wells), groundwater recharge, septic systems, recycled water usage, discharges, and runoff in the Basin
- Estimation of groundwater storage capacity (based on available data)
- An identification (list) of any groundwater-dependent habitat
- Groundwater Quality and Basin Characteristics GIS layers and Map
- Summary of preliminary existing and potential future Beneficial Uses within the Basins
- Baseline groundwater conditions
- List of Salinity and Nutrient Parameters and other Constituents of Concern to the SNMP
- Technical Memorandum (TM) summarizing the above
- Stakeholder Workshop 1 - Basin Characterization



Table 3-12: Row (c) Planning/ Design/ Environmental Documentation Costs
Coachella Valley Salt and Nutrient Management Program
Subtask 4.2: Conduct Basin Characterization

Activity or Deliverable	Schedule	Status	Completion of Task	
			Before Sept 2013	After Sept 2013
Subtask 4.2: Assessment and Evaluation				
4.2.1 Identify the Groundwater Basins Being Evaluated	October 2013 – November 2013	Not yet begun		X
4.2.2 Identify, Collect, and Review Existing Groundwater Studies and Data	October 2013 – November 2013	Not yet begun		X
4.2.3 Document Beneficial Uses	November 2013 – December 2013	Not yet begun		X
4.2.4 Characterize Groundwater Quality and Occurrences	December 2013 – January 2014	Not yet begun		X
4.2.5 Identify Salinity, Nutrient, and Constituents of Concern	December 2013	Not yet begun		X
4.2.6 Establish Baseline Conditions	December 2013 – January 2014	Not yet begun		X

Subtask 4.3 Identify Salt / Nutrient Loading and Trends

This task will involve identifying, and the preliminary quantification of, salt and nutrient sources to the groundwater basin for the identified constituents of concern.

Subtask 4.3.1 Identify Salinity and Nutrient Sources

The Technical Team shall identify land use characteristics, known point sources and non-point sources of salts and nutrients, and their locations. Water sources and their places of use shall be identified based on information gathered with input from appropriate water suppliers, irrigators, and stakeholders. The type or source of water used for outdoor irrigation for each parcel shall be defined using available information. Data collected under this task will be accumulated into GIS and/or Excel databases for subsequent analyses. During the first Technical Team Review Meeting, and subsequently in Stakeholder Workshop 1, the Technical Team shall seek input regarding significant land cover changes that might have taken place since the date of available data to more accurately reflect current land cover data.

Subtask 4.3.2 Quantify Salinity and Nutrient Source Loads

The Technical Team shall use existing available data to quantify salinity and nutrient sources in terms of volume, concentration, and/or mass loads using data and information collected in previous tasks, along with other salinity and nutrient source loading information, to conduct a loading analysis. The Technical Team shall prepare a preliminary water budget and mass load estimate for the study area, as well as for individual groundwater sub-basins or management areas.

The Technical Team shall conduct the initial source loading analysis using a GIS-based tool to input all data into a GIS format and to perform initial water budget and mass loading analyses. The GIS-based tool shall be used to conduct analyses of historical, existing, and projected future basin conditions and to identify any water quality trends. Salt and nutrient loads to each sub-basin or management area will be identified, as will the salinity and nutrient load sources that appear to be most important in influencing historical and projected groundwater quality trends.



The mass balance model will assume instantaneous mixing of waters within the groundwater basin and will be developed to analyze sub-basins or management areas that may have specific water quality or salt/nutrient source loadings that differ significantly from the rest of the basin.

Where data history on sources, water balance, and conditions is adequate for use in projecting future conditions, the Technical Team will perform an assessment of historic and projected future trends of salinity and nutrient concentrations in groundwater basins. This preliminary work could indicate an increase, decrease, or no expected changes in the future. More detailed study (Phase 3) would provide quantified future contaminant concentrations for the 20-year planning horizon.

Subtask 4.3.3 Develop a Plan for Data Gaps

The Technical Team shall identify potential data gaps or needs based on the work completed in **Tasks 4.2 and 4.3**. Data gaps could include groundwater quality data, groundwater monitoring data, salinity and nutrient source data, and data for hydrogeologic and other groundwater modeling parameters. The Technical Team shall determine what additional data may be required to support future analysis or modeling efforts to be completed in Phase 3. If necessary, the Technical Team will develop a plan for obtaining the data, including the identification of responsible parties for collecting the data as part of the monitoring plan to be developed under **Task 4.6**.

Task 4.3 Deliverables:

- Salt and nutrient source location and loads maps
- Preliminary water budget and mass load estimates
- Preliminary salinity and nutrient source load assessment and evaluation of model results of existing and projected basin conditions
- Stakeholder Workshop 2: Salt/Nutrient Loading and Trends

Task 4.3 Assumptions:

- Loading assessments will include an initial analyses, a review by the Technical Team, and then a final analyses for presentation to the Stakeholders
- A Technical Memorandum or other written summary in digital format will be developed that can be used in subsequent workshop presentations and handouts and for use in the Draft and Final Salt/Nutrient Management Plan. This summary will include appropriate figures and maps based on the analyses conducted.

**Table 3-13: Row (c) Planning/ Design/ Environmental Documentation Costs
Coachella Valley Salt and Nutrient Management Program
Subtask 4.3: Identify Salt/Nutrient Loading and Trends**

Activity or Deliverable	Schedule	Status	Completion of Task	
			Before Sept 2013	After Sept 2013
Subtask 4.3: Assessment and Evaluation				
4.3.1 Identify Salinity and Nutrient Sources	January 2014 – February 2014	Not yet begun		X
4.3.2 Quantify Salinity and Nutrient Source Loads	February 2014 – April 2014	Not yet begun		X
4.3.3 Develop a Plan for Data Gaps	April 2014	Not yet begun		X



Subtask 4.4 Identify Water Management Goals and Potential Strategies

The purpose of this task is to identify the principal goals to be achieved by the SNMP and to develop an initial list of management strategies that may be appropriate for achieving the established goals.

Subtask 4.4.1 Identify Water Supply and Water Quality Management Goals

The Technical Team shall identify the preferred goals of the key agencies that will implement the SNMP and other stakeholders, including processes for obtaining stakeholder input and resolving potential conflicts.

Working with the CVRWMG, the Technical Team shall develop an approach to solicit input from Stakeholders that will be used to identify and rank overall management goals to be achieved within the groundwater basin or sub-basin/management area. Desired goals may focus on source load reduction, treatment, providing other forms of water quality protection, or increased recycled water use. The selected goals should be specific to the needs and conditions of the basin, and will, in part, depend on:

- Existing groundwater quality and occurrence
- Existing salinity/nutrient source loads and locations
- Water agency needs and proposed supply projects
- Recycled water agency needs and proposed projects
- Existing Basin Plan objectives and compliance issues
- Water conservation considerations
- Potential within the basin to implement specific groundwater management strategies
- Basin assimilative capacity
- Funding/implementation feasibility considerations
- Future growth (development depends on water supply assessments)

The CVRWMG shall be responsible for managing and addressing potential stakeholder conflicts and refinement of the SNMP goals as may be necessary. The Technical Team will provide a Technical Memorandum or other written summary that can be used in subsequent workshop presentations and handouts and for use in the Draft and Final Salt/Nutrient Management Plan. This updated summary will include appropriate figures and maps based on the analyses conducted previously and the salt/nutrient management plan goals developed under this task.

Subtask 4.4.2 Develop List of Potential Management Strategies

The Technical Team shall review possible salinity and nutrient management strategies, including those being implemented or under consideration by agencies, those identified in previous studies, and based on input from the CVRWMG and stakeholders. The Technical Team will develop a preliminary list of alternative management strategies that are feasible for implementation in the groundwater basin, and obtain stakeholder input on the preliminary list. The following are potential strategies that may be considered.



Table 3-14: Summary of Potential Salinity/Nutrient Management Strategies

Category	Potential Salinity/Nutrient Management Strategy
Wastewater salinity/nutrient source control	<ul style="list-style-type: none"> • Water softener control (ordinance and/or rebates) • Local pretreatment limits (industrial discharge controls) • Recycled water nutrient treatment • Recycled water demineralization treatment
Public education	<ul style="list-style-type: none"> • Salinity source reduction best management practices • Water softener use education • Irrigation best management practices • Fertilizer use best management practices
Source load reduction	<ul style="list-style-type: none"> • Agency lease-holder requirements • Fertilizer reduction requirements for recycled water users • Source load diversion
Source water salinity control	<ul style="list-style-type: none"> • Brackish source water demineralization • Modify ratios of local or imported water sources
Salt export	<ul style="list-style-type: none"> • Brine line • Salt flushing to the Salton Sea or other location • Concentrate management including disposal • Zero liquid discharge involving salt sequestration
Groundwater recharge	<ul style="list-style-type: none"> • Imported water recharge • Recycled water recharge • Stormwater recharge • Percolation basins • Injection wells • Aquifer Storage Recovery (ASR) wells
Groundwater management	<ul style="list-style-type: none"> • Conjunctive use • Demineralization treatment • In lieu (exchange use of untreated groundwater for recycled water) • Decrease detention time • Seasonal storage • Carryover storage • Emergency storage
Land use regulation	<ul style="list-style-type: none"> • Modify land use policy • Require sewer connections
Water use efficiency (20 x 2020 goals)	<ul style="list-style-type: none"> • Landscape ordinance • Water use restrictions • Water conservation rate structures • Public education/behavior change
Stormwater/runoff management	<ul style="list-style-type: none"> • Stormwater BMPs to reduce salinity/nutrient loading • Stormwater diversion to beneficial use • Low flow runoff diversion
Regulatory	<ul style="list-style-type: none"> • Changes to current basin plan (work in conjunction with RWQCB in Phase 3): <ul style="list-style-type: none"> ○ Designated Beneficial Uses (See Task 2) ○ Numerical groundwater concentration objectives or narrative translation procedures ○ Implementation policies and projects

Subtask 4.4.3 Evaluate Feasibility of Potential Management Strategies

Following completion of **Subtask 4.4.2**, the Technical Team will evaluate the list of potential management strategies to identify and compare the most feasible strategies (including existing and proposed strategies) on the basis of factors such as:

- Costs (capital and O&M, including monitoring costs)



- Anticipated water quality improvements
- Local water supply development potential, including increasing the use of recycled waters or enhanced development of groundwater supplies
- Regulatory compliance
- Sustainability and funding considerations
- Ability to implement
- Environmental impacts

After this evaluation is complete, preferred management strategies will be recommended for implementation by the Technical Team using stakeholder feedback and a pre-defined decision process and will be carried forward into the anti-degradation process for further review and consideration (**Task 4.5**). The CVRWMG will oversee the evaluation process and make final decisions regarding the recommended strategies.

The methodology for evaluating and ranking the list of potential management strategies will be developed by the Technical Team to help determine which management strategies should be implemented to help address the various SNMP goals (preferred management strategies). If necessary, a decision methodology will be developed with input from the Stakeholders to help define and document the decision-making process. The potential costs for implementation, including monitoring needs, of the strategies should also be considered in the prioritization process.

Subtask 4.4.4 Assimilative Capacity Analysis

Assimilative capacity represents a comparison of existing water quality concentrations to the limits set in the Colorado River RWQCB's Water Quality Control Plan (Basin Plan). In general, water quality better than the Basin Plan limits is an indicator of available assimilative capacity, while water quality constituent levels above the Basin Plan limits indicate that load reduction measures may be necessary (or that Basin Plan objectives may need to be changed). In this subtask, the Technical Team will conduct several activities that will allow comparison of groundwater quality at representative locations within the basin to identified limits set in the Basin Plan to estimate the assimilative capacity of the groundwater basin, either in whole or by management area.

- **Step 1: Identify Basin Management Levels** The Technical Team will work with Colorado River RWQCB staff to identify a method for translating the existing narrative water quality objectives for Municipal Supply (MUN), Agricultural Supply (AGR) and Industrial Supply (IND), as documented in the Basin Plan, into basin management targets for the recommended list of constituents of concern developed in **Subtask 4.2.5**. These levels will be used in the subsequent steps to estimate the basin assimilative capacity.
- **Step 2: Compare Baseline Groundwater Quality Conditions with Basin Management Targets** After identifying the Basin Management Targets, baseline groundwater quality will be compared to the targets to determine if the current status of the basin with respect to the Basin Plan's management goals.
- **Step 3: Evaluate Fate and Transport of Salts and Nutrients in Groundwater Basin** The Technical Team will also perform a qualitative analysis of the fate and transport of the identified constituents of concern using the GIS-based mass balance model.
- **Step 4: Estimate Basin Assimilative Capacity** The results of the previous steps will then be brought together to estimate the groundwater basin's assimilative capacity.



This approach will facilitate future updates to the analysis as well as allow reviewers to monitor specific areas of concern within the basin.

Task 4.4 Deliverables:

- SNMP goals
- Summary of identified and ranked alternative management strategies
- Decision methodology for selecting the preferred strategy(ies)
- Stakeholder Workshop 3: SNMP Goals and Management Strategies
- Mass balance model and results
- Assimilative capacity analysis

Task 4.4 Assumptions:

- The CVRWMG shall be responsible for managing and addressing potential stakeholder conflicts and refinement of the SNMP goals and preferred management strategies.

**Table 3-15: Row (c) Planning/ Design/ Environmental Documentation Costs
Coachella Valley Salt and Nutrient Management Program
Subtask 4.4: Identify Water Management Goals and Potential Strategies**

Activity or Deliverable	Schedule	Status	Completion of Task	
			Before Sept 2013	After Sept 2013
Subtask 4.4: Assessment and Evaluation				
4.4.1 Identify Water Supply and Water Quality Management Goals	April 2014 – May 2014	Not yet begun		X
4.4.2 Develop List of Potential Management Strategies	May 2014	Not yet begun		X
4.4.3 Evaluate Feasibility of Potential Management Strategies	May 2014 – June 2014	Not yet begun		X
4.4.4 Assimilative Capacity Analysis	June 2014	Not yet begun		X

Subtask 4.5. Conduct Anti-Degradation Process

The anti-degradation process incorporates and builds, as well as informs, efforts performed in previous tasks to evaluate the preferred management strategies. Strategies developed under **Task 4-4** should be reconsidered as a result of the initial analyses. In addition, assumptions and/or data collection needs resulting from the Salt/Nutrient Loading and Trends Analysis may also have to be revised or updated as a result of this analysis.

Subtask 4.5.1 Assess Load Reductions and Water Quality Improvements

The purpose of this task is to assess the existing and preferred water management strategies and their ability to meet the goals of the SNMP, including any salt/nutrient load reduction, other water quality goal, and water supply/beneficial use goals. The Technical Team will identify the necessary mass loading modeling scenarios to be analyzed on a projected basis to assess the effectiveness of each management strategy in meeting the SNMP goals. It is assumed that the mass balance tool developed under **Task 4.3** will be utilized to perform this analysis. Initial strategies that should be assessed will be those strategies currently employed by agencies. If additional strategies are needed to meet SNMP goals, then the



additional analyses will consider new/additional strategies based on the preferences identified under **Task 4.4**.

Subtask 4.5.2 Identify Preferred Management Strategies

The Technical Team shall evaluate the preferred management strategies identified in **Subtask 4.4.3**, along with any additional management strategies determined potentially feasible, to determine their compliance with the State's Anti-Degradation Policy (Resolution Number 68-16). Specifically, the assessment will:

- Determine if their implementation will degrade groundwater;
- Verify that they meet best practicable treatment or control (BPTC) requirements; or
- If the strategy is consistent with the maximum benefit to the people of the State.

After this evaluation is complete, the revised list of preferred management strategies will be recommended for implementation by the Technical Team using stakeholder feedback and a pre-defined decision process. The CVRWGM will oversee the evaluation process and make final decisions regarding the recommended strategies.

If any Basin Plan Amendments are recommended (including those identified in **Task 4.4**) after conducting the anti-degradation process and evaluation of management strategies, then the following steps should be undertaken as part of the Phase 2 effort:

- Identify required Basin Plan Amendments (e.g. changes to numerical objectives, implementation policies, or beneficial uses) associated with the preferred salinity/nutrient management strategies. This effort will most likely occur during Phase 2 activities, but additional amendments may be developed as part of the initial Phase 3 efforts as well.
- Coordinate with Regional Board staff to (1) reach agreement on the approach for Basin Plan amendment; (2) identify information needs necessary for the proposed Basin Plan Amendment; and (3) identify if data are available for proposed amendment.
- Under **Task 4.6**, develop a data collection or monitoring plan necessary to collect any necessary data as part of the Phase 3 process.

Actual Basin Plan Amendments would be prepared under Phase 3.

Task 4.5 Deliverables:

- Assessment of load reduction and/or water quality improvements (anti-degradation process) - Technical Memorandum
- Evaluation and selection of SNMP Management Strategies - Technical Memorandum, including any recommended Basin Plan Amendments for Phase 3
- Recommendations for any additional Basin Plan Amendments - Technical Memorandum
- Stakeholder Workshop 4: Anti-Degradation Process and Management Strategies



Table 3-16: Row (c) Planning/ Design/ Environmental Documentation Costs
Coachella Valley Salt and Nutrient Management Program
Subtask 4.5: Conduct Anti-Degradation Process

Activity or Deliverable	Schedule	Status	Completion of Task	
			Before Sept 2013	After Sept 2013
Subtask 4.5: Assessment and Evaluation				
4.5.1 Assess Load Reductions and Water Quality Improvements	June 2014 – August 2014	Not yet begun		X
4.5.2 Identify Preferred Management Strategies	August 2014 – September 2014	Not yet begun		X

Subtask 4.6 Finalize Phase 2 SNMP

This task will involve developing an implementation plan, identifying the metrics to evaluate effectiveness of selected salinity and nutrient management strategies, developing monitoring and audit plans, finalizing the SNMP, and working with the Colorado River Basin RWQCB (Region 7) to obtain approval of the Phase 2 SNMP and scope for the Phase 3 SNMP.

Subtask 4.6.1 Develop Implementation Plan

The Technical Team will develop an Implementation Plan that will include the following components:

- Identification of the selected management strategies
- Activities to be implemented
- Phases of implementation
- Estimated costs
- Implementation timeframes

Subtask 4.6.2 Identify Metrics and Develop Monitoring Program

The Technical Team shall identify metrics (measurable parameters) that can be used to evaluate the effectiveness of the selected salinity and nutrient management strategies following implementation. The Technical Team shall develop a monitoring program, including identification of the responsible agency, the schedule for implementation, and monitoring required to measure the effectiveness of any implemented groundwater management strategy. Existing monitoring efforts will be incorporated into the SNMP monitoring plan. Where possible, existing monitoring efforts will be adjusted to include any necessary SNMP monitoring needs. The costs for additional monitoring needs shall be considered when assessing the feasibility of the implementation strategies under **Task 4.5.2**. The monitoring program shall comply with the State Water Resources Control Board’s (SWRCB’s) policy on monitoring of contaminants of emerging concern (CECs) that is currently in draft form and expected to be approved in late 2012 or 2013. In addition, data collection/monitoring needs identified under **Tasks 4.3** will also be included in this monitoring plan. The metrics and monitoring plan shall be reviewed by the CVRWGM prior to input from the Stakeholder Workshop.

Subtask 4.6.3 Develop SNMP Data Management, Reporting, and Audit Processes

The Technical Team shall establish the framework and schedule for how data will be managed, including ongoing monitoring efforts, in addition to reporting and auditing processes. Auditing of the SNMP and its implementation will likely be conducted on a periodic basis and should include updating of the SNMP



(based on adaptive management principles) and identifying the responsible agency or agencies for implementing the effectiveness assessment.

Subtask 4.6.4 Determine CEQA/NEPA Compliance Needs

In conjunction with the RWQCB, the Technical Team shall determine how the recommended SNMP will need to conform to California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) requirements. In accordance with the SWRCB's Recycled Water Policy, the SNMP is required to be in compliance with CEQA to determine potential significant environmental impacts and identify measures to avoid or mitigate impacts where feasible.

However, under the California Secretary for Natural Resources, the SWRCB's basin planning process is exempt from certain requirements of CEQA, including the preparation of an Initial Study, Negative Declaration, and Environmental Impact Report [CCR, Title 14, §15251(g)]. The SNMP may still be subject to other CEQA provisions, including the avoidance of significant adverse effects to the environment where feasible. Completion of an environmental checklist and a written report consisting of a description of the proposed activities, analysis of reasonable alternatives, and identification of mitigation measures to minimize potential significant adverse environmental impacts may still be required (CCR, Title 23, §3777(a)). In lieu of an Initial Study, Negative Declaration, and Environmental Impact Report, a Substitute Environmental Documentation (SED) may be required for any water quality control plan, state policy for water quality control, and other components of California's water quality management plan, prior to RWQCB approval or adoption. This assessment will identify if implementation of the recommended strategies or any identified Basin Plan Amendments (to be developed under Phase 3 of this work plan) will be subject to review under CEQA or NEPA and if an SED or other documentation will be necessary.

The Technical Team will work with the RWQCB in preparing the necessary CEQA documentation for implementation of the SNMP. For the purposes of this work plan, it is assumed that all management strategies identified in previous tasks for implementation under the SNMP will be non-structural in nature (e.g. policies, monitoring). Therefore, the scope of work under this subtask is limited to:

- One scoping meeting to seek input on environmental information that should be considered;
- Completion of an environmental checklist evaluating environmental factors that may be potentially affected by the SNMP implementation;
- Preparation of a response to any comments received on the environmental checklist and during the scoping meeting; and
- A cover memorandum identifying the preferred management strategies and summarizing the results of the checklist and scoping meeting (including identification of any recommended mitigation measures).

If the recommended strategies or identified Basin Plan Amendments would be subject to review, then in conjunction with the RWQCB and as part of the Phase 2 work, the CVRWMG and the Technical Team will:

- Identify the appropriate governing body (lead agency)
- Identify the required documentation and responsible parties

Since preparation of the Basin Plan Amendments are proposed under Phase 3, the Environmental Documentation process will occur in Phase 3 as well.



Subtask 4.6.5 Finalization of the SNMP

The Technical Team shall prepare a Draft and Final Salt/Nutrient Management Plan that summarize the results of all deliverables described within **Tasks 4.1 through 4.6** into a comprehensive planning document that is stand-alone or that can be incorporated into the IRWM Plan Update.

Task 4.6 Deliverables:

- Summaries or Technical Memorandums from **Tasks 4.2 through 4.5**,
- SNMP Implementation Plan
- Performance metrics and monitoring plan
- SNMP Audit Plan
- Scope and Schedule for Phase III efforts, including any proposed Basin Plan modifications
- Assessment of any required CEQA/NEPA documentation
- Draft and Final Salt/Nutrient Management Plan
- Stakeholder Workshop 5: Draft SNMP

Task 4.6 Assumptions:

- One Draft Plan will be developed and after review by the CVRWMG, will be reviewed by the public stakeholders as part of Stakeholder Workshop 5. Comments from this review will then be incorporated into a Final Plan for approval by the CVRWMG.

**Table 3-17: Row (c) Planning/ Design/ Environmental Documentation Costs
Coachella Valley Salt and Nutrient Management Program
Subtask 4.6: Finalize Salt and Nutrient Management Plan**

Activity or Deliverable	Schedule	Status	Completion of Task	
			Before Sept 2013	After Sept 2013
Subtask 4.6: Assessment and Evaluation				
4.6.1 Develop Implementation Plan	September 2014 - October 2014	Not yet begun		X
4.6.2 Identify Metrics and Develop Monitoring Program	October 2014	Not yet begun		X
4.6.3 Develop SNMP Data Management, Reporting, and Audit Processes	October 2014 - November 2014	Not yet begun		X
4.6.4 Determine CEQA/NEPA Compliance Needs	November 2014 - December 2014	Not yet begun		X
4.6.5 Finalization of the SNMP	December 2014 - March 2015	Not yet begun		X

Task 5: Project Design

No design deliverables are included in this work plan.

Task 6: Environmental Documentation

No CEQA, NEPA, and other environmental compliance tasks or deliverables are included in this work plan.



Task 7: Permitting

No permits or permitting deliverables are anticipated for this project.

Task 8: Construction Contracting

No construction contracting or associated deliverables are needed for this project.

Row (d) Construction/ Implementation

Task 9: Construction

No construction activities or associated deliverables are included in this work plan.

Row (e) Environmental Compliance/ Mitigation/ Enhancement

Task 10: Environmental Compliance / Mitigation/Enhancement

No environmental mitigation or enhancement actions or associated deliverables are included in this work plan.

Row (f) Construction Administration

Task 11: Construction Administration (Management)

No construction management tasks or associated deliverables are needed for this project.



Project 3: Groundwater Quality Protection Program – Subarea D2

I. Introduction

Project Sponsor

The project sponsor for the *Groundwater Quality Protection Program – Subarea D2* is the Mission Springs Water District (MSWD).

Project Need

The Coachella Valley IRWM region lies within Region 7 (Colorado River Basin) of the California Regional Water Quality Control Board (RWQCB). In 2006, the RWQCB last adopted the *Water Quality Control Plan for the Colorado River Basin* (Basin Plan), outlining water quality objectives for the region and putting forth an Implementation Program that would assist in achieving those objectives. The Basin Plan notes Septic System Impacts to Groundwater Basins as a critical regional issue and that unsewered communities within Region 7 have the potential to negatively impact groundwater.⁵ The Basin Plan specifically prohibits individual disposal systems on parcels (less than one-half acre) that overlie the Mission Creek and Desert Hot Springs groundwater aquifers and mandates connection to the municipal sewer system.⁶

Water quality in the Mission Creek Subbasin is being degraded by a on-site wastewater disposal systems (septic systems) within the Mission Creek Subbasin and potentially from the neighboring Desert Hot Springs subbasin, which contributes a small amount of inflow (approximately 1,800 AFY) to the unconfined Mission Creek aquifer.⁷ On-site disposal systems are increasing nitrate contamination levels in local water supply wells. The *Groundwater Quality Protection Program – Subarea D2* will capture and treat wastewater flows, and then recharge them in the Mission Creek Subbasin. The project will result in groundwater quality protection by treating wastewater and preventing wastewater effluent from entering the high-quality Mission Creek subbasin.

MSWD's 2010 *Urban Water Management Plan* notes that the Desert Hot Springs Subbasin is a hot-water basin, containing hot mineral water with temperatures exceeding 100 degrees Fahrenheit.⁸ This water serves as the economic basis of Desert Hot Springs because it draws visitors to the City's numerous spa resorts and hotels. Therefore, protecting the groundwater quality within the Desert Hot Springs aquifer will not only protect the local water supply but will also protect hot mineral water that is the economic basis of the community's spa industry.

Water quality both in the water supply (Mission Creek) and hot water (Desert Hot Springs) subbasins are vital to the area's economic vitality. In addition, because Desert Hot Springs qualifies as a disadvantaged community (DAC), this project will also protect residents of a DAC from significant costs that would result if treatment of the potable groundwater supply were necessary due to contamination of groundwater supplies.

⁵ Colorado River RWQCB. 2006. *Water Quality Control Plan for the Colorado River Basin (Region 7)*. Includes Amendments through June 2006. Section III: Regional Board Issues, A: Septic System Impacts to Groundwater Basins, page 5-2. Section II. Point Source Controls, H: Septic Systems, page 4-5.

⁶ Colorado River RWQCB. 2006. *Water Quality Control Plan for the Colorado River Basin (Region 7)*. Includes Amendments through June 2006. Section II. Point Source Controls, H: Septic Systems, page 4-5.

⁷ MSWD. 2011. *2010 Urban Water Management Plan*. Page 2-7, Table 2.1-1, Mission Creek Subbasin Inflows/Outflows.

⁸ MSWD. 2011. *2010 Urban Water Management Plan*. June 2011. Section 2.1.1 Groundwater, page 2-1.



Project Purpose

The purpose of the *Groundwater Quality Protection Program – Subarea D2* is to 1) extend MSWD’s municipal wastewater collection system to Subarea D2 in Assessment District 12, 2) eliminate the need for on-site septic systems in the project area, and 3) comply with State law and an MSWD ordinance that require customers to connect to the wastewater collection system once it is available to their property.

Project Abstract

The City of Desert Hot Springs is classified as an economically disadvantaged community (DAC), located within the MSWD service area, which is located within the Colorado River Basin. This community overlays the Desert Hot Springs groundwater aquifer, a hot-water groundwater basin containing hot mineral water with temperatures exceeding 100 degrees Fahrenheit. This water serves as the economic basis of the City of Desert Hot Springs, because it draws visitors to the City’s numerous spa resorts and hotels.

The Colorado River RWQCB’s Basin Plan notes septic system impacts to groundwater as a critical regional issue, and specifically states that septic systems within the Colorado River Basin have the potential to negatively impact groundwater.⁹ Portions of the City of Desert Hot Springs have septic tank densities that are 2.3 to 2.8 times higher than the density recommended by the RWQCB. As such, the high density of the septic systems potentially threaten the water quality of the local groundwater supply. These septic systems also potentially threaten the local economy, which is highly dependent on hot mineral water to support the spa and hotel industry.

As a response to local issues associated with high-density septic systems, Assessment District 12 was approved by voters in 2004, providing approximately \$28 million of matching funds that expires in 2014. This money was used to fund engineering design of a wastewater collection system that will abate approximately 6,000 on-site septic systems. Design of 10 sub-areas that make up the Assessment District is complete, and funds are now needed for construction. Environmental compliance documentation was completed in 1998 and re-certified in 2007.

The project area, Subarea D2, consists of 582 parcels and 382 existing on-site septic systems that will be converted to sewers. Wastewater collected by the MSWD sewer system would be sent to the existing Horton Wastewater Treatment Plant (WWTP), where it would be beneficially reused via percolation. Project construction includes installing 18,555 lineal feet of 8-inch vitrified clay pipe (VCP) sewer, 15,281 lineal feet of 4-inch VCP sewer laterals, 70 manholes, and all appurtenances. Final design work for Subarea D2 was completed in 2010, and construction is currently ready to bid. As such, this project is at 100% completion of design.

Project Partners

MSWD provides water and wastewater infrastructure to the City of Desert Hot Springs, and as such, coordinates land use planning efforts with the City. The City of Desert Hot Springs is supportive of MSWD’s efforts to convert septic tanks to sewers, including attending joint meetings of the two governing boards where the need and status of the program were discussed. In conjunction with the sewer project, the City of Desert Hot Springs coordinates additional land use improvements such as curbs, gutters, and street paving.

⁹ Colorado River RWQCB. 2006. *Water Quality Control Plan for the Colorado River Basin (Region 7)*. Includes Amendments through June 2006. Section III: Regional Board Issues, A: Septic System Impacts to Groundwater Basins, page 5-2. Section II. Point Source Controls, H: Septic Systems, page 4-5.



Project Timing and Phasing

This project is a multi-phased project. MSWD’s Groundwater Quality Protection Program includes numerous phases, where some portions have been completed and others will be completed in the future. Upon completion of the Subarea D-2 phase, the project will be fully operational connecting to a phase currently under construction (Subarea D-1).

Project Map

Figure 3-12 provides a project site map for the *Groundwater Quality Protection Program – Subarea D2*, showing the boundary of the project in relation to the rest of Assessment District 12. Figure 3-13 provides a project site map for the *Groundwater Quality Protection Program – Subarea D2*, showing surface waters, groundwater basins, DACs within the project area, and proposed monitoring locations.

Project Objectives:

The *Groundwater Quality Protection Program – Subarea D2* includes the following project objectives:

- Expand the wastewater collection system in Assessment District 12 Subarea D2, which will connect 582 parcels (382 on-site septic systems) to the MSWD system
- Abate potential water quality threats associated with 382 on-site septic systems
- Protect both the drinking water supply to Desert Hot Springs and the hot mineral water that is the basis of the spa economy for the City of Desert Hot Springs and the Coachella Valley
- Reduce the septic tank density in Assessment District 12 Sub Area D2 to at or near the density recommended by the RWQCB

Table 3-18 provides an overview of the Coachella Valley IRWM Plan Objectives that are expected to be indirectly (○) or directly (●) achieved through implementation of the *Groundwater Quality Protection Program - Desert Hot Springs*.

Table 3-18: Contribution to IRWM Plan Objectives

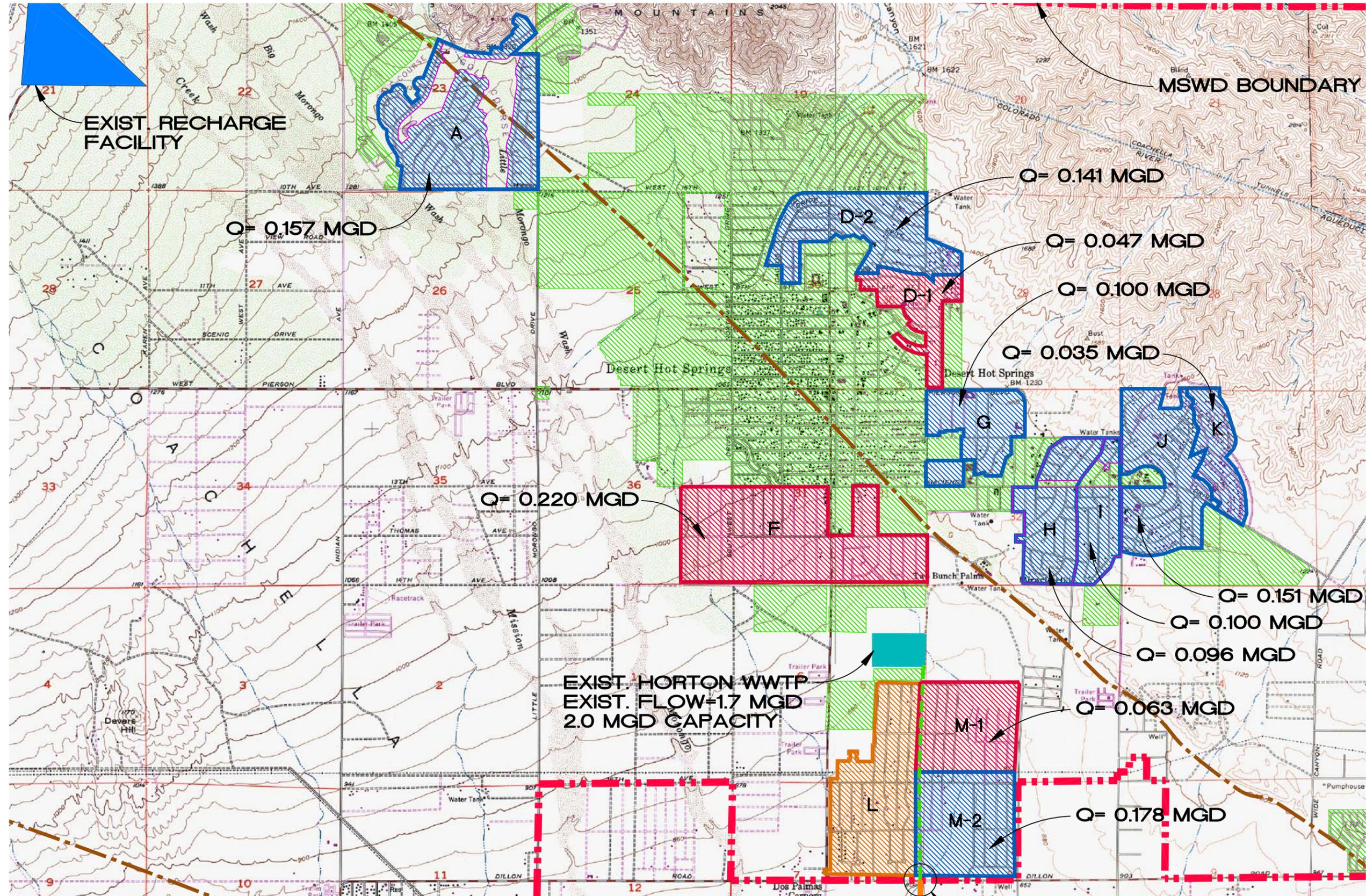
Proposal Projects	Contribution to IRWM Plan Objectives												
	A	B	C	D	E	F	G	H	I	J	K	L	M
Groundwater Quality Protection Program – Sub-Area D-2	○	○		○	●					○		●	○

● = directly related; ○ = indirectly related

This project contributes to the IRWM Plan objectives in the following ways:

Objective A – Provide reliable water supply. The program will help to provide a reliable water supply for MSWD customers by contributing flows to the Horton WWTP for future recycled water use.

Objective B – Manage groundwater levels. This project will help to manage groundwater levels by capturing flows currently lost to the non-potable Desert Hot Springs Subbasin and reusing them within the potable Mission Creek subbasin. This will help to manage groundwater levels in the Mission Springs subbasin through recharge (percolation) and through source substitution (recycled water use).



- LEGEND:**
- - - MSWD SERVICE AREA
 - - - FAULT LINES
 - ▨ NON-PROJECT SEWERED AREAS
 - ▨ COMPLETED SEWER
 - ▨ UNDER CONSTRUCTION
 - ▨ FUTURE CONSTRUCTION

SCALE: 1" = 1,200'



TKE
ENGINEERING

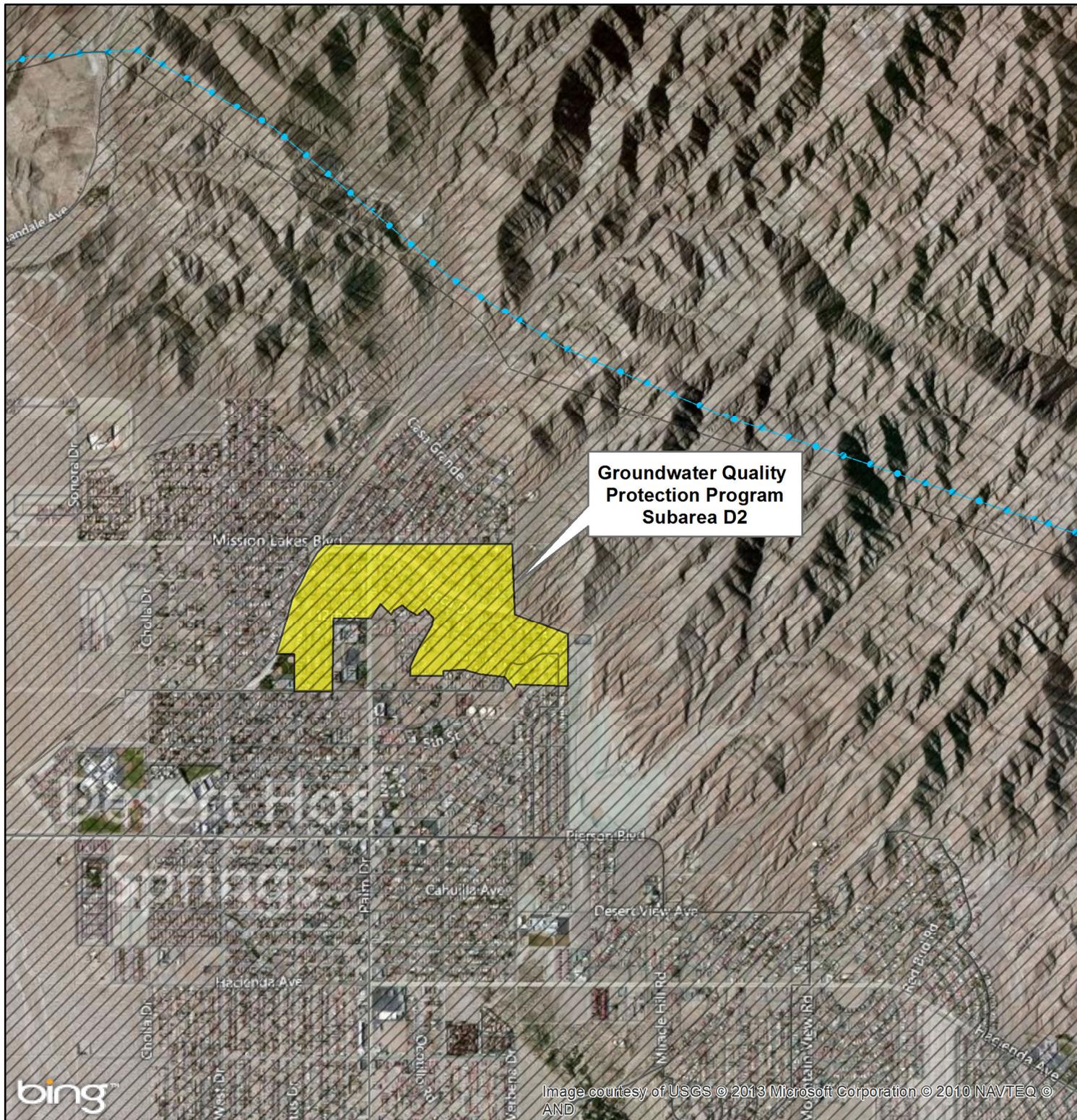
TKE ENGINEERING, INC.
2305 CHICAGO AVENUE
RIVERSIDE, CA 92507
(951) 680-0440
FAX: (951) 680-0490

MISSION SPRINGS WATER DISTRICT
GROUNDWATER PROTECTION PROGRAM

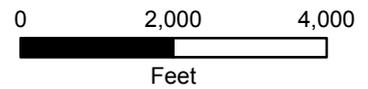
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CVIRWMP Project Locations Groundwater Protection Program

-  Groundwater Protection Program
-  Colorado River Aqueduct
-  Coachella and All American Canals
-  Whitewater River Stormwater Channel
-  Interstate Hwys.
-  Lakes
-  Colorado River Funding Area
-  Disadvantaged Communities



**Groundwater Quality
Protection Program
Subarea D2**



File Name: Fig 5-3_MH1.mxd
 File Location: L:\Projects GIS\0264-001_CoachellaIRWMP\mxds\
 Date Updated: November 2010
 Made By: DNF
 Department: RMC Water & Environment



Image courtesy of USGS © 2013 Microsoft Corporation © 2010 NAVTEQ © AND



Objective D – Maximize local supply opportunities. This project indirectly maximizes local supplies by capturing septic effluent that is currently lost to the Desert Hot Springs Subbasin for possible future recycled uses. The sewer flows captured via new customer connections to the MSWD collection system will be treated for future groundwater recharge in the basin. This will alleviate the current overdraft in the region’s groundwater basin and prevent potential subsidence.

Objective E – Protect groundwater quality and improve where feasible. Expansion of MSWD’s municipal wastewater collection system will eliminate the need for on-site septic systems in the project area. This will reduce septic tank densities in the region and prevent potential negative impact to Mission Creek and Desert Hot Springs groundwater aquifers from improperly functioning septic systems. In addition, this project protects hot mineral water sources from contamination by septic systems, thus preserving the primary industry of the local economy of a DAC.

Objective J – Maximize stakeholder involvement. This project will involve coordination with residents within Sub Area D-2 of Assessment District 12 within MSWD’s service area. As residents within this area are required to connect to the sewer system once it is in place, these residents are considered primary stakeholders and will be made aware of the project, its schedule, and its benefits to the Region.

Objective L – Address water and sanitation needs of DACs. This project directly addresses water and sanitation needs of DACs by providing for expansion of the municipal wastewater collection system and providing means for connection to the collection system. Removal of the septic systems will avoid any potential unsanitary conditions resulting from future system failures at residences. Potential nitrate and pathogen contaminations of the Desert Hot Springs aquifer will be eliminated via abatement of septic system. Hot mineral water will also be secured to continue supporting the local spa and hotel economy.

Objective M – Maintain affordability of water. This project indirectly helps maintain the affordability of water by reducing and preventing contamination of the local groundwater supply. A contaminated potable water supply would require costly treatment, and therefore, the project helps maintain the current water supply at affordable levels.

Project Integration

This program will involve replacing high-density septic systems with sewers in a DAC. Several of the other projects – *Torres-Martinez Avenue 64 Water Supply Connection Project* and *San Antonio del Desierto DAC Sewer Extension Project* – both also serve the Region’s DACs by providing healthy and sanitary municipal water and wastewater services. The Coachella Valley IRWM Plan identifies the critical need to serve the Region’s DACs (IRWM Plan Objective L) and this funding application helps the Region to accomplish that goal.

This project also links to the *Coachella Valley Salt & Nutrient Management Program* in that it will be removing a source of nutrient and salt loading in the subbasin. Reducing this loading will help the Coachella Valley Groundwater Basin to meet overall Basin Plan objectives.

Finally, the *Groundwater Quality Protection Program – Subarea D2* is a continuation of a previous project funded through the Coachella Valley IRWM Region under Proposition 84-Round 1. The previous phase of the project connected 238 parcels to the municipal sewer system and abated 181 septic systems in Subarea D1.

Linkages and Synergies with Other Projects in the Proposal

This program will involve replacing high-density septic systems with sewers in a DAC. Several of the other projects – *Torres-Martinez Avenue 64 Water Supply Connection Project* and *San Antonio del Desierto DAC Sewer Extension Project* – both also serve the Region’s DACs by providing healthy and



sanitary municipal water and wastewater services. The Coachella Valley IRWM Plan identifies the critical need to serve the Region's DACs (IRWM Plan Objective L) and this funding application helps the Region to accomplish that goal.

This project also links to the *Coachella Valley Salt & Nutrient Management Program* in that it will be removing a source of nutrient and salt loading in the subbasin. Reducing this loading will help the Coachella Valley Groundwater Basin to meet overall Basin Plan objectives.

Completed Work

- Formation of Assessment District 12—MSWD completed formation of the Assessment District in 2004 to provide local match funding for grant opportunities.
- Contract Documents—MSWD completed design for the project in 2010.
- Environmental Compliance—MSWD completed environmental compliance processing in 2007.

Existing Data and Studies

This project type, scope, and focus are identified in the following plans and studies. These documents are also included as Appendix 3-3 to this attachment.

- Sub Area D2 Sewer Exhibits (2012).
- Mission Springs Water District (MSWD). 2007. *CEQA Recertification Documents*.
- Mission Springs Water District (MSWD). 1997. *Sewer Improvement Project Report*. This report contains the following appendices:
 - June 17, 1996 – USGS Report, Transport of Contaminants from Wastewater Disposal Systems Near Mission Creek Subbasin
 - September 12, 1996- Michigan Technical University, Groundwater Study
- Mission Springs Water District (MSWD). 2007. *Water Recycling Feasibility Study: Resource Protection and Wastewater Infrastructure, Desert Hot Springs, CA*.

II. Project Work

Row (a) Direct Project Administration Costs

Task 1: Project Administration

Ongoing project administration for this project will involve coordinating with CVWD on DWR-related contracting efforts and coordinating with the project consultant. Project administration also includes the staff time that necessary to receive approval for project construction from the MSWD Board of Directors.

Task 1 Deliverables:

- Construction and other project-related approvals from the MSWD Board of Directors

Task 2: Labor Compliance Program

MSWD will contract with a consultant to complete a Labor Compliance Program (LCP) to verify that construction is completed in accordance with current law including prevailing wage determinations. The program will be completed and submitted to the California Department of Industrial Relations. Implementation of the LCP will begin prior to project construction, occur through project construction, and end with construction, which is estimated to be complete in March of 2017.



Task 2 Deliverables:

- Final LCP Report and Submittal to the California Department of Industrial Relations

Task 3: Reporting

MSWD will prepare a project assessment and evaluation plan, quarterly invoices, and progress reports for submittal to DWR as part of the grant contract. MSWD will also prepare a project completion report upon completion of all grant-funded activities associated with the proposed project.

MSWD will also ensure that all of the data collected and analyzed to measure program performance (as described in Attachment 6) will be submitted to DWR and made available to the public and to the Region for future inclusion within the Data Management System as required in the Data Management Standard.

Task 3 Deliverables:

- Quarterly invoices and progress reports, including required deliverables
- Project Assessment and Evaluation Plan (PAEP)
- Project Completion Report

**Table 3-19: Row (a) Direct Project Administration
Groundwater Quality Protection Program - Subarea D2**

Activity or Deliverable	Schedule	Status	Completion of Task	
			Before Sept 2013	After Sept 2013
Task 1: Project Administration				
Project Coordination	October 2013-July 2017	Not yet begun		X
Task 2: Labor Compliance Program				
Labor Compliance Program, including field interviews, reviewing contractor payroll, preparing deficiency notifications, and preparing final report	August 2014 – March 2017	Not yet begun		X
Task 3: Reporting				
Compile PAEP, Invoices, and Progress Reports	October 2013-July 2017	Not yet begun		X
Prepare Quarterly Reports	October 2013-July 2017	Not yet begun		X
Prepare Final Report	March 2017-July 2017	End of work		X

Row (b) Land Purchase/ Easement

A land purchase easement is not required for implementation of this project. As such, there are no deliverables related to a land purchase easement.

Row (c) Planning/ Design/ Engineering/ Environmental Documentation

Task 4: Assessment and Evaluation

Preliminary design and assessments were prepared in 2004. No additional planning work or deliverables are included in this work plan.



Task 5: Final Design

Design drawings, specifications, and cost estimates for Subarea D2 were completed in 2010. Bids have not yet been solicited. The project does not require completion of any future phases to place the system into operation. MSWD, through the lead agency, will submit contract documents (plans, specifications, and estimates) for review to DWR to verify consistency with program requirements. No additional design work or deliverables are included in this work plan.

Task 6: Environmental Documentation

The project has been analyzed in an Initial Study/Mitigated Negative Declaration document that was completed and finalized in 1999. The document was later recertified in 2007. This project also went through a NEPA review that resulted in an Environmental Assessment and a Finding of No Significant Impact in December 2010.

The CEQA/NEPA environmental documentation outlined a Mitigation Monitoring and Reporting Plan (MMRP) that demonstrates mitigation measures required for CEQA compliance were completed in 1998. The MMRP will be in effect during the construction phase of this project. No additional environmental documentation or deliverables are included in the work plan.

Task 7: Permitting

MSWD will apply for coverage from the State Water Resources Control Board under the NPDES General Construction Permit, which requires preparation of a Stormwater Pollution Prevention Plan (SWPPP). MSWD will also apply for right-of-way Encroachment Permits from the City of Desert Hot Springs and the County of Riverside. MSWD will apply for these permits prior to December 2014.

Task 7 Deliverables:

- Final SWPPP
- Final Encroachment Permits from the City of Desert Hot Springs and the County of Riverside

**Table 3-20: Row (c) Planning/ Design/ Environmental Documentation
Groundwater Quality Protection Program - Subarea D2**

Activity or Deliverable	Schedule	Status	Completion of Task	
			Before Sept 2013	After Sept 2013
Task 7: Permitting				
NPDES General Construction Permit, including SWPPP	August 2014 – December 2014	Not yet begun		X
Encroachment Permits from City of Desert Hot Springs and County of Riverside	August 2014 – December 2014	Not yet begun		X

Row (d) Construction/ Implementation

Task 8: Construction Contracting

Solicitation for a construction contractor will involve advertisement for bids, holding a preconstruction meeting, bid opening, bid evaluations, MSWD staff recommendations, MSWD Board of Directors approval, and awarding the construction contract, which includes confirming the contractor’s insurance requirements and bonds. For each contract, MSWD staff must issue a Request for Proposals, evaluate submitted proposals, and issue recommendations.



Task 8 Deliverables:

- Final Executed Construction Contract

Task 9: Construction/ Implementation

Construction tasks will include mobilization, clearing and grubbing, trench protection, pipeline installation, manhole construction, lateral construction, connections, backfill, compaction, testing, street restoration, on-site disposal system abandonment, and clean-up.

Building Materials and/or Computational Methods

Building material requirements are detailed in the 100% design plans and specifications and are further referenced in the ASTM, Green Book, and Mission Springs Water District Developer Handbook standards. All materials will be submitted by the contractor, evaluated according to the standards, and approved prior to construction (normally after NTP and before the pre-construction meeting).

Construction Standards, Health and Safety Standards, Laboratory Analysis, and/or Accepted Classification Methods

Construction for this project will conform to the specifications prepared for the project by a licensed engineer. These specifications include project-specific construction standards and require the contractor to conform to applicable local, state, and federal laws. The specific codes that will be used for project implementation include: MSWD Developer/Contractors Guidelines Handbook, Project Plans and Specifications, ASTM Standards for materials and manufacturing, compliance with all state and local health and safety standards, California Occupational Safety and Health (Cal-OSHA) requirements, County of Riverside and/or Desert Hot Springs Noise Ordinance(s), South Coast Air Quality Management District Standards, and Colorado River Basin RWQCB Standards.

Construction Tasks

Construction tasks for this project will include Mobilization and Site Preparation, Project Construction, and Performance Testing and Demobilization. These subtasks are described in detail below:

- ***Subtask 9.1 Mobilization and Site Preparation:*** This task will involve equipment delivery, SWPPP BMP installation, potholing, pavement grind and disposal, and potentially some clearing and grubbing at lateral connections.
- ***Subtask 9.2 Project Construction:*** Project construction includes installing 18,555 lineal feet of 8-inch vitrified clay pipe (VCP) sewer, 15,281 lineal feet of 4-inch VCP sewer laterals, 70 manholes, and all appurtenances. This task includes traffic control, BMP management, pavement removal, trenching, shoring, bedding, pipe installation, manhole installation, lateral construction, backfilling, compaction, connections, pavement restoration, striping, and clean-up. The contractor shall return construction and staging areas to as reasonable as possible to original or improved conditions as a result of construction activities, including newly paved streets.
- ***Subtask 9.3 Performance Testing and Demobilization:*** Performance testing shall be per MSWD Developer/Contractors Guidelines Handbook and per the project plans and specifications. Inspection and testing are required by the project specifications. Testing includes air pressure testing of the sewer lines and backfill compaction testing. Demobilization includes surplus materials and equipment removal.

Task 9 Deliverables:

- Performance testing results



**Table 3-21: Row (d) Construction/ Implementation
Groundwater Quality Protection Program - Subarea D2**

Activity or Deliverable	Schedule	Status	Completion of Task	
			Before Sept 2013	After Sept 2013
Task 8: Construction Contracting				
Bidding, Bid Evaluation and Award, and Contract Execution	January 2015 – March 2015	Not yet begun		X
Task 9: Construction				
<i>Subtask 9.1 Mobilization and Site Preparation</i>				
Mobilization, traffic control, implementation of SWPPP BMPs, potholing, and pavement pulverization	April 2015 - June 2015	Not yet begun		X
<i>Subtask 9.2 Project Construction</i>				
Installation of sewer main, laterals, manholes, connections, restoration, etc	June 2015 – September 2016	Not yet begun		X
<i>Subtask 9.3 Performance Testing and Demobilization</i>				
Testing and demobilization	October 2016 – March 2017	Not yet begun		X

Row (e) Environmental Compliance/ Mitigation/ Enhancement

Task 10: Environmental Compliance/Mitigation/Enhancement

No environmental compliance or mitigation deliverables are included in this work plan. As discussed above under Task 6, the completed CEQA/NEPA documentation outlined a Mitigation Monitoring and Reporting Plan (MMRP) that demonstrates mitigation measures required for CEQA compliance were completed in 1998. The MMRP will be in effect during the construction phase of this project.

Row (f) Construction Administration

Task 11: Construction Administration

Construction management includes 1) general construction management (administration, project-partner coordination, preconstruction conference coordination, construction progress meetings, invoicing, requests for information and requests for copy responses, change order execution, and other related management duties), 2) materials testing, 3) inspection, and 4) construction staking. A consultant will be procured to help manage the aforementioned activities.

Task 11 Deliverables:

- Construction management contract

**Table 3-22: Row (f) Construction Administration
Groundwater Quality Protection Program - Subarea D2**

Activity or Deliverable	Schedule	Status	Completion of Task	
			Before Sept 2013	After Sept 2013
Task 11: Construction Contracting				
Management of Construction Contractor, including materials testing, inspection, and construction staking	January 2015 – March 2017	Not yet begun		X



Project 4: San Antonio del Desierto DAC Sewer Extension Project

I. Introduction

Project Sponsor

Pueblo Unido Community Development Corporation (PUCDC) is the project sponsor for the *San Antonio del Desierto DAC Sewer Extension Project*.

Project Need

The San Antonio del Desierto (St. Anthony) Mobile Home Park is currently operating five (5) anaerobic wastewater treatment lagoons. The lagoons are in extremely close proximity (within 150 feet) to the mobile home park residents. Inadequate design of the lagoons, including lack of proper lining, location, and unstable dikes, urge the need to provide a sanitary and reliable wastewater disposal and treatment system for residents of the mobile home park. Inadequate design of the lagoons not only provides concerns relating to the health and safety of mobile home park residents, but also presents water quality concerns within and surrounding the project area. Due to the project's location within the eastern Coachella Valley, the project area is underlain by a shallow groundwater aquifer with a high water table. As such, inadequate lagoon conditions pose a potential threat to groundwater quality within the surrounding area as wastewater and associated contaminants from the lagoons could potentially contaminate the groundwater due to the lack of an adequate barrier lining the lagoons. Due to the proximity of the mobile home park to the Coachella Valley Water District's (CVWD's) sewer sanitary collection system, connecting to the CVWD municipal wastewater system is the best option for meeting project-related needs.

Project Purpose

The purpose of the *San Antonio del Desierto DAC Sewer Extension Project* is to replace the existing on-site wastewater treatment system at the St. Anthony Mobile Home Park with a sewer connection. The project proposes the installation of a gravity sewer pipeline, lift station, and a sewer force main pipeline that will collect wastewater from the St. Anthony's Mobile Home Park, which has an approximate population of 400 people. The project will provide sewer service to the residents and convey the wastewater to the Coachella Valley Water District (CVWD) Water Reclamation Plant No. 4 (WRP-4).

Project Abstract

The San Antonio del Desierto (St. Anthony) Mobile Home Park is located along Highway 111, south of Avenue 66 and north of Avenue 68 in the Coachella Valley in an unincorporated portion of Riverside County known as Mecca. This mobile home park, which contains approximately 400 residents, is considered an economically disadvantaged community (DAC) per requirements established by DWR. The mobile home park is owned by the Pueblo Unido Community Development Corporation (PUCDC), which is in the process of acquiring legal permitting for the mobile home park in the form of a Conditional Use Permit (CUP) from the County of Riverside. One of the conditions of the CUP is that the mobile home park must convert to a sanitary wastewater system, as the mobile home park currently relies upon five (5) anaerobic wastewater treatment lagoons for wastewater treatment and disposal.

The lagoons are in extremely close proximity (within 150 feet) to the mobile home park residents. Inadequate design of the lagoons, including lack of proper lining, location, and unstable dikes, urge the need to provide a sanitary and reliable wastewater disposal and treatment system for residents of the mobile home park. Inadequate design of the lagoons not only provides concerns relating to the health and safety of mobile home park residents, but also presents water quality concerns within and surrounding the



project area. Due to the project's location within the eastern Coachella Valley, the project area is underlain by a shallow groundwater aquifer with a high water table. As such, inadequate lagoon conditions pose a potential threat to groundwater quality within the surrounding area as wastewater and associated contaminants from the lagoons could potentially contaminate the groundwater due to the lack of an adequate barrier lining the lagoons. Due to the proximity of the mobile home park to the CVWD's sewer sanitary collection system, connecting to the CVWD municipal wastewater system is the best option for meeting project-related needs.

The project proposes the installation of a gravity sewer pipeline, lift station, and a sewer force main pipeline that will collect wastewater from the St. Anthony Mobile Home Park. The project will provide sewer service to the residents and convey the wastewater to CVWD's Water Reclamation Plant No. 4 (WRP-4).

Project Partners

The primary organization responsible for implementing the project is PUCDC, who is leading the design and funding of the sewer main extension. CVWD, who will own and operate the sewer main that will be constructed, is a cooperating agency. The County of Riverside, who will be responsible for permitting the mobile home park, is also a cooperating agency.

Project Timing and Phasing

The project is not a portion or phase of a larger multi-phased project. The project will be completed in one single phase including grading, trenching, underground work, construction of a lift station and extension of pipelines to the existing force main located north of the site. CVWD will then operate the facility.

Project Map

Figure 3-14 is a site map showing the project's geographical location and surrounding work boundaries.

Project Objectives

The *San Antonio del Desierto DAC Sewer Extension Project* seeks to achieve the following objectives:

- To provide sewer sanitary collection service
- Abandonment of existing wastewater lagoons
- Improve the quality of water services to the community

CVIRWMP Project Locations San Antonio Del Desierto



-  Proposed Sewer Connection
-  Colorado River Aqueduct
-  Coachella and All American Canals
-  Whitewater River Stormwater Channel
-  Interstate Hwys.
-  Lakes
-  Colorado River Funding Area
-  Disadvantaged Communities

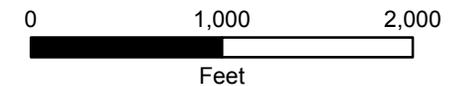




Table 3-23 provides an overview of the Coachella Valley IRWM Plan Objectives that are expected to be achieved through implementation of the *San Antonio del Desierto DAC Sewer Extension Project*.

Table 3-23: Contribution to IRWM Plan Objectives

Project	IRWM Objective													
	A	B	C	D	E	F	G	H	I	J	K	L	M	
San Antonio del Desierto DAC Sewer Extension Project	○			○	●	○	○				●		●	○

- = Directly helps achieve objective
- = Indirectly helps achieve objective

The *San Antonio del Desierto DAC Sewer Extension Project* will contribute towards achieving the following CVIRWM Plan Objectives:

Objective A – Provide reliable water supply: The program will help to provide a reliable water supply by connecting the St. Anthony Mobile Home Park to a municipal sewer system, thereby transferring wastewater to a water reclamation plant for future water reuse.

Objective D – Maximize local supply: This project indirectly maximizes local supplies by capturing wastewater effluent that is currently lost to the shallow aquifer, and ultimately the Salton Sea, for future recycled uses at CVWD’s WRP-4. Wastewater that is sent to WRP-4 is currently discharged to the Coachella Valley Stormwater Channel (CVSC) after undergoing secondary treatment. While these flows are not currently beneficially reused, CVWD intends to upgrade WRP-4 to tertiary treatment to produce recycled water for beneficial reuse. This will maximize local supply opportunities by providing additional flows for recycled water, which will alleviate groundwater pumping via source substitution.

Objective E – Protect groundwater quality: The St. Anthony Mobile Home Park utilizes an on-site wastewater facility that is inadequate, does not meet current minimum standards, and is in need of replacement. The presence of a high groundwater table and poor percolation rates in the vicinity can negatively impact the operation of the onsite wastewater lagoons. The elevated groundwater can cause the system to fail and significantly degrade the surrounding groundwater quality that is the mainstream use for irrigation purposes. The proposed project will connect to CVWD’s wastewater collection system and will protect public health, preserve valuable water resources, and diminish the possibility for groundwater contamination.

Objective F – Preserve and improve surface water quality: The existing on-site wastewater facilities consist of anaerobic wastewater lagoons. The majority of the existing on-site wastewater system is in immediate need of replacement and has a history of overflow, spills, and leaks. Existing groundwater levels are very close to ground surface and may adversely affect the subsurface flow of water from the lagoons to adjacent agricultural drains.

Objective G – Preserve local environment: This project will divert flows from onsite wastewater lagoons to the CVWD municipal water system. Therefore, the project will divert untreated wastewater from flowing into the Salton Sea or to the Torres-Martinez wetlands located adjacent to the Salton Sea. Wastewater from the project will be treated to tertiary levels and reused as recycled water, assuming that WRP-4 is upgraded to tertiary treatment by 2015. Therefore, the project will improve the quality of wastewater before it is discharged to the local environment.

Objective J – Maximize stakeholder involvement: *San Antonio del Desierto DAC Sewer Extension Project* is a community-driven project supported by CVWD. This constitutes a true testimony of



community involvement. The community has expressed serious interest in replacing the existing wastewater lagoons that have been adversely impacted by the high water table and poor percolation in the area for many years. This has resulted in the formulation of this project, which will ensure better living conditions and new opportunities for future generations.

Objective L – Address needs of DACs: Connection to the CVWD wastewater collection system will help a local DAC meet their water and sanitation needs by providing for expansion of the municipal wastewater collection system and providing means for connection to the collection system. Removal of the wastewater lagoon system will avoid any potential unsanitary conditions resulting from future system failures. Potential nitrate and pathogen contaminations of the shallow aquifer will be eliminated via abatement of the lagoons.

Objective M – Maintain affordability of water: Protecting groundwater quality indirectly helps maintain the affordability of water. Eliminating the potential for nitrate contamination in water supplies will help project proponents avoid costly mitigation measures.

Project Integration

The project will be the catalyst of new infrastructure resources that in turn, will create new opportunities for affordable housing and improved living conditions in the vicinity. The lack of basic infrastructure has been recognized to be one detrimental obstacle in improving the quality of life of many residents in the area. Other projects in development include the Riverside County Transportation Department Avenue 66 realignment project geared to improve traffic circulation in the vicinity.

Linkages and Synergies with Other Projects in the Proposal

Though not explicitly connected with other projects in this proposal, this project would provide necessary sanitary sewer service to a disadvantaged community. Several of the other projects – *Groundwater Quality Protection Program – Subarea D2* and *Torres-Martinez Avenue 64 Water Supply Connection Project* – both also serve the Region’s DACs by providing healthy and sanitary municipal water and wastewater services. The Coachella Valley IRWM Plan identifies the critical need to serve the Region’s DACs (IRWM Plan Objective L) and this funding application helps the Region to accomplish that goal.

Completed Work

- Preliminary Engineering Report
- Sewer Sanitation Collection System construction plans and exhibits
- Funding procurement with the U.S. Department of Agriculture to match the project
- Funding procurement with the State Water Boards to match the project

Existing Data and Studies

The following includes a list of data that have been collected and studies that have been performed that support the project site location, feasibility, and technical methods. These documents are also included as Appendix 3-4 to this attachment.

- County of Riverside Planning Department. 2011. CZ07738/CUP03645 – PC Staff Report: May 25, 2011. This report contains information, including the preliminary environmental documentation that was completed for the project. This report also clearly indicates that connection to the CVWD sewer system is a County of Riverside stipulation that must be met in order to secure a CUP for the project (Page 3 or 4, Finding No. 5).



- Gross, Elena Blank. N.D. *Market Study: the Unincorporated Community of Mecca*. This study is a comprehensive market study completed regarding the community of Mecca. This study clearly documents the need for affordable housing within the eastern Coachella Valley, and specifically with Mecca. This study also specifically notes that the St. Anthony Mobile Home Park project is an example of an innovative approach to effectively respond to the need for housing preservation to prevent potential displacement of families (Executive Summary and Conclusions).

II. Project Work

Row (a) Direct Project Administration Costs

Task 1: Project Administration

PUCDC is the lead entity in managing and administering the project. This task will involve administering the grant contract, tracking budgets, preparing invoices and quarterly reports, preparing project assessment and evaluation plans (PAEPs), and preparing final reports as required by DWR for IRWM contracting purposes. It is assumed that this work will be completed in-house by a Project Manager from PUCDC. PUCDC will also provide assistance in submitting engineering design, plans and cost estimates. Additionally, PUCDC will provide technical support in coordinating construction activities within the property boundary.

Task 1 Deliverables:

- Quarterly invoices and progress reports, including required deliverables
- Project Assessment and Evaluation Plan
- Project Completion Report

Task 2: Labor Compliance Program

Construction of the proposed sewer main extension and pump station are “public works projects” in accordance with the State Department of Industrial Relations guidelines. All construction activities will be in compliance with CVWD’s established Labor Compliance Program (LCP). No additional budget for administration of the LCP is included in this work plan.

Task 2 Deliverables:

As no specific work items for this task are included in this scope of work, deliverables are not applicable.

Task 3: Reporting

Reporting for the *San Antonio del Desierto DAC Sewer Extension Project* is included above in Task 1: Project Administration. With regards to reporting described in Task 1, PUCDC will also ensure that all of the data collected and analyzed to measure program performance (as described in Attachment 6) will be submitted to DWR and made available to the public and to the Region for future inclusion within the Data Management System as required in the Data Management Standard.

Task 3 Deliverables:

Deliverables associated with reporting are included under Task 1: Project Administration.



Table 3-24: Row (a) Direct Project Administration
San Antonio del Desierto DAC Sewer Extension Project

Activity or Deliverable	Schedule	Status	Completion of Task	
			Before Sept 2013	After Sept 2013
Task 1: Project Administration				
Track budgets, prepare invoices, compile backup documentation, and prepare quarterly reports	October 2013-December 2016	Not yet begun		X
Prepare and administer PAEP	October 2013-December 2013	Not yet begun		X
Prepare project completion report	July 2016-December 2016	Not yet begun		X
Coordination of construction plans and exhibits	October 2013-November 2014	Not yet begun		X

Row (b) Land Purchase/Easement

No easement acquisitions and/or right-of-ways will be required for project. The proposed lift station will be located on St Anthony’s property, and an easement will be granted to CVWD.

Land Purchase Easement Deliverables:

As no work related to a land purchase easement will be completed as part of the project, deliverables are not applicable.

Row (c) Planning/ Design/ Engineering/ Environmental Documentation

Task 4: Assessment and Evaluation

No assessment or conceptual studies will be prepared for the project.

Task 4 Deliverables:

As no work for this task will be completed as part of the project, deliverables are not applicable.

Task 5: Project Design

Currently, PUCDC is in progress to complete the Preliminary Engineering Report for the San Antonio del Desierto DAC Sewer Extension Project. PUCDC is also managing preparation of geotechnical investigations and final design for the sewer extension. That design work will be completed for the project prior to construction.

Task 5 Deliverables:

- Preliminary Engineering Report
- Geotechnical Investigations
- Final (100%) Design

Task 6: Environmental Documentation

Because the proposed project is less than one mile of pipeline, a CEQA Categorical Exemption is anticipated. PUCDC will work with CVWD to prepare and adopt the necessary CEQA findings. These costs are not included in the proposed budget.



Task 6 Deliverables:

As no work for this task will be completed as part of the project, deliverables are not applicable.

Task 7: Permitting

PUCDC, in collaboration with CVWD, will secure all necessary permits for construction of the project including encroachment permits with the County of Riverside. Preparation of permit applications is not included in this work plan.

**Table 3-25: Row (c) Planning/ Design/ Environmental Documentation
*San Antonio del Desierto DAC Sewer Extension Project***

Activity or Deliverable	Schedule	Status	Completion of Task	
			Before Sept 2013	After Sept 2013
Task 5: Project Design				
Preliminary Engineering Report	January 2013 – September 2013	In progress	X	
Geotechnical Investigations	October 2013– June 2014	Not yet begun		X
Final Design (100%)	July – November 2014	Not yet begun		X

Row (d) Construction/ Implementation

Task 8: Construction Contracting

Once final construction plans are approved, CVWD will be the lead agency in preparing bid documents to retain construction contractors. Construction contracting is not included in this work plan.

Task 9: Construction

The project proposes the installation of a gravity sewer pipeline, lift station, and a sewer force main pipeline that will collect wastewater from the St. Anthony Mobile Home Park. The project will provide sewer service to the residents and convey the wastewater to the CVWD WRP-4. Please note that there is a scheduled time lapse between the time that project design is complete and the time that project construction will begin. This ensures that there will be time to coordinate efforts between PUCDC, CVWD, and the construction contractor.

Subtask 9.1 Mobilization and Site Preparation:

This task will involve mobilization as necessary for pipeline installation. Mobilization includes engineering and construction staking, as well as mobilization and site preparation for the project area that will include the sewer force main, the sewer gravity pipeline, and the sewer lift station.

Subtask 9.2 Project Construction:

This task will include construction of the following facilities:

- 2,200 feet of 8-inch gravity sewer beginning at the St. Anthony Mobile Home Park and Lincoln Street, extending southerly to the intersection of Avenue 68, and connecting to the proposed lift station that will be located at the corner of Avenue 68 and Lincoln Street
- Sewer lift station located at the corner of Avenue 68 and Lincoln Street



- 5,000 feet of a 6-inch sewer force main from the proposed lift station at the intersection of Avenue 68 and Lincoln Street to CVWD’s existing 18-inch force main at the intersection of Avenue 66 and Lincoln Street
- Temporary building and site fencing

Subtask 9.3 Performance Testing and Demobilization:

This task will include performance testing of the new sewer line and lift station, along with payment of the CVWD connection fee for the mobile home park that is required to make the new sewer extension operational.

Task 9 Deliverables:

- Notice to Proceed for Construction Contractor
- Performance testing results

**Table 3-26: Row (d) Construction/ Implementation
San Antonio del Desierto DAC Sewer Extension Project**

Activity or Deliverable	Schedule	Status	Completion of Task	
			Before Sept 2013	After Sept 2013
Task 9: Construction				
<i>Subtask 9.1 Mobilization and Site Preparation</i>				
Mobilization	July - August 2015	Not yet begun		X
<i>Subtask 9.2 Project Construction</i>				
2,200 feet of 8-inch gravity sewer	September 2015 – May 2016	Not yet begun		X
Sewer lift station	September 2015 – May 2016	Not yet begun		X
5,000 feet of 6-inch sewer force main	September 2015 – May 2016	Not yet begun		X
<i>Subtask 9.3 Performance Testing and Demobilization</i>				
Performance testing and CVWD Connection Fee	June 2016	Not yet begun		X

Row (e) Environmental Compliance/ Mitigation/ Enhancement

Task 10: Environmental Compliance / Mitigation / Enhancement

No environmental mitigation or enhancement action or tasks are included in this work plan. However, as noted above under Task 6, PUCDC will collaborate with CVWD to prepare and adopt a Mitigated Negative Declaration in compliance with CEQA. Any environmental mitigation set forth in the Mitigated Negative Declaration will be implemented in accordance with CEQA.



F. Construction Administration

Task 11: Construction Administration

PUCDC, in collaboration with CVWD, will manage the construction contractor that is chosen for the project.

Table 3-27: Row (f) Construction Administration
San Antonio del Desierto DAC Sewer Extension Project

Activity or Deliverable	Schedule	Status	Completion of Task	
			Before Sept 2013	After Sept 2013
Task 11: Construction Administration				
Management of Construction Contractor	July 2015 – June 2016	Not yet begun		X



Project 5: Torres-Martinez Avenue 64 Water Supply Connection Project

I. Introduction

Project Sponsor

The Torres-Martinez Desert Cahuilla Indians (DCI) is the sponsor of the *Torres-Martinez Avenue 64 Water Supply Connection Project*.

Project Need

The Torres-Martinez Avenue 64 potable water system (PWS), which serves an economically disadvantaged tribal subdivision located along Avenue 64 (Avenue 64 Subdivision), is subject to power outages, water supply failures, and other issues that pose multiple health and safety hazards to the community and to the operators who run the system. These potential hazards are due to the documented failures with the existing system leading to: 1) loss of water supply for consumption, showers or flushing toilets, 2) insufficient back-up service which does not meet capacity needs and has also led to loss of chlorine residual in drinking water supply, 3) inoperable components such as the hydropneumatic tank and fire supply system, 4) safety and security risks from electrical hazards that could result in fatal consequences, and 5) potential water quality concerns related to perchlorate and chromium.

These risks and hazards are documented in the U.S. Environmental Protection Agency's (USEPA) Sanitary Survey Information (USEPA 2011a) and correspondence from the USEPA to the Torres-Martinez DCI (USEPA 2011b). In the letter, the USEPA notified Torres-Martinez DCI that the deficiencies in the water system and its management "pose a critical risk to human health". In this letter, Torres-Martinez DCI was given 120 days to respond with concrete actions to address the many deficiencies in the system or face a formal enforcement action. Additional information with regard to operations and maintenance issues associated with the existing PWS is summarized in the Preliminary Engineering Report produced by Indian Health Service (IHS) for the Torres Martinez DCI (IHS 2012a).

Project Purpose

The *Torres-Martinez Avenue 64 Water Supply Connection Project* would provide a safer and more reliable supply of water and require much less direct operations and maintenance from the Torres-Martinez DCI. Once implemented, this project will resolve the water outages and improve the health and safety issues for the residents and the operators of the system. This project will also restore fire protection to the Avenue 64 Subdivision, which has not been operable since 2004 (IHS 2012a).

This project will provide engineering services to design the extension of the existing CVWD regional water supply system and connect it to the existing Torres-Martinez Avenue 64 potable water distribution system. The existing Avenue 64 groundwater wells, storage tanks, and pressure stations would be physically disconnected from the water distribution system, and the existing distribution system would be permanently connected to the CVWD municipal water system.

Project Abstract

The *Torres-Martinez Avenue 64 Water Supply Connection Project* would provide funding to design and engineer the development of a new water supply for the Torres-Martinez Avenue 64 potable water system (PWS) located at the intersection of Avenue 64 and Monroe Street. This new supply source would be from the CVWD municipal water system through the construction of approximately 5,400 feet of 12-inch Ductile Iron (DI) water main along Monroe Street from an existing CVWD 24-inch DI water main at the intersection of Monroe Street and Avenue 62 to the Avenue 64 Subdivision. CVWD would own the 5,400-foot extension of 12-inch DI water main and the master water meter that would be connected at two



points to the existing Avenue 64 PWS. The Torres-Martinez Desert Cahuilla Indians (DCI) would own and maintain the 4-inch polyvinyl chloride (PVC) distribution system from the CVWD meter throughout the Avenue 64 Subdivision.

This new water main would improve the safety and reliability of the water supply and would connect at two points to PWS's existing water distribution system that currently serves the subdivision, one for the domestic water supply and one for fire protection service. The community water system that feeds this subdivision that includes 33 single occupancy homes with an estimated 100 people and a church that is owned and operated by the Torres- Martinez DCI.

The existing wells, pumping system, and storage tanks currently servicing the Avenue 64 PWS were evaluated through several studies and reported to be suffering from a lack of maintenance and upkeep. The conclusions in the Preliminary Engineering Report (PER) conducted by IHS determined that "upgrades to the existing system would be prohibitively expensive, or would only solve some of the system's many existing issues. In addition, the existing water source for the Tribal system would be permanently disconnected from the distribution system" (IHS 2012a). As such, the PER concludes that the most effective long-term solution to providing safe and reliable drinking water to the Avenue 64 Subdivision would be to connect the subdivision to the CVWD municipal system, as proposed in this Project.

CVWD would own the 5,400-foot extension of 12-inch DI water main and the master meter. The Tribe would own and maintain the 4-inch PVC distribution system from the master meter throughout the subdivision.

Many planning and assessment tasks are complete or ongoing, including biological and cultural/archaeological surveys, records searches, and aerial mapping of the project area. These tasks are being completed by funds from a USEPA Clean Water Act grant for a sewer project along the same proposed alignment (Monroe Street). The project will take place in two phases:

1. Phase I-Planning and Design: Most of the planning studies are complete or in progress. This application is for the design and environmental compliance tasks needed to complete Phase I.
2. Phase II-Construction: The design plans and specifications generated by Phase I will provide the basis for Phase II-Construction.

Project Partners

The Torres-Martinez DCI is the lead entity responsible for project administration and management. CVWD will be responsible for the engineering, design, construction, and inspection of the water main extension. CVWD will also review the design of the service connection and inspect the final connection during the construction phase. Indian Health Services (IHS) will lead the engineering design, construction inspection of system interconnections, and well disconnection. The USEPA has undertaken planning tasks as a Phase I and potential Phase II funding agency. The U.S. Department of Agriculture (USDA) is a potential Phase II-construction funding agency.

Project Timing and Phasing

Phase I involves the planning, engineering, and environmental compliance for the *Torres-Martinez Avenue 64 Water Supply Connection Project* and is currently underway. Completing Phase I will increase the likelihood of the potential funding agencies (USEPA and USDA) to fund the construction in Phase II.

Project Map

Figure 3-15 is a site map showing the project's geographical location and surrounding work boundaries.

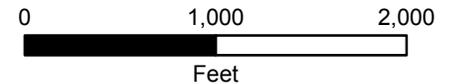
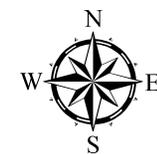
CVIRWMP Project Locations Torres-Martinez Ave 64



-  Connection to CVWD
-  Tribe Water Main
-  Colorado River Aqueduct
-  Coachella and All American Canals
-  Whitewater River Stormwater Channel
-  Interstate Hwys.
-  Lakes
-  Colorado River Funding Area
-  Disadvantaged Communities

Proposed 12" Ductile Iron Water Main

Existing 4" Tribe PVC Water Main





Project Objectives

The *Torres-Martinez Avenue 64 Water Supply Connection Project* seeks to achieve the following objectives:

- Phase I: Complete planning, design/engineering, and environmental tasks to prepare for construction of the CVWD-Avenue 64 Subdivision connection. This effort includes the biological and cultural/archaeological surveys/reports to satisfy NEPA/CEQA requirements, in order to be ready to proceed during the next round of funding from the USDA, USEPA, IRWM, and/or others.
- Phase II: Complete construction of interconnection to CVWD’s water main and disconnect the Ave 64 PWS distribution system from the current source, which is a local groundwater well.

Table 3-28 provides an overview of the Coachella Valley IRWM Plan Objectives that are expected to be achieved through implementation of the *Torres-Martinez Avenue 64 Water Supply Connection Project*.

Table 3-28: Contribution to IRWM Plan Objectives

Project	IRWM Objective												
	A	B	C	D	E	F	G	H	I	J	K	L	M
Torres-Martinez Water Extension Project	•	•								○	•	•	•

- = Directly helps achieve objective
- = Indirectly helps achieve objective

The *Torres-Martinez Avenue 64 Water Supply Connection Project* will contribute towards achieving the following CVIRWM Plan Objectives:

Objective A – Provide reliable water supply: This project will connect the Torres-Martinez Avenue 64 Subdivision to the current CVWD water distribution system, which will provide safe and reliable domestic water and fire suppression services to the community. The project will allow the Torres-Martinez DCI to disconnect their existing well system, which experiences frequent outages and poses a risk to human health and safety.

Objective B – Manage groundwater levels: This Project will allow the Torres-Martinez DCI to disconnect their current well system and eliminate local groundwater pumping in the community, which is located in the eastern Coachella Valley. Reduced local groundwater extraction in this portion of the Coachella Valley will help to manage the perched water aquifer.

Objective J – Maximize stakeholder involvement: By partnering with adjacent agencies and doing outreach to local residents, along with CVWD, this project will optimize stakeholder involvement in extension of municipal services to a disadvantaged tribal community.

Objective K – Address water-related needs of Tribes: This project is designed to address the critical drinking water supply needs of the Torres-Martinez DCI (a Native American Tribe), and provides reliable and safe drinking water directly to a tribal community located on tribal lands.

Objective L – Address water and sanitation needs of DACs: This project will provide for a more reliable and safer water source for a DAC. With the elimination of the existing groundwater wells, this will project will reduce the risks to human health and safety that are posed by the community’s current water system. By connecting to the CVWD potable water system, the project will also provide a long-term solution to addressing water-related needs of a DAC.



Objective M – Maintain affordability of water: Residents currently need a periodic provision of bottled water supplies for potable consumption during frequent outages in their current water supply system. This project will eliminate the need for costly bottled water provisions to the community. The project will also greatly reduce the operations and maintenance needs and costs associated with the existing onsite potable water system.

Integrated Elements of Projects:

The Torres-Martinez Avenue 64 Subdivision is a disadvantaged tribal community, for which the Coachella Valley IRWM Plan recommends outreach and partnership to address critical water supply and water quality needs. The 2010 *Coachella Valley Water Management Plan* notes that there are water quality concerns within private groundwater wells located in the eastern Coachella Valley, and specifically mentions that CVWD is working with the Torres-Martinez DCI on federal grants to expand the CVWD municipal water system to tribal lands (CVWD 2010).

Linkages and Synergies with Other Projects in the Proposal

Though not explicitly connected with other projects in this proposal, this program will provide high quality municipal water supply for a disadvantaged tribal community. Several of the other projects – *Groundwater Quality Protection Program – Subarea D2* and *San Antonio del Desierto DAC Sewer Extension Project* – both also serve the Region’s DACs by providing healthy and sanitary municipal water and wastewater services. The Coachella Valley IRWM Plan identifies the critical need to serve the Region’s tribes (IRWM Plan Objective K) and DACs (IRWM Plan Objective L) and this funding application helps the Region to accomplish that goal.

Completed Work

The following work has been completed for the *Torres-Martinez Avenue 64 Water Supply Connection Project*.

- Digitized aerial mapping of the project area has been completed, and is included as an attachment to the Preliminary Engineering Report (IHS 2012a)
- *Preliminary Engineering Report for the Torres Martinez DCI, CVWD Water Main Extension to Avenue 64 Housing Subdivision* complete by the Indian Health Service (IHS 2012a)
- Biological assessment survey completed and report published for proposed project area and alignments

Existing Data and Studies

The following includes a list of data that have been collected and studies that have been performed that support the project site location, feasibility, and technical methods. These documents are also included as Appendix 3-5 to this attachment.

- Indian Health Services (IHS). 2012a. *Preliminary Engineering Report for the Torres Martinez DCI, CVWD Water Main Extension to Avenue 64 Housing Subdivision*. This report contains extensive documentation to support the project, and also includes a multitude of appendices from other agencies such as the EPA and the CVWD that demonstrate the site location, feasibility, and preferred alternative for the project.
- Indian Health Services (IHS). 2012b. *Preliminary Engineering Report for the Torres Martinez DCI, CVWD Sewer Main Extension to Avenue 64 Housing Subdivision*. This report includes information regarding a parallel sewer connection project, which would connect the Avenue 64 Subdivision to the CVWD municipal sewer system.



- Coachella Valley Water District (CVWD). 2010. *Coachella Valley WMP 2010 Update*. This comprehensive water management plan conducted by CVWD mentions that CVWD is working with the Torres-Martinez DCI to connect tribal lands to the CVWD potable water system (see page 6-39).
- L&L Environmental, Inc. 2012. Biological Assessment for Plants and Animals, Botany, and Wildlife Report for the Torres Martinez Indian Reservation Sewer and Water Line Improvement Project. This report is a biological assessment that was completed for the project area, and provides information regarding on-site biological resources, which will provide information for the environmental planning and design work completed for the project.

II. Project Work

Row (a) Direct Project Administration Costs

Task 1: Project Administration

Project administration activities for the project will include various accounting and other administrative activities that will occur throughout the duration of the project. Such activities include but are not limited to: coordination of contracts, memorandums of understanding (MOUs), review and reimbursement of contractor payment applications, payroll review for prevailing wages requirements, change order review and approval, regular meetings with contractor, engineer, and funding agencies, and quarterly invoicing and reporting requirements. Further, administrative activities included within this task include those required to complete DWR-required administration such as completion of a Project Assessment and Evaluation Plan and a Project Completion Report. Torres Martinez DCI staff will be responsible for project management and oversight.

Task 1 Deliverables:

- Fully executed MOUs between project partners
- Quarterly invoices and progress reports, including required deliverables
- Project Assessment and Evaluation Plan
- Project Completion Report

Task 2: Labor Compliance Program

This project includes design, /engineering, and environmental services only. The project does not include construction of a public works project and therefore, does not require establishment of a Labor Compliance Program (LCP) at this time. When Phase II-construction is initiated, however, Torres-Martinez DCI and CVWD are committed to implementing an LCP and ensuring the construction contractor applies prevailing wage rates.

Task 2 Deliverables:

As no work for this task will be completed as part of the project, deliverables are not applicable.

Task 3: Reporting

Quarterly and final reports required for the DWR grant contract will be prepared by Torres-Martinez DCI. All reporting costs are included under Task 1: Project Administration. With regards to reporting described in Task 1, Torres-Martinez DCI will also ensure that all of the data collected and analyzed to measure program performance (as described in Attachment 6) will be submitted to DWR and made available to the public and to the Region for future inclusion within the Data Management System as required in the Data Management Standard.



Task 3 Deliverables:

Deliverables associated with reporting are included under Task 1: Project Administration.

**Table 3-29: Row (a) Direct Project Administration
Torres-Martinez Avenue 64 Water Supply Connection Project**

Activity or Deliverable	Schedule	Status	Completion of Task	
			Before Sept 2013	After Sept 2013
Task 1: Project Administration				
Tribal Administration to Contract Engineering Services and CVWD Construction	October 2013 - May 2015	Not yet begun		X
Tribal Administration for Planning Tasks	April 2012 – May 2015	Ongoing		X
IHS Project Technical Support for Planning Tasks	April 2012 – May 2015	Ongoing		X

Row (b) Land Purchase/ Easement

No easement acquisitions and/or right-of-ways will be required for the project. It is anticipated that all proposed work will be within the Bureau of Indian Affairs (BIA) right-of-way along Monroe Street and on Torres-Martinez DCI tribal land. It will be necessary to obtain a BIA easement permit for Phase II construction activities, but no land purchase easements are anticipated.

Land Purchase Easement Deliverables:

As no work related to a land purchase easement will be completed as part of the project, deliverables are not applicable.

Row (c) Planning/ Design/ Engineering/ Environmental Documentation

Task 4: Assessment and Evaluation

Two planning tasks for this project are complete, including aerial mapping (via USEPA planning funds), and the PER (prepared by IHS). Another planning task to create geotechnical studies is expected to begin in September of 2013, and will be conducted via USEPA planning funds for a proposed sewer connection along the same alignment along Monroe Street. Torres-Martinez DCI is working with the funding agencies to ensure that all assessment and evaluation activities will be completed in a timely manner so that Phase II engineering and environmental tasks can begin promptly.

Task 4 Deliverables:

- Final aerial maps of the project area
- Final Preliminary Engineering Report from IHS
- Final Geotechnical Study

Task 5: Project Design

Project design will require solicitation of engineering consultants, review of their qualifications and proposals, and selection and contracting. The selected design consultant will be responsible for delivery of 30, 60, 90, and 100% design plans and specifications for construction. Design plans and specifications must adhere to CVWD design requirements and therefore will require review and approval by CVWD.



Task 5 Deliverables:

- 30% Design Plans
- 60% Design Plans
- 90% Design Plans and Specifications
- 100% Design Plans and Specifications
- Final Design Plans – these will be provided in the event that CVWD modifies the 100% Design Plans and Specifications

Task 6: Environmental Documentation

Torres-Martinez DCI is currently in the process of completing the Biological and Cultural/Archaeological surveys and reports, records research, consultation with the State Historic Preservation Office, impact/mitigation determinations, and other tasks to ensure that the project will be in compliance with applicable provisions of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). Given that the Torres-Martinez DCI is a Native American tribe, CVWD will serve as the lead agency for CEQA-related requirements.

Task 6 Deliverables:

- Final CEQA Documentation – including applicable surveys and reports such as those pertaining to biological and cultural resources, and a final mitigation and monitoring plan
- Final NEPA Documentation– including applicable surveys and reports such as those pertaining to biological and cultural resources, and a final mitigation and monitoring plan

Task 7: Permitting

Torres-Martinez DCI will obtain a BIA encroachment permit to construct the project within the BIA right-of-way located along Monroe Street.

Task 7 Deliverables:

- Final BIA Encroachment Permit

**Table 3-30: Row (c) Planning/ Design/ Environmental Documentation
Torres-Martinez Avenue 64 Water Supply Connection Project**

Activity or Deliverable	Schedule	Status	Completion of Task	
			Before Sept 2013	After Sept 2013
Task 4: Assessment and Evaluation				
Aerial Mapping	June 2012 – December 2012	Completed	X	
Preliminary Engineering Report	January 2012 - June 2012	Completed	X	
Geotechnical Studies	Sept 2013 – Sept 2014	Not yet begun		X
Task 5: Project Design				
30% Design Plans	September 2013 – January 2014	Not yet begun		X
60% Design Plans	January 2014 – March 2014	Not yet begun		X



Activity or Deliverable	Schedule	Status	Completion of Task	
			Before Sept 2013	After Sept 2013
90% Design Plans and Specifications	March 2014 – May 2014	Not yet begun		X
100% Design Plans and Specifications	May 2014 – August 2014	Not yet begun		X
Review of Plans and Specifications by CVWD	September 2013 – September 2014	Not yet begun		X
Final Design Plans and Specifications	September 2013 – September 2014	Not yet begun		X
Task 6: Environmental Documentation				
Biological Study/Report	April 2012– July 2012	Completed	X	
Cultural/Archeological Study/Report	June 2012 – June 2013	Ongoing	X	
NEPA/CEQA Documentation	May 2013 – December 2013	Not yet begun		X
Cultural/Archeological Mitigation Planning	April 2012 – September 2014	Not yet begun		X
Task 7: Permitting				
BIA Road Permit Application Process and Fee	Dec 2013 – June 2014	Not yet begun		X

Row (d) Construction/ Implementation

Task 8: Construction Contracting

No construction contracting is included in this work plan therefore, deliverables are not applicable.

Task 9: Construction

No construction tasks are included in this work plan therefore, deliverables are not applicable.

Row (e) Environmental Compliance/ Mitigation/ Enhancement

Task 10: Environmental Compliance / Mitigation / Enhancement

No environmental mitigation or enhancement action or tasks are included in this work plan therefore, deliverables are not applicable.

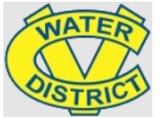
Row (f) Construction Administration

Task 11: Construction Administration

No construction management is included in this work plan therefore, deliverables are not applicable.

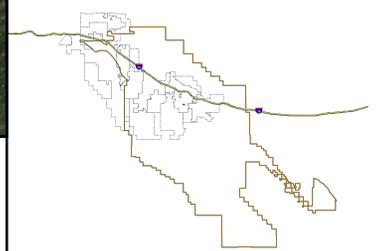
**Appendix 3-1: Supporting Documents for
*Non-Potable Water Use Expansion Program***

Lateral 117.8 - Indian Palms Entrance



- Riverside Parcels
- Imperial Parcels
- AllAnno
- Meter
- Fitting
- CustomerDeliveryPoint
- Canal Water Availability
- LinesForCustomerDeliveryPoints
- LeaderLine
- Lateral
- EvacuationChannel
- EasementLine
- CVWD Canal
- Street Centerlines
- Interstate
- Canal Mile Posts - Check Structure
- Canal Lateral 97.1 - Junctions
- Canal Lateral 97.1 - Pipelines
- Mid Valley Pipeline
- ID 1 Boundaries
- Coachella Valley City Limits
- CVWD Boundary
- Quarter Sections

210 ft



Coachella Valley Water District uses the most current and complete data available. However, GIS data and product accuracy may vary. GIS data and products may be developed from sources of differing accuracy, accurate only at certain scales, based on modeling or interpretation, incomplete while being created or revised, etc. Coachella Valley Water District reserves the right to correct, update, modify, or replace, GIS products without notification. Coachella Valley Water District cannot assure the accuracy, completeness, reliability, or suitability of this information for any particular purpose. Using GIS data for purposes other than those for which they were created may yield inaccurate or misleading results. The recipient may neither assert any proprietary rights to this information nor represent it to anyone as other than District-produced information. Coachella Valley Water District shall not be liable for any activity involving this information with respect to lost profits, lost savings or any other consequential damages.

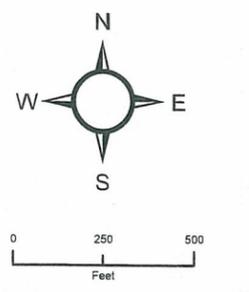




Legend

- Mid_Valley_Pipeline_Alignment
- Meter/Connecting Point
- Alternative 1 Desert Horizon 24" Pipeline
- Alternative 2 Desert Horizon 24" Pipeline
- CVWD 24" Pipe
- Desert Horizon 24" Pipe

	CVWD Cost	Golf Course Cost
Alternative 1 Meter	\$152,202	
Alternative 1 24" Pipeline		\$402,600
Alternative 1 CVWD Eng. Costs	\$58,800	
Alternative 1 Total Costs	\$211,002	\$402,600
Alternative 2 Meter	\$152,202	
Alternative 2 24" Pipeline		\$367,950
Alternative 2 CVWD Eng. Costs	\$58,800	
Alternative 2 Total Cost	\$211,002	\$367,950
Alternative 3 Meter & New Connection	\$290,600	
Alternative 3 24" Pipeline		\$194,700
Alternative 3 CVWD Eng. Costs	\$68,800	
Alternative 3 Total Cost	\$359,400	\$194,700



Non-Potable Water Connections for Desert Horizons Golf Course



Cost Estimate for Desert Horizons NPW Meter Connection-Alternative 1

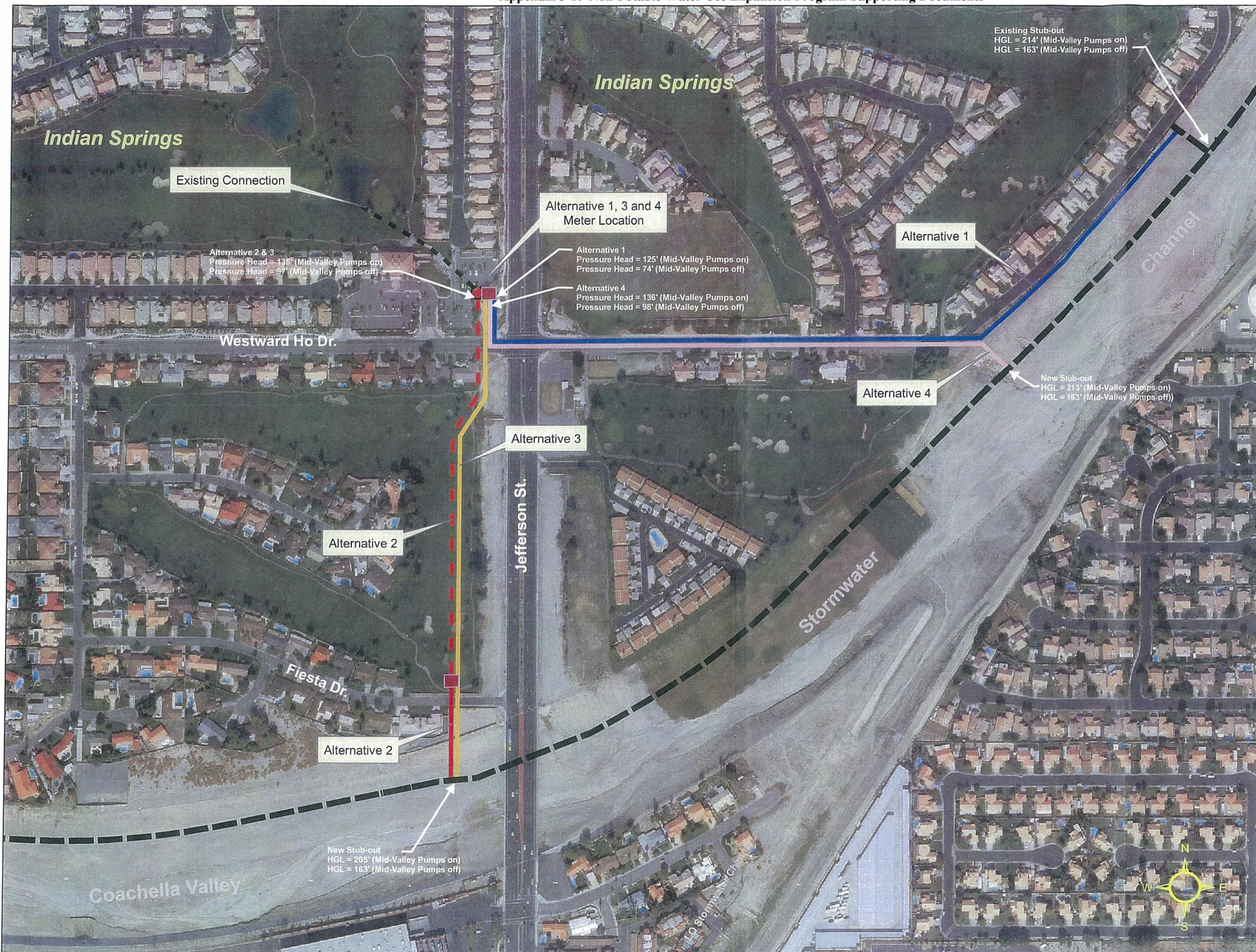
Item	Material	Quantity	Unit	Unit price	Cost
CVWD Item	CVWD engineering cost	1	LS	\$ 58,800.00	\$ 58,800.00
	Meter box	1	EA	\$ 48,000.00	\$ 48,000.00
	24" D. I. P. pipe within channel	300	LF	\$ 200.00	\$ 60,000.00
	Contingency 10%				\$ 16,680.00
	A & G 15%				\$ 27,522.00
CVWD Total Cost					\$ 211,002.00
Golf Course Item	24" PVC within grass area	1700	LF	\$ 90.00	\$ 153,000.00
	24" PVC within pavement	1650	LF	\$ 120.00	\$ 198,000.00
	Water level control over pond	1	EA	\$ 15,000.00	\$ 15,000.00
	Contingency 10%				\$ 36,600.00
	A & G 15%				\$ 40,260.00
Golf Course Total Cost					\$ 402,600.00
Total Project Cost					\$ 613,602.00

Cost Estimate for Desert Horizons NPW Meter Connection-Alternative 2

Item	Material	Quantity	Unit	Unit price	Cost
CVWD Item	CVWD Engineering cost	1	LS	\$ 58,800.00	\$ 58,800.00
	Meter box	1	EA	\$ 48,000.00	\$ 48,000.00
	24" D.I.P. pipeline	300	LF	\$ 200.00	\$ 60,000.00
	Contingency 10%				\$ 16,680.00
	A & G 15%				\$ 27,522.00
CVWD Total Cost					\$ 211,002.00
Golf Course Item	24" PVC within grass area	3550	LF	\$ 90.00	\$ 319,500.00
	Water level control over pond	1	EA	\$ 15,000.00	\$ 15,000.00
	Contingency 15%				\$ 33,450.00
	A & G 15%				\$ 55,192.50
Golf Course Total Cost					\$ 367,950.00
Total Project Cost					\$ 578,952.00

Cost Estimate for Desert Horizons NPW Meter Connection-Alternative 3

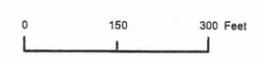
Item	Material	Quantity	Unit	Unit price	Cost
CVWD Item	Meter box	1	EA	\$ 48,000.00	\$ 48,000.00
	CVWD Engineering cost	1	LS	\$ 68,800.00	\$ 68,800.00
	New 24" stub out from 54" Steel pipe	1	EA	\$ 45,000.00	\$ 45,000.00
	24" D.I.P. within the channel	400	LF	\$ 200.00	\$ 80,000.00
	24" D.I.P. crossing Fred Waring Dr.	250	LF	\$ 250.00	\$ 62,500.00
	Replace pavement Fred Waring DR.	1	LS	\$ 7,500.00	\$ 7,500.00
	Traffic control and stripping	1	LS	\$ 15,000.00	\$ 15,000.00
	Contingency 10%				\$ 32,680.00
	A&G 15%				\$ 53,922.00
CVWD Total Cost					\$ 359,480.00
Golf Course Item	24" PVC within grass	1800	LF	\$ 90.00	\$ 162,000.00
	Water level control over pond	1	EA	\$ 15,000.00	\$ 15,000.00
	Contingency 10%				\$ 17,700.00
	A&G 15%				\$ 29,205.00
Golf Course Total Cost					\$ 194,700.00
Total Project Cost					\$ 554,180.00



Legend

- Meter/Connecting Point
- Mid_Valley_Pipeline_Alignment
- Alternative 1 CVWD Pipeline
- Alternative 2 Golf Course Pipeline
- Alternative 2 CVWD Pipeline
- Alternative 3 CVWD 18" Pipeline
- Alternative 4 CVWD Pipeline

	CVWD Cost	Golf Course Cost
Alternative 1 18" Pipeline and Meter	\$540,226	
Alternative 1 On-site Connection		\$69,575
Alternative 1 CVWD Eng. Costs	\$85,000	
Alternative 1 Total Cost	\$625,226	\$69,575
Alternative 2 18" Pipeline and Meter	\$247,144	
Alternative 2 18" Pipeline and Meter		\$239,401
Alternative 2 CVWD Eng. Costs	\$68,600	
Alternative 2 Total Cost	\$315,744	\$239,401
Alternative 3 18" Pipeline and Meter	\$393,654	
Alternative 3 On-site Connection		\$69,575
Alternative 3 CVWD Eng. Costs	\$68,600	
Alternative 3 Total Cost	\$462,254	\$69,575
Alternative 4 18" Pipeline and Meter	\$547,898	
Alternative 4 On-Site Connection		\$69,575
Alternative 4 CVWD Eng. Costs	\$68,600	
Alternative 4 Total Cost	\$616,498	\$69,575



Non-Potable Water Connections for Indian Springs Golf Course



Cost Estimate for Indian Springs Cannal Water Delivery Water Meters-Alternative 1

Item	Material	Quantity	Unit	Unit price	Cost
CVWD item	CVWD engineering cost	1	LS	\$ 85,000.00	\$ 85,000.00
	Meter box	1	EA	\$ 48,000.00	\$ 48,000.00
	18" D.I.P along channel levee	1100	LF	\$ 95.00	\$ 104,500.00
	18" D.I.P along Westward Ho. Dr.	1450	LF	\$ 135.00	\$ 195,750.00
	18" D.I.P. crossing Jefferson	170	LF	\$ 300.00	\$ 51,000.00
	Traffic Control and striping along Westward Ho. Dr.	1	LS	\$ 11,000.00	\$ 11,000.00
	Contingency 10%				\$ 48,425.00
	A & G 15%				\$ 81,551.25
CVWD Total Cost					\$ 625,226.00
Golf Course Item	Connetcion to CVWD pipe	1	LS	\$ 40,000.00	\$ 40,000.00
	Water level control over pond	1	LS	\$ 15,000.00	\$ 15,000.00
	Contingency 10%				\$ 5,500.00
	A & G 15%				\$ 9,075.00
Golf Course total					\$ 69,575.00
Total Project Cost					\$ 694,801.00

Alternative 1 : CVWD only provide pipe from the existing 24" stub out to well site

Cost Estimate for Indian Springs Cannal Water Delivery Water Meters-Alternative 2

Item	Material	Quantity	Unit	Unit price	Cost
CVWD Item	CVWD engineering cost	1	LS	\$ 68,600.00	\$ 68,600.00
	Water meter box	1	EA	\$ 48,000.00	\$ 48,000.00
	New 18" stun out from 54" steel pipe	1	EA	\$ 45,000.00	\$ 45,000.00
	18" D.I.P. within channel	200	LF	\$ 200.00	\$ 40,000.00
	18" D.I.P. ouside channel	200	LF	\$ 135.00	\$ 27,000.00
	Remove and replace concrete panel	20	LF	\$ 950.00	\$ 19,000.00
	Traffic Control and striping at Fiesta Dr.	1	LS		\$ 2,000.00
	Contigency 10%				\$ 24,960.00
	A&G 15%				\$ 41,184.00
CVWD Total Cost					\$ 315,744.00
Golf Course Item	connection to CVWD pipe	1	LS	\$ 40,000.00	\$ 40,000.00
	18" PVC within golf course	1000	LF	\$ 85.00	\$ 85,000.00
	18" PVC from the end of golf couse to Well site	350	LF	\$ 135.00	\$ 47,250.00
	Water level cobtrol over pond	1	EA	\$ 15,000.00	\$ 15,000.00
	Traffic Control and striping				\$ 2,000.00
	Contigency 10%				\$ 18,925.00
	A&G 15%				\$ 31,226.25
Golf Course total					\$ 239,401.25
Total Project Cost					\$ 555,145.25

Cost Estimate for Indian Springs Cannal Water Delivery Water Meters-Alternative 3

Item	Material	Quantity	Unit	Unit price	Cost
CVWD Item	Engineering cost	1	LS	\$ 68,600.00	\$ 68,600.00
	Meter vault box	1	EA	\$ 48,000.00	\$ 48,000.00
	New stub out from 54" Middel valley pipeline	1	EA	\$ 45,000.00	\$ 45,000.00
	18"D.I.P. within channel	200	LF	\$ 200.00	\$ 40,000.00
	18" D.I.P. under pavement	500	LF	\$ 135.00	\$ 67,500.00
	18" D.I.P. within golf course grass	1000	LF	\$ 85.00	\$ 85,000.00
	Remove and replace pavement at Fiesta and Westward Ho. Dr.	1	LS	\$ 7,500.00	\$ 7,500.00
	Traffic Control and striping at Fiesta Dr.	1	LS	\$ 2,000.00	\$ 2,000.00
	Traffic Control and striping at Westward Ho. Dr.	1	LS	\$ 2,000.00	\$ 2,000.00
	Contingency 10%				\$ 36,360.00
	A&G 15%				\$ 60,294.00
CVWD Total Cost					\$ 462,254.00
Golf Course Item	Connection to CVWD pipe	1	LS	\$ 40,000.00	\$ 40,000.00
	water level control over pond	1	EA	\$ 15,000.00	\$ 15,000.00
	Contingency 10%				\$ 5,500.00
	A&G 15%				\$ 9,075.00
Golf Course total					\$ 69,575.00
Total Project Cost					\$ 531,829.00

Cost Estimate for Indian Spring Cannal Water Delivery Water Meters-Alternative 4

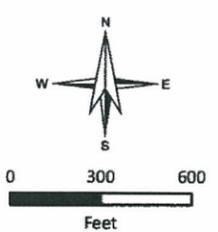
Item	Material	Quantity	Unit	Unit price	Cost
CVWD Item	CVWD engineering cost	1	LS	\$ 68,600.00	\$ 68,600.00
	Meter box	1	EA	\$ 48,000.00	\$ 48,000.00
	New Stub out from 54" MVP	1	LS	\$ 45,000.00	\$ 45,000.00
	18" D.I.P. within channel	250	LF	\$ 200.00	\$ 50,000.00
	Remove and replace concrete panel	20	LF	\$ 950.00	\$ 19,000.00
	18" D.I.P. along Westward Ho. Dr.	1450	LF	\$ 135.00	\$ 195,750.00
	18" D.I.P. crossing Jefferson	170	LF	\$ 300.00	\$ 51,000.00
	Traffic Control and striping along Westward Ho. Dr.	1	LS	\$ 11,000.00	\$ 11,000.00
	Contingency 10%				\$ 47,735.00
	A & G 15%				\$ 80,412.75
CVWD Total Cost					\$ 616,497.75
Golf Course Item	Connection to CVWD pipe	1	LS	\$ 40,000.00	\$ 40,000.00
	Water level control over pond	1	LS	\$ 15,000.00	\$ 15,000.00
	Contingency 10%				\$ 5,500.00
	A & G 15%				\$ 9,075.00
Golf Course total					\$ 69,575.00
Total Project Cost					\$ 686,072.75

Alternative 4 : CVWD provide new stub out close to Westward Ho. Dr.

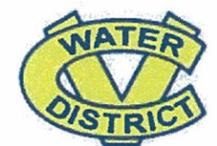


Legend

- 24" Low Pressure Nonpotable Water
- 24" High Pressure Nonpotable Water
- Lakes Country Club



**Non-Potable Water Connection
Lakes Country Club**



File Name: Lakes Country Club Non Potable Water Connectn. mxd
File Location: J:\ENGCAD\GIS\Projects\Non Potable Water Lakes\CM.dwg
Date Updated: Friday, August 10, 2012 @ 1:15:32 PM
Department: CVWD Engineering - GIS/CAD

Appendix 3-1: Non-Potable Water Use Expansion Program Supporting Documents

Cost Estimate for The Lakes Country Club

Item	Material	Quantity	Unit	Unit price	Cost
CVWD Item	CVWD Field Survey	1	LS	\$ 3,500.00	\$ 3,500.00
	CVWD Engineering Design	300	Hr	\$ 50.00	\$ 15,000.00
	CVWD Construction Inspection	100	hr	\$ 50.00	\$ 5,000.00
	CVWD Soil Report	1	LS	\$ 9,000.00	\$ 9,000.00
	Install 12" PVC	1700	LF	\$ 225.00	\$ 382,500.00
	Install Meter box (6'x8' concrete vault, two 10" plug valve, Krohne mag meter, telemetry)	3	EA	\$ 35,000.00	\$ 105,000.00
	Power Supply	3	LS	\$ 10,000.00	\$ 30,000.00
	Install 2" Air Release Valve	1	EA	\$ 2,900.00	\$ 2,900.00
	Contingency 10%				\$ 55,290.00
	CVWD Total Cost				
Golf Course Item	Install 12" PVC (within golf course area)	400	LF	\$ 185.00	\$ 74,000.00
	Install 12" PVC within pavement	500	LF	\$ 225.00	\$ 112,500.00
	Install 2" Air Release Valve	1	EA	\$ 2,900.00	\$ 2,900.00
	Install 6'x8' Concrete Vault	3	EA	\$ 5,500.00	\$ 16,500.00
	Install Automated Water Level Control Valve	3	EA	\$ 5,500.00	\$ 16,500.00
	Floater and Telemetry	3	LS	\$ 7,500.00	\$ 22,500.00
	Power Supply	3	LS	\$ 10,000.00	\$ 30,000.00
	Contingency 10%				\$ 27,490.00
Golf Course Total Cost					\$ 302,390.00
Total Project Cost					\$ 910,580.00

Project Summary

<u>Project Title:</u>	
<u>Project ID Number:</u>	
<u>Project Description & Justification:</u>	
Ongoing Project District Forces	Discretionary Non-discretionary Return on Investment Y N
<u>Current Project Budget</u>	

Estimated Project Schedule and Funding Request

	Fiscal Year	Cost
	Prior Total Actuals	
Design		
Construction		
	Total Project Cost	

Proposed Funding Source

Estimated Annual Impact on Operating Costs

	Cost	Comments
<u>Labor, Materials & Equipment</u>		
<u>Utilities</u>		
<u>Other</u>		
<u>Total</u>		

Non-Financial Impacts:

PREPARED FOR
COACHELLA VALLEY
WATER DISTRICT

Coachella Valley Water Management Plan Update

DRAFT REPORT



December 2010



MWH[®]

BUILDING A BETTER WORLD



Water Consult
Engineering and Planning Consultants

COACHELLA VALLEY WATER MANAGEMENT PLAN 2010 UPDATE

Draft Report

Prepared by:

Coachella Valley Water District

**P.O. Box 1058
Coachella, California 92236
(760) 398-2651**

**Steve Robbins
General Manager-Chief Engineer**

**Patti Reyes
Planning and Special Program Manager**

December, 2010

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Section 6 - Management Plan Elements

delivery operation at Whitewater where Metropolitan stores surplus water for future exchange with CVWD and DWA. This program has allowed the Valley to benefit from higher groundwater levels while water is stored and allowed Metropolitan to essentially discontinue Exchange water deliveries during dry periods, drawing upon its stored water. CVWD and DWA also purchase and store available surplus water for groundwater storage.

With the increased variability of SWP deliveries and uncertainty regarding the QSA, increased emphasis will be placed on conjunctive use. Since the Valley has a large groundwater basin, it can provide groundwater storage opportunities for other water agencies in the State. As part of the QSA, CVWD and IID have signed an agreement that allows IID to store surplus Colorado River water in the Coachella Valley. Under the agreement, CVWD would store water for IID subject to availability of storage space, delivery and recharge capacity and the prior storage rights of CVWD, DWA and Metropolitan. Stored water would incur a 5 percent recharge loss and a 5 percent annual storage loss. IID may also request CVWD to investigate and construct additional locations for direct or in-lieu recharge facilities. CVWD would return stored water to IID by reducing its consumptive use of Colorado River water. This could be accomplished by temporarily reducing or eliminating groundwater recharge. If reduced recharge were not sufficient to produce the required delivery reduction, CVWD or its customers could pump groundwater and reduce Colorado River water deliveries to source substitution projects. This program would benefit Coachella Valley by providing higher levels of groundwater storage while IID water is stored in the Valley.

The 2002 WMP did not identify specific conjunctive use projects, but instead recommended that flexibility be provided for conjunctive use. For the 2010 WMP Update, it is recommended that recharge facilities have sufficient capacity to allow capture of surplus water deliveries during future wet periods. This could be accomplished by providing additional recharge basins or by changing the operations of existing facilities to recharge water on a more continuous basis. The ability to recharge additional water may be limited by water delivery system capacity and the need to meet existing customers' demands.

In addition to providing sufficient recharge capacity, additional pumping capacity may be required to maximize the potential for conjunctive use. Under the Advanced Delivery and Exchange Agreements, the mechanism for returning stored water to entities outside the basin is through a reduction in SWP deliveries. If stored water is to be returned through reductions in Canal water deliveries, then deliveries for recharge would need to be reduced during the payback period. If recharge reductions are insufficient, then reductions in direct deliveries would need to be offset through increased groundwater pumping.

6.5 SOURCE SUBSTITUTION

Source substitution is the delivery of an alternate source of water to users that currently pump groundwater. The substitution of an alternate water source reduces groundwater extraction and allows the groundwater to remain in storage, thus reducing overdraft. Source substitution projects include:

- Conversion of existing and future golf courses in the West Valley from groundwater to recycled water

Section 6- Management Plan Elements

- Conversion of existing and future golf courses in the East Valley from groundwater to Colorado River water
- Conversion of existing and future golf courses in the West Valley from groundwater to Colorado River water via the Mid-Valley Pipeline
- Conversion of agricultural irrigation from groundwater to Colorado River water, primarily in the Oasis area
- Conversion of urban use from groundwater to treated Colorado River water in the East Valley
- Conversion of outdoor urban use to non-potable water including Colorado River water or recycled water in the East Valley

The following discussion of source substitution projects is presented by water source and by location within the Valley.

6.5.1 Recycled Water Uses

Recycled water is a significant potential local resource that could be used to help reduce overdraft. Wastewater that has been highly treated and disinfected can be reused for landscape irrigation and other purposes; treated wastewater is not suitable for potable use. Recycled wastewater has historically been used for irrigation of golf courses and urban landscaping in the Coachella Valley. Future recycled water uses could also include indirect potable reuse (IPR), which is the planned use of highly treated wastewater to directly augment water supplies via direct or indirect groundwater recharge, or blending with other potable sources.

6.5.1.1 Non-potable Uses

The principal non-potable uses for recycled water in the Coachella Valley are:

- Agricultural irrigation
- Golf course irrigation
- Urban landscape irrigation

Each of these recycled water uses could be implemented through: 1) direct blending with Coachella Canal water and delivery through the existing Canal water distribution system or the MVP system, 2) construction of an isolated distribution system that delivers recycled water only, 3) expansion of existing dedicated recycled water systems to serve new customers, and 4) a combination of these options. Each approach has advantages and disadvantages.

The first option has a significant potential cost advantage in that the distribution system is in place; little additional capital expenditures would be needed to deliver recycled water to a wide range of non-potable water users. Recycled water (even blended with Canal water) may not be acceptable to certain agricultural users; however, the California Department of Public Health (DPH) regulations allow the use of tertiary treated municipal effluent to irrigate “food crops, including all edible root crops, where the recycled water comes into contact with the edible portion of the crop” (CCR Title 22, 2010). However, the introduction of recycled water into the Canal system could pose significant permitting issues for the future potable use of Canal water.

Section 6 - Management Plan Elements

This may require isolating portions of the system that receive recycled water from those that would ultimately deliver water to urban water treatment facilities.

The second option would avoid the issues created by serving a blend of recycled and Canal water by operating a dedicated recycled delivery system. However, this option is most feasible where the suitable users are located relatively near the recycled water source. It is also difficult to balance demand and supply with this type of system because irrigation needs fluctuate seasonally.

The third option is partially in place. Existing dedicated recycled water systems have been constructed near each of the West Valley wastewater treatment facilities. Expansion of these systems makes sense when the users can be served recycled water from a cost-effective extension.

The fourth option may be the most viable approach in the East Valley where agriculture is expected to transition to urban land uses. Here, the existing Canal water distribution system can serve Colorado River water to most users. This also allows the system to convey water to future potable water treatment facilities. New non-potable water systems could be designed to use both Canal and recycled water where appropriate. Portions of the Canal distribution system located near the recycled water sources that can be isolated could be used to deliver a blend of water to non-potable customers.

6.5.1.2 Indirect Potable Reuse

An additional recycled water use in the East Valley is indirect potable reuse (IPR). IPR is the planned use of highly treated wastewater to directly augment water supplies. IPR is likely to become an important element of water resources development in southern California due to the limitations on imported water supplies. Orange County Water District and West Basin Municipal Water District have been pioneers in the development of IPR for injection at the coastal seawater intrusion barriers. Several other agencies in southern California including Metropolitan, Los Angeles County Sanitation Districts, Water Replenishment District of Southern California, Upper San Gabriel Valley Municipal Water District, Eastern Municipal Water District and the City of San Diego are investigating IPR for either groundwater replenishment through surface spreading and/or injection prior to extraction or blending with surface water supplies prior to diversion for potable use.

In all cases, multiple barriers are provided to protect the safety of the water supply. Most commonly, membrane treatment processes (microfiltration/nanofiltration and reverse osmosis) followed by ultraviolet light and hydrogen peroxide addition are being used or investigated to meet the stringent public health requirements established by the State of California DPH and the Regional Boards. In addition, strict source control programs prevent the introduction of harmful pollutants to the wastewater supply coupled with comprehensive monitoring and blending with natural and imported water supplies. The cost for IPR is high due to the extensive treatment requirements with capital costs in the range of \$4.50 to \$6.50 per gallon of plant capacity. Including conveyance and operations/maintenance costs, recent IPR projects have unit costs in the range of \$900-\$1,200/AF.

Section 6- Management Plan Elements

In the Coachella Valley, IPR could be practiced through treatment and groundwater recharge via spreading or injection or through treatment and blending with Coachella Canal water. However, it is likely that simple blending with Coachella Canal water may not provide sufficient retention time to satisfy the regulatory agencies without construction of a large surface reservoir. IPR is an emerging approach that may be considered in future WMP updates, but are not included in the 2010 Plan Update.

6.5.2 Groundwater to Canal Water Conversion

Canal water is a significant water supply source for the Coachella Valley. One of the underlying principles in the development of the 2010 WMP Update is to fully use the available Canal water supply. This is achieved by conversion of agricultural users and golf courses from groundwater to Canal water, development of dual piping for urban users and treatment of Canal water for urban use and groundwater recharge. Recharge activities are discussed in **Section 6.6**.

6.5.2.1 Agricultural Conversion from Groundwater

Agriculture accounted for approximately 314,000 AFY (69 percent) of the water use in the Coachella Valley in 2009. Of the total agricultural use, about 66,000 AFY of demand is estimated to be supplied from groundwater pumping.²

The 2002 WMP focused on conversion of agricultural groundwater use to Canal water use and proposed two principal measures:

- expansion of the distribution system to areas within ID-1 not served by the current distribution system, and
- conversion of groundwater users who have Canal water available for use but choose to irrigate with groundwater

Expansion of the Canal Water Distribution System: CVWD is currently working with two farming groups (Gold Coast Growers and Ocean Mist, et al.) to extend the Canal water delivery system to serve agricultural operations that are not currently served with Canal water. One extension will deliver water outside the ID-1 to serve agriculture that pumps groundwater from the Lower Whitewater River Subbasin. The other extension will serve a group of farmers located south of Mecca in a portion of the ID-1 service area that did not originally receive Canal water. Implementation of these two extensions will increase Canal water use by about 5,300 AFY.

A third location of potential expansion of the Canal water delivery system is the Oasis area. This area is included in the ID-1 service area but did not receive Canal water because the soils were not suitable for farming based on the irrigation technology of the time. Currently, much of this area is irrigated with groundwater using drip irrigation.

² Reported pumping in 2009 was 25,748 AFY. About 40,000 AFY of additional pumping is estimated based on historical power records.

Section 6 - Management Plan Elements

In 1996, CVWD completed a study investigating the feasibility of expanding the distribution system to serve farmers on the Oasis slopes (Summers, 1996). Desalinated drain water and recycled water would be served to the areas outside ID-1 via an exchange to avoid then existent limitations preventing delivery of Canal water outside ID-1. The 2002 WMP recommended construction of this system with additional facilities to serve farmers located outside ID-1 with the system being operational in the mid-2020s. However, farmers considered the system too costly. Recently, there has been renewed interest in expanding the irrigation system in the Oasis area. Since the QSA now allows Canal water to be used outside ID-1 to reduce groundwater overdraft in ID-1, the need for delivering non-Canal water via exchange has been eliminated. If completed, this system is expected to deliver about 27,000 AFY of Canal water to offset groundwater pumping. As development occurs in the Oasis area, the system could be converted to serve non-potable water for landscape irrigation.

A 1958 agreement between CVWD and Reclamation allows the extension of the Canal water distribution system to serve tribal lands if requested by the tribes. The cost of the extension is to be paid by the federal government. The Torres-Martinez tribe has expressed interest in obtaining Canal water service. Since much of the land is not currently farmed, this represents a new use of Canal water. The potential amount of Canal water that could be used has not been quantified.

Increased Use by Existing Canal Water Customers: A review of reported groundwater extraction from the Engineer's Report on Water Supply and Replenishment Assessment for the Lower Whitewater River Subbasin Area of Benefit (CVWD, 2010b) shows agriculture pumped at least 25,748 AFY in 2009. It is believed that significantly more agricultural pumping (up to 40,000 AFY) may be unreported, based on historical power records. Eight of the largest farming operations that pump 1,000 AFY or more represent 92 percent of the reported agricultural pumping. Most of these operations are within the ID-1 service area. Of these, about 65 percent of their water use is from groundwater and 35 percent is Canal water.

If these operations could increase their Canal water use to 90 percent of their demand, then 20,700 AFY of additional Canal water could be utilized, with a corresponding reduction in groundwater overdraft. Since many of these agricultural operations have Canal water connections, it is expected that little additional cost would be incurred to increase their usage. The District should determine what obstacles exist that prevent these pumpers from using additional Canal water and encourage them to reduce their groundwater pumping.

Summary of Agriculture Conversion Potential. For the 2010 WMP Update, agricultural use of groundwater is assumed to decrease from about 66,000 AFY in 2009 to about 7,000 AFY by 2045, a decrease of 59,000 AFY or 89 percent.

6.5.2.2 Golf Course Conversion

There are currently about 80 golf courses in the West Valley and 35 golf courses in the East Valley (Palm Springs Life, 2010). Additional golf courses are expected to be constructed as development occurs, primarily in the East Valley. In 2010, CVWD developed a new non-potable water use agreement that requires golf courses with access to Canal or recycled water to meet at least 80 percent of their irrigation demand from that source (CVWD, 2010e). For the 2010 WMP Update, a target is established of 90 percent use of Canal water by 2015.

Section 6- Management Plan Elements

East Valley Golf Course Conversion: The use of Canal water by golf courses has increased from 6,500 AFY in 1999 to 14,900 AFY in 2009 in the East Valley. There are 19 existing golf course operations in the East Valley that have Canal water connections. The total water usage (Canal water and groundwater) for these courses was 26,100 AFY in 2009. Existing Canal water use constituted approximately 57 percent of their total annual water use. Based on the 90 percent non-potable usage target, there is a potential for an additional 8,800 AFY of Canal water usage at these golf courses. Since these customers have Canal water connections, there is little additional cost associated with increasing their non-potable water use.

In addition to golf courses that currently have Canal water connections, there are nine golf course operations that rely solely on groundwater. In 2009, these courses used about 8,300 AFY of groundwater. All of these courses are located within or adjacent to ID-1; however, not all have access to Canal water. The Canal water distribution system is nearby the Eagle Falls, Indian Palms, La Quinta Country Club, La Quinta Resort and Rancho Casablanca courses. However, the system would need to be extended about one mile to serve The Quarry and several miles to serve Bermuda Dunes and Palm Royale. The district plans to serve the latter two courses from the MVP. These courses could reduce their groundwater pumping by up to 7,800 AFY when connected to non-potable water.

CVWD currently requires new golf courses with access to Canal water to meet at least 80 percent of their demand with that source. With an estimated additional demand of 34,000 AFY, new courses should use at least 27,000 AFY of Canal water. Based on this assessment, non-potable water use by golf courses could reduce groundwater pumping by 44,000 AFY by 2045 as shown in **Table 6-3**.

West Valley Golf Course Conversion: In the West Valley, the MVP will provide 37,000 AFY of Canal water and 15,000 AFY of WRP-10 recycled water to golf courses in lieu of groundwater pumping. The MVP project is discussed further in **Section 6.5.3**. Additional golf course conversion in the West Valley could be accomplished using recycled water from the Palm Springs WRP and WRP-7. Canal water, amounting to 2,300 AFY, will also be provided to Mountain Vista, Shadow Hills and Classic Club in the West Valley by 2045. Conversion of all feasible golf courses in the West Valley to use at least 80 percent non-potable water would reduce groundwater pumping by 56,800 AFY by 2045 as shown in **Table 6-4**. These figures are applied in the 2010 Plan Update.

Section 6 - Management Plan Elements

Table 6-3
East Valley Golf Course Conversion Potential

User	Demand (AFY)	Current Non-potable Use ¹ (AFY)	Future Non-potable Use ² (AFY)	Pumping Reduction (AFY)
Existing Courses with Canal Water Connections	26,100	14,900	23,900	8,800
Existing Courses without Canal Water	9,200	0	8,300	8,300
New Courses	34,000	0	27,000	27,000
Totals	69,300	14,900	59,200	44,100

1 Current non-potable use is Canal water.

2 Future non-potable use includes both Canal water and recycled water.

Table 6-4
West Valley Golf Course Conversion Potential

User	Demand (AFY)	Current Non-potable Use ¹ (AFY)	Future Non-potable Use ² (AFY)	Pumping Reduction (AFY)
Palm Springs Area Courses	16,500	4,300	13,200	8,900
Mid-Valley Courses	50,700	6,600	45,600	39,000
North Indio Area Courses	4,800	4,300	4,300	0
New Courses	11,200	0	8,900	8,900
Totals	83,200	15,200	72,000	56,800

1 Current non-potable use is principally recycled water with limited Canal water use.

2 Future non-potable use includes both recycled water and Canal water.

6.5.2.3 Potable Urban Use in the East Valley

As growth occurs in the East Valley and farms are converted to urban land uses, agricultural demand for Canal water will decrease. To avoid increased urban groundwater pumping, there will be a need to begin treating Canal water for urban use. The 2002 WMP anticipated this need and proposed that treatment be provided beginning in the late 2020s and about 32,000 AFY be treated by 2035. Increased domestic water demand coupled with reduced agricultural demand is expected to increase this amount.

Several possible approaches exist for defining the range of treated Canal water required in the future. By 2045, urban water demand in the East Valley is projected to be about 190,000 AFY with conservation. Because water treatment infrastructure is relatively costly, one approach would be to treat only the amount of potable demand created by new growth. Since about 25 percent of domestic water is used for potable purposes, about 48,000 AFY of treatment would be required to meet new indoor potable demands in the East Valley. A somewhat larger program might involve treating all indoor demands in the East Valley. Based upon a 2045 urban demand of about 265,000 AFY (with conservation), about 62,000 AFY of treated Canal water could be used to meet the indoor water demands. A third approach would be to treat all urban water demand not met by groundwater and non-potable Canal water deliveries. This might require 75,000 to 90,000 AFY of treated water depending on the amount of non-potable water delivered for irrigation. Using these approaches, treated Canal water capacities might range from 48,000 to 90,000 AFY compared to the 32,000 AFY identified in the 2002 WMP. This represents a

Section 6- Management Plan Elements

significant increase in the amount of Canal water that would be treated for urban use compared to the 2002 WMP. Treatment strategies are discussed further in **Section 6.7.1**.

6.5.2.4 Non-potable Urban Water Systems in the East Valley

One approach for reducing future groundwater use and overdraft while increasing Canal water use is the installation of dual source water systems, which refers to the operation of separate but parallel potable and non-potable systems to serve urban development.

An urban non-potable distribution system may be achieved by the following methods:

- Developer installation of on-site non-potable irrigation system (treatment if needed, storage, pumping and piping) which connects to Canal water distribution system or recycled water systems as available and feasible.
- Rehabilitation and extension of the existing Canal delivery system, as needed
- Separate potable water system that meets indoor and other uses requiring a potable supply.

A separate non-potable system could reduce the amount of groundwater that would have to be treated for arsenic removal, minimize the number of new wells required to serve growth and could be designed to meet fire protection needs, thus reducing the size of the potable water system. In addition, delivery of non-potable water for urban use would reduce the amount of Canal water treatment need for potable use. The non-potable system would need to be distinguishable from the potable water system to prevent cross-contamination and backflow issues. In California, non-potable systems are installed using “purple pipe” in compliance with the California Health and Safety Code §116815, to clearly indicate that the water is not for drinking purposes.

For this 2010 WMP Update, it is estimated that distribution systems could be installed for at least two-thirds to as much as 80 percent of the new development in the East Valley by 2045. This estimate is based on the following:

- Growth will create about 190,000 AFY of new demand in the East Valley with conservation. Of this amount, about 75 percent or 143,000 AFY is expected to be outdoor demand.
- Larger developments must mitigate for their incremental demand on the basin.
- Large developments are more likely to have the financial capability to distribute the costs of infrastructure among more housing units, thereby lowering the individual unit’s cost.

Based on these premises, about 95,000 to 115,000 AFY of non-potable use with Canal water and desalinated drain water could potentially be implemented by 2045. Additional investigations should be conducted into the feasibility of delivering non-potable water on this scale over the next five years.

Section 6 - Management Plan Elements

6.5.3 Mid-Valley Pipeline

The MVP is a pipeline distribution system to deliver Colorado River water to the Mid-Valley area for use with CVWD's recycled water for golf courses and open space irrigation. This source substitution project will reduce groundwater pumping for these uses. Construction of the first phase of the MVP from the Coachella Canal in Indio to WRP-10 (6.6 miles in length) was completed in 2009. Implementation of later phases will expand the MVP to be able to serve approximately 50 golf courses in the Rancho Mirage-Palm Desert-Indian Wells area that currently use groundwater as their primary source of supply with a mixture of Colorado River water and recycled water.

The 2010 WMP Update assumes that the MVP will serve about 37,000 AFY of imported water and 15,000 AFY of WRP-10 recycled water on average by 2045. The MVP will meet approximately 72 percent of the West Valley golf course demand by 2045.



Construction of the Mid-Valley Pipeline

Since the MVP has not been fully implemented, the amount of water it can currently deliver is limited by the demands

of existing non-potable customers. There are eight golf courses and five other users in the West Valley currently connected to the WRP-10 recycled water system, which can receive both recycled water and canal water via the MVP. If all of these courses use at least 90 percent of their irrigation needs with non-potable water, then about 2,700 acre-ft/ of groundwater pumping could be eliminated.

There are four golf courses adjacent to the MVP that can be connected to the system by undertaking minimal construction, thus making them ideal candidates to receive Canal water through the MVP. In fact, construction of Phase 1 of the MVP included outlets along the pipeline to serve these courses. However, pipeline connections to deliver Canal water from the MVP to each course have yet to be constructed. When all of these courses are connected, about 4,500 AFY of additional pumping could be eliminated. At least ten additional courses could be connected to the MVP downstream of WRP-10 with relatively simple pipeline connections, reducing pumping by about 11,200 AFY. In total, about 18,400 AFY of golf course pumping could be eliminated.

In addition to delivering water for non-potable uses, another possible use for the MVP is conveyance of Canal water to urban water treatment facilities. Although this use was not contemplated when the MVP concept was developed, it is possible that one or more small-scale water treatment facilities could be constructed to offset urban groundwater pumping. The locations and economic feasibility of this approach has not been evaluated. However, since the MVP has a capacity of 92 cfs at the Coachella Canal diversion, conveyance of Canal water to water treatment facilities would reduce the capacity available to serve golf courses. Thus the

Section 6- Management Plan Elements

cost to treat and deliver potable water would need to be compared with the cost to expand the MVP distribution system to serve additional golf courses.

CVWD should implement the near-term extensions to the MVP and prepare a master plan to lay out the remainder of the MVP system. In addition to non-potable uses, the feasibility of using a portion of the capacity to treat water for urban water uses will be evaluated.

6.5.4 Source Substitution Scenarios

Potential source substitution options are arrayed by size as summarized in **Table 6-5**. For this table, the amount of source substitution is determined by comparing the change in groundwater production after deducting the effects of planned water conservation. The amounts of source substitution included in the 2002 WMP are also shown for comparison.

Table 6-5
Range of Source Substitution Options
(AFY)

Scenario	Agriculture	Golf Courses	Urban-Treated	Urban-Untreated	Total
2002 WMP	51,000	59,000	32,000	0	142,000
Minimum	5,300	108,200	48,000	95,000	256,500
Moderate	33,000	120,000	62,000	105,000	320,000
Maximum	38,000	142,600	90,000	115,000	385,600

6.6 GROUNDWATER RECHARGE

Groundwater recharge is an important component of basin management. Groundwater recharge can be accomplished by surface spreading or by injection. The feasibility of each method is a function of geologic conditions, land availability, cost and other factors. With surface spreading, water is placed in shallow ponds where it is allowed to percolate into the underlying aquifers. Surface spreading requires large areas of open land for construction of ponds and the absence of significant confining clay layers that would prevent the water from reaching the aquifers. With injection, water is put directly into the aquifers through a well. Frequently, injection wells are also used to extract the stored water. Injection wells have a relatively small footprint compared to recharge basins and the cost is only slightly higher than the cost of a new production well; however, injected water needs to be treated prior to injection to ensure that it meets drinking water regulations and to prevent well clogging.

Since 1973, CVWD and DWA have recharged the West Valley basin at the Whitewater River Spreading Facility with over two million AF of SWP Exchange water. As a part of the 2002 WMP, CVWD investigated recharge in the East Valley using Colorado River water and finished construction at the Thomas E. Levy Groundwater Replenishment Facility (Levy facility) and is planning the construction of another major recharge facility at Martinez Canyon. Additional surface recharge sites in the Mid-Valley area will be considered on the basis of geologic suitability and availability of sufficient vacant land.

Section 6 - Management Plan Elements

6.6.1 West Valley Recharge Facility

The Whitewater River Recharge Facility has a recharge capacity of in excess of 300,000 AFY. The 2002 WMP established a future average annual recharge goal at this facility of about 100,000 AFY. Consequently, no additional recharge capacity expansion is required. The available capacity is valuable for conjunctive use operations by CVWD and DWA as well as Metropolitan or other interested parties.



Whitewater River Spreading Facility
located north of Palm Springs

As described in **Section 6.4.2**, to reach the 100,000 AFY goal for the Whitewater facility, CVWD and DWA would need to acquire additional SWP Table A Amounts or other imported water sources. As discussed in **Section 4**, the SWP Exchange supply can currently provide about 77,700 AFY for the Whitewater facility. However, the 2010 WMP Update assumes the reliability of the SWP will decline to about 50 percent of the Table A Amounts without improvements in the Delta. Consequently, under future conditions, it is possible that recharge at Whitewater could be limited to the available future supply of about 61,400 AFY unless it is augmented with other supplies. If Delta habitat and conveyance improvements can be successfully implemented, this supply could increase to 93,000 AFY.

6.6.2 East Valley Recharge Facilities

CVWD has operated a pilot recharge facility at Dike 4 near Avenue 62 since 1997. Construction of the full-scale Levy facility was completed in mid-2009. This facility is located on the west side of the Valley in La Quinta and has an estimated average recharge capacity of 40,000 AFY. Currently, the capacity is limited by hydraulic and water delivery constraints within the Canal water distribution system to a long-term average of about 32,000 AFY. Consequently, construction of an additional pipeline and pumping station from Lake Cahuilla may be required in the future.



Thomas E. Levy Groundwater Replenishment
Facility located in La Quinta

The Martinez Canyon recharge facility is a pilot project underway since 2005. Upon completion of a full-scale facility, this project (according to the 2010 WMP Update) is expected to recharge 20,000 to 40,000 AFY on average. The Martinez Canyon facility is projected to start initial operation in 2016 and is expected to reach full capacity by 2018.

Section 6- Management Plan Elements

CVWD is also evaluating alternative recharge locations that might allow recharge in the vicinity of areas of significant groundwater pumping. A settlement agreement between the City of Indio and CVWD specifies a process for proposing and evaluating additional recharge facilities in the vicinity of Indio (CVWD-Indio, 2009). CVWD and the City of Indio are investigating the potential of a recharge site within the City of Indio which would benefit the Indio area.

IWA conducted a preliminary investigation (performed by Petra Geotechnical) that identified Posse Park (Avenue 42 and Golf Center Parkway adjacent to the Coachella Canal) as a potential location for recharge of both the upper and lower Coachella Valley aquifer by either spreading or injection wells. IWA recently drilled two exploratory wells at this location and plans to conduct further studies to validate the use of Posse Park to replenish the aquifer. The amount of potential recharge at this location has not been determined. The 2010 WMP Update assumes for planning purposes that an Indio facility could recharge 10,000 AFY.

As discussed previously, surface recharge facilities are only effective in areas where the geology is suitable. In the Coachella Valley, significant portions of the East Valley are underlain by relatively thick clay and silt which impedes the vertical percolation of water into the deep aquifers from which most groundwater is produced. Consequently, most surface recharge facilities are located on the fringes of the East Valley where these clay and silt layers are not present. As an alternative, the groundwater basin can also be recharged by injection through either dedicated recharge wells or aquifer storage and recovery (ASR) wells which can be used for both recharge and groundwater production. Injection has the benefit of placing replenishment water at the same location where pumping has occurred. However, injection requires a high quality, turbidity-free source of water. In most areas where injection is practiced, a treated water source that meets federal and state surface water treatment rules is used.

Injection was considered in the 2002 WMP as a potential means of recharge. However, injection was deferred from consideration at that time due to the cost. In the future, injection may become more viable as a recharge approach when treated Colorado River water becomes more widely available. However, impacts of injection on local water quality may affect feasibility.

6.6.3 Recharge Scenarios

Three alternative recharge scenarios are considered for possible implementation in the 2010 WMP Update: minimum, intermediate and maximum.

A minimum scenario would involve continued operation of the existing Whitewater, Levy and Martinez recharge facilities based on capacity and existing supply limitations. Recharge at Whitewater is assumed to be limited by future SWP supply availability (about 61,400 AFY) without Delta habitat and conveyance improvements. In the East Valley, the Levy facility would operate at 40,000 AFY and the Martinez demonstration project operate at 3,000 AFY. This would provide about 101,000 AFY of recharge on average.

An intermediate scenario is considered that is similar to that proposed in the 2002 WMP. This option would increase recharge at Whitewater to 100,000 AFY through the use of supplemental water from either the QSA or agricultural drain desalination, construct the Martinez facility to an average capacity of 40,000 AFY as indicated in the 2002 WMP, and add recharge at a potential

F i n a l C o n c e p t P a p e r

Mid-Valley Pipeline

Coachella Valley, California

**Submitted to:
Coachella Valley Water District**

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Table of Contents

Executive Summary	ii
1 Introduction	1
2 Irrigation Water Use in Mid-Valley Area	3
2.1 Irrigation Water Demand	3
2.2 Impacts on Golf Course Operations	6
3 Mid-Valley Recycled Water Facilities	7
3.1 Recycled Water Program at WRP 10	7
3.2 Expansion of the Recycled Water Program at WRP 10	8
4 Proposed Facilities and Phasing	9
4.1 Required Canal Water Flow	9
4.2 Canal Water Transmission System	11
4.3 Recycled Water System Extension	13
4.4 Canal Water Distribution System	13
4.5 Golf Course Connections and On Site Conversions	17
5 Project Cost	19
5.1 Canal Water Transmission System	19
5.2 Canal Water Distribution System	21
5.3 Mid-Valley Pipeline Cost	23
6 Eliminated Alternatives and Limitations	24
6.1 Alternatives Considered and Eliminated	24
6.2 Additional Analysis	24
7 Recommendations	26
7.1 Canal Water Transmission System	26
7.2 Expansion of the Recycled Water System	27
7.3 Canal Water Distribution System	27
7.4 Phasing of deliveries	27
7.5 Preliminary Schedule	27

Appendices

- Appendix A - References
- Appendix B - Sketches
- Appendix C - Cost Estimates

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Executive Summary

This concept paper provides District staff and the District Board with the information needed to evaluate the feasibility of proceeding with design of the Mid-Valley Pipeline. In addition, it will to serve as background information for a request for proposal for engineering services on the Mid-Valley Pipeline. **Sketch 2-1** (all sketches are in **Appendix B**) shows the Mid-Valley area. The area includes a large concentration of golf courses that currently obtain most of their water from groundwater.

The Mid-Valley Pipeline was initially proposed in the Conjunctive Use/Surplus Water Storage Study prepared in 2000. That study proposed a system to deliver water from the Coachella Canal (Canal) to golf courses in the Mid-Valley area (generally Palm Desert, Indian Wells and Rancho Mirage). The system would operate as a conjunctive use project, allowing the District to better manage use of Canal water and groundwater. From a legal perspective, the Canal water would be water from the State Water Project (SWP). The District would exchange the SWP water with Metropolitan Water District of Southern California (Metropolitan) for some of Metropolitan's Colorado River water.

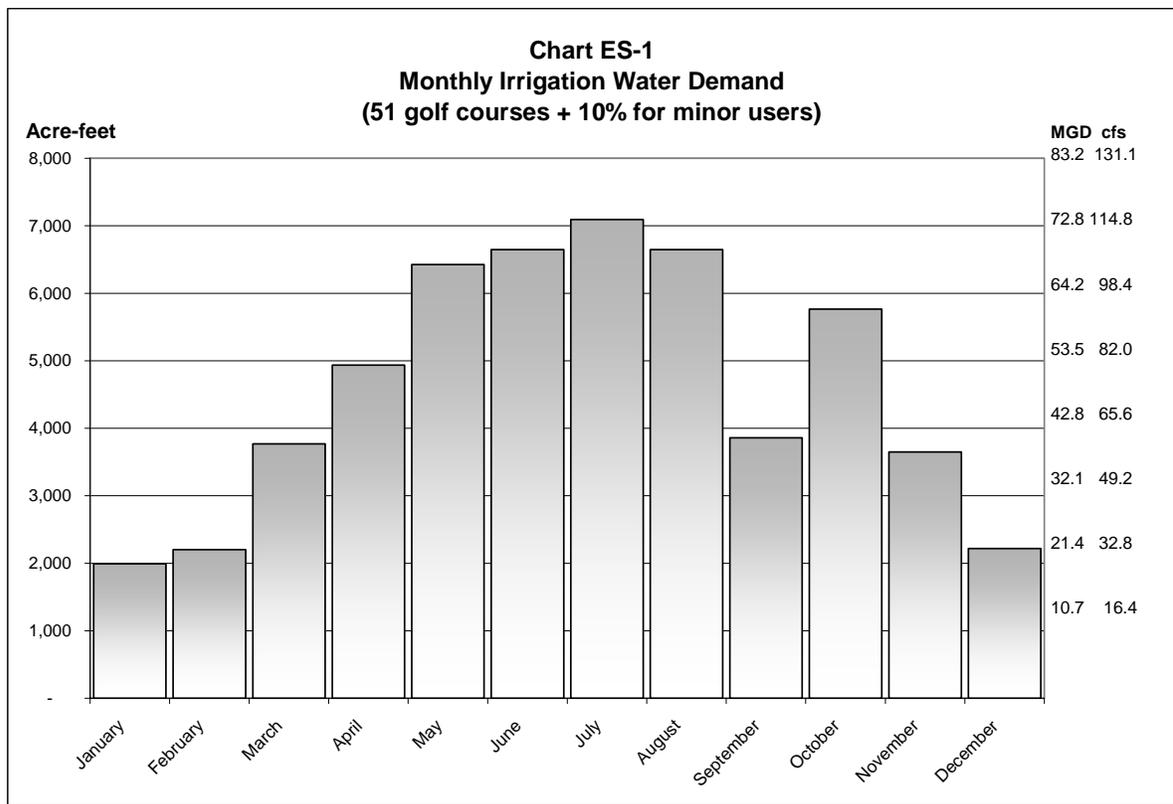
The Mid-Valley Pipeline has been incorporated into the Preferred Alternative of the District's September 2002 Final Water Management Plan. The Preferred Alternative of the Water Management Plan sets a goal of eliminating approximately 37,000 acre-feet/yr of groundwater pumping with this conversion. The Preferred Alternative also includes a conversion of 8,000 acre-feet of groundwater use by golf courses to recycled water. The Program Environmental Impact Report of the Water Management Plan provides program-level CEQA analysis for these two projects. Project-level (site-specific) CEQA analysis for facilities construction will be required for facilities construction.

This concept paper reviews the previous work and provides a more detailed evaluation. It proposes integrating the use of Canal water with the use of WRP 10 recycled water program.

Irrigation Use in the Mid-Valley Area

There are 51 golf courses within Mid-Valley area, including proposed courses. Annual water use of these courses in 2015 will be approximately 50,200 acre-feet per year or 975 acre-feet per year per golf course. Minor irrigation water users in the area including homeowners associations, parks and the Palm Desert High School, may use an additional 10 percent or 5,000 acre-feet.

Chart ES-1 shows the monthly use of irrigation water in the Mid-Valley area.



Impacts on Golf Course Operations

While the golf courses recognize the necessity of reducing groundwater pumping they operate in a highly competitive market and are concerned with equity among all golf courses. If the project is implemented in a manner that puts one golf course at a disadvantage to another, there may be severe financial impacts. Golf courses have a number of concerns with the project's impact on their operations and costs. These concerns include water quality, capital costs of converting their irrigation systems and increased maintenance and operations costs.

The District has set in place a collaborative effort with the golf courses in the Mid-Valley area to address issues related to use of Canal water, recycled water and groundwater on the courses.

WRP 10 Recycled Water Facilities

WRP 10 is located within the Mid-Valley area on the south side of Hovley Lane east of Cook Street. An existing recycled water system serves golf courses and other users with tertiary treated water from WRP 10. Since 1987, WRP 10 has been providing recycled water to golf courses, homeowners associations, and the Palm Desert High School.

In 2003, WRP 10 treated 3,752 million gallons of influent (11,515 acre-feet). While influent is higher in winter, flows are relatively constant from season to season. Historically, inflow has increased by approximately 5 percent per year.

Only about one-third of influent was recycled in 2003. In August 2004, the District and Toscana Country Club signed an agreement to serve that golf course with recycled water. Still, only about one-half of the influent will be recycled. Further expansion of recycled water use is limited by the inability to meet demand during the high demand months. If Canal water were brought to WRP 10 and delivered to the recycled water pump station, then additional customers could be added and the use of recycled water maximized by supplementing the supply during the summer when irrigation demand is high.

Proposed Mid-Valley Pipeline Facilities

The Mid-Valley Pipeline facilities would consist of a Canal Water Transmission System from the Coachella Canal to WRP 10 and distribution facilities from WRP 10 to the golf courses and other users. There would be two types of distribution facilities. First Canal water would be used to augment the existing recycled water supply allowing expansion of the recycled system. Second, a separate Canal Water Distribution System would be constructed to serve the remaining demand.

Canal Water Transmission System

The Canal Water Transmission System would consist of Pump Station 1 located adjacent to the Canal, a Transmission Line to WRP 10, a Receiving Impoundment at WRP 10 and service connections to adjacent golf courses.

Pump Station 1 would be sized to deliver the projected remaining demand for irrigation water after maximum use is made of recycled water produced by WRP 10. A preliminary estimate of the required area for the pump station is 0.7 acres, not including any additional land for mitigating noise and aesthetic impacts.

Two alignments for the Transmission Line to WRP 10 have been evaluated. **Sketch 4-1** shows the locations of these two alignments. The Coachella Stormwater Channel Alignment (Stormwater Channel Alignment) generally follows the Coachella Stormwater Channel. The 42nd Avenue/Hovley Lane Alignment (42nd Avenue Alignment) follows public streets for the majority of its route.

District staff and Bookman-Edmonston met with staff from the cities of Indio, Indian Wells, La Quinta and Palm Desert, and the County of Riverside in February and May 2005. The cities and county all indicated a preference for the Stormwater Channel Alignment in order to reduce construction impacts. While the 42nd Avenue Alignment is shorter, constructing along a major street presents significant challenges including traffic control, maintaining access for adjacent property owners, utility conflicts and restricted construction zones.

A Receiving Impoundment at WRP 10 will be required to allow matching flows entering WRP 10 from the Canal with flows being delivered from the plant to the golf courses. District plans for WRP 10 include construction of a 5 million gallon (15-acre-foot) impoundment adjacent to an existing recycled water reservoir. Construction of this impoundment as part of the transmission system will allow operation of the Mid-Valley Pipeline at partial capacity. Additional storage will be required as additional golf courses are connected to the system.

It is feasible to connect some golf courses located adjacent to the Canal Water Transmission System directly to the system.

Recycled Water System Extension

The existing Recycled Water System will need to be extended to make the additional deliveries made possible by the addition of Canal water to the recycled system. The extension is not addressed in this report.

Canal Water Distribution System

The District and the golf course operators are collaborating to fully understand the opportunities and constraints in delivering Canal water to the golf courses. A possible system configuration has been prepared in order to develop an understanding of the feasibility and cost of a distribution system.

From the proposed Pump Station 2 at WRP 10, the Canal Water Distribution System would extend to the northwest with approximately 120,000 lineal feet of pipeline. Additional storage will be constructed as the system is built. Fifteen million gallons of storage (in addition to the five million gallons built with the transmission system) would allow operation of the Canal Water Transmission System for 24 hours and delivery of canal water to the golf courses over 18-hours.

Two options were evaluated for the sizing and operation of the distribution system. The first option is to enlarge the system to allow all deliveries to the distribution system to occur at mid-peak or off-peak energy rates. The second option is the inclusion of an additional pump station to reduce energy consumption by allowing some deliveries to be made with less pumping.

Project Cost

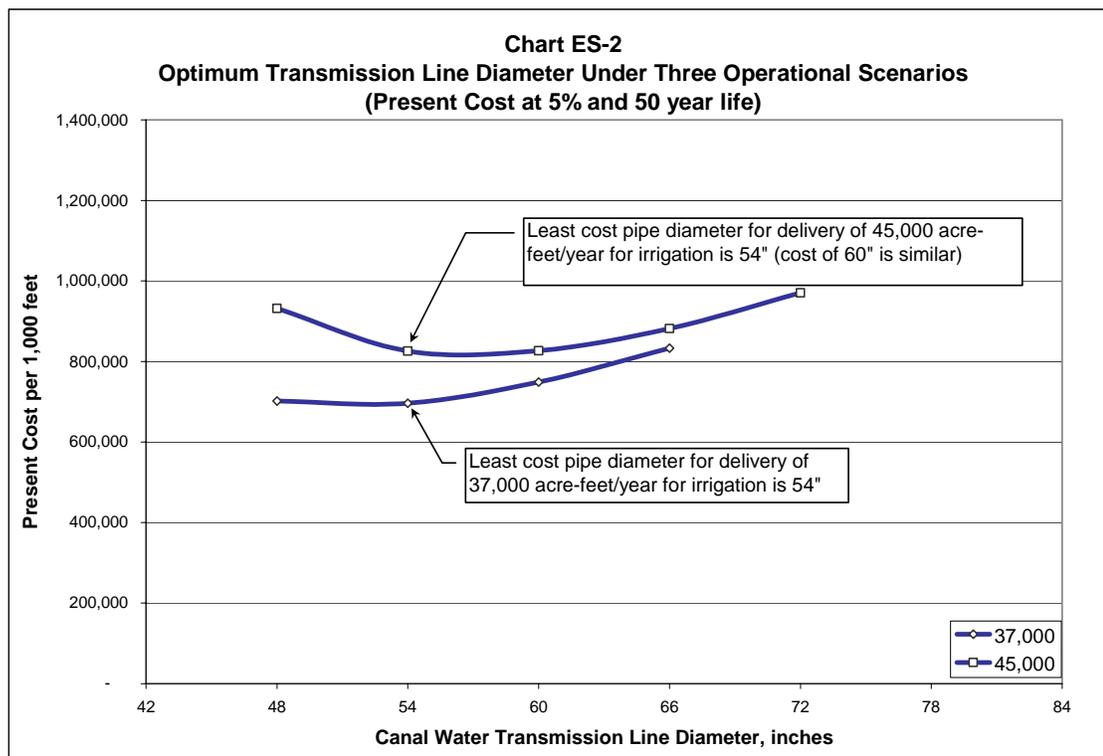
Project costs have been developed using current (2005) price levels. These costs include the costs of construction and a partial evaluation of operation costs where those costs affect sizing and design of the proposed facilities. **Table ES-2** summarizes the projected capital cost of each alignment and various sizes of the Canal Water Transmission System.

Table ES-2
Canal Water Transmission System Capital Cost
Includes Pump Station 1 and 5 MG storage at WRP 10
(2005 Price Level)

Pipe Diameter (inches)	42nd Avenue/Hovley Lane Alignment	Coachella Stormwater Channel Alignment	
		Levee	Invert
54	\$ 27,509,799	\$ 29,266,322	\$ 29,914,107
60	\$ 30,328,335	\$ 32,716,761	\$ 32,889,852
66	\$ 33,652,274	\$ 36,728,243	\$ 36,389,973

The estimated capital cost varies by approximately ten-percent between the alignments. Given uncertainty of predicting the construction climate more than a year from now and the preliminary nature of these estimates, the capital cost of each alignment is essentially the same.

Determination of the most cost effective pipe diameter depends not only on the capital cost, but also on operation and maintenance costs. Energy to pump the water, the largest element in the operation and maintenance cost, depends on the diameter of the pipeline. In **Chart ES-2** the total cost (capital and operation and maintenance) for a length of pipe has been evaluated under two operational scenarios. If the transmission line is to be sized to meet the goal delivering 37,000 acre-feet per year of Canal water as stated in the District’s Water Management Plan, a 54-inch diameter pipeline would be the most cost effective. Initial sizing of the project has focused on a potential of delivering 45,000 acre-feet per year. A 54-inch or a 60-inch diameter pipeline would be the most cost effective size for the delivery of 45,000 acre-feet.



Canal Water Distribution System Cost

Table ES-3 shows the capital cost of each option considered for this system.

Table ES-3
Canal Water Distribution System Capital Cost
(2005 Price Level. Includes design and construction management. Does not
include supervision and administration by District staff)

	Single Pressure Zone	Dual Pressure Zone
Canal Water Distribution System, Pump Station 2 at 72 cfs for 24-hour Delivery	\$ 37,090,824	\$ 40,603,627
Canal Water Distribution System, Pump Station 2 at 96 cfs for 18-hour Delivery	\$ 40,132,982	\$ 44,654,383
Notes: Does not include supervision and administration by District staff		

An evaluation of the operation and maintenance costs of each of these four options has been made. The savings from 18-hour deliveries would be on the order of \$60,000 per year. This annual savings would justify approximately \$1.5 million dollars of construction (50 year life, 3 percent interest rate). The cost estimate in Table ES-3 shows an increased capital cost of three to four million to enlarge the system to facilitate 18-hour delivery. While there are still issues with the location of storage and system operations to be resolved, it appears that 18-hour delivery cannot be justified based on savings in energy costs.

Including a dual lift for the distribution system would reduce the lift of 23,000 acre-feet of Canal water by 180 feet. This reduction in lift would result in an annual savings in energy of \$550,000. This reduction easily justifies the additional cost of approximately \$ 4 million. Including the second lift station may have additional advantages of facilitating construction of the distribution system in phases.

Mid-Valley Pipeline Cost

Table ES-4 presents an evaluation of the capital cost and cost per acre-foot of the Mid-Valley Pipeline. The table focuses on the anticipated deliveries of the project and on the construction of the Canal Water Transmission System. Thus, the cost of the Canal Water Distribution System is kept constant for each alternative. Four different diameters for the Canal Water Transmission System and two different annual delivery goals are shown. The anticipated capital cost is between \$74 million and \$85 million. The annual operation and maintenance cost is predominately energy for pumping. The cost per acre-foot of water delivered varies between \$170 and \$208.

Table ES-4
Cost of Mid-Valley Pipeline
(2005 price level. 5% and 50 year life)

	Diameter of the Canal Water Transmission System			
	54-inch	60-inch	66-inch	72-inch
Capital Costs (2005 price level)				
Canal Water Transmission System (Stormwater Channel Alignment, Invert)	\$ 29,300,000	\$ 32,900,000	\$ 36,400,000	\$ 40,300,000
Canal Water Distribution System (18-hour deliveries, dual lift)	44,700,000	44,700,000	44,700,000	44,700,000
On site improvements to golf courses	Not included	Not included	Not included	Not included
Expansion of recycled water system	Not included	Not included	Not included	Not included
Capital Cost	\$ 73,900,000	\$ 77,500,000	\$ 81,000,000	\$ 84,900,000
37,000 acre-feet per year of canal water delivered (Goal of Water Management Plan)				
Equivalent annual capital cost	\$ 4,050,000	\$ 4,250,000	\$ 4,440,000	\$ 4,650,000
Annual Operation and Maintenance cost	3,030,000	3,010,000	3,020,000	3,040,000
Equivalent annual cost	\$ 7,080,000	\$ 7,260,000	\$ 7,460,000	\$ 7,690,000
Equivalent annual cost per acre-foot	\$ 191	\$ 196	\$ 202	\$ 208
45,000 acre-feet per year of canal water delivered (all pumping of groundwater in Mid-Valley eliminated)				
Equivalent annual capital cost	\$ 4,050,000	\$ 4,250,000	\$ 4,440,000	\$ 4,650,000
Annual Operation and Maintenance cost	3,610,000	3,540,000	3,510,000	3,520,000
Equivalent annual cost	\$ 7,660,000	\$ 7,790,000	\$ 7,950,000	\$ 8,170,000
Equivalent annual cost per acre-foot	\$ 170	\$ 173	\$ 177	\$ 182

Recommendations

The evaluation in this concept paper is adequate to recommend that the District fund implementation of the Mid-Valley Pipeline. The first phase of construction should be the Canal Water Transmission System to deliver Canal water to WRP 10. Planning for the expansion of the existing recycled system and construction of the proposed Canal Water Distribution System should be initiated in order that deliveries of Canal water to golf courses can start soon after construction of the Transmission Facilities is complete.

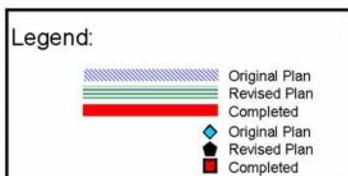
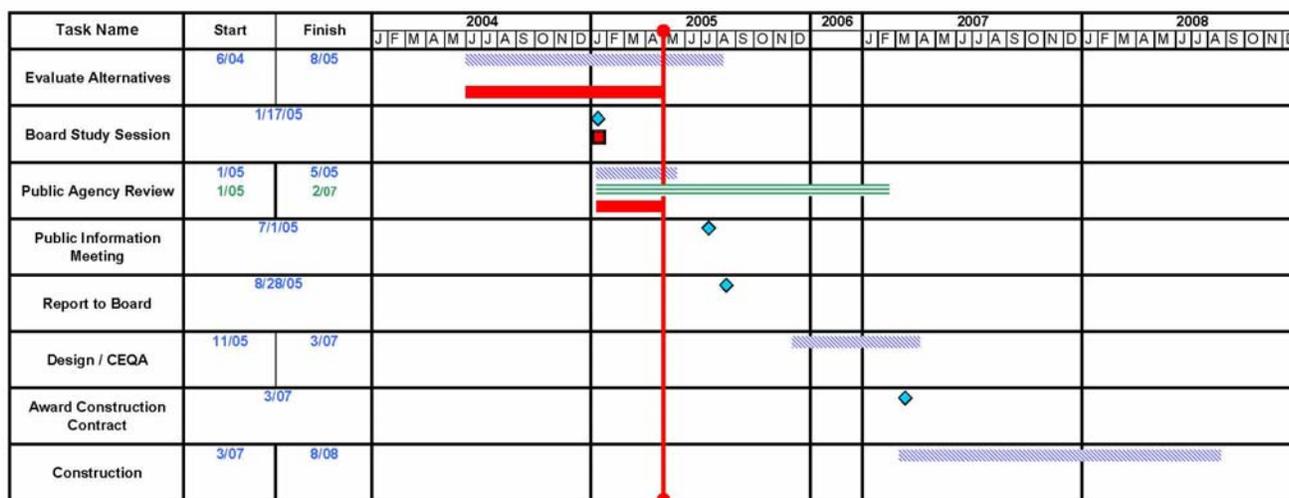
The proposed Canal Water Transmission System should be sized to allow delivery of up to 37,000 acre-feet of Canal water for irrigation purposes and should be integrated with the existing Recycled Water System. The cost difference between a 54-inch and 60-inch diameter Transmission Line is small. Further evaluation during pre-design is warranted to select the pipeline diameter. The Stormwater Channel Alignment is recommended over the Hovely Lane/42nd Avenue Alignment due to reduced construction impacts. District staff has initiated selection of property for the pump station to be located at the canal under the presumption that the Stormwater Channel Alternative will be selected. Once a selection is made, the District should assure that the selected site remains available.

Implementation requires significant coordination with the golf courses. During design of the Canal Water Transmission System discussions should occur with golf courses that possibly

can be connected to the Canal Water Transmission System. During design and construction, discussions should occur with the golf courses that can be connected to an expanded recycled water system. During construction, discussions should occur with the golf courses that can be connected to the Canal Water Distribution System. Table 4-1 in Section 4 divides the Mid-Valley area golf courses into Phases 1, 2 and 3 respectively.

A preliminary design and construction schedule through design and construction of the Transmission system is shown in **Chart ES-3**. Planning and design efforts for construction of the Canal Water Distribution System would continue during this period. Implementation of the distribution system and enlargement of the Recycled Water Distribution System would be initiated with the completion of the Transmission System.

**Chart ES-3
Preliminary Schedule through construction of
Canal Water Transmission System**



1 Introduction

The Mid-Valley Pipeline was initially proposed in the Conjunctive Use/Surplus Water Storage Study prepared for the Coachella Valley Water District (District) and Metropolitan Water District of Southern California (Metropolitan) (Bookman-Edmonston, 2000). The project was then incorporated into the District's September 2002 Final Water Management Plan.

The Conjunctive Use/Surplus Water Storage Study proposed a system to deliver water from the Coachella Canal (Canal) to golf courses in the Mid-Valley area (generally Palm Desert, Indian Wells and Rancho Mirage). The system would operate as a conjunctive use project, allowing the District to better manage its use of Canal water and groundwater. The study determined that there was a market for up to 35,900 acre-feet of Canal water if 49 golf courses converted from groundwater to Canal water. From a legal perspective, the water from the Canal would be water from the State Water Project (SWP). The District would exchange the SWP water with Metropolitan for some of Metropolitan's Colorado River water. The study proposed that the golf courses would maintain their groundwater wells and the ability to shift back to groundwater when imported supplies were unavailable. The potential would also exist for the golf courses to produce groundwater for use by the District. The District could then deliver groundwater to the Canal by operating the proposed facilities in reverse.

The concept was incorporated into the Preferred Alternative of the District's September 2002 Final Water Management Plan and is covered by the CEQA documentation of that plan as "Conversion of Upper Valley Golf Courses to SWP Exchange Water" (Montgomery Watson Harza, 2002a). The Preferred Alternative sets a goal of eliminating 37,000 acre-feet/yr of groundwater pumping with this conversion. The Preferred Alternative also includes "Upper Valley Golf Courses Conversion to Recycled Water." This conversion anticipated an increase of about 8,000 acre-feet/year in recycled water use. The Program Environmental Impact Report of the Water Management Plan provides program-level CEQA analysis for these two projects. The District's Board of Directors certified the Final Program Environmental Impact Report prepared for the Water Management Plan in Resolution No. 2002-213. Project-level (site-specific) CEQA analysis for facilities construction will be required for facilities construction (Montgomery Watson Harza, 2002b and 2002c).

The District retained Bookman-Edmonston, a division of GEI Consultants, to prepare a concept paper on the Mid-Valley Pipeline. This concept paper reviews the previous work and provides a more detailed evaluation. In addition, it proposes integrating the use of Canal water in the Mid-Valley area with the use of recycled water. This integration would facilitate water management by allowing better matching of supply and demand – monthly supply of

recycled water is relatively constant while demand for irrigation water is seasonal. This concept paper provides District staff and the District Board with the information needed to evaluate the feasibility of proceeding with design. In addition, it is intended to serve as background information for a Request for Proposal for additional engineering services.

Section 2 reviews the demand for irrigation water in the Mid-Valley Pipeline area. In Section 3 the existing recycled water supply is discussed. Section 4 addresses the design criteria and evaluates several options for the required project facilities. The project costs are discussed in Section 5. Section 6 addresses eliminated alternatives and study limitations. Finally, Section 7 contains recommendations for proceeding with the Mid-Valley Pipeline.

2 Irrigation Water Use in Mid-Valley Area

The Mid-Valley Pipeline area (Mid-Valley area) is generally bounded by Interstate 10 on the northeast, Washington Street on the east, Highway 111 on the south, and Date Palm Drive on the west. In addition, several golf courses along Deep Canyon Channel, south of Highway 111, are included. The area includes a large concentration of golf courses that currently obtain most of their water from groundwater and the remainder from the District's recycled water program. **Sketch 2-1** (all sketches are in **Appendix B**) shows the Mid-Valley area. The limits of the area were established based on the engineering and economic feasibility of delivering water from the Coachella Canal (Canal).

This section updates the water demand projections of the Conjunctive Use/Surplus Water Storage Study (Bookman-Edmonston, 2002). The primary changes have been to reflect the construction of additional golf courses and to include golf courses that use recycled water. While the prior study treated recycled water as a separate system, this concept paper proposes close integration of the recycled water and Canal water systems.

2.1 Irrigation Water Demand

There are 51 golf courses within Mid-Valley area (A 27-hole golf course is counted as 1.5 golf courses), including several proposed courses. **Table 2-1** lists these golf courses and their projected water use in 2015. Water use by minor users in the area (including homeowners associations, parks and the Palm Desert High School) is assumed to use ten percent of golf course use.

Chart 2-1 shows the monthly pattern of irrigation in the area. **Chart 2-2** combines the data in Table 2-1 and Chart 2-1 to show the anticipated monthly Mid-Valley area demand. Combining the information from Table 2-1 and Chart 2-1, the average 18-hole golf course uses approximately 975 acre-feet per year (0.87 million gallons per day (MGD)). The highest demand occurs in July, when each golf course uses an average of 3.88 acre-feet per day (1.26 MGD).

**Table 2-1
Projected Mid-Valley Use of Irrigation Water (2015)**

Golf Course	Holes/18-Hole Equivalents	2015 Projected Water Use¹ (acre-feet per year)
Desert Willow ²	36	1800
Portola Country Club ²	18	900
The Golf Center, Palm Desert ²	9	450
Woodhaven Country Club	18	994
Palm Desert Country Club	27	1,999
Palm Desert Resort Country Club	18	1,157
Indian Ridge Country Club ²	36	923
Palm Valley Country Club	36	1,664
Avondale	18	793
Emerald Desert Country Club	9	333
Desert Falls Country Club	18	1,522
The Lakes Country Club	27	2,308
The Oasis	18	931
The Golf Resort at Indian Wells	36	1,845
Indian Wells Country Club	27	885
El Dorado Country Club	18	307
Desert Horizons Country Club	18	867
Marriott's Shadow Ridge ³ (built since 2000)	18	923
Santa Rosa Country Club ²	18	746
Suncrest Country Club	9	714
Chaparral Country Club	18	951
Monterey Country Club	27	1,628
Date Palm Country Club	18	619
Marriott's Desert Springs Resort	36	1587
Palm Desert Greens Country Club ²	18	884
Toscana Country Club ⁴	36	1800
Rancho Portola, future course at T4S/R6E Sec 33	18	923
The Eagle, future course at T4S/R6E Sec 31	36	1,845
Rancho Las Palmas Resort Country Club, Marriott's	27	1,236
Date Palm Country Club	18	619
Sunrise Country Club	18	961
Thunderbird Country Club	18	574
The Springs Club	18	1,289
Desert Island Golf and Country Club	18	852
Rancho Mirage Country Club	18	1,236
Tamarisk Country Club	18	692
The Club at Morningside Heights	18	1,205
Westin Mission Hills Resort	36	1,854
Mission Hills Country Club	54	5,747
Private at NW corner Hope and Sinatra ⁵	9	450
Private at top of Magnesia Canyon ⁵	18	900
Total golf course irrigation	51	50,194
Average demand per golf course (18 hole equivalent)		975
Minor irrigation (assumed to equal 10% of golf course use)		5,019
Total irrigation demand in Mid-Valley area		55,213

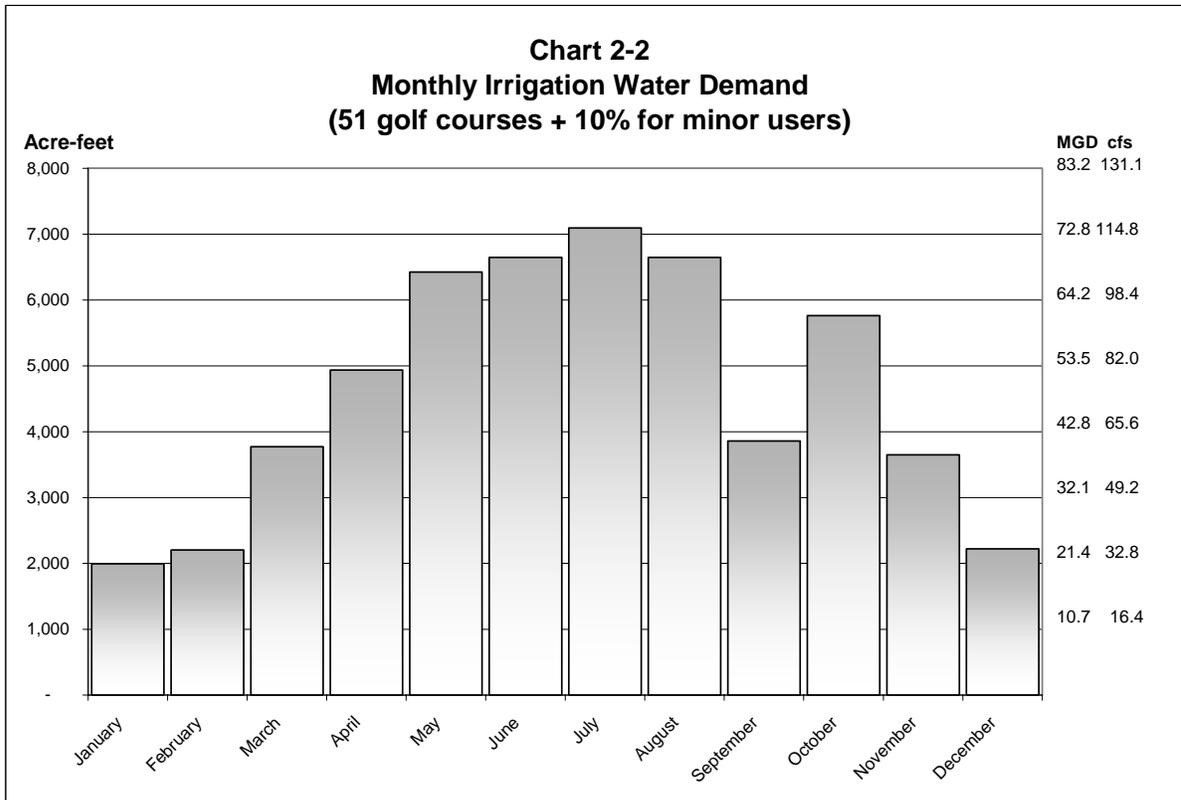
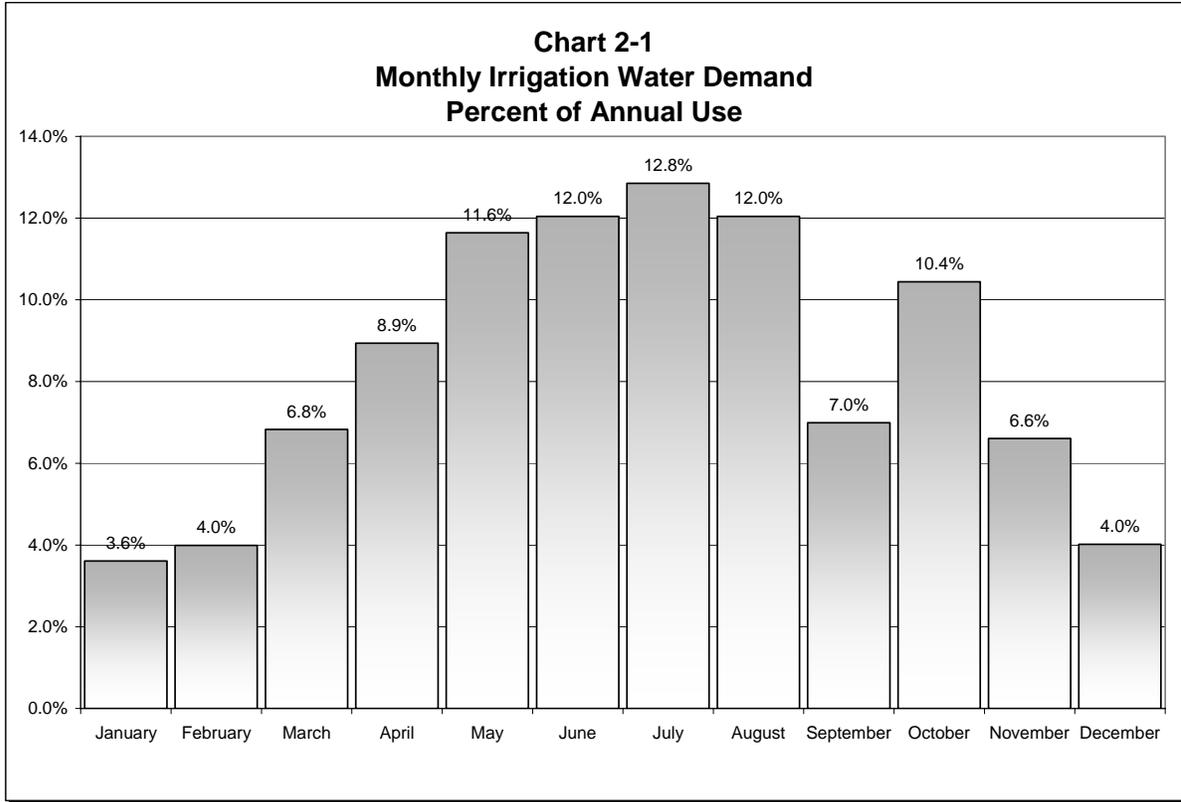
¹ Unless otherwise noted, projected 2015 usage is from the District's Water Management Plan. Projections for 2105 assume implementation of water conservation measures.

² Golf courses currently receiving recycled water. Use assumed to be 900 acre-feet per year.

³ Marriott's Shadow Ridge was constructed to facilitate later conversion to recycled water (low pressure system). It is currently using groundwater.

⁴ Toscana Country Club signed agreements with the District in August 2004 to use recycled water. Construction is underway.

⁵ These are closely-held private courses. The Magnesia Canyon course obtains water from a private well located below the cove. Use assumed to be 900 acre-feet per year.



2.2 Impacts on Golf Course Operations

While the golf courses recognize the necessity of the project they operate in a highly competitive market and are concerned with equity among all golf courses. If the project is implemented in a manner that puts one golf course at a disadvantage to another, there may be severe financial impacts. The golf courses have a number of concerns with the projects impact on their operations and costs.

The golf courses are concerned with water quality. Canal water has higher suspended solids than groundwater or recycled water. Canal water and recycled water both have higher total dissolved solids (salt or TDS) and a different mix of salts than groundwater. The golf courses must manage their operations to avoid or minimize damage from the suspended solids and salts.

Converting to Canal water or recycled water from groundwater will require an investment in their irrigation system by the golf courses. The golf courses have an investment in their existing groundwater production system that they do not want to abandon. Use of recycled water requires compliance with State regulations.

As will be discussed later, use of Canal water (pumped from the Canal 24 hours a day and applied to the golf courses at night) will require storage. To the extent this storage is on the golf course there is a cost to the golf courses.

The District has set in place a collaborative effort with the golf courses in the Mid-Valley area to address issues related to use of Canal water, recycled water and groundwater on the courses.

3 Mid-Valley Recycled Water Facilities

Water Reclamation Plant 10 (WRP 10) is located within the Mid-Valley area south of Hovley Lane and east of Cook Street. Since 1987, WRP 10 has been providing recycled water (tertiary treated) to golf courses, homeowners associations, and the Palm Desert High School. The WRP 10 permitted influent capacity is 18.0 MGD (55 acre-feet per day). The permitted recycling capacity is 15.0 MGD (46 acre-feet per day). In 2003, the plant treated 3,752 million gallons of influent (11,515 acre-feet). Historically, inflow has increased by approximately five percent per year. This section describes the current system and proposes an approach to maximizing the use of recycled water.

3.1 Recycled Water Program at WRP 10

Recycled water facilities at WRP 10 include a 5-million-gallon earth-embankment reservoir with a floating roof and a pump station with both “high-pressure” and “low pressure” pumps. The high-pressure system delivers water at sprinkler pressure. The low-pressure system delivers to impoundments on the golf courses. Total pumping capacity is approximately 20,000 gallons per minute (gpm) or 45 cubic feet per second (cfs). The high-pressure pumps have a peak flow of approximately 12,000 gpm or 27 cfs. **Table 3-1** lists the customers served by the recycled system; **Sketch 3-1** shows the layout of the distribution lines. With modest additions, the current recycled water distribution system can serve much of the Mid-Valley area south of Gerald Ford Drive and east of Monterey Avenue.

Table 3-1
Current WRP 10 Recycled Water Customers

Indian Ridge Country Club	Silver Sands HOA
Santa Rosa Country Club	Casa Blanca HOA
Palm Desert Greens Country Club	Palm Desert High School
Portola Country Club	Desert Willow Golf Resort
The Golf Center, Palm Desert	Mountain View Falls HOA4
Marriott's Desert Springs Resort	Toscana Country Club
Vista Del Montanas HOA	

Table 3-2 shows the treatment and use of WRP 10 influent during 2003. Only about one-third of influent was recycled. In August 2004, the District and Toscana Country Club signed an agreement to serve that golf course with recycled water. During hot weather, Toscana Country Club will need 2 to 2.5 MGD (6 to 8 acre-feet per day) to serve two 18-hole golf courses. With this addition to the recycled system, summer use of recycled water from WRP 10 will come closer to the potential supply. Still, only about one-half of the influent will be recycled. Further expansion of recycled water use is limited by the inability to meet demand during the high-demand months. Providing Canal water to the recycled system

during high-demand months would allow additional golf courses to be connected to the system.

Table 3-2
Treatment and Use of WRP 10 Influent

Month (1993 actual)	Inflow		Percolated (Secondary Treated)		Recycled (Tertiary Treated)		On-Site Use	
	(acre-feet)	(million gallons)	(acre-feet)	(million gallons)	(acre-feet)	(million gallons)	(acre-feet)	(million gallons)
January	1,029	335	754	246	151	49	124	40
February	920	300	789	257	92	30	40	13
March	1,075	350	745	243	235	77	96	31
April	1,038	338	724	236	301	98	14	4
May	991	323	472	154	495	161	23	8
June	924	301	196	64	547	178	182	59
July	894	291	294	96	467	152	132	43
August	937	305	280	91	507	165	150	49
September	902	294	390	127	339	110	173	56
October	950	309	464	151	323	105	162	52
November	997	325	676	220	169	55	152	50
December	986	321	698	227	176	57	112	36
Total	11,642	3,792	6,482	2,111	3,802	1,238	1,358	442

Source: CVWD. Alan Harrell, e-mail. July 27, 2004

3.2 Expansion of the Recycled Water Program at WRP 10

Sketch 3-1 also shows golf courses that could be added to the recycled system, if the supply of recycled water were adequate. These include Marriott's Shadow Ridge, Palm Desert Resort, Woodhaven, The Oasis, Palm Desert Country Club, Lakes Country Club, Desert Falls Country Club, Avondale Golf Club, Palm Valley Country Club, Emerald Desert Country Club and RV Resort and the NorthStar development east of Interstate 10. The existing irrigation system at Marriott's Shadow Ridge (north of Frank Sinatra Drive, between Monterey Avenue and Portola Avenue) was designed to accommodate conversion to recycled water from the low-pressure recycled system. The recycled water pump station and recycled water distribution systems at WRP 10 are sized for these expanded deliveries.

4 Proposed Facilities and Phasing

This section develops an initial layout for the Mid-Valley Pipeline facilities. The facilities are sized presuming the project was sized to deliver enough Canal water to eliminate groundwater pumping. First, the integrated use of Canal water and recycled water is discussed and flow rates are established for Canal water. Then, pipeline alignments and pump station locations for a proposed transmission system are reviewed. The distribution systems necessary to serve the golf courses are discussed next. Finally three phases are proposed for connecting golf courses to the project.

Additional information will be collected from discussions with golf courses during predesign studies. It is anticipated that this information will result in changes to the alignments and to the sizes of some facilities. Because each golf course is unique and the layout of its irrigation system is not known, the optimal location and size of each service connection cannot be determined at this stage. Due to uncertainty in this analysis, an allowance of ten-percent is included in the sizing of facilities.

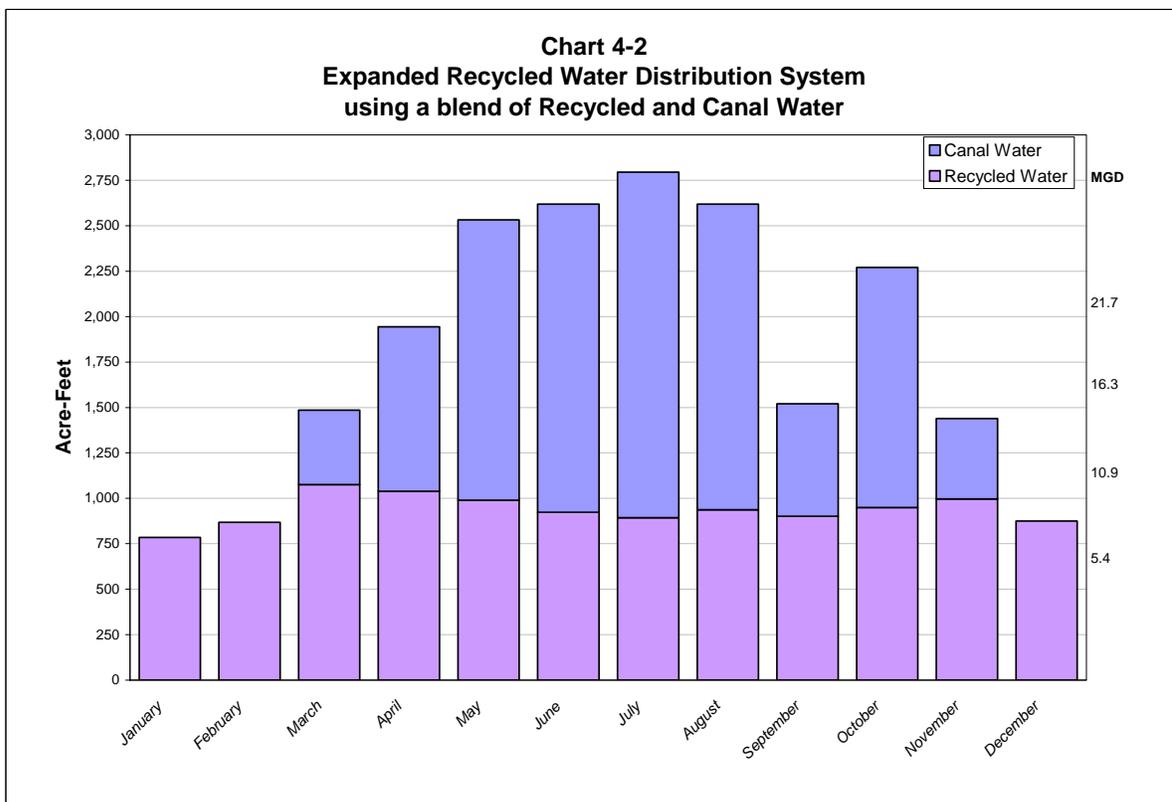
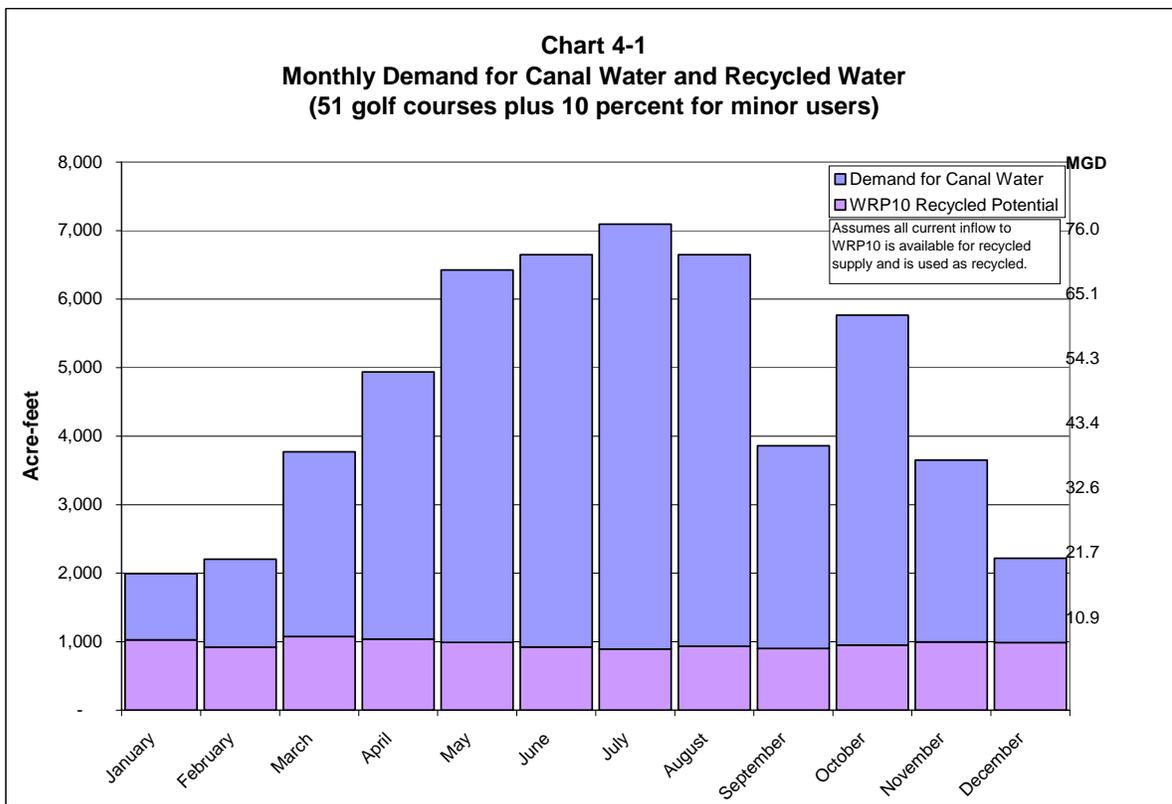
4.1 Required Canal Water Flow

Section 2 established the monthly demand for irrigation water. Section 3 reviewed the availability of recycled water and showed that expansion of the existing recycled water is limited by the inability to meet summer irrigation demand with the relatively constant supply of recycled water. The most efficient use of water is to maximize use of recycled water and then import Canal water to supply the remaining demand.

Chart 4-1 shows the monthly demand for irrigation water in the Mid-Valley area (year 2015) and the proportion of that demand that could be served by recycled water. Peak monthly demand in July is 7,095 acre-feet when only 894 acre-feet of recycled water are available. The remaining 6,201 acre-feet must be met with Canal water. A delivery rate of 104 cfs is required to deliver this amount from the Canal. Including a ten-percent increase for uncertainty and to allow for daily peaking, the recommended Canal water delivery rate to WRP 10 would be 114 cfs. A Canal Water Transmission System would deliver this water from the Canal to WRP 10 for distribution.

Two distribution systems are proposed. One an expansion of the existing Recycled Water System would distribute a blend of recycled and Canal water, the proposed Canal Water Distribution System would distribute Canal water only. Both of these systems would start with pump stations at WRP 10.

Chart 4-2 shows, on a monthly basis, the amount of Canal water that would have to be added to the recycled system to allow the envisioned expansion of that system.



4.2 Canal Water Transmission System

The Canal Water Transmission System from the Canal to WRP 10 would consist of Pump Station 1 located adjacent to the Canal, a Transmission Line, a Receiving Impoundment at WRP 10 and service connections to adjacent golf courses. These facilities are discussed below.

4.2.1 Pump Station 1

Pump Station 1 would be sized to deliver the projected remaining demand for irrigation water after maximum use is made of recycled water produced by WRP 10. The pump station would operate 24-hours a day to minimize impacts on Canal operations. Imperial Irrigation District, which provides electrical power in this area, does not have time-of-use rates eliminating a reason to avoid pumping during peak hours by constructing a larger pump station. It is anticipated that control of transients (water hammer) will require construction of pressure vessels at the pump station. Screening for removal of debris will be included at Pump Station 1. Sediment removal may not be practical at this location.

Depending on the location selected for the pump station, noise impacts and aesthetics could potentially impact adjacent land uses. Noise mitigation measures could include enclosures, walls and earth berms. Aesthetic considerations could affect the design perimeter walls and require landscaping. A larger site than is needed for the facilities could also mitigate noise and aesthetic impacts.

A preliminary estimate of the required area for the pump station is 0.7 acres, not including any additional land for mitigating noise and aesthetic impacts.

4.2.2 Transmission Line

Two alignments for the Transmission Line from the Canal to WRP 10 have been evaluated. The Coachella Stormwater Channel Alignment (Stormwater Channel Alignment) generally follows the Coachella Stormwater Channel. The 42nd Avenue/Hovley Lane Alignment (42nd Avenue Alignment) follows public streets for the majority of its route. **Sketch 4-1** shows these two alignments. **Sketches 4-2 to 4-16** show more detail for the Stormwater Channel Alignment. **Sketches 4-17 to 4-22** show more detail for the 42nd Avenue Alignment.

The Stormwater Channel Alignment presents two options. The pipeline could be constructed in the levee or in the invert. Construction in the levee presents challenges with restricted space and utility conflicts (Sketch 4-5 and 4-6). Construction in the invert presents challenges with scour and existing drop structures. The best option may vary in different portions of the alignment.

The pump station for the Stormwater Channel Alignment would be located at the intersection of the canal and the Stormwater Channel (Sketch 4-2). The District is currently evaluating

the availability of land at this location for the Pump Station. Each of the four corners is a possibility although it appears that the west corner (currently owned by Heritage Palms Golf Club) will be acquired by Imperial Irrigation District for an electrical substation. Discussions with Imperial (Randy Gray, April 12, 2005) indicate that Imperial will need the entire site for the substation.

The pump station for the 42nd Avenue Alignment would be located along the canal and south of Indio Highway. Land on the west side of the Canal from Indio Highway to the extension of Avenue 43, a distance of 1600 feet is currently vacant. But, significant development is occurring in the vicinity (Sketch 4-17).

District staff and Bookman-Edmonston met with staff from the cities of Indio, Indian Wells, La Quinta and Palm Desert, and the County of Riverside in February and May 2005. The cities and county all indicated a preference for the Stormwater Channel Alignment in order to reduce construction impacts. The City of Indian Wells noted that construction of a pipeline through the Golf Resort at Indian Wells (which straddles the channel) is consistent with their intent to remodel the course. While the 42nd Avenue Alignment is shorter, constructing along a major street presents significant challenges including traffic control, maintaining access for adjacent property owners, utility conflicts and restricted construction zones.

4.2.3 Receiving Impoundment

As Pump Station 1 will operate 24-hours a day and golf course irrigation occurs at night there is a need for significant storage. The storage will occur either at District facilities or on the golf courses. Generally golf courses irrigate for 12 hours or less while Pump Station 1 will operate 24 hours. At peak operation of 114 cfs, approximately 114 acre-feet of storage would be required. While each golf course is unique, they typically have been designed with adequate storage to allow their wells to operate up to 18-hours a day. If, on the average, the golf courses have storage to take deliveries over 18 hours, then an additional 60 acre-feet of storage is needed. This additional storage could be constructed at WRP 10, on golf courses or at District owned sites on distribution pipelines.

A Receiving Impoundment at WRP 10 will be required to allow matching flows entering WRP 10 from the Canal with flows being delivered from the plant to the golf courses.

District plans for WRP 10 include construction of a 5 million-gallon (MG) or 15 acre-foot impoundment adjacent to the existing recycled water reservoir. Assuming that distribution from WRP 10 to golf courses occurs over 18-hours, this would allow operation of the transmission system at 30 cfs or approximately one-quarter of ultimate capacity.

While additional storage will be needed for the complete project, a 5 MG receiving impoundment is included with the transmission system. The impoundment will include sediment removal facilities, a connection to the existing recycled water reservoir and allowances for future connection to the proposed Canal Water Distribution System.

4.2.4 Adjacent Golf Courses

Whichever route is selected for the transmission line, it will be possible to connect some golf courses directly to the transmission line. The Golf Resort at Indian Wells has expressed interest in connecting to the transmission system if the line is routed along the Stormwater Channel.

4.3 Recycled Water System Extension

The existing Recycled Water System will need to be extended to make the additional deliveries made possible by the addition of Canal water to the recycled system. The extension is not addressed in this report.

4.4 Canal Water Distribution System

As discussed in Section 2, the District and the golf course operators are collaborating to fully understand the opportunities and constraints in delivering Canal water to the golf courses. This section lays out a possible configuration in order to develop an understanding of the feasibility and cost of a distribution system. Two variations in the configuration are examined. The first variation is enlarging the system to allow all deliveries to the distribution system to occur at mid-peak or off-peak energy rates (Southern California Edison provides service to WRP 10 and time-of-use rates are available). The second variation is dividing the system into two pressure zones by including an additional pump station with the goal of reducing energy consumption.

Sketch 4-23 shows a possible layout for the Canal Water Distribution System. With this layout, 21 golf courses would connect to this system. The remaining 29 Mid-Valley area golf courses either are served by the recycled system or by branches off the main Transmission Line between Pump Station 1 and WRP 10.

The golf courses to be served by the Canal Water Distribution System have a peak demand of 72 cfs using the criteria established above and 24-hour a day delivery. An 18-hour delivery period would increase the maximum daily flow rate to approximately 96 cfs. The pump station supplying the Canal Water Recycled System has been designated as Pump Station 2.

From Pump Station 2, the distribution system extends to the northwest with approximately 78,000 lineal feet of pipeline ranging from 48- to 24-inches in diameter. An additional 39,000 lineal feet of smaller-diameter pipelines will be required to branch out to the golf courses throughout the region.

After Pump Station 2, the flow is split at the intersection of Portola Avenue and Country Club Drive to create a looped system. This not only gives the District the ability to back feed its customers if a pipeline were damaged, but also allows smaller diameter pipe to be used. The looped system utilizes several branch systems to serve the outlying customers. The branch systems are labeled Branch 3 through Branch 6 on Sketch 4-23.

Sizing of the system is discussed below. Making deliveries over 24-hours and over 18-hours are both evaluated. Also, adding a lift station along the system is evaluated.

4.4.1 24-Hour Delivery

A 24-hour a day delivery schedule minimizes the size requirements for the distribution system. However, with continuous delivery the pump systems are operating during on-peak peak energy charge periods and delivering water to golf courses at times of low use (typically watering occurs at night and early morning, off-peak hours). The sections below evaluate the system requirements for both pump station alternatives under the continuous delivery scenario.

4.4.1.1 Single Pump Station at WRP 10 (Single pressure zone)

Under this alternative, the entire Canal Water Distribution System would be served by a proposed Pump Station 2 at WRP 10. The maximum flow would be 72 cfs, with a required pumping head of approximately 390 feet. **Chart 4-4** illustrates the hydraulic grade through the system. While developing the system pressure needs, a requirement of 20 psi delivery pressure at each golf course was assumed and an additional 10 ft of head was added at those delivery points to account for elevation uncertainties and depth of pipe. The triangles indicate pressure requirements for the branches off the main distribution facilities.

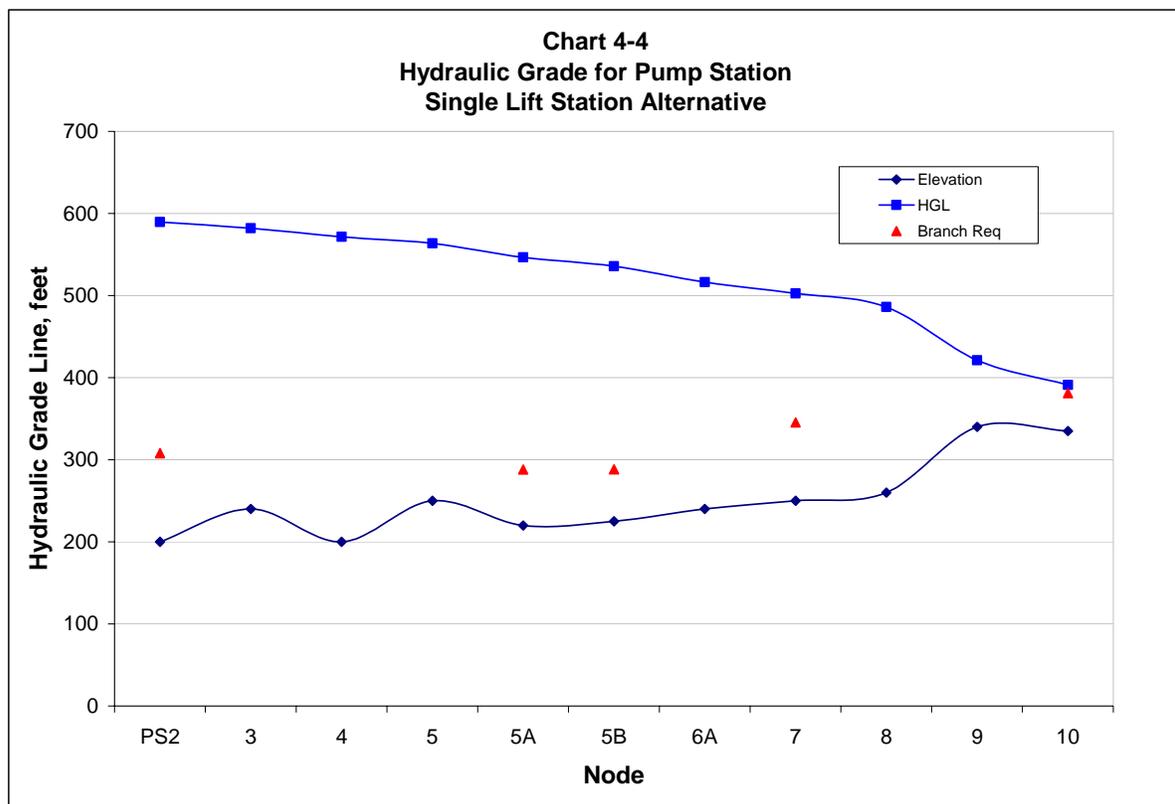
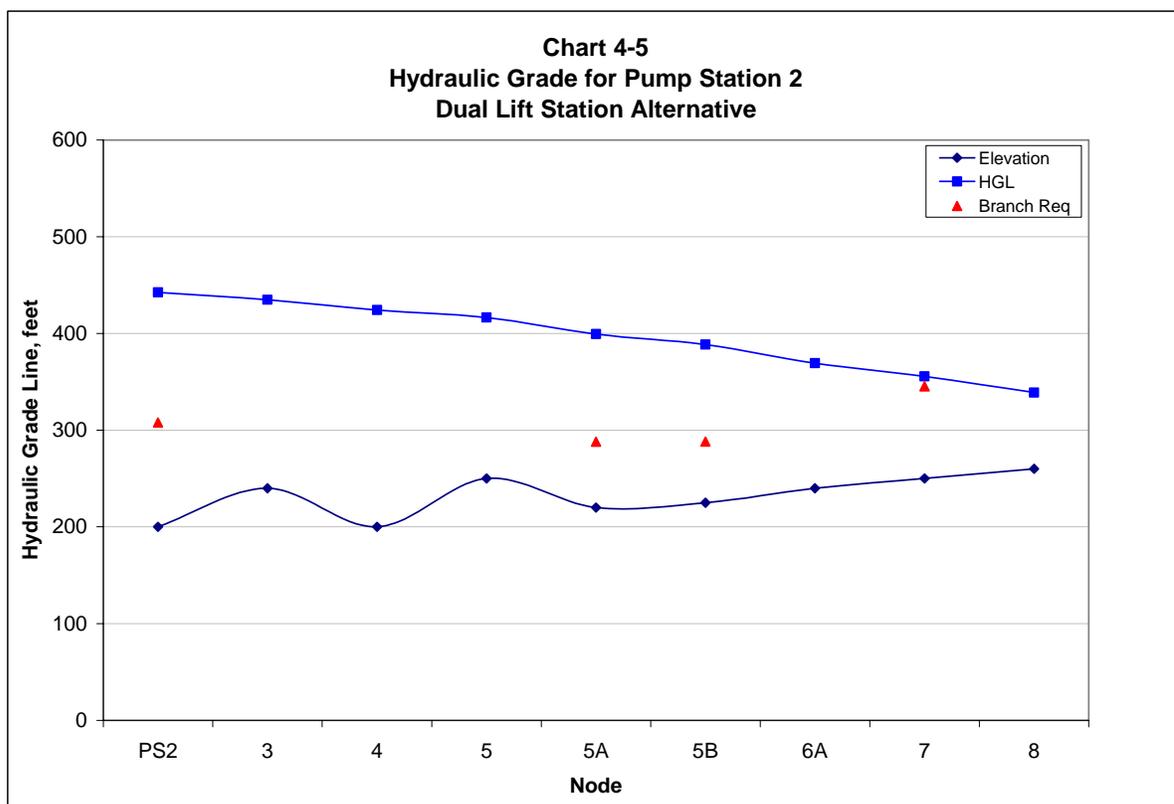


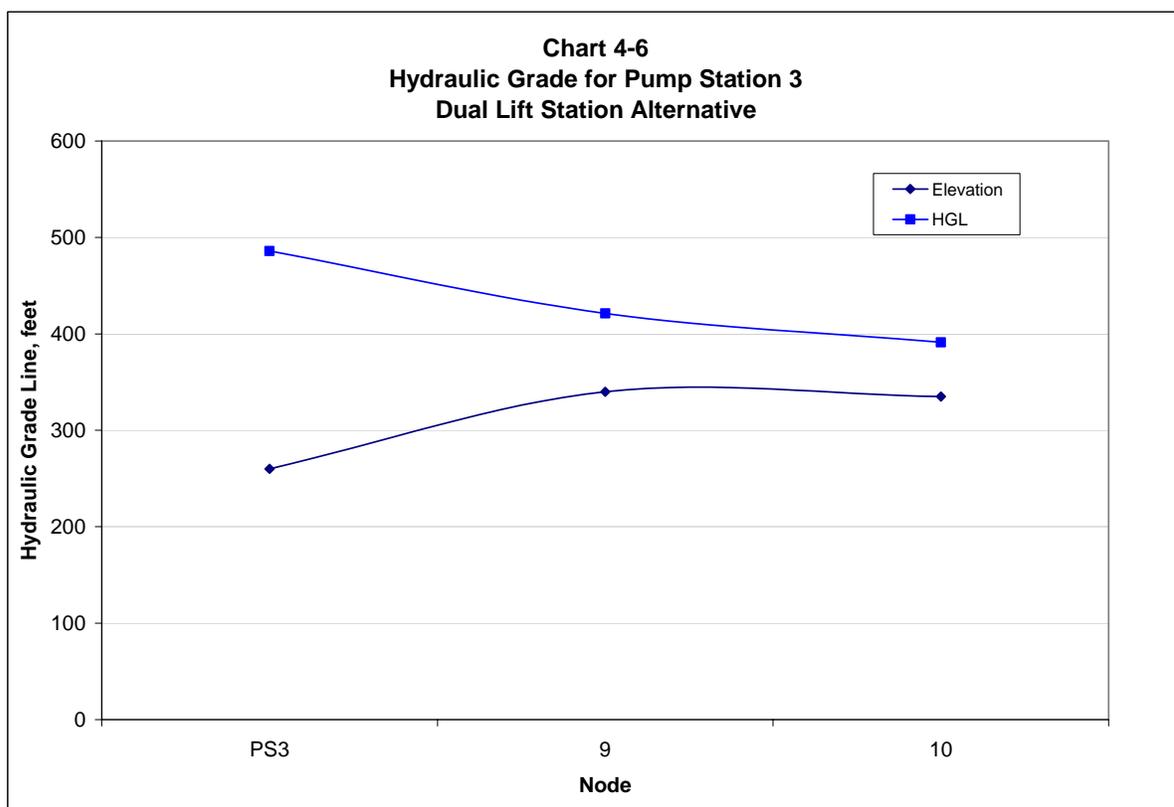
Chart 4-4 illustrates that pumping head is wasted in the initial legs of this system in order to provide the necessary pressure at the northern most golf course. The opportunity to save energy by dividing the distribution system into two pressure zones is examined next.

4.4.1.2 Additional Pump Station (Two pressure zones)

The elevations of the golf courses to be served by this system vary for a few feet to 180 feet above WRP 10. Delivering water to the lower golf courses directly from Pump Station 2 and including another pump station to lift Canal Water to the higher golf courses would reduce the lift requirement and energy demand of the Pump Station 2. Were the added pump station, Pump Station 3, added near the intersection of Bob Hope Drive and Frank Sinatra Drive, the lift of Pump Station 2 would be reduced from 390 feet to 242 feet with the same flow characteristics. There is a vacant section of land on the northeast side of this intersection. **Chart 4-5** shows the hydraulic grade for Pump Station 2 at WRP 10 under this alternative.



Pump Station 3, serving the northern most golf courses would be sized to deliver a flow of 20 cfs with a total dynamic head of 226 feet. **Chart 4-6** below shows the hydraulic grade through the system downstream of Pump Station 3, located at the intersection of Frank Sinatra Drive and Bob Hope Drive.



4.4.2 18-Hour Delivery Scenario

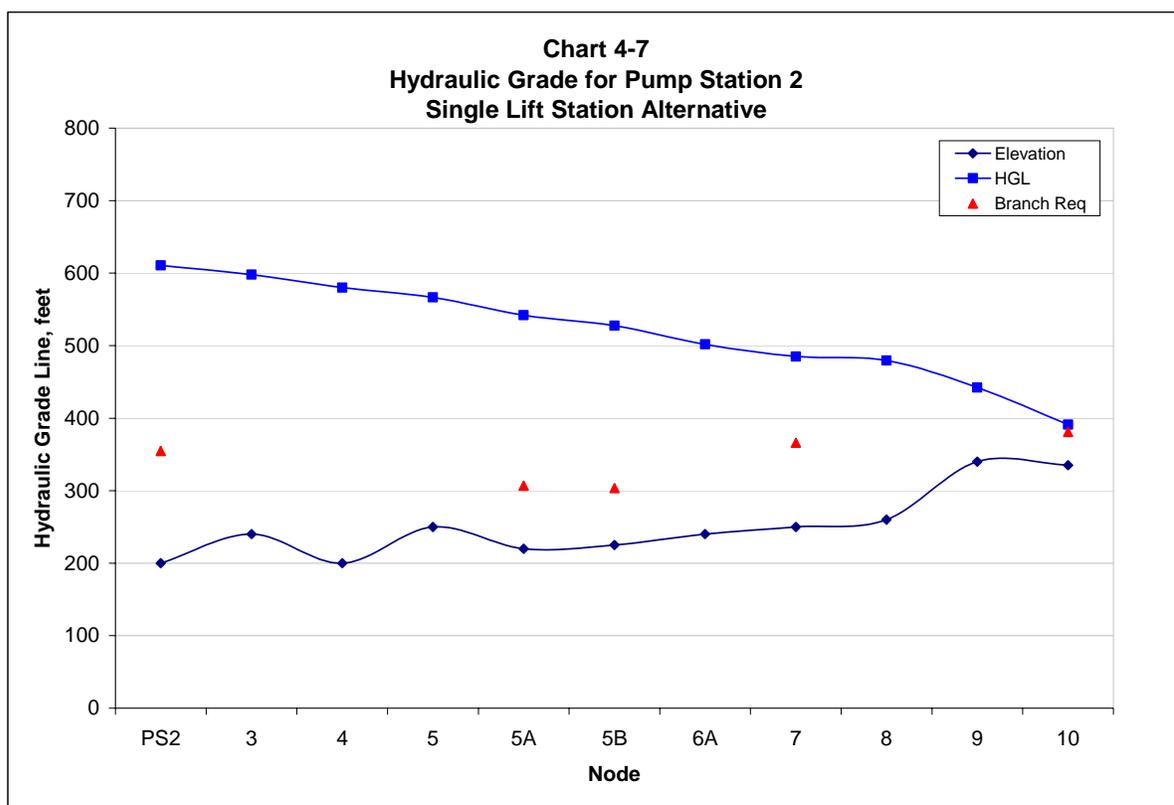
An 18-hour a day delivery schedule better matches delivery with demand. This option also allows the District to avoid pumping during on-peak hours (Noon to 6:00 PM). However, decreasing the daily operation period from 24-hour to 18-hour the flow requirements for sizing the distributions and pumping systems are increased by 33 percent. Additional storage would also be required at WRP 10 as deliveries from the Canal will be on a 24-hour basis. The sections below evaluate the system requirements for both pump station alternatives under the 18-hour delivery scenario.

4.4.2.1 Additional storage at WRP 10

The required storage at WRP 10 would be approximately six hours of Pump Station 1's peak flow rate of 114 cfs or 56 acre-feet (18 MG), although deliveries made directly from the Transmission System prior to WRP 10 would reduce the requirement by a small amount. The Transmission System portion of the project includes a 15-acre-foot (5 MG) receiving impoundment. The additional storage requirement would be approximately 41 acre-feet.

4.4.2.2 Single Pump Station at WRP 10 (Single pressure zone)

Under this alternative the new pump station at WRP 10 would require a maximum flow of 96 cfs, with a required pumping head of approximately 529 feet. **Chart 4-7** illustrates the hydraulic grade through the system with one pump station operating at WRP 10. The same delivery pressure requirements and assumptions were made with this alternative.



4.4.2.3 Additional Pump Station (Two pressure zones)

The evaluation of two pressure zones for the 18-hour delivery scenario is similar to the evaluation made for the 24-hour scenario in Section 4.4.1 and is not repeated here.

4.5 Golf Course Connections and On Site Conversions

In addition to the service laterals and meters required for each golf course, various on-site conversions will be necessary. These conversions are site specific and will differ for each golf course. On going discussions with the golf course operators will allow further definition of these requirements. The golf courses would be connected to the project in phases. Phase 1 would include those golf courses that could be connected to the Canal Water Transmission System without additional pumping. Phase 2 would be golf courses that could be connected to the expanded recycled water system. Phase 3 would be the remaining courses that would be connected to the proposed Canal Water Distribution System. **Table 4-1** shows which golf courses would be in each phase. The goals for Phase 1 are ambitious. It is likely that

physical or institutional limitations will prevent some of these courses from being included in Phase 1.

Table 4-1
Proposed Phasing Goals for Golf Course participation in Mid-Valley In-Lieu Program

Golf Course	Holes/18-Hole Equivalents	2015 Water Use (af/y)	Proposed Phase		
			Phase 1	Phase 2	Phase 3
Desert Willow	36	1,800	1,800		
Portola Country Club	18	900	900		
The Golf Center, Palm Desert	9	450	450		
Woodhaven Country Club	18	994		994	
Palm Desert Country Club	27	1,999		1,999	
Palm Desert Resort Country Club	18	1,157		1,157	
Indian Ridge Country Club	36	923	923		
Palm Valley Country Club	36	1,664		1,664	
Avondale	18	793		793	
Emerald Desert Country Club	9	333		333	
Desert Falls Country Club	18	1,522		1,522	
The Lakes Country Club	27	2,308		2,308	
The Oasis	18	931		931	
The Golf Resort at Indian Wells	36	1,845	1,845		
Indian Wells Country Club	27	885		885	
El Dorado Country Club	18	307		307	
Desert Horizons Country Club	18	867	867		
Marriott's Shadow Ridge	18	923		923	
Santa Rosa Country Club	18	746	746		
Suncrest Country Club	9	714			714
Chaparral Country Club	18	951			951
Monterey Country Club	27	1,628			1,628
Date Palm Country Club	18	619			619
Marriott's Desert Springs Resort	36	1,587	1,587		
Palm Desert Greens Country Club	18	884	884		
Toscana Country Club	36	1,800	1,800		
Future course at T4S/R6E Sec 33	18	923			923
Future course at T4S/R6E Sec 31	36	1,845			1,845
Rancho Las Palmas Resort Country Club, Marriott's	27	1,236			1,236
Date Palm Country Club	18	619			619
Sunrise Country Club	18	961			961
Thunderbird Country Club	18	574			574
The Springs Club	18	1,289			1,289
Desert Island Golf and Country Club	18	852			852
Rancho Mirage Country Club	18	1,236			1,236
Tamarisk Country Club	18	692			692
The Club at Morningside Heights	18	1,205			1,205
Westin Mission Hills Resort	36	1,854			1,854
Mission Hills Country Club	54	5,747			5,747
Private at NW corner Hope & Sinatra	9	450			450
Private at top of Magnesia Canyon	18	900			900
Indian Springs County Club ⁶			900		
Projected water use			12,702	13,816	24,295
Current recycled water use			4,000		
Potential Conversions			8,702	13,816	24,295

Note: See notes on Table 2-1 for additional information on golf courses.

5 Project Cost

This section covers the capital cost of facilities discussed in Section 4 and addresses operating costs to the extent necessary to allow selection between different alternatives. The Transmission System for the Canal to WRP 10 is discussed first, then the Canal Water Distribution System. All costs are in year 2005 dollars. Detailed cost estimates are included in **Appendix C**. Section 7 makes recommendations for which alternatives should be carried forward to design or further evaluation.

5.1 Canal Water Transmission System

Section 4 discussed the requirements for the Transmission System including Pump Station 1 (114 cfs), a Transmission Line and a Receiving Impoundment at WRP 10. It described two alternative alignments for the Transmission Line: the 42nd Avenue/Hovley Lane Alignment and the Stormwater Channel Alignment. It also discussed whether the Stormwater Channel Alignment would be in the channel levee or the invert. **Table 5-1** summarizes the projected capital cost of each alignment and various sizes of the Canal Water Transmission System.

Table 5-1
Canal Water Transmission System Capital Cost
Includes Pump Station 1 and 5 MG storage at WRP 10
(2005 Price Level. Includes design and construction management)

Pipe Diameter (inches)	42nd Avenue/ Hovley Lane Alignment	Coachella Stormwater Channel Alignment	
		Levee	Invert
54	\$ 27,509,799	\$ 29,266,322	\$ 29,914,107
60	\$ 30,328,335	\$ 32,716,761	\$ 32,889,852
66	\$ 33,652,274	\$ 36,728,243	\$ 36,389,973
72	\$ 37,392,524	\$ 41,145,454	\$ 40,261,509

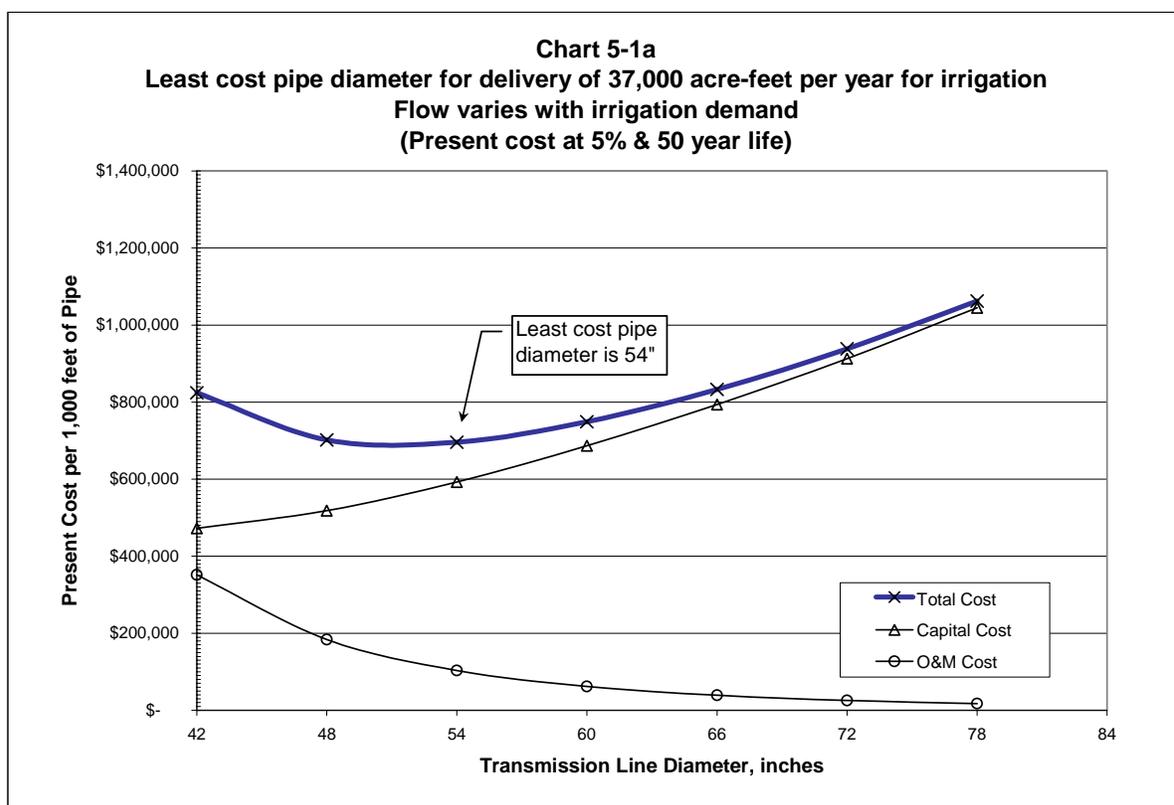
The capital cost of each pipe diameter varies by approximately ten percent between the alignments. Given uncertainty of predicting the construction climate more than a year from now and the preliminary nature of these estimates, the capital cost for each alignment is essentially the same.

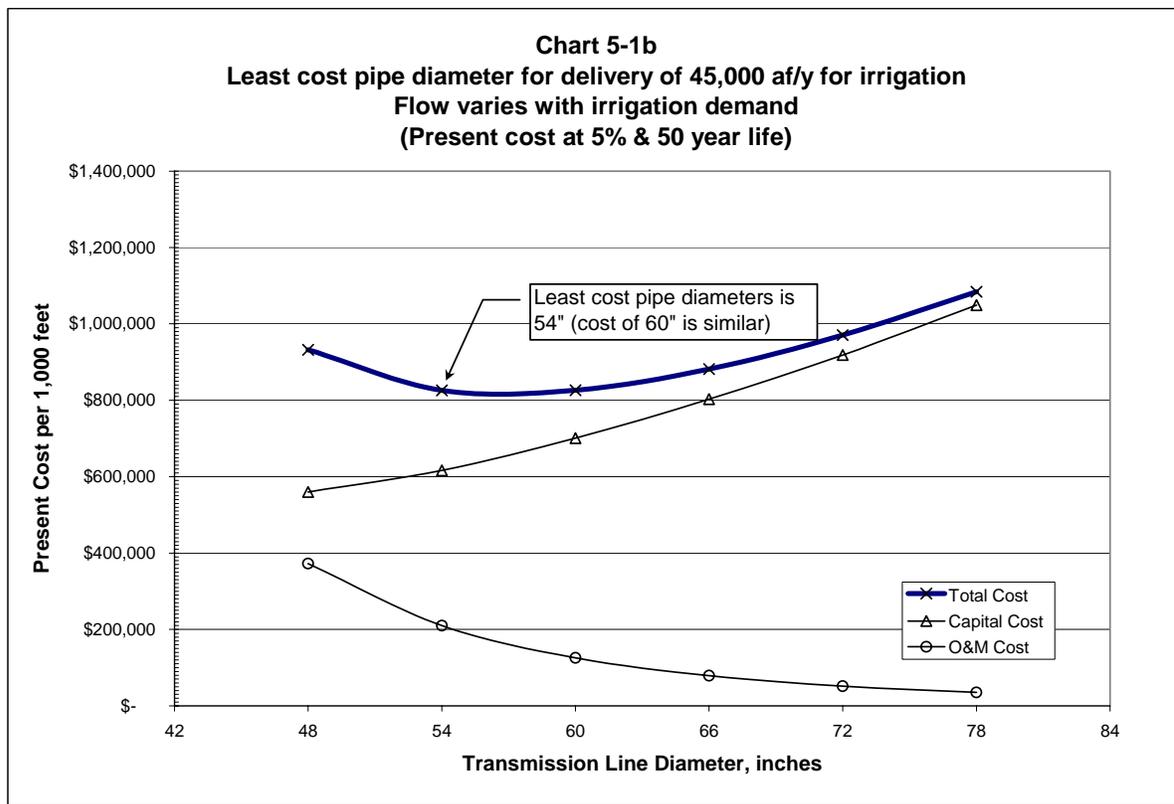
The next step of evaluating the cost of the Transmission System is evaluation of the operation and maintenance costs of different pipe diameters. Two different operational goals were considered in evaluating the most cost efficient diameter for the Transmission Line:

- (1) The District's Water Management Plan goal of delivering 37,000 acre-feet per year of Canal water to the Mid-Valley area for irrigation use. Deliveries peak during the summer.

(2) Replacing all groundwater pumping for irrigation in the Mid-Valley area by delivering 45,000 acre-feet per year. Deliveries peak during the summer.

This evaluation includes the capital cost to construct the pipe and pumping capacity to overcome friction losses operation and maintenance costs including energy to overcome friction losses, electrical connection costs for the pumping plant, maintenance of the pipeline and maintenance of the pump capacity. A set of three charts demonstrates the varying capital cost and operation and maintenance cost for different pipe diameters under each of these operational goals using a fixed length of 1,000 feet of pipe. The larger the pipe diameter, the higher the capital cost and the lower the operation and maintenance costs. If these two costs are summed for each pipe diameter, the lowest cost pipe diameter can be determined. **Chart 5-1a** shows the cost to deliver 37,000 acre-feet per year for irrigation using different diameters. **Chart 5-1b** shows the cost to deliver 45,000 acre-feet per year for irrigation.





While these graphs provide guidance on selection of pipe diameter, they do not by themselves determine the correct size. The goals for the Mid-Valley Pipeline, the need for flexibility in its operations and uncertainty all need to be considered. Chart 5-1a suggests that a 54-inch pipeline would most efficiently meet the goal of the Water Management Plan, but may not be the most efficient size were the project able to entirely replace use of groundwater. Chart 5-1b shows that a 60- or 66-inch line would be preferred for delivering 45,000 acre-feet per year of irrigation water. The District may also choose a pipe diameter larger than the apparent optimal size due to uncertainty and to allow flexibility in operations.

5.2 Canal Water Distribution System

One alignment was developed for the Canal Water Distribution System. This alignment was then expanded into four variations by evaluating two delivery scenarios and by evaluating splitting the system into two pressure zones.

The two delivery scenarios examined were 24-hour delivery and 18-hour delivery. The 24-hour delivery option would require storage at the golf courses. The 18-hour delivery option would require storage at WRP 10 and either at the golf courses or along the distribution system, but would avoid pumping at on-peak rates.

The second variation splits the system into two pressure zones by including a pump station located in the vicinity of Frank Sinatra and Bob Hope Drives. This third pump station reduces the average lift and energy costs.

Table 5-2 shows the capital cost of each option.

Table 5-2
Canal Water Distribution System Capital Cost
(2005 Price Level. Includes design and construction management. Does not
include supervision and administration by District staff)

	Single Pressure Zone	Dual Pressure Zone
Canal Water Distribution System, Pump Station 2 at 72 cfs for 24-hour Delivery	\$ 37,090,824	\$ 40,603,627
Canal Water Distribution System, Pump Station 2 at 96 cfs for 18-hour Delivery	\$ 40,132,982	\$ 44,654,383
Notes: Does not include supervision and administration by District staff		

With the caution that the on going collaborative effort between the District and the golf courses is expected to provide insights that will impact the design of the Canal Water Distribution System, partial evaluation of the operation and maintenance costs of each of these four variations has been made.

A key advantage of 18-hour operation compared to 24-hour operation would be the ability to avoid pumping from Noon to 6:00 PM during summer week days when on-peak rates are in effect. The pump stations would be located within Southern California Edison's service area and would operate under time of use rates. Evaluation of the probable pumping schedule for 24-hour operation shows that only about 7 percent of pumping would occur during the on-peak time period, approximately 72 percent would occur during off-peak time periods with the remaining at mid-peak. The energy savings from 18-hour deliveries would be on the order of \$60,000 per year. This annual savings would justify approximately \$1.5 million dollars of construction (50 year life, 3 percent interest rate). The cost estimate in Table 5-2 shows an increased capital cost of three to four million to enlarge the system to facilitate 18-hour delivery. While there are still issues with the location of storage and system operations to be resolved, it appears that 18-hour delivery cannot be justified based on savings in energy costs.

Splitting the Canal Water Distribution System into two pressure zones reduces the lift of the 23,000 acre-feet of water delivered to the lower zone by 180 feet. This reduction would result in an annual savings in energy of \$550,000 assuming a cost of \$ 0.10/kWh and a pump efficiency of 0.8. This reduction easily justifies the additional cost of approximately \$ 4 million. Including the second pressure zone may have additional advantages of facilitating construction of the distribution system in phases.

Additional storage (beyond that built when the Canal Water Transmission System is constructed) will be required as the distribution system is expanded. Some of this storage will occur on golf courses and some will be District owned. For purposes of cost estimating,

an additional 15 MG (45 acre-feet) has been assumed. While some of this storage may be located along the distribution system, space should be reserved at WRP 10 for future storage.

5.3 Mid-Valley Pipeline Cost

Table 5-3 presents an evaluation of the capital cost and cost per acre-foot of the Mid-Valley Pipeline. The table focuses on the anticipated deliveries of the project and on the construction of the Canal Water Transmission System. Thus, the cost of the Canal Water Distribution System is kept constant for each alternative. Four different diameters for the Canal Water Transmission System and two different annual delivery goals are shown. The annual operation and maintenance cost is predominately energy for pumping. This analysis shows that the cost per acre-foot of water delivered varies between \$170 and \$208.

Table 5-3
Cost of Mid-Valley Pipeline
(2005 price level. 5% and 50 year life)

	Diameter of the Canal Water Transmission System			
	54-inch	60-inch	66-inch	72-inch
Capital Costs (2005 price level)				
Canal Water Transmission System (Stormwater Channel Alignment, Invert)	\$ 29,300,000	\$ 32,900,000	\$ 36,400,000	\$ 40,300,000
Canal Water Distribution System (18-hour deliveries, dual lift)	44,700,000	44,700,000	44,700,000	44,700,000
On site improvements to golf courses	Not included	Not included	Not included	Not included
Expansion of recycled water system	Not included	Not included	Not included	Not included
Capital Cost	\$ 73,900,000	\$ 77,500,000	\$ 81,000,000	\$ 84,900,000
37,000 acre-feet per year of canal water delivered (Goal of Water Management Plan)				
Equivalent annual capital cost	\$ 4,050,000	\$ 4,250,000	\$ 4,440,000	\$ 4,650,000
Annual Operation and Maintenance cost	3,030,000	3,010,000	3,020,000	3,040,000
Equivalent annual cost	\$ 7,080,000	\$ 7,260,000	\$ 7,460,000	\$ 7,690,000
Equivalent annual cost per acre-foot	\$ 191	\$ 196	\$ 202	\$ 208
45,000 acre-feet per year of canal water delivered (all pumping of groundwater in Mid-Valley eliminated)				
Equivalent annual capital cost	\$ 4,050,000	\$ 4,250,000	\$ 4,440,000	\$ 4,650,000
Annual Operation and Maintenance cost	3,610,000	3,540,000	3,510,000	3,520,000
Equivalent annual cost	\$ 7,660,000	\$ 7,790,000	\$ 7,950,000	\$ 8,170,000
Equivalent annual cost per acre-foot	\$ 170	\$ 173	\$ 177	\$ 182

6 Eliminated Alternatives and Limitations

This section reviews alternatives that were considered and eliminated, the limitations of this paper, and the refinements that require additional data collection and analysis.

6.1 Alternatives Considered and Eliminated

A number of design criteria and alternatives were evaluated earlier in this evaluation or in previous studies and eliminated.

The Conjunctive Use/Stored Water Study (Bookman-Edmonston, 2000) proposed a distribution system for Canal water that was not integrated with the recycled water system. Integration of the two systems as proposed in the current study will allow more recycled water to be used and either reduce the demand on Canal water or allow a further reduction of groundwater pumping.

The Conjunctive Use/Stored Water Study also proposed two goals. In addition to the program described in this paper, a smaller goal of delivering approximately 13,000 acre-feet/year of Canal water to the Mid-Valley area was considered. The Coachella Valley Water Management Plan (Montgomery Watson Harza, 2002a) selected the larger program with a goal of 37,000 acre-feet/year.

Consideration was given to sizing the pump station at the Canal, Pump Station 1, for less than 24-hour a day operation. This option was eliminated due to the impacts of Canal operations. The capacity of the Canal in the vicinity of the proposed pump station is 675 cfs. The pump station would be approximately 150 cfs, 22 percent of the Canal capacity and a much larger percent on normal flow. In addition, the pump station and pipeline would cost more due to the larger size.

6.2 Additional Analysis

As implementation of the Mid-Valley Pipeline proceeds there are a number of issues and opportunities to be addressed in more detail.

The cost estimate for constructing the Transmission Line in the invert of the Stormwater Channel assumes a depth of burial of 10-feet below the existing channel invert. This matches the construction of existing slope protection which was typically constructed to 10-feet below the channel invert. Additional investigation of the potential depth of scour is necessary should the Stormwater Channel Alignment be selected in order for the District to make an informed decision of the risks.

While it is believed that CEQA requirements will not be a significant restraint, there is a possibility that construction in the Stormwater Channel invert could raise some concerns.

Discussions with the regulatory agencies have not been initiated. The Mid-Valley Pipeline is included in the District's *Program Environmental Impact Report for Coachella Valley Water Management Plan and State Water Project Entitlement Transfer (PEIR)*. In that CEQA documentation, the Mid-Valley Pipeline is discussed as two separate projects: Conversion of Upper Valley Golf Courses to Exchange Water and Upper Valley Golf Course Conversion to Recycled Water. The PEIR includes the requirement for project-specific mitigation measures. For the Mid-Valley Pipeline, those measures address construction impacts.)

The on going collaborative effort between the District and the golf courses will provide additional insights into the best implementation.

The location and amount of storage needs additional investigation.

Decisions on the location of storage can significantly affect the sizing of the Canal Water Distribution System. Locating storage at WRP 10 increases the size of Pump Station 2 and of the pipelines in the distribution system.

The District has initiated evaluation of the availability of land for the pump station should the Stormwater Channel alignment be selected. The District is also evaluating their existing easements and land acquisition requirements for construction of the Transmission Line in the Stormwater Channel. This paper presumes that land will be available for Pump Station 1 and Pump Station 3. The District has initiated investigation of the availability of land for Pump Station 1. It is premature to investigate the availability of land for Pump Station 3, unless development in the vicinity proposed for that pump station raises the opportunity for the District to obtain the necessary land by dedication.

The cost of extending the recycled water distribution system has not been addressed. The District typically funds these extensions as part of the contractual agreements made with the golf course that will be served by the extension. The arrangements made for construction and payment are negotiated as part of each agreement and vary.

The route for the Canal Water Distribution System requires additional investigation. Additional review of existing underground utilities may affect route selection. In particular, there are major storm drains in Portola Avenue. The specific arrangement of on-site facilities at each golf course will also affect the layout of the distribution systems. Cook Street may be widened by the city of Palm Desert during the summer of 2006 and may install a storm drain in Portola Street in either 2006 or 2007. This may provide an opportunity to coordinate portions of construction. In general, the city has expressed a preference for construction in the Stormwater channel.

Use of the Mid-Valley Pipeline to return water to the Canal was previously proposed (Bookman-Edmonston, 2000) and is still an option. This paper has not further evaluated the feasibility.

7 Recommendations

The evaluation in this concept paper is adequate to recommend that the District fund implementation of the Mid-Valley Pipeline. The first phase of construction should be the Canal Water Transmission System to deliver Canal water to WRP 10 with deliveries to golf courses where practical.

The on-going collaborative efforts with golf courses should continue to assure timely resolution of challenges with making deliveries to the golf courses.

Planning for the design and construction of expansion the existing recycled system and construction of the proposed Canal Water Distribution System should be initiated in order that deliveries of Canal water to golf courses can start soon after construction of the Transmission Facilities is complete.

A more detailed discussion of these recommendation and the steps required for implementation follows.

7.1 Canal Water Transmission System

The proposed Canal Water Transmission System includes Pump Station 1 at the Coachella Canal, the Transmission Line from the Canal to WRP 10 and a the Receiving Impoundment at WRP 10. These facilities should be sized to allow delivery of up to 37,000 acre-feet of Canal water for irrigation purposes and should be integrated with the existing Recycled Water System. Where feasible, turnouts should be provided to golf courses near the transmission facilities. The cost difference between a 54-inch and 60-inch diameter Transmission Line is small. The smaller diameter reduces capital costs while the larger diameter reduces operation and maintenance costs and provides more flexibility in operations. Further evaluation during pre-design is warranted to select the pipeline diameter.

The Stormwater Channel Alignment is recommended over the Hovely Lane/42nd Avenue Alignment due to reduced construction impacts. Additional investigations will be necessary to determine whether construction in the invert or on the levee – or a combination – is the best option.

District staff has initiated selection of property for the pump station to be located at the canal under the presumption that the Stormwater Channel Alternative will be selected. Once a selection is made, the District should assure that the selected site remains available.

The opportunities to connect golf courses directly to the Canal Water Transmission System have not been fully explored. These opportunities should be explored during predesign and design of the system.

The cost for the transmission facilities, including design and construction management, but not including supervision and administration by District staff is from \$ 30 million for a 54-inch pipeline to \$33 million for a 60-inch pipeline at 2005 price level.

7.2 Expansion of the Recycled Water System

District staff should continue collaboration with golf courses near the existing recycled system with the intent of entering contracts for delivery of water once the transmission system is in operation. Previous expansions have generally been constructed at the expense of the golf courses that the expansion serves. Contractual arrangements have ranged from the golf course constructing the required extension to the golf course paying for construction by the District through their payments for delivered water.

7.3 Canal Water Distribution System

Additional planning is required to determine the best alignment and sizing of the Canal Water Distribution System. This planning effort should include a collaborative effort with the golf courses and extensive coordination with the cities. Cost for the Canal Water Distribution System including design and construction management is estimated at \$37 million to \$45 million at 2005 price level.

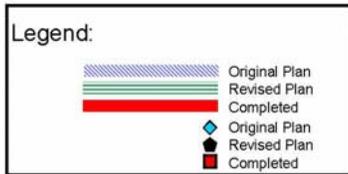
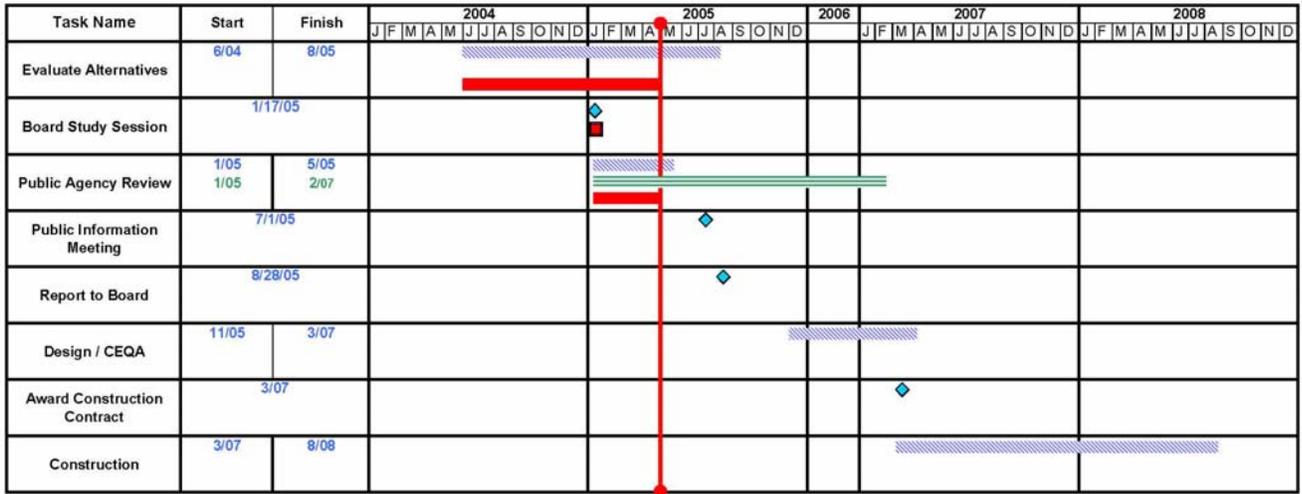
7.4 Phasing of deliveries

Implementation requires significant coordination with the golf courses. During design of the Canal Water Transmission System discussions should occur with golf courses that possibly can be connected to the Canal Water Transmission System. During design and construction, discussions should occur with the golf courses that can be connected to an expanded recycled water system. During construction, discussions should occur with the golf courses that can be connected to the Canal Water Distribution System. Table 4-1 in Section 4 divides the Mid-Valley area golf courses into Phases 1, 2 and 3 respectively based on this criterion.

7.5 Preliminary Schedule

A preliminary design and construction schedule through design and construction of the Transmission system is shown in **Chart 7-1**. Planning and design efforts for construction of the Canal Water Distribution System would continue during this period. Implementation of the distribution system and enlargement of the Recycled Water Distribution System would be initiated with the completion of the Transmission System.

**Chart 7-1
Preliminary Schedule through construction of
Canal Water Transmission System**



Appendix A

References

Bookman-Edmonston, 2000. Conjunctive Use/Surplus Water Storage. Prepared for Coachella Valley Water District and Metropolitan Water District of Southern California.

Coachella Valley Water District, 2002. Resolution no. 2002-213.

Montgomery Watson Harza, 2002a. Draft Program Environmental Impact Report for Coachella Valley Water Management Plan and State Water Project Entitlement Transfer. Prepared for Coachella Valley Water District.

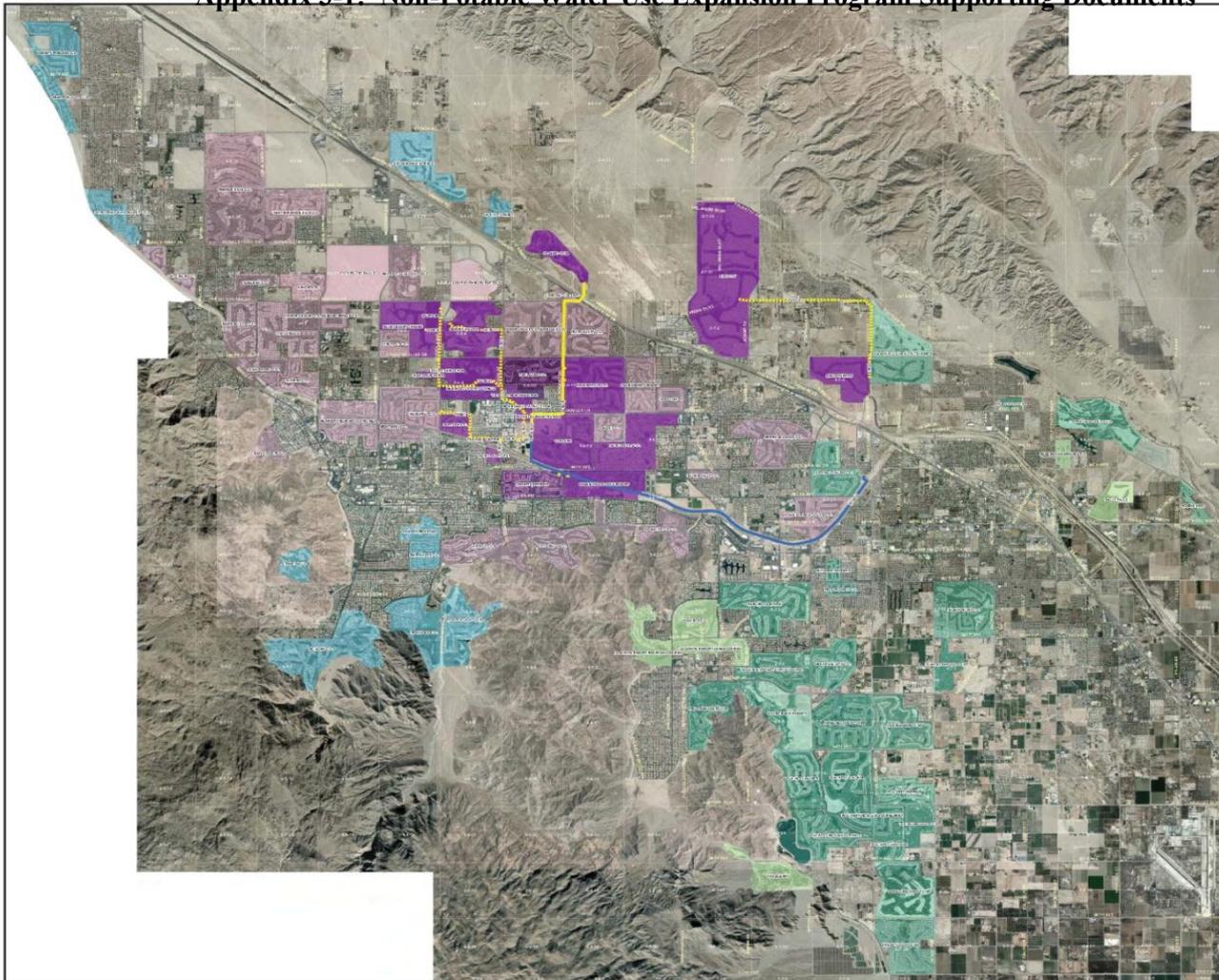
Montgomery Watson Harza, 2002b. Final Program Environmental Impact Report for Coachella Valley Water Management Plan and State Water Project Entitlement Transfer. Prepared for Coachella Valley Water District.

Montgomery Watson Harza, 2002c. Coachella Valley Final Water Management Plan. Prepared for Coachella Valley Water District.

NONPOTABLE WATER

Board Report

November 27, 2012



Irrigation Water Sources for Golf Courses

- Legend**
- Groundwater Customers
 - Existing MVP Customer
 - Letter of Intent MVP Customer
 - Future MVP Customers
 - Existing Canal Water Customer
 - Future Canal Water Customer
 - 54" Mid Valley Pipeline



Coachella Valley Water District

1000 N. DATELINE
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92288-1000
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WWW.CVWD.COM

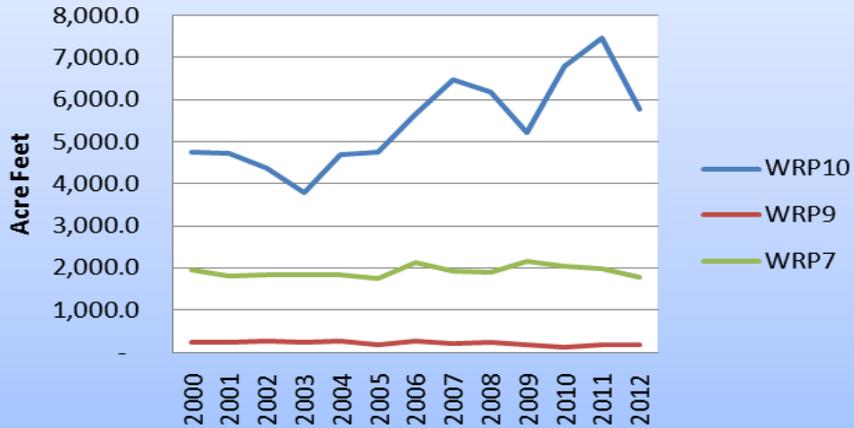
Keeping it going

- ▣ Monthly Meeting between Trades and Support, Operations, Engineering and Service (TOES)
 - Updates on user issues, maintenance items, and new construction
- ▣ Golf Course Committee
 - Singular purpose of ensuring that all water sources are efficiently used on golf courses
 - Operations, Engineering, and Service Depts.

Appendix 3-1: Non-Potable Water Use Expansion Program Supporting Documents

Acre Feet Recycled Water			
	WRP10	WRP9	WRP7
2000	4,766.0	232.4	1,946.9
2001	4,726.1	229.9	1,809.7
2002	4,373.0	282.7	1,842.6
2003	3,800.4	232.7	1,846.8
2004	4,684.7	262.7	1,855.9
2005	4,760.8	181.6	1,758.8
2006	5,665.4	278.4	2,129.0
2007	6,479.4	220.7	1,926.2
2008	6,172.5	235.3	1,898.9
2009	5,215.6	188.5	2,160.8
2010	6,789.0	129.6	2,050.6
2011	7,454.3	188.8	1,979.4
2012	5,767.2	189.8	1,794.8

Recycled Water



Recycled Water, Influent Vs. Demand



Appendix 3-1: Non-Potable Water Use Expansion Program Supporting Documents

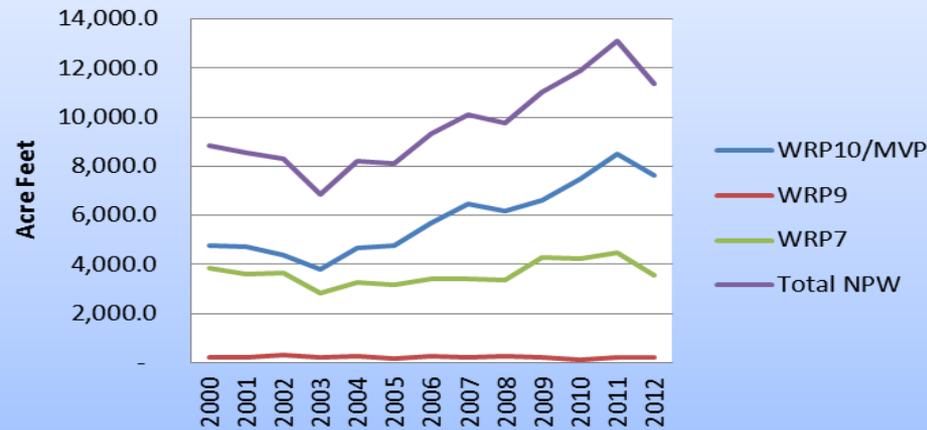
	Acre Feet Canal Water		
	MVP	WRP9	WRP7
2000	-	-	1,886.7
2001	-	-	1,799.5
2002	-	-	1,801.1
2003	-	-	964.4
2004	-	-	1,405.7
2005	-	-	1,408.0
2006	-	-	1,269.9
2007	-	-	1,500.6
2008	-	-	1,443.5
2009	1,381.0	-	2,101.5
2010	706.2	-	2,199.5
2011	1,028.6	-	2,474.9
2012	1,866.8	-	1,765.6

	Acre Feet Nonpotable Water			
	WRP10/MVP	WRP9	WRP7	Total NPW
2000	4,766.0	232.4	3,833.6	8,832.0
2001	4,726.1	229.9	3,609.2	8,565.2
2002	4,373.0	282.7	3,643.7	8,299.4
2003	3,800.4	232.7	2,811.2	6,844.3
2004	4,684.7	262.7	3,261.6	8,209.0
2005	4,760.8	181.6	3,166.8	8,109.2
2006	5,665.4	278.4	3,398.9	9,342.7
2007	6,479.4	220.7	3,426.8	10,126.9
2008	6,172.5	235.3	3,342.4	9,750.2
2009	6,596.6	188.5	4,262.3	11,047.4
2010	7,495.2	129.6	4,250.1	11,874.9
2011	8,482.9	188.8	4,454.3	13,126.0
2012	7,634.0	189.8	3,560.4	11,384.2

Canal Water MVP and WRP 7



Combined Nonpotable



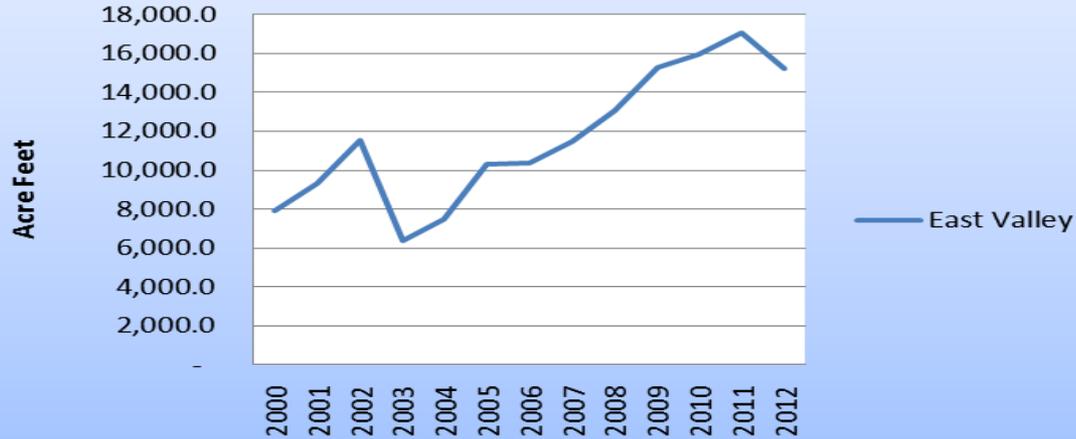
Appendix 3-1: Non-Potable Water Use Expansion Program Supporting Documents

Canal Water

East Valley

2000	7,884.1
2001	9,335.6
2002	11,540.6
2003	6,385.1
2004	7,511.3
2005	10,290.3
2006	10,395.7
2007	11,469.7
2008	13,041.0
2009	15,282.9
2010	15,927.8
2011	17,076.7
2012	15,215.0

Canal Water direct to Golf Courses



Water Code

- California Water Code Section 32600 – 32603 says that if the Board determines...
 - Adequate quality
 - Less than or equal to cost of alternate water supply
 - Not detrimental to public health
 - Complies with any State water quality control plan
 - Will not adversely affect water rights, water quality, plants, fish or wildlife

...then golf courses (and others) are required to use nonpotable water.

When we talk Rates

- California Water Code Section 32600 – 32603 says that if the Board determines...
 - Adequate quality
 - **Less than or equal to cost of alternate water supply**
 - Not detrimental to public health
 - Complies with any State water quality control plan
 - Will not adversely affect water rights, water quality, plants, fish or wildlife
 - ...then golf courses (and others) are required to use nonpotable water.

Rates, per Acre Foot

- ▣ Mid Valley
 - $NPWC = .85(RAC + PC)$
 - Average is \$139, high is \$154.62, low is \$127.92
- ▣ WRP 9
 - $NPWC = .70(RAC + PC)$, \$112.34
- ▣ WRP 7 (ID #1)
 - Canal Rate, Class 2, plus Quagga and Pumping
 - $\$42.15 + \$5.00 + \$6.00 = \53.15
- ▣ East Valley Golf
 - Canal Rate, Class 2, plus Quagga and pumping charge if applicable

Connecting New Users

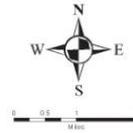
- ▣ Currently targeting golf courses adjacent to existing distribution system
- ▣ Meet with the course and obtain a letter of intent
- ▣ Complete preliminary design
- ▣ Agree on cost sharing and all other aspects of connection – signed agreement
- ▣ Complete final design and construct

Milestones 2012

- ❑ Indian Wells Golf Resort began taking Canal Water through the Mid Valley Pipeline in August – expect 2,000 AF annual use.
- ❑ Connected the landscaped areas at CVWD's Palm Desert Buildings
- ❑ Classic Club nearing final agreement
- ❑ Desert Horizons signed Letter of Intent, Preliminary Design nearing completion
- ❑ Lakes Country Club Signed a Letter of Intent
- ❑ Hydraulic Model of WRP 10 distribution system updated
- ❑ Meeting with Shadow Ridge and Chaparral re: LOI

Appendix 3-1: Non-Potable Water Use Expansion Program Supporting Documents

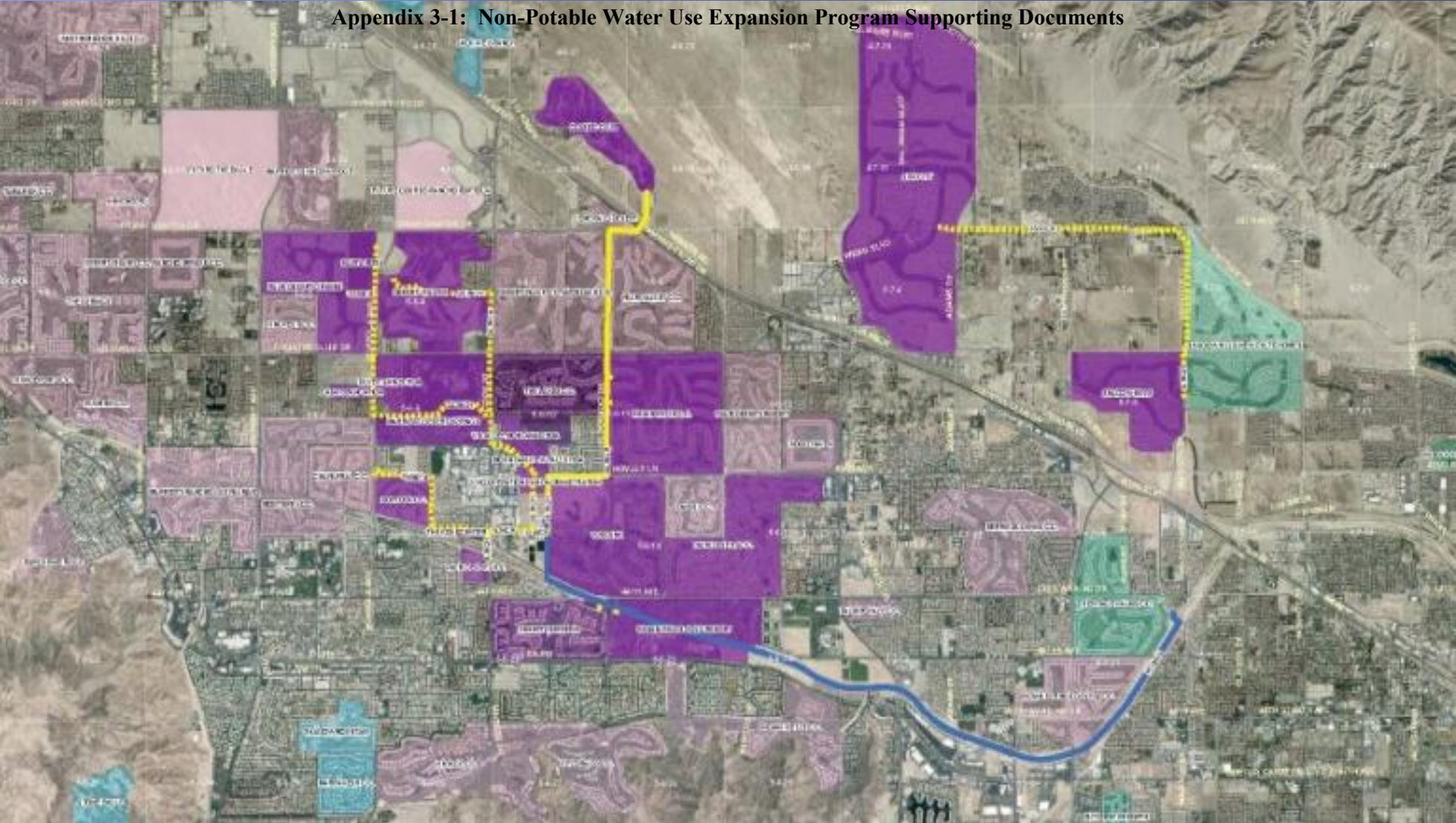
Irrigation Water Sources for Golf Courses



Coachella Valley Water District

14 Served
2 LOI
37 Targeted
29 Served
6 Targeted
13 Groundwater

Appendix 3-1: Non-Potable Water Use Expansion Program Supporting Documents



Coachella Valley Water District



2010 Urban Water Management Plan Final Report July 2011



Section 3 System Demands

3.3.2 Other Uses and System Losses

3.3.2.1 Wholesale Water Demand Projections

CVWD does not rely on a wholesale agency for its urban water supply. The agency currently draws 100 percent of its supply from local groundwater, portion of which is replenished as described in Section 3.3.2.2. In the future, CVWD will augment this groundwater supply with Colorado River water as described in Section 4. UWMP Guidebook **Table 12** is not applicable.

CVWD does not currently sell water to other agencies. There is a possibility the agency may sell water to other Coachella Valley water agencies in the future, but this demand has not been quantified yet. Hence, UWMP Guidebook **Table 9** is not provided.

3.3.2.2 Groundwater Recharge

CVWD and DWA operate groundwater recharge programs in the upper Whitewater River and Mission Creek subbasins. CVWD is also conducting pilot recharge tests in the lower Whitewater River subbasin at the Martinez Canyon Pilot Recharge Facility. As part of the CVWMP, CVWD intends to significantly expand its groundwater recharge program in the Whitewater River subbasin.

CVWD recently completed construction the Thomas E. Levy (Levy) Groundwater Replenishment Facility in the lower Whitewater River Subbasin with a capacity to 40,000 AFY. Due to water delivery limitations at this facility, CVWD is currently recharging approximately 32,500 AFY at this facility.

Groundwater is also being directly recharged on the Martinez Canyon alluvial fan. CVWD completed construction of a pilot recharge facility and several monitoring wells in this area in March 2005. This facility is designed to recharge approximately 3,000 AFY. According to the 2010 CVWMP, CVWD plans to construct a full-scale facility at Martinez Canyon to recharge 20,000 AFY by 2025. Additionally, CVWD and the City of Indio plan are considering construction of a facility to recharge about 10,000 AFY in the City of Indio to directly benefit groundwater levels in the city.

Groundwater recharge in the Mission Creek subbasin commenced in 2004 using SWP Exchange water. This program is jointly administered by CVWD and DWA with facilities constructed and operated by DWA.

Table 3-16 presents the current estimated groundwater recharge demand for the period 2005-2035.

3.3.2.3 Non-Potable Water Demand Projections

CVWD delivers Coachella Canal water and recycled water for non-potable irrigation uses. The Canal water distribution system is not a part of the domestic system, but is discussed in this section for completeness.

The primary use of Canal water is for agricultural irrigation. However, Canal water is also used for golf course and other landscape irrigation as well as groundwater recharge in the East Valley. Recycled water is used for golf course and common area irrigation in the West Valley.

*Table 3-16
Projected Groundwater Recharge Demand*

Year ¹	Recharge Facility (AFY)					
	Whitewater Spreading Facility ²	Levy Spreading Facility	Martinez Canyon Spreading Facility	Indio ²	Mission Creek Spreading Facility ³	Total
2005	165,600	4,000	800	0	24,700	195,100
2010	87,400	32,500	4,000	0	8,200	132,100
2015	72,300	40,000	4,000	5,000	9,900	131,200
2020	88,800	40,000	4,000	5,000	10,700	148,500
2025	78,000	40,000	20,000	10,000	10,700	158,700
2030	78,700	40,000	20,000	10,000	10,700	159,400
2035	82,000	40,000	20,000	10,000	11,100	163,100

Source: CVWD, 2010 CVWMP Update

Notes:

- 1- Values shown for 2010 are based on anticipated operations. Actual values may be higher based on imported water availability. Values for 2015 through 2035 represent average annual values based on anticipated water availability.
- 2- Values are estimated. Site of the recharge facility in Indio is still under investigation.
- 3- Water recharged at Whitewater and Mission Creek facilities is the joint responsibilities of CVWD and DWA. Amounts will vary based on hydrologic conditions and groundwater pumping.

Local groundwater is produced for agricultural, golf course and other irrigation by many private pumpers. In the West Valley, groundwater production and usage is metered and reported to CVWD to determine groundwater replenishment assessments for each producer who pumps more than 25 AF annually. In the East Valley, CVWD implemented a groundwater replenishment assessment in January 2005. Because many wells in the East Valley are not yet metered, there is incomplete information on current non-potable water demand for groundwater. Groundwater pumping for non-potable use within the CVWD service area was estimated to be about 142,000 acre-ft in 2010 (CVWMP 2010 Update). In the absence of the CVWMP, this pumping is projected to increase to about 196,000 AFY in 2035.

Implementation of the CVWMP includes the conversion of a portion of the non-potable groundwater pumping to Canal water or recycled water to reduce groundwater overdraft. The CVWMP estimated the future demand for agricultural and other non-potable water use through the year 2035 that would be served by CVWD. Those demand estimates are presented in **Table 3-17**.

As described in the CVWMP, future urban growth in the East Valley is expected to occur equally (50 percent each) on agricultural and vacant parcels, thereby decreasing future agricultural and overall non-potable water demands. However, future golf course and municipal non-potable water demands will increase. It is not expected that the full Canal water allocation under the Quantification Settlement Agreement (see Section 4 for details) will be utilized in the future due to decreasing overall non-potable water demand and lack of infrastructure to deliver Canal water to potable water customers. In addition, CVWD's Canal water allocation will gradually increase in the future as described in Section 4.

3.3.2.4 System Losses

CVWD has very little system water loss in its domestic system. The average percentage water loss of total water production over the last five years is 3.2 percent. It is assumed that future system water loss will be equal to this percentage. **Table 3-18** provides future projections of system water loss based on

**Appendix 3-2: Supporting Documents for
*Coachella Valley Salt and Nutrient Management Program***

Recycled Water Policy

1. *Preamble*

California is facing an unprecedented water crisis.

The collapse of the Bay-Delta ecosystem, climate change, and continuing population growth have combined with a severe drought on the Colorado River and failing levees in the Delta to create a new reality that challenges California's ability to provide the clean water needed for a healthy environment, a healthy population and a healthy economy, both now and in the future.

These challenges also present an unparalleled opportunity for California to move aggressively towards a sustainable water future. The State Water Resources Control Board (State Water Board) declares that we will achieve our mission to "preserve, enhance and restore the quality of California's water resources to the benefit of present and future generations." To achieve that mission, we support and encourage every region in California to develop a salt/nutrient management plan by 2014 that is sustainable on a long-term basis and that provides California with clean, abundant water. These plans shall be consistent with the Department of Water Resources' Bulletin 160, as appropriate, and shall be locally developed, locally controlled and recognize the variability of California's water supplies and the diversity of its waterways. We strongly encourage local and regional water agencies to move toward clean, abundant, local water for California by emphasizing appropriate water recycling, water conservation, and maintenance of supply infrastructure and the use of stormwater (including dry-weather urban runoff) in these plans; these sources of supply are drought-proof, reliable, and minimize our carbon footprint and can be sustained over the long-term.

We declare our independence from relying on the vagaries of annual precipitation and move towards sustainable management of surface waters and groundwater, together with enhanced water conservation, water reuse and the use of stormwater. To this end, we adopt the following goals for California:

- Increase the use of recycled water over 2002 levels by at least one million acre-foot per year (afy) by 2020 and by at least two million afy by 2030.
- Increase the use of stormwater over use in 2007 by at least 500,000 afy by 2020 and by at least one million afy by 2030.
- Increase the amount of water conserved in urban and industrial uses by comparison to 2007 by at least 20 percent by 2020.
- Included in these goals is the substitution of as much recycled water for potable water as possible by 2030.

The purpose of this Policy is to increase the use of recycled water from municipal wastewater sources that meets the definition in Water Code section 13050(n), in a manner that implements state and federal water quality laws. The State Water Board expects to

Appendix 3-2: Coachella Valley Salt and Nutrient Management Program Supporting Documents

develop additional policies to encourage the use of stormwater, encourage water conservation, encourage the conjunctive use of surface and groundwater, and improve the use of local water supplies.

When used in compliance with this Policy, Title 22 and all applicable state and federal water quality laws, the State Water Board finds that recycled water is safe for approved uses, and strongly supports recycled water as a safe alternative to potable water for such approved uses.

2. *Purpose of the Policy*

- a. The purpose of this Policy is to provide direction to the Regional Water Quality Control Boards (Regional Water Boards), proponents of recycled water projects, and the public regarding the appropriate criteria to be used by the State Water Board and the Regional Water Boards in issuing permits for recycled water projects.
- b. It is the intent of the State Water Board that all elements of this Policy are to be interpreted in a manner that fully implements state and federal water quality laws and regulations in order to enhance the environment and put the waters of the state to the fullest use of which they are capable.
- c. This Policy describes permitting criteria that are intended to streamline the permitting of the vast majority of recycled water projects. The intent of this streamlined permit process is to expedite the implementation of recycled water projects in a manner that implements state and federal water quality laws while allowing the Regional Water Boards to focus their limited resources on projects that require substantial regulatory review due to unique site-specific conditions.
- d. By prescribing permitting criteria that apply to the vast majority of recycled water projects, it is the State Water Board's intent to maximize consistency in the permitting of recycled water projects in California while also reserving to the Regional Water Boards sufficient authority and flexibility to address site-specific conditions.
- e. The State Water Board will establish additional policies that are intended to assist the State of California in meeting the goals established in the preamble to this Policy for water conservation and the use of stormwater.
- f. For purposes of this Policy, the term "permit" means an order adopted by a Regional Water Board or the State Water Board prescribing requirements for a recycled water project, including but not limited to water recycling requirements, master reclamation permits, and waste discharge requirements.

3. *Benefits of Recycled Water*

The State Water Board finds that the use of recycled water in accordance with this Policy, that is, which supports the sustainable use of groundwater and/or surface water, which is

Appendix 3-2: Coachella Valley Salt and Nutrient Management Program Supporting Documents

sufficiently treated so as not to adversely impact public health or the environment and which ideally substitutes for use of potable water, is presumed to have a beneficial impact. Other public agencies are encouraged to use this presumption in evaluating the impacts of recycled water projects on the environment as required by the California Environmental Quality Act (CEQA).

4. *Mandate for the Use of Recycled Water*

- a. The State Water Board and Regional Water Boards will exercise the authority granted to them by the Legislature to the fullest extent possible to encourage the use of recycled water, consistent with state and federal water quality laws.
 - (1) The State Water Board hereby establishes a mandate to increase the use of recycled water in California by 200,000 afy by 2020 and by an additional 300,000 afy by 2030. These mandates shall be achieved through the cooperation and collaboration of the State Water Board, the Regional Water Boards, the environmental community, water purveyors and the operators of publicly owned treatment works. The State Water Board will evaluate progress toward these mandates biennially and review and revise as necessary the implementation provisions of this Policy in 2012 and 2016.
 - (2) Agencies producing recycled water that is available for reuse and not being put to beneficial use shall make that recycled water available to water purveyors for reuse on reasonable terms and conditions. Such terms and conditions may include payment by the water purveyor of a fair and reasonable share of the cost of the recycled water supply and facilities.
 - (3) The State Water Board hereby declares that, pursuant to Water Code sections 13550 *et seq.*, it is a waste and unreasonable use of water for water agencies not to use recycled water when recycled water of adequate quality is available and is not being put to beneficial use, subject to the conditions established in sections 13550 *et seq.* The State Water Board shall exercise its authority pursuant to Water Code section 275 to the fullest extent possible to enforce the mandates of this subparagraph.
- b. These mandates are contingent on the availability of sufficient capital funding for the construction of recycled water projects from private, local, state, and federal sources and assume that the Regional Water Boards will effectively implement regulatory streamlining in accordance with this Policy.
- c. The water industry and the environmental community have agreed jointly to advocate for \$1 billion in state and federal funds over the next five years to fund projects needed to meet the goals and mandates for the use of recycled water established in this Policy.

Appendix 3-2: Coachella Valley Salt and Nutrient Management Program Supporting Documents

- d. The State Water Board requests the California Department of Public Health (CDPH), the California Public Utilities Commission (CPUC), and the California Department of Water Resources (CDWR) to use their respective authorities to the fullest extent practicable to assist the State Water Board and the Regional Water Boards in increasing the use of recycled water in California.

5. *Roles of the State Water Board, Regional Water Boards, CDPH and CDWR*

The State Water Board recognizes that it shares jurisdiction over the use of recycled water with the Regional Water Boards and with CDPH. In addition, the State Water Board recognizes that CDWR and the CPUC have important roles to play in encouraging the use of recycled water. The State Water Board believes that it is important to clarify the respective roles of each of these agencies in connection with recycled water projects, as follows:

- a. The State Water Board establishes general policies governing the permitting of recycled water projects consistent with its role of protecting water quality and sustaining water supplies. The State Water Board exercises general oversight over recycled water projects, including review of Regional Water Board permitting practices, and shall lead the effort to meet the recycled water use goals set forth in the Preamble to this Policy. The State Water Board is also charged by statute with developing a general permit for irrigation uses of recycled water.
- b. The CDPH is charged with protection of public health and drinking water supplies and with the development of uniform water recycling criteria appropriate to particular uses of water. Regional Water Boards shall appropriately rely on the expertise of CDPH for the establishment of permit conditions needed to protect human health.
- c. The Regional Water Boards are charged with protection of surface and groundwater resources and with the issuance of permits that implement CDPH recommendations, this Policy, and applicable law and will, pursuant to paragraph 4 of this Policy, use their authority to the fullest extent possible to encourage the use of recycled water.
- d. CDWR is charged with reviewing and, every five years, updating the California Water Plan, including evaluating the quantity of recycled water presently being used and planning for the potential for future uses of recycled water. In undertaking these tasks, CDWR may appropriately rely on urban water management plans and may share the data from those plans with the State Water Board and the Regional Water Boards. CDWR also shares with the State Water Board the authority to allocate and distribute bond funding, which can provide incentives for the use of recycled water.
- e. The CPUC is charged with approving rates and terms of service for the use of recycled water by investor-owned utilities.

Appendix 3-2: Coachella Valley Salt and Nutrient Management Program Supporting Documents

6. *Salt/Nutrient Management Plans*

a. *Introduction.*

- (1) Some groundwater basins in the state contain salts and nutrients that exceed or threaten to exceed water quality objectives established in the applicable Water Quality Control Plans (Basin Plans), and not all Basin Plans include adequate implementation procedures for achieving or ensuring compliance with the water quality objectives for salt or nutrients. These conditions can be caused by natural soils/conditions, discharges of waste, irrigation using surface water, groundwater or recycled water and water supply augmentation using surface or recycled water. Regulation of recycled water alone will not address these conditions.
- (2) It is the intent of this Policy that salts and nutrients from all sources be managed on a basin-wide or watershed-wide basis in a manner that ensures attainment of water quality objectives and protection of beneficial uses. The State Water Board finds that the appropriate way to address salt and nutrient issues is through the development of regional or subregional salt and nutrient management plans rather than through imposing requirements solely on individual recycled water projects.

b. *Adoption of Salt/ Nutrient Management Plans.*

- (1) The State Water Board recognizes that, pursuant to the letter dated December 19, 2008 and attached to the Resolution adopting this Policy, the local water and wastewater entities, together with local salt/nutrient contributing stakeholders, will fund locally driven and controlled, collaborative processes open to all stakeholders that will prepare salt and nutrient management plans for each basin/sub-basin in California, including compliance with CEQA and participation by Regional Water Board staff.
 - (a) It is the intent of this Policy for every groundwater basin/sub-basin in California to have a consistent salt/nutrient management plan. The degree of specificity within these plans and the length of these plans will be dependent on a variety of site-specific factors, including but not limited to size and complexity of a basin, source water quality, stormwater recharge, hydrogeology, and aquifer water quality. It is also the intent of the State Water Board that because stormwater is typically lower in nutrients and salts and can augment local water supplies, inclusion of a significant stormwater use and recharge component within the salt/nutrient management plans is critical to the long-term sustainable use of water in California. Inclusion of stormwater recharge is consistent with State Water Board Resolution No. 2005-06, which establishes sustainability as a core value for State Water Board programs and

Appendix 3-2: Coachella Valley Salt and Nutrient Management Program Supporting Documents

also assists in implementing Resolution No. 2008-30, which requires sustainable water resources management and is consistent with Objective 3.2 of the State Water Board Strategic Plan Update dated September 2, 2008.

- (b) Salt and nutrient plans shall be tailored to address the water quality concerns in each basin/sub-basin and may include constituents other than salt and nutrients that impact water quality in the basin/sub-basin. Such plans shall address and implement provisions, as appropriate, for all sources of salt and/or nutrients to groundwater basins, including recycled water irrigation projects and groundwater recharge reuse projects.
 - (c) Such plans may be developed or funded pursuant to the provisions of Water Code sections 10750 *et seq.* or other appropriate authority.
 - (d) Salt and nutrient plans shall be completed and proposed to the Regional Water Board within five years from the date of this Policy unless a Regional Water Board finds that the stakeholders are making substantial progress towards completion of a plan. In no case shall the period for the completion of a plan exceed seven years.
 - (e) The requirements of this paragraph shall not apply to areas that have already completed a Regional Water Board approved salt and nutrient plan for a basin, sub-basin, or other regional planning area that is functionally equivalent to paragraph 6(b)3.
 - (f) The plans may, depending upon the local situation, address constituents other than salt and nutrients that adversely affect groundwater quality.
- (2) Within one year of the receipt of a proposed salt and nutrient management plan, the Regional Water Boards shall consider for adoption revised implementation plans, consistent with Water Code section 13242, for those groundwater basins within their regions where water quality objectives for salts or nutrients are being, or are threatening to be, exceeded. The implementation plans shall be based on the salt and nutrient plans required by this Policy.
- (3) Each salt and nutrient management plan shall include the following components:
- (a) A basin/sub-basin wide monitoring plan that includes an appropriate network of monitoring locations. The scale of the basin/sub-basin monitoring plan is dependent upon the site-specific conditions and shall be adequate to provide a reasonable,

Appendix 3-2: Coachella Valley Salt and Nutrient Management Program Supporting Documents

cost-effective means of determining whether the concentrations of salt, nutrients, and other constituents of concern as identified in the salt and nutrient plans are consistent with applicable water quality objectives. Salts, nutrients, and the constituents identified in paragraph 6(b)(1)(f) shall be monitored. The frequency of monitoring shall be determined in the salt/nutrient management plan and approved by the Regional Water Board pursuant to paragraph 6(b)(2).

- (i) The monitoring plan must be designed to determine water quality in the basin. The plan must focus on basin water quality near water supply wells and areas proximate to large water recycling projects, particularly groundwater recharge projects. Also, monitoring locations shall, where appropriate, target groundwater and surface waters where groundwater has connectivity with adjacent surface waters.
 - (ii) The preferred approach to monitoring plan development is to collect samples from existing wells if feasible as long as the existing wells are located appropriately to determine water quality throughout the most critical areas of the basin.
 - (iii) The monitoring plan shall identify those stakeholders responsible for conducting, compiling, and reporting the monitoring data. The data shall be reported to the Regional Water Board at least every three years.
- (b) A provision for annual monitoring of Emerging Constituents/ Constituents of Emerging Concern (e.g., endocrine disrupters, personal care products or pharmaceuticals) (CECs) consistent with recommendations by CDPH and consistent with any actions by the State Water Board taken pursuant to paragraph 10(b) of this Policy.
 - (c) Water recycling and stormwater recharge/use goals and objectives.
 - (d) Salt and nutrient source identification, basin/sub-basin assimilative capacity and loading estimates, together with fate and transport of salts and nutrients.
 - (e) Implementation measures to manage salt and nutrient loading in the basin on a sustainable basis.
 - (f) An antidegradation analysis demonstrating that the projects included within the plan will, collectively, satisfy the requirements of Resolution No. 68-16.

Appendix 3-2: Coachella Valley Salt and Nutrient Management Program Supporting Documents

- (4) Nothing in this Policy shall prevent stakeholders from developing a plan that is more protective of water quality than applicable standards in the Basin Plan. No Regional Water Board, however, shall seek to modify Basin Plan objectives without full compliance with the process for such modification as established by existing law.

7. *Landscape Irrigation Projects*

- a. *Control of incidental runoff.* Incidental runoff is defined as unintended small amounts (volume) of runoff from recycled water use areas, such as unintended, minimal over-spray from sprinklers that escapes the recycled water use area. Water leaving a recycled water use area is not considered incidental if it is part of the facility design, if it is due to excessive application, if it is due to intentional overflow or application, or if it is due to negligence. Incidental runoff may be regulated by waste discharge requirements or, where necessary, waste discharge requirements that serve as a National Pollutant Discharge Elimination System (NPDES) permit, including municipal separate storm water system permits, but regardless of the regulatory instrument, the project shall include, but is not limited to, the following practices:
 - (1) Implementation of an operations and management plan that may apply to multiple sites and provides for detection of leaks, (for example, from broken sprinkler heads), and correction either within 72 hours of learning of the runoff, or prior to the release of 1,000 gallons, whichever occurs first,
 - (2) Proper design and aim of sprinkler heads,
 - (3) Refraining from application during precipitation events, and
 - (4) Management of any ponds containing recycled water such that no discharge occurs unless the discharge is a result of a 25-year, 24-hour storm event or greater, and there is notification of the appropriate Regional Water Board Executive Officer of the discharge.
- b. *Streamlined Permitting*
 - (1) The Regional Water Boards shall, absent unusual circumstances (i.e., unique, site-specific conditions such as where recycled water is proposed to be used for irrigation over high transmissivity soils over a shallow (5' or less) high quality groundwater aquifer), permit recycled water projects that meet the criteria set forth in this Policy, consistent with the provisions of this paragraph.
 - (2) If the Regional Water Board determines that unusual circumstances apply, the Regional Water Board shall make a finding of unusual circumstances based on substantial evidence in the record, after public notice and hearing.

Appendix 3-2: Coachella Valley Salt and Nutrient Management Program Supporting Documents

- (3) Projects meeting the criteria set forth below and eligible for enrollment under requirements established in a general order shall be enrolled by the State or Regional Water Board within 60 days from the date on which an application is deemed complete by the State or Regional Water Board. For projects that are not enrolled in a general order, the Regional Water Board shall consider permit adoption within 120 days from the date on which the application is deemed complete by the Regional Water Board.
 - (4) Landscape irrigation projects that qualify for streamlined permitting shall not be required to include a project specific receiving water and groundwater monitoring component unless such project specific monitoring is required under the adopted salt/nutrient management plan. During the interim while the salt management plan is under development, a landscape irrigation project proponent can either perform project specific monitoring, or actively participate in the development and implementation of a salt/nutrient management plan, including basin/sub-basin monitoring. Permits or requirements for landscape irrigation projects shall include, in addition to any other appropriate recycled water monitoring requirements, recycled water monitoring for CECs on an annual basis and priority pollutants on a twice annual basis. Except as requested by CDPH, State and Regional Water Board monitoring requirements for CECs shall not take effect until 18 months after the effective date of this Policy. In addition, any permits shall include a permit reopener to allow incorporation of appropriate monitoring requirements for CECs after State Water Board action under paragraph 10(b)(2).
 - (5) It is the intent of the State Water Board that the general permit for landscape irrigation projects be consistent with the terms of this Policy.
- c. *Criteria for streamlined permitting.* Irrigation projects using recycled water that meet the following criteria are eligible for streamlined permitting, and, if otherwise in compliance with applicable laws, shall be approved absent unusual circumstances:
- (1) Compliance with the requirements for recycled water established in Title 22 of the California Code of Regulations, including the requirements for treatment and use area restrictions, together with any other recommendations by CDPH pursuant to Water Code section 13523.
 - (2) Application in amounts and at rates as needed for the landscape (i.e., at agronomic rates and not when the soil is saturated). Each irrigation project shall be subject to an operations and management plan, that may apply to multiple sites, provided to the Regional Water Board that specifies the agronomic rate(s) and describes a set of reasonably practicable measures to ensure compliance with this requirement, which may include the development of water budgets for use areas, site

Appendix 3-2: Coachella Valley Salt and Nutrient Management Program Supporting Documents

supervisor training, periodic inspections, tiered rate structures, the use of smart controllers, or other appropriate measures.

- (3) Compliance with any applicable salt and nutrient management plan.
- (4) Appropriate use of fertilizers that takes into account the nutrient levels in the recycled water. Recycled water producers shall monitor and communicate to the users the nutrient levels in their recycled water.

8. *Recycled Water Groundwater Recharge Projects*

- a. The State Water Board acknowledges that all recycled water groundwater recharge projects must be reviewed and permitted on a site-specific basis, and so such projects will require project-by-project review.
- b. Approved groundwater recharge projects will meet the following criteria:
 - (1) Compliance with regulations adopted by CDPH for groundwater recharge projects or, in the interim until such regulations are approved, CDPH's recommendations pursuant to Water Code section 13523 for the project (e.g., level of treatment, retention time, setback distance, source control, monitoring program, etc.).
 - (2) Implementation of a monitoring program for constituents of concern and a monitoring program for CECs that is consistent with any actions by the State Water Board taken pursuant to paragraph 10(b) of this Policy and that takes into account site-specific conditions. Groundwater recharge projects shall include monitoring of recycled water for CECs on an annual basis and priority pollutants on a twice annual basis.
- c. Nothing in this paragraph shall be construed to limit the authority of a Regional Water Board to protect designated beneficial uses, *provided* that any proposed limitations for the protection of public health may only be imposed following regular consultation by the Regional Water Board with CDPH, consistent with State Water Board Orders WQ 2005-0007 and 2006-0001.
- d. Nothing in this Policy shall be construed to prevent a Regional Water Board from imposing additional requirements for a proposed recharge project that has a substantial adverse effect on the fate and transport of a contaminant plume or changes the geochemistry of an aquifer thereby causing the dissolution of constituents, such as arsenic, from the geologic formation into groundwater.
- e. Projects that utilize surface spreading to recharge groundwater with recycled water treated by reverse osmosis shall be permitted by a Regional Water Board within one year of receipt of recommendations from CDPH. Furthermore, the Regional Water Board shall give a high priority to review and approval of such projects.

9. *Antidegradation*

- a. The State Water Board adopted Resolution No. 68-16 as a policy statement to implement the Legislature's intent that waters of the state shall be regulated to achieve the highest water quality consistent with the maximum benefit to the people of the state.
- b. Activities involving the disposal of waste that could impact high quality waters are required to implement best practicable treatment or control of the discharge necessary to ensure that pollution or nuisance will not occur, and the highest water quality consistent with the maximum benefit to the people of the state will be maintained.
- c. Groundwater recharge with recycled water for later extraction and use in accordance with this Policy and state and federal water quality law is to the benefit of the people of the state of California. Nonetheless, the State Water Board finds that groundwater recharge projects using recycled water have the potential to lower water quality within a basin. The proponent of a groundwater recharge project must demonstrate compliance with Resolution No. 68-16. Until such time as a salt/nutrient management plan is in effect, such compliance may be demonstrated as follows:
 - (1) A project that utilizes less than 10 percent of the available assimilative capacity in a basin/sub-basin (or multiple projects utilizing less than 20 percent of the available assimilative capacity in a basin/sub-basin) need only conduct an antidegradation analysis verifying the use of the assimilative capacity. For those basins/sub-basins where the Regional Water Boards have not determined the baseline assimilative capacity, the baseline assimilative capacity shall be calculated by the initial project proponent, with review and approval by the Regional Water Board, until such time as the salt/nutrient plan is approved by the Regional Water Board and is in effect. For compliance with this subparagraph, the available assimilative capacity shall be calculated by comparing the mineral water quality objective with the average concentration of the basin/sub-basin, either over the most recent five years of data available or using a data set approved by the Regional Water Board Executive Officer. In determining whether the available assimilative capacity will be exceeded by the project or projects, the Regional Water Board shall calculate the impacts of the project or projects over at least a ten year time frame.

Appendix 3-2: Coachella Valley Salt and Nutrient Management Program Supporting Documents

- (3) The state of knowledge regarding CECs is incomplete. There needs to be additional research and development of analytical methods and surrogates to determine potential environmental and public health impacts. Agencies should minimize the likelihood of CECs impacting human health and the environment by means of source control and/or pollution prevention programs.
 - (4) Regulating most CECs will require significant work to develop test methods and more specific determinations as to how and at what level CECs impact public health or our environment.
- b. *Research Program.* The State Water Board, in consultation with CDPH and within 90 days of the adoption of this Policy, shall convene a “blue-ribbon” advisory panel to guide future actions relating to constituents of emerging concern.
- (1) The panel shall be actively managed by the State Water Board and shall be composed of at least the following: one human health toxicologist, one environmental toxicologist, one epidemiologist, one biochemist, one civil engineer familiar with the design and construction of recycled water treatment facilities, and one chemist familiar with the design and operation of advanced laboratory methods for the detection of emerging constituents. Each of these panelists shall have extensive experience as a principal investigator in their respective areas of expertise.
 - (2) The panel shall review the scientific literature and, within one year from its appointment, shall submit a report to the State Water Board and CDPH describing the current state of scientific knowledge regarding the risks of emerging constituents to public health and the environment. Within six months of receipt of the panel’s report the State Water Board, in coordination with CDPH, shall hold a public hearing to consider recommendations from staff and shall endorse the recommendations, as appropriate, after making any necessary modifications. The panel or a similarly constituted panel shall update this report every five years.
 - (3) Each report shall recommend actions that the State of California should take to improve our understanding of emerging constituents and, as may be appropriate, to protect public health and the environment.
 - (4) The panel report shall answer the following questions: What are the appropriate constituents to be monitored in recycled water, including analytical methods and method detection limits? What is the known toxicological information for the above constituents? Would the above lists change based on level of treatment and use? If so, how? What are possible indicators that represent a suite of CECs? What levels of CECs should trigger enhanced monitoring of CECs in recycled water, groundwater and/or surface waters?

Appendix 3-2: Coachella Valley Salt and Nutrient Management Program Supporting Documents

- c. *Permit Provisions.* Permits for recycled water projects shall be consistent both with any CDPH recommendations to protect public health and with any actions by the State Water Board taken pursuant to paragraph 10(b)(2).

11. *Incentives for the Use of Recycled Water*

- a. *Funding*

The State Water Board will request CDWR to provide funding (\$20M) for the development of salt and nutrient management plans during the next three years (i.e., before FY 2010/2011). The State Water Board will also request CDWR to provide priority funding for projects that have major recycling components; particularly those that decrease demand on potable water supplies. The State Water Board will also request priority funding for stormwater recharge projects that augment local water supplies. The State Water Board shall promote the use of the State Revolving Fund (SRF) for water purveyor, stormwater agencies, and water recyclers to use for water reuse and stormwater use and recharge projects.

- b. *Stormwater*

The State Water Board strongly encourages all water purveyors to provide financial incentives for water recycling and stormwater recharge and reuse projects. The State Water Board also encourages the Regional Water Boards to require less stringent monitoring and regulatory requirements for stormwater treatment and use projects than for projects involving untreated stormwater discharges.

- c. *TMDLs*

Water recycling reduces mass loadings from municipal wastewater sources to impaired waters. As such, waste load allocations shall be assigned as appropriate by the Regional Water Boards in a manner that provides an incentive for greater water recycling.

Coachella Valley Water Management Plan Update

DRAFT REPORT



December 2010



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Appendix 3-2: Coachella Valley Salt and Nutrient Management Program Supporting Documents

COACHELLA VALLEY WATER MANAGEMENT PLAN 2010 UPDATE

Draft Report

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Appendix 3-2: Coachella Valley Salt and Nutrient Management Program Supporting Documents

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to the SWP. The SWP extension would terminate at the Whitewater and Mission Creek spreading facilities. The preliminary construction cost estimate for the aqueduct is between \$800 million and \$1.5 billion. This project could significantly increase the cost of providing water to Coachella Valley customers, and it would provide water only for recharge in the West Valley, as there are no plans to convey SWP water to the East Valley recharge sites due to the distance, cost, and lack of supply.

Another alternative is the treatment of Colorado River water before recharge. One of the primary deterrents to this alternative is cost. According to preliminary estimates developed for CVWD, the cost of treating Canal water would range from \$538 per AF (TDS = 500 mg/L) to \$685 per AF (TDS = 250 mg/L). Costs for treating Metropolitan Colorado River aqueduct water (Whitewater) would range from \$460 per AF (TDS = 500 mg/L) to \$595 per AF (TDS = 250 mg/L). Urban water users in the Valley on an average consume approximately one AF of water annually per connection. Based on this figure, treatment of Colorado River water before recharge could increase the annual water bill for an average customer by up to \$450. For major pumpers such as golf courses, the annual impact would be as much as a three to seven fold increase over their current costs.

In summary, the use of Colorado River water for recharge increases salinity in the Valley groundwater basin. The impact of the salinity increase has not been clearly identified. Potential alternatives being investigated to mitigate this condition have high costs. The scope and importance of this Valley-wide issue makes it an ideal candidate for discussion in a forum such as the Integrated Regional Water Management Plan (IRWMP).

5.1.2.2 Recycled Water Use Policy

Recycled municipal wastewater has historically been used for irrigation of golf courses, other municipal greenbelts and landscaped areas in the Coachella Valley. Based on file data from CVWD and DWA, recycled water usage in the West Valley is approximately 12,400 AFY (8,200 AFY CVWD usage, 4,200 AFY DWA usage). Recycled water usage in the East Valley is approximately 700 AFY and is mainly for agricultural irrigation, duck clubs and fish farms. As discussed in **Section 4.5**, the amount of municipal wastewater available for reuse is expected to increase 150 percent by 2045. This water represents a valuable resource that needs to be put to beneficial use to reduce groundwater overdraft.

The SWRCB adopted a Recycled Water Use Policy in February 2009 to regulate the quality and the quantity of recycled water used throughout the state. The goals of this policy are to:

- increase the use of recycled water by at least 1 million AFY over the 2002 levels by 2020 and by 2 million AFY by 2030,
- increase the use of stormwater by at least 500,000 AFY over 2007 levels by 2020 and by 1 million AFY by 2030,
- increase urban and industrial water conservation by 20 percent over the 2007 levels by 2020, and
- substitute potable water with recycled water to the maximum possible extent by 2030.

This policy provides guidelines for appropriate criteria to be used by regulating agencies (Regional and State Water Boards) for issuing permits for recycled water projects. The State will address the conservation and storm water use goals of this policy (listed above) under separate policies.

According to the policy, substitution of recycled water, which is sufficiently treated and which does not have any adverse health or environmental impacts, for potable water, groundwater, or surface water is considered to have beneficial effects.

- The SWRCB has also established a mandate to increase the beneficial use of recycled water within California by 200,000 AFY by 2020 and by an additional 300,000 AFY by 2030.
- Agencies producing recycled water and not putting it to beneficial use shall make this water available to other water purveyors for reuse on reasonable terms and conditions.
- Pursuant to the California Water Code Section 13550 *et seq.*, the SWRCB considers it a waste and unreasonable use of water by water agencies if recycled water of adequate quality is available and not put to beneficial use.

These mandates are contingent upon sufficient funding available for the construction of recycled water projects. Development and use of additional recycled water within the Coachella Valley will contribute toward meeting these goals and mandates.

The policy defined the roles of the SWRCB, the Regional Boards, the California Department of Public Health (CDPH), DWR and California Public Utilities Commission (CPUC) in connection with recycled water projects. The policy also requires the preparation of salt/nutrient management plans as discussed below.

5.1.2.3 Salt/Nutrient Management Plans

Some groundwater basins in the state contain salts and nutrients that exceed or threaten to exceed the water quality objectives established by the applicable Basin Plan. At this time, not all Basin Plans incorporate measures for achieving compliance with the water quality objectives for salts and nutrients (SWRCB, Recycled Water Use Policy, February 2009). Over and above recycled water, there are a number of other sources adding salt/nutrients to groundwater such as waste discharge and irrigation using surface water. Consequently, the SWRCB recognized that regulation of recycled water alone will not address these conditions.

The SWRCB Recycled Water Use Policy described previously requires every region in the state to develop a salt/nutrient management plan by 2014. The salt/nutrient management plans are intended for management of all sources contributing salt/nutrients on a basin-wide or watershed-wide basis to ensure that water quality objectives are achieved. The content and length of the plans will vary based on factors such as size and complexity of the basin, source water quality, hydrogeology, stormwater recharge, aquifer water quality and other factors. As specified in the policy, the plans will include:

- Basin/subbasin-wide water quality monitoring plan with an appropriate network of monitoring locations
- Annual monitoring of emerging constituents (e.g., personal care products or pharmaceuticals, endocrine disruptors)
- Water recycling and stormwater recharge/use goals and objectives
- Salt and nutrient source identification, basin/subbasin assimilative capacity and loading estimates
- Transport of salts and nutrients
- Implementation measures to manage salt and nutrient loading in the basin on a sustainable basis
- Anti-degradation analysis

The local water and wastewater entities, together with local salt/nutrient contributing stakeholders, will fund locally driven and controlled salt/nutrient management plans. The plans are to be developed using collaborative processes open to all stakeholders and will include compliance with CEQA and participation by Regional Board staff. The plans are to address and implement provisions for all sources of salt and/or nutrients to groundwater basins, including recycled water irrigation projects and groundwater recharge reuse projects.

5.1.2.4 Anti-degradation vs. Maximum Benefit

SWRCB's Resolution No. 68-16, also referred to as the Anti-degradation Policy, is incorporated into all Basin Plans. The policy applies to high quality waters (surface water as well as groundwater) and requires that the high quality be maintained to the maximum extent possible. The policy allows for degradation if the change is consistent with maximum benefit to the people of the state, such a change does not adversely affect the beneficial uses, and does not result in water quality lower than the acceptable standards.

The policy also considers the use of recycled water for landscape irrigation in accordance with this policy as a beneficial use. Regardless of the source, irrigation activities over time result in degradation of groundwater quality. The SWRCB intends to address this impact by requiring development of salt/nutrient management plans described earlier.

Historically, the Regional Board has recognized the importance of groundwater recharge using Colorado River water to control overdraft and in spite of the higher TDS of this supply. Consequently, the Board has not taken a formal position on recharge with Colorado River water but has encouraged water conservation and recycling (Regional Board, 2006). It will continue to be important that CVWD, DWA and the other valley water agencies and tribes work together to with the Regional Board to develop policies and implementation plans that balance overdraft elimination with water quality protection.

5.1.2.5 Emerging Constituents/Chemicals of Emerging Concerns

There are provisions in the SWRCB Recycled Water Policy to regulate emerging contaminants (ECs). The policy acknowledges the incomplete and evolving knowledge of ECs and provides

