

Attachment 3

Work Plan

**Integrated Regional Water Management Implementation
Prop 84, Round 1**

Santa Ana Watershed Project Authority

**Santa Ana One Water One Watershed IRWM
Prop 84, Round 1 Implementation Proposal**

Work Plan

Proposal Goals and Objectives

SAWPA's request for funding through Proposition 84, Chapter 2 Integrated Regional Water Management will be used to support the first phase of funding for SAWPA to advance the One Water One Watershed (OWOW) vision. The OWOW program, developed and maintained through an ongoing collaborative stakeholder process facilitated by SAWPA is based upon the long-term vision where the Santa Ana Watershed is:

- A watershed that is sustainable, drought-proofed and salt-balanced by 2030, and in which water resources are protected and water is used efficiently;
- A watershed that supports economic and environmental viability;
- A watershed that is adaptable to climate change;
- A watershed in which environmental justice deficiencies are corrected;
- A watershed in which interruptions to natural hydrology are minimized, and;
- A watershed where a new water ethic is created at the institutional and personal level.

This portfolio of projects is intended to implement the first phase of the Santa Ana River Watershed's One Water One Watershed (OWOW), Integrated Regional Water Management Plan (IRWM). With the input and direction of the OWOW Steering Committee, a group of leaders from local government, water agencies, the business and environmental community, the Santa Ana Watershed Project Authority (SAWPA) developed a portfolio of 13 projects that are 1) ready to implement in a timely manner and 2) address strategies identified in the OWOW plan. The project portfolio integrates projects across geographic boundaries and provides multiple benefits to the region.

This project portfolio was developed from the OWOW IRWM plan ranked project list. Initially, all 297 OWOW projects were objectively ranked using a mathematical decision tool, based on criteria developed and weighted in relative importance by the OWOW Steering Committee. The Steering Committee requested that these criteria be quantitative in nature, removing the opportunity for misinterpretation of data. Each project was ranked based on:

- Water supply benefit;
- Habitat restoration/ flood management benefit;
- Water quality and salt management benefit;
- Recreational benefit
- Environmental justice benefit;
- Reduction of greenhouse gas emissions;
- Increase in resource efficient land use or reduction in impacts to natural hydrology;
- Cost match;
- Cost effectiveness;
- Project readiness, and;
- Increases in active participation (partnerships).

Based on Steering Committee direction, an independent review panel reviewed in detail the top 25 projects considered ready to implement in an initial funding round. The Steering Committee requested that the top ranked projects where preliminary design was 30% complete be ranked. In an effort to distribute benefits throughout the Santa Ana River Watershed, only the highest ranked project from each lead agency was considered. The review panel consisted of two civil engineering faculty members from local universities, the retired Executive Officer from the Regional Water Quality Control Board, and was led by an engineer/ MBA with project development experience. The review panel considered supporting project information, conducted detailed interviews with project proponents, and considered OWOW objectives when developing a project portfolio. The review panel was asked to consider the following factors when ranking the top 25 projects for funding consideration:

- Did the project meet Statewide water priorities and Proposition 84 objectives;
- Was the project scientifically and technically feasible;
- In ranking the project, were benefits accurately accounted and double counting avoided, and;
- Was the project cost effective?

The project review panel presented a number of portfolio scenarios based on available funding and distribution of project benefits across the Watershed. The Steering Committee recommended a portfolio of 13 projects for consideration and submission by SAWPA. The

SAWPA Commission reviewed the selection process and recommended a portfolio for submission.

Thirteen lead agencies from across the region will be constructing projects that when complete will offset up to 15% of projected imported water demand for the region. These projects can be placed in three groups based on primary project benefits. It should be noted that these projects provide additional benefits beyond the primary benefit of the project. Groundwater recharge/recycling projects include:

- Groundwater Replenishment System-Flow Equalization (Orange County Water District);
- Sludge Dewatering, Odor Control, and Primary Sludge Thickening (Orange County Sanitation District).

Flood management/ habitat enhancement with surface water quality improvement include:

- East Garden Grove Wintersburg Channel Urban Runoff Diversion (City of Huntington Beach);
- Romoland Line A Flood System (City of Menifee);
- Santa Ana Watershed Vireo Monitoring (Santa Ana Watershed Association);
- Mill Creek Wetlands (City of Ontario), and;
- Cactus Basins (County of San Bernardino).

Contaminated Groundwater Recovery and Salt Removal Projects include:

- Inland Empire Brine Line Rehabilitation and Enhancement (SAWPA);
- Arlington Desalter Interconnection Project (City of Corona);
- Perris II Desalination Facility (Eastern Municipal Water District);
- Perchlorate Wellhead Treatment System Pipeline (West Valley Water District);
- Chino Creek Wellfield Development (Western Municipal Water District), and;
- Impaired Groundwater Recovery (Irvine Ranch Water District).

Project proponents will provide monitoring and reporting information as required by SAWPA and department of water resources.

Specific Project Goals and Objectives

The specific project goals and objectives for each of the 13 portfolio projects are summarized below. They are discussed in greater detail within the sections discussing individual project proposals.

Groundwater Replenishment System-Flow Equalization (Orange County Water District)

The primary objective of the Ground Water Replenishment System (GWRS) Flow Equalization Project is to more effectively utilize the available flow of secondary effluent from Orange County Sanitation District (OCSD) and maximize resource processing and overall production from the GWRS. This project will increase the local water supply in Orange County by an additional 12,000 acre-feet per year (AFY) and diversify the water supply portfolio in the Southern California region. Orange County Water District (OCWD) is currently unable to operate the GWRS at full capacity due to the daily fluctuations in flows from OCSD's Plant 1 treatment facility. Two flow equalization tanks are needed to balance the secondary effluent from OCSD to GWRS throughout the day in order to maximize the overall production of the GWRS. This will enable peaks in the secondary effluent flow to be stored and subsequently used when flows to the GWRS are low, ensuring that a steady influent of wastewater to the GWRS is maintained at the design production capacity. Any excessive flows that occur at peak times during the day will be stored in the equalization tanks and delivered to the GWRS during periods when the secondary effluent from OCSD's Plant 1 is low. Upon completion, this project will enable OCWD to produce an additional 12,000 AFY of highly purified water for groundwater recharge and seawater intrusion control barrier operations.

Sludge Dewatering, Odor Control, and Primary Sludge Thickening (Orange County Sanitation District)

The Sludge Dewatering, Odor Control, and Primary Sludge Thickening (P1-101) Project will make necessary improvements to Orange County Sanitation District's (OCSD) Plant No. 1 that supplies secondary effluent to the Orange County Water District's Ground Water Replenishment System (GWRS), which is beneficial to the region by creating natural supplies of potable water. As natural supplies of potable water are dwindling due to droughts and increased water consumption, the project will create a local,

reliable supply of purified recycled water that is used to prevent seawater intrusion at the Talbert Barrier and to recharge the Orange County Groundwater Basin. The secondary treatment upgrades will also help preserve the environment by improving water quality in the near shore marine environment at a time when Southern California is confronting an increase in water pollution as a result of continuous population growth. The project will also provide better quality source water for the GWRS to produce purified recycled water that contains lower salt levels.

The goals and objectives of OCSD's Sludge Dewatering (P1-101) Project are as follows:

- Construct new treatment facilities for additional secondary treatment capacity to:
 - Meet NPDES permit limits for secondary treatment;
 - Create a reliable water supply by providing more secondary effluent for the GWRS expanding purified recycled water production; and
 - Provide better quality source water to GWRS for production of purified recycled water with a lower TDS level for groundwater replenishment, which aligns with the Santa Ana Region Basin Plan's Ground Water Salt Management Plan and the Santa Ana Region IRWMP to reduce levels of TDS.

These objectives can be attained through completion of numerous secondary treatment upgrade projects, among which is the P1-101 Project. One other secondary treatment upgrade project adjacent to P1-101 is underway. The P1-102 Project will add 60 mgd of activated sludge treatment capacity and is scheduled for completion in 2012. The P1-101 Project represents a critical piece of the OCSD CIP that is required to fully achieve OCSD's goals and objectives.

East Garden Grove Wintersburg Channel Urban Runoff Diversion (City of Huntington Beach)

The East Garden Grove Wintersburg Channel (EGGWC) Urban Runoff Diversion and Treatment Project will divert up to 3 million gallons per day of dry weather urban runoff from the regional flood control channel draining a watershed area over 22 square miles into an approximate 15-acre area in Huntington Beach Central Park for enhanced natural treatment utilizing a specialized wetland treatment trains and a reconstructed manmade lake system designed for polished treatment. The project will provide multiple benefits to the region that include (1) reclamation of

an unused non-potable water supply that had been previously been considered polluted waste, (2) protection of the beneficial uses of our coastal waters, (3) enhancement of habitat value, (4) groundwater recharge, (5) seawater barrier enhancements, and (6) public recreation benefits. Following treatment, the treated urban runoff will be used as a reclaimed nonpotable water source to irrigate Central Park and recharge the groundwater aquifer in the project vicinity while reducing stress on existing water supplies.

The primary 1 goals of this project directly related to water resources are to:

- Develop new public water supplies and reduce stress on existing water sources
- Provide regional improvement of the existing surface water quality tributary to natural receiving waters and groundwater
- Enhance and restore aquatic/riparian habitat
- Provide opportunities for public education on water quality, treatment, and aquatic systems

The objectives of this project include:

- Water reclamation through natural treatment an unused water supply as a potential water source for existing applications
- Eliminate or substantially reduce polluted urban runoff from being discharged into lower Bolsa Chica Wetlands and Huntington Harbor
- Water quality treatment of urban runoff through naturalized treatment systems
- Creation of riparian/aquatic ecosystem and restore the existing Talbert Lake to a functional permanent lake system
- Improve and recharge existing groundwater supplies

This will be accomplished through the diversion of dry weather channel flow to the Huntington Beach Central Park area for treatment, infiltration and aquatic restoration. Any water returned to the channel system will be of much improved quality. The project would reduce trash, debris, nutrients, and metals in the Huntington Harbor, Anaheim Bay, and Bolsa Chica areas. It will also reduce microbial contamination within the Watershed and divert polluted nuisance flows from our waterways. The project is also consistent with the Nonpoint and Coastal Source Control Programs by protecting the beneficial uses of water through control of nonpoint source pollution and protecting the water quality and environment of coastal waters, estuaries, and nearshore

waters. Another goal is to educate the public on pollution source control and prevention with an educational/outreach component included in the project. This project would not only be beneficial in the proposed use, but would also enhance existing open space, contribute to the replacement of wetlands and associated habitat lost to development in the past. Additional regional benefits will include groundwater recharge, enhanced salt water barrier intrusion benefits, park aesthetics, and possibly passive lake activities.

Romoland A Line Flood System (City of Menifee)

The Project for which the Integrated Regional Water Management Grant is to be utilized consists of Phase 1 of the four-phase Homeland/Romoland Master Drainage Plan (“MDP”). The Project includes two detention basins and approximately 11,800 lineal feet of open channel and storm drains that runs westerly from Juniper Flats to Briggs Basin. The purpose of the Project, as well as the entire MDP, is to collect storm water and control runoff while removing debris, silt and other contaminants and providing a comprehensive solution for non-point source pollution generated from a 6.5 square mile drainage basin. The Project will span portions of the City of Menifee (the “City”) and unincorporated Riverside County, an area generally identified as the Homeland/Romoland area, and lies within a 100 year flood zone. The area to be impacted by the Project consists of 6.5 square miles within the 13.7 square mile MDP and is situated within the 650 square mile San Jacinto River Basin, which drains into Canyon Lake and Lake Elsinore.

The goals and objectives of the Project are to:

- Capture up to 1,785 acre feet of annual rainfall flows, thereby providing protection from historic flooding and removing impacted properties from the 100 year flood plain;
- Improve water quality by reducing top soil erosion and pollutants and implementing water quality BMPs;
- Provide 400 acre-feet of additional storage capacity within the two detention basins, as the detention basins were oversized by 20% to 30% to provide additional capacity to store low flow runoff for recharge and to provide additional capacity for sediment/pollutant removal
- Construct drainage basins and remove up to 500,000 tons of silt and debris that currently flow to the San Jacinto River, thereby assuring higher quality water supply to Canyon Lake and Lake Elsinore;

- Provide flood control protection for the recently flooded Heritage High School, the existing fire station, existing Edison substation, businesses and homes;
- Recharge the local groundwater basin with up to 1,785 acre feet per year of rainwater recapture, and create an infiltration area for recharge during low level storm events;
- Create 865 acres of parks and open space, including recreational facilities, as well as a planned comprehensive trail system with drought-resistant landscaping, all of which is for use by local residents;
- Facilitate new development and provide permanent jobs in an existing community with high unemployment rates.

Santa Ana Watershed Vireo Monitoring (Santa Ana Watershed Association)

This project provides data needed for the permitting and continued operations of facilities located within riparian corridors within the Santa Ana River Watershed. Throughout the watershed, especially upstream of Prado, the flood control system is soft-bottom and vegetated. This area provides open space and habitat for a number of threatened and endangered species. Any construction and maintenance activity requires specific data to avoid or minimize the impact to these species. In order to operate these facilities in an integrated fashion, where flood protection, water supply and species restoration are all possible, quality data must be available. The flood and water agencies regularly collect data on water volume and quality, but there is no party responsible for collecting data at a granularity that is useful for management.

This project will allow the continued removal of invasive *Arundo donax*, a water-hungry invasive plant that has been removed from much of the watershed above the I-15 Freeway. As a result of this project surface flows have been enhanced, flood risk from debris dams reduced and recovery of endangered species, especially the endangered least Bell's vireo, will continue. Projects in this proposal requiring data from this programmatic effort include the Romoland Line A Flood System, the Mill Creek Wetlands, the Cactus Basin, and the Inland Empire Brine Line Rehabilitation and Enhancement. These projects all require permits from resource agencies charged with managing habitat and species. And as these projects, in many cases provide specific habitat benefits, this project provides independent performance benchmarks that are readily accepted by the US Fish and Wildlife Service and the California Department of Fish and Game.

The goal of the Santa Ana Watershed Vireo Monitoring and Breeding Bird Survey project is to continue to add to SAWA's extensive knowledge base, supports habitat restoration and infrastructure projects in riparian corridors. The data presented are public information to assist with planning for development projects, mitigation, habitat restoration, recreational development, public works projects and commercial and residential development. The Santa Ana Watershed Vireo Monitoring and Breeding Bird Survey Project adds value to any public works or other construction project that takes place in riparian or wetland areas of the watershed by providing comprehensive data on the locations of endangered birds and sensitive habitat where construction impacts may take place. SAWA biologists can also monitor construction activities and make recommendations regarding work methods to remediate negative effects on wildlife if there is presence of raptors, endangered birds or other focal species.

Mill Creek Wetlands (City of Ontario)

The Mill Creek Wetlands, also referred to as the Cucamonga Creek Watershed Regional Water Quality Project, sponsored by the City of Ontario, focuses on improving water quality; preserving & enhancing the environment; improving regional integration & coordination; providing recreational opportunities; maintaining quality of life; & providing economically effective water solutions. The Cucamonga Creek Watershed Regional Water Quality Project is a regional natural treatment facility proposed to be located on property adjacent to Cucamonga Channel at its terminus and transition to Mill Creek. The Project is designed to divert both wet weather & dry weather flows in Cucamonga Creek into a series of natural water quality treatment ponds.

The Goals and Objectives of the Cucamonga Creek Watershed Regional Water Quality Project are as follows:

- Water Quality
- Preserve and Enhance the Environment
- Regional Integration and Organization
- Recreational Opportunities
- Quality of Life
- Economically Effective Water Solutions

Cactus Basin (San Bernardino County Flood Control District)

The primary objectives of constructing Cactus Basin No. 3 are to reduce local flooding, reduce downstream flooding potential, and to reduce the size and cost of downstream drainage facilities. Secondary objectives are water quality protection and increase groundwater recharge in the basin and subsequent increase to the water supply.

The basin will allow for the reduction of urban runoff and increased conservation. It allows for the use of stormwater as water supply. Future utilization of Cactus Basin No. 3 as a recharge basin could be part of an overall strategy to reduce the need for imported water. Local and downstream residents and businesses will benefit from improved safety as well as improved quality of life due to reductions in flood potential and resultant road closures and flood damage. Additionally, the project will provide for both on-site ecosystem restoration and protection of off-site mitigation land.

Inland Empire Brine Line Rehabilitation and Enhancement (Santa Ana Watershed Project Authority)

A portion of the SARI Lower Reach IVB Brine Line was installed in the 1980's and was constructed of unlined, sacrificial reinforced concrete pipe (RCP). The section of Lower Reach IVB Brine Line begins at Prado Dam and extends a distance of approximately 16,000 linear feet (3.0 miles). This section of pipe is 36-inches in diameter and is within the water conservation pool impact area.

Core samples and subsequent condition assessment report completed by Krieger & Stewart in 2004 recommended that SAWPA consider rehabilitation of these pipelines to extend their service life. The rehabilitation to the pipeline is also necessary to meet the new loading conditions created by raising the height of Prado Dam and to restore the diminished capacity of the Lower Reach IVB Brine Line. A recent project completed by the U.S. Army Corps of Engineers (ACOE) has raised the height of Prado Dam by approximately 28 feet. Over the next 30 years, the sediment deposition behind the dam is expected to rise 20 feet.

The project as designed will increase the capacity of the Lower Reach IVB Brine Line by an additional 4.0 MGD. This additional Brine Line capacity will allow greater groundwater desalting capacity in the Inland Empire. The desalination process produces a local source of

potable water by taking unusable groundwater and treating through a reverse osmosis process. The treated water is served to the local communities and the unusable portion or brine is disposed of through the Brine Line. The Brine Line is the only cost effective alternative to remove brine from the watershed. Without the Brine Line there would not be groundwater desalination in the Inland Empire. The additional capacity in the brine line from the project will allow an additional 30,000 tons per year of salt removal from the watershed based on the current brine TDS.

Arlington Desalter Interconnection Project (City of Corona)

The Arlington Desalter Interconnection Project aims to improve water supply reliability in the Santa Ana Watershed region by linking existing water sources to increase local water use efficiency and reduce reliance on oversubscribed State water resources. The proposed project will create a two-way inter-tie that will connect an existing portion of the City of Corona Department of Water and Power's (Corona) water system with the Western Municipal Water District's (WMWD) system.

The goals and objectives of the Arlington Desalter Interconnection Project are as follows:

- **Improve regional water use efficiency** by constructing a two-way inter-tie connection that will help reduce regional reliance on State Water supplies that are currently experiencing drought shortages;
- **Ensure reliability of the Region's water supply** to commercial and residential customers in Corona and WMWD' wholesale and retail service territories by having the capacity to mitigate water shortages in the event of emergency, service outage or scheduled maintenance;
- **Maximize the use of local/regional water resources** by increasing Corona's capability to furnish 10 million gallons of water per day to WMWD and allowing WMWD to provide 10 million gallons of water per day to Corona through the interconnection;
- **Improve water quality** by helping Corona reduce the amount of total dissolved solids (TDS) in its water by having the ability to receive water furnished by Western with a lower overall TDS count; and
- **Provide a foundation for future connectivity projects** that will link up to the Arlington Desalter interconnection at Promenade Street to help increase local and regional

reliability of water resources through decreased reliance on the diminishing State Water supply.

Perris II Desalination Facility (Eastern Municipal Water District)

Eastern Municipal Water District (EMWD) project will supply brackish feed water to the existing Menifee and Perris I Desalters located within the Perris Valley, then ultimately supply brackish feed water to the Perris II Desalter (planned to be operational in 2013). EMWD views the use of desalters to make effective, beneficial use of local degraded brackish groundwater supplies as a viable, long-term step in generating new local potable water resources. These efforts were implemented in order to:

- Increase local drought preparedness and mitigation responsiveness;
- Increase reliance on local groundwater and recycled water, decreasing dependence on imported water;
- Increase reliance on local water resources in the event of an emergency (such as an earthquake) that cuts off imported water supplies;
- Supplement water supplies to local communities; and
- Address some of EMWD's ongoing challenges in the Perris Valley including:
 - Intrusion and mitigation of elevated nitrates, perchlorate and TDS;
 - Reduction of imported water demand; and
 - Supplemental supplies for disadvantaged communities.

The above are consistent with the "desalinate groundwater" strategy of the adopted IRWM Plan, and address the following specific goals and objectives of the adopted IRWM Plan:

1. Reliable water supply (by reducing demand for imported water).
2. Preserve/enhance the environment (by reducing groundwater salinity).
3. Promote sustainable water solutions (by increasing efficiency of local groundwater use).
4. Ensure high quality water (by reducing groundwater salinity, nitrate and perchlorate concentrations).
5. Provide economically effective solutions (by reducing demand for imported water).
6. Improve regional integration & coordination (by reducing salinity for all down-gradient water users and by increasing the availability of imported water for regional water users by decreasing EMWD's imported water demand).
9. Maintain quality of life (by increasing local, reliable supply of high-quality groundwater).

The Project would also contribute to the following targets of the adopted IRWM Plan:

1. Recycle and reuse 100% of wastewater (the Project provides a TIN/TDS offset within its GMZ, thus enabling continued use of recycled water within that GMZ).
4. Remove all salt necessary for reuse (the Project is part of a brackish water desalination program).
8. Meet water quality standards (the Project, in its programmatic context, will provide a water supply compliant with all applicable water quality standards).
11. Assure adequate water supply and safe water treatment (the Project will increase the available local water supply).
12. Reduce GHG emissions (the Project will reduce overall GHG emissions--see above).

13. Increase resource-efficient land use (the substitution of a local water supply for imported water increases efficiency of resource use).

Perchlorate Wellhead Treatment System Pipeline (West Valley Water District)

The Project includes the necessary piping to connect the groundwater contamination wellhead treatment project (WTP) to the two contaminated drinking water production wells located in the Rialto-Colton Groundwater Basin (Basin). The result will be removal of perchlorate, nitrate, and trichloroethylene (TCE) from the contaminated groundwater wells.

The Project has the following goals and objectives:

- Stabilize groundwater supplies in the Rialto-Colton Basin and reclaim operational flexibility;
- Restore groundwater production capacity lost due to contamination of groundwater;
- Decrease contaminant mass in the Basin;
- Improve the water quality of the basin and provide salt management benefits;
- Restore the basin to its natural hydrologic settings; and,
- Provide safe and reliable drinking water utilizing existing supply sources to meet customer demands.

Chino Creek Wellfield Development (Western Municipal Water District)

The Chino Creek Wellfield Development Project, Wells 1, 2, and 3 (Project) is a component of the larger Chino Creek Wellfield (CCWF) Development Project. The Chino Creek Wellfield Development Project is part of the Chino Desalter Phase 3 Expansion, and consists of the development of three production wells. Total new well production capacity from the three wells would be approximately 2,900 acre-feet per year (AF/y).

The goal of the CCWF Development Project is to:

- Increase Local Supplies and Facilitate Responsible Groundwater Management.
The CCWF Development Project facilitates responsible management of groundwater resources while increasing groundwater production. Essentially the

project results in new water supplies in an area thirsty for new water. Treating water from the local aquifer is more reliable than importing water from the Sacramento-San Joaquin Delta.

- **Protect Downstream Users.** Increasing groundwater pumping in the Chino Creek Wellfield will significantly reduce the flow of degraded groundwater into the Santa Ana River, as ordered by the Regional Water Quality Control Board. This in turn helps to increase water quality of the Santa Ana River and protects downstream water supplies and ecosystems.
- **Promote Regional Cooperation.** The proposed project is a regional project. The proposed project is supported by a group of agencies whom have developed regional groundwater treatment facilities that benefit many areas. Like the Riverside Corona Feeder, the proposed project will facilitate conveyance of local supplies. The proposed project will benefit many agencies in the SAWPA region, including the City of Chino Hills, the City of Chino, Jurupa Community Services District, Santa Ana River Water Company, the City of Norco, and the City of Ontario, as well as the Western Municipal Water District Service area. The CCWF Development Project benefits all agencies utilizing the Chino I Desalter by spreading fixed costs over a larger production volume thereby reducing unit cost of water.

Impaired Groundwater Recovery (Irvine Ranch Water District)

The Impaired Groundwater Recovery project, also known as the Wells 21 and 22 Project will recover and treat impaired groundwater to increase local drinking water supplies for the Irvine Ranch Water District (IRWD) service area to meet growing demands. The Project will supplement IRWD's current annual potable supplies, reduce demands of imported water, and increase IRWD's diversity of local supply. The projected Wells 21 and 22 Project yield is expected to be 6,330 acre-feet per year (AFY). IRWD currently receives imported treated water from the Metropolitan Water District of Southern California (MWD).

The Project goals and objectives are as follows:

- Recover and treat local impaired groundwater for potable use to satisfy increasing water demands and provide a reliable local water supply source of approximately 6,330 acre-feet per year (AFY)
- Reduce local dependency on imported water from Bay-Delta thereby alleviating freshwater shortages
- Build sustainable infrastructure and provide long-term benefits for the IRWD service area
- Improve the Orange County Groundwater Basin water quality by removing salts and nitrates

Purpose and Need

This proposal implements the first phase of the One Water One Watershed program. Projects were selected for inclusion in the portfolio based on 1) an objective, numeric process developed to select multi-benefit, regional projects, and 2) the determination by the Steering Committee that the included projects could be completed in a reasonable time frame.

Specific project purpose and need is discussed in the description of each project.

Project List

Project Title	Lead Agency	Cooperating Agencies	Percent Design Completed	Abstract
Groundwater Replenishment System (GWRS)- Flow Equalization	Orange County Water District	Orange County Sanitation District (OCSD)	30% Design	Two flow equalization tanks will be constructed to balance secondary effluent from OCSD to GWRS throughout the day in order to maximize the overall production of the

				GWRS.
Sludge Dewatering, Odor Control, and Primary Sludge Thickening	Orange County Sanitation District (OCSD)	Orange County Water District (OCWD)	Project Ready to bid	The project will make improvements to OCSD Plant No. 1 that will increase supplies of secondary effluent to OCWD Ground Water Replenishment
East Garden Grove Wintersburg Channel Urban Runoff Diversion	City of Huntington Beach	County of Orange, Orange County Flood Control District, Orange County Water District	Project ready to bid	The project will divert dry weather urban runoff from the regional flood control system into natural treatment utilizing specialized wetland treatment trains and a reconstructed manmade lake system.
Romoland Line A Flood System	City of Menifee	City of Perris, County of Riverside Flood Control and Water Conservation District, County of Riverside Transportation Department, Eastern Municipal Water District, Homeland/Romoland ADP, Perris Union High School District, Southern California Edison	Project ready to bid	The project includes two detention basins and approximately 11,800 lineal feet of open channel and storm drains.
Santa Ana Watershed Vireo	Santa Ana Watershed	Elsinore-Murrieta-Anza Resource Conservation District, Inland Empire	100% Design	The project is a regional monitoring program in riparian or

Monitoring	Association	Resource Conservation District, Orange County Water District, Riverside Corona Resource Conservation District, San Jacinto Basin Resource Conservation District		wetland areas that provides comprehensive data on the locations of endangered birds and sensitive habitat.
Mill Creek Wetlands	City of Ontario	City of Chino, Inland Empire Utilities Agency, Orange County Water District	30% Design	The project is designed to divert both wet weather and dry weather flows in Cucamonga Creek into a series of natural water quality treatment ponds.
Cactus Basin	San Bernardino County Flood Control District	City of Rialto Redevelopment Agency, City of Rialto Public Works	100% Design	Construction of Cactus Basin will reduce local flooding, reduce downstream flooding potential, and to reduce the size and cost of downstream drainage facilities
Inland Empire Brine Line Rehabilitation and Enhancement	Santa Ana Watershed Project Authority	Eastern Municipal Water District, Inland Empire Utilities Agency, San Bernardino Valley Municipal Water District, Western Municipal Water District	Project ready to bid	The project will increase the capacity of the Lower Reach IVB Brine Line by an additional 4.0 MGD and rehabilitate portions of Reach IVA and B.
Arlington	City of	Western Municipal Water	Project	The project will

Desalter Interconnection	Corona	District	ready to bid	create a two-way inter-tie connecting an existing portion of the City of Corona Department of Water and Power's water system with the Western Municipal Water District system.
Perris II Desalination Facility	Eastern Municipal Water District	United States Army Corps of Engineers	100% Design	The project will supply brackish feed water to the existing Menifee and Perris I Desalters, then ultimately supply brackish feed water to the Perris II Desalter (planned to be operational in 2013).
Perchlorate Wellhead Treatment System Pipelines	West Valley Water District	California Department of Public Health, Santa Ana Regional Water Quality Control Board	Project ready to bid	The project includes piping to connect the groundwater contamination wellhead treatment project (WTP) to two contaminated drinking water production wells.
Chino Creek Wellfield Development	Western Municipal Water District	City of Ontario, Jurupa Community Services District	30% Design	The project consists of the development of three production wells to support

				groundwater desalting.
Impaired Groundwater Recovery	Irvine Ranch Water District		30% Design	The project will recover and treat impaired groundwater to increase local drinking water supplies.

Integrated Elements of Projects

There are a number of project synergies or linkages resulting in added value or in some cases require coordinated implementation or operation. The projects selected by the OWOW Steering Committee fall into three primary benefit groups: 1) groundwater recharge/ recycled water projects; 2) flood control/ habitat enhancement projects, and; 3) groundwater desalination/ salt removal (or other groundwater contaminant removal).

The groundwater recharge/ recycled projects (Groundwater Replenishment System- Flow Equalization and Sludge Dewatering, Odor Control, and Primary Sludge Thickening) are closely integrated with additional water available from sludge dewatering providing secondary effluent to the Groundwater Replenishment System for recharge into the Orange County groundwater basin. The Flow Equalization tanks will balance secondary effluent flows from the Orange County Sanitation District throughout the day so that production from the GWRS can be maximized.

In general, both of these groundwater recharge/ recycled water projects are ultimately linked to the flood control/ habitat projects as the flood projects provide multiple benefits beyond simple flood protection. The flood control system in the Santa Ana River Watershed, the Santa Ana Mainstem Project, is a highly integrated system with the Santa Ana River serving as the terminal collection point for most stormwater generated in the watershed. The Mainstem Project is operated cooperatively with the US Army Corps of Engineers and the Counties of Orange,

Riverside and San Bernardino. The flood system also provides important habitat corridors and wetland functions (including natural treatment of surface waters). Projects which improve water quality upstream or retain water in the system longer, so it is available for recharge in the Orange County Basins providing the initial source water that feeds the Orange County Sanitation District treatment plants.

In Orange County, the East Garden Grove Wintersburg Channel Urban Runoff Diversion will divert dry weather flow from the flood system through a treatment wetland and manmade lake system, constructed to provide a passive recreational benefit in a local park. Some of the water in the soft-bottomed system will be recharged into the local groundwater basin.

A number of flood improvement/ basin projects are also included upstream in Riverside and San Bernardino Counties (Romoland Line A Flood System, Mill Creek Wetlands and Cactus Basin). These projects provide local flood benefit, but also provide available water for recharge in the local groundwater basins. Harvesting or collecting stormwater and allowing it to recharge will be one of the most cost effective tools for developing water supply in the Santa Ana River Watershed. These projects also provide significant habitat or open space benefits, as soft-bottomed channel system provides significant wildlife corridor values. In addition, the vegetated flood easement and basins provide the primary habitat for many of the threatened and endangered species in the region. The Santa Ana Watershed Vireo Monitoring project tracks habitat and species projects, so flood and water infrastructure can be operated in the same area as these significant habitat resources.

As the repurposed flood control projects that provide groundwater recharge, as well as flood risk reduction, it is also important to manage legacy contaminants in the groundwater basins. These legacy contaminants, primarily salts, are often found at concentrations too great to allow for potable use. The Inland Empire Brine Line is the backbone for brackish groundwater desalting in Riverside and San Bernardino Counties as it provides a means of disposing of high-salt “reject water” that is the byproduct of the desalting process. Desalting removes the legacy salts from the basin and provides a source of local potable drinking water. The Inland Empire Brine Line Rehabilitation and Enhancement Project will not only ensure the reliability of the line as it passes through the sensitive habitat in the Prado Flood Control Basin, it will increase the capacity of line allowing more desalting to occur in the region. The Perris II Desalination Facility project and the Chino Wellfield development project will draw water from salt-

Project A: Groundwater Replenishment System (GWRS) - Flow Equalization (Orange County Water District)

Part One - Introduction

The Groundwater Replenishment System (GWRS) is the world's largest advanced wastewater purification system of its kind for indirect potable reuse. This water supply project was jointly-funded and constructed by two public agencies: the Orange County Water District (OCWD) and the Orange County Sanitation District (OCSD). The GWRS supplements existing water supplies in north and central Orange County by providing reliable, high-quality water to recharge Orange County groundwater basin and protects the basin from further water quality degradation due to seawater intrusion. It also provides peak wastewater flow disposal relief and postponed, possibly indefinitely, the need for OCSD to construct a new ocean outfall by diverting treated wastewater flows to the GWRS that would otherwise be discharged to the Pacific Ocean. OCWD and OCSD have worked together collaboratively for over 30 years. Together, they are leading the way in water recycling and providing a locally-controlled, drought-proof and reliable supply of high-quality water in an environmentally sensitive and economical manner.

The GWRS has been operating successfully since January 2008, but unable to achieve its full production capacity due to diurnal variations of wastewater flows from OCSD. Raw wastewater flows arriving at OCSD's Plant 1 fluctuate between 64 and 170 million gallons per day (MGD) resulting in periods of shortfalls and periods of surplus. The diurnal flow calculations demonstrate that a storage volume of 15 MGD is required to equalize the flows of secondary treated wastewater (i.e., secondary effluent) through the day in order to provide a constant flow of 130 MGD to the GWRS. OCWD will build two 7.5 MGD storage tanks to store secondary effluent on a temporary basis during daily peak flow periods to be treated through the GWRS during low flow periods.

A - Goals and Objectives

The primary objective of the GWRS Flow Equalization Project is to more effectively utilize the available flow of secondary effluent from OCSD and maximize resource processing and overall production from the GWRS. This project will increase the local water supply in Orange County by an additional 12,000 acre-feet per year (AFY) and diversify the water supply portfolio in the

Southern California region. OCWD is currently unable to operate the GWRS at full capacity due to the daily fluctuations in flows from OCSD's Plant 1 treatment facility. Two flow equalization tanks are needed to balance the secondary effluent from OCSD to GWRS throughout the day in order to maximize the overall production of the GWRS. This will enable peaks in the secondary effluent flow to be stored and subsequently used when flows to the GWRS are low, ensuring that a steady influent of wastewater to the GWRS is maintained at the design production capacity. Any excessive flows that occur at peak times during the day will be stored in the equalization tanks and delivered to the GWRS during periods when the secondary effluent from OCSD's Plant 1 is low. Upon completion, this project will enable OCWD to produce an additional 12,000 AFY of highly purified water for groundwater recharge and seawater intrusion control barrier operations.

B - Purpose and Need

This project supplements the water supplies in Orange County by providing a locally-controlled, reliable and high-quality source of water to recharge the Orange County groundwater basin, decreasing the region's dependence on limited imported water supplies, minimizing negative impacts resulting from natural disasters, climate change and/or droughts, and protecting the groundwater basin from further degradation due to seawater intrusion. This project conforms to OCSD's charter which supports water recycling, and allows for more efficient reuse of wastewater by producing high-quality recycled water through the advanced treatment technologies at the GWRS. The water supply benefits from this flow equalization project are characterized by the increased water supply to the Orange County region in the amount of 12,000 AFY; enough new water for nearly 100,000 residents. In essence, the flow equalization tanks accomplish the same water supply functions as water storage facilities. This project also greatly improves the water quality of water supplies through the advanced treatments used at the GWRS.

Water quality improvements will be in the areas of contaminant removal and salinity (i.e., total dissolved solids or salts) management in Orange County's groundwater basin. This project enhances conjunctive management and groundwater storage as reflected by the water recharged into the Orange County groundwater basin which, in turn, alleviates and decreases groundwater overdraft. It is important to point out that the flow equalization tanks improve and simplify the operation efficiency of the GWRS by supplying a constant of flow of secondary effluent,

providing operational flexibility and optimizing the water transfer from OCSD to the GWRS. In terms of wastewater benefits, this project provides peak flow disposal relief and possibly indefinitely postpones the need for construction of a new ocean outfall.

C - Integrated Project Elements

The GWRS Flow Equalization Project provides the following synergies and linkages with other proposed projects in the Orange County region:

OCSD:

The GWRS is a water supply and water quality project operated and managed jointly by OCWD and OCSD. Secondary wastewater effluent treated by OCSD is conveyed to the GWRS at OCWD where it undergoes a three-step advanced purification process consisting of microfiltration, reverse osmosis and ultraviolet light with hydrogen peroxide. The purified GWRS water is pumped to OCWD's recharge basin for percolation into the groundwater basin and is injected into the Talbert seawater barrier to prevent seawater intrusion from contaminating groundwater supplies.

Secondary-treated effluent that is not sent to the GWRS is discharged to the ocean. OCSD discharges a blend of primary and secondary wastewater effluent via a deep outfall to the ocean. Operation of the GWRS significantly reduces the discharge of wastewater into the ocean. Increasing the amount of wastewater flows that can be treated by the GWRS will further reduce the discharge of wastewater through OCSD's ocean outfall, contributing to an improvement of ocean water quality. In addition, OCSD is currently constructing new secondary treatment facilities, which includes sludge dewatering, odor control, and primary sludge thickening at Plant 1. When complete, additional wastewater will be available for the GWRS. OCWD will need to expand the capacity of the GWRS and maximize operation to full capacity in order to realize the maximum benefit of this increased wastewater supply and increase the production of recycled water.

Irvine Ranch Water District (IRWD):

OCWD manages the groundwater basin in order to maximize the production of groundwater for water supply purposes. Increasing groundwater production is accomplished through a variety of means including increasing managed aquifer recharge of the basin, preventing and remediating

groundwater contamination, and recharging the basin with imported water when water is available. Since the amount of allowable pumping of groundwater is determined annually on a basin-wide basis and imposed on groundwater producers equally, projects and programs that increase the basin's yield in one part of the basin benefit all of the basin's producers. The same is true for projects that remediate groundwater contamination. A project that cleans up groundwater contamination for beneficial use increases the overall supply for groundwater producers. Therefore, all projects within OCWD's boundaries that increase available water supplies are linked and provide synergies.

Groundwater produced from IRWD wells 21 and 22 is unsuitable for potable use due to nitrate concentrations in excess of drinking water standards. This project will provide treatment to enable beneficial use of this water supply. OCWD encourages, through financial incentives, the removal and treatment of groundwater that does not meet drinking water standards in order to protect water quality. The benefits to the basin include removing and beneficially using poor-quality groundwater and reducing or preventing the spread of poor-quality groundwater into non-degraded aquifer zones. Removal and treatment of groundwater in the area of wells 21 and 22 will benefit the entire basin by removing contaminants in the groundwater basin, allowing continued use of existing production wells, increasing the availability of local water supplies, and reducing dependence of the region on imported water supplies.

City of Huntington Beach:

The City of Huntington Beach proposes to build the East Garden Grove Wintersburg Channel Urban Runoff Diversion Project, Phase 1. One of the benefits of this project will be the potential recharge of 560 af per year of stormwater into the Orange County groundwater basin.

OCWD manages the groundwater basin in order to maximize the production of groundwater for water supply purposes. Any increase in groundwater recharge accomplished by the City of Huntington Beach's project will increase the availability of local water supplies and will reduce the region's dependence on imported water supplies.

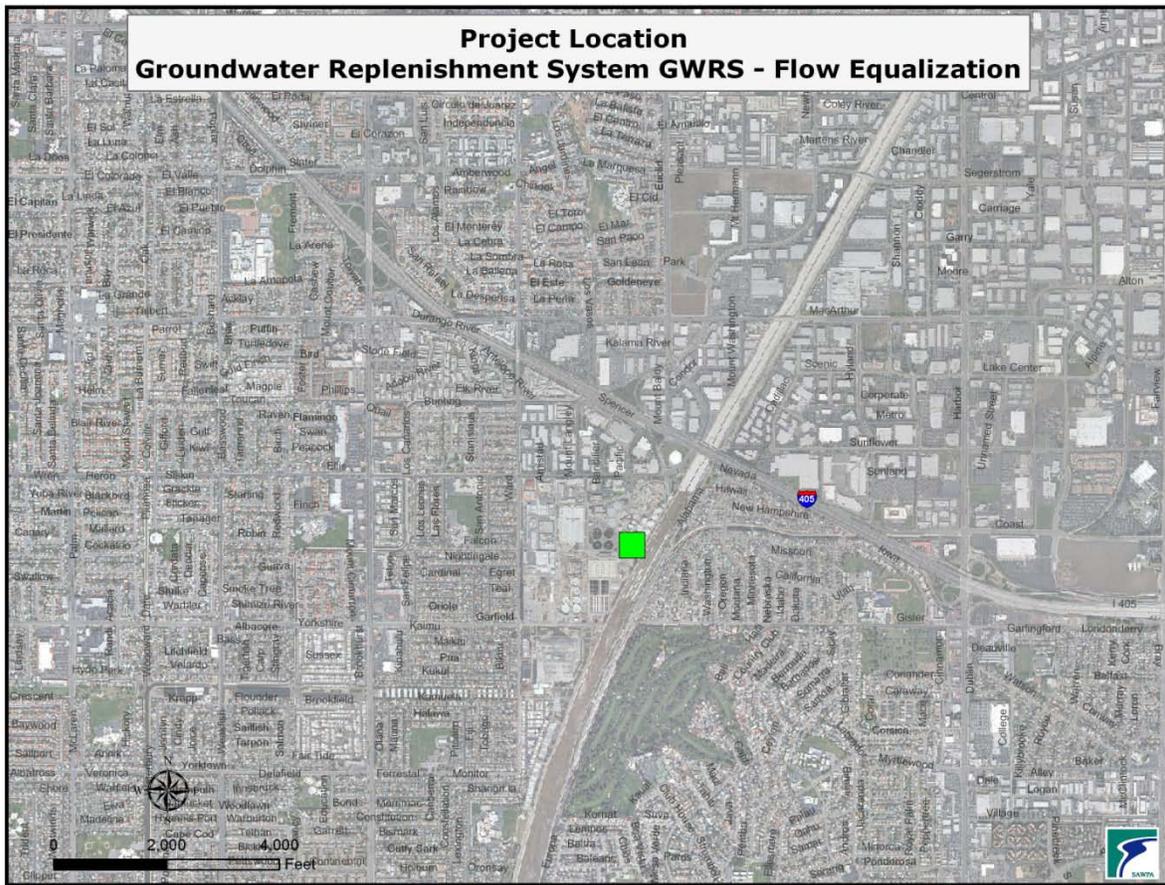
D - Completed Work

The Environmental Impact Report (EIR) and Environmental Impact Statement for the GWRS were certified by the OCWD and OCSD Board of Directors in March 1999, making the first milestone for the GWR System. In addition, a comprehensive and rigorous environmental mitigation monitoring and reporting program was established for the GWRS. OCWD and OCSD also filed the Notice of Determination with the State Clearinghouse Office of Planning and Research (SCH 98111030). In addition, a Cultural Resources Reconnaissance for the GWRS, Orange County, California was conducted in January 2000. Since the EIR for the GWRS is more than five years old, an Addendum to the EIR is currently being prepared for this project. Upon completion and approval and adoption by OCWD Board of Directors, the Notice of Determination will be filed with the State Clearinghouse and the County of Orange. An environmental mitigation monitoring and reporting program for the Flow Equalization Project is also currently being prepared by OCWD staff for CEQA compliance.

E - Existing Data and Studies

OCWD and OCSD have collected an extensive amount of data on wastewater diurnal flows and the equalization volumes for each hour and day throughout the various locations at OCSD's treatment plant and the GWRS for several years. This data was used to conduct technical studies that support the selection of project site location, flow equalization system requirements, feasibility, tank alternatives, cost estimates and technical methods. The design of the flow equalization project has recently been completed by OCWD's consultant, Black and Veatch. The claims made in the discussion of this work plan are discussed in greater details in the Technical Memorandum 6 entitled "Flow Equalization Study" and the Technical Memorandum 11 entitled "Secondary Effluent Flow Equalization Facilities." The main objective of the Flow Equalization Study was to evaluate the storage of OCSD's treated effluent during peak flow periods for feed to the GWRS. The objective of the Secondary Effluent Flow Equalization Facilities was to develop the basis for the design of flow equalization facilities including operation process flow and hydraulics, pump station, equalization tanks (design criteria, materials, accessories, mixing system and drain metering vault), architectural, structural, mechanical, electrical, instrumentation and control designs.

F - Project Map



G - Project Timing and Phasing

The GWRs Flow Equalization Project is a standalone project from the expansion project since the equalization tanks provide the operational flexibility and additional flow storage capacity for the existing facility. Its objective is to maximize the current production of recycled water without the addition of additional treatment process modules. This project is an independent project from the expansion of GWRs, and is not a part or a component or a phase of other projects planned by OCWD. The requested IRWM implementation grant will be utilized solely to fund the flow equalization tanks of this project.

Part Two - Proposed Work Tasks

A – BUDGET CATEGORY (a): DIRECT PROJECT ADMINISTRATION COSTS Budget

Task 1: Administration

Lo Tan, senior engineer of OCWD, will be in charge of the daily grant administration of Proposition 84 IRWM program grant. Mr. Tan is the primary contact for SAWPA and DWR. Mr. Tan will prepare the project progress reports, invoices, and other deliverable documents as required by the IRWM Grant Agreement.

Deliverables: Preparation of invoices and other deliverables as required.

Task 2: Labor Compliance Program

Lo Tan will administer the labor compliance of the primary contractor and its sub-contractor(s), if any, during the construction of this project. The certified payroll reports could be provided to SAWPA and DWR on a weekly basis or bi-weekly basis depending on the contractor's pay frequency. Mr. Tan is managing the labor compliance program for an OCWD project funded by Proposition 50 and understands the labor compliance requirements.

Deliverables: Submission of certified payroll reports for labor compliance.

Task 3: Reporting

Lo Tan will prepare and submit the project progress reports (either monthly or quarterly to be determined by SAWPA and/or DWR), annual report, and final project report as required by the IRWM Grant Agreement.

Deliverables: Submission of quarterly, annual and final reports as specified in the Grant Agreement.

B - BUDGET CATEGORY (b): LAND PURCHASE/EASEMENT

Not Applicable to this project

C - BUDGET CATEGORY (c): PLANNING/ENGINEERING/ENVIRONMENTAL DOCUMENTATION

Task 4: Assessment and Evaluation

The technical evaluation and the feasibility assessment of this project were conducted by OCWD consultant (Black and Veatch) with critical review and comments by OCWD staff. Two important studies for this project include the Technical Memorandum 6 entitled “Flow Equalization Study” and the Technical Memorandum 11 entitled “Secondary Effluent Flow Equalization Facilities.”

Deliverables: Technical Memorandum 6 and 11.

Task 5: Final Design

The final design has recently been completed by OCWD’s design consultant, Black and Veatch. Project design plans and specification at 100 percent completion and as-built drawings will be submitted to SAWPA and DWR upon request and availability.

Deliverables: Project plans and specifications at the 100 percent and final level.

Task 6: Environmental Documentation

The environmental documents for this project include the Addendum to the Environmental Impacts Report for the GWRS to be approved and adopted by the OCWD Board of Directors, the filling of Notice of Determination with the State Clearing House Office of Planning and Research and the Orange County Clerk Recorder, and OCWD’s environmental mitigation measures monitoring and reporting program.

Deliverables: Approved and adopted documentation on the Addendum to the Environmental Impacts Report, Notice of Determination and mitigation measures.

Task 7: Permitting

No permit is needed for the flow equalization tanks.

Deliverables: Not applicable

D - BUDGET CATEGORY (d): CONSTRUCTION/IMPLEMENTATION

Task 8: Construction Contracting

OCWD's GWRS project manager and OCWD's contracting staff will administer the construction of the GWRS Flow Equalization Project. As a public agency, OCWD staff follows the public works construction contracting procedures and will advertise for bids and develop the bid package including all the pertinent requirements and provisions for this project. A pre-bid meeting will be held with all interested contractors during which answers to any questions will be provided. OCWD will also issue and distribute the bid packages to all interested bidders, allow sufficient time to submit bid proposals, evaluate all bids, and announce and summarize all bids submitted. OCWD staff will recommend the contract award to the lowest bid for formal approval by the OCWD Board of Directors at a regularly-scheduled Board of Directors meeting. After approval by the Board of Directors, OCWD's contracting staff will verify contractor bonds and insurance, and issue a Notice-To-Proceed to the selected contractor.

Deliverables: Advertisement for bids; pre-bid contractors meeting; evaluation of bids; award contract; notice to proceed.

Task 9: Construction

The major tasks of construction include bid period, mobilization, project submittals, flow equalization civil and structural construction items, procurement of major equipment, installation of equipment, substantial completion of plant site construction, startup and testing, demobilization and contract closeout, and final completion of construction.

a. Subtask 9.1 - Mobilization and Site Preparation

This subtask includes site preparation of the staging area at OCSD and mobilization of construction equipment to the staging area.

b. Subtask 9.2 - Project Construction

The civil and structural construction subtasks include shoring, excavation, set up pile template, auger/cast-in-place piles, prepare pile cap subgrade, form/place concrete foundation pile cap slab, form/place concrete foundation slab and subgrade walls, curing

of last concrete pour, construct CMU building, erect steel tanks, paint and coating, install fill/feed piping, hydrostatic leakage test tanks, hydrostatic leakage testing piping, and backfill/finish grade.

The procurement of major equipment includes the following: release for manufacture after submittal are approved, time for equipment manufacture, witnesses shop testing, fabrication of steel tanks, factory inspection of assemblies, packaging & shipping of equipment, shipping steel tanks, and major equipment delivered to site.

The equipment installation includes the following: install pumps, process & bleach piping, valves, flow meters, submersible pumps, tank mixers, conduit & wiring, instrumentation & communication systems, hydrostatic testing and disinfection of piping, Delta V integration, tie-in to screening and ultraviolet light facility, tie-in to OCSD facilities, and process control system commissioning.

The plant site construction to substantial completion includes the following: install remaining yard piping, pressure & leakage testing, cleaning and disinfection, remove shoring systems along roads, installation of remaining duct banks, and restoration of road, paving and stripping.

c. Subtask 9.6 - Performance Testing and Demobilization

Perform project testing and startup and substantial operational completion for flow equalization tanks. The demobilization and contract closeout subtasks include the following: complete site improvements, remove temporary fencing, punch list items and contract closeout, contractor submit as-built drawings, demobilize and site cleanup.

**E - BUDGET CATEGORY (e): ENVIRONMENTAL COMPLIANCE/MITIGATION/
ENHANCEMENT**

Task 10: Environmental Compliance/Mitigation/Enhancement

The mitigation measures program for CEQA compliance will include air quality monitoring during the construction (reduce the release of undesirable emissions, develop a trip reduction plan, sweep on and off site streets, and others), compliance with all Noise Ordinance provisions of nearby cities, limitation of noise construction with respect to surrounding

homes, and, possibly, development of a traffic plan to minimize traffic flow interference from construction activities.

F - BUDGET CATEGORY (f): CONSTRUCTION ADMINISTRATION

Task 11: Construction Administration

As a public agency, OCWD staff shall request an approval from the OCWD Board of Directors to issue a Request for Proposals (RFP) for construction management services for this project. OCWD staff will prepare the RFP, interview the qualified firms and provide staff recommendation to the OCWD Board of Directors for formal approval at regularly-schedule Board of Directors meeting.

Project B: Sludge Dewatering, Odor Control and Primary Sludge Thickening (Orange County Sanitation District)

Part One - Introduction

The Orange County Sanitation District (OCSD) is a public agency responsible for wastewater treatment for more than two million residents and businesses within Orange County. OCSD presently discharges a blend of primary and secondary wastewater effluent via a deep ocean outfall to the Pacific Ocean. In July 2002, the OCSD Board of Directors decided to voluntarily upgrade OCSD's facilities to meet federal secondary treatment requirements during the renewal process of its ocean discharge permit (National Pollutant Discharge Elimination System (NPDES)).

OCSD and the Orange County Water District (OCWD) strongly support water reclamation and the service areas for both districts are essentially the same. OCSD and OCWD are co-sponsors of the Groundwater Replenishment System (GWRS), which began operation in January 2008, and have established a Joint Operations Agreement. As part of OCSD's commitment to increase water recycling, the OCSD has placed a high priority in expanding facilities capacity to increase production of secondary treated wastewater (secondary effluent), needed for the planned GWRS expansion. In order to provide more source water, or secondary effluent, for the expanded GWRS, OCSD needs to upgrade its secondary treatment facilities at Plant No. 1, including implementation of the Sludge Dewatering, Odor Control, and Primary Sludge Thickening Project at Plant No. 1, also known as the P1-101 Project in the OCSD CIP. The P1-101 project is an important component of OCSD's commitment to the GWRS and water reclamation.

Plant No. 1 is located in the City of Fountain Valley about four miles northeast of the Pacific Ocean and adjacent to the Santa Ana River. The plant is located on approximately 108 acres bounded on the north by Ellis Avenue, OCWD and Ward Street on the west, Garfield Avenue on the south, and the Santa Ana River (SAR) on the east. This plant receives wastewater from six major sewer pipes and provides advanced primary and secondary treatment. OCSD treats wastewater using three processes: preliminary treatment, advanced primary treatment, and secondary treatment. All of OCSD's wastewater receives preliminary treatment and advanced primary treatment. Secondary effluent is sent to OCWD for further treatment and distribution as

reclaimed water or blended with advanced primary effluent and routed to the ocean outfall disposal system.

The P1-101 project will upgrade the secondary treatment that will provide an increase in the supply of treated wastewater that can be reclaimed through the OCWD's GWRS which is beneficial to the Santa Ana River region because natural supplies of potable water are dwindling due to droughts and increased water consumption, the project will create reliable, new supply of water by increasing production of purified recycled water that will replenish the Orange County groundwater basin.

A - GOALS AND OBJECTIVES

The P1-101 Project will make necessary improvements to Plant No. 1 that supplies secondary effluent to the GWRS, which is beneficial to the region by creating natural supplies of potable water are dwindling due to droughts and increased water consumption, the project will create a local, reliable supply of purified recycled water that is used to prevent seawater intrusion at the Talbert Barrier and to recharge the Orange County Groundwater Basin. The secondary treatment upgrades will also help preserve the environment by improving water quality in the near shore marine environment at a time when Southern California is confronting an increase in water pollution as a result of continuous population growth. The project will also provide better quality source water for the GWRS to produce purified recycled water that contains lower salt levels.

The goals and objectives of OCSD's the P1-101 Project are as follows:

- Construct new treatment facilities for additional secondary treatment capacity to:
 - Meet NPDES permit limits for secondary treatment;
 - Create a reliable water supply by providing more secondary effluent for the GWRS expanding purified recycled water production; and
 - Provide better quality source water to GWRS for production of purified recycled water with a lower TDS level for groundwater replenishment, which aligns with the Santa Ana Region Basin Plan's Ground Water Salt Management Plan and the Santa Ana Region IRWMP to reduce levels of TDS.

These objectives can be attained through completion of numerous secondary treatment upgrade projects, among which is the P1-101 Project. One other secondary treatment upgrade project adjacent to P1-101 is underway. The P1-102 Project will add 60 mgd of activated sludge treatment capacity and is scheduled for completion in 2012. The P1-101 Project represents a critical piece of the OCSD CIP that is required to fully achieve OCSD's goals and objectives.

B - PURPOSE AND NEED

The purpose of the P1-101 Sludge Dewatering, Odor Control, and Primary Sludge Thickening Project is to provide solids treatment for the Plant No. 1 secondary treatment upgrades and increasing the source water quantity for the GWRS to produce 31,000 AFY additional purified recycled water for reclamation. Construction of sludge thickening and dewatering are needed to treat the additional sludge produced from new and upgraded activated sludge wastewater treatment processes. Figure 1 illustrates the main project structures and location at Plant No. 1. As a result of implementing the secondary treatment upgrades, OCSD will meet federal Clean Water Act secondary treatment requirements for the discharge of biochemical oxygen demand (BOD) and total suspended solids (TSS).

OCSD's secondary treatment upgrades will improve water quality within the SAR region and provide the GWRS with a new supply of treated wastewater by meeting secondary requirements for the agency's wastewater discharge. In order to do so, the construction of new treatment facilities needs to be implemented. The P1-101 Project is one of the many components of the secondary treatment upgrades program that will allow OCSD wastewater treatment facilities to meet secondary treatment standards.

The P1-101 Project is needed in order to:

- Construct a primary sludge/waste activated sludge (WAS) co-thickening system and replace the existing sludge dewatering systems because the existing sludge thickening, digestion, and dewatering systems do not have sufficient capacity to meet increased demands brought on by the secondary treatment process. The project will:
 - Implement a primary sludge and WAS co-thickening process, using centrifuges, to optimize use of existing sludge digestion systems for year 2020 demands.

The P1-101 Project supports the SAWPA OWOW and IRWMP's goals and objectives by producing more secondary effluent for water reclamation and by improving water quality. As a co-sponsor with OCWD, OCSD fully supports water recycling by providing treated wastewater as feedwater for the GWRS to produce purified recycled water to recharge the groundwater basin and improve its water quality. Serving north and central Orange County, the OCSD and OCWD service areas are essentially the same. The P1-101 Project will support the GWRS expansion and the OWOW goals by providing:

- Up to 31,000 afy (30 mgd) of new, local, reliable water supply for Orange County, thereby reducing the need to import water;
- Increase the amount of wastewater treatment capacity up to 38,000 afy (34mgd);
- New source water avoids depleting existing groundwater basin by pumping and treating it as drinking water;
- Improved water quality of the Orange County Groundwater Basin because of the low salinity of the purified recycled water produced by the GWRS using OCSD secondary effluent to be used as source water for the GWRS;
- Energy efficiency by avoiding the need to import water from northern California and/or the Colorado River and by utilizing digester gas from solids treatment to produce electrical power at Plant No. 1 and reducing greenhouse gas emissions;
- Greenhouse Gas Emissions reduction by reducing the amount of truck hauling of solids;
- Serving the interest of numerous cities and water/sanitation districts in Orange County with a regional approach to wastewater and solids treatment;
- Improve sustainability by decreasing the amount of wastewater wasted via the ocean discharge to the Pacific Ocean;
- Serves to improve environment at local beach communities;
- Promotes drought preparedness by providing new source water used to restore groundwater

C - INTEGRATED ELEMENTS OF PROJECTS

In 2012 with full secondary (liquids) treatment, under peak monthly conditions, as seen in the past 5 years, current solids thickening, digestion and dewatering capacities are not sufficient and will not accommodate projected population growth and expansion of GWRS. P1-101 treatment

upgrades must also be integrated to the wastewater treatment process to maximize the source water production for groundwater recharge. The projections for solids levels are depicted in Figure 2.

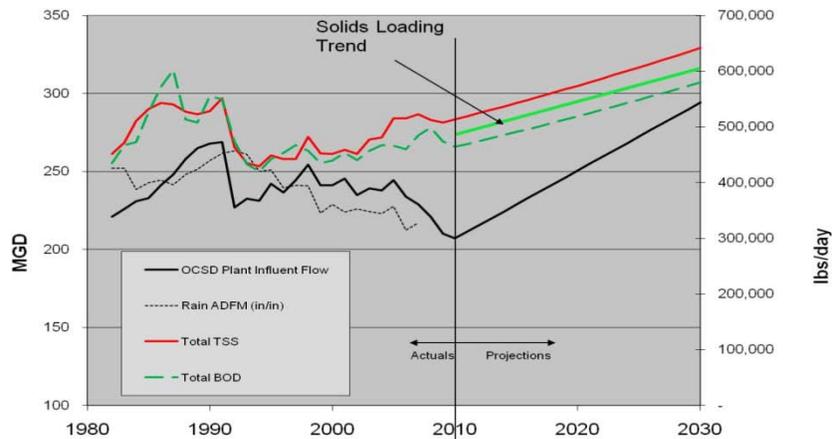


Figure 2: OCSD Flow and Solids Projection, OCSD 2010

A description of synergies or linkages between projects that result in added value, or require coordinated implementation or operation.

The P1-101 in conjunction with the Cactus Basin No. 3 and No. 3A will increase groundwater recharge in the Santa Ana Region. Perris Desalination Facility will treat local degraded brackish groundwater, Chino Creek Wellfield, Wells 1, 2, and 3 will increase desalter groundwater pumping, will decrease the salt levels in local water supplies. The following projects will assist with environmental restoration Cucamonga Creek Watershed Regional Water Quality Project (Mill Creek Wetlands) and East Garden Grove Winterstburg Channel Urban Runoff Diversion Project and the Santa Ana Watershed Vireo Monitoring and Breeding Bird Surveys. The Arlington Desalter Connection and IRWD’s Wells 21 and 22 will create new reliable local water supplies. The Perchlorate Wellhead Treatment System Pipelines will restore groundwater production capacity by lowering contamination in the water also creating a reliable local water

supply. The Repairs to the unlined RCP Reach IVA and Reach IVB Santa Ana Regional Interceptor will sustain the viability of the SARI line protecting the water quality of Santa Ana River, which will protect the water supply for P1-101. OCWD's Flow Equalization Project is interrelated with P1-101 to maximize source water for the GWRS and maximize reclamation efforts. The Santa Ana Region will be healthier and have increased water supply by the construction of all the above mentioned projects.

The P1-101 project will provide a key component of the secondary treatment upgrades, especially sludge dewatering, odor control and primary sludge thickening which will enable plant No. 1 to produce more secondary effluent for the GWRS expansion. However, the Secondary Treatment Expansion System Project, P1-102, will add 60 mgd more of activated sludge that are necessary to support the GWRS expansion facilities, P1-102 will be completed in early 2012. The relationships of the projects are shown in figures

Figure 3 and shows the schedule of and how the all projects is order to 31,000 AFY

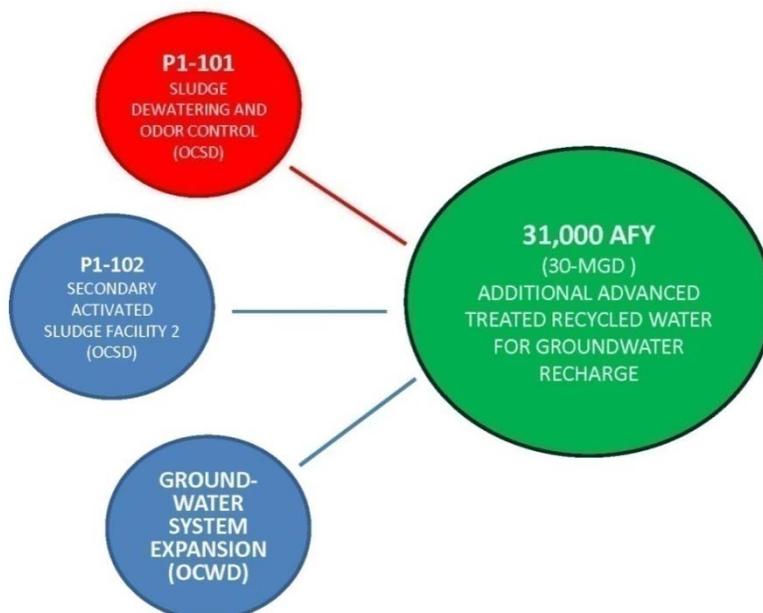


Figure 4 construction the projects completion of necessary in produce of new water.

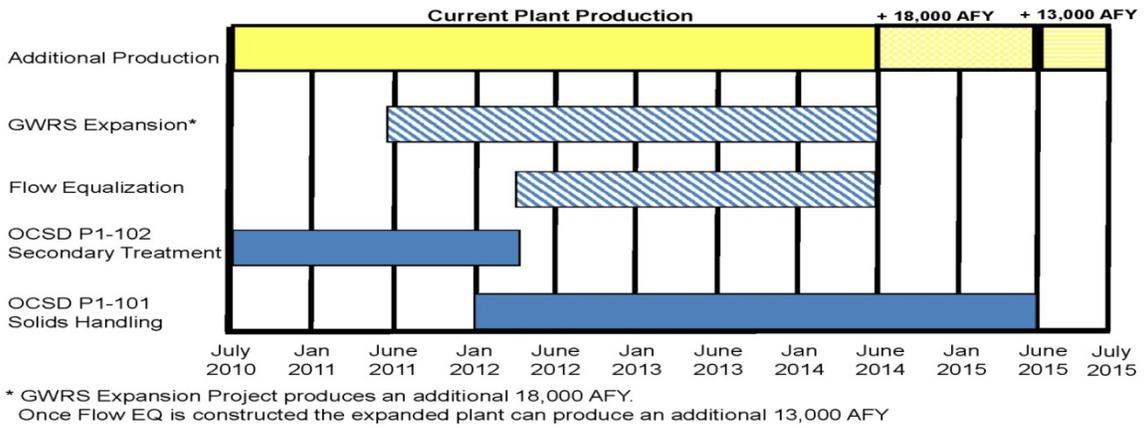


Figure 3: OCSD and OCWD Project Relationships

Figure 4: OCSD and OCWD Project Schedule

D - COMPLETED WORK

Planning, environmental compliance, and preliminary design work on the P1-101 Project have been completed. The project began in 2003, following the OCSD Board of Directors decision to upgrade the OCSD wastewater treatment facilities to secondary treatment standards.

OCSD completed the Long Range Biosolids Management Plan that was completed in December 2003. That document provided an initial needs assessment and feasibility study for solids treatment, handling, dewatering, and disposal. A copy of this study was provided to SAWPA for review as part of project selection.

The Preliminary Design Report was completed in 2005 to form the basis of the P1-101 Project. A copy of the Preliminary Design Report prepared by HDR is attached study was provided to SAWPA for review as part of project selection.

From 2006 to 2009, equipment studies were conducted to evaluate and optimize the selection of sludge dewatering and thickening equipment to be installed. Copies of the Engineering and Equipment Studies were provided to SAWPA for review as part of project selection.

The requirement of the environmental documentation for compliance with California Environmental Quality Act (CEQA) and National Environmental Protection Act (NEPA) has been completed by OCSD. The EIR was completed in 2005. The OCSD Board of Directors certified the EIR and submitted the Notice of Determination to the State Clearinghouse in May 2005. To complete the NEPA process, a categorical exemption was filed with the lead agency, the Environmental Protection Agency. A copy of the EIR, Notice of Determination, and Categorical Exemption were provided to SAWPA for review as part of project selection.

The final design phase is currently 60% (DS2) completed. Copies of the 30% (DS1) plans and technical specifications and 60% (DS2) plans and technical specifications were provided to SAWPA for review as part of project selection. Final design will be completed in August 2011.

E - EXISTING DATA AND STUDIES

The P1-101 project will include the construction of a primary sludge/waste activated sludge (WAS) co-thickening system, sludge dewatering facilities, and odor control systems for the upgraded and expanded Plant No. 1. OCSD evaluated several different technologies as part of

the Long Range Biosolids Management Plan that was completed in December 2003. The process selected was chosen due to the appropriateness of the technology and economical considerations.

The P1-101 Project is located at OCSD Reclamation Plant No. 1 because it upgrades and expands the solids dewatering and thickening facilities for Plant No. 1. OCSD needs improved solids treatment facilities at this location because Plant No. 1 provides secondary effluent as source water for the Groundwater Replenishment System. More feedwater from Plant No. 1 is needed for the Groundwater Replenishment System. OCSD is unable to use secondary effluent produced by Plant No. 2 as feedwater because the Groundwater Replenishment System permit specifies that “only secondary treated wastewater from the OCSD Reclamation Plant No. 1 that does not include wastewater flows from the Santa Ana River Interceptor line shall be used as influent source water for advanced tertiary treatment at the...GWRS.” As such OCSD, as a co-sponsor of the Groundwater Replenishment System along with OCWD, has expanded Plant No. 1’s liquid treatment processes. One of these projects, the Activated Sludge Facility 2 at Plant No. 1 (P1-102) is under construction and scheduled for completion by 2012. However, OCSD cannot fully deliver the amount of secondary effluent needed for the Groundwater Replenishment System’s expansion until the P1-101 project is completed. Solids dewatering, primary sludge/WAS thickening, and associated odor control are required to support the liquid streams at Plant No. 1. In other words, the P1-101 Project is the final piece of the puzzle that will enable OCSD to produce sufficient quantities of secondary effluent as sources water for the Groundwater Replenishment System. Production of approximately 31,000 afy (30 mgd) more of purified recycled water for Orange County is dependent on OCSD completing the P1-101 Project.

Following the Long Range Biosolids Management Plan in late 2003, OCSD embarked on other planning studies for the P1-101 Project. Between 2003 and 2009, a variety of feasibility and engineering studies have been completed as the P1-101 Project was developed. Pilot tests of belt press dewatering equipment have also been completed to optimize the project.

Copies of these existing data and studies were provided to SAWPA for review as part of project selection.

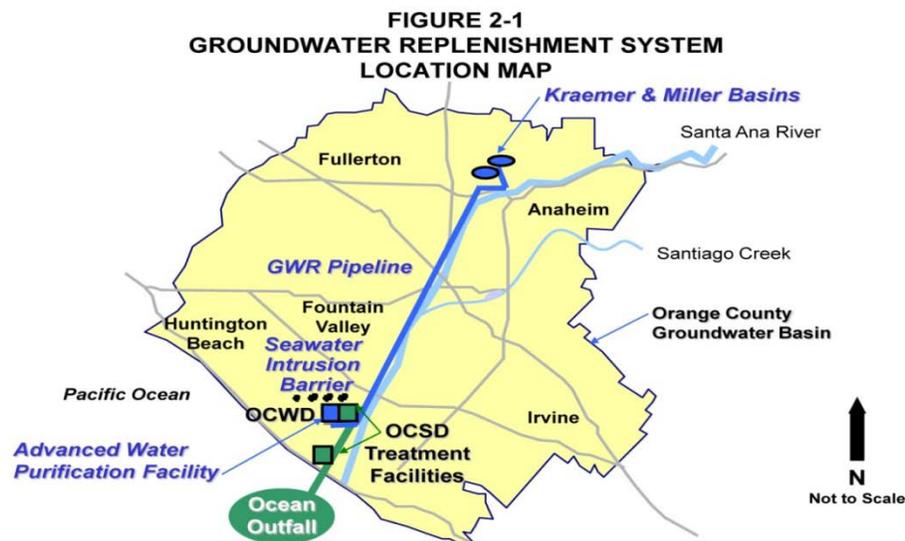
F - PROJECT MAP

OCSD is a public agency responsible for collecting, treating, recycling, and disposing of wastewater for 2.5 million residents and businesses within a 471-square mile area of northern and central Orange County, California. For 50 years, OCSD has provided services to 21 cities and 3 sanitary districts; Costa Mesa Sanitation District, Midway Sanitation District and Irvine Ranch Water District (not shown in the figure). OCSD operates the third largest wastewater system on the West Coast, consisting of over 650 miles of trunk and subtrunk sewer lines, two regional wastewater treatment plants, and an ocean outfall disposal system.

OCSD was formed in 1946 pursuant to the California County Sanitation District Act of 1923 as a single purpose entity, to provide wastewater treatment for Orange County. OCSD began operation in 1954 with a network of trunk sewers, two treatment plants, and an ocean outfall disposal system outfall with a design rated capacity of 240 million gallons per day (mgd). A second 120-inch diameter ocean outfall with a design rated capacity of 480 mgd was installed in 1971. This outfall, currently in service, extends approximately four miles into the Pacific Ocean where it connects with a diffuser extending another 6,000 feet northward at a depth of 250 feet.

Reclamation Plant No. 1 in Fountain Valley provides secondary effluent for the Groundwater Replenishment System. OCSD and Orange County Water District (OCWD) are co-sponsors of the Groundwater Replenishment System. In partnership with OCWD, OCSD fully supports water recycling.

The Groundwater Replenishment System is located in Fountain Valley, adjacent to Plant No. 1. The existing Groundwater Replenishment System began operating in 2008 to produce up to 72,000 afy (70 mgd) of purified recycled water for injection at the Talbert Seawater Intrusion Barrier and



spreading at Kraemer-Miller Basins to recharge the Orange County Groundwater Basin. The locations of the Groundwater Replenishment System facilities are shown on

Figure 5. The service areas of OCWD and OCSD are nearly identical with both co-sponsors serving north and central Orange County.

Figure 5: Groundwater Replenishment System Location Map

Expansion of the Groundwater Replenishment System is planned, increasing its purified recycled water production up to 103,000 afy (100 mgd). Adding 31,000 afy (30 mgd) more production capacity at the Groundwater Replenishment System will provide more water for north and central Orange County. In order for the Groundwater Replenishment System to produce this

additional water supply, OCSD must supply more secondary treated wastewater as source water for the advanced treatment facilities.

As discussed in the previous section, OCSD must complete the Sludge Dewatering, Odor Control and Primary Sludge Thickening Project, also called the P1-101 Project, to support its ability to deliver more secondary treated wastewater to the Groundwater Replenishment System. Without the upgraded and expanded solids facilities, Plant No. 1 will be restricted and unable to deliver the required feedwater for water reclamation. Construction of expansion for the liquid treatment stream at Plant No. 1 involves completion of the new activated sludge facility, which will be completed under the separate P1-102 Project by the end of 2012. However, the P1-101 Project is critical to provide solids treatment to allow OCSD to increase its Plant No. 1 capacity and provide more feedwater for the Groundwater Replenishment System expansion, which in turn will increase the local water supply by up to 31,000 afy.

Figure 6 shows a map of the OCSD service area, this figure also illustrates the cities within OCSD's service area and shows the locations of OCSD's two wastewater treatment plants and the ocean outfall disposal system.

Figure 6: OCSD Service Area Map

Figure 7 shows the Plant No. 1 site layout of the P1-101 Project facilities. Plant No. 1 is located in Fountain Valley, California, adjacent to the Santa Ana River and the OCWD/OCSD GWRS.



Figure 7: P1-101 Project at Plant No. 1 Site

G - PROJECT TIMING AND PHASING

The P1-101 Project is a standalone project that will be fully functional, to treat wastewater to secondary effluent, without implementation of subsequent construction projects. However, to maximize reclamation efforts the P1-101 project is interrelated to P1-102, GWRS expansion and the Flow Equalization project, as shown in figure 4. The P1-102 Project will expand Plant No. 1's secondary treatment capacity by adding 60 mgd more of activated sludge facilities. Construction of the P1-102 Project will be completed in 2012, in compliance with the NPDES permit consent decree. The remaining critical project is the P1-101 Sludge Dewatering, Odor Control, and Primary Sludge Thickening Project. The solids facilities expansion and modifications provided by the P1-101 Project are needed to achieve OCSD's goals of providing

full secondary treatment and expanding Plant No. 1 in order to provide more secondary effluent as feedwater for the GWRS.

The P1-101 Project is designed and will be constructed as one single project, all in one phase to handle the entire Plant No. 1 solids needs. Upon completion of the construction and start-up testing, the P1-101 facilities will be fully functional. No subsequent projects will be required to achieve the benefits that the P1-101 Project will provide namely secondary treatment and more secondary effluent for water reclamation.

Part Two – Proposed Work Tasks

A - BUDGET CATEGORY (a): DIRECT PROJECT ADMINISTRATION COSTS

Task 1: Administration

OCS D staff will manage all aspects of the project and be responsible for coordination of the design, construction, and start-up testing phases. HDR, Inc. is the lead consulting engineering firm providing the P1-101 design services and preparing engineering plans and technical specifications. As of November 2010, design is approximately 60% complete and final design completion is scheduled by August 2011. OCS D staff will provide all construction management and inspection services. When bids are received, reviewed and the construction contract is awarded, the contractor will furnish a construction resident engineer, project manager, inspector and project administration staff. OCS D construction management staff along with resident engineer will oversee and inspect the contractor's work. OCS D operations staff will coordinate the start-up and testing phase of the project as the construction nears completion.

The OCS D Project Manager, Umesh Murthy, will be responsible for administration of the entire project from final design through construction and start-up. He has led the project preliminary design and final design work completed to date. He will be the main point of contact for administration of the grant agreement, preparation of invoices, and preparation of all deliverables, reports, plans, specifications, and supporting documentation for the P1-101 Project. Other team members listed above will support Mr. Murthy in the administration of

this project to ensure that it stays on schedule and within budget. Detailed funding reimbursement claims showing expenditures will be prepared by the OCSD Contracts Administration/Purchasing Department.

OCSD has a highly effective and proven project management system in place. OCSD has developed and used these administration procedures to successfully implement many projects comprising its \$2.7 Billion Capital Improvement Program that will bring its wastewater treatment facilities up to full secondary treatment standards. The P1-101 Project is one of these projects.

Administration of the P1-101 Project, including information on budgeting, expenditures, schedule, progress reporting will comply with needs of SAWPA and the OWOW for Data Management and Monitoring Deliverables consistent with the DWR's IRWMP Standards and Guidance – Data Management Standard. Other technical information for compliance with the IRWMP Data Management Standards, such as designs, feasibility studies, planning reports, final design documents, construction documentation, operations reports, and monitoring reports, will be available as needed for project administration. Quarterly reports will be submitted with invoices as the project progresses. A final report will be submitted at completion of the project.

Deliverables: Project administration reports, including invoices, budget updates, schedule updates, and progress reports, and other supporting documentation and deliverables as required.

Performance Measures: Timely submittal of administrative reports, invoices, and all deliverables.

Task 2: Labor Compliance Program

OCSD strictly follows all labor compliance programs set forth in the California Labor Code. The project will include the following requirements for contractor's employees' compensation:

General Prevailing Rate:

OCSD has been advised by the State of California Director of Industrial Relations of its determination of the general prevailing rate of per diem wages and the general prevailing rate for legal holiday and overtime Work in the locality in which the Work is to be performed for each craft or type of Work needed to execute this Contract, and copies of the same are on file in the Office of the ENGINEER of OCSD. The CONTRACTOR agrees that not less than said prevailing rates shall be paid to workers employed on this public works Contract as required by Labor Code Section 1774 of the State of California. Per California Labor Code 1773.2, OCSD will have on file copies of the prevailing rate of per diem wages at its principal office and at each job site, which shall be made available to any interested party upon request.

Forfeiture for Violation:

CONTRACTOR shall, as a penalty to OCSD, forfeit Fifty Dollars (\$50.00) for each calendar day or portion thereof for each worker paid (either by the CONTRACTOR or any Subcontractor under it) less than the prevailing rate of per diem wages as set by the Director of Industrial Relations, in accordance with Sections 1770-1780 of the California Labor Code for the Work provided for in this Contract, all in accordance with Section 1775 of the Labor Code of the State of California.

Apprentices:

Sections 1777.5, 1777.6, 1777.7 of the Labor Code of the State of California, regarding the employment of apprentices are applicable to this Contract and the CONTRACTOR shall comply therewith if the prime contract involves Thirty Thousand Dollars (\$30,000.00) or more or twenty (20) working days or more; or if contracts of specialty contractors not bidding for work through the general or prime CONTRACTOR are Two Thousand Dollars (\$2,000.00) or more or Five (5) working days or more.

Workday:

In the performance of this Contract, not more than eight (8) hours shall constitute a day's work, and the CONTRACTOR shall not require more than eight (8) hours of labor in a day from any person employed by him hereunder except as provided in paragraph (B) above. CONTRACTOR shall conform to Article 3, Chapter 1, Part 7 (Section 1810 et seq.) of the Labor Code of the State of California and shall forfeit to OCSD as a penalty the sum of

Twenty-five Dollars (\$25.00) for each worker employed in the execution of this Contract by CONTRACTOR or any Subcontractor for each calendar day during which any worker is required or permitted to labor more than eight (8) hours in any one calendar day and forty (40) hours in any one week in violation of said Article. CONTRACTOR shall keep an accurate record showing the name and actual hours worked each calendar day and each calendar week by each worker employed by CONTRACTOR in connection with the Project.

Record of Wages; Inspection:

CONTRACTOR agrees to maintain accurate payroll records showing the name, address, social security number, work classification, straight-time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker or other employee employed by it in connection with the Project and agrees to require that each of its Subcontractors do the same. All payroll records shall be certified as accurate by the applicable CONTRACTOR or Subcontractor or its agent having authority over such matters.

CONTRACTOR further agrees that its payroll records and those of its Subcontractors shall be available to the employee or employee's representative, the Division of Labor Standards Enforcement, and the Division of Apprenticeship Standards and shall comply with all of the provisions of Labor Code Section 1776, in general. Penalties for non-compliance with the requirements of Section 1776 may be deducted from Project payments per the requirements of Section 1776.

Deliverables: Submission of Labor Compliance Program

Task 3: Reporting

OCSD will submit quarterly reports and annual reports during implementation of the P1-101 Project. At the end of the project, OCSD will submit a final report. Each of the quarterly and annual reports will show expenditures to date, remaining budget and forecasted costs, tasks completed and planned work for the next period, milestone dates achieved and planned. Backup documentation will be provided as needed.

As noted above in Task 1 "Administration", the reports will be detailed and submitted to SAWPA in accordance with the OWOW and to the DWR in accordance with the IRWMP

Program Guidelines and Grant Agreement. Copies of final design submittals, construction contract documents, bids, and contractor pay requests, contractor payments, and overall project expenditures will be available to support the quarterly, annual, and final reports.

Deliverables: Submission of quarterly, annual and final reports as specified in the Grant Agreement.

Performance Measures: Timely submittal of all quarterly, annual, and final reports.

B - BUDGET CATEGORY (b): LAND PURCHASE/EASEMENT

No land purchases or easements are required for the P1-101 Project. The project will be located at the Plant No. 1 site in Fountain Valley, California, which is already owned and operated by OCSD.

Deliverables: None/not applicable.

Performance Measures: None/not applicable

C - BUDGET CATEGORY (c): PLANNING/ENGINEERING/ENVIRONMENTAL DOCUMENTATION

Task 4: Assessment and Evaluation

Nearly a decade ago with development of its Capital Improvement Program, OCSD determined that the P1-101 Project must be implemented in order for OCSD to meet the operational needs of processing wastewater to secondary treatment standards. To upgrade to secondary standards pursuant to its new National Pollution Discharge Elimination System (NPDES) permit, OCSD staff initiated a project study to ascertain what new or upgraded facilities would be needed to meet those secondary standard goals.

Production of approximately 38,000 afy (34 mgd) more secondary effluent at Plant No. 1 would also increase the volume of feedwater for the GWRS, enabling OCWD to produce approximately 31,000 afy (30 mgd) more purified recycled water for groundwater recharge and fulfilling OCSD's goal of water reclamation. As a co-sponsor of the GWRS, one of OCSD's goals is to maximize the secondary effluent discharge to OCWD to boost purified recycled water production, using this new water supply for north and central Orange County.

OCSD staff submitted this project through OCSD's official CIP approval process, which includes project assessment, budgetary considerations requiring that OCSD has the ability to finance the project, and approval by the OCSD Board of Directors. The criteria used to develop the P1-101 Project are based on accepted engineering practices for these types of projects. This project is divided into six phases for project administration/management purposes:

Phase 1 – Project Development

Phase 2 – Preliminary Design

Phase 3 – Final Design

Phase 4 – Construction and Installation Services

Phase 5 – Commissioning Services

Phase 6 – Close Out

Phases 1 and 2, project development and preliminary design, have already been completed. Project planning started in August 2003 and was completed in May 2005. Preliminary design began in March 2004 and was completed in December 2009. Phase 3, final design, began in December 2009 and is ongoing, as described below under Task 5. As part of the project assessment and evaluation tasks, OCSD and its consulting team completed a Preliminary Design Report, Long Range Biosolids Management Study, and tested new equipment. The Preliminary Design Report developed the design criteria, preliminary layouts, and refined the construction cost estimates. The Engineering Study evaluated a variety of alternatives for sludge dewatering and odor control to support the upgrade to full secondary treatment and expansion of Plant No. 1. The evaluation task continued with studies and pilot testing of new equipment between 2007 and 2009. Another feasibility study was completed in 2008 to test and optimize belt filter press dewatering equipment. These studies helped to determine the necessary permits to implement the P1-101 Project. Copies of the project development documents, preliminary design report and feasibility studies are available to demonstrate completion of this Task 4 "Assessment and Evaluation".

Deliverables: Technical studies, preliminary design report, and engineering studies are attached herein.

Performance Measurements: Submittal of deliverables which have already been completed.

Task 5: Final Design

Phase 3 Final Design includes the preparation of a package of biddable plans and technical specifications as well as contractor bid and award activities. OCSD has retained the services of a consultant, HDR, Inc., in order to provide engineering design services in preparing one original package of biddable plans, technical specifications and other contract documents as required for construction of the project based on the design concepts and criteria developed during the preliminary design. The Final Design will be submitted in three review packages before the final review package is approved and submitted

- 30% (DS1) was completed in July 2010;
- 60% (DS2) was completed in November 2010;
- 90% (DS3) is ongoing and expected to be submitted in March 2011; and
- 100% Final Design completion is scheduled in August 2011.

The first two submittals, DS1 and DS2 have been received and reviewed by OCSD staff. Responses to comments have been prepared and discussed with the design engineer; the final design is 60% complete. Final design on the third submittal, DS3 (90%) is in progress with the next submittal due in August 2011.

In accordance with OCSD's project administration procedures, these final design packages are submitted by the consultant to OCSD for review in accordance with the schedule outlined in the project Scope of Work. Formal workshops are conducted to review each package with OCSD staff. Focused meetings are held throughout the Final Design to solicit input from OCSD staff.

A Value Engineering study was performed after the 30% (DS1) final design submittal. In addition, OCSD and the consultant conduct additional workshops including constructability reviews and meetings, and prepare bid packages and reports.

Deliverables: Completion of project plans and specifications at the 90 percent and final level.

Performance Measures: Timely submittals of the 90% and 100% final project plans and specifications in accordance with the P1-101 Project Schedule.

Task 6: Environmental Documentation

In order to achieve compliance with the secondary treatment requirements, OCSD will construct new treatment processes under its Capital Involvements Program (CIP). Because the new permit will be in place prior to the completion of secondary upgrades, an interim compliance strategy was developed with the Environmental Protection Agency (EPA) and the Santa Ana Regional Water Quality Control Board (RWQCB). This strategy is formalized in a consent decree contains interim effluent limitations and construction milestones for the completion of new and rehabilitated facilities necessary for the achievement of the secondary treatment requirements by December 2012.

Environmental documentation for compliance with California Environmental Quality Act (CEQA) and National Environmental Protection Act (NEPA) has been completed with OCSD as the lead agency. The EIR was completed in 2005. The OCSD Board of Directors certified the EIR in May 2005 and submitted the Notice of Determination to the State Clearinghouse.

Deliverables: Approved and adopted CEQA and NEPA documentation. A copy of the EIR and Notice of Determination filed with State Clearinghouse and filed with EPA for federal funding was provided to SAWPA for review as part of project selection.

Performance Measures: Submittal of the Final EIR and Notice of Determination and Notice of Guarantee.

Task 7: Permitting

Permit acquisition will play an integral part in the development and completion of the P1-101 project. Each permitting agency has its own procedure for reviewing and accepting applications, each taking varying lengths of time to process.

The P1-101 project will be constructed at Plant No. 1 site in Fountain Valley; requirements of the following agencies are discussed below:

- California Occupational Safety and Health Administration (CAL/OSHA)
- County of Orange Health Care Agency
- City of Fountain Valley
- National Pollutant Discharge Elimination System (NPDES)
- Regional Water Quality Control Board, Santa Ana Region (RWQCB)
- South Coast Air Quality Management District (SCAQMD)

California Occupational Safety and Health Administration (CAL/OSHA)

An excavation permit, issued by Cal/OSHA, is required for underground tunneling, and also works where excavations are expected to be five feet or more in depth and involves a specific application and review period. The permit would be submitted by the construction contractor for approval.

County of Orange Health Care Agency

The Orange County Health Care Agency would become involved for the construction of underground storage tanks. Additionally, Orange County Health may review for potential cross connections at the plant.

City of Fountain Valley

The P1-101 project is located at Plant No. 1 within the City of FV. The City has numerous departments including Public Works, Fire, and Building & Safety that require review and/or permits for construction projects. However, an understanding between the District and the City of FV allows exemption of certain review and permit processes on a project-by-project basis. As a result, the required City of FV review and permits identified below reflect all permits typically required by the City of FV and will not necessarily be required for this project.

Fire Department (Including Hazardous Materials)

- Access
- Fire Code

- Fire Hydrant Locations
- Chemical Areas

Public Works Department

- Encroachment
- Traffic & Access
- Hauling
- Grading
- Water supply (cross connection)

Regional Water Quality Control Board, Santa Ana Region (RWQCB) & National Pollutant Discharge Elimination System (NPDES)

OCSD currently operates Reclamation Plant No.1 and Plant No. 2 under Order No. R8-2004-0062, NPDES Permit No. CA0110604, approved in 2004, OCSD has filed to update the permit and approval is expected late 2010. Since the permit is in place prior to the completion of secondary upgrades, an interim compliance strategy was developed with the Environmental Protection Agency (EPA) and the Santa Ana Regional Water Quality Control Board (RWQCB) via the consent decree.

South Coast Air Quality Management District (SCAQMD)

The SCAQMD regulates the discharge of air contaminants at the District. Installation of new facilities will require modification to the District's existing SCAQMD and Title V (major source) Permits to Operate. The same information required for the SCAQMD permit is also needed for the Title V Permit Modification and, therefore, little additional effort will be needed to complete the Title V permit modifications.

OCSD will be required to submit a complete Permit to construct application to the SCAQMD for each new or modified source which includes process parameters and flow diagrams, operational parameters, and emission information in addition to the standard SCAQMD application forms and permit fees.

OCSD has established a priority category for the acquisition of permits which should expedite the process and keep the P1-101 project in schedule. Below are brief descriptions of

the categories related to process time, prerequisites for other permits, and design stage. Category 1 represents first priority permits.

Category 1 – Building Permit.

The P1-101 project is exempt from the City of Fountain Valley’s Building Permit review process because it is a treatment plant and does not include any occupied buildings.

- Engineering Department. This department will review the grading, traffic and access, water supply and hauling requirements of the project. Separate calculations indicating volume of material to be brought onto or taken off of the site may be required, if not indicated on the plans.
- Fire Department. This department will review the plans for compliance with fire codes, access, fire hydrant locations and chemical areas. No permits will be issued by the Department. Specific notification on demolition procedure will be required if asbestos or other hazardous chemicals are identified in the areas to be demolished.

Category 2 – Notification of Work.

Many of the state and federal agencies require notification of planned work and how it affects the NPDES permit. As stated earlier, this process is currently underway with the update to the NPDES permit.

Category 3 – Responsibility of Contractor at Time of Construction.

Typical construction permits are the responsibility of the contractor. These permits are issued at the Public Counter at the time of construction, with the exception of an excavation permit that is issued by Cal/OSHA. This permit is required for underground tunneling and work where excavations are expected to be five feet or more in depth. They involve a specific application and review period. If other large-scale alterations are expected, a short review period of about one week

Deliverables: Copies of permits.

D - BUDGET CATEGORY (d): CONSTRUCTION/IMPLEMENTATION

Task 8: Construction Contracting

Once Final Design bid documents are approved, the bid process will begin for Phase 4 - Construction and Installation Services, for construction of the facilities. Contractors will be retained following accepted procurement procedures.

The P1-101 project is considered a public improvement and Public Contracts Code Section 20783 will be adhered. OCSD Policies and Procedures for solicitation and bid evaluation are attached.

Deliverables: Advertisement for bids; pre-bid contractors meeting; evaluation of bids; award contract.

Performance Measures: Timely submittal of the deliverables in accordance with the project schedule.

Task 9: Construction

The major tasks of the P1-101 Project, along with a detailed description for each task are presented in Table 1.

Table 1: P1-101 Project Components

Project Component	Description
Project Element 1 – Existing Dewatering Facilities	<ul style="list-style-type: none">• Modify existing dewatering systems to eliminate shortfalls prior to commissioning of proposed permanent dewatering facilities.

Project Component	Description
<p>Project Element 2 – Permanent Sludge Thickening and Dewatering Facilities</p>	<p>Facility will be a two-level building, with approximate dimensions of 100 feet by 130 feet, will be designed and constructed for the proposed Thickening and Dewatering Facility.</p> <ul style="list-style-type: none"> • Wet wells (primary sludge, waste activated sludge (WAS), combined sludge, thickened combined sludge, centrate) • Sludge conditioning systems (grinders, screens, de-gritters, etc) • Centrifuge sludge feed systems (pumps, grinders, etc) • Sludge thickening centrifuges • Thickened sludge collection and conveyance systems (hoppers, pumps, etc) • Thickening centrifuge bypass systems (for sludge bypass directly to digesters) • Sludge dewatering centrifuges • Sludge cake collection and conveyance systems (hoppers, pumps, conveyors, etc) • Chemical storage, dilution and feed systems. • Centrate collection and conveyance systems • Struvite and foam control systems • Foul air collection and conveyance systems (ducting, fans, etc) • Ancillary process support systems • Sludge piping and major equipment (centrifuges, pumps, conveyors, etc.) cleaning systems • Major equipment (centrifuges, pumps, conveyors, etc.) maintenance systems • Fire protection systems • Miscellaneous mechanical systems • Electrical systems • Instrumentation & control systems • Structures and structural support systems • Facility support systems (lighting, HVAC, drainage, utilities, etc.)

Project Component	Description
Project Element 3 – Dewatering Building M and Cake Transfer Station M	Decommissioning and demolition of process-associated mechanical, electrical, and instrumentation & control systems/ facilities, including temporary sludge dewatering facilities constructed/installed as part of this project. Modifications to structures and facility support systems (lighting, HVAC, drainage, utilities, etc.) to allow alternative use of facility.
Project Element 4 – Dewatering Building C and Cake Transfer Station C	Decommissioning and demolition of structural, mechanical, electrical, and instrumentation & control systems/facilities, including temporary sludge dewatering facilities constructed/installed as part of this project.
Project Element 5 – Solids Storage Facility	Modifications to sludge cake pumping, conveyance, storage and truck loading systems, including structural, mechanical, electrical, and instrumentation & control systems (as necessary to assure that systems will be capable of handling dryer sludge cake and will appropriately support operation and control of proposed dewatering systems). Modifications to foul air collection and conveyance systems Structures and structural support systems for building expansion MCC-SL upgrades
Project Element 6 – Solids Area Scrubber Complex	<ul style="list-style-type: none"> • Foul air treatment systems (scrubbers, etc) • Foul air conveyance systems (ducting, fans, etc) • Chemical storage and feed systems. Ancillary process support systems • Miscellaneous mechanical systems • Electrical systems • Instrumentation & control systems • Structures and structural support systems • Facilities support systems (lighting, drainage, utilities, etc.)
Project Element 7 – Solids Area Scrubber Complex	Decommissioning and demolition of structural, mechanical, electrical, and instrumentation & control systems
Project Element 8	Project Element 8 has been removed from the project.

Project Component	Description
Project Element 9 – Utility Tunnels	<p>Process piping and conveyance systems (as appropriate to accommodate new and upgraded systems)</p> <p>Electrical systems (as appropriate to accommodate new and upgraded systems)</p>
Project Element 10 – Primary Clarifier Galleries	<p>Modifications to primary sludge pumping and conveyance systems, including mechanical, electrical and controls systems, as necessary to assure that systems will appropriately support operation and control of proposed thickening systems.</p>
Project Element 11 – return activated sludge (RAS)/waster activated sludge (WAS) Pump Stations	<p>Modifications to waste activated sludge pumping and conveyance systems, including mechanical, electrical and controls systems, as necessary to assure that systems will appropriately support operation and control of proposed thickening systems.</p>
Project Element 12 – Plant 1 Electrical Systems	<p>Electrical system additions and/or modifications (as appropriate to supply power to proposed new and upgraded facilities)</p>
Project Element 13 – Plant Water Pump Station and Distribution System	<p>Mechanical and electrical system additions and/or modifications (as appropriate to accommodate new and upgraded systems)</p>
Project Element 14 – Centrate/Dissolved Air Floatation Thickeners (DAFT) Underflow Conveyance System	<p>Collection, storage, pumping and conveyance systems for centrate and DAFT underflow to allow discharge to any of the following points:</p> <p>Metering and Diversion Structure P1-76 Influent Structure P1-82 Influent Structure P1-102 Influent Structure</p>
Project Element 15 – Yard Areas	<ul style="list-style-type: none"> • Process piping and conveyance systems (as appropriate to accommodate new and upgraded systems) • Electrical and control systems (as appropriate to accommodate new and upgraded systems) • Grading, paving and drainage • Miscellaneous civil, piping and utilities

a. Subtask 9.1 - Mobilization and Site Preparation

The Contractor's mobilization activities will include the following:

1. Complete Contract Bonds and insurance requirements.
2. Deliver equipment required to complete the project.
3. Provide temporary trailers for staff.
4. Securing and erecting storage and staging areas – both onsite at OCSD Plant No. 1 and offsite as required to complete the work.
5. Submittal and acceptance of the Plant Access Roads (Emergency and Operations) Plan.
6. Submittal and acceptance of the Construction Safety Plan.
7. Submittal and acceptance of the Odor Mitigation Plan.
8. Installing temporary construction power, wiring, and communication and lighting facilities.
9. Constructing temporary water supply connections, potable water and sanitary sewer connections.
10. Obtaining permits (GR-8) required but not provided by the DISTRICT.
11. Submittal and acceptance of Baseline Project Schedule.

b. Subtask 9.2 - Project Construction

The construction work and sequence for of the P1-101 Project are shown in Table 2.

Table 2: Work Sequence

Sequence	Description
0	<p>Pipelines constructed at Contractor's discretion:</p> <ul style="list-style-type: none">• PS Lines• Digested Sludge Line• WAS Lines• SFW Line• Portion of Centrate/ DAFT UF Lines
1	<ul style="list-style-type: none">• Construct PSC lines• Construct remaining portion of Centrate/DAFT UF Line• Make connections to Primary Effluent Diversion Junction Boxes• Relocate existing 12 KV Line• Install 12 KV conduit/handholes
2	<ul style="list-style-type: none">• Excavate south portion of Tunnel 29• Demolish interfering portion of 66-inch RCP bypass line• Excavate area for Thickening and Dewatering Facility• Modify existing piles and drive new piles
3	<ul style="list-style-type: none">• Install DAFT UF Line• Construct southern portion of Tunnel 29• Begin construction of Thickening and Dewatering Facility• Relocate portion of 12-inch storm drain and 10-inch gas line
4	<ul style="list-style-type: none">• Continue construction of Thickening and Dewatering Facility• Modifications in pairs to the Solids Storage Silos/Cake Load-out pumps, piping, structural supports• Odor control modifications to Solids Storage Silos
5	<ul style="list-style-type: none">• Continue construction of Thickening and Dewatering Facility• Complete superstructure of Thickening and Dewatering Facility• Construct Interim Solids Load-out Facility• Construct new Bleach Station and demolish existing Bleach Station• Construct new Solids Scrubber Facility

Sequence	Description
6	<ul style="list-style-type: none"> • Install equipment in the Thickening and Dewatering Facility • Excavate northern portion of Tunnel 29 • Demolish portion of 66-inch RCP bypass line and Primary Effluent Junction Box • Construct northern portion of Tunnel 29 • Route solids through Interim Solids Load-out Facility • Modify existing Load-out Facility • Install Centrate/DAFT UF line through new Tunnel 29 • Relocate portion of 12-inch storm drain and 10-inch gas line
7	<ul style="list-style-type: none"> • Continue construction of Thickening and Dewatering Facility and installation of equipment • Construct bridge between Thickening and Dewatering Facility and Solids Storage and Load-out Facility • Connect dewatered sludge piping to the modified Solids Load-out Facility
8	<ul style="list-style-type: none"> • Complete construction of Thickening and Dewatering Facility • Startup and Testing of Thickening and Dewatering Facility • Convert to operating new centrifuges • Connect odor control in Solids Storage Facility to the new Solids Scrubber Facility
9	<ul style="list-style-type: none"> • Demolish Belt Press Building C and all equipment • Demolish all equipment and piping in Belt Press Building M • Demolish Belt Press Building M Cake Transfer Facility • Demolish Existing Solids Scrubber Complex • Demolish Power Building No. 2

c. Subtask 9.6 - Performance Testing and Demobilization

Performance testing (commissioning) will be conducted to ensure the facility meets its technical and performance requirements and the facility can be turned over to the operator for beneficial occupancy.

The commissioning process includes the planning and implementation of the systematic inspection, testing, evaluation, starting, and putting in service of equipment and processes. Equipment and processes include mechanical, electrical, and instrumentation and control equipment, with the latter being key items in the startup process. Equipment is commissioned in phases with individual components being inspected, tested, evaluated and started, followed by the testing and starting of groups of equipment until the entire process is demonstrated to operate together properly as an entire system.

Commissioning starts during the design phase, beginning with the planning efforts of the Commissioning Team. At this point, the Commissioning Team includes the OCSD project team and the Design Consultant. When construction begins, the Contractor is added to the team and planning continues, including preparation by the Contractor of detailed testing and startup protocols and checklists for review and approval by OCSD. This phase is called Pre-commissioning, and a pre-commissioning checklist must be completed by the Contractor before he may begin commissioning.

Commissioning activities include Operational Readiness Tests, Functional Acceptance Test, and Reliability Acceptance Test. Table 3 provides a list of general pre-commissioning and commissioning activities and their sequence.

Table 3 Commissioning Activities

RE-COMMISSIONING Construction)	COMMISSIONING	
	PHASE 1	PHASE 2
Equipment Submittal Process Complete	Redline As-Built Drawings received 15 days prior to Operator Training	Reliability Acceptance Test (RAT)
RFIs and Responses up to Date		All Manufacturer Certificates of Proper Operation
All Factory Demonstration Test (FDT) Reports		
All Electrical Equipment Tests	Operator Training received 30 days prior to Phase 2	Commissioning – Phase 2 Report
All Process and Instrumentation Equipment Tests		Substantial Completion
All Mechanical Equipment Tests	Operational Readiness Test - Part 3 (ORT-3)	Final Operations & Maintenance Manuals
EID Data		
SAT Data	Functional Acceptance Test (FAT)	Final Punch List
Loop Drawings	Commissioning – Phase 1 Report	Final As-Built Drawings
P&ID Drawings	Operational Acceptance	Final Completion
CONTRACTOR Lock-out Tag-out Procedures	Obtain District Approval to Proceed to RAT	
All Manufacturer Certificates of Proper Installation		
All Pressure Test Reports		
All Loop Test Reports		
All Conductivity and Megger Test Reports		
All Instrument Calibration Reports		
All Electrical Breaker Setting Reports All NETA Test Reports		
All Mechanical Alignment Reports		

Any and All Operating Permits
Operator & Maintenance Training Plan
Commissioning Plan (approved prior to 50 percent Progress Payment)
Draft O&M Manuals (received 120 days prior to Phase 1)
Factory Demonstration Test - Part 1
Factory Demonstration Test - Part 2
Electrical Power System Energization Test - EPSET
Operational Readiness Test - Part 1 (ORT-1)
Operational Readiness Test - Part 2 (ORT-2)
Pre-commissioning Report
Obtain District Approval to Proceed to Commissioning

E - BUDGET CATEGORY (e): ENVIRONMENTAL COMPLIANCE/MITIGATION/ ENHANCEMENT

Task 10: Environmental Compliance/Mitigation/Enhancement

Environmental documentation for compliance with California Environmental Quality Act (CEQA) and National Environmental Protection Act (NEPA) has been completed with OCSD as the lead agency. The EIR was completed in 2005. The OCSD Board of Directors certified the EIR in May 2005 and submitted the Notice of Determination to the State Clearinghouse.

No additional environmental compliance/mitigation/enhancement documentation is foreseen for the construction of P1-101 and not budget category has been established for this category of work. Should any compliance issue arise, it will be address via an addendum to the established and approved documents and is not expected to have a significant cost and can be covered through the project management tasks.

See attached Environmental Mitigation and Monitoring Program. The Mitigation and Monitoring Program has been implemented for all Secondary Expansion Projects, including P1-101.

F - BUDGET CATEGORY (f): CONSTRUCTION ADMINISTRATION

Task 11: Construction Administration

OCSD staff will manage this project, provide field inspections during construction and perform quality assurance and quality control. Construction and installation support services will be provided by a consultant through the OCSD's official procurement process. OCSD will negotiate for these services with the consultant during the design phase based on the rates negotiated for Phase 3 – Final Design.

OCSD's goal of construction management is to complete construction on schedule, within budget, and in accordance with plans, specifications, and requirements of local, state, and federal regulations. The Program Construction Management (CM) staff has overall responsibility for administering all construction activities, particularly construction quality on behalf of the OCSD. The CM Resident Engineer (RE) reports to the Project Manager (PM) for all communications concerning cost, schedule, quality, and safety.

OCSD has prepared a CM Manual which provides the basic processes, practices, and tools that are used during management of a construction project for OCSD. The manual helps define the manner in which the Project Team (OCSD, Contractor, Consultant [Design Engineer], PM, Contract Administrator [CA], Inspector [CI], and RE) will endeavor to execute the requirements of the contracts put in place.

The CM Manual contains a description and summary of the Project Team organization, communication lines between team members and the manner in which construction inspection and contract administration are handled. Roles of the various team members, as

applied to the construction phase of a project, are described and summarized. The manual also provides a basis for future improvements to our processes.

This CM Manual addresses project quality through inspection and testing, as well as through the manner in which the RE controls the quality of work. Procedures and responsibilities of the team members are defined or referenced in various areas of the manual to assist all Project Team members in developing and understanding consistent lines of authority, communication, and responsibility.

General activities during construction management are listed in Table 4.

Table 4 Construction and Installation Activities

WORK PACKAGES	ACTIVITIES	DEFINITIONS
3310 PROJECT MANAGEMENT		
	Preconstruction meeting	The first formal meeting of the District and contractor personnel that also kicks off construction
	Weekly coordination meetings	Discussions of the project's progress and any outstanding issues.
	Submittals review process	Verification that contractor's materials / supplies conform with the contract documents. Also known as the shop drawing review process.
	Requests for information (RFIs)	Answers written questions from the contractor about the contract document.
	Change order process	Document that show any District agreements on changes to the contract and negotiated changes in costs.
	Progress payments	Acknowledgement of satisfactory progress of the contractor.
	Contractual schedules	The contractor's proposed activity timeline to meet the contract completion date.
	Field investigations	Research conducted by O&M staff to verify that all information about an existing facility supports the construction of the capital project.
	Maintenance / cleaning	General activities conducted by O&M staff that support the capital project, including facility wash-downs, cleaning, equipment maintenance, and removal.
	Commission team selection (final)	Identification of leadership and other personnel whose expertise (such as air quality) will be necessary to facilitate Phase 5.
	Commission team orientation	Communication that gives the Commission team a common understanding about the work to be done in Phase 5.
	Updated project plans for Gate 6	Adjustments made to the project baselines, risk plans, and change management plans, based on the construction and installation activities.
	GATE 6 - COMMISSIONING PLAN APPROVAL	Assessment of completion of all exit criteria for Phase 4 and the readiness to begin commission activities in Phase 5.
3320 PROJECT TECHNICAL SUPPORT		
	Project Technical Work	This work includes all tasks assigned by the Project Manager to complete the construction of the project.
3321 PCI SUPPORT		
	SCADA bench testing	Verification that facility process control software is ready for testing in Phase 5.
	SAT in SCADA (initial)	The draft SAT (SCADA Access Table) is successfully loaded into the SCADA server.
3350 CONSULTANT SERVICES DURING CONSTRUCTION		
	EID database matches SAT (initial)	The draft EID (equipment information data sheet) is equal to the SAT (SCADA Access Table).
	Lockout-tagout procedures (initial)	Preliminary methods from consultant for meeting hazardous energy control requirements.
	O&M manuals from consultant (initial)	Preliminary documentation that describes how the entire facility will operate.
3360 CONSTRUCTION CONTRACTOR WORK		
	Project construction work	Execution of the contract by the contractor.
	Testing/Commissioning Plan	The plan and procedures that both consultant and contractor will use to test a facility in Phase 5.
	Maintenance manuals (initial)	Preliminary documentation from contractor for individual components or machines that are needed for start-up.
3362 INSPECTION		
	Permit compliance	Formal requirements of outside agencies that may require special oversight.
	Inspections	Identification of outstanding items that prevents an installation from conforming to the contract.
	Shutdown coordination	Activity that enables O&M to interrupt operations so that construction may proceed.
	Inspection punch list	The items remaining before a facility is ready for Phase 5.
	Component testing report	The results of testing all individual components of a facility.
	Punch list work completion	Last items of work for the contractor to consider the project complete. Identified in the Final Insection Report.
	Field mark-ups / as-builts	All contractor and/or District staff records and documents of the construction, including all changes and field mark-ups.
	Equip performance test reports	Verification that specific installed machines / equipment meet the contract's specs.
3363 TESTING		
	Testing (ORT)	Tests to verify the field instrumentation wiring is ready for operational readiness in Phase 5.
3390 LEGAL COSTS (PHASES 4, 5, & 6)		
	Legal Reviews	

Project C: East Garden Grove Wintersburg Channel Urban Runoff Diversion (City of Huntington Beach)

Part One - Introduction

The East Garden Grove Wintersburg Channel (EGGWC) Urban Runoff Diversion and Treatment Project will divert up to 3 million gallons per day of dry weather urban runoff from the regional flood control channel draining a watershed area over 22 square miles into an approximate 15-acre area in Huntington Beach Central Park for enhanced natural treatment utilizing a specialized wetland treatment trains and a reconstructed manmade lake system designed for polished treatment. The project will provide multiple benefits to the region that include (1) reclamation of an unused non-potable water supply that had been previously been considered polluted waste, (2) protection of the beneficial uses of our coastal waters, (3) enhancement of habitat value, (4) groundwater recharge, (5) seawater barrier enhancements, and (6) public recreation benefits. Following treatment, the treated urban runoff will be used as a reclaimed nonpotable water source to irrigate Central Park and recharge the groundwater aquifer in the project vicinity while reducing stress on existing water supplies. This larger urban water treatment and reclamation project is composed of three primary elements which can be considered separate phases or construction projects which include: *Phase 1* – EGGWC diversion facility/pump station/force main, *Phase 2* - Central Park wetland distribution infrastructure and wetland treatment train system, and *Phase 3* – Manmade lake construction with treatment system. However, implementing any of the phases independently would result in immediate benefits to the desired project objectives.

This grant application focuses on funding one of the primary initial elements of the project which is the EGGWC diversion facility which will allow the urban runoff within the channel to be delivered to the proposed treatment system within the Central Park. The diversion facility will consist of (1) installation of an inflatable rubber dam in the flood control channel in order to intercept and collect urban flows, (2) channel intake structure to sedimentation chamber for pretreatment and collection of floatables, (3) pump station, (4) pumps mechanical and electrical, (5) channel stilling wells for flow measurement and telemetry controls, and (6) force main. The EGGWC is a rectangular concrete channel approximately 75' wide x 14' high and historical monitoring data from the City for EGGWC indicate that dry weather urban runoff typically

ranges from 0.5 - 5 MGD; however, recent testing shows flow of 0.5 - 1.5 MGD. The ponded water upstream of the inflatable dam diversion structure will act as a de-silting area to remove coarse sediment and debris in the channel prior to diverting the flow to Central Park. The wet well forebay and pump station will be located beneath the channel maintenance access road right-of-way on the south side of the EGGWC. The forebay will provide a secondary sedimentation location for additional removal of settleable solids. The pump station will be designed to have a capacity of 5 MGD, but the operating flow rate for the Talbert Lake Diversion Project will be less than 3 MGD. The diverted flow will be pumped a force main within the Goldenwest Street right-of-way that will discharge into a storm drain, and then the existing storm drain will deliver the flows to Central Park.

A - GOALS AND OBJECTIVES

The primary goals of this project directly related to water resources are to:

- Develop new public water supplies and reduce stress on existing water sources
- Provide regional improvement of the existing surface water quality tributary to natural receiving waters and groundwater
- Enhance and restore aquatic/riparian habitat
- Provide opportunities for public education on water quality, treatment, and aquatic systems

The objectives of this project include:

- Water reclamation through natural treatment an unused water supply as a potential water source for existing applications
- Eliminate or substantially reduce polluted urban runoff from being discharged into lower Bolsa Chica Wetlands and Huntington Harbor
- Water quality treatment of urban runoff through naturalized treatment systems
- Creation of riparian/aquatic ecosystem and restore the existing Talbert Lake to a functional permanent lake system
- Improve and recharge existing groundwater supplies

This will be accomplished through the diversion of dry weather channel flow to the Huntington Beach Central Park area for treatment, infiltration and aquatic restoration. Any water returned to the channel system will be of much improved quality. The project would reduce trash, debris, nutrients, and metals in the Huntington Harbor, Anaheim Bay, and Bolsa Chica areas. It will also reduce microbial contamination within the Watershed and divert polluted nuisance flows from our waterways. The project is also consistent with the Nonpoint and Coastal Source Control Programs by protecting the beneficial uses of water through control of nonpoint source pollution and protecting the water quality and environment of coastal waters, estuaries, and nearshore waters. Another goal is to educate the public on pollution source control and prevention with an educational/outreach component included in the project. This project would not only be beneficial in the proposed use, but would also enhance existing open space, contribute to the replacement of wetlands and associated habitat lost to development in the past. Additional regional benefits will include groundwater recharge, enhanced salt water barrier intrusion benefits, park aesthetics, and possibly passive lake activities.

B - PURPOSE AND NEED

The East Garden Grove Wintersburg Channel delivers polluted urban runoff from 27.8 square mile regional watershed encompassing seven cities, ultimately discharging to Huntington Harbor and Anaheim Bay which have been designated as 303(d) listed impaired waterbodies by the Santa Ana Regional Water Quality Control Board. In addition, the runoff is ultimately tributary to the coastal waters along the beaches within Huntington Beach which are some of the most actively used beaches by the Southern California population. Impairment of the water quality to this important natural recreation element is a critical concern. The California Coastal Commission approved the Bolsa Chica Restoration Plan which was recently completed and provides one of the key important restored coastal wetland habitats that is sanctuary for numerous endangered species. In addition, the citizen volunteer sampling for the TMDL process in Huntington Harbor and Anaheim Bay are ongoing. These events have focused considerable public and political attention on reducing the polluted flow into these water bodies and reducing the number of postings for elevated levels of bacteria. The purpose of this project to address these specific needs related to water quality improvement to these water bodies that are actively used by the Southern California population and resident to significant habitat in the coastal wetlands influenced by the channel runoff. The other primary purpose is the potential to reclaim

this polluted water as a potential untapped and valuable non-potable water source that can reduce the use of other existing water supplies.

C - INTEGRATED ELEMENTS OF PROJECTS

The project is integrated as it a potential provides a water supply based on a natural treatment system and an existing water source. This water is available for use on local landscaping offsetting the need for additional water supply. Treatment of this water improves surface water quality. This project also provides some recharge into the Orange County groundwater basin. This water can augment supply and prevent salt water intrusion in the area. This project improves and restores natural habitat that is ultimately linked to the Bolsa Chica wetlands. In addition, as the some of the treatment occurs in a park, the restored area provides a significant habitat/open space/ educational amenity to an area that is underserved.

D - COMPLETED WORK

Significant amount of work has been completed since the beginning of 2006 that has resulted in currently having available the construction documents and final engineering to 90 percent level, and certified CEQA document. The following summarizes the work that has been completed to bring the project to its current stage.

Surveys / Field Investigations

1. Aerial topography and field topographic surveys
2. Bathymetric surveys of existing lake
3. Vegetation surveys
4. Wildlife surveys
5. Channel flow monitoring station and measurements
6. Channel water quality testing

Feasibility Studies / Preliminary Engineering

1. Water quality modeling of treatment system pollutant removals
2. Watershed hydrologic modeling
3. Floodplain hydraulic modeling
4. Preliminary wetland system configuration assessment
5. Preliminary grading designs
6. Pump station hydraulics and preliminary alternative layouts
7. Force main alternative alignment hydraulic evaluations
8. Alternative planning cost estimates
9. Water balance

Environmental Documentation / Studies

1. Air quality, vegetative mapping, cultural resources, biological resources, and protocol surveys for Least Bell's Vireo and Southwestern Willow Flycatcher
2. Initial Study and Mitigated Negative Declaration (June 2008) - APPROVED

Environmental Regulatory Permitting

1. 404 ACOE permit
2. 401 Certification RWQCB
3. 1602 CDFG permit

Construction Documents

1. 90 percent construction drawings
 - a. EGGWC Diversion Facility and Pump Station
 - b. Wetland Treatment Systems
 - c. Central Park Pump Station and Wetland Distribution Infrastructure

2. 90 percent specifications
3. Engineer's Quantity and Construction Estimate

E - EXISTING DATA AND STUDIES

Numerous different field investigation, engineering studies, and environmental investigations have been conducted as part of the preliminary and final engineering process for the overall project, as well as the environmental documentation preparation.

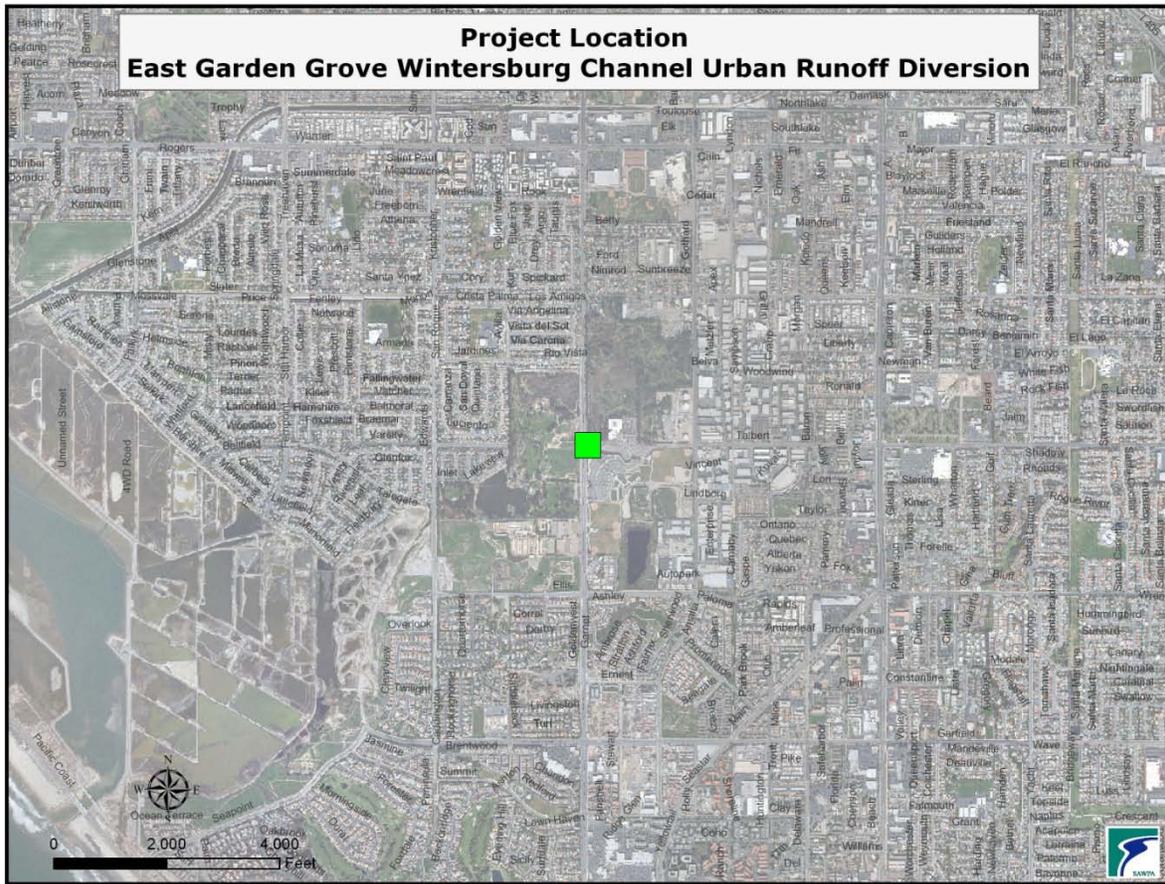
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Feasibility Studies / Preliminary Engineering

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5. Preliminary grading designs
6. Pump station hydraulics and preliminary alternative layouts
7. Force main alternative alignment hydraulic evaluations
8. Alternative planning cost estimates
9. Water balance

F - PROJECT MAP



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G - PROJECT TIMING AND PHASING

This urban water treatment and reclamation project is composed of three primary elements which can be considered separate phases or construction projects which include: *Phase 1* – EGGWC diversion facility/pump station/force main, *Phase 2* - Central Park wetland distribution infrastructure and wetland treatment train system, and *Phase 3* – Manmade lake construction with treatment system. The initial phase which this grant application focuses on funding is the EGGWC diversion facility which will allow the urban runoff within the channel to be delivered to the proposed treatment system within the Central Park. Immediate benefits would occur and water reclamation/water quality improvement can be provided without the other phases implemented. The future phases will allow increased water quality treatment. The diversion facility will consist of (1) installation of an inflatable rubber dam in the flood control channel in

order to intercept and collect urban flows, (2) channel intake structure to sedimentation chamber for pretreatment and collection of floatables, (3) pump station, (4) pumps mechanical and electrical, (5) channel stilling wells for flow measurement and telemetry controls, and (6) force main. It is estimated that the project construction schedule will involve approximately 9 months to one-year in order to complete. This schedule is similar for the other phases and since these projects can be constructed independently, there is the possibility for simultaneous construction to occur also. The implementation of just the diversion project would allow delivery of the urban flows from the EGGWC to Central Park where there are existing wetlands and the existing perennial Talbert Lake which can be used for water quality treatment and groundwater recharge.

Part Two – Proposed Work Tasks

A - BUDGET CATEGORY (a): DIRECT PROJECT ADMINISTRATION COSTS

Task 1: Administration

Work effort will be performed by an outside consultant hired specifically for this project. The specific tasks would include performing the administrative tasks associated with the management of the project and funding requirements.

Task 2: Labor Compliance Program

Work effort will be performed by an outside consultant hired specifically for this project. The specific tasks would include developing and tracking project performance related to the “Labor Compliance Program”.

Task 3: Reporting

Work effort will be performed by an outside consultant hired specifically for this project. The specific tasks would include generating and compiling the reporting as required by the grant funding which can include but are not limited to the (1) quarterly report, (2) annual, and (3) final reports. Initial drafts would be submitted to the City for review and modifications, and then for submission to the State.

B - BUDGET CATEGORY (b): LAND PURCHASE/EASEMENT

Not Applicable. All work performed in existing City or County lands. The work proposed for this phase of the Talbert Lake Diversion Project will not require purchase of any land. All proposed work occurs within either City of Huntington Beach right of way, or within Orange County Flood Control right of way. A maintenance agreement between the City of Huntington Beach and Orange County Flood Control Department will be attained for operation and maintenance of the diversion structure and associated infrastructure located within County right of way.

C - BUDGET CATEGORY (c): PLANNING/ENGINEERING/ENVIRONMENTAL DOCUMENTATION

Task 4: Assessment and Evaluation

Task Completed – (1) Feasibility Study and Alternatives Analysis, (2) Field Investigations and Surveys, (3) Monitoring, (4) Preliminary Engineering Design Studies and Analysis

Task 5: Final Design

Task Completed – (1) 95 percent Construction Drawings/Improvement Plans, (2) Final Engineering Analysis/Design Report and Analysis, (3) Specifications, (4) Engineer's Quantity and Cost Estimate.

Final engineering design and approximately 80 percent construction plans have been completed for the Talbert Lake Diversion Project. The latest set of plans and specifications for the diversion structure, pump station, and delivery pipeline were prepared by PACE and dated February 2009. The plans, details and specifications of the design can be viewed on sheets C100 – C104, C200 – C202, I100 - I101, I300 - I301, and M100 – M104.

Some of the remaining items to be finalized on the plans include details and specifications dependent upon product availability and final equipment selection. The discharge point at Central Park may require some design modification depending upon budget availability and the scope of this phase of the overall project.

Task 6: Environmental Documentation

Task Completed – Approved – *Talbert Lake Diversion Project Initial Study/Mitigated Negative Declaration* (Bonterra, June 2008) - Earlier analyses were used where pursuant to tiering, program EIR or other CEQA processes where one or more effects were adequately analyzed in an earlier EIR or negative declaration. Earlier Documents prepared and utilized by BonTerra Consulting in their extensive Initial Study/Mitigated Negative Declaration of the project in June 2008 contained reference to Local Significance Threshold Worksheets (2008); Biological Resources Report: Talbert Lake Diversion Project (2007a); Jurisdictional Delineation Report: Talbert Lake Diversion Project (2007b); Phase I Historic Properties Identification Survey, Talbert Lake Restoration Project, City of Huntington Beach, Orange County, California (2007c); and Results of Focused Surveys for the Southwestern Willow Flycatcher and Least Bell's Vireo on the Talbert Lake Diversion Project Site, City of Huntington Beach, Orange County, California (2007d). A complete environmental evaluation of the entire project including the diversion structure, water delivery system, Central Park distribution system, wetland treatment system and the improved Talbert Lake was completed and documented in the Talbert Lake Diversion Project Mitigated Negative Declaration prepared by BonTerra Consulting dated June 2008. The City of Huntington Beach notified all responsible and interested agencies and interest groups, organizations, and individuals that a Draft Mitigated Negative Declaration (MND) was prepared for the proposed project. On numerous other occasions the City solicited input from interested parties. After public participation and review of the project, the responses to all comments were compiled in the document titled Response to Comments for the Talbert Lake Diversion Project Initial Study/Mitigated Negative Declaration prepared by BonTerra Consulting dated September 2008.

Task 7: Permitting

Task Completed - The environmental regulatory permitting process for the project is complete and the following permits have already been obtained:

1. State of California Department of Fish and Game (CDFG), Section 1602 Streambed Alteration Agreement

2. California Regional Water Quality Control Board (RWQCB), Santa Ana Region, Section 401 Certification
3. U.S. Army Corps of Engineers, Section 404 Permit

Additional permits which will be obtained for the project include the following:

1. Orange County Public Works permit for the channel diversion and maintenance agreement between the City of Huntington Beach and Orange County Flood Control Department
2. NPDES Permit for storm water discharges associated with construction activities

D - BUDGET CATEGORY (d): CONSTRUCTION/IMPLEMENTATION

Task 8: Construction Contracting

Contracts for City public works projects are advertised in local newspapers and in related construction trade journals and newsletters. Contracts are awarded to the lowest responsive and responsible bidder as required by the Public Contract Code.

Deliverables: Advertisement for bids; pre-bid contractors meeting; evaluation of bids; award contract

Task 9: Construction

a. Subtask 9.1 - Mobilization and Site Preparation

The main construction staging and mobilization for the project will be located in the Central Park parking lot off of Gothard St., south of Slater Avenue. An alternative staging/storage and mobilization site will be located in Murdy Park, just north of the EGGW Channel. Site preparation will consist of diversion, control, and removal of water during construction within the channel. Work outside the channel but within Orange County Flood Control right of way will require minimal site preparation. The work within the Gothard St. right of way will require traffic control measures including designation of the work areas and detour's for motorists, pedestrians, and bicyclists.

b. Subtask 9.2 - Project Construction

Construction in the East Garden Grove Wintersburg Channel (EGGWC) will include the diversion structure within the main channel, and the forebay and pump station outside of the main channel but within the flood control right of way. Construction of the diversion system will require diversion of any dry weather flows in the channel. The construction within the channel may take up to 4 weeks to complete. This construction will include the installation of an inflatable dam, drop inlets or side inlets from the channel invert to the forebay, pumps and piping from the inlets to the forebay. Construction of the forebay and pump station outside of the main channel will last 6 to 8 weeks. This work will include excavation and shoring below the existing access road, installation of the forebay and pump station. Construction of the force main pipeline connecting the pump station to the existing storm drain system near the intersection of Gothard St and Warner Ave. will occur within Orange County Flood Control right of way along the channel and within City of Huntington Beach right of way along Gothard Ave. The expected duration of this work will be 4 to 5 weeks.

c. Subtask 9.6 - Performance Testing and Demobilization

Performance testing of materials, equipment, and facilities will be conducted according to the requirements listed in the plans and specifications, and special provisions provided to the contractor prior to commencement of construction. Shop drawings and/or testing will be submitted by the Contractor to the project manager at the City of Huntington Beach for approval prior to installation of the material, product, equipment or certification of the facility. As soon as project construction has been completed and approved to the satisfaction of the project inspectors demobilization will begin and include restoration of permanent and temporary work areas, staging and storage areas to a condition cleaner than before construction began and to the satisfaction of the project inspector.

E - BUDGET CATEGORY (e): ENVIRONMENTAL COMPLIANCE/MITIGATION/ ENHANCEMENT

Task 10: Environmental Compliance/Mitigation/Enhancement

The Talbert Lake Diversion project has received regulatory authorization from the: U.S. Army Corps of Engineers (Nationwide Permit Nos. NWP 07 - Outfall Structures and Associated Intake Structures, NWP 27 – Aquatic Restoration, NWP 43 – Stormwater Management Facilities, and Enhancement Activities, and NWP 33 – Temporary Construction, Access and Dewatering) pursuant to Clean Water Act (CWA) §404(b)(1); Regional Water Quality Control Board Santa Ana Region (Water Quality Certification) pursuant to CWA §401; and California Department of Fish and Game (Streambed Alteration Agreement) pursuant to California Fish and Game Code §1602-03. There are a number of environmental compliance and regulatory permitting tasks that need to be completed during final design, during project construction, and post-construction associated with final mitigation requirements and resource agency permitting for long term project operation and maintenance activities. Tasks that must be completed prior to the initiation of project construction include:

Develop Habitat Mitigation and Monitoring Plan (HMMP):

A Habitat Mitigation and Monitoring Plan (HMMP) is required by the permitting agencies prior to the initiation of project construction. This HMMP will provide details on the plant palette and project landscaping to ensure that project design and performance is consistent with mitigation commitments and permit conditions.

Coordinate Plant/Seed Propagation and Collection:

Coordinate the collection of seed materials of local origin by a qualified seed collection company. The seed materials will be used for the propagation of container plants at a local nursery and for the creation of seed mixes to be applied within the mitigation site.

Plans and Specs Coordination re: landscaping:

Coordinate with the project landscape architect during the development of riparian habitat restoration and enhancement construction documents. Review the landscape and irrigation

plans and specifications for compliance with the approved HMMP, resource agency permits, and other project requirements.

Installation Monitoring:

Restoration/enhancement site installation monitoring and coordination will be performed on an annual basis to facilitate compliance with the approved HMMP, and with project documents, conditions, and permits.

Pre-Construction Bio Surveys for Nesting Birds:

If construction commences during the migratory bird nesting season (March 1 to August 31), a preconstruction survey for nesting birds will need to be conducted by a qualified biologist within 72 hours prior to the onset of construction activities. This would include nesting birds, raptors, and special status species such as the least Bell's vireo. Tasks that must be completed following construction prior to the termination date for the CDFG Streambed Alteration Agreement:

Regulatory Permitting for CDFG Long-Term 1605 Streambed or Lakebed Alteration

Agreement or Long-Term Operation and Maintenance:

CDFG Section 1605 Long-Term Maintenance Agreement application for Lake and Streambed Alteration (LSAA) will need to be prepared and submitted to the CDFG following completion of the project construction to provide regulatory authorization for the long-term operation and maintenance of the project.

Post-Construction Monitoring (5 years):

Qualitative monitoring visits to the on-site habitat restoration/enhancement area would be performed on a monthly basis during the first year following planting (12 visits), and on a quarterly basis for the remaining four years of the five year program (16 visits). Brief progress reports will be provided to the project team following each qualitative monitoring visit. In addition to these qualitative visits, annual qualitative surveys will be performed for up to five years after installation completion. Annual quantitative surveys will consist of both quantitative and qualitative evaluations of existing buffering effects, hydrology, physical structure, and biotic structure (vegetation and wildlife).

F - BUDGET CATEGORY (f): CONSTRUCTION ADMINISTRATION

Task 11: Construction Administration

Work effort will be performed by an outside consultant hired specifically for this project. The specific tasks would include performing the administrative reporting and monitoring associated with the Project Management during the construction phase of the project.

Project D: Romoland Line A Flood System (City of Menifee)

Part One – Introduction

The Project for which the Integrated Regional Water Management Grant is to be utilized consists of Phase 1 of the four-phase Homeland/Romoland Master Drainage Plan (“MDP”). The Project includes two detention basins and approximately 11,800 lineal feet of open channel and storm drains that runs westerly from Juniper Flats to Briggs Basin. The purpose of the Project, as well as the entire MDP, is to collect storm water and control runoff while removing debris, silt and other contaminants and providing a comprehensive solution for non-point source pollution generated from a 6.5 square mile drainage basin. The Project will span portions of the City of Menifee (the “City”) and unincorporated Riverside County, an area generally identified as the Homeland/Romoland communities’ area, and lies within a 100 year flood zone. The area to be impacted by the Project consists of 6.5 square miles within the 13.7 square mile MDP and is situated within the 650 square mile San Jacinto River Basin, which drains into Canyon Lake and Lake Elsinore.

The Project will intercept runoff from rugged terrain and store the effluent in two large detention basins. The attenuated flows will then be discharged into a series of open earthen channels that will ultimately flow into the San Jacinto Channel, upstream of Canyon Lake. The Project will remove a large area from the FEMA Zone A flood plain, including (once all four phases are completed) EMWD's operation center and wastewater treatment plant. In the process of detaining the storm water flows and channelizing the runoff, the Project will remove silt and debris and minimize the amounts of nitrogen, phosphorus and other chemicals that would otherwise be included in the runoff that would have flooded local farm fields.

The detention basins to be constructed will be of the extended type and will incorporate a variety of water quality BMPs as described in the County’s BMP Design Handbook, including bio-swales, infiltration sub-basins, infiltration trenches and sand filters. These BMPs will blend in with the basin framework consisting of the sediment forebay, pilot channel, micropool and erosion resistant vegetation. The BMPs will both improve the water quality of captured runoff and provide demonstrations of proven BMPs to encourage their incorporation into the community’s local site planning efforts. A portion of the basins will be utilized as bio-remediation areas to remove some of the contaminants that are associated with storm water

runoff and soil erosion. In addition, plants such as Atriplex and Salicornia will be employed to eliminate some of the salt content included in the runoff.

The Project will also promote water conservation by (i) reducing the need to import potable water and/or purified contaminated water by protecting downstream water bodies, such as Canyon Lake and Lake Elsinore, from septic system contaminants and non-point source pollution, (ii) recharging the local groundwater basin during low level storms in order to create reliable, long term sources of clean water for the Project Area, (iii) emphasizing drought-resistant landscaping, and (iv) constructing storm drains and detention basins that will improve the area's storm water management and flood protection capabilities, as well as capture water that can be put to productive use.

A - GOALS AND OBJECTIVES OF THE PROJECT

The goals and objectives of the Project are to:

- Capture up to 1,785 acre feet of annual rainfall flows, thereby providing protection from historic flooding and removing impacted properties from the 100 year flood plain;
- Improve water quality by reducing top soil erosion and pollutants and implementing water quality BMPs;
- Provide 400 acre-feet of additional storage capacity within the two detention basins, as the detention basins were oversized by 20% to 30% to provide additional capacity to store low flow runoff for recharge and to provide additional capacity for sediment/pollutant removal
- Construct drainage basins and remove up to 500,000 tons of silt and debris that currently flow to the San Jacinto River, thereby assuring higher quality water supply to Canyon Lake and Lake Elsinore;
- Provide flood control protection for the recently flooded Heritage High School, the existing fire station, existing Edison substation, businesses and homes;
- Recharge the local groundwater basin with up to 1,785 acre feet per year of rainwater recapture, and create an infiltration area for recharge during low level storm events;
- Create 865 acres of parks and open space, including recreational facilities, as well as a planned comprehensive trail system with drought-resistant landscaping, all of which is for use by local residents;

- Facilitate new development and provide permanent jobs in an existing community with high unemployment rates.

B – PURPOSE AND NEED FOR THE PROJECT

Currently the 640-acre area to be directly impacted by the Project is subject to periodic flooding, thereby endangering the health, safety and welfare of the existing community and prohibiting future development, which is crucial to the revitalization of the area. The current hydrology of the watershed for the Project area can be described as upstream rocky and mountainous terrain discharging onto a moderately sloped lower alluvial floodplain. The runoff from the mountains can flood much of the lower alluvial floodplain, as was evident in the relatively moderate storms in 2009-2010, which resulted in a number of road closures and evacuations. Additionally, by oversizing the two basins, they now have a combined capacity to hold 500,000 tons of debris. Based on the design of the two basins, it has been determined that the average annual debris production for the 6.5 square mile is approximately 62,300 tons of debris, including salts, sediments, organic substances, and other pollutants that are associated with this watershed. Phase 1 reduces the downstream runoff from Briggs Road basin from 3,388 CFS (100 year event) to 640 CFS, which is an 80% drop in flow. This flow reduction results into a 20-year event downstream of the basin. It also removes a portion of the upper watershed from the FEMA Zone A floodplain.

In terms of outside funding, it is important to note that to date, local property owners within the Area Drainage Plan (“ADP”) who would receive direct benefit from the Project have already contributed \$28.5 million in funding to finalize all of its planning and design work, as well as to purchase all necessary rights-of-way and complete all CEQA documentation to allow construction of the Project to begin immediately. These same property owners have also voted to establish a Community Facilities District on their properties to provide further funding for the second through fourth phases of the MDP Program.

Once the entire MDP is constructed, the additional detention basins that will be located in the lower portion of the watershed will collect and hold large storm volume runoff, discharging it in a controlled fashion while allowing the storm runoff to infiltrate into the groundwater basin. The downstream channels will reduce further erosion that creates sediment deposition and other pollutants, thereby impacting downstream water bodies. The Project will also provide a positive

impact on the watershed by removing large areas from the FEMA Zone A floodplain and will serve as the backbone system to which other areas' flood control facilities can be connected.

One further reason for the Project is the opportunity to create additional housing and jobs in a Project area that is in dire need of both. The Community Development Plan areas that will be impacted by the Project were characterized by unemployment rates of 26.5% and 21.6%, respectively, as of May 2010, as well as median incomes ranging from 56.3% to 77.8% of the median income for the Riverside-SB Metro Statistical Area. Local residents are in need of both housing and employment, and local public agencies are currently unable to fund the infrastructure necessary to facilitate the development that would mitigate these shortages. The completion of the entire MDP will ultimately result in the addition of 41,555 housing units (including affordable housing) and 35,091,667 square feet of non-residential development, leading to 229,454 one-time construction jobs and 129,743 permanent jobs (according to an IMPLAN-based employment multiplier analysis). Furthermore, the County Redevelopment Agency has designated the MDP Watershed as part of its Community Revitalization Program, which includes plans for renovated public facilities, landscaping and various beautification projects, as well as enhancements to the housing stock through the County Economic Development Agency's Senior and Mobile Home Repair Programs.

C - INTEGRATED ELEMENTS OF PROJECT

The parties participating in this Project consist of, the Santa Ana Regional Water Quality Control Board, Riverside County Flood Control District ("RCFCD"), the County of Riverside Transportation Department, the County of Riverside Planning Department, Caltrans District 8, Perris Union High School District, Eastern Municipal Water District, Southern California Edison, City of Perris, Homeland/Romoland ADP, Brookfield Land Development and the City of Menifee.

Many of these parties, including the City of Menifee, are members of the Canyon Lake/Lake Elsinore TMDL Task Force. The Project will provide solutions to the nutrient load of both lakes once the entire MDP is completed because, once the remaining phases of the MDP are completed, the attenuated flows being stored in the Project's two large detention basins will ultimately be discharged into a series of open earthen channels that feed into the San Jacinto Channel upstream of Canyon Lake. In the process of detaining the flows and channelizing the

runoff, the Project will remove silt and debris and minimize the amounts of nitrogen, phosphorus and other chemicals that would otherwise be included in the runoff that would have flooded local farm fields. This will help the Canyon Lake TMDL Task Force meet their goals, and will ultimately also improve the water quality in Lake Elsinore.

Additional coordination between the City and other municipalities is also anticipated to occur, as listed below:

- In removing a large area from the FEMA Zone A flood plain, the MDP will protect EMWD's operation center and wastewater treatment plant, both of which are currently located in that flood plain.
- The City has volunteered to team with the California Department of Fish and Game and the US Army Corps of Engineers to provide stewardship of the "Restrictive Covenant," a 105 acre preserve upstream of Canyon Lake. The "Restrictive Covenant" serves as the last biological treatment of Salt Creek prior to discharge into Canyon Lake.
- The City is regulated by DWR and the Santa Ana Regional Water Quality Control Board, and is a co-permittee for the MS4 permit, Order No. R8-2010-0033.
- The City, which was formed in October 2008, has a contract with RCFCD to accept for maintenance all flood control facilities larger than 36" in diameter that are located within the City. RCFCD also assists the City in plan review services. For this Project, RCFCD also served as sponsoring agency (prior to City of Menifee incorporation) and approving agency for the design of Line A.
- The County of Riverside Transportation Department ("RCTD") provides plan review and construction management support for the City. It was the approving agency for street design work associated with the Project. RCTD, along with the Riverside County Planning Department, is included in a broad services package contract with the City.
- Caltrans District 8 owns the I-215 Freeway which serves as an embankment holding the alluvial flood plain waters to the east of the freeway over a very broad north-south-east area. Phase 3 of the Project will be constructing a larger culvert under the I-215 Freeway to transmit a much higher flow rate into the new Line A (Phase 4) which will discharge into the San Jacinto River. Caltrans District 8 participated in the design of the culvert.
- The Project will remove a large area from the FEMA Zone A flood plain, including (once all four phases are completed) EMWD's operation center and wastewater treatment plant.

Perris Union High School District, Eastern Municipal Water District, Southern California Edison and the City of Perris are all proponents of the Project as it protects their facilities in the flood plain. Last year the flooding from the winter storms affected Perris Union High School and Southern California Edison property and disrupted service. The storms were not significant events in frequency, but reoccur in their flooding effect almost yearly

- Homeland/Romoland ADP and Brookfield Land Development is a joint effort by land owners and developers to provide flood relief for their properties. The group has already funded the design of Line A (including Phase 1) and acquired the necessary right-of-way. As a result, as noted below, the Project is completely ready to place out to bid and construct.
- The long-term operation and maintenance of the Phase 1 facilities will be provided by the RCFCD as outlined in an executed Infrastructure Funding, Acquisition, and Reimbursement Agreement. When the basins are converted into recreation facilities, the operation and maintenance of the recreation components will be covered by a Landscape Maintenance District or a second Community Facilities District to be established by the City of Menifee that has been already agreed upon by the ADP property owners.

The Project also meets the goals of the California Water Plan Update 2009.

D - COMPLETED WORK

\$28.5 million in privately-generated funds have already been expended to bring the Project to a "shovel ready" condition, including the design and the acquisition of all of the right-of-way. There are no remaining barriers that could delay the construction of the Project, other than the current \$3.5 million shortfall that is the subject of this application. All Project approvals have been secured and local funding for the construction of the Project is already in place. CEQA approval was obtained through the approval of the Draft and Final Environmental Impact Reports that was prepared for the Homeland Romoland MDP. Regulatory Agency clearances were also obtained from the U.S. Army Corps of Engineers, California Department of Fish and Game, and the Santa Ana Regional Water Quality Control Board. Minor design changes to the approved bid and construction documents are needed to accommodate the proposed bid.

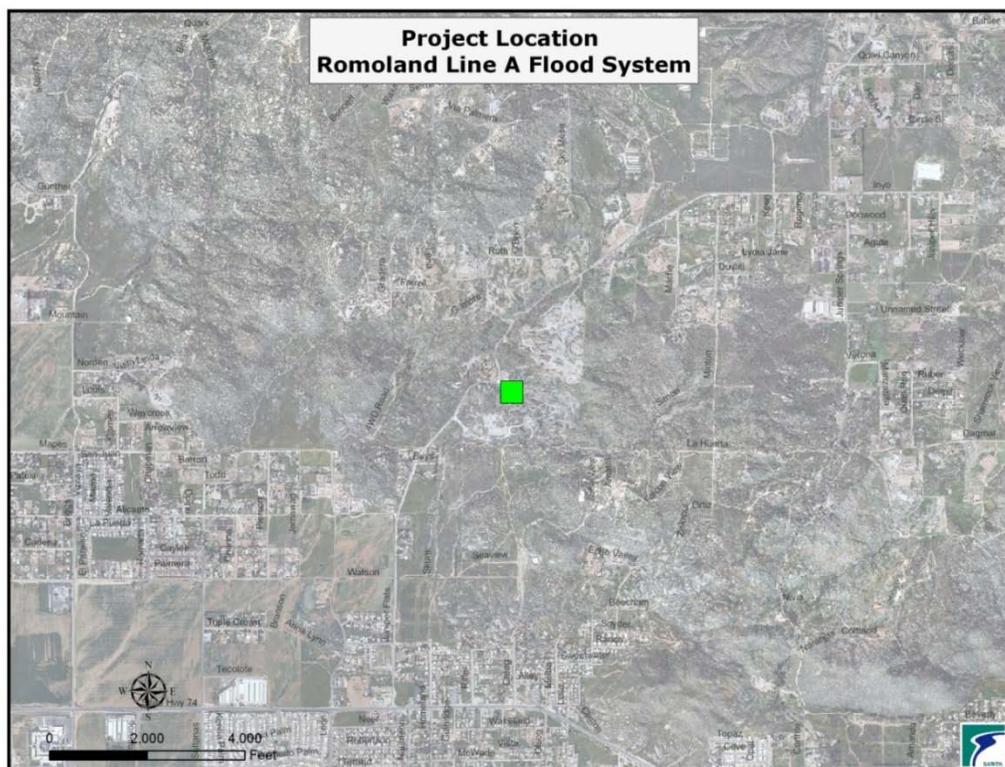
In June of 2008, the ADP property owners solicited construction bids for the implementation of Phase 1. Thirteen bids were provided to the ADP property owners. These bids were averaged and summarized into the Engineer's 2008 Statement of Probable Cost for the Project.

E - EXISTING DATA AND STUDIES

The claims and calculations contained in this work plan and in the subsequent attachments are primarily based on the following data and studies:

- EMWD 2005 Urban Water Management Plan
- Joint Community Facilities Agreement
- Final Environmental Impact Report
- Economic Impact Study
- Homeland/Romoland Watershed Master Drainage Plan
- Army Corps of Engineers Determination Letter
- California Regional Water Quality Control Board Waste Discharge Requirements
- California Regional Water Quality Control Board NPDES Permit

F - PROJECT MAP



G - PROJECT TIMING AND PHASING

The Project has been modified to match the amount of State funding available under this IRWM Grant to complement existing County and privately-raised funding. Removal of material from the two basins is ongoing. This work is a portion of the local share for this project. Construction drawings and bid packages will be revised starting in June, with construction anticipated to begin in April 2012 and being completed in April 2013.

Part Two – Proposed Work Tasks

A - BUDGET CATEGORY (a): DIRECT PROJECT ADMINISTRATION COSTS

Task 1: Administration

The Juniper Flats Detention Basin is being excavated by private contract, administered by local developers. Bid documents and contracts will be prepared to complete both basins as designed, consistent with those used in public works contracts. The project will be advertised and awarded, with the lowest responsible bidder providing all required insurance, bonds and certifications. The City of Menifee will publish notice inviting bids, conduct pre bid meetings, answer questions during the bid process, verify bids for completeness and competency, provide bid analysis and conduct bid opening.

The earthen channel and storm drain pipe connecting the two basins will be a standard public works project administered by the City of Menifee. The City will perform all of the tasks listed above for the basins in addition to measurement and payment, and change order management.

Deliverables: Preparation of invoices and other deliverables as required.

Task 2: Labor Compliance Program

The completion of the basins, earthen channel and storm drains that connect the basins will be a prevailing wage project administered by the City of Menifee. City inspectors will conduct job site inspections to verify wage rates, benefits and employee identifications to comply with prevailing wage requirements. Contractor and sub contractors will provide

prevailing wage reports on a monthly basis with monthly invoices. The City contract administrator will verify that current wage and benefit requirements are met.

Deliverable: Submission of Labor Compliance Program

Task 3: Reporting

The City of Menifee will provide all internal progress reports including budget status, percent complete updates and change order status. The City will also provide summary status reports for submittal to DWR and other appropriate agencies at intervals spelled out in the Grant Agreement.

Deliverables: Submission of quarterly, annual and final reports as specified in the Grant Agreement.

B - BUDGET CATEGORY (b): LAND PURCHASE/EASEMENT

Dedication of right-of-way has been completed.

C - BUDGET CATEGORY (c): PLANNING/ENGINEERING/ENVIRONMENTAL DOCUMENTATION

Task 4: Assessment and Evaluation

The final design is complete as well as the CEQA documents.

Deliverables: Hydrology Study, Final EIR, Master Plan of Drainage.

Task 5: Final Design

5.1 Final Hydrology/Hydraulics

5.1.1 Hydrology – detailed hydrology analysis including hydrology model selection, rainfall patterns, recurrence intervals.

5.1.2 Hydraulics – development of stream flow hydrographs, hydrograph attenuation, basin capacity analysis.

5.1.3 Flood Plain Analysis – flood limits, flood depths, FEMA map modifications.

5.2 Rough Grading

5.2.1 Basin grading plans

5.3 Structural Plans

5.3.1 Basin Inlet Structures.

5.3.2 Basin Outlet Structures.

5.3.3 Channel transitions.

5.3.4 Storm Drain structures including manholes and transitions.

5.4 Storm Drain Plans

5.4.1 Plan and Profile.

5.4.2 Typical Sections.

5.4.3 Manhole Details.

5.4.4 Utility crossings.

5.5 Earthen Channel Improvement Plans

5.5.1 Plan and Profile.

5.5.2 Typical Sections.

5.5.3 Transition Details.

5.5.4 Utility crossing Details.

5.6 Utility Relocation Plans - None Required

5.7 Traffic Control Plans - Traffic control plans will be specified and provided by the construction contractor.

5.8 Composite Utility Plans - Composite utility plans will not be provided as most of the work is outside public streets and the utilities.

5.9 Coordinate Control Plans - A coordinate survey control plan will be provided

Deliverables: Completion of project plans and specifications at the 90 percent and final level.

Task 6: Environmental Documentation

a. Subtask 6.1 -

Draft EIR.

b. Subtask 6.2 –

Technical Studies including noise, traffic, water supply, flood control, air quality, archeological, etc.

- c. Subtask 6.3 -
Final EIR.

Deliverable: Approved and adopted CEQA/NEPA documentation.

Task 7: Permitting

7.1 Grading Permits - the basin contractor will obtain permits for grading only, covering the excavation of the basins and access roads.

7.2 Construction Permits – the basin contractor will obtain a construction permit for the remainder of the work, including roadway paving, BMP devices, concrete inlet and outlet structures, fencing, slope protection, erosion control, etc.

7.3 Corps of Engineers 404 Permit.

7.4 Dept. of Fish and Game 1602 Permit.

7.5 Construction General Permit, State Water Quality Control Board Order Number 2009-0009-DWQ.

D - BUDGET CATEGORY (d): CONSTRUCTION/IMPLEMENTATION

Task 8 Implementation

- a. Subtask 8a.1 - Juniper Flat Basin

Developer has contracted for the removal of material from the basin. This will be ongoing to completion or termination of the developer’s contract to speed completion of the project.

- b. Subtask 8a.2 - Juniper Flat and Briggs Road Basins

City prepares contract documents including contract specifications, special provisions, contract, bid forms, subcontractor lists, DBE/WBE compliance, prevailing wage requirements, bond and insurance requirements, etc.. For the Juniper Flat Basin, supplemental topography will be provided to determine the grading necessary to complete the final basin configuration. Conduct pre-bid meeting. Prepare and publish

notice inviting bids. Conduct bid opening and selection of apparent lowest responsible bidder. Prepare bid analysis and award of contract. Conduct pre-construction meeting. Issue notice to proceed.

Deliverables: Advertisement for bids; pre-bid contractors meeting; evaluation of bids; award contract.

Task 9 Construction Contracting

a. Subtask 9.1 - Basins

9.1.1 Mobilization and Site Preparation – Contractor move in, set up field office, bond reimbursement, clear and grub, dust control, dewatering, security fencing and utility relocation.

9.1.2 Rough Grading – excavate, haul export to approved location, rough grade access roads and temporary haul roads.

9.1.3 Structures – construct concrete inlet and outlet structure including gates, valves and appurtenances.

9.1.4 Erosion Control – construct all temporary and permanent erosion control measures in accordance with plans and specs.

9.1.5 Water Quality Best Management Practices – install all filters, bio-swales and other BMP's called out in the plans and specifications.

9.1.6 Provide planting plan for water quality control plantings.

9.1.7 Paving – construct roadway base and paving structural sections in all paved areas in accordance with the plans and specs.

b. Subtask 9.2 – Project Construction / Connecting Pipeline

9.2.1 Mobilization and Site Preparation – Contractor move in, set up field office, bond reimbursement, clear and grub, dust control, dewatering, security fencing and utility relocation.

9.2.2 Traffic Control -Provide any required traffic control such as delineators, temporary signalization, one way control, detour signage, etc. for trench areas with public right of way.

9.2.3 Trench Excavation – remove pavement within trench area, excavate to bottom of

bedding, fill and compact bedding to grade.

9.2.4 Construct manholes, headwalls and other structures.

9.2.5 Install pipe in accordance with plans.

9.2.6 Backfill – place approved backfill over pipe. Compact to required density.

9.2.7 Paving – construct paving base and asphaltic concrete structural section within public streets and paint new striping, as indicated on the plans.

c. Subtask 9.6 – Performance Testing and Demobilization

9.3.1 Review shop drawings and submittals, such as concrete mix design, rebar shop drawings, valves, gates and appurtenant shop drawings

9.3.2 Provide soil compaction tests, including soil density and moisture content

9.3.3 Provide concrete strength tests including compressive and shear strength

9.3.4 Provide R-value analysis for all sub-grade under paved areas

E - BUDGET CATEGORY (e): ENVIRONMENTAL COMPLIANCE/MITIGATION/ ENHANCEMENT

Task 10: Environmental Compliance/Mitigation/Enhancement

10.1 The Construction Manager will engage an archeological consultant to provide periodic monitoring for artifacts of significant value.

10.2 The Construction Manager will engage an environmental consultant to monitor impacts to endangered species, protection or restoration of habitat, and mitigation measures identified in the EIR process.

F - BUDGET CATEGORY (f): CONSTRUCTION ADMINISTRATION

Task 11: Construction Administration

11.1 Resident Engineer/Construction Manager – provide general over site of the project, ensuring proper prosecution and progress.

11.2 Inspection – provide continuous inspection of all materials and workmanship with regard to contract work items.

11.3 Measurement and Payment – approve all contractor monthly payment requests. Verify all quantities of in-place contract items for which payment is requested.

11.4 Change Management - Approval of all extra work and corresponding change orders.
Review and approval of extra work reports.

11.5 Schedule – Provide schedule updates to baseline schedule on a monthly basis. Review and approve all delay change orders.

11.6 Daily Reports/Diaries – review and approve all daily reports including extra work, weather delays, unforeseen changes, material deliveries and rented equipment working times.

11.7 Certifications – provide certifications of line and grade for all rough grade and finished grade work. Prove acceptance of furnished equipment and products.

11.8 Provide final certification of the project.

Project E: Santa Ana Watershed Vireo Monitoring (Santa Ana Watershed Association)

Part One - Introduction

A - GOALS AND OBJECTIVES

The goal of the Santa Ana Watershed Vireo Monitoring and Breeding Bird Survey project is to continue to add to SAWA's extensive knowledge base, which benefits a wide range of stakeholders in the watershed. The data presented are public information to assist with planning for development projects, mitigation, habitat restoration, recreational development, public works projects and commercial and residential development.

B - PURPOSE AND NEED

The data SAWA collects annually and continues to collect provides vital information on sensitive and native species, including their abundance, locations, breeding, parasitism and depredation trends. The beneficiaries of these studies include water districts, flood control districts; joint powers authorities, federal and state regulators, counties, private developers and municipalities.

C - INTEGRATED ELEMENTS OF PROJECTS

The Santa Ana Watershed Vireo Monitoring and Breeding Bird Survey Project adds value to any public works or other construction project that takes place in riparian or wetland areas of the watershed by providing comprehensive data on the locations of endangered birds and sensitive habitat where construction impacts may take place. SAWA biologists can also monitor construction activities and make recommendations regarding work methods to remediate negative effects on wildlife if there is presence of raptors, endangered birds or other focal species.

Some examples of projects that could benefit from this information include SAWPA's "Repairs to the Unlined RCP Reach IVA and Reach IVB Santa Ana Regional Interceptor Project"; Western Municipal Water District's "Chino Creek Wellfield, Wells 1, 2, and 3 Project"; The City

of Huntington Beach's "East Garden Grove Wintersburg Channel Urban Runoff Diversion Project, Phase I"; the City of Ontario's "Cucamonga Creek Watershed Regional Water Quality Project (Mill Creek Wetlands)"; and the Orange County Water District's "Groundwater Replenishment System - Flow Equalization Project."

D - COMPLETED WORK

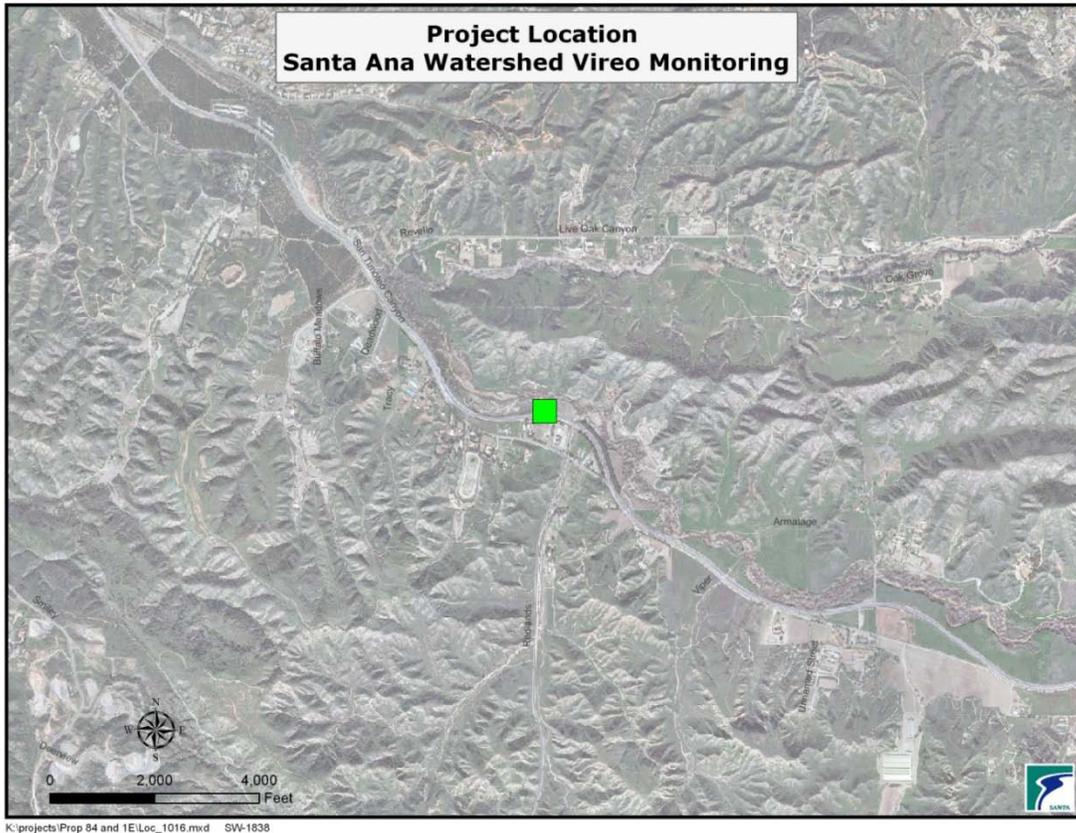
SAWA biologists are in the field daily from March through July annually surveying and doing nest management. Work has been done and reported annually for the last 10 years under U.S. Fish & Wildlife (USFWS) permit TE-839480 and California Department of Fish and Game (CDFG) MOU dated 1 April 2008, which expires 31 October 2012. CEQA and NEPA permitting are not necessary because there is no adverse effect on the habitat due to the activities of this project.

E - EXISTING DATA AND STUDIES

SAWA biologists submit an annual report to the USFWS and the CDFG with results of the vireo monitoring efforts. The U.S. Fish and Wildlife Service used SAWA data in its 5-year review process of the Least Bell's Vireo to determine if the species should be de-listed or down-listed. These results document vireo abundance and distribution throughout the Santa Ana Watershed from Redlands to Orange County. Ten-year data summaries for each site monitored are part of the annual reports in Appendix C of each annual report.

F - PROJECT MAP

The map on the next page shows the abundance and distribution of the Least Bell's Vireo in the Santa Ana River Watershed regional area. The dots show the areas in which the major monitoring efforts are conducted and delineate the project area.



G - PROJECT TIMING AND PHASING

This project is not part of a multi-phased project complex, and occurs concurrently with year-round efforts to remove *Arundo* and other water-thirsty invasive plants from the watershed. It is not dependent on the progress of any other project.

Part Two – Proposed Work Tasks

A - BUDGET CATEGORY (a): DIRECT PROJECT ADMINISTRATION COSTS

Task 1: Administration

The SAWA Executive Director and Lead Biologist will track hours and equipment used in implementation of the project in order to create invoices related to the project.

Deliverables: Preparation of invoices and financial reports

Task 2: Labor Compliance Program

The SAWA Executive Director, Lead Biologist and field biologists will collaborate to compile all of the reports related to the project. Resources from our partnering agencies will be used to create mapping support and provide additional information required for the reports. This will be accomplished through existing agreements among our member districts.

Deliverables: Submission of all quarterly, annual and final reports as specified in the grant agreement.

B - BUDGET CATEGORY (b): LAND PURCHASE/EASEMENT

There are no tasks or deliverables in this budget category because there are no land purchases or easements required.

C - BUDGET CATEGORY (c): PLANNING/ENGINEERING/ENVIRONMENTAL DOCUMENTATION

There are no tasks or deliverables in this budget category because this is an ongoing program and there is no construction or environmental impacts. Also, all project planning has been completed.

Task 4: Assessment and Evaluation

Task 6: Environmental Documentation

- a. Subtask 6.1 - CEQA/NEPA Environmental Review
- b. Subtask 6.2 – Mitigation
- c. Subtask 6.3 - Tribal Notification

D - BUDGET CATEGORY (d): CONSTRUCTION/IMPLEMENTATION

Task 8 Implementation

- a. Subtask 8.1 - Vireo Monitoring

Riparian habitat throughout the Santa Ana Watershed will be surveyed for the endangered Least Bell's Vireo. SAWA's Vireo Monitoring Program will strive to detect

all vireo territories in the watershed. Seven full-time biologists and 2 half-time SAWA biologists will document vireo locations with GPS at more than 50 sites. At times, SAWA biologists will be assisted by field assistants and staffs of cooperating agencies under our existing agreement as members of the association. Major monitored sites include the Santa Ana River at Norco, Riverside, and the Santa Ana Canyon, the San Jacinto River, Mockingbird Canyon, Santiago Canyon at Irvine Regional Park.

SAWA biologists will determine breeding status and monitor nests at each site. SAWA biologists will document nest contents, e.g., numbers of eggs and nestlings, and cowbird eggs are removed. Biologists monitor nests once a week until fledging occurs. SAWA biologists will report data that include number of territories, number of pairs, number of breeding pairs, number of observed fledglings, number of nests, number of eggs, number of nests tracked, nesting success, reasons for nest failure as percentage of nests failed due to reproductive failure, parasitism, or depredation, cowbird parasitism rate, reproductive success, projected recruitment of young, clutch size, number of cowbird eggs and cowbird nestlings in nests, number of manipulated nests (nests from which cowbird eggs were removed), number of vireo young fledged from manipulated nests, number of repaired nests and number of vireos fledged from repaired nests. SAWA biologists will document nesting substrate by plant species. SAWA biologists are in the field daily from March through July annually surveying and doing nest management. Work is done and reported annually for the last 10 years under U.S. Fish & Wildlife (USFWS) permit TE-839480 and California Department of Fish and Game (CDFG) MOU dated 1 April 2008, which expires 31 October 2012.

b. Subtask 8.2 - Cowbird Management

Brown-headed cowbirds cause nest failure in Least Bell's Vireo populations, as well as in at least 250 other species. Year-round trapping of cowbirds will be done to control the damage they can perpetrate particularly in riparian habitat. SAWA biologists will deploy about 50 cowbird traps every spring throughout the watershed to trap cowbirds before the females lay their eggs in the nests of native birds, such as the vireo. Winter trapping will occur at cowbird wintering sites such as dairies. SAWA biologists contact private property owners living in or near sensitive habitat and receive permission to place a trap

on their properties. This community involvement has been a key to SAWA's success with the cowbird management program. Traps are modified Australian crow traps and are deployed at the San Jacinto and Santa Ana Rivers, Mockingbird Canyon, Temescal, and the Santa Ana Canyon. SAWA's protocol for trap management follows the regulations set by the USFWS and the CDFG. Traps are baited with live birds because the cowbird species is gregarious and attracted by conspecifics. SAWA biologists or assistants service traps once a day, seven days a week, to remove non-target birds (native birds that may enter the trap, usually for seed), and to make sure the bait birds have food and water. SAWA biologists also will provide bathing water for the birds to preserve their drinking water. SAWA biologists and assistants will keep daily records on each trap. Documentation includes number of birds in trap upon arrival, number of birds removed from trap, number of cowbirds left in trap, number and species of non-target birds removed from trap and any mortality. Reported statistics are site, trap name and GPS location, and, per trap, number of trap days, number of total cowbirds removed, number of males, females, and juveniles removed, number of adults removed per trap day, total number of cowbirds removed per trap day and mortality rate for the season. SAWA biologists also report number of non-targets captured and released by number and species, and mortality by species for the season. Protocol requires a non-target mortality rate of 1% or less. Annual reporting of these statistics is made to USFWS and CDFG in the annual report of the Vireo Monitoring Program with GIS maps of trap locations. As of 2009, SAWA has removed 45,000 cowbirds from the watershed since 2000.

Deliverables: All of the aforementioned surveys will be conducted and the mentioned reports will be added to those required in the grant.

Task 10: Construction

Not applicable.

**E - BUDGET CATEGORY (e): ENVIRONMENTAL COMPLIANCE/MITIGATION/
ENHANCEMENT**

Task 10: Environmental Compliance/Mitigation/Enhancement

There are no tasks or deliverables in this budget category because there are no environmental impacts associated with this work.

F. BUDGET CATEGORY (f): CONSTRUCTION ADMINISTRATION

Task 11: Construction Administration

There are no tasks or deliverables in this budget category because there is no construction associated with this work.

Project F: Mill Creek Wetlands (City of Ontario)

Part One – Introduction

The Prado Dam Basin offers a unique, open space with large and rapidly developing communities within portions of San Bernardino and Riverside Counties. The Cucamonga Creek Watershed Regional Water Quality Project (“Project”), sponsored by the City of Ontario, focuses on improving *water quality*; preserving and enhancing the *environment*; improving *regional integration and coordination*; providing *recreational opportunities*; maintaining *quality of life*; and providing *economically effective water solutions*.

The Prado Basin functions as the primary source of recharge for the Orange County groundwater basin, which is the primary source of drinking water for Orange County. The deterioration of the water quality in Prado Basin continues to threaten the viability of the groundwater quality and viability for the public drinking water supply.

The Cucamonga Creek Watershed Regional Water Quality Project is a regional natural treatment facility proposed to be located on property adjacent to Cucamonga Channel at its terminus and transition to Mill Creek. The Project is designed to divert both wet weather and dry weather flows in Cucamonga Creek into a series of natural water quality treatment ponds. The treatment system captures runoff from the entire Cucamonga Creek watershed tributary to the diversion point. This watershed area totals 77 mi² and incorporates the tributary areas of Deer Creek, Old Deer Creek and West Cucamonga Creek.

The Prado Basin also contains some of the best and largest riparian habitat in all of Southern California with more than 300 species of plants, 13 species of reptiles, 47 species of breeding birds, 11 raptor species, and 23 mammal species. Included are threatened and endangered species such as the least Bell’s vireo, arroyo chub, and Santa Ana sucker. However, the deterioration in water quality in the Prado Basin threatens to disrupt the long-term viability of these species.

The Project will create 32 acres of native habitat through the use of native planting in the wetland ponds and slopes. The Native Habitat Plan creates several habitat types that will benefit local wildlife, including endangered species, by utilizing species that promote nesting, breeding

and foraging. The Native Habitat Plan also supports the Recreation Plan by providing shade, wildlife viewing opportunities, and aesthetics.

Balancing the primary constraints of flood control and master planning remains an essential element of fostering natural and project resources for the benefit of present and future generations. The Project provides an opportunity to set a standard for cooperative and balanced use of these significant resources for the benefit of the public. Spearheaded by the City of Ontario, the Project is supported by the City of Chino, the County of San Bernardino, the Inland Empire Utilities Agencies (IEUA), the Orange County Water District (OCWD), and the United States Army Corps of Engineers (USACE). The Project transforms a fallow and underutilized area into a destination providing environmental, recreational and educational benefits consistent with the USACE Prado Basin Master Plan, The Chino Preserve Specific Plan, The City of Chino Urban Buffer Plan trail connections, The County of San Bernardino planned future trail connections, and Regional Water Quality Control Board water quality objectives. The Project also serves to satisfy the intent of the storm water run-off provisions of the Clean Water Act.

The Project proposes to create additional active recreation opportunities in the Prado Basin by the construction of approximately 2.5 additional miles of hiking and equestrian trails. The trails will be constructed of decomposed granite and form a looped trail system around vegetated and open-water ponds. The new trail system will also connect to the City of Chino Urban Buffer and will provide future trail connections for the inter-county trail system.

The Project also contains passive recreation opportunities in the Prado Basin by providing vista and wildlife viewing locations and interpretive signage. The proposed trail system will include benches in locations that offer vistas of the wetland ponds and the surrounding environment. Planting around the benches will provide shade and aesthetics without blocking views. The surrounding native plantings and open water wetlands will attract numerous wildlife species, offering excellent wildlife viewing opportunities.

The Prado Basin currently provides recreation opportunities through parks, community trails, and inter-county trail systems. Similar to the San Joaquin Marsh operated by Irvine Ranch Water District in Orange County, this Project would provide the Inland Empire a unique educational recreational opportunity designed to promote environmental stewardship through the

natural use of the land while preserving and restoring native habitat and serving a public need in the improvement of water quality.

The project as designed not only provides public benefits but is economically advantageous. It is predicted that the volume of water treated for water quality is more than twice the volume of treated water without the project. The project location allows for a low-cost, highly-efficient, energy-conserving and sustainable implementation of a natural treatment system for water quality with multiple beneficial uses. The wetland system creates passive recreational and educational opportunities that would not have otherwise been available at no additional cost. The project enhances flood storage within Prado basin. Finally, the project assists the region in complying with regional water quality needs, which has been shown to be almost as costly as imported water.

The Project provides a unique opportunity to set a standard for cooperative and balanced use of the Prado Basin's significant resources for the benefit and education of the public. This Project also will inspire environmental stewardship through the development of a wetlands ecosystem that provides recreational opportunities and regional water quality improvement to native habitat and downstream communities. Through interpretive signage, wildlife viewing vistas, and interactive educational kiosks, visitors will learn how development and environmental changes impact the region's natural resources and how "Green" projects such as this are working to improve the coexistence of humans with the native inhabitants of the area. An increased public understanding and knowledge of the area's natural resources is vital to their preservation.

A - GOALS AND OBJECTIVES

The Project goals and objectives are as follows:

- Improve water quality
- Preserve and enhance the environment
- Improve regional integration and coordination
- Provide recreational opportunities
- Maintain quality of life
- Provide economically effective water solutions

Details as to how each goal and objective will be achieved are as follows:

1. Improve Water Quality:

Prado Basin provides an opportunity to improve water quality, prior to the waters' use downstream, associated with the recharge of underground aquifers that provide a source of drinking water for Orange County. A substantial need exists to improve water quality flowing into the Prado Basin not only to comply with Clean Water Act standards but also because the quality of the water entering Prado Basin affects the quality of the drinking water for Orange County, applies constraints on public recreational uses, and affects the habitat of rare, threatened, and endangered species.

Cucamonga Creek collects storm runoff and nuisance flows from an approximate 77 square mile watershed that in addition to the City of Ontario captures runoff from the cities of Chino, Rancho Cucamonga, and Upland. Additionally, Cucamonga Creek accepts treated wastewater discharge from the Inland Empire Utility Agency's Reclamation Plant #1 (RP1).

The City of Ontario proposes to create a regional water quality treatment facility within the Cucamonga Creek watershed. The purpose of the project is to create a regional water quality treatment facility that:

- Reduces pollutant loads during both the wet- and dry-weather conditions, including targeting reductions of total suspended solids, metals, trash and debris, bacteria and nutrients;
- Improves water quality in the Prado Basin in an effort to be consistent with recreational goals outlined in the Prado Dam Recreation Plan;
- Improves water quality in the Prado Basin to support ecosystem preservation and enhancement;
- Supports the goal of providing clean drinking water to the region;
- Provides consistency with federal, state, regional and local water quality programs and requirements;
- Treats as much as practicable of the 6,059 undeveloped acres located in the City of Ontario that are tributary to Cucamonga Creek and subject to the MS4 Permit requirements; and
- Is consistent with local, state, regional, and federal flood control facilities and objectives.

The local and federal need to improve water quality in Cucamonga Creek and the entire Prado Basin is well documented. Runoff into Cucamonga Creek/Mill Creek contains pollutants from existing developed communities, agricultural operations, dairies, and discharges from the Inland Empire Utilities Agency (IEUA) water reclamation facilities. Due to the quality of the runoff and stated beneficial uses in Cucamonga Creek/Mill Creek, the Santa Ana Regional Water Quality Control Board (RWQCB) designated the Creek as impaired pursuant to Section 303(d) of the Clean Water Act. Mill Creek is listed as impaired by nutrients, bacteria, and total suspended solids (TSS). The main water quality constituents of concern in effluent discharges are nutrients, primarily nitrate, and total dissolved solids (TDS). Elevated levels of nutrients can contribute to algae growth in downstream flows, and elevated levels of nitrate and TDS cause problems for downstream aquifer replenishment.

The Project proposes a regional natural treatment facility designed to hold and treat 150 acre-feet of water (the maximum treatment volume based on site constraints). This volume translates into treatment of 10 – 18% of all wet weather runoff in the Cucamonga Channel watershed. In contrast, a single-function water quality project of the same size in an upstream tributary could effectively capture approximately 6% of the total wet-weather runoff from the watershed (Geosyntec, 2008).

The Water Quality Plan proposes to divert both wet weather and dry weather flows in Cucamonga Creek into a series of natural water quality treatment ponds (Figure 1.1 and 1.2). The diverted water will gravity flow first through a de-silting basin, which is designed to remove debris and trash. From the de-silting basin the water will flow through a series of ponds that include areas of open water and wetland vegetation.

The wetland ponds, which include areas of open water and wetland vegetation, remove pollutants through settlement, ultraviolet light treatment, and biological activity from the wetland vegetation. The targeted pollutant constituents include sediment, nutrients, trash, metals, bacteria, oil and grease, and organics. According to the California Stormwater Quality Association BMP Handbook, the wetland ponds have a high degree of removal effectiveness for all targeted pollutants except nutrients, which has a medium effectiveness rating.

During larger storm events, flow into the ponds will raise the water surface elevation flooding over the wetlands and filling the Extended Detention portion of the Ponds. The Extended

Detention includes the vegetated slopes of the ponds above the wetland area. This area only floods during larger storm events and then dries during smaller events and the dry season. The vegetation in the Extended Detention portion of the Ponds also provides water quality benefits from settlement and biological activity. Targeted pollutant constituents also include sediment, nutrients, trash, metals, bacteria, oil and grease, organics, and oxygen demanding chemicals. According to the California Stormwater Quality Association BMP Handbook, the Extended Detention portion of the ponds has a medium degree of removal effectiveness for all targeted pollutants except nutrients, which has a low effectiveness rating and trash, which has a high effectiveness rating.

After approximately three to six days of residence time, the water will flow through an outlet and back into Mill Creek. The constant flow through the system minimizes the potential for mosquito breeding and the need for vector control.

The peak diversion from Cucamonga Creek in a wet weather condition is 404 cfs. The entire system has an approximate storage capacity of 150 acre-feet.

FIGURE 1.1 – Project Design

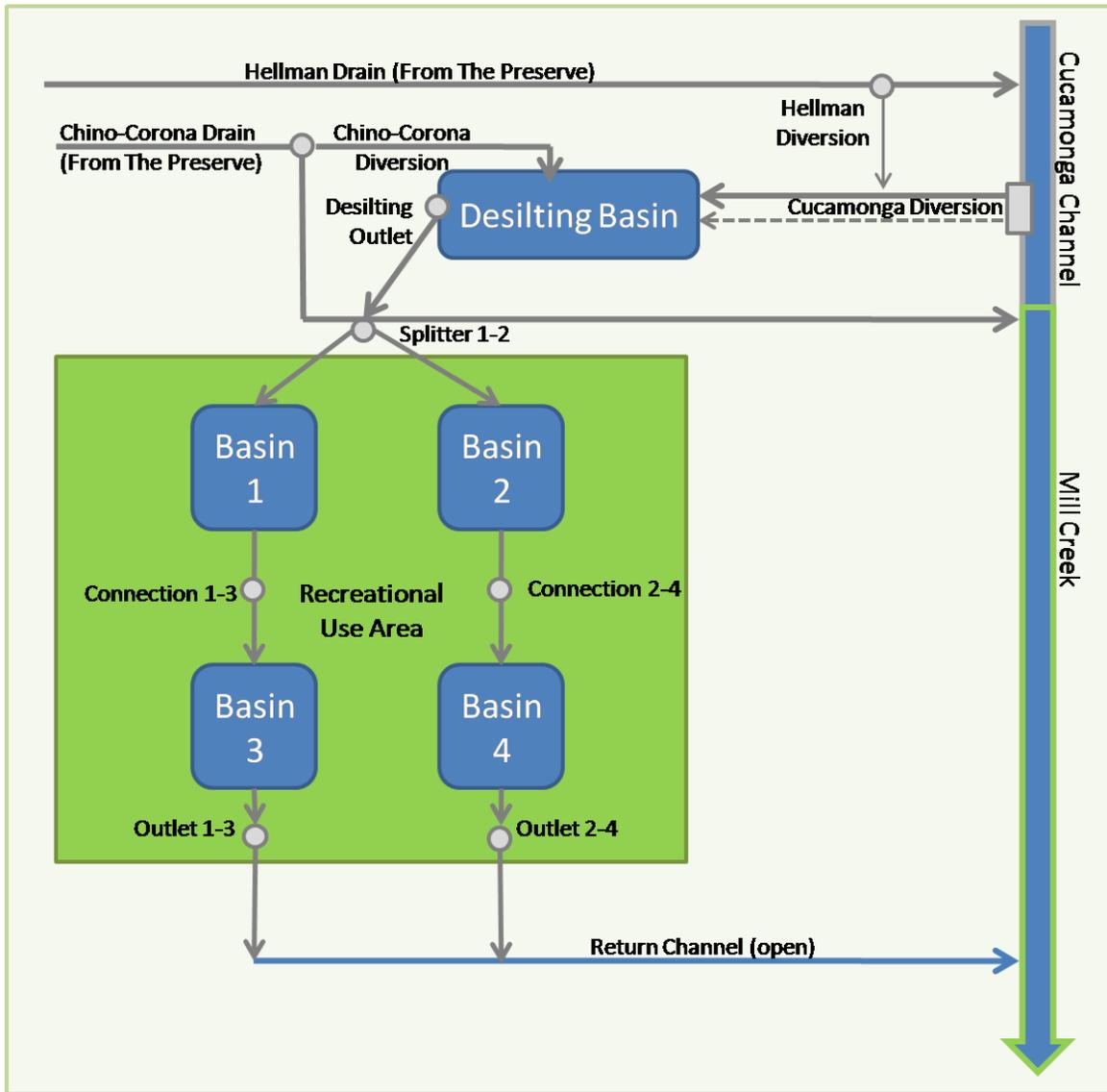
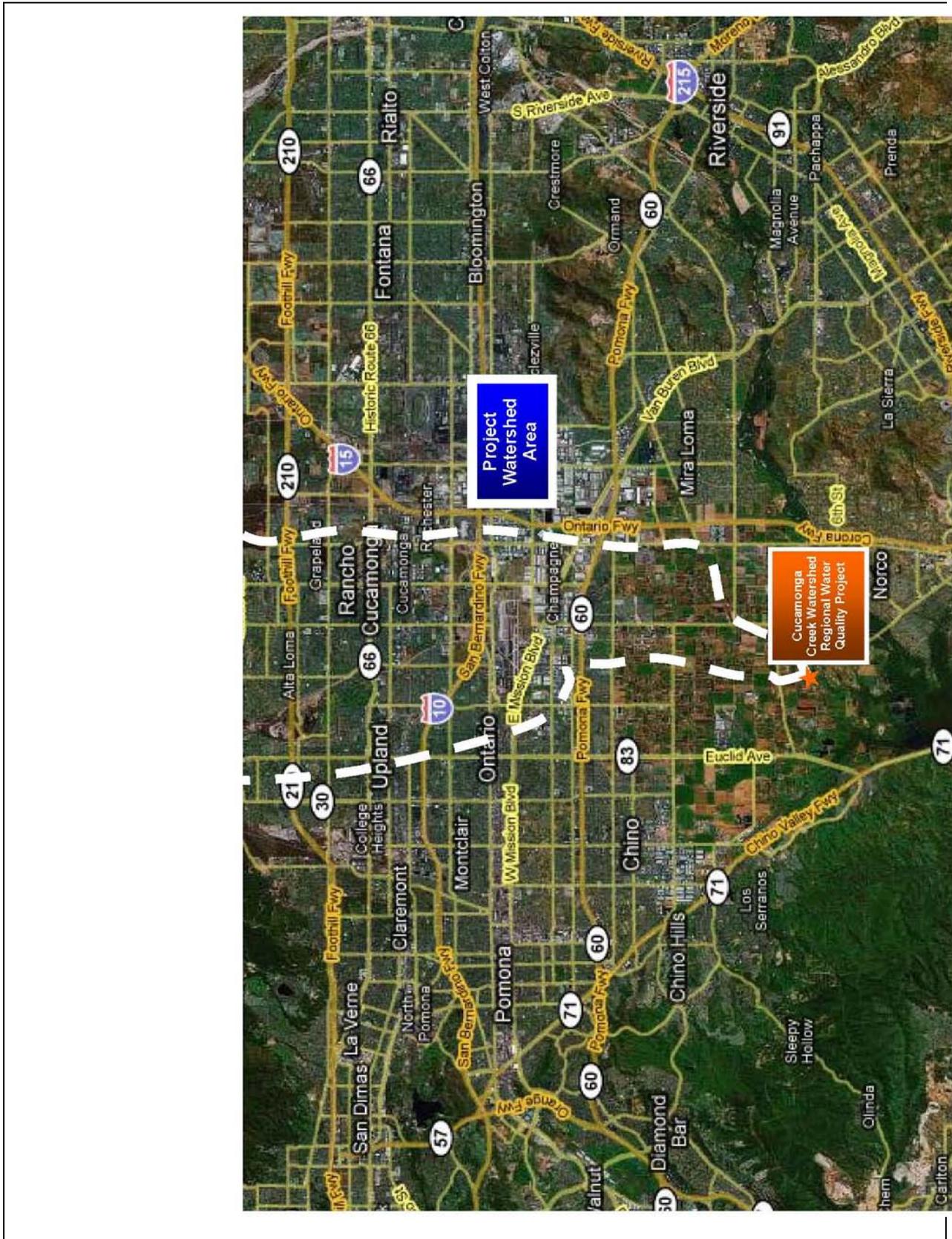


FIGURE 1.2 – Regional Watershed Treatment Area



Per the Project's Pre-Construction Water Quality Monitoring Plan, water sampling prior to construction of the Project has occurred to provide a baseline condition. Following construction of the ponds and establishment of the planting, water quality sampling will occur. The comparison to the baseline samples will demonstrate the water quality benefits of the Project.

Water samples were collected from three different locations: 1) before the point of diversion from Cucamonga Creek; 2) at the point of discharge into Mill Creek; and, 3) a midstream point at the Chino Corona Road crossing. Samples were collected monthly for four consecutive months during the dry weather season and once during a wet weather event.

The two main purposes of the Pre-Construction Water Quality Monitoring Program are to help determine what constituents will be monitored long term for this project and to provide baseline data. To help determine what water quality parameters will be monitored long term, the pre-construction monitoring program includes testing for a wide variety of constituents. The *San Bernardino County Report of Waste Discharge, Application for Renewal of Municipal NPDES Stormwater Permit 2001-2006* provided reference to develop the constituent list. A Pre-Construction Monitoring Report will be prepared upon completion of the sample collection and analysis. The report will summarize the laboratory results and make a recommendation for the constituents to monitor for the long term Monitoring Plan.

The Project is an effective means of leveraging water quality benefits for the region. Based on detailed analysis (Geosyntec, 11/18/2009), the Project treats on an average annual basis approximately 4,200 acre-feet of wet weather runoff and 2,700 acre-feet of dry weather runoff. A site specific location, rather than regional location, would treat approximately 1,520 acre-feet wet weather runoff and 700 acre-feet dry weather runoff. The regional benefits can be easily demonstrated through about a 270% (additional 2,625 acre-feet) and 333% (additional 2,000 acre-feet) increase in efficiency for wet weather and dry weather respectively.

The Clean Water Act requires Federal agency cooperation with state and local agencies to develop comprehensive solutions to prevent, reduce and eliminate pollution in conjunction with programs such as the SARWCB MS4 Permit for managing water resources. The water quality benefits meet these mandates for environmental stewardship, partnership with local agencies, preservation of natural resources, and public benefit from storm water, drinking water, and recreational aspects.

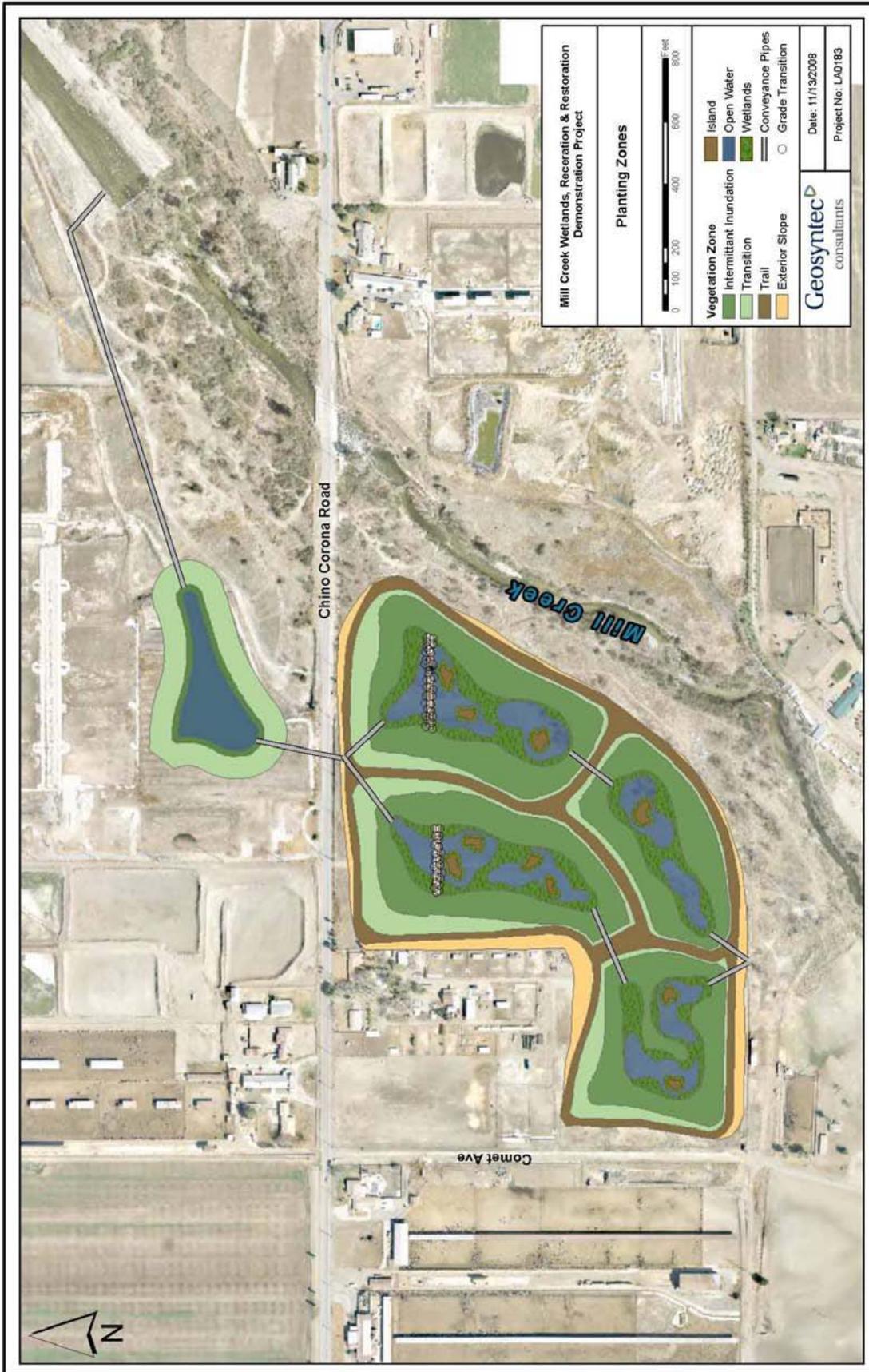
2. Preserve and Enhance the Environment:

The Project is consistent with the OWOW goal to preserve and enhance the environment by (1) enhancing and expanding habitat for the region's protected and endangered species and (2) utilizing sustainable practices, techniques and materials in the design, construction and maintenance of the project.

Habitat:

The Prado Basin currently protects 4,400 acres of native habitat. The Prado Basin also contains some of the best and largest riparian habitat in all of Southern California with more than 300 species of plants, 13 species of reptiles, 47 species of breeding birds, 11 raptor species, and 23 mammal species. Included are threatened and endangered species such as the least Bell's vireo, arroyo chub, and Santa Ana sucker. One mission of the OWOW is to preserve and enhance the environment. Therefore, the second priority of the Project is to increase the amount of native habitat by replacing non-native vegetation, agricultural lands, and disturbed areas with high quality native vegetation. Figure 2.1 graphically displays the planting zones for the proposed project:

FIGURE 2.1 – Project Planting Zones



The Native Habitat Plan creates several habitat types covering a total of 32 acres that will benefit local wildlife, including endangered species. The Native Habitat Plan also supports the Recreation Plan by providing shade, wildlife viewing opportunities, and aesthetics. The Native Habitat Plan proposes to create the following vegetation zones, including:

Open Water: In the arid southwest, areas of open water are vital to wildlife. Areas of open water serve both terrestrial species and birds, including waterfowl.

Wetlands: Wetlands include species such as cattails and rushes. Wetland vegetation provides habitat for a variety of species and is known to benefit water quality by providing pollutant absorbing plant material.

Riparian: Riparian habitat includes species such as willows, mulefat, cottonwoods, and Mexican elderberry. Riparian vegetation provides habitat, including feeding, foraging, and nesting opportunities for a variety of species, including the endangered least Bell's vireo.

Oak Woodland: Oak Woodland habitat includes large tree species such as oaks, walnuts, sycamores, and toyon. These trees provide nesting, foraging, and feeding habitat for a variety of species, including raptors. The Oak Woodland also includes an understory consisting of shrubs, perennials, and native grasses. This understory is also vital to local wildlife. In addition to providing habitat, the Oak Woodland supports the goals of the Recreation Plan by providing shade and aesthetics along the trail system.

Scrub and Grassland: The Habitat Plan includes areas of scrub vegetation in varying densities. For example, around the de-silting basin the scrub vegetation will be less dense in support of burrowing owl habitat. However, in other areas transition zones will have more dense coastal sage scrub habitat. Native grasslands also play an important role in a variety of ways, including burrowing owl habitat, raptor foraging habitat and water quality benefits within the riparian zone.

Per Figure 2.1 above, the Native Habitat Plan includes the following seven planting zones: De-silting Zone, Island Zone, Wetland Zone, Intermittent Inundation Zone, Transition Zone, Trail Zone and Outlet Zone.

De-silting Zone:

The bottom of the de-silting basin will be hard lined, therefore it will not have the same wetland vegetation found in the other ponds. The hard lined bottom will allow equipment to remove silt and debris collected in the basin.

The sides of the de-silting basin will be vegetated primarily with the plant list found in the Transition Zone. Additionally, the side slopes of the de-silting basin will be planted for burrowing owl habitat under the direction of the project biologist. Burrowing owl habitat consists of low-lying native grasslands and sparse scrub habitat. Burrowing owls also like mounds, rocks or low level perches that allow them for watch for both predators and prey. The burrowing owl habitat in the de-silting basin provides regional mitigation opportunities for the City of Chino through the City's RMP, consistent with The Chino Preserve Specific Plan EIR.

Island Zone :

The Island Zone includes the planting on each island and the wetland planting surrounding each island. The planting palette provides water quality benefits while also being able to survive periodic inundation. Potential species include:

TREES

<i>Salix lasiolepis</i>	Arroyo willow
<i>Salix gooddingii</i>	Black willow

CATTAILS

<i>Typha angustifolia</i>	Narrow-leaf cattail
<i>Typha domingensis</i>	Southern cattail
<i>Typha latifolia</i>	Broad-leaf cattail

Wetland Zone:

The Wetland Zone provides the planting for all of the other wetlands that are not associated with an island. Similar to the Island Zone, the Wetland Zone planting provides water quality benefits while also being able to survive periodic inundation. The two zones differ by the type of wetland species proposed. Potential species include:

PERENNIALS

<i>Anemopsis californica</i>	Yerba Mansa
<i>Carex praegracilis</i>	Slender Sedge
<i>Cyperus eragrostis</i>	Umbrella Sedge
<i>Eleocharis macrostachya</i>	Commib Spikerush
<i>Eleocharis montevidensis</i>	Sand Spikerush
<i>Juncus acutus</i>	Spiny rush
<i>Juncus xiphioides</i>	Iris-leaved rush
<i>Mimulus guttatus</i>	Seep monkeyflower

RUSH

<i>Scirpus acutus</i>	Bulrush
<i>Scirpus americanus</i>	Common Bulrush
<i>Scirpus californicus</i>	California Bulrush
<i>Scirpus maritimus</i>	Cosmopolitan Bulrush

Intermittent Inundation Zone:

The Intermittent Inundation Zone includes the Extended Detention portion of each pond. This area also must be able to survive periodic inundation; however, unlike the wetland zones, this area will be very dry during the dry weather months. In addition to providing a water quality benefit during inundation, the Intermittent Inundation Zone will provide vegetation to support local wildlife. Potential species include:

TREES/LARGE SHRUBS

<i>Baccharis salicifolia</i>	Mulefat
<i>Juglans californica</i>	Black walnut
<i>Platanus racemosa</i>	California Sycamore
<i>Populus fremontii</i>	Fremont Cottonwood
<i>Salix gooddingii</i>	Black Willow
<i>Salix laevigata</i>	Red Willow
<i>Salix lasiolepis</i>	Arroyo Willow
<i>Sambucus Mexicana</i>	Mexican Elderberry

PERENNIALS/VINES

<i>Artemisia douglasiana</i>	Mugwort
<i>Pluchea odorata</i>	Sweetscent
<i>Vitis girdiana</i>	Wild grape

GRASSES

<i>Agrostis exarata</i>	Bent Grass
<i>Carex pragracilis</i>	Slender Sedge
<i>Deschampsia caespitosa</i>	California Hairgrass
<i>Distichlis spicata</i>	Salt grass
<i>Hordeum brachyantherum</i>	Meadow barley
<i>Leymus triticoides</i>	Creeping Wild Rye
<i>Muhlenbergia rigens</i>	Deergrass

Transition Zone:

The Transition Zone is located between the Intermittent Inundation Zone and the Trail Zone and between the Trail Zone and existing vegetation. This zone provides native, drought tolerant vegetation that functions as a transition between different zones. Potential species include:

TREES

<i>Heteromeles arbutifolia</i>	Toyon
<i>Juglans californica</i>	California Walnut
<i>Quercus agrifolia</i>	Coast Live Oak
<i>Quercus engelmannii</i>	Englemann Oak

SHRUBS

<i>Artemisia californica</i>	California Sagebrush
<i>Baccharis pilularis</i>	Coyote Brush
<i>Eriophyllum confertiflorum</i>	Golden Yarrow
<i>Isocoma menziesii</i>	Goldenbush
<i>Malosma laurina</i>	Laurel Sumac
<i>Rhus integrifolia</i>	Lemonadeberry
<i>Salvia apiana</i>	White Sage
<i>Salvia mellifera</i>	Black Sage

PERENNIALS

<i>Eschscholzia californica</i>	California Poppy
<i>Lotus scoparius</i>	Deerweed
<i>Lupinus longifolius</i>	Longleaf Bush Lupine
<i>Mimulus aurantiacus</i>	Yellow Sticky Monkeyflower

GRASSES

<i>Melica imperfect</i>	Junegrass
<i>Muhlenbergia rigens</i>	Deer Grass
<i>Nassella cernua</i>	Nodding Grass
<i>Nassella lepida</i>	Foothill Needlegrass
<i>Nassella pulchra</i>	Purple Needlegrass
<i>Vulpia microstachys</i>	Small fescue

Trail Zone:

The Trail Zone is the area on both sides of the top of the berm surrounding the ponds and bisected by the trail system. Even this zone will be planted with drought tolerant natives, limited amounts of irrigation will assist this zone to achieve its primary goal of aesthetics and shade along the trail system. Potential species include:

TREES

<i>Alnus rhombifolia</i>	White Alder
<i>Heteromeles arbutifolia</i>	Toyon
<i>Juglans californica</i>	California Walnut
<i>Platanus racemosa</i>	California Sycamore
<i>Quercus agrifolia</i>	Coast Live Oak
<i>Sambucus Mexicana</i>	Mexican Elderberry

SHRUBS

<i>Artemisia californica</i>	California Sagebrush
<i>Baccharis pilularis</i>	Coyote Brush
<i>Baccharis emoryi</i>	Emory's Baccharis
<i>Ceanothus crassifolius</i>	Hoary Whitethorn
<i>Eriophyllum confertiflorum</i>	Golden Yarrow

Isocoma menziesii

Goldenbush

Malosma laurina

Laurel Sumac

Rhus integrifolia

Lemonadeberry

Rhus ovate

Sugar Bush

Rosa californica

Wild Rose

Rubus ursinus

California Blackberry

Salvia apiana

White Sage

Salvia leucophylla

Purple Sage

Salvia mellifera

Black Sage

PERENNIALS

Encelia californica

California Encelia

Eschscholzia californica

California Poppy

Lupinus latifolius

Broadleaf Canyon Lupine

Penstemon centranthifolius

Scarlet Buglar

Penstemon spectabilis

Showy Penstemon

Sisyrinchium bellum

Blue-eyed Grass

Vitis girdiana

California Wild Grape

GRASSES

Agrostis exarata

Bent Grass

Elymus glaucus

Blue Wild Rye

Leymus condensatus

Giant Wild Rye

Leymus triticoides

Creeping Wild Rye

Muhlenbergia rigens

Deer Grass

Outlet Zone:

The outlet of the lower ponds carries flows from the ponds back to Mill Creek. The outlet will be planted with riparian vegetation. Potential species include the following:

TREES/LARGE SHRUBS

<i>Baccharis salicifolia</i>	Mulefat
<i>Juglans californica</i>	Black walnut
<i>Platanus racemosa</i>	California Sycamore
<i>Populus fremontii</i>	Fremont Cottonwood
<i>Salix gooddingii</i>	Black Willow
<i>Salix laevigata</i>	Red Willow
<i>Salix lasiolepis</i>	Arroyo Willow
<i>Sambucus Mexicana</i>	Mexican Elderberry

PERENNIALS/VINES

<i>Artemisia douglasiana</i>	Mugwort
<i>Pluchea odorata</i>	Sweetscent
<i>Vitis girdiana</i>	Wild grape

GRASSES

<i>Agrostis exarata</i>	Bent Grass
<i>Carex pragracilis</i>	Slender Sedge
<i>Deschampsia caespitosa</i>	California Hairgrass
<i>Distichlis spicata</i>	Salt grass
<i>Hordeum brachyantherum</i>	Meadow barley
<i>Leymus triticoides</i>	Creeping Wild Rye
<i>Muhlenbergia rigens</i>	Deergrass

Sustainable Design Practices, Techniques and Materials

The Project is located within and adjacent to highly valuable natural habitat. Therefore, a significant amount of consideration was taken in the design and planning of the Project to be environmentally sensitive. Throughout the planning phase of the Project, the team has consulted with environmentalists, State and Federal environmental regulatory agencies, and environmental professionals from several fields to ensure the concepts, design, construction operations, and materials used are ecologically aware to the highest extent possible. These design principals will be interpreted throughout the Project to promote and educate the public on the meaning and practices of sustainable projects.

Sustainable Design Practices

Energy Conservation: Future energy demand for the Project will be minimal. Design principals will address project approaches as well as an understanding towards low carbon footprint / energy signature implementation. The water quality system has been designed with sufficient hydraulic gradient to operate entirely by gravity; therefore, no pumps or mechanical methods of circulating storm water will be required. The system includes manually operated sluice gates as well as manually adjusted orifice control plates that also will not require an alternate energy source. The irrigation system may require energy usage; however, the design is striving to include solar power for this system. Additionally, parking lot security lighting will focus on solar solutions. There are no other design elements requiring energy usage.

Water Conservation: The drought tolerant plant palette chosen will require little to no water once established. During the plant establishment period, estimated to be 2 – 5 years, temporary irrigation will be required using recycled water. Once established, the species in and within close proximity to the wetland ponds will not require irrigation. The vegetation around the trail system will include permanent irrigation. However, the plant palette remains native drought tolerant vegetation requiring minimal long-term recycled water irrigation.

Storm Water Management: The overall purpose of the project is to improve regional stormwater quality. The Project itself will result in a minimal increase in semi-impervious surface as trails will be constructed of decomposed granite and the parking lots will focus on the use of permeable surfaces such as porous concrete or crushed aggregate surfaces. The Project provides

additional capacity for on-site storm water treatment as part of the Water Quality Management Plan and therefore does not create an impact to storm water management.

Waste Generation and Disposal: The trail system will include trash receptacles for trail users; however, the amount of trash generated is expected to be de minimis. Maintenance and trash removal in the basin and ponds will generate solid waste, which can sufficiently be served by the El Sobrante Landfill. Green waste generated from the maintenance of the vegetated areas shall be taken to a green waste recycling facility to the maximum extent practicable.

Sustainable Techniques and Principals

Construction: Greenhouse and global warming impacts during construction have been carefully considered. Construction of the Project will require the removal and relocation of approximately 900,000 cubic yards of earth. A site within close proximity to the Project site has been chosen to place this material to reduce transportation and thereby emissions. During grading operations, reduced emissions will be attained through diesel equipment offset strategies including the use of Tier 3 or better construction equipment and the use of electricity directly from the power poles rather than temporary diesel generators. Environmental impacts during construction are considered to be less than significant.

Maintenance and Operations: The water quality and trail systems have been designed to require minimal maintenance activities. Maintenance of the facility will require periodic trash removal from the trails and ponds, annual vegetation maintenance and removal, and periodic cleaning of the de-silting basin. The nature of the gravity fed system mimics natural water flow, lending itself to low and minimally invasive maintenance, and low potential for infrastructure replacement.

Sustainable Materials

The Project incorporates several sustainable, low impact, quality and durability driven, and renewability focused materials in the design as follows:

Plant Material: The plant palette consists of native, drought tolerant plant material specifically chosen to provide water quality benefits and support wildlife. The Project will replace non-native vegetation and invasive species with high quality native vegetation. The selection of a

native plant palette allows a perpetuation of the ecological setting and life cycle present in the region. Maintenance functions focus toward recycling green waste.

Recycled Water: The temporary and permanent irrigation systems will utilize recycled water.

Solar Energy: Solar lights requiring no alternate means of energy will be installed in the parking lots for safety and security reasons. A minor amount of energy may be required to operate the irrigation system; however, the design is striving to include solar power for this system. Remote viewing cameras will also utilize solar energy.

Trail System: The trails will be constructed of decomposed granite, creating a permeable, low maintenance and highly sustainable surface. The selection of natural materials with low heat retention provides the additional benefit of minimizing impacts related to heat and local microclimates.

Parking Lot and Road Surfaces: The parking lots and resurfacing of Comet Road (currently an unpaved dirt road) will utilize permeable pavement such as porous concrete and recycled pavement materials.

Recycled Materials: As the Project design proceeds, the design team will focus on utilizing recycled materials in as many of the educational and recreational elements as practicable. The material selection will research and focus on the use of manufacturing processes that require less energy, utilization of naturally available materials, and balance the project goals and objectives with reduced impacts of using locally produced materials.

3. Regional Integration and Coordination:

Another primary goal of the OWOW is to improve regional integration and coordination throughout the watershed. The proposed Cucamonga Creek Watershed Regional Water Quality Project is a multi-jurisdictional opportunity to create a wetlands ecosystem and enhance recreational uses as part of a regional watershed management plan. Located in the Prado Basin in Chino, California with feed waters from Mill Creek in Ontario, the project would increase the headwaters available to Orange County's drinking water system by taking advantage of the natural filtration systems in the area.

Spearheaded by the City of Ontario, the Project is supported by the City of Chino, the County of San Bernardino, the Inland Empire Utilities Agencies (IEUA), the Orange County Water District

(OCWD), and the United States Army Corps of Engineers (USACE). The Project transforms a fallow and underutilized area into a destination providing environmental, recreational and educational benefits consistent with the One Water One Watershed Integrated Regional Water Management Plan, the USACE Prado Basin Master Plan, The Chino Preserve Specific Plan, The City of Chino Urban Buffer Plan trail connections, The County of San Bernardino planned future trail connections, and Regional Water Quality Control Board water quality objectives. The Project also serves to satisfy the intent of the storm water run-off provisions of the Clean Water Act.

The scope of the project requires strong coordinated efforts among local, State and Federal Agencies as well as several funding sources that include private and public monies. Private-sector funds – collected by local jurisdictions through Development Impact Fees – will be obtained from area developers benefiting from the regional storm-water management required by Section 404 of the Clean Water Act. State funding has been obtained through a State Water Resources Control Board Grant, which provides \$5 million in funding toward the design and construction of the Project. The Project is slated to complete in December, 2010, and will provide valuable planning and design information for the overall feasibility study. Federal contributions to the project are being sought through the federal budgeting process as part of a multi-year USACE request beginning in FY-2010.

The regional benefits provided by the Project are outlined in the Regional Public Benefits Matrix (Figure 3.1) below:

FIGURE 3.1 – Regional Benefits

Cucamonga Creek Watershed Regional Water Quality Project, sponsored by the City of Ontario
Regional Public Benefits Matrix



	City of Ontario	City of Chino	San Bernardino County Parks	Orange County Water District	Inland Empire Utility Agency	USACE
Land Use		<ul style="list-style-type: none"> 1. Habitat Creation Consistent with RMP Conservation Area 2. Consistent with Weed Removal and Replanting of Native Vegetation (Conservation Area) 3. Surface Water and Riparian Habitat Creation 	<ul style="list-style-type: none"> 1. Habitat Creation Consistent with RMP Conservation Area 2. Consistent with Weed Removal and Replanting of Native Vegetation (Conservation Area) 3. Surface Water and Riparian Habitat Creation 		<ul style="list-style-type: none"> 1. Habitat Creation Consistent with IEUA Habitat Restoration Program 	<ul style="list-style-type: none"> Habitat Creation Consistent with USACE Feasibility Study Objectives and Prado Basin Master Plan
Biological Resources		<ul style="list-style-type: none"> 1. Habitat Creation for Federally Threatened and Endangered Species (Vireo) 2. Habitat Creation for State Threatened and Endangered Species 3. Habitat Creation for Federal and State Sensitive Species (Raptor, Burrowing Owl) 	<ul style="list-style-type: none"> 1. Habitat Creation for Federally Threatened and Endangered Species (Vireo) 2. Habitat Creation for State Threatened and Endangered Species 3. Habitat Creation for Federal and State Sensitive Species (Raptor, Burrowing Owl) 	<ul style="list-style-type: none"> 1. Habitat Creation for Federally Threatened and Endangered Species (Vireo) 2. Habitat Creation for State Threatened and Endangered Species 3. Habitat Creation for Federal and State Sensitive Species (Raptor, Burrowing Owl) 	<ul style="list-style-type: none"> 1. Habitat Creation for Federally Threatened and Endangered Species (Vireo) 2. Habitat Creation for State Threatened and Endangered Species 3. Habitat Creation for Federal and State Sensitive Species (Raptor, Burrowing Owl) 	<ul style="list-style-type: none"> 1. Habitat Creation for Federally Threatened and Endangered Species (Vireo) 2. Habitat Creation for State Threatened and Endangered Species 3. Habitat Creation for Federal and State Sensitive Species (Raptor, Burrowing Owl) Creation of recreational facilities Consistent with USACE Feasibility Study Objectives and Prado Basin Master Plan
Parks & Recreation	<ul style="list-style-type: none"> 1. Creation of Link for Coast to Coast Trail 	<ul style="list-style-type: none"> 1. Integration in to Community Trail System for Hiking & Equestrian Uses 2. Creation of Link for Santa Ana River Trail 3. Integration of Local History within Trail System 	<ul style="list-style-type: none"> 1. Integration in to Community Trail System for Hiking & Equestrian Uses 2. Creation of Link for Santa Ana River Trail 3. Integration of Local History within Trail System 			
Cultural Resources		<ul style="list-style-type: none"> 1. Preservation of Sensitive Cultural, Archeo, Paleo Sites 	<ul style="list-style-type: none"> 1. Preservation of Sensitive Cultural, Archeo, Paleo Sites 			<ul style="list-style-type: none"> 1. Preservation of Sensitive Cultural, Archeo, Paleo Sites
Aesthetics	<ul style="list-style-type: none"> 1. Mill Creek Scenic Resources Enhancement 	<ul style="list-style-type: none"> 1. Mill Creek Scenic Resources Enhancement 	<ul style="list-style-type: none"> 1. Mill Creek Scenic Resources Enhancement 			<ul style="list-style-type: none"> 1. Mill Creek Scenic Resources Enhancement
Community Education	<ul style="list-style-type: none"> 1. Potential Education Partnership with Local Schools & Universities 	<ul style="list-style-type: none"> 1. Community Education Trails Integrated into Chino Communities 2. Potential Education Partnership with Local Schools & Universities 	<ul style="list-style-type: none"> 1. Community Education Trails Integrated into Prado Regional Park 2. Potential Education Partnership with Local Schools & Universities 	<ul style="list-style-type: none"> 1. Community Education on Effects of Storm Water / Drinking Water Cycles & Impacts 2. Potential Education Partnership with Local Schools & Universities 	<ul style="list-style-type: none"> 1. Community Landscape Alliance Education Trails Integrated into Prado Regional Park Area 2. Potential Education Partnership with Local Schools & Universities 	<ul style="list-style-type: none"> 1. Community Education Trails Integrated into Surrounding Communities and Parks
Water Quality	<ul style="list-style-type: none"> 1. Centralized Storm Water Quality Treatment System for Communities 	<ul style="list-style-type: none"> 1. Centralized Storm Water Quality Treatment System for Communities 		<ul style="list-style-type: none"> 1. Enhancement of Urban Run-off Water Treatment for OC Drinking Water Supply 	<ul style="list-style-type: none"> 1. Storm Water / RPI Water Quality Treatment System for Communities 	<ul style="list-style-type: none"> Regional Water Quality consistent with Federal Agency mandate to cooperate with state and local agencies to develop comprehensive solutions to prevent, reduce, and eliminate pollution in conjunction with programs for managing water resources under the Clean Water Act.
Flood Storage Capacity		<ul style="list-style-type: none"> 1. Potential Flood Storage Offset for City Projects 				<ul style="list-style-type: none"> Consistent with high water inundation limits established for Prado Dam Increase Flood Storage Capacity behind Prado Dam
Project Process	<ul style="list-style-type: none"> 1. Integration into Regional Chino Integrated Basin Master Plan Partnership Approach with USACE 2. Provide Real Time Evaluation of City Goals & Objectives in Effort to Enhance Options Under Feasibility Study 	<ul style="list-style-type: none"> 1. Integration into Regional Chino Integrated Basin Master Plan Partnership Approach with USACE 2. Provide Real Time Evaluation of City Goals & Objectives in Effort to Enhance Options Under Feasibility Study 	<ul style="list-style-type: none"> 1. Integration into Regional Chino Integrated Basin Master Plan Partnership Approach with USACE 2. Provide Real Time Evaluation of County Goals & Objectives in Effort to Enhance Options Under Feasibility Study 	<ul style="list-style-type: none"> 1. Integration into Regional Chino Integrated Basin Master Plan Partnership Approach with USACE 2. Provide Real Time Evaluation of Agency Goals & Objectives in Effort to Enhance Options Under Feasibility Study 	<ul style="list-style-type: none"> 1. Integration into Regional Chino Integrated Basin Master Plan Partnership Approach with USACE 2. Provide Real Time Evaluation of Agency Goals & Objectives in Effort to Enhance Options Under Feasibility Study 	<ul style="list-style-type: none"> 1. Integration into Regional Chino Integrated Basin Master Plan Partnership Approach with USACE 2. Provide Real Time Evaluation of Agency Goals & Objectives in Effort to Enhance Options Under Feasibility Study



4. Recreational Opportunities:

The OWOW strives to provide recreational opportunities. Therefore, another Project priority is to provide more trail access and encourage environmental awareness through outdoor recreational activities.

The Prado Basin currently provides recreation opportunities through parks, such as the Prado Regional Park, community trails, and inter-county trail systems with one example being the Coast to Crest Trail. The Project proposes a Recreation Plan, included as Figure 4.1, to enhance the existing recreation facilities in the area by providing additional active and passive recreation opportunities in the Prado Basin.

The Recreation Plan proposes to create additional active recreation opportunities in the Prado Basin through the construction of approximately 3.3 additional miles of hiking and equestrian trails. The trails proposed on the north side of Chino Corona Road around the de-silting basin and diversion structure are planned future trail connections. The trails proposed on the south side of Chino Corona Road around the wetland / extended detention ponds will be constructed as part of the Project. The trails will be constructed of decomposed granite and form a looped trail system around vegetated and open-water ponds. The new trail system will also connect to the City of Chino Urban Buffer and will provide future trail connections for the inter-county trail system noted above.

The Recreation Plan also contains passive recreation opportunities in the Prado Basin by providing vista and wildlife viewing locations and interpretive signage. The proposed trail system will include benches in locations that offer vistas of the wetland ponds and the surrounding environment. Planting around the benches will provide shade and aesthetics without blocking views. The surrounding native plantings and open water wetlands will attract numerous wildlife species, offering excellent wildlife viewing opportunities.

Interpretive signage will be located at the trailheads as well as throughout the trail system. The interpretive signage will provide park users with a better understanding of the history of the area; local wildlife that might be viewed; information on native vegetation, including plant communities and individual species; and an explanation on water quality and natural treatment systems.

The Recreation Plan identifies two new parking lots for use of the trail system. The primary parking lot for hikers and pedestrians is located off of Chino Corona Road and includes eight spaces. A secondary, future, parking lot designed to accommodate horse trailers with five spaces is located off of Comet Avenue on the west side of the Demonstration Project. No lighting is planned on the trail system around the ponds or within the parking lots. However, both parking lots will be equipped with locking gates and signage that indicates the facility closes at dusk.

Safety fencing around the ponds is included as part of the Recreation Plan. The fencing will occur on slopes with a gradient greater than 3:1 only. No fencing would occur on slopes with a gradient of 3:1 or flatter. Fencing will be a minimum of 48-inches high, located downslope from the trail, and screened by vegetation. As the vegetation matures, the fencing in areas with a gradient greater than 3:1 may be superseded by vegetation provided the type, density, and height of the vegetation is sufficient to deter human access.

FIGURE 4.1 – Recreational Plan



5. Quality of Life:

Community Need for Nature Education & Environmental Stewardship

The Prado Basin offers a unique, open space within rapidly developing communities within San Bernardino and Riverside Counties. The Cucamonga Creek Watershed Regional Water Quality Project is a multi-jurisdictional opportunity to create a wetlands ecosystem that restores native habitat for both plant and wildlife species. The Project will enhance existing recreation facilities in the area by providing additional active and passive recreation opportunities in the Prado Basin while combining the study of natural science with preservation, demonstration and education programs as part of a regional watershed management plan.

The Prado Basin contains some of the best and largest riparian habitat in all of Southern California with more than 300 species of plants, 13 species of reptiles, 47 species of breeding birds, 11 raptor species, and 23 mammal species. Included are threatened and endangered species such as the least Bell's vireo, arroyo chub, and Santa Ana sucker. The Prado Basin also functions as the primary source of recharge for the Orange County groundwater basin, which is the primary source of drinking water for Orange County.

Livestock, agriculture, sewage, weathering of minerals, and, most recently, suburban development and population growth, have contributed to the impairment of water bodies in the region. The deterioration of the water quality in Prado Basin continues to threaten the viability of the native habitat, groundwater quality and the public drinking water supply. Educating visitors and school children on how population growth and deterioration in water quality in the Prado Basin threatens to disrupt the long-term viability of the native species, affects groundwater and drinking water supplies, and what steps are being taken on a local and regional basis to preserve the natural habitat will promote the preservation of the area for future generations. In addition, providing steps individuals can take in their day-to-day activities and within their community to help preserve the region's natural resources is vital to the long term viability of the native habitat.

The Project provides a unique opportunity to set a standard for cooperative and balanced use of these significant resources for the benefit and education of the public while inspiring environmental stewardship through the development of a wetlands ecosystem that provides regional water quality benefits. Through interpretive signage, wildlife viewing vistas, and

interactive educational kiosks, visitors will learn how development and environmental changes impact the region's natural resources and how "Green" projects such as this are working to improve the coexistence of humans with the native inhabitants of the area. An increased public understanding and knowledge of the area's natural resources is vital to their preservation.

The Prado Basin currently provides recreation opportunities through parks, community trails, and inter-county trail systems. Similar to the San Joaquin Marsh operated by Irvine Ranch Water District in Orange County, this Project would provide the Inland Empire a unique educational recreational opportunity designed to promote environmental stewardship through the natural use of the land while preserving and restoring native habitat and serving a public need in the improvement of water quality.

Through the construction of this natural water quality wetlands ecosystem, local communities and schools will have the opportunity to access educational opportunities in the areas of water quality and supply, flood control and ecosystem protection, and the use of natural resources to reduce energy consumption in the process of providing water quality improvement to native habitat and downstream communities.

Overarching Themes & Messages Inspiring Environmental Stewardship

The California State Water Resources Control Board has listed Cucamonga Creek, Mill Creek, and the Santa Ana River as 303(d) impacted water bodies. Pollutants such as pathogens, nutrients, salinity/total dissolved solids/chlorides, and suspended solids are known to occur in these water bodies. Active and former agricultural uses and urban runoff from developed areas represent the primary contributors to the pollutants found in the watershed. The deterioration of the water quality in Prado Basin continues to threaten the viability of the native habitat, groundwater quality and the public drinking water supply.

The Cucamonga Creek Watershed Regional Water Quality Project provides an opportunity to improve water quality for some of the best and largest riparian habitat in all of Southern California, including many threatened and endangered species such as the least Bell's vireo, arroyo chub, and Santa Ana sucker. In addition, the Project would improve water quality prior to the waters' use downstream, associated with the recharge of underground aquifers that provide a source of drinking water for Orange County.

The Project would promote environmental stewardship by increasing public awareness as to how Federal, State and Local agencies are working together to promote the use of regional natural water quality treatment systems, thereby decreasing our contributions to global warming while preserving the native habitat. The project will strive to achieve environmental sustainability; recognize the interdependence of life and the physical environment; seek balance and synergy among human development activities and natural systems by designing economic and environmental solutions that support and reinforce one another; seek ways and means to assess and mitigate cumulative impact to the environment; bring systems approaches to the full life cycle of our process and work; and find innovative win-win solutions to the nation's problems that also protect and enhance the environment. Public awareness on alternatives to traditional water quality treatment systems that preserve open space recreation areas, reduce pollution, and rely on natural energy sources will serve to preserve the natural resources for generations and promote public support for future environmental projects.

Learning and Discovery Opportunities of the Natural Resources

The Cucamonga Creek Watershed Regional Water Quality Project is designed to restore environmental resources and improve regional water quality. This includes satisfying the intent of the stormwater runoff provisions of the Clean Water Act as well as creating, expanding and maintaining high quality wildlife habitat for migratory birds, raptors, burrowing owls, least Bell's vireo and waterfowl. As the water from the area proceeds downstream through the Santa Ana River, its percolation into the Orange County watershed becomes an increased source of groundwater supply.

Visitors will have the opportunity to walk approximately 2.5 miles of hiking and equestrian trails, exploring the diverse flora and fauna of the restored habitat and created wetlands ecosystem. The trails will be constructed of decomposed granite and form a looped trail system around vegetated and open-water ponds. The new trail system will also connect to the City of Chino Urban Buffer and will provide future trail connections for the inter-county trail system as well as the Coast to Crest Trail system intended to connect the Santa Ana River Trail from its outfall in Orange County to the mountains in San Bernardino. The project provides a diverse series of native habitats, changing as the land transitions from the creek to the higher elevations. The changes in habitat provide shelter and food for a variety of native animals, birds and insects, including protected and endangered native species.

Interpretive signage and interactive educational opportunities: Interpretive signage and interactive educational opportunities will be located at the trailheads as well as throughout the trail system to promote environmental stewardship and conservation. The interpretive signage and interactive educational opportunities will feature a wide variety of topics, providing park users and school children with an understanding of the history of the area; the significant value of the local natural resources and habitat to Southern California residents and wildlife; local wildlife that might be viewed; information on native vegetation, including plant communities and individual species; and an explanation on water quality and natural treatment systems.

History: Going back 12,000 years to the Native American tribes, through the Mission and Hacienda Eras, and the rise of the agricultural industry, the Prado Basin has a long and diverse settlement history. Interpretive signage throughout the trail system will provide visitors with a comprehensive understanding of the area's historical importance in the settling and development specifically of the Inland Empire area and Southern California as a whole. Displays such as aerial photographs documenting the gradual development of the region and historical accounts of the early settlers will be graphically displayed on monuments located throughout the trail system.

Local Natural Resources, Habitat, Wildlife And Vegetation: The Prado Basin contains some of the best and largest riparian habitat in all of Southern California with more than 300 species of plants, 13 species of reptiles, 47 species of breeding birds, 11 raptor species, and 23 mammal species. Included are threatened and endangered species such as the least Bell's vireo, arroyo chub, and Santa Ana sucker.

Lookout areas located at high points along the trail provide opportunities for visitors to look for native birds, such as raptors, circling high above the fields and creek flood plain.

Along the wetland trails, interpretive signs will describe the ecology and importance of the native habitat with images of wildlife a visitor might encounter. Signage will highlight the roles each plays in the environment and how to interact safely and respectfully with these residents. Information on the area's protected and endangered species will be graphically displayed, explaining the diverse range of species residing in the area, their nesting and foraging habits, the value of protecting these resources, and the environmental role each of us plays in our day-to-day lives.

Interactive educational opportunities will provide visitors with hands-on opportunities to engage their senses as they expand their knowledge on the local resources. Interactive approaches will provide visitors a view of the nearby least Bell's vireo habitat, without causing disturbance to the species, as well as a view of the natural Mill Creek; displays showing magnified samples of the flora and fauna will engage the visitors to notice the many different native plant species used throughout the park and educate them on their roles as habitat, nesting and foraging areas for the local wildlife; information on how rainfall, droughts and water quality can positively or negatively affect the local natural resources will inspire visitors to play a role in water conservation and quality improvement; and elevated lookouts that will encourage visitors to look for specific local wildlife such as raptors circling high above the fields and creek floodplain.

Water Quality: Throughout the Park, visitors will be educated as to how population growth and deterioration in water quality in the Prado Basin threatens to disrupt the long-term viability of the native species, affects groundwater and drinking water supplies, and what steps are being taken on a local and regional basis to preserve the natural habitat. Educational opportunities will provide details on the Project's natural water quality system; detailed images and explanations illustrating how the construction of this wetlands ecosystem improves water quality; how we can mimic nature's processes as we work to minimize our impact on the land; steps individuals can take in their day-to-day activities to help preserve the region's natural resources; and how their roles in water conservation and water quality are vital to the long term viability of the native habitat.

6. Economically Effective Water Solutions:

The Project is an effective means of leveraging water quality benefits for the region. Based on detailed analysis (Geosyntec, 11/18/2009), the Project treats on an average annual basis approximately 4,200 acre-feet of wet weather runoff and 2,700 acre-feet of dry weather runoff. A site specific location, rather than regional location, would treat approximately 1,520 acre-feet wet weather runoff and 700 acre-feet dry weather runoff. The regional benefits can be easily demonstrated through about a 270% (additional 2,625 acre-feet) and 333% (additional 2,000 acre-feet) increase in efficiency for wet weather and dry weather respectively.

The Clean Water Act requires Federal agency cooperation with state and local agencies to develop comprehensive solutions to prevent, reduce and eliminate pollution in conjunction with

programs such as the SARWCB MS4 Permit for managing water resources. The water quality benefits meet these mandates for environmental stewardship, partnership with local agencies, preservation of natural resources, and public benefit from storm water, drinking water, and recreational aspects.

The project, as envisioned and designed provides economically effective water solutions. Preliminary studies indicate that the volume of water treated by project (dry-weather and wet-weather flows) is significantly more than without the project, providing a regional and public benefits. This increase in treated volume for water quality has been estimated as more than twice the no-project alternative.

The project is also low-cost, requiring simple and energy-neutral infrastructure (i.e., passive diversion system, no pumping required), and not requiring costly land acquisition. Because of its location and configuration it does not require complex systems, and can be easily upgraded to increase treatment capacity even further. It provides additional features for recreational and educational purposes that would be otherwise costly. The project enhances flood storage within Prado basin, and typically increases in reservoir storage require costly improvement such as dam raises. Finally, the project assists the region in complying with regional water quality needs; in other Southern California areas, TMDL compliance has been estimated to be, on an acre-ft per year basis, almost as costly as imported water.

B - PURPOSE AND NEED

Purpose: The purpose of the Proposal is to treat storm event runoff through a regional water quality treatment approach that (1) treats as much as practicable of the 6,059 undeveloped acres located in the City of Ontario that are tributary to Cucamonga Creek and subject to the MS4 Permit requirements, with the goal of treating at least 1500 acres or 25 percent of Ontario's MS4 watershed; (2) reduces pollutant loads during both the wet- and dry-weather conditions, including targeting reductions of total suspended solids, metals, trash and debris, bacteria and nutrients; and (3) improves water quality in the Prado Basin. **Need:** Activities within the Cucamonga Creek watershed have resulted in a deterioration of water quality within the watershed. Livestock, agriculture, sewage, weathering of minerals, and, most recently, suburban development, have contributed to the impairment of water bodies in the region. Many of these activities and development occurred before the establishment of water quality requirements. The

Santa Ana Regional Water Quality Control Board (RWQCB) designated Cucamonga Creek/Mill Creek as impaired pursuant to Section 303(d) of the Clean Water Act, based on nutrients, bacteria, and total suspended solids (TSS). In addition to the listing by the RWQCB, other agencies routinely test runoff in Cucamonga/Mill Creek. The Inland Empire Utilities Agency (IEUA), which is a source of discharge into the Prado Basin, regularly monitors the quality of its discharges. The main water quality constituents of concern in effluent discharges are nutrients, primarily nitrate, and total dissolved solids (TDS). Elevated levels of nutrients in IEUA discharges can contribute to algae growth in downstream flows, and elevated levels of nitrate. The City of Ontario owns and operates storm event and urban runoff conveyance systems that discharge into waters of the United States. These conveyance systems are commonly referred to as Municipal Separate Storm Sewer Systems (MS4s). Urban and storm event runoff from these MS4 systems are regulated under a National Pollutant Discharge Elimination System (NPDES) permit according to Section 402(p) of the federal Clean Water Act (CWA).

Within the City of Ontario, approximately 6,059 acres of undeveloped land drains into Cucamonga Creek. As the City approves new development within its boundaries, it must comply with the discharge requirements of the California Regional Water Quality Control Board, Santa Ana Region, included in the MS4 Permit (also called an Order), which requires the preparation of project-specific Water Quality Management Plans (WQMPs) to address post construction impacts on water quality. To meet the requirements of the Order, the City of Ontario may undertake two types of treatment programs, localized (and often project-specific) treatment programs and regional programs.

Since a substantial portion of the Cucamonga Creek watershed is already developed and most of that development does not include water quality treatment facilities, there is a need for regional water quality treatment facilities that not only treat new development, but treat a larger portion of the watershed that includes previously developed land constructed without water quality facilities. The State Water Resources Control Board recognizes the need for regional treatment facilities and encourages such facilities in its draft Municipal Separate Storm Sewer Systems (MS4s) Permit program.

The deterioration of water quality in Cucamonga Creek has also affected the Prado Basin, which receives the flows from the Cucamonga Creek. The Prado Basin contains some of the best and largest riparian habitat in all of Southern California. The Prado Basin contains more than 300

species of plants, 13 species of reptiles, 47 species of breeding birds, 11 raptor species, and 23 mammal species. Included are threatened and endangered species such as the least Bell's vireo, arroyo chub, and Santa Ana sucker. The deterioration in water quality in the Prado Basin threatens to disrupt the long-term viability of these species.

C - INTEGRATED ELEMENTS OF PROJECTS

The goals of the Cucamonga Creek Watershed Regional Water Quality Project (Project) are to ensure the creation of high quality water, preserve and enhance the environment, improve regional integration and coordination, provide recreational opportunities, provide economically effective solutions, promote sustainable water solutions, and together these will help to maintain quality of life. These goals are consistent with the IRWM.

D - COMPLETED WORK

ITEM	DESCRIPTION	COMPLETION DATE	% COMPLETE TO DATE
1.	GPS Information for Project site and monitoring locations	01/08	100%
2.	Project Assessment Evaluation Plan (PAEP)	06/12	80%
3.	Non Point Source Pollution Reduction Follow-up Survey Form	Annually	0%
4.	Monitoring Plan (MP)	06/11	50%
5.	Monitoring Report	Quarterly	10%
6.	Quality Assurance Project Plan (QAPP)	06/11	30%
7.	CEQA/NEPA Documents	06/11	85%
8.	Land Owner Agreement (s)	06/12	50%
9.	Applicable Permits	06/11	30%
10.	Preliminary Engineering Report	06/11	100%
11.	50% Plans, Specifications, & Estimate (PS&E)	01/09	100%
12.	90% PS&E	05/11	50%
13.	Final PS&E	06/11	50%
14.	Operations and Maintenance Manual	06/11	30%
15.	Notice to Proceed	07/11	0%
16.	Photographic Monitoring Report	12/12	20%
17.	"As Built" Record Drawings	01/13	0%

E - EXISTING DATA AND STUDIES

Completed Reports and Studies:

PUBLIC BENEFITS RELATED TO WATER QUALITY – CUCAMONGA CREEK WATERSHED REGIONAL WATER QUALITY PROJECT Draft Technical Memorandum prepared for the City of Ontario (Geosyntec, November 18, 2009)

CONCEPTUAL HYDROLOGIC AND HYDRAULIC PROJECT DESIGN AND FUNCTION: WETLAND/EXTENDED DETENTION ALTERNATIVE (ALTERNATIVE 2A) - Cucamonga Creek Watershed Regional Water Quality Project prepared for the City of Ontario (Geosyntec, December 12, 2008 – rev June 17, 2010)

EXISTING AND PROPOSED SURFACE WATER QUALITY - Mill Creek Wetlands Recreation and Restoration Demonstration Project (Geosyntec, December 9, 2008)

PRE-CONSTRUCTION WATER QUALITY MONITORING PLAN, MILL CREEK WETLANDS REGIONAL NATURAL TREATMENT SYSTEM prepared for the City of Ontario and submitted to the SWRCB (Stantec Consulting, May 2007)

MILL CREEK WETLANDS PROJECT ASSESSMENT AND EVALUATION PLAN (PAEP) prepared for the City of Ontario and submitted to the SWRCB (Stantec Consulting, January 2007)

EXPANDED INITIAL STUDY/ MITIGATED NEGATIVE DECLARATION prepared for the City of Ontario for the Mill Creek Wetlands Recreation and Restoration Demonstration Project (Vandermost Consulting Services, Inc., December 2008)

DRAFT ENVIRONMENTAL ASSESSMENT (EA) – FINDING OF NO SIGNIFICANT IMPACT (FONSI) prepared pursuant to the National Environmental Policy Act (NEPA) (Vandermost Consulting Services, Inc., July 2010)

AIR QUALITY ASSESSMENT prepared for the City of Ontario (Investigative Science and Engineering, November 18, 2008)

BIOLOGICAL RESOURCE ASSESSMENT prepared for the City of Ontario (Vandermost Consulting Services, Inc., December 18, 2008 – draft rev June, 2010)

CULTURAL RESOURCE INVENTORY prepared for the City of Ontario (Stantec Consulting, November 20, 2008)

GEOTECHNICAL REPORT, MILL CREEK WETLANDS RECREATION AND RESTORATION DEMONSTRATION PROJECT prepared for the City of Ontario (Geosyntec, December 2008)

EXISTING AND PROPOSED CONDITIONS RELATED TO SCOUR prepared for the City of Ontario (Geosyntec, December, 2008)

PHASE I ENVIRONMENTAL SITE ASSESSMENT (ESA) prepared for the City of Ontario in accordance with the American Society Testing and Materials (ASTM) Standard E 1527-05, *Standard Practice for Environmental Assessments: Phase I Environmental Site Assessment Process* (Geosyntec, November 24, 2008)

CONCEPTUAL HYDROLOGIC AND HYDRAULIC PROJECT DESIGN AND FUNCTION prepared for the City of Ontario (Geosyntec, December 12, 2008)

CUCAMONGA CHANNEL/MILL CREEK DIVERSION FLOW HEC-RAS ANALYSIS prepared for the City of Ontario (AECOM, dated December 11, 2008)

EXISTING AND PROPOSED SURFACE WATER QUALITY prepared for the City of Ontario (Geosyntec, December 9, 2008)

EXISTING AND PROPOSED CONDITIONS RELATED TO SCOUR prepared for the City of Ontario (Geosyntec, December, 2008)

TRIP GENERATION ANALYSIS AND TRAFFIC ASSESSMENT prepared for the City of Ontario (Linscott, Law & Greenspan, Engineers, December 8, 2008)

DRAFT SUMMARY OF GROUNDWATER ANALYTICAL RESULTS prepared for the City of Ontario (Geosyntec, June 2009)

Supporting Regional Plans:

USACE PRADO BASIN MASTER PLAN

THE CHINO PRESERVE SPECIFIC PLAN

THE CITY OF CHINO URBAN BUFFER PLAN TRAIL CONNECTIONS

THE COUNTY OF SAN BERNARDINO PLANNED FUTURE TRAIL CONNECTIONS

REGIONAL WATER QUALITY CONTROL BOARD WATER QUALITY OBJECTIVES

F - PROJECT MAP



G - PROJECT TIMING AND PHASING

The proposed project is not part of a multi-phased project complex. All elements of the proposed project are proposed for the IRWM Implementation grant funding.

Part Two - Proposed Work Tasks

A - BUDGET CATEGORY (a): DIRECT PROJECT ADMINISTRATION COSTS

Task 1: Administration

Project Administration – Progress, budget, and schedule tracking, evaluation, and management.

Project Communications / Public Relations Program – Agency, stakeholder, and community / business outreach, project communications tools, emergency contact list and procedures, project roles & responsibility matrix.

Grant Administration Program – Management of Grant Agreement, reporting format and schedule management for Grant deliverables.

Deliverables: Preparation of invoices, and other deliverables as required.

Status: Current efforts are focused towards Project Administration components. Project Communications and Grant Administration Program are anticipated to be addressed during the development of the Project Construction Documents and Grant Agreement Execution.

Task 2: Labor Compliance Program

Labor Compliance Program Development – Definition of current DIR labor classifications with construction trades required for project, Agency review organization, reporting requirements to meet City of Ontario requirements, State and Federal Requirements.

Construction Documents Labor Compliance Program – Define labor compliance reporting methodology and enforcement including certified payroll review, labor benefits formats, interview schedule.

Labor Compliance Program – Preparation, Submission, and review of Program to Department of Water Resources.

Deliverables: Submission of Labor Compliance Program.

Status: Labor Compliance Program is anticipated to be addressed during the development of Project Construction Documents.

Task 3: Reporting

Project Public Relations / Community Outreach – Agency coordination, community outreach, public workshops (as necessary), project communications & tracking of issue resolution.

Project Status Report – Progress, budget and schedule tracking, project status evaluation and recommended actions.

Labor Compliance Report – Certified Payroll review, Labor Benefits compliance, Labor Interviews, Enforcement issues. (Monthly & Final Reports)

Construction Management Report – Construction Operations, Progress, Schedule and Budget Impacts, Issues, Change Orders, Claims. (Monthly & Final Reports)

Construction Storm Water Compliance Report

Grant Administration Report (Quarterly, Annual & Final Reports)

Deliverables: Submission of quarterly, annual, and final reports as specified in Grant Agreement.

Status: Project Reporting currently underway for completion of Environmental Documents and Permitting. Additional Project Reporting anticipated at the development of each task based on the project schedule.

B - BUDGET CATEGORY (b): LAND PURCHASE/EASEMENT

- US Army Corps Out Grant Application and Easement – US Army Corps of Engineers to provide and Out Grant Application to the City of Ontario for a minimum term of 50 years (initial term of 25 years with an automatic renewal of 25 years). Agreement terms are broadly defined with final details, agreement language, and associated supporting

information such as legal description to be developed following issuance of FONSI under the NEPA Document.

- City of Ontario / San Bernardino County Parks Department Lease Assignment – City of Ontario and County of San Bernardino Parks & Recreation Department MOU to be developed under the outlined terms of the US Army Corps Out Grant Application and Easement as San Bernardino County Parks Department currently holds a lease for the use of Federal land. The MOU terms are broadly defined with final details and agreement language to be developed following final terms for the Out Grant Application and Easement.
- Private Landowner Easements – Private landowners at forebay and outfall to provide easements to the City of Ontario for the drainage of the Project as well as temporary construction access. Agreement terms to be developed in conjunction with Out Grant Application and Easement.
- Temporary Construction / Access Easements – Temporary construction and access agreement to be developed following completion of Construction Documents and Out Grant Application and Easements.
- Southern California Edison Facilities Relocation Agreement – City of Ontario to develop a Work Order for permanent relocation of 66KV facilities on Project footprint. Preliminary research indicates minimal rights for SCE facilities on USACE land. Work Order to be prepared following completion of Construction Documents.

Deliverables: Agreements listed above.

Status: Land Purchase / Easements currently under development with primarily and initial focus towards US Army Corps Grant Agreement as basis for remainder agreements. Approval of the NEPA document will initiate completion of all above listed agreements.

C - BUDGET CATEGORY (c): PLANNING/ENGINEERING/ENVIRONMENTAL DOCUMENTATION

Task 4: Assessment and Evaluation

- Biological Study – Sensitive / endangered species and habitat.
- Cultural Study – Native American and other cultural impacts.

- Geotechnical Study – Land formation, geology, ground water.
- Environmental Hazards Study – Phase I evaluation.
- Traffic Study – Traffic and circulation impacts.
- Utility Study – Dry and wet utility availability and impacts.
- Hydrology and Hydraulic Studies – Mill Creek / Cucamonga Creek hydrology and hydraulics including Project performance and operations.
- Aesthetics
- Agriculture – Impacts to agricultural lands.
- Land Use – Consistency with Federal, County, and local regional planning.
- Mineral Resources
- Public Services
- Air Quality / Global Warming
- Noise
- Recreation – Integration into City of Chino and San Bernardino County Parks recreation planning.
- Growth Inducement / Population Study

Deliverables : Technical Studies

Status: All Technical Studies completed for basis of Final Design and Environmental Documentation.

Task 5: Final Design

- Civil Engineering Final Design – Final design addressing grading, underground and storm drainage structures and conveyance systems, energy dissipation, parking lots and recycled water connections.
- Landscape / Irrigation / Recreation Final Design – Final design addressing wetlands, slope, and trail level landscaping, recreation components including irrigation, planting, and interpretive signage.
- Project Specifications

Deliverables: Completion of project plans and specifications at the 90 percent and final level.

Status: Construction Documents completed at a 50% level pending the completion of NEPA Document.

Task 6: Environmental Documentation

- CEQA Document - City of Ontario Lead Agency for Project
- NEPA Document

Deliverables: Approved and adopted CEQA / NEPA documentation.

Status: CEQA Document completed and circulated with public comment. Adoption pending the NEPA public circulation. NEPA Document in final draft preparation in anticipation of public circulation in December 2010 / January 2011.

Task 7: Permitting

- Section 7 Consultation
- Section 1600 Permit (Fish & Game, Fish & Wildlife Service)
- Section 404 Permit
- Section 401 Permit

Deliverables: Section 1600, 404, 401 Permits

Status: Section 7 Consultation initiated by USACE for preparation of Section 1600 and 404 permits. Draft 401 Permit submitted to Regional Board.

D - BUDGET CATEGORY (d): CONSTRUCTION/IMPLEMENTATION

Task 8: Construction Contracting

- Development of Construction Agreement and front end bidding instructions.
- Project Advertisement for Bids & Pre-Bid Conference
- Public Bid Opening
- Evaluation of Bids, Determination of Lowest Responsive Responsible Bidder.
- Contract Award

Deliverables: Advertisement for Bids, pre-bid contractor meeting, evaluation of bids, award contract.

Status: Pending Construction Documents completion.

Task 9: Construction

Project construction includes clearing & grubbing, grading, earthwork movement, creek diversion structure, storm drain conveyance, dry utility relocation, basin discharge structure, landscaping, irrigation, trail system, and parking lot construction.

d. Subtask 9.1 Mobilization and Site Preparation

Mobilization and site preparation including identification of sensitive habitat areas, construction fencing, project survey controls, temporary closure of Chino Corona Road, preparation of earthwork receiving site.

e. Subtask 9.2 Project Construction

Sequence of construction operations based on construction window for flood control facilities and vireo nesting season. Elements of construction are listed below:

- Cucamonga Creek Diversion Structure
- Storm Drain Conveyance to Forebay
- Forebay, Basin, and Outfall Grading
- Dry Utility Relocation of 66 KV Lines to Chino Corona Road
- Basin Discharge Structures
- Landscape and Irrigation Installation
- Trail System
- Parking Lot

f. Subtask 9.3 Performance Testing and Demobilization

Project performance testing includes primarily plant establishment monitoring and maintenance prior to full demobilization. Remainder performance testing is outlined under Environmental Compliance below.

**E - BUDGET CATEGORY (e): ENVIRONMENTAL COMPLIANCE/MITIGATION/
ENHANCEMENT**

Task 10: Environmental Compliance/Mitigation/Enhancement

Environmental Compliance is focused towards short term water quality results from dry weather flows and mitigated as well as non mitigated habitat establishment. Long term Environmental Compliance will be addressed through long term dry and wet weather storm water quality testing and reports (401) as well as the Habitat Monitoring Plan (1600).

F - BUDGET CATEGORY (f): CONSTRUCTION ADMINISTRATION

Task 11: Construction Administration

Construction Administration includes the following elements:

- Public / Community Outreach (Communications Plan)
- Contract Administration including construction progress monitoring, progress payment processing, change order management, RFI requests, contract document changes, performance and labor bond management
- Inspection, Materials Testing, Quality Control Monitoring
- Construction storm water compliance Monitoring
- Labor Compliance Monitoring

Project G: Cactus Basin (San Bernardino County Flood Control District)

Part One - Introduction

A - GOALS AND OBJECTIVES

The primary objectives of constructing Cactus Basin No. 3 are to reduce local flooding, reduce downstream flooding potential, and to reduce the size and cost of downstream drainage facilities.

Secondary objectives are water quality protection and increases to the groundwater recharge in the basin and subsequent increase to the water supply.

Cactus Basin No. 3, in its existing condition, is considered interim only as it does not have the capacity needed to attenuate the calculated runoff volume of a 100-year storm event. This project will bring the basin to ultimate condition by increasing the depth, capacity, spillway, and outlet structure size.

B - PURPOSE AND NEED

The Rialto Channel System receives most of the storm runoff generated in the City of Rialto and is currently unable to handle the peak flow from a 100-year flood event under existing conditions.

Cactus Basin No. 3 is in line with the IRWMP's comprehensive water strategy. The basin will allow for the reduction of urban runoff and increased conservation. It allows for the use of stormwater as supply water. Future utilization of Cactus Basin No. 3 as a recharge basin could be part of an overall strategy to reduce the need for imported water. Local and downstream residents and businesses will benefit from improved safety as well as improved quality of life due to reductions in flood potential and resultant road closures and flood damage. Additionally, the project will provide for both on-site ecosystem restoration and protection of off-site mitigation land.

C - INTEGRATED ELEMENTS OF PROJECTS

The Cactus Basin No. 3 Project functions hand in hand with several of the other projects proposed for Proposition 84 funding. While its direct beneficiaries mostly reside in the City of Rialto, the project is part of a much larger system of facilities that impacts the Santa Ana River Watershed. While the project's primary function will be to provide the flood protection, it will also alleviate some of the demands for additional water supply as it will have recharge capacity into the basin which will benefit downstream customers. Also, because of the off-site mitigation requirements, the project will provide environmental enhancement by preserving 40 acres of undisturbed land within the Santa Ana River basin in perpetuity.

D - COMPLETED WORK

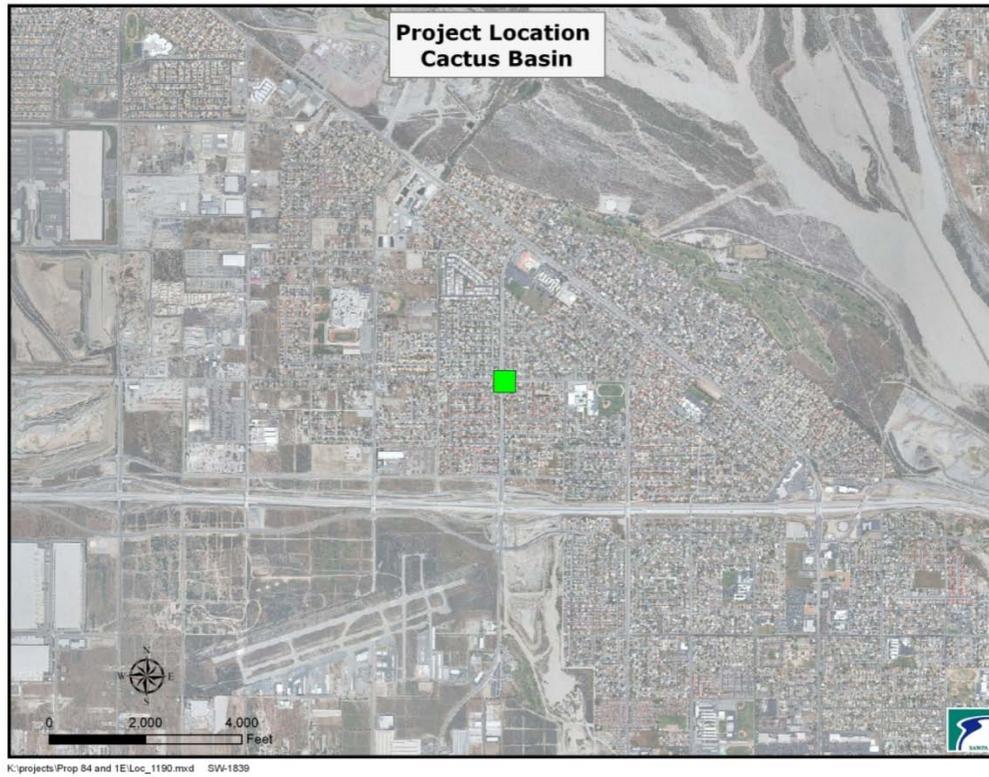
The list of work items already completed includes construction plans, construction specifications, cost estimate, Environmental Impact Report/CEQA (approved by the City of Rialto in October of 1988), and Supplemental Environmental Impact Report and CEQA Facts and Findings (approved by the County Board of Supervisors in December of 2008). Permits that have already been approved include permits 1601 from Fish and Game, and 401 from the Regional Water Quality Control Board.

E - EXISTING DATA AND STUDIES

A variety of studies, reports, and investigations have been performed for the Cactus Basins, including hydrology and hydraulics studies, Comprehensive Storm Drain Plans, etc., as well as reviews by DSOD and California Department of Fish and Game.

The locations of the Cactus Basins was determined in the 1970's as a result of the land being used as a borrow pit.

F - PROJECT MAP



G - PROJECT TIMING AND PHASING

Cactus Basin No. 3 is part of a Rialto Channel Storm Drain system that also includes the Rialto Channel, Cactus Basins 1 & 2 (existing), and the future Cactus Basins 4 & 5.

Currently there are several projects proposed along the Rialto Channel Storm Drain system, including several road crossing improvements, channel capacity improvements, and basin improvements. Because of its location, at the upstream-most segment of the Rialto Channel Storm Drain System, the completion of the Cactus Basin No. 3 improvements will attenuate flows and reduce flooding along the other facilities located downstream. When all projects are completed, the Rialto Channel Storm drain system will provide 100 year storm protection.

Part Two – Proposed Work Tasks

A - BUDGET CATEGORY (a): DIRECT PROJECT ADMINISTRATION COSTS

Task 1: Administration

Administration costs associated with this project include the following:

- Planning and preliminary design - Zone Advisory Committee meetings, drainage reports, meetings with City of Rialto and City of Rialto RDA.
- Preparation of MOU's and Agreements with the City of Rialto and City of Rialto RDA
- Construction contract advertising
- Approval and award of contract by Board of Supervisors
- Surveying - preliminary, construction, and as-built surveying
- Construction contract administration/construction inspection
- Contract administration - preparation of invoices and performance reports as required

Deliverables: Preparation of invoices and other deliverables as required.

Task 2: Labor Compliance Program

The County of San Bernardino Public Works Department/Flood Control District will comply with the labor compliance requirements as stated in the Propositions 84 & 1E IRWM Guidelines, Section IV. General Program Requirements, D. Labor Code Compliance. These guidelines require that "the body awarding a contract for a public works project financed in any part with funds made available by Proposition 84 to adopt and enforce a labor compliance program pursuant to California Labor Code 1771.5(b).

The Labor Compliance Program may include confirming receipt of certified payrolls from the contractor and subcontractors working on this project.

Deliverables: Submission of Labor Compliance Program

Task 3: Reporting

The County of San Bernardino Public Works Department/Flood Control District will comply with the reporting requirements as agreed to in the Grant Agreement.

Deliverables: Submission of quarterly, annual and final reports as specified in the Grant Agreement.

B - BUDGET CATEGORY (b): LAND PURCHASE/EASEMENT

This project requires no land purchases or easements because the land was already owned by the Flood Control District since at least 1993.

C - BUDGET CATEGORY (c): PLANNING/ENGINEERING/ENVIRONMENTAL DOCUMENTATION

Task 4: Assessment and Evaluation

Various studies have been performed regarding the hydrology and hydraulics related to this project and Rialto Channel downstream of the basins.

Deliverables: Technical studies

Task 5: Final Design

Construction plans, project specifications and special provisions, and cost estimates have been prepared and will be provided as part of the application package.

Deliverables: Completion of project plans and specifications at the 90 percent and final level.

Task 6: Environmental Documentation

The CEQA document was prepared and approved by the City of Rialto in 1988. Because of the time lapse since approval of the original document and the need to comply with current standards, the District approved and approved a supplement to the CEQA document in December of 2008. We will provide a copy of the documentation.

Deliverables: Approved and adopted CEQA/NEPA documentation

Task 7: Permitting

Permits 1601 from Fish and Game and 401 from the Regional Water Quality Control Board have been approved. Permits still pending approval include the 404 from the Army CORPS of Engineers and the Section 10(a) from the US Fish and Wildlife service.

We will provide copies of completed documents as approval is received.

Deliverables: Completed permits

D - BUDGET CATEGORY (d): CONSTRUCTION/IMPLEMENTATION

Task 8: Construction Contracting

Once all permits are approved and funding is finalized, the District will advertise the project for construction bids. During the bid process, the District will schedule at least one pre-bid meeting which may or may not be on-site to discuss the project with plan holders. Once bids are received and opened, the District will evaluate a number of the lowest bidders to ensure that the apparent low bidder has complies with all the language in the contract documents to ensure they have submitted a responsive bid. Once the lowest, responsive bid is determined, the District will submit the project to the Board of Supervisors for award of contract.

Deliverables: Advertisement for bids; pre-bid contractors meeting; evaluation of bids; award contract

Task 9: Construction

a. Subtask 9.1 - Mobilization and Site Preparation

After award of contract and prior the contractor mobilizing on the project, the District and the contractor will hold a pre-construction meeting to introduce the respective construction and project management teams. Once a Notice to Proceed date has been established, the contractor will be allowed to begin work on the project. Generally speaking, the contractor will bring necessary equipment to the site, secure the site, and set up BMP's in accordance with the approved SWPPP.

b. Subtask 9.2 - Project Construction

The construction project will consist of several major components. Among them are the basin excavation and forming of the sideslopes and access ramps, construction of a 120 foot wide emergency spillway, and construction of interior berms that will be used for groundwater recharge.

c. Subtask 9.6 - Performance Testing and Demobilization

Once the project is completed, the contractor will be required to demobilize from the site. This will entail removing all equipment, security fencing and appurtenances, and all temporary MP's. Per the construction documents, the contractor will also be required to provide a one year warranty on the project to ensure that is free of any defects.

**E - BUDGET CATEGORY (e): ENVIRONMENTAL COMPLIANCE/MITIGATION/
ENHANCEMENT**

Task 10: Environmental Compliance/Mitigation/Enhancement

As part of the permit requirements, the District will be re-vegetating approximately 0.8 acres within the project site with native plant material. The use of native plant material will allow the vegetation to propagate with little or no maintenance. Also, because of the loss of sage scrub that would have existed on the once undisturbed site, approximately 40 acres (erroneously reported as 20 acres in the initial submittal to SAWPA) of mitigation land will be perpetually preserved off site. Potential mitigate land sites include Lytle Creek, San Sevaine Creek, and Cucamonga Creek.

F - BUDGET CATEGORY (f): CONSTRUCTION ADMINISTRATION

Task 11: Construction Administration

Construction administration will be performed by the Department of Public Works' Contract Administration Division. A resident engineer will be assigned to the project to ensure the contractor complies with all the requirements in the contract documents and to assist with any engineering challenges that arise out of the construction activities. A full time inspector

will be providing support to the resident engineer and overseeing the day to day construction activities. Office support staff will also be available.

Budget:

A. **Row (a) Direct project Administration Costs**

Administrative tasks such as drafting and maintaining contracts, Board items, the project budget. This task also includes coordinating between various other agencies which have an interest in the project, such as the City of Rialto. **Row (b) Land Purchase/Easement**
Not applicable.

B. **Row (c) Planning/Design/Engineering/Environmental Documentation**

This task includes the full development of the project plans, specifications, and construction cost estimate, as well as procurement of all required permits. Ancillary tasks included verification of District right of way (no procurement or easements required), environmental studies to support the requirements of the various permits, and field investigations of the site. The District does not maintain records of costs incurred per the design stages discussed above. The tasks under budget category C are approximately 98% complete and the District is not seeking reimbursement for such tasks **Row (d) Construction/Implementation**

Construction cost estimate for project. **Row (e) Environmental Compliance / Mitigation/ Enhancement**

Revegetation of 0.8 acres at the project site. Landscape work will occur concurrently with the construction of the project as it will part of the same contract

C. **Row (f) Construction Administration**

This task includes the cost to administer the construction of the project. Since it is only an estimate at this time, the District has practice of budgeting 15% of the construction contract cost for the administration of the project **Row (g) Other Costs**

This task includes incidental costs associated with the project, such as Counsel review of various documents, and reproduction services.

D. **Row (h) Construction/Implementation Contingency**

This task sets aside funds in the case there is a project cost over-run. Since it is only an estimate at this time, the District has practice of budgeting 10% of the construction contract cost for contingencies.

Project H: Inland Empire Brine Line Rehabilitation and Enhancement (Santa Ana Watershed Project Authority)

Part One – Introduction

The Santa Ana Watershed Project Authority (SAWPA) was formed in 1972 to plan and build facilities to protect water quality in the Santa Ana River Watershed. SAWPA is a Joint Powers Authority (JPA) comprised of five (5) member agencies: Eastern Municipal Water District (EMWD), Inland Empire Utilities Agency (IEUA), Orange County Water District (OCWD), San Bernardino Valley Municipal Water District (SBVMWD), and Western Municipal Water District (WMWD).

SAWPA owns either capacity rights in, or owns outright approximately 93 miles of pipeline referred to as the Santa Ana Regional Interceptor (SARI) Brine Line. The SARI was initially constructed to provide for highly saline, non-domestic discharges in order to protect the inland water quality in the upper Santa Ana River Watershed.

A portion of the SARI Lower Reach IVB Brine Line was installed in the 1980's and was constructed of unlined, sacrificial reinforced concrete pipe (RCP). The section of Lower Reach IVB Brine Line begins at Prado Dam and extends a distance of approximately 16,000 linear feet (3.0 miles). This section of pipe is 36-inches in diameter and is within the water conservation pool impact area.

Core samples and subsequent condition assessment report completed by Krieger & Stewart in 2004 recommended that SAWPA consider rehabilitation of these pipelines to extend their service life. The rehabilitation to the pipeline is also necessary to meet the new loading conditions created by raising the height of Prado Dam and to restore the diminished capacity of the Lower Reach IVB Brine Line. A recent project completed by the U.S. Army Corps of Engineers (ACOE) has raised the height of Prado Dam by approximately 28 feet. Over the next 30 years, the sediment deposition behind the dam is expected to rise 20 feet.

A technical memorandum was completed by RBF Consulting in 2008 to evaluate options to rehabilitate or relocate the pipeline. It was recommended to rehabilitate the Reach IVB Brine Line with a segmental slip-liner pipe designed specifically to increase the hydraulic capacity of the pipeline and meet the loading conditions imposed by the operation of Prado Dam.

A Preliminary Design Report (PDR) was completed by RBF Consulting in September 2009. The PDR addressed the severe deterioration of the Lower Reach IVB Brine Line impacting both the structural integrity of the pipeline and the diminishing hydraulic capacity. The PDR addresses the rehabilitation strategies, project issues and costs, and presents a recommended work plan to address the Lower Reach IVB Brine Line unlined reinforced concrete pipe.

The project as designed will increase the capacity of the Lower Reach IVB Brine Line by an additional 4.0 MGD. This additional Brine Line capacity will allow greater groundwater desalting capacity in the Inland Empire. The desalination process produces a local source of potable water by taking unusable groundwater and treating through a reverse osmosis process. The treated water is served to the local communities and the unusable portion or brine is disposed of through the Brine Line. The Brine Line is the only cost effective alternative to remove brine from the watershed. Without the Brine Line there would not be groundwater desalination in the Inland Empire. The additional capacity in the brine line from the project will allow an additional 30,000 tons per year of salt removal from the watershed based on the current brine TDS.

A - GOALS AND OBJECTIVES

To sustain the viability of the SARI line by extending the useful life of lower Reach IVB Brine Line an additional 50 years. To sustain the water quality of the Santa Ana River Watershed through the use of the SARI line by increasing its capacity and the protection of the environment by reducing the risk of a catastrophic failure of the SARI line as it comes to the end of its useful life. Specifically, the project will provide a new water supply of 23,295 acre-feet per year and remove 30,000 tons per year of salt from the watershed.

B - PURPOSE AND NEED

The Project as designed will eliminate the effect of the on-going structural deterioration of the unlined RCP, reduce the risk of a catastrophic failure in the environmentally sensitive Prado Basin, increase the hydraulic capacity of the pipeline to allow greater Brine discharge to the Brine Line and provide the structural support to meet the loading conditions imposed by the increased flood storage capacity at Prado Dam. Through the construction of a new pipeline the project extends the useful life of the Lower Reach IVB Brine Line an additional 50 years.

C - INTEGRATED ELEMENTS OF PROJECTS

The SARI Brine Line is a network of approximately 73 miles of pipeline located in the Upper Santa Ana Watershed. The Brine Line conveys primarily non-reclaimable, high saline effluent from groundwater desalters, power plants, and other industries which cannot discharge to municipal wastewater treatment plants due to the quality of their effluent.

The Reach IVB Brine Line provides service to users in the Eastern Municipal Water District (EMWD), and Western Municipal Water District (WMWD) areas. Groundwater desalters discharging to the Reach IVB Brine Line produce approximately 25 million gallons of potable water per day. In addition, the Brine Line accepts discharges from various power plants in the Inland Empire area. Without the Brine Line, the Inland Empire would have to rely more on importing their water and the power plants would be forced to haul their cooling effluent outside of the Inland Empire. The Brine Line also provides emergency connections to several wastewater treatment plants in the Inland Empire. These emergency connections provide a valuable redundancy system for municipalities, thus saving them millions of dollars from not having to construct additional treatment facilities and preventing uncontrolled discharges of untreated wastewater to water ways. Through the use of these permitted emergency connections to the brine line closures of water ways to the public are eliminated or greatly reduced.

The Brine Line is a valuable tool to achieve a salt-balanced watershed and protect valuable water resources and wildlife in the Santa Ana Watershed. In addition, the Brine Line provides economic incentives for businesses in the Inland Empire; without the Brine Line, businesses would be forced to haul their waste at a much larger expense to areas outside the Inland Empire.

D - COMPLETED WORK

The following is a description of the work that has been completed:

CEQA – COMPLETE May 2009

In May 2009 the SAWPA Commission Certified the Environmental Impact Report for the Project and adopted the following documents, all included as part of the Final Environmental Impact Report: CEQA Statement of Findings, Statement of Overriding Considerations, Mitigation Monitoring and Reporting Program, and Decision Regarding No Recirculation of the Environmental Impact Report.

“The CEQA Statement of Findings” provides a summary of the environmental effects identified in the EIR and the proposed mitigation measure to reduce the impacts to a level “Less than Significant.”

“The Statement of Overriding Considerations” identifies those environmental parameters which would be significantly impacted, even after application of all feasible mitigation identified as part of the Environmental Impact Report. Specifically, significant impacts to the following resources are identified: 1) short-term construction impacts to air quality; 2) short-term cumulative impacts to air quality; and 3) potential conflicts with the adopted Western Riverside County Multi-species Habitat Conservation Plan (MSHCP.)

Short-Term (Construction) Impacts to Air Quality and Short Term Cumulative Impacts to Air Quality: Activities related to construction of the Project would exceed the SCAQMD daily emission thresholds for regional NOX for all three repair options for all three pipelines, Reach IV-B partial realignment option, and the Simultaneous Repairs Option after implementation of all feasible mitigation measures. Activities related to construction of the Project would exceed the SCAQMD daily emission thresholds for regional ROG for the simultaneous repairs of all three reaches including the Reach IV-B partial realignment option after implementation of all feasible mitigation measures. Therefore, construction of the Project would have a significant and unavoidable impact on regional air quality. Construction emissions would not exceed the SCAQMD significance threshold for SO₂, CO, PM₁₀, and PM_{2.5}.

Implementation of the proposed project would include construction activities, which could potentially result in periodic exceedances of South Coast Air Quality Management District (SCAQMD) standards. The existing regional air quality surrounding the proposed project site exceeds SCAQMD standards and is classified at a non-attainment status. As such, with or without implementation of the proposed project, impacts to air quality will continue to occur. Furthermore, although compliance with SCAQMD rules and regulations would reduce construction-related impacts for the Simultaneous Repairs Option, impacts would be significant and unavoidable for ROG emissions. Therefore, it can be reasonably inferred that the Project-related construction activities, in combination with those from other projects in the area, would deteriorate the local air quality and lead to a cumulative short-term construction-related impact. As such, a requirement for the proposed project to mitigate for existing air quality impacts in the

South Coast Air Basin is infeasible due to the size of the air basin which covers all of Orange County and most of Riverside, Los Angeles, and San Bernardino Counties.

Impacts to Biological Resources Habitat Conservation Plans: The proposed Project occurs within the Prado Flood Control Basin and within the portions of Cell Groups A and B that are identified for conservation in the MSHCP. The proposed Project is not consistent with the conservation goals of these cell groups, but it does not inhibit the long-term preservation goals of the MSHCP. SAWPA is not a permittee in the MSHCP, and therefore, SAWPA will likely have to obtain “Take” authorization for listed species and the critical habitat of these species through individual consultation, and not through the “Take” authorized in the MSHCP. As such, significant impacts have been identified and mitigation measures will be required to reduce potential impacts. However, unless SAWPA becomes a permittee in the MSHCP, it will remain in conflict with the adopted HCP and potential impacts will remain significant.

OVERRIDING CONSIDERATIONS WARRANTING PROJECT APPROVAL DESPITE REMAINING SIGNIFICANT IMPACTS TO AIR QUALITY AND BIOLOGICAL RESOURCES

As identified above, this project has significant and not fully mitigated effects relating to air quality impacts associated with short-term construction impacts and impacts to biological resources as a result of potential conflicts with an approved MSHCP. The mitigation measures and project alternatives identified in the FEIR are infeasible in accordance with CEQA Section 21081 and CEQA Guidelines Section 15091 to fully mitigate these impacts as detailed above.

However, the Commission has weighed the benefits of the proposed SARI pipeline repairs upstream of Prado Dam against the identified unavoidable environmental risks and impacts in determining whether to approve the project. The Commission finds that the project will provide specific economic, social, and public safety benefits which outweigh the unavoidable environmental impacts of the project, such that those impacts are considered acceptable. With approval of the project, these benefits are:

Finding of Economic Benefit

1. Construction of the SARI pipeline repairs would result in construction jobs, including highly skilled civil engineering jobs, for the region, which would help support the local economy. The project includes repairs to approximately 11 miles of pipeline which would provide a substantial amount of work for construction crews.
2. Construction of the SARI pipeline repairs would ensure continued operation of the pipeline for SARI customers with reduced risk of having to shut down operations due to pipeline failures. Reliability of the SARI pipeline is important for customers who need to maintain consistent operations for their own business needs.

Finding of Social Benefit

1. Reducing the risk of a catastrophic failure of the pipeline within the basin area reduces the potential need for emergency clean-up actions within the basin. Emergency clean-up actions could cost a substantial amount of money, require a premature release of water from the conservation pool, and require SARI customers to halt or minimize their operations to avoid releasing more untreated brine water into the basin.
2. The proposed project provides mitigation that would remove invasive plant species from the Prado Basin. The Basin serves as large area of natural habitat for several endangered animal species. Preserving natural habitat is critical to the long term viability of the sensitive species in the region.
3. The proposed pipeline repairs would reduce the risk of a catastrophic failure of the pipeline within the basin area. The release of untreated brine water into the basin and the Santa Ana River would adversely impact sensitive plant and animal species in an area that is known to support animal species that are recognized federally listed endangered species.

Finding of Public Safety Benefit

1. The proposed pipeline repairs would reduce the risk of a catastrophic failure of the pipeline within the basin area which would reduce the risk of human exposure to untreated brine water in the Prado Basin and the Santa Ana River downstream from the Prado Dam.

The SAWPA Commission specifically finds that any one of the benefits detailed above is sufficient, standing alone, to justify approval of the SARI Repairs Upstream of Prado Dam (Reaches IV-A and IV-B) in accordance with State CEQA Guidelines Sections 15092 and 15093 and CEQA Section 21081.

Documents related to these findings are available for review at the Santa Ana Watershed Project Authority, 11615 Sterling Avenue, Riverside, CA 92503.

The SAWPA Commission has adopted Findings Regarding Significant Effects for the above project, which identify that certain significant effects of implementing the project are unavoidable, even after incorporation of any feasible mitigation measures. The Commission finds that the remaining unavoidable significant effects are acceptable due to each of the specific economic, legal, social, technological or other benefits which will result from the approval and implementation of the project, as described above. All of these benefits are based on the facts set forth in the Findings Regarding Significant Effects, the Final EIR, and the record of proceedings for this Project. Each of these benefits is a separate and independent basis that justifies approval of the project, so that if a court were to set aside the determination that any particular benefit will occur and justifies project approval, the Commission determines that it would stand by its determination that the remaining benefits are sufficient to warrant project approval.

“The Mitigation Monitoring and Reporting Program” identifies the mitigation measures proposed as part of the EIR process and provides a mechanism to ensure that mitigation is implemented and monitored as proposed.

“A Decision Regarding No Recirculation of the EIR” is included considering that no comments were received during the public comment period that would require adding significant new information to the Draft Environmental Impact Report.

PRELIMINARY DESIGN REPORT(PDR) – COMPLETED SEPTEMBER 2009

The PDR addresses the rehabilitation strategies, project issues and costs, and presents a recommended work plan to address the SARI Lower Reach IVB unlined reinforced concrete pipe.

REQUEST FOR PRE-QUALIFICATION OF CONTRACTORS – COMPLETED AUGUST 2009

Due to the special requirements and nature of this project, SAWPA has determined that prequalification of prospective bidders is necessary to ensure that bidders have the requisite experience and financial liquidity to complete a job of this magnitude and complexity. In July 2009, SAWPA issued a Request for Prequalification to identify prospective contractors who are most qualified to compete for the project. Only those contractors deemed appropriately qualified in large diameter sewer pipeline rehabilitation using live flow slip-lining processes in accordance with the pre-qualification selection process will be allowed to submit a bid for the project. Bids received from firms who have not been prequalified for the Project will not be considered. In November 2009, the SAWPA Commission approved the list of pre-qualified contractors for the project.

CONTRACT DOCUMENTS FOR SITE CLEARING – REACH IVB – COMPLETED JULY 2010

The slip-lining work in the environmentally sensitive Prado Basin includes the clearing of about 5 acres of endangered species habitat for 10 work areas, and an additional 10-foot widening of the existing access road. The work areas are necessary to access the old pipe and install the access pits that are used to insert the new pipe inside the existing pipe. This construction contract is open to all qualified contractors and not limited to the previously approved list of Pre-Qualified Contractors.

CONTRACT DOCUMENTS FOR SLIP-LINING REACH IVB – COMPLETED NOVEMBER 2010

The project documents for construction were completed in November 2010.

E - EXISTING DATA AND STUDIES

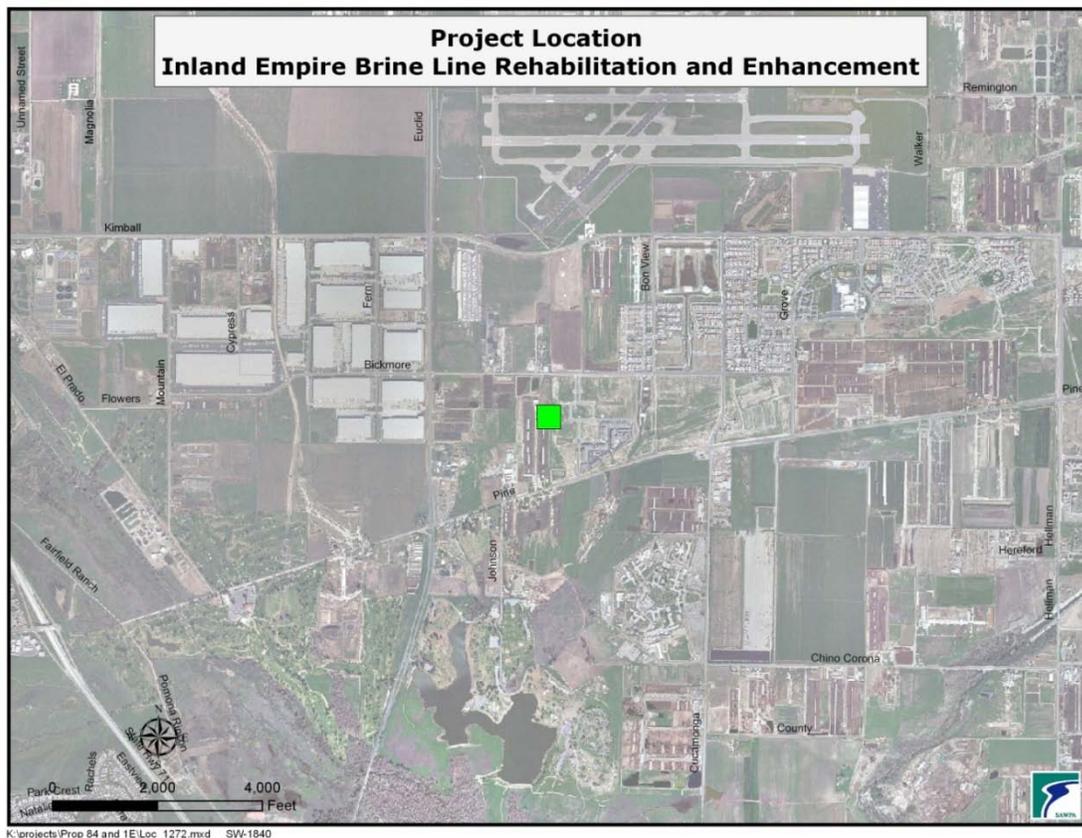
Core samples and subsequent condition assessment report completed by Krieger & Stewart in 2004 recommended that SAWPA consider rehabilitation of the Lower Reach IVB Brine Line to extend their service life.

A technical memorandum was completed by RBF Consulting in 2008 to evaluate options to repair or relocate portions of Lower Reach IVB Brine Line. It was recommended to rehabilitate the lower portion of Reach IVB Brine Line with a segmental slip-liner pipe designed specifically

to meet the loading conditions imposed by the operation of Prado Dam and to extend the useful life of the pipeline.

A Preliminary Design Report (PDR) was completed by RBF Consulting in September 2009. The PDR addresses the rehabilitation strategies, hydraulic constraints and diminished capacity of the Lower Reach IVB Brine Line, project issues and costs, and presents a recommended work plan to address the Lower Reach IVB Brine Line unlined reinforced concrete pipe. Section 4.1.1 documents the increased capacity of 4.0 MGD in the Lower Reach IVB Brine Line. Current and planned desalting projects show a brine disposal need of 7.04 MGD by 2015, 3 MGD by 2020 and an additional 3 MGD by 2025. Based on the diminished capacity of Reach IVB Brine Line and the current and planned desalting projects, the Reach IVB Brine Line will be at capacity sometime between 2015 and 2020. The SAWPA Salinity Management Plan, Section 6.5 and the EMWD Brine Management System Basis of Design Report, Section 2 documents the brine disposal needs through 2025.

F - PROJECT MAP



G - PROJECT TIMING AND PHASING

Construction plans and specifications for the project are complete. Award of a construction contract is anticipated in January 2011. Construction will commence in February 2011. The completion date for the project is November 2012.

Current and planned desalting projects show a brine disposal need of 7.04 MGD by 2015, 3 MGD by 2020 and an additional 3 MGD by 2025. The increased capacity of the Reach IVB Brine Line due to the project will be utilized beginning sometime in 2015 and be fully utilized by 2025

Part Two – Proposed Work Tasks

A - BUDGET CATEGORY (a): DIRECT PROJECT ADMINISTRATION COSTS

Task 1: Administration

SAWPA will perform the following administrative activities; administer contracts with design engineers and construction contractors, perform project accounting and perform project reporting

Deliverables: Preparation of invoices and other deliverables as required.

Task 2: Labor Compliance Program

SAWPA will retain a consultant to perform labor compliance services including labor compliance program administration, meetings with contractors and subcontractors, review and monitoring of certified payroll records for payment of the proper prevailing wage rate, conduct regular random audits of the certified payroll reports and conduct field inspections to confirm proper jobsite postings, interview workers to confirm water rate classification

Deliverables: Submission of Labor Compliance Program

Task 3: Reporting

SAWPA shall prepare and submit quarterly, annual and final reports as specified in the Grant Agreement.

Deliverables: Submission of quarterly, annual and final reports as specified in the Grant Agreement.

B - BUDGET CATEGORY (b): LAND PURCHASE/EASEMENT

SAWPA has an existing easement with the U.S. Army Corps of Engineers to operate, maintain, construct and replace the Lower Reach IVB Brine Line

C - BUDGET CATEGORY (c): PLANNING/ENGINEERING/ENVIRONMENTAL DOCUMENTATION

Task 4: Assessment and Evaluation

Core samples and subsequent condition assessment report completed by Krieger & Stewart in 2004 recommended that SAWPA consider rehabilitation of the Lower Reach IVB Brine Line to extend their service life.

A technical memorandum was completed by RBF Consulting in 2008 to evaluate options to repair or relocate portions of the Lower Reach IVB Brine Line. It was recommended to rehabilitate the lower portion of Reach IVB with a segmental slip-liner pipe designed specifically to meet the loading conditions imposed by the operation of Prado Dam and to extend the useful life of the pipeline.

A Preliminary Design Report (PDR) was completed by RBF Consulting in September 2009. The PDR addresses the rehabilitation strategies, hydraulic constraints, project issues and costs, and presents a recommended work plan to address the Lower Reach IVB Brine Line unlined reinforced concrete pipe.

Deliverables: Condition Assessment Report, Krieger and Stewart, 2004; Technical Memorandum, RBF Consulting, 2008, Final Preliminary Design Report, RBF Consulting, September 2009.

Task 5: Final Design

The final design has recently been completed by SAWPA's design consultant, RBF Consulting. Project design plans and specification at 100 percent completion and as-built drawings will be submitted to DWR upon request and availability.

Deliverables: Project plans and specifications at the 90 percent and final level.

Task 6: Environmental Documentation

In May 2009 the SAWPA Commission Certified the Environmental Impact Report for the Project and adopted the following documents, all included as part of the Final Environmental Impact Report: CEQA Statement of Findings, Statement of Overriding Considerations, Mitigation Monitoring and Reporting Program, and Decision Regarding No Recirculation of the Environmental Impact Report.

Deliverables: Approved and adopted CEQA documentation

Task 7: Permitting

All permits for the project are anticipated to be received by February 2011, including a 1602 Streambed Alteration Agreement from the California Department of Fish and Game, 2081 Incidental Take Permit from DFG, 404 Nationwide Permit from the ACOE, Right of Entry from the ACOE, and a 401 Certification from the Regional Water Quality Control Board.

Deliverables: Section 1602, 2081, 404, ROE, 401.

D - BUDGET CATEGORY (d): CONSTRUCTION/IMPLEMENTATION

Task 8: Construction Contracting

SAWPA issued a notice inviting bids to the list of pre-qualified contractors in November 2010. SAWPA will award construction of the project in February 2011. During the bid phase engineering services include:

- Prepare the pre-bid meeting agenda, prepare for and attend the pre-bid meeting and attend a project site tour, and prepare pre-bid meeting minutes
- Prepare addenda as required

- Respond to bid questions during the bidding period as required
- Attend bid openings and receive and review bids
- Prepare construction contracts for award
- Prepare a conformed document set (drawings, specifications and other required documents) that incorporates the addenda.

Deliverables: Notice Inviting bids; pre-bid contractors meeting agenda and notes; evaluation of bids; award contract.

Task 9: Construction

a. Subtask 9.1 – Mobilization and Site Preparation

Construction crews will mobilize and prepare site for construction activities including installation of temporary bridges to span existing drainage channels; minor site clearing along the access road and within work areas; installation of sound barriers; preparation and submittal of preconstruction video of existing site conditions; and clean and CCTV pipe and remove all debris from pipeline

b. Subtask 9.2 - Project Construction

Construct eight (8) watertight containment basin sections and one (1) closure pit; install 16,000 feet of 30 – inch diameter fiberglass reinforced pipe (FRP) into existing reinforced concrete pipe (RCP); Pressure grout annular space between FRP and old reinforced concrete pipe; construct eight (8) maintenance access structures; and rehabilitate eight maintenance access structures with fiberglass reinforced liner.

c. Subtask 9.6 - Performance Testing and Demobilization

Performance testing of materials, equipment, and facilities will be conducted according to the requirements listed in the plans and specifications, and special provisions provided to the contractor prior to commencement of construction. As soon as project construction has been completed and approved to the satisfaction of SAWPA demobilization will begin.

E - BUDGET CATEGORY (e): ENVIRONMENTAL COMPLIANCE/MITIGATION/ ENHANCEMENT

Task 10: Environmental Compliance/Mitigation/Enhancement

As a result of impacts within USACOE property related to the project, several agencies have required mitigation as a condition of their permits and/or agreements. In order to fulfill these mitigation requirements, SAWPA proposes restoration of native riparian habitat in Prado Basin.

SAWPA, in coordination with USACOE and the U.S. Fish and Wildlife Service, has identified in Prado basin approximately 10.35 acres currently invaded with perennial pepperweed, a State of California class B noxious weed. Perennial pepperweed is a highly invasive plant, and presents a risk of spreading to previously restored mitigation and habitat areas. Restoration of the proposed area will allow SAWPA to comply with mitigation requirements set forth by the U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, and the California Department of Fish and Game.

F - BUDGET CATEGORY (f): CONSTRUCTION ADMINISTRATION

Task 11: Construction Administration

Construction management tasks will include the following:

- Contractor contract administration
- Attend Pre- construction meeting
- Review contractor shop drawing submittals
- Respond to requests for information
- Attend progress meetings and review pay requests
- Inspect construction
- Perform materials testing
- Prepare record drawings
- Contract administration and close out

Project I: Arlington Desalter Interconnection Project (City of Corona)

Part One – Introduction

The Arlington Desalter Interconnection Project aims to improve water supply reliability in the Santa Ana Watershed region by linking existing water sources to increase local water use efficiency and reduce reliance on oversubscribed State water resources. The proposed project will create a two-way inter-tie that will connect an existing portion of the City of Corona Department of Water and Power's (Corona) water system with the Western Municipal Water District's (WMWD) system. This will provide both entities with the ability to mutually benefit one another by exchanging water resources in the event of an emergency, outage or scheduled maintenance.

The proposed interconnection will join existing pipelines in the vicinity of Promenade Avenue in Corona through the installation of a Zone 2 pipeline that will connect Western's Arlington Desalter pipeline to two of Corona's existing pipelines. A Supervisory Control and Data Acquisition (SCADA) system will also be installed at the project site. This will facilitate two-way flow capabilities through meter and valve operations that provide real-time flow information and maximize valve operations. A 25' x 35' concrete masonry building will be constructed to house these facilities as well as provide space for an ammonia storage tank, disinfection equipment and water quality monitoring equipment.

This is a shovel ready project with a construction timeframe of six months. Final design and technical specifications are in the final approval process, CEQA is complete, and all local match funding is secured.

A - GOALS AND OBJECTIVES

The goals and objectives of the Arlington Desalter Interconnection Project are as follows:

- **Improve regional water use efficiency** by constructing a two-way inter-tie connection that will help reduce regional reliance on State Water supplies that are currently experiencing drought shortages;

- **Ensure reliability of the Region's water supply** to commercial and residential customers in Corona and WMWD' wholesale and retail service territories by having the capacity to mitigate water shortages in the event of emergency, service outage or scheduled maintenance;
- **Maximize the use of local/regional water resources** by increasing Corona's capability to furnish 10 million gallons of water per day to WMWD and allowing WMWD to provide 10 million gallons of water per day to Corona through the interconnection;
- **Improve water quality** by helping Corona reduce the amount of total dissolved solids (TDS) in its water by having the ability to receive water furnished by Western with a lower overall TDS count; and
- **Provide a foundation for future connectivity projects** that will link up to the Arlington Desalter interconnection at Promenade Street to help increase local and regional reliability of water resources through decreased reliance on the diminishing State Water supply.

B - PURPOSE AND NEED

Due to State Water Project drought conditions and anticipated State cutbacks on the water supply from Metropolitan Water District (MWD), the City of Corona Department of Water and Power (Corona) and Western Municipal Water District (WMWD) are working together to increase regional water supply reliability and maximize local groundwater resources. The Arlington Desalter Promenade Interconnection is one of the necessary building blocks for WMWD to increase water supply reliability for retail and wholesale customers within its service area. Certain portions of WMWD's retail and wholesale customers are currently dependent upon State Water Project water supplies and are affected by shutdowns or reductions in delivery from that system, whether on an annual basis for routine maintenance or in the event of an emergency.

Corona has a balanced water supply comprised of 56% local groundwater, 34% Metropolitan Water District's (MWD) Colorado River water via Lake Matthews, and 10% of MWD's State Water Project water supply from the Henry J. Mills Treatment Plant. Corona is in a position to help supply WMWD with water resources to ensure reliability in the region. With the funds requested, Corona and WMWD intend to construct an interconnection between the two existing systems at Promenade Avenue in the City of Corona. The interconnection will be between

Corona's Zone 2 and Zone 3 water systems and WMWDs Arlington Desalter system. This will serve the purpose of supplying an additional 10 million gallon per day water supply from Corona to WMWD and a 10 million gallon per day supply from WMWD to Corona, on an as needed basis. This will improve the reliability of both water supply systems while reducing reliance on State Water Project supplies and Colorado River water that are both oversubscribed and in immediate need of integrated regional approaches that help reduce the burden to those systems.

The Arlington Desalter Interconnection Project will assist the region by maintaining a reliable water supply, improving water quality and maximizing water use efficiency. These three outcomes are directly aligned with three of the ten proposed "pillars" associated with the One Water One Watershed Plan, Santa Ana Watershed Project Authority's 2010 Integrated Water Resource Management Plan. These outcomes are also prioritized in WMWD's 2008 Water Use Efficiency Plan and in the City of Corona's 2010 Draft UWRP that is currently in the process of being developed.

C - INTEGRATED ELEMENTS OF PROJECTS

As the State Water Project continues to be at critical levels and Colorado River water is experiencing a shortage in delivery levels to the State of California, many of the proposed One Water One Watershed projects have a common goal of alleviating water shortages and ensuring water reliability in the Santa Ana Watershed region. The proposed Arlington Desalter Interconnection Project will provide an economical, integrated approach to maintaining water supply reliability and solving regional water shortages or outages. This project will benefit both the City of Corona and WMWD by allowing for the transfer of water between both entities through the proposed connection, as needed or in case of emergency.

By extension, the region will benefit from the synergies of water resource planning and sharing at the comprehensive watershed level. The proposed interconnection can be used to resolve water related shortages, emergencies or planned maintenance within WMWD's wholesale and retail service areas because it gives WMWD and its local agencies more water supply alternatives for dealing with Tier 2 drought reductions and their related cutbacks for use of Colorado River and State Water Project supplies. The project will be monitored and evaluated to determine the expected results achieved and to improve future practices for connectivity sites throughout the region. Later projects planned by WMWD will build on this early integration of

water supply systems by constructing interconnections between its Arlington Desalter Pipeline with the Chino Basin Desalter, estimated for 2014, and its La Sierra – Mills system.

D – COMPLETED WORK

Mutual Aid Agreement – Completed:

The Corona DWP and WMWD executed an agreement for the construction of the Arlington Desalter Interconnection Project on October 1, 2008.

CEQA – Completed:

The Arlington Desalter Interconnection Project is shovel ready. WMWD completed the CEQA analysis in 2008 and the Corona City Council filed a Notice of Determination and approved the Mitigated Negative Declaration on May 11, 2009, which determined that the project will not have a significant effect on the environment.

Final Design and Technical Specifications – Completed:

For several months, WMWD and Corona DWP have been working jointly to prepare design plans and technical specifications. These documents are completed. The Corona City Engineer has signed the plans and they are currently being routed to WMWD for final signature. Because both parties have been meeting collaboratively for several months, all design and technical specification work is estimated to be completed by December 2010.

E – EXISTING DATA AND STUDIES

Water reliability is one of the main objectives outlined in WMWD's 2005 Urban Water Management Plan. The proposed project will assist WMWD in reducing reliance on State Water Project and Colorado River Water, which currently comprises a large percentage of WMWD's water supply. It will also provide WMWD with the ability to have an immediately accessible source for water in the event of an emergency or during maintenance; thereby decreasing outage times and ensuring customers have reliable water access.

With the proposed project, Corona's water system will have the ability to deliver up to 10 million gallons per day (MGD) or 11,202 acre feet per year (AFY) into the Arlington Desalter pipeline. WMWD will have the ability to deliver up to 10 MGD to Corona's system. The

proposed inter-tie will help WMWD’s capacity increase initially and will continue to increase as other supplies are developed and connected to the Arlington Desalter pipeline. The most recent review of Corona’s water supply, the “Water Supply Assessment for the Arantine Hills Specific Plan Project Corona, CA” supports Corona’s ability to produce the necessary water needed to match the proposed interconnection capacity. This water supply assessment identified Corona’s unused water supply capacity in excess of 30,000 AFY for Normal and Single-Year Drought conditions from 2010 through year 2030.

F - PROJECT MAP



G – PROJECT TIMING AND PHASING

The proposed Arlington Desalter Interconnection Project is a *stand alone, shovel ready project* with agreements secured between both Corona and WMWD in October 2008 and amended in July 2009. Design is complete with engineering approval and the design plans are currently being reviewed by WMWD with full expectations that WMWD will approve the design plans by the end of 2010. CEQA is complete. The entire project will take six months from start to finish with the requisite components detailed on the Project Schedule. Corona's DWP has a team of expert project managers who have extensive experience overseeing grant funded water projects and will ensure that this project is completed on time and on budget.

Part Two – Proposed Work Tasks

A – BUDGET CATEGORY (a): DIRECT PROJECT ADMINISTRATION COSTS

Task 1: Administration

The City of Corona Department of Water and Power (DWP) staff will provide administrative oversight for the project. Activities will include reviewing grant agreements and contracts, attending meetings, maintaining grant and project files, preparing and processing requests for reimbursements, preparing updates for executive management and the City Council, ensuring grant agreement compliance, coordinating any audit requests and/or examination of records by SAWPA, the State of California, or independent auditors, and maintaining all records for at least three years after the project is closed out. These items will be contributed in-kind by the City.

Deliverables: Preparing Request for Reimbursements, Reconciling Invoices to Reimbursement Requests, Maintaining Project Files, Grant Agreements, Audit Reports, Memos to the File, City Staff Reports, etc.

Task 2: Labor Compliance Program

The City of Corona DWP staff will provide all required Labor Compliance Program information to DWR. This will be contributed in-kind by the City.

Deliverables: Submission of Labor Compliance Program, Memos to the Project File

Task 3: Reporting

The City of Corona DWP staff will provide reports to DWR on a quarterly basis and at the completion of the grant. This will be contributed in-kind by the City.

Deliverables: Submission of quarterly, annual and final reports as specified in the Grant Agreement.

The overall administrative components associated with the proposed project are estimated to cost \$5,760 and will be contributed in-kind by the City. Calculation: One Grant Project Manager for 3 hours per week for 24 weeks = 72 hours x \$80 fully burdened City rate = \$5,760.

B – BUDGET CATEGORY (b): LAND PURCHASE/EASEMENT

Not Applicable. The Arlington Desalter Interconnection Project will be constructed within the City's existing right-of-way on Promenade Avenue.

**C – BUDGET CATEGORY (c): PLANNING/DESIGN/ENGINEERING/
ENVIRONMENTAL DOCUMENTATION**

Task 4: Final Design and Technical Specifications

The Arlington Desalter Interconnection Project Final Design and Technical Specifications were completed and approved in October 2010 by the City of Corona and are currently pending sign off from WMWD. The architect and engineering fees totaled \$77,202 and have already been expended by DWP. (Please see attachment A pages 15-16 for a schematic of the proposed inter-tie connection.)

Deliverables: Completion of project plans and specifications at the final design level.
Estimated completion date December, 2010.

Task 5: Environmental Documentation

WMWD completed the CEQA analysis in 2008 and the Mitigated Negative Declaration was adopted by the Corona City Council on May 6, 2009.

Deliverables: Approved and adopted CEQA Mitigated Negative Declaration. Task completed May 6, 2009.

Task 6: Permitting

National Pollutant Discharge Elimination System (NPDES) permits have been secured. California Department of Public Health (CDPH) operating permits and City of Corona building permits still need to be secured.

The cost associated with the review and approval process of the CDPH operating permit = \$124/hr x 10 hrs for an estimated fee of \$1,240. Building permits will be obtained directly through the City, and therefore have no fees that will be charged to the Department of Water and Power. The permitting costs will be contributed in-kind.

Deliverables: NPDES, CDPH, City Building Permits

D – BUDGET CATEGORY (d): CONSTRUCTION/IMPLEMENTATION

Task 7: Construction Contracting

DWP will develop a Notice Inviting Bids, evaluate bids, and award a contract in accordance with the City of Corona Purchasing Policy and Procedures.

Deliverables: Notice Inviting Bids; pre-bid contractors meeting; evaluation of bids; award of contract by City Council.

The cost for DWP staff to oversee the construction contracting process is calculated as one Project Engineer at \$120 per hour fully burdened rate (wages plus benefits) at 40 hours total = \$4,800. In-Kind Match.

Task 8: Construction

The Arlington Desalter Interconnection Project **construction tasks** are estimated to cost \$780,000 and include the following items:

a. **Subtask 8.1 Mobilization and Site Preparation**

Civil site work will be conducted at the site along with site clean-up and preparation.

b. **Subtask 8.2 Project Construction**

The City of Corona will construct a two-way water supply interconnection including:

1. A Zone 2 pipeline including interior and exterior piping, valves and tie-ins;
2. A water meter to monitor flows;
3. Control valves, SCADA system and chemical feed/ammonia storage tank; and
4. Construct a 25' x 35' concrete masonry unit building to house these facilities.

c. **Subtask 8.3 Performance Testing and Demobilization**

The City of Corona will ensure that the Arlington Desalter Interconnection Project is inspected and tested prior to usage.

The following itemized cost is provided:

<u>Item</u>	<u>Cost</u>
Building	\$150,000
Civil Site Work	\$60,000
Interior Piping, Valves	\$120,000
Exterior Piping, Tie-ins	\$155,000
Chemical Feed and Storage	\$75,000
SCADA/Electrical	\$80,000
Site Clean-up	\$10,000
Sub-Total	<u>\$650,000</u>
20% Contingency	\$130,000
Engineer's Estimate	<u>\$780,000</u>

The total project cost is \$901,908, which is \$780,000 for construction related activities, \$5,760 for in-kind project administration costs, and \$78,442 for planning, design, and engineering work. Grant funds requested total \$400,000. The local match of \$501,908 is a combination of Corona Capital Improvement Program (CIP) 2011-2012 funds and WMWD matching funds.

**E – BUDGET CATEGORY (e): ENVIRONMENTAL COMPLIANCE/MITIGATION/
ENHANCEMENT**

Task 9: Environmental Compliance/Mitigation/Enhancement

The City of Corona filed a Mitigated Negative Declaration for the Arlington Desalter Interconnection Project on May 6, 2009. Minor mitigation measures were made as a condition of the approval of the project which included construction practices to reduce air pollution and minimize construction impacts to water quality, tactics to ensure safe handling of any mineral or archeological objects should they be found on

the site and traffic calming measures. Ensuring compliance for the Mitigation Monitoring Plan is included in budget category (f) below and will be an in-kind contribution from DWP.

F – BUDGET CATEGORY (f): CONSTRUCTION ADMINISTRATION

Task 10: Construction Administration

The City of Corona DWP will oversee the construction administration of the project, which includes monitoring all construction work, conducting on-site inspections throughout construction process, hosting weekly progress meetings with construction Foreman and Project Engineers, reviewing invoices and approving payments for work, ensuring compliance with the Mitigation Monitoring Plan, ensuring compliance with any prevailing wage regulations, testing all components, communicating periodically with WMWD and SAWPA, and ensuring for the safety of the work site as required by law, etc.

The cost for DWP staff to oversee the construction administration is calculated as one Project Engineer at \$120 per hour fully burdened rate (wages plus benefits) at 5 hours per week for 24 weeks = \$14,400. This will be provided as an in-kind match.

Project J: Perris II Desalination Facility (Eastern Municipal Water District)

Part One – Introduction

A - GOALS AND OBJECTIVES

The Project consists of the construction of a new, fully-developed and equipped brackish water well easterly of the City of Perris, near the intersection of Nuevo Road and Menifee Road within the San Jacinto River Watershed, tributary to the Santa Ana River Watershed in Western Riverside County, California. The Project is an element of EMWD's South Perris Desalination Program, which consists of twelve existing brackish water wells, up to seven proposed brackish water wells, two existing desalters, a third proposed desalter, and a brine line for exporting salts from the local area to the Pacific Ocean.

The Project will supply brackish feed water to the existing Menifee and Perris I Desalters located within the Perris Valley, then ultimately supply brackish feed water to the Perris II Desalter (planned to be operational in 2013). The Project, in its programmatic context, will provide a new, local source of potable water supply, and will also provide a TIN/TDS (nitrate and salinity) offset within the Lakeview/Hemet North Groundwater Management Zone (GMZ), rendering that GMZ fully mitigated with respect to both TIN and TDS, thus enabling continued use of recycled water within that zone and tributary zones according to EMWD's Master Reclamation Permit (California Regional Water Quality Control Board, Santa Ana Region, Order No. R8-2008-0008).

The goals and objectives of the Project, in its programmatic context, are to:

- Enhance EMWD's drought preparedness portfolio by:
 - Increasing self-reliance using local groundwater resources, which are more reliable during drought conditions.
 - Increasing efficacy of groundwater basin management of the Perris South, Lakeview/Hemet North, Menifee, and Perris North GMZs.

- Utilizing drought resistant supplies that would otherwise be unusable due to elevated levels of salts.
- Conserve State Water Project (SWP) water from the Sacramento-San Joaquin River Delta (Bay-Delta) by:
 - Reducing EMWD's demand levels of imported water.
 - Substituting imported water with a water supply that is not susceptible to evaporative losses during transport.
- Generate on the order of 700 AF/yr of new water supply (enough water to supply over 1,400 families [over 4,600 people]) that will primarily serve disadvantaged communities.
- Increase efficient use and reuse of local water resources.
- Offset climate change by increasing desalination of local brackish groundwater and enabling increased water recycling, which provides an efficient use of local water resources and is more energy-efficient than imported water supplies, thereby reducing overall greenhouse gas (GHG) emissions.
- Provide a purified water supply from a local source that would not otherwise be usable.
- Improve and protect local groundwater quality and address exceedances of primary MCLs for Nitrate and Perchlorate (45 mg/L and 6 µg/L, respectively).
- Reduce Total Dissolved Solids (salts) in the Lakeview/Hemet North GMZ by roughly 2,000 tons/yr and Nitrate by roughly 8.5 tons/yr.
- Follow the following Ahwahnee principles:
 - Ahwahnee Water Principle 9 - *Ground water treatment and brackish water desalination should be pursued when necessary to maximize locally available, drought-proof water supplies.* (The Project is part of a brackish water desalination program.)
 - Ahwahnee Climate Change Principle 4 - *Climate Action Plans should also include strong water efficiency standards, increased water conservation*

and water recycling strategies guided by the Ahwahnee Water Principles.
(The Project increases water conservation.)

- *Ahwahnee Climate Change Principle 6 - Local governments should lead by example in reducing their own carbon footprint by enacting and implementing policies to reduce GHG emissions from their municipal operations while preparing for unavoidable climate change impacts.* (The Project reduces overall GHG emissions--see above.)
- Protect potable groundwater resources by reducing migration of brackish groundwater into areas of potable groundwater production.
- Comply with the salinity management plan for the San Jacinto River Watershed.

B - PURPOSE AND NEED

EMWD views the use of desalters to make effective, beneficial use of local degraded brackish groundwater supplies as a viable, long-term step in generating new local potable water resources. These efforts were implemented in order to:

- Increase local drought preparedness and mitigation responsiveness;
- Increase reliance on local groundwater and recycled water, decreasing dependence on imported water;
- Increase reliance on local water resources in the event of an emergency (such as an earthquake) that cuts off imported water supplies;
- Supplement water supplies to local communities; and
- Address some of EMWD's ongoing challenges in the Perris Valley including:
 - Intrusion and mitigation of elevated nitrates, perchlorate and TDS;
 - Reduction of imported water demand; and
 - Supplemental supplies for disadvantaged communities.

The above are consistent with the "desalinate groundwater" strategy of the adopted IRWM Plan, and address the following specific goals and objectives of the adopted IRWM Plan:

1. Reliable water supply (by reducing demand for imported water).
2. Preserve/enhance the environment (by reducing groundwater salinity).
3. Promote sustainable water solutions (by increasing efficiency of local groundwater use).
4. Ensure high quality water (by reducing groundwater salinity, nitrate and perchlorate concentrations).
5. Provide economically effective solutions (by reducing demand for imported water).
6. Improve regional integration & coordination (by reducing salinity for all down-gradient water users and by increasing the availability of imported water for regional water users by decreasing EMWD's imported water demand).
9. Maintain quality of life (by increasing local, reliable supply of high-quality groundwater).

The Project would also contribute to the following targets of the adopted IRWM Plan:

1. Recycle and reuse 100% of wastewater (the Project provides a TIN/TDS offset within its GMZ, thus enabling continued use of recycled water within that GMZ).
4. Remove all salt necessary for reuse (the Project is part of a brackish water desalination program).
8. Meet water quality standards (the Project, in its programmatic context, will provide a water supply compliant with all applicable water quality standards).

11. Assure adequate water supply and safe water treatment (the Project will increase the available local water supply).
12. Reduce GHG emissions (the Project will reduce overall GHG emissions-- see above).
13. Increase resource-efficient land use (the substitution of a local water supply for imported water increases efficiency of resource use).

C - INTEGRATED ELEMENTS OF PROJECTS

The Project, in its programmatic context, will contribute to the following synergies or linkages between projects that will result in added value, or will require coordinated implementation or operation:

1. The Project will help to reduce salinity and nutrients for all down-gradient water users by exporting salt and nitrate from the basin.
2. The Project will conserve water from the Bay-Delta by reducing local demand of imported water thereby decreasing evaporative losses during transport.
3. Increase available imported water for regional water users by decreasing EMWD imported water demand.
4. EMWD will coordinate with the members of the Advisory Committee that oversees the implementation of the West San Jacinto Groundwater Management Plan with respect to the operation of the Project and the distribution of groundwater level and quality data obtained thereby.
5. The Project will export salts and nitrate from the basin, allowing for regulatory compliance and continued water conservation through use of recycled water within the watershed.

D - COMPLETED WORK

The following work has been completed:

1. The Environmental review process (CEQA/NEPA) has been completed. An amendment to the Mitigated Negative Declaration for the Perris II Desalter Project specifically covering the Project was adopted by the EMWD Board of Directors on October 20, 2010. The Notice of Determination was filed with the Riverside County Clerk on October 25, 2010. The environmental impacts of the Project were determined to be less than significant when mitigated.
2. Exploratory drilling has been performed, providing geological data for design of the well.
3. Well site property has been acquired.
4. 100% plans and specifications for construction of the well have been completed.
5. The following work is anticipated to have been completed prior to the grant award date:
6. 100% plans and specifications for equipping of the well are expected to be completed by February 2011.

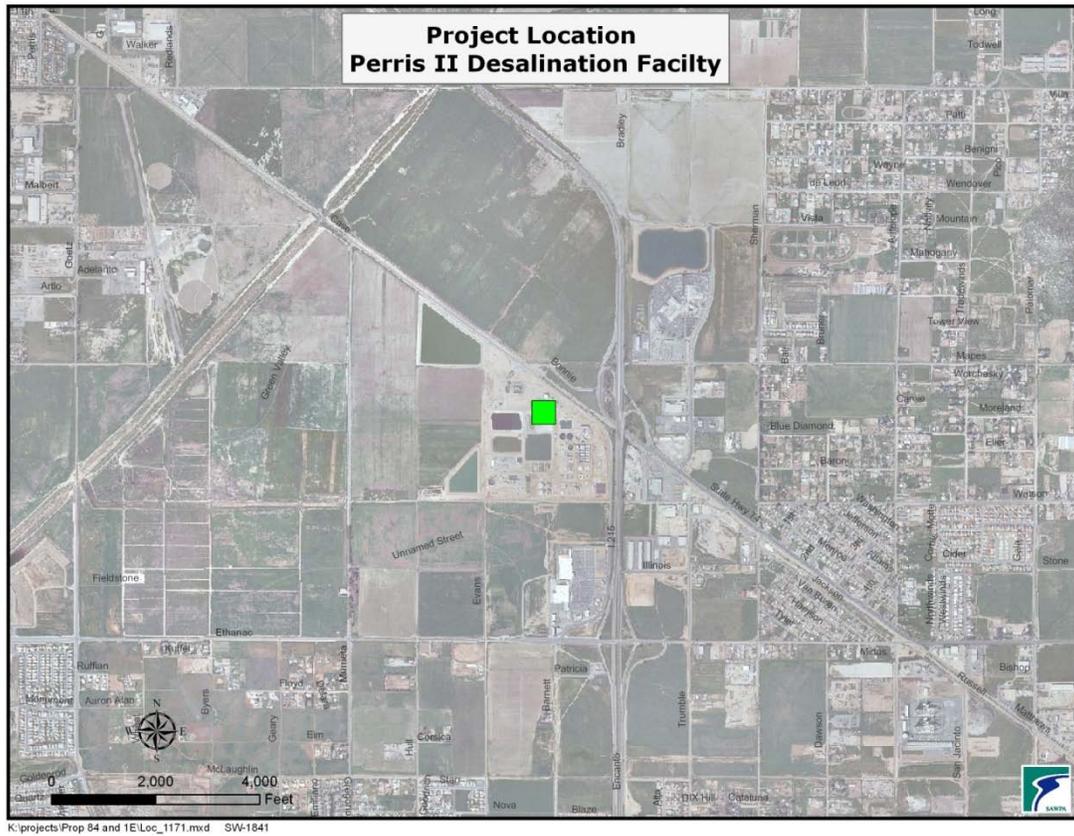
E - EXISTING DATA AND STUDIES

The following data and studies supporting the Project are available:

1. An exploratory drilling report (March 2010).
2. A study was conducted in 2009 to select a suitable well site for purchase.
3. Historic water quality data is available from EMWD Wells in the vicinity.
4. Perris I/Meniffee Desalter Studies:
 - a. Reverse Osmosis Pilot Testing Results and Strategies & Planned Activities to Increase Recovery at Perris Desalination Facility (CH2M Hill, March 30, 2009)

- b. Evaluation of the Impacts of Higher RO Recovery on the Plant Operation and RO Permeate Quality (CH2M Hill, November 13, 2007)
 - c. Summary of Reverse Osmosis Recovery Projections and Anti-scalant Dosages for Various Operational Conditions for the Perris Desalination Facility (CH2M Hill, August 10, 2007)
 - d. Water Quality Summary and Blend Options Analysis for Perris Desalter I Optimization Study (CH2M Hill, July 3, 2007)
5. A CEQA/NEPA Initial Study/Environmental Assessment for the Perris II Desalter was completed in February of 2009. An amendment to same, addressing an increase in design capacity of the Perris II Desalter and the specific location of the supply wells, was adopted in October 2010.
6. A final mitigation plan for recycled water use in the San Jacinto River Watershed for Total dissolved solids (TDS) and Total inorganic Nitrogen (TIN) ("Mitigation Plan for Eastern Municipal Water District's Recycled Water Activities in the San Jacinto Watershed") was submitted to the California Regional Water Quality Control Board, Santa Ana Region, on June 25, 2008. Said mitigation plan evaluates the need for TDS and/or TIN offsets and details the manner by which those offsets will be accomplished, monitored, and reported.

F - PROJECT MAP



G - PROJECT TIMING AND PHASING

Project design is expected to be completed by February 2011, and the well is anticipated to be constructed and equipped by August 2013, assuming funding from DWR occurs by October 2011.

The Project is part of EMWD's Perris Desalination Program, which comprises the Menifee and Perris I Desalters, twelve brackish water wells, planned construction of the Perris II Desalter and up to seven new brackish water supply wells with connecting pipelines, boosting facilities, well-head treatment and monitoring facilities, and other ancillary facilities and equipment.

The Perris II Desalination Facility project will be a reverse osmosis facility with the capacity to treat approximately 7.3 MGD of brackish groundwater and produce approximately 5.4 MGD of potable water. In addition to reducing the TDS to meet the secondary MCL, the process will remove perchlorates and nitrates to meet primary MCLs. The project will treat otherwise unusable brackish water to potable water standards.

The Menifee and Perris I Desalters were constructed in 2001 and have a combined design capacity to produce up to 7.5 MGD of treated brackish groundwater ; however, the Menifee and Perris I Desalters are currently limited to an operation of approximately 12,600 AF/Yr due to the presence of iron and manganese in the supply wells. Iron and manganese pre-treatment facilities have been funded and are currently in EMWD's bidding process.

While the Perris II Desalter is not anticipated to be constructed and operational until September 2013, the Project will be used in the interim to supply the existing Menifee and Perris I Desalters with raw, brackish groundwater and thus help to increase the systems operational capacity in parallel with construction of the iron and manganese pre-treatment facilities.

Part Two – Proposed Work Tasks

Note: Data Management and Monitoring Deliverables identified herein will be consistent with the IRWM Plan Standards and Guidance--Data Management Standard.

A - BUDGET CATEGORY (a): DIRECT PROJECT ADMINISTRATION COSTS

Task 1: Administration

EMWD will perform the following administrative activities with respect to the Project:

- a. Administer contracts with design engineers and construction contractors
- b. Implement recommendations of environmental studies

- c. Perform Project accounting
- d. Perform Project reporting

Deliverables: Invoices and other deliverables as required.

Task 2: Labor Compliance Program

EMWD will utilize existing Labor Compliance Plan 2003.00006 approved by the Department of Industrial Relations.

Deliverables: Labor Compliance Program 2003.00006.

Task 3: Reporting

EMWD will prepare and submit quarterly, annual and final Project Status Reports to SAWPA as specified in the Grant Agreement.

Deliverables: Submission of quarterly, annual and final reports as specified in the Grant Agreement.

B - BUDGET CATEGORY (b): LAND PURCHASE/EASEMENT

A 1.41-acre parcel has been purchased by EMWD for the Project: Riverside County Assessor's Parcel No. 307-210-010.

C - BUDGET CATEGORY (c): PLANNING/ENGINEERING/ENVIRONMENTAL DOCUMENTATION

Task 4: Assessment and Evaluation

A study was conducted in 2009 to select a suitable well site for purchase.

An exploratory drilling report was completed in March 2010.

Deliverables: Exploratory drilling report.

Task 5: Final Design

100% plans and specifications for construction of the well have been completed.

100% plans and specifications for equipping of the well are expected to be completed by January 2011.

Deliverables: 100% plans and specifications for construction of the well. 90% and 100% plans and specifications for equipping of the well.

Task 6: Environmental Documentation

a. Subtask 6.1 - CEQA/NEPA Environmental Review

A CEQA Mitigated Negative Declaration (MND) for the Perris II Desalter was adopted on March 22, 2006, with the U.S. Army Corps of Engineers adopting a Finding of No Significant Impact under NEPA simultaneously. A subsequent MND was adopted on January 21, 2009 to cover an increase in the design capacity of the Perris II Desalter. An amendment to same, addressing an additional increase in design capacity of the Perris II Desalter and the specific locations of the supply wells, was adopted on October 20, 2010. The Notice of Determination for the latter was filed with the Riverside County Clerk on October 25, 2010.

b. Subtask 6.2 - Mitigation

The MND included a number of mitigation measures. The only such mitigation measure pertinent to the Project as described herein is Mitigation Measure IX, pertaining to Noise. Provisions for noise reduction in conformance with Mitigation Measure IX have been included in the specifications for well construction and will be included in the specifications for well equipping.

c. Subtask 6.3 - Tribal Notification

On November 10, 2008, EMWD mailed copies of the Notice of Intent to Adopt a Mitigated Negative Declaration for the Subsequent EA/Initial Study and Mitigated Negative Declaration to the following persons:

James J. Fletcher, Superintendent

Southern California Agency

Bureau of Indian Affairs

U.S. Department of the Interior

Debbie Pilas-Treadway

Associate Governmental Program Analyst

Native American Heritage Commission

John Marcos, Chairman

Santa Rosa Band of Mission Indians

Harrold Arres, Cultural Resources Manager

Soboba Band of Luiseno Indians

Deliverables: Approved and adopted CEQA/NEPA documentation.

Task 7: Permitting

Necessary permits:

- a. County Drilling Permit (to be obtained by drilling contractor)
- b. Waste Discharge Requirements for disposal of development and testing water
- c. Encroachment Permit from County of Riverside Transportation Department
- d. Encroachment Permit from Riverside County Flood Control District (potential)

Deliverables: Permit documentation for each.

D - BUDGET CATEGORY (d): CONSTRUCTION/IMPLEMENTATION

Task 8: Construction Contracting

100% plans and specifications for construction of the well have been completed.

100% plans and specifications for equipping of the well are expected to be completed by February 2011.

Bid solicitation efforts have not yet commenced.

Deliverables: Advertisement for bids; pre-bid contractors meeting; evaluation of bids; award contract.

Task 9: Construction

a. Subtask 9.1 - Driller Mobilization and Site Preparation

- 1) Mobilization
- 2) Site security and installation of temporary fencing
- 3) Installation of noise control barrier walls and other measures as needed to comply with noise suppression requirements

b. Subtask 9.2 - Well Construction

General Standards: DWR Bulletins 74-81 and 74-90

- 1) Installation of 42-inch conductor casing and 50-ft. sanitary seal (ASTM Standards A-569 and C150)
- 2) 12-inch pilot borehole drilling (reverse circulation rotary drilling method)
- 3) Down-hole geophysical logs
- 4) Final borehole reaming (reverse circulation rotary drilling method)

- 5) Caliper log
- 6) Installation of 18-inch ASTM Standard A240, 316L Stainless well casing and shutter screen (currently estimated at 350 feet. Final depth will be determined by field conditions, and may be greater than the currently estimated 350 feet.)
- 7) Installation of tubing, gravel pack and annular seals
- 8) Well development by airlift swabbing and chemical methods
- 9) Well alignment surveys
- 10) Well development by surge pumping

c. Subtask 9.3 - Well Performance Testing, Disinfection, and Demobilization

- 1) Final pumping tests and flow meter survey (spinner log)
- 2) Down-hole well video
- 3) Final well chlorination and capping
- 4) Site cleanup
- 5) Demobilization

d. Subtask 9.4 - Equipment Contractor Mobilization and Site Preparation

- 1) Mobilization
- 2) Clear and grub site
- 3) Site grading to raise well site and to construct blow-off pond
- 4) Site security and installation of permanent fencing
- 5) Installation of noise control barrier walls and other measures as needed to comply with noise suppression requirements

e. Subtask 9.5 - Well Equipping

- 1) Construction of well head pump pedestal, including extension of well casing, tubing, conductor casing, annular seals and related work
- 2) Construction of site facilities including blow off structure, blow off pond high water level float switch, building drain system, liquid chlorine leak detection system piping and dry well, and site lighting
- 3) Construction of well discharge and blow off site piping, valves and appurtenances
- 4) Construction of electrical and chlorine generation building including HVAC equipment, receptacles, and lighting
- 5) Construction of chlorine generation equipment, piping, electrical, valves, chlorine injector, brine storage tank, chlorine storage tank, dosing pumps, ventilation blowers, emergency shower eyewashes, and appurtenances
- 6) Furnishing and Installation of submersible vertical turbine pumping unit, including pump, column, and well-discharge head
- 7) Construction of Southern California Edison electrical service conduit and service meter/main (switchgear)
- 8) Construction of electrical motor control equipment (MCC), variable frequency drive (VFD), well level transducer, well electrical conductivity sensor, discharge pressure switches and transducer, and associated wiring
- 9) Construction of telemetry equipment
- 10) Final site grading, including installation of site surfacing material

f. Subtask 9.6 - Pump Performance Testing and Demobilization

- 1) Pump and motor shop testing
- 2) Pump station equipment startup, including, but not limited to, pump and motor start-up and testing and chlorine generation equipment startup and testing
- 3) Site cleanup
- 4) Demobilization

Deliverables: Water well driller's report, well video recording, quarterly, annual, final construction reports, pump station start-up report.

**E - BUDGET CATEGORY (e): ENVIRONMENTAL COMPLIANCE/MITIGATION/
ENHANCEMENT**

Task 10: Environmental Compliance/Mitigation/Enhancement

Not applicable.

F - BUDGET CATEGORY (f): CONSTRUCTION ADMINISTRATION

Task 11: Construction Administration

Construction administration and construction inspection will be performed by EMWD staff as in-kind labor. Construction phase engineering support services may be provided by third party engineering and surveying firm(s) and include the following components; construction phase engineering support, Contractor's submittal review and response, Contractor's request for information review and response, attendance of course of construction meetings and site meetings, construction staking, and preparation of record drawings.

Deliverables: Quarterly, annual, final construction reports.

Project K: Perchlorate Wellhead Treatment System Pipelines (West Valley Water District)

Part One – Introduction

This project's name is the "Perchlorate Wellhead Treatment System Pipeline Project", which involves a cooperative arrangement between the West Valley Water District (District) and the City of Rialto (Rialto).

The Project includes the necessary piping to connect the groundwater contamination wellhead treatment project (WTP) to the two contaminated drinking water production wells located in the Rialto-Colton Groundwater Basin (Basin). The result will be removal of perchlorate, nitrate, and trichloroethylene (TCE) from the contaminated groundwater wells.

The loss of two drinking wells due to groundwater contamination has made it difficult for the District and Rialto to maintain operational flexibility and meet seasonal peak water demands. Because of rising perchlorate concentrations, Rialto declared a water supply emergency and has joined with the District in an effort to stabilize local water supplies. Large portions of groundwater in the Basin are currently contaminated with perchlorate, nitrate, and volatile organic compounds (VOCs), including TCE.

The WTP will be the first biological treatment plant in California used for drinking water and will use a multiple treatment-train Fluidized Bed Bioreactor (FBR) system to treat for perchlorate and nitrate coming from the groundwater wells.

The Project location is within the District and Rialto service area boundaries in San Bernardino County. New and existing 16-inch pipelines will convey untreated water from Rialto Well No. 6, near Etiwanda Avenue, and along Willow Avenue from District Well No. 11 to Cactus Avenue to the District's maintenance yard located at 855 W. Base Line Road in Rialto, where the proposed wellhead treatment plant will be sited.

The Project involves three groundwater basins within the Upper Santa Ana River Watershed and is a partnership between two adjacent water agencies to enhance the operational flexibility and independence of existing groundwater supplies.

The planned components of the Project include: Approximately 3,000 linear feet of 16-inch pipeline within Etiwanda, Willow, and Cactus Avenues and the treatment plant/District headquarters site, with appurtenances and associated site work to accommodate the wellhead treatment plant.

A - GOALS AND OBJECTIVES

The Project has the following goals and objectives:

- Stabilize groundwater supplies in the Rialto-Colton Basin and reclaim operational flexibility;
- Restore groundwater production capacity lost due to contamination of groundwater;
- Decrease contaminant mass in the Basin;
- Improve the water quality of the basin and provide salt management benefits;
- Restore the basin to its natural hydrologic settings; and,
- Provide safe and reliable drinking water utilizing existing supply sources to meet customer demands.

B - PURPOSE AND NEED

This Project is necessary to connect the groundwater contamination WTP to the two contaminated drinking water production wells located in the Basin. The result will be removal of perchlorate, nitrate, and TCE from the contaminated groundwater wells.

The loss of two drinking wells due to groundwater contamination has made it difficult for the District and Rialto to maintain operational flexibility and meet seasonal peak water demands. Because of rising perchlorate concentrations, Rialto declared a water supply emergency and has joined with the District in an effort to stabilize local water supplies. Large portions of groundwater in the Rialto-Colton Groundwater Basin are currently contaminated with perchlorate, nitrate, and VOCs, including TCE.

The *Upper Santa Ana River Watershed Integrated Regional Water Management Plan* (IRWM Plan) identified the “Remediation Extraction Wells to Capture High-Concentration Perchlorate Contamination in Rialto-Colton Basin” as a project to meet the IRWM Plan’s goals and objectives by meeting the water supply benefits and providing water quality benefits as described below.

The Project will restore water supply lost due to water quality impairment and decrease reliance on imported water. The amount of water supply to be restored is 4,302 AF/yr, or over 15 years, approximately 64,544 AF.

The Perchlorate Wellhead Treatment System Pipelines will provide several water supply benefits per DWR program preferences. The water supply benefits include: 1) restoring groundwater supplies from two wells that have been idled due to perchlorate, nitrate and VOC contamination; 2) by restoring these wells, there will be less of a need for imported water; and 3) the use of local-groundwater supplies instead of imported water, provides a lower-energy usage, lower-cost and more reliable water supply; and 4) through interconnections with the District, this restored water supply can be delivered to other water retailers in the area.

Additionally, per DWR program preferences, the funding of this project will assist in increasing the cost-effectiveness of the proposed Project when compared to the higher operational costs of the ion-exchange treatment.

The Project provides water quality benefits primarily in that the pipelines are a key element of the proposed Project to treat contaminated groundwater. As such, the pipelines will provide water quality benefits related to:

- 1) The numerical mass of salt/contaminants removed. Approximately 1,650 tons of perchlorate/nitrate destroyed, and a total salts load of 18,000 tons removed from groundwater.
- 2) The benefit derived from remediating and abating a severe, and still migrating plume of contamination. This benefit will also result in minimizing the total duration and cost required for cleanup, and help decrease the adverse impacts to

groundwater wells downgradient of the project, and also in other groundwater Basins.

- 3) The benefit derived from the full-scale California Department of Public Health (DPH)-permitted, implementation of a viable sustainable green-remediation technology for destroying perchlorate and nitrate contaminants from drinking water in the form of the FBR technology.

C - INTEGRATED ELEMENTS OF PROJECTS

This project is part of an integrated system that 1) removes perchlorate from a groundwater basin and 2) provides a source of clean drinking water to a disadvantaged community. The project protects groundwater basins as it prevents the further migration of perchlorate plumes within the region.

D - COMPLETED WORK

Final design drawings for the Complete FBR Project are available for review. No permits are required at this stage of the project; and CEQA is complete. After bidding is complete, then two additional permits will be obtained.

CEQA was completed with a Notice of Determination Filing Date of September 8, 2009. The District adopted a Mitigated Negative Declaration pursuant to the provisions of CEQA, adopted a Mitigation Monitoring Program, and approved the above described project. The District has made the following determinations regarding the above described project: The project will NOT have a significant effect on the environment.

E - EXISTING DATA AND STUDIES

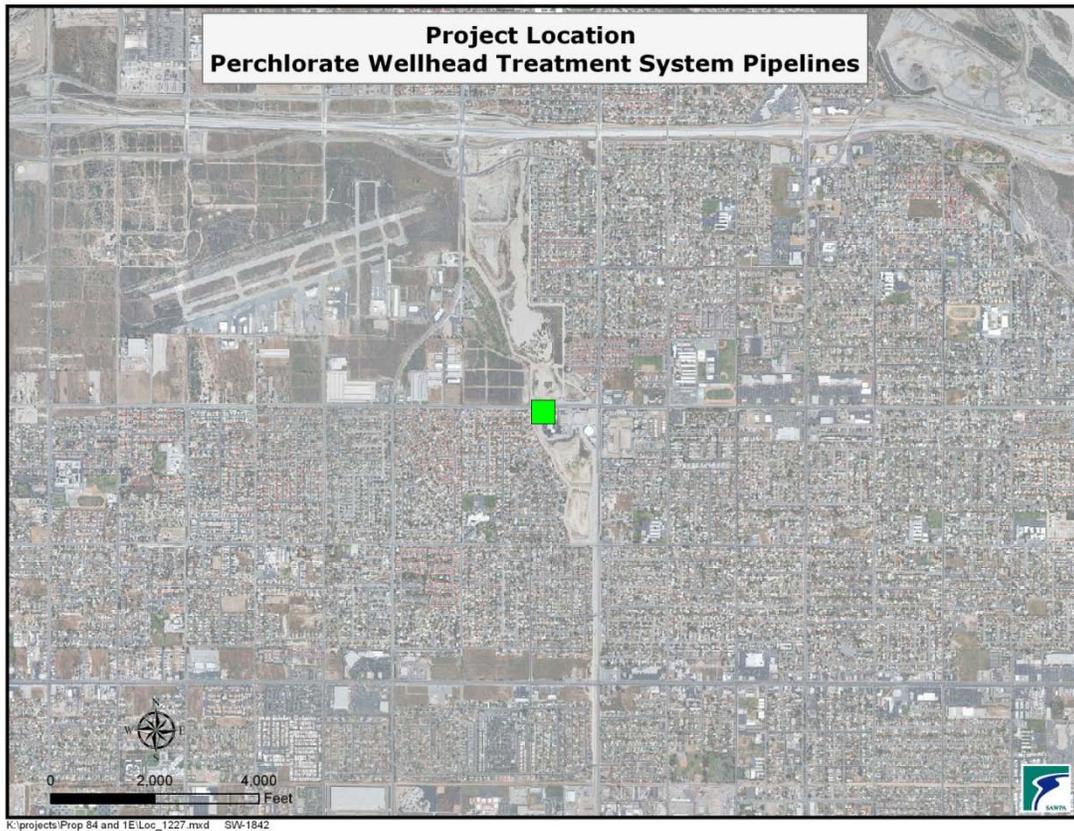
The complete FBR Project is necessary to provide the District and the City with a reliable source of drinking water. Although this Perchlorate Wellhead Treatment System Pipeline Project will assist in cleaning up contaminated groundwater from a Superfund Listed Site, the Project provides infrastructure required for the complete FBR Project that will

be operating consistently with the Superfund process and yet is being implemented independently of that process.

In September 2009, the District completed a Mitigated Negative Declaration pursuant to the provisions of CEQA. The Project will operate consistent with the “1961 Basin decree” which set extraction volume limitations for the Rialto-Colton Basin.

F - PROJECT MAP

See **Figure 1** for a site map showing the project’s geographical location and the surrounding work boundaries.



G - PROJECT TIMING AND PHASING

This Project is necessary to connect the groundwater contamination WTP to the two contaminated drinking water production wells located in the groundwater basin. The cost for the entire project is summarized below in **Table 1**, which includes the WTP, the pipeline project that is the subject of this grant application, and two well pump replacements.

Table 1

Complete Well Conveyance and FBR Treatment System Cost Estimate

Capital Cost Item	Base Estimated Cost
Preliminary Costs (CEQA; Admin Costs)	\$200,000
Construction Costs	\$14,300,000
Design/Engineering Costs	\$700,000
Equipment Costs (FBR only)	\$4,000,000
Land Acquisition	\$0
Contingencies	\$860,000
Other Costs (Program & Construction Management; Permitting Support)	\$2,240,000
Total Capital Project Cost	\$22,300,000 ^(a)
Funds Secured To Date ^(b)	\$14,700,000 ^(b)
Matching Funds Commitment by District and City	\$6,000,000 ^(c)
Additional Fund Required TOTAL FBR Treatment Project	\$1,600,000

Table 1

Complete Well Conveyance and FBR Treatment System Cost Estimate

(a) Please note that this is an Engineer's Cost Estimate, which in today's market place is likely to be conservative and actual costs should be up to 10% less than estimate.

(b) Funds secured through the Department of Defense, State Water Resources Control Board, and California Department of Health. An additional \$1M is not included in this total that has been secured from the Regional Water Quality Control Board which is intended to be applied towards first year of O&M cost for project.

(c) The District and the City each agreed to pay one-half of the difference between the Anticipated Funding actually received and the actual cost of the design and construction of the Complete Well Conveyance and FBR Treatment System Project, which is estimated at approximately \$6M.

Part Two – Proposed Work Tasks

This Section defines the required tasks for the specific activities that will be performed to implement the Perchlorate Wellhead Treatment System Pipeline Project. The task descriptions will be used as the scope of work in the grant agreement if the Proposal is selected for funding. The task detail allows the reviewer to fully understand the work to be performed in order to evaluate the adequacy of the Proposal. Additionally, the tasks provide sufficient detail to justify the project(s) cost estimates. Tasks listed in this Work Plan were provided to SAWPA for review as part of project selection.

A - BUDGET CATEGORY (a): DIRECT PROJECT ADMINISTRATION COSTS

Task 1: Administration

Project administration includes administration of grant and construction contracts, preparation of reports and plans, coordination of design contracts, and other activities as required completing design and construction that may not be directly related to those tasks.

Deliverables: None.

Task 2: Labor Compliance Program

Public Resources Code section 75075 requires that any entity awarding a contract for a public works project financed in any part with funds made available by Proposition 84 must adopt and enforce a Labor Compliance Plan. The District has contracted Kennedy/Jenks Consultants to prepare the Labor Compliance Plan in accordance with DWR requirements.

Deliverables: Submission of Labor Compliance Program.

Task 3: Reporting

The District will prepare and submit quarterly progress reports and invoices to DWR. The District will require the contractor to submit monthly progress reports to accompany each invoice. The progress reports will describe activities undertaken and accomplishments of each task during the milestones achieved, and any problems encountered in the performance of the work under this contract. A final summary report will be prepared and submitted once the project is completed. Other items required by the grant contract will also be submitted to DWR.

Deliverables: Quarterly Progress Reports, and Final Summary Report at Completion.

Task 4: Coordination with Partners

This project involves two primary partners, and five additional supporting partners. The two primary partners are the West Valley Water District (District) and City of Rialto (the owners of the two contaminated wells to be treated). A Memorandum of Understanding (MOU) between the District and Rialto has been executed. The MOU was signed in March 2009 and defines terms between the District and Rialto concerning the SWRCB Cleanup and Abatement Account (CAA) funding as contemplated in the funding application, and identifies further agreements between the District and Rialto regarding the Proposition 84 DPH grant monies, and the operation of the wells and wellhead treatment system. A copy of this MOU was provided to SAWPA for review as part of project selection.

In addition, as discussed in the paragraphs below, the project is directly supported by:

- The California DPH (State and Local levels, via \$10M of Proposition 84 DPH Funding and at local-level via technical support/permitting);
- The Santa Ana Regional Water Quality Control Board (RWQCB) (providing technical/regulatory support and \$2.8M via their Cleanup and Abatement Account funds);
- The State Water Resources Control Board (SWRCB) (allocating the \$2.8M Cleanup and Abatement Account Funds via the RWQCB);
- The Department of Defense Environmental Security Technology Certification Program (ESTCP) program, which is providing \$2.9M to help advance the FBR technology; and,
- The United States Environmental Protection Agency (USEPA), providing regulatory and technical support.

On July 13, 2010, the District and City signed an agreement detailing and finalizing their participation in the Complete Well Conveyance and FBR Treatment System Project. A copy of this study was provided to SAWPA for review as part of project selection.

The District and the City each agreed to pay one-half (1/2) of the difference between the Anticipated Funding actually received and the actual cost of the design and construction of the Complete Well Conveyance and FBR Treatment System Project, which is estimated at approximately \$6M. A copy of this study was provided to SAWPA for review as part of project selection.

On June 23, 2010, the District and the City were awarded \$10M for the Complete Well Conveyance and FBR Treatment System Project from a Proposition 84 grant funded through California DPH.

On February 29, 2008, the RWQCB adopted Resolution No. R8-2008-0020, which requested that the SWRCB allocate \$2.8M from the CAA to conduct a regional groundwater study related to the groundwater contamination in the Basin. The SWRCB subsequently approved Resolution No. 2008-0018 on March 18, 2008, approving the allocation of \$2.8M from the CAA .

The District and City subsequently requested that \$1M be re-designated by the RWQCB and SWRCB for design, preparation of a Proposition 84 grant application funded through California DPH, startup/operation costs, and maintenance of the proposed Complete Well Conveyance and FBR Treatment System Project. The RWQCB approved the adoption of a resolution revising its request for \$2.8M of CAA funds from the SWRCB to be allocated to the proposed project through RWQCB Resolution No. R8-2009-0027 on April 24, 2009.

The U.S. Department of Defense's ESTCP is providing funding for a portion of the Complete Well Conveyance and FBR Treatment System Project. The funding covers the continuation of the treatment pilot test at Rialto Well No. 2. The total awarded amount of \$2.9M has been provided by the ESTCP.

B - BUDGET CATEGORY (b): LAND PURCHASE/EASEMENT

The District is not purchasing land for implementation of the project. The District is entering into a "License Agreement" with the San Bernardino County Flood Control District (Flood Control District) for that portion of the waterline within the Flood Control District's property. A "License Agreement" is similar to an easement only it is permanent. An annual License Fee will be paid to the Flood Control District based on square footage required for the pipeline alignment. The "License Agreement" and fees are still being negotiated between the District and the Flood Control District.

The remainder of the pipeline installation will occur within public right-of-way or on District-owned property.

C - BUDGET CATEGORY (c): PLANNING/ENGINEERING/ENVIRONMENTAL DOCUMENTATION

Task 4: Assessment and Evaluation

A Project Technical Report was completed for the Complete Well Conveyance and FBR Treatment System Project in late 2009 as part of the Proposition 84 Section 75025 DPH Grant Application. The report details groundwater contamination issues in the area, need for the project, alternatives to the project, project costs, and schedule. A copy of this study was provided to SAWPA for review as part of project selection.

Deliverables: Technical studies

a. Subtask 4.1 – Performance Measures and Monitoring Plans

Development of performance measures and monitoring plans for the project(s) listed in the Proposal during construction/initial implementation.

The District will prepare a Project Assessment and Evaluation Plan (PAEP) to provide a framework for the assessment and evaluation of project performance and to identify measures that can be used to monitor progress towards achieving project goals. A Monitoring Plan (MP) to develop monitoring procedures and a Quality Assurance Project Plan (QAPP) will also be prepared, as necessary, to identify the requirements and criteria for the procedures used during planning and implementation of the monitoring program.

Deliverables: PAEP, MP, and QAPP.

Task 5: Final Design

The Final (100%) design and specification documents are complete and will create the design package that will be advertised for project award for construction. Construction and Operations and Maintenance costs have been estimated. Final design and specifications was provided to SAWPA for review as part of project selection.

Additionally, the final design is described in detail in the Project Technical Report discussed in Task 4, previously.

Deliverables: Design plans and specifications.

Task 6: Environmental Documentation

CEQA was completed with a Notice of Determination Filing Date of September 8, 2009. The District adopted a Mitigated Negative Declaration and a Mitigation Monitoring Program pursuant to the provisions of CEQA. Environmental documentation was provided to SAWPA for review as part of project selection.

Deliverables: Notice of Determination and Mitigated Negative Declaration.

Task 7: Permitting

After bidding of the construction for the contract is complete, the following required permits will be obtained:

- City of Rialto Encroachment Permit
- San Bernardino County Flood Control “License Agreement” - An annual License Fee will be required to be paid to the Flood Control District for the portion of the pipeline alignment that is constructed within Flood Control District’s property. The annual license fee will be paid based on square footage and is estimated to be \$3,745/annually.

D - BUDGET CATEGORY (d): CONSTRUCTION/IMPLEMENTATION

Task 8: Construction Contracting

A request for bid proposals will be prepared. The project will be advertised for bidding through standard procedures. The District will pre-qualify construction contractors using procedures consistent with the Public Contract Code. The District will hold a pre-bid meeting and respond to questions from contractors, open and review bids for completeness, and award the project to the responsible bidder with the

lowest bid in accordance with the Public Contract Code. Once the project has been bid and awarded, the selected Contractor will construct the project in accordance with the final plans and specifications.

Deliverables: Advertisement for bids; pre-bid contractors meeting; evaluation of bids; award contract

Task 9: Construction

The project includes the necessary piping to connect the groundwater contamination WTP to the two drinking water production wells located in the Basin. The planned components of the Project include: Approximately 3,000 linear feet of 16-inch pipeline within Etiwanda, Willow, and Cactus Avenues and the treatment plant/District headquarters site, with appurtenances and associated site work to accommodate the treatment facility.

After the Notice to Proceed has been issued by the District to the selected Contractor, the following subtasks will happen:

a. Subtask 9.1 - Mobilization and Site Preparation

Mobilization and site preparation will consist of the following activities:

- Mobilization: Mobilization includes moving the required equipment and materials onto the site in preparation for the work scope.
- Shop Drawings and Submittals.
- Underground Utility Location.

b. Subtask 9.2 – Relocating Fuel Tanks

At the proposed WTP site there is an existing above-ground diesel and gasoline tank that the District uses to fuel their service vehicles. The tanks, dispensers and associated electrical equipment need to be relocated on-site before any construction can take place. In addition to the relocation, the existing concrete slabs that the tanks sit upon and the curbs and bollards

surrounding the equipment need to be removed and new concrete pads, curbs and bollards constructed. The new location will require power to run the dispensers and lighting.

c. Subtask 9.3 – Site Demolition

As stated previously, the proposed WTP site is to be located in an area at the District's Headquarters that currently is a storage area for various supplies. There is a concrete slab 109' x 16', 109 linear feet (LF) of 4-foot high retaining wall, and twenty 30 foot long x 2 feet high concrete block pipe supports that need to be removed.

d. Subtask 9.4 – Remove Existing 16'' Water Line

Approximately 280 LF of existing 16" waterline from Well 33 will be removed and be relocated as part of another subtask.

e. Subtask 9.5 – Flood Control

At the location of discharge for the testing phase of the proposed WTP, rip rap will be installed.

f. Subtask 9.6 – Install 16'' Water Lines

Approximately 3,000 LF of 16-inch water pipeline of cement-mortar lined and coated (CML&C) steel pipe will be constructed including valves and appurtenances. This price includes the cost to construct this pipeline, connections to existing waterlines, trenching, shoring, testing, disinfection, sand bedding, base, thrust blocks, asphalt concrete (AC) pavement, insurance and bonds. The location of the water pipeline is shown on the plans in four sheets as described below:

- Sheet 4 of the plans includes 780 LF of influent water pipeline connecting the proposed WTP to an existing 16-inch water pipeline, south of the District's Zone 3A-2 Reservoir.

- Sheet 5 of the plans includes 800 LF of pipeline connecting the proposed WTP to the discharge basin and existing IX treatment process.
- Sheet 6 of the plans includes 675 LF of the 16-inch water pipeline connecting to the existing Zone 3A-2 Reservoir and to the existing Well 33 blending pipeline.
- Sheet 7 of the plans includes 665 LF of pipeline constructed in Etiwanda Avenue from the intersection of Willow Avenue to intersection of the 14-inch water pipeline that connects to the City of Rialto's Well No. 6.

g. Subtask 9.7 – Electrical

This subtask includes the incoming electrical to the proposed WTP, including concrete pads for the electrical transformer and switchboard.

h. Subtask 9.8 – Install 8'' Sewer Line

This is the discharge line from the proposed WTP to the City of Rialto's sewer main. There is approximately 1,100 LF of 8-inch sewer pipeline, ten manholes and one connection to the City facilities.

i. Subtask 9.9 - Pipe Testing

This subtask includes pressure testing the 16-inch pipeline per the Districts Standards for Domestic Water Facilities. Pressure and leakage tests shall be performed in accordance with the American Water Works Association Standard procedure for Pressure and Leakage Test, AWWA C605, Section 7, or as in the Districts Standards.

j. Subtask 9.10 – Street Re-paving

This subtask includes re-paving of Etiwanda Avenue from the City of Rialto Well #6 west to Willow Avenue.

k. Subtask 9.11 – Install Water Line for Building Service

A water supply will be required to the proposed WTP. The water service for the building includes hot and cold water service for the building and emergency eye wash/shower loop. This subtask consists of installing 190 LF of 6-inch waterline connecting from the existing 8-inch waterline south of the District Headquarters Building to the WTP facility and installing a double detector check at the facility per District Standards.

l. Subtask 9.12 - Install Site Drains

This subtask includes constructing 300 LF of 12-inch PVC drain line connected to the building roof drainage system and the construction of three grated concrete reinforced catch basins. Catch basins and drain lines to be connected to existing site drainage.

m. Subtask 9.13 – Construct Retaining Wall

This subtask includes constructing a type ‘A’ masonry retaining wall per APWA STD 618-1 100 feet in length with dovetailed landscape block ends.

n. Subtask 9.14 – Regrading

This subtask includes the removal of 200 square feet of existing pavement at site.

o. Subtask 9.15 – Fence Construction

This subtask includes removing and replacing in kind 200 LF of 6-foot high chain link fencing.

p. Subtask 9.16 – Site Paving

Approximately 18,300 square feet of asphalt concrete pavement will be required at the site. This subtask includes the construction of concrete ramps

at the entrances to the proposed WTP plant. Also, 400 LF of 10-inch high asphalt concrete berm will need to be constructed to direct site drainage.

q. Subtask 9.17 – Punch List and Demobilization

After construction, the punch list of unresolved issues will be completed, followed by demobilization of the construction equipment.

E - BUDGET CATEGORY (e): ENVIRONMENTAL COMPLIANCE/MITIGATION/ ENHANCEMENT

Task 10: Environmental Compliance/Mitigation/Enhancement

CEQA was completed with a Notice of Determination Filing Date of September 8, 2009. The District adopted a Mitigated Negative Declaration and a Mitigation Reporting Program dated August 28, 2009, that will track the implementation of the mitigation measures contained in the Initial Study.

Deliverables: Mitigation Reporting Program

F - BUDGET CATEGORY (f): CONSTRUCTION ADMINISTRATION

Task 11: Construction Administration

During construction, District staff and/or qualified engineering consultants will provide construction management and administration, including daily on-site observation; inspection of material and fabrication processes at the factory; testing of materials used for construction, including soils and concrete; and documentation of these activities. The District will require the contractor to submit monthly progress reports to accompany each invoice. The District will compile the major items in the monthly progress reports into Quarterly reports to accompany invoices to the State.

Deliverables: Specific reports as required by DWR and SAWPA

Project L: Chino Creek Wellfield Development (Western Municipal Water District)

Part One – Introduction

The Chino Creek Wellfield Development Project, Wells 1, 2, and 3 (Project) is a component of the larger Chino Creek Wellfield (CCWF) Development Project. The Chino Creek Wellfield Development Project is part of the Chino Desalter Phase 3 Expansion, and consists of the development of three production wells. Total new well production capacity from the three wells would be approximately 2,900 acre-feet per year (AF/y).

All facilities would be located in the City of Chino, east of the existing Chino Desalter I and south of the Chino Airport. These facilities would be constructed in the area referred to as the “Chino North Management Zone”.

The Chino Desalter Phase 3 Expansion will enhance the ability of local agencies to treat Chino Basin groundwater for nitrates and TDS. The CCWF Development Project, Wells 1, 2, and 3, is an important activity within the Chino Desalter Phase 3. Western is the lead sponsor for the Chino Desalter Phase 3 and will enter into contracts with consultants, contractors and suppliers. Western will act as a subgrantee to SAWPA for any Proposition 84 Integrated Regional Water Management Plan grant responsibilities related to the CCWF Development Project, including contribution of local match funds.

A - GOALS AND OBJECTIVES

The goal of the CCWF Development Project is to:

- Increase Local Supplies and Facilitate Responsible Groundwater Management. The CCWF Development Project facilitates responsible management of groundwater resources while increasing groundwater production. Essentially the project results in new water supplies in an area thirsty for new water. Treating water from the local aquifer is more reliable than importing water from the Sacramento-San Joaquin Delta.

- **Protect Downstream Users.** Increasing groundwater pumping in the Chino Creek Wellfield will significantly reduce the flow of degraded groundwater into the Santa Ana River, as ordered by the Regional Water Quality Control Board. This in turn helps to increase water quality of the Santa Ana River and protects downstream water supplies and ecosystems.
- **Promote Regional Cooperation.** The proposed project is a regional project. The proposed project is supported by a group of agencies whom have developed regional groundwater treatment facilities that benefit many areas. Like the Riverside Corona Feeder, the proposed project will facilitate conveyance of local supplies. The proposed project will benefit many agencies in the SAWPA region, including the City of Chino Hills, the City of Chino, Jurupa Community Services District, Santa Ana River Water Company, the City of Norco, and the City of Ontario, as well as the Western Municipal Water District Service area. The CCWF Development Project benefits all agencies utilizing the Chino I Desalter by spreading fixed costs over a larger production volume thereby reducing unit cost of water.

B - PURPOSE AND NEED

The purpose of the OWOW IRWMP is to promote a sustainable Watershed that is drought-proofed, salt-balanced, and supports economic and environmental viability. The Project is consistent with the IRWMP because it will increase local water supply, improve both surface and groundwater quality, and reduce greenhouse gas emissions.

High salt and nitrate concentrations are two long-standing water quality issues in the Chino Basin. Between January 2001 and June 2006, over half of all wells (452 wells) in the Chino Basin exceeded the Department of Public Health maximum contaminant level (MCL) for nitrate and nearly half of all wells (359 wells) exceeded the MCL for TDS. Nitrate contamination has known short-term acute health effects. The health effects of elevated TDS are not well defined, but high TDS levels noticeably affect the taste of water and hence affect consumer acceptance of water. The use of salinity management

facilities such as the Chino Desalter and the SARI Brine Line have been instrumental in preventing further salt build-up and remediating high TDS groundwater basins. The Project is consistent with the IRWMP because will extract 2,900 AFY of water from the Chino North Management Zone for treatment at the Chino I Desalter.

Not only is there a need to treat high TDS and nitrate levels, there is a need to prevent groundwater overflow from the Chino Basin from contaminating the Santa Ana River. Increased pumping from the Chino North Management Zone, including the Chino Creek Wellfield, would help achieve hydraulic control and protect Santa Ana River water quality.

The SAWPA region has a need to increase its supply sources and enhance supply reliability. The SAWPA region draws its water supply from a variety of sources. However, some of these are now oversubscribed, and several face water quality problems. The availability of imported water has decreased in recent years, due to legally mandated environmental mitigation programs and increased demand from other communities that share these resources. Because of these uncertainties, as well as increasing costs, escalating reliance on imported water is undesirable. The project will reduce the need for State Water Project supplies, thereby increasing water supply reliability while reducing the high levels of energy consumption and greenhouse gas emissions associated with importing water supplies.

C - INTEGRATED ELEMENTS OF PROJECTS

The Chino Creek Wellfield Wells 1 to 3 will utilize the existing Chino I Desalter. In turn the Chino I Desalter disposes of brine through the existing Santa Ana Regional Interceptor (SARI) Line. The Desalter and the SARI line work in conjunction to treat brackish groundwater, to create a local water supply, and to protect water quality of the Santa Ana Watershed. The Desalter provides the means of treating water and the SARI line provides the means to export salts out of the basin. Reach IVA of the SARI line serves the Chino Basin area; this reach along with Reach IVB are proposed for repairs within the suite of projects in this grant application.

D - COMPLETED WORK

The project is at conceptual design stage (30%). The following studies/designs have been completed for the proposed project:

- *Chino Desalter Phase 3 Comprehensive Predesign Report* dated May 2010 prepared by Carollo Engineers: Chapter 2 of this report describes results of the studies analyzing hydraulic control of the Chino Basin. Additionally, this chapter describes the standard criteria for new well equipment for the Chino Desalter Phase 3 project. Chapter 8 of the report provides estimates of capital and O&M costs for the Chino Desalter Phase 3 project. A copy of this study was provided to SAWPA for review as part of project selection.
- *Preliminary Design Report for the Chino Creek Wellfield and Chino Expansion Wellfield Chino Desalter Phase III Project* dated September 2009 prepared by Geoscience: This report provides preliminary designs, design criteria, ground water production estimates, and estimates of anticipated geohydrologic conditions for both the Chino Creek and Chino II expansion wellfields. A copy of this study was provided to SAWPA for review as part of project selection.
- The scope of this effort included:
 - *Field reconnaissance of two proposed Chino Creek well sites,*
 - *Review of existing wells in the vicinity of the proposed wellfields,*
 - *Evaluation of well production data,*
 - *Evaluation of ground water quality data, and*
 - *Evaluation of potential sources of ground water contamination.*
- *Public Draft Initial Study/Mitigated Negative Declaration for Chino Desalter Phase 3 Expansion* dated September 2010 prepared by Tom Dodson & Associates: The report provides CEQA documentation for the Project. A final document is anticipated in December 2010. The Draft Initial Study found that although the proposed project could have a significant effect on the environment, there will not be a significant effect due to mitigation measures (see page 29 of

document). A Mitigated Negative Declaration will be prepared. A copy of this study was provided to SAWPA for review as part of project selection.

E - EXISTING DATA AND STUDIES

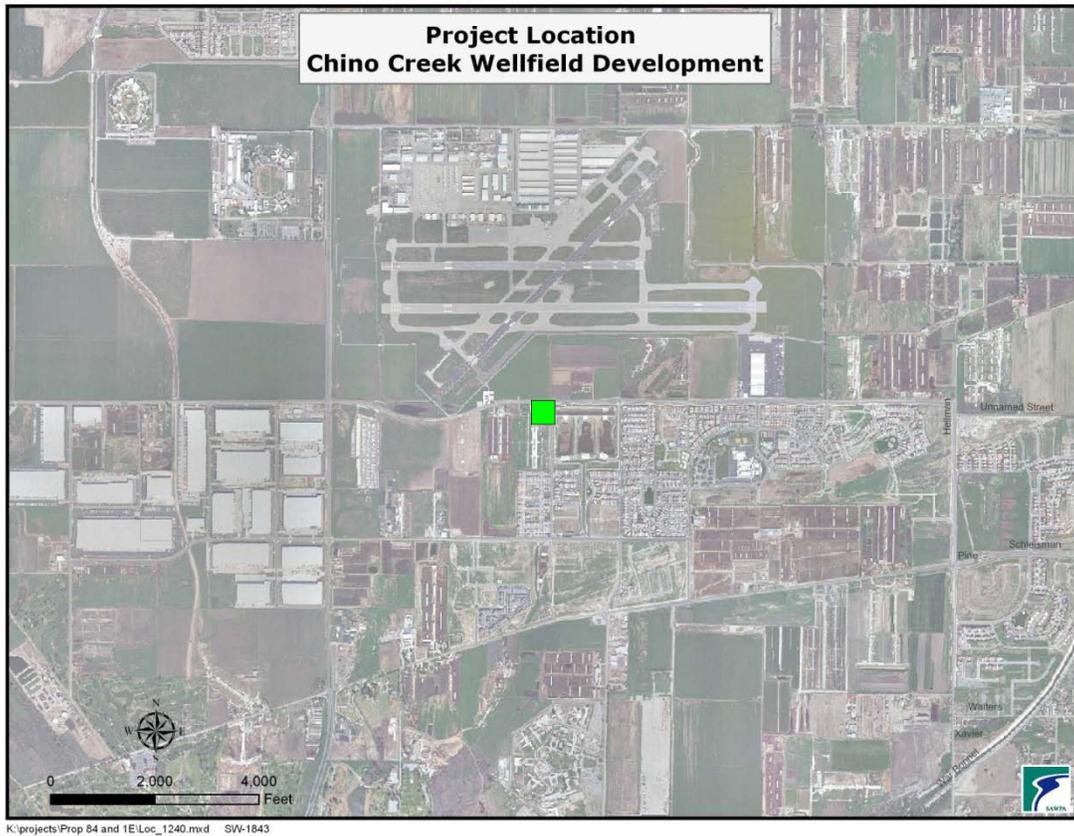
The documents and studies listed above and included in Attachments W1-W5 support the choice of site location, project feasibility, and technical methods. Specifically:

Choice of project site location was based on groundwater modeling, anticipated geohydrologic conditions potential for groundwater level interference, and proximity to an existing desalter. The *Preliminary Design Report for the Chino Creek Wellfield and Chino Expansion Wellfield Chino Desalter Phase III Project* was provided to SAWPA for review as part of project selection.

Project feasibility (production capacity, ability to provide hydraulic control) was verified in the *Preliminary Design Report for the Chino Creek Wellfield and Chino Expansion Wellfield Chino Desalter Phase III Project* dated September 2009 prepared by Geoscience. See also *Chino Desalter Phase 3 Comprehensive Predesign Report*. Project Feasibility (cost) was evaluated in the *Chino Desalter Phase 3 Comprehensive Predesign Report*. A copy of these studies were provided to SAWPA for review as part of project selection.

Technical methods, including the well drilling method, well design and construction materials, and sequence of drilling operations, were studied within the *Preliminary Design Report for the Chino Creek Wellfield and Chino Expansion Wellfield Chino Desalter Phase III Project* dated September 2009 prepared by Geoscience. A copy of this study was provided to SAWPA for review as part of project selection.

F - PROJECT MAP



G - PROJECT TIMING AND PHASING

The Superior Court, which retains jurisdiction over management of the Chino Groundwater Basin (Case #RCV 51010) has ordered actions to:

- Achieve hydraulic control of Chino Groundwater Basin overflow to the Santa Ana River,
- Increase desalter groundwater pumping from the lower Chino Basin to 40,000 afy, consistent with the Chino Optimum Basin Management Plan, and
- Produce at least 10 mgd of additional product water capacity.

The Project is a part of the larger Chino Desalter Phase 3 Project, developed by Western Municipal Water District, Jurupa Community Services District, and the City of Ontario to provide for expansion of the Chino Desalter System. Part of the Chino Desalter Phase 3

Project includes development of a new wellfield in the Chino Creek area of Chino Basin, expansion of production from the existing Chino II Desalter wellfield, and evaluation of potential well sites for future expansion of the Chino II Desalter wellfield. The additional pumping from the Chino Creek and Chino II Desalter wellfields will be used to gain hydraulic control of the basin and to provide raw water to the Chino Desalter system.

The proposed Project is a piece of the Chino Desalter Phase 3 Project. The Project will construct three of the six wells that are part of the development of the new wellfield in the Chino Creek area. Chino Creek Wellfield Wells 1, 2, and 3 are proposed to extract 2,900 AFY from the North Chino Management Zone. This in turn will be sent for treatment at the Chino I Desalter, resulting in the treatment of approximately 2.6 mgd of drinking water. The wells will be constructed along an existing

The Project will contribute to Chino Desalter Phase 3 Project by providing additional water supply to the Chino Desalter. The Project will be fully functional regardless of whether or not other aspects of the Chino Desalter Phase 3 project are implemented. The Project can stand alone without the other components of the Chino Desalter Phase 3 Project because it will construct new wells and utilize existing capacity in the Chino I Desalter to provide additional water supply.

Part Two – Proposed Work Tasks

A - BUDGET CATEGORY (a): DIRECT PROJECT ADMINISTRATION COSTS

Task 1: Administration

The proposed project will be built by Western as part of its responsibilities as a member of the Chino Desalter Authority. As such Western will coordinate design and other decisions related to the Chino Creek Wellfield with the Chino Desalter Authority. The Chino Basin Desalter Authority was created through a Joint Exercise of Powers Agreement (JPA). Amendment 2 of the JPA admitted Western to the Chino Desalter Authority and describes the coordination responsibilities of the various

partners. A copy of this study was provided to SAWPA for review as part of project selection.

Project administration includes administration of grant and construction contracts, preparation of reports and plans, coordination of design contracts, and other activities needed to facilitate design and construction that may not be directly related to those tasks.

Deliverables: Preparation of invoices and other deliverables as required as required by the grant agreement.

Task 2: Labor Compliance Program

Public Resources Code section 75075 requires that any entity awarding a contract for a public works project financed in any part with funds made available by Proposition 84 must adopt and enforce a Labor Compliance Plan. Western will contract with a third party to perform Labor Compliance.

Deliverables: Submission of Labor Compliance Program.

Task 3: Reporting

Western will prepare and submit quarterly progress reports and invoices to SAWPA and DWR. Western will require the contractor to submit monthly progress reports to accompany each invoice. The progress reports will describe activities undertaken and accomplishments of each task during the milestones achieved, and any problems encountered in the performance of the work under this contract. A final summary report will be prepared and submitted once the project is completed. Other items required by the grant contract will also be submitted to DWR.

Deliverables: Quarterly Progress Reports, and Final Summary Report at Completion.

B - BUDGET CATEGORY (b): LAND PURCHASE/EASEMENT

The three well sites, located in the vicinity of 7200 Kimball Avenue, 7700 Kimball Avenue, and 8100 Kimball Avenue in the City of Chino, just south of the Chino Airport, will be acquired by late March 2011. Well locations are approximate based on groundwater modeling, but will be refined to reflect constraints of property available and utility locations (e.g., sanitary sewers and overhead power lines). Western will need to purchase the land for these sites.

Deliverables: Applicable land appraisals, landowner agreements and easements.

C - BUDGET CATEGORY (c): PLANNING/ENGINEERING/ENVIRONMENTAL DOCUMENTATION

Task 4: Assessment and Evaluation

Project feasibility studies and environmental documentation has already been completed (see the discussion on existing data and studies above).

Task 5: Final Design

The Project is at the 30% phase with conceptual designs completed. Western will develop a Request for Proposals and solicit proposals for the final design of the wells in December 2010. Final selection will be approved by the Chino Desalter Authority and design will be awarded by early February 2011, with completion by end of May 2011. As recommended in the *Preliminary Design Report for the Chino Creek Wellfield and Chino II Expansion Wellfield Chino Desalter Phase 3 Project Report*, prior to implementing final well designs, a meeting will be held between all involved parties including Western, members of the Chino Desalter Authority, and consultants to discuss and reach consensus on the details of the well design.

Deliverables: Completion of project plans and specifications at the 90 percent and final level.

Task 6: Environmental Documentation

The *Draft Initial Study for Chino Desalter Phase 3 Expansion* dated September 2010 and prepared by Tom Dodson & Associates provides CEQA documentation for the Project. A final document is anticipated in December 2010. The Draft Initial Study found that although the proposed project could have a significant effect on the environment, there will not be a significant effect due to mitigation measures. A Mitigated Negative Declaration will be prepared.

The cost of the environmental documentation is being reimbursed through another grant program, hence Western will not seek reimbursement for these costs nor will Western use these costs as part of their required match. However, Western recognizes that completion of CEQA is a necessary task.

Deliverables: A Mitigated Negative Declaration

Task 7: Permitting

Well development will require compliance with the National Pollutant Discharge Elimination System and specific well sites will require approval from the Chino Basin Watermaster. Western will require the construction contractor to prepare and implement a Storm Water Pollution Prevention Plan, consistent with the General Construction Activity Storm Water NPDES (General Permit).

Western will coordinate with the Chino Basin Watermaster to determine final CCWF Well 1, 2, and 3 locations. No construction will begin until Western receives a letter from the Chino Basin Watermaster concurring with the well site locations.

Deliverables: Stormwater Pollution Prevention Plan, Concurrence Letter from Chino Basin Watermaster.

D - BUDGET CATEGORY (d): CONSTRUCTION/IMPLEMENTATION

Task 8: Construction Contracting

After final design is completed in late May 2011, construction of the Project will be advertised for bidding through standard Western procedures. Western will pre-qualify construction contractors using procedures consistent with the Public Contract Code. Western will hold a pre-bid meeting and respond to questions from contractors, open and review bids for completeness, and award the project to the responsible bidder with the lowest bid in accordance with the Public Contract Code. Depending on the status of grant funds and acceptance of CEQA documents by DWR, a notice to proceed for construction of the Project could be issued by August 2011.

Deliverables: Advertisement for bids; bid evaluation documents; notice of contract award

Task 9: Construction

Detail descriptions of the construction process are described in Section 4 of the *Preliminary Design Report for the Chino Creek Wellfield and Chino II Expansion Wellfield*. The selected contractor will construct the wells in accordance with the final plans and specifications. The wells will be constructed in sequence with some overlap in the construction schedule of each well. The total mobilization/construction/demobilization schedule of each well is approximately 15 weeks each. Construction of the first well is expected to begin as early as August 2011 and the last well will complete construction in mid to late March 2012.

a. Subtask 9.1 - Mobilization and Site Preparation

Mobilization and site preparation will involve mobilizing a fluid reverse circulation rotary drilling rig and its associated equipment to the well site including sound barriers for noise control, reservoirs for fluid containment, solids control equipment, and a working geologist.

b. Subtask 9.2 - Project Construction

Construction activities will consist of the following:

1. Drilling, installing and cementing a 36-inch OD conductor casing to a depth of 50 ft within a 48-inch diameter borehole.
2. Drilling and sampling the 17 ½ -inch diameter pilot borehole to total depth with deviation surveys being performed every 100 ft.
3. Conditioning and cleaning the borehole, if necessary, prior to running the specified geophysical borehole logs.
4. Performing isolated aquifer zone testing within the pilot borehole.
5. Destroying the borehole in accordance with County of San Bernardino requirements if unsuitable as a production well. If suitable, the following steps will be completed:
6. Enlarging the pilot borehole from 17 ½ inches to 28 and 32 inches in diameter to total depth.
7. Performing a caliper survey on the enlarged borehole less than six hours prior to the installation of the casing and screen.
8. Installing 18-inch ID casing and louvered well screen within the reamed borehole, with centralizers, sounding tube, and two (2) gravel feed pipes as necessary.
9. Installing an artificial filter pack in the annular space between the casing and/or screen and the borehole wall, and install surface seal as necessary.
10. Performing initial development by airlifting and swabbing from between packers.
11. Cleaning out the blank casing below the screened interval.
12. Construction of pump buildings and associated piping connections.

c. Subtask 9.6 - Performance Testing and Demobilization

Performance testing and demobilization activities will consist of the following:

1. Demobilizing the drilling rig and associated drilling equipment.
2. Mobilizing the test pump and support equipment.
3. Installing a deep well turbine test pump with a variable speed engine.
4. Performing final development using a deep well turbine test pump.

5. Performing well and aquifer tests (including step drawdown, constant rate and recovery tests).
6. Collecting water quality samples for Title 22 (California Code of Regulations) and other selected analyses.
7. Performing a spinner (flowmeter) survey prior to the end of the constant rate pumping test.
8. Removing the test pump from the well.
9. Performing a gyroscopic alignment survey of the well.
10. Bailing the well to remove sediments, which have accumulated during test pumping.
11. Performing a dual-cam video survey of the well.
12. Demobilizing all equipment, including site cleanup, restoration and wellhead completion.

**E - BUDGET CATEGORY (e): ENVIRONMENTAL COMPLIANCE/MITIGATION/
ENHANCEMENT**

Task 10: Environmental Compliance/Mitigation/Enhancement

As described earlier, CEQA documentation for the Project should be completed prior to execution of a grant agreement. Western will require the construction contractor to follow mitigation measures identified in the CEQA documentation. Anticipated mitigation measures include requiring the contractor to comply with, and implement, the Stormwater Pollution Prevention Program, limit the hours during which construction can occur, utilize practices to limit the potential for release of hazardous materials, restricting access to the construction, In addition, Western will require that all areas, except those areas occupied by structures or hardscapes, be revegetated, either with native vegetation in natural landscapes or in accordance with a landscape plan in man-made landscape areas.

F - BUDGET CATEGORY (f): CONSTRUCTION ADMINISTRATION

Task 11: Construction Administration

During construction, Western staff and/or qualified engineering consultants will provide construction management and administration, including daily on-site observation; inspection of materials used for construction, including soils and concrete; and documentation of these activities.

Project M: Impaired Groundwater Recovery (Irvine Ranch Water District)

Part One - Introduction

The Wells 21 and 22 Project will recover and treat impaired groundwater to increase local drinking water supplies for the Irvine Ranch Water District (IRWD) service area to meet growing demands. The Project will supplement IRWD's current annual potable supplies, reduce demands of imported water, and increase IRWD's diversity of local supply. The projected Wells 21 and 22 Project yield is expected to be 6,330 acre-feet per year (AFY). IRWD currently receives imported treated water from the Metropolitan Water District of Southern California (MWD).

IRWD owns Wells 21 and 22 located within the City of Tustin, southeast of the Newport and Santa Ana Freeways. Agricultural and urban drainage, as well as salt concentration have degraded this portion of the Basin. In the past, the project area of the Orange County Groundwater Basin (Basin) had been exclusively used for irrigation of agricultural crops and livestock. Natural geology, past agricultural practices (farming and livestock operations) have resulted in high total dissolved solids (TDS), salts and nitrate concentrations. The concentrations have accumulated in the groundwater to the point that it cannot be used as a municipal supply without treatment. In order to utilize these wells and the water supply, IRWD proposes to construct a nearby treatment plant and conveyance facilities for Wells 21 and 22.

Development of additional groundwater and recycled water are projected to reduce dependence on imported water supply for future District operations. If the groundwater supplies are expanded as planned, IRWD's potable demand will be served primarily from local supplies produced, supplemented by MWD imported water. Should IRWD choose to not expand groundwater resources for cost or other reasons, future demands would need to be served with imported treated water from MWD. The proposed groundwater recovery and treatment project will help to meet existing and new demands and will reduce demands on MWD for imported supplies.

A - GOALS AND OBJECTIVES

The Project goals and objectives are as follows:

- Recover and treat local impaired groundwater for potable use to satisfy increasing water demands and provide a reliable local water supply source of approximately 6,330 acre-feet per year (AFY)
- Reduce local dependency on imported water from Bay-Delta thereby alleviating freshwater shortages
- Build sustainable infrastructure and provide long-term benefits for the IRWD service area
- Improve the Orange County Groundwater Basin water quality by removing salts and nitrates

B - PURPOSE AND NEED

Currently IRWD receives 35% of its drinking water supplies imported from MWD. MWD gets its supplies from the Colorado River and the State Water Project (SWP). In 2009, MWD declared a Level 2 stage Water Supply Allocation due to statewide drought conditions through years of below-average rainfall and court-ordered restrictions limiting imported State water supplies. IRWD's service area is growing and potable water demands are expected to increase by 30% over the next 20 years and new supplies are needed to meet these demands. If IRWD does not expand groundwater resources for cost or other reasons, future demands would need to be served with imported treated water from MWD. In 1992, IRWD constructed Wells 21 and 22 but, was unable to put the wells into production due to nitrate levels that exceed the primary drinking water standard, elevated total dissolved solids (TDS) above the secondary standard upper limit, and hardness levels above an acceptable concentration. As imported supplies continue to be stressed by drought and environmental constraints with reliability uncertainties, IRWD made the decision to try to integrate these existing wells with treatment into the domestic water supply system.

Wells 21 and 22 currently are not able to produce potable water without treatment; therefore, the project is considered to be a new drinking water supply. The Project will

enable IRWD to increase local supplies by 6,330 AFY which directly offsets the need for imported water. By using treated, impaired groundwater, the Project will reduce imported water demands for the region and result in overall water conservation by effectively utilizing local water supplies that would otherwise be an unusable water source.

The use of local groundwater will directly reduce local dependency on imported water from Bay-Delta thereby alleviating freshwater shortages which supports one or more of the objectives of the CALFED Bay-Delta Program. Developing local supplies to meet demand will also reduce operations and maintenance costs for water importation to Southern California. Offsetting imported water with locally produced water will free up MWD system capacities otherwise used for IRWD demands and make this available to other MWD member agencies. A regional benefit is derived by “freeing” up MWD imported water capacity for use by others.

As a result of offsetting imported water with locally produced water, MWD system capacities otherwise used to meet IRWD demands are extended and available to other areas. The water supply reliability benefit derived by the project incrementally reduces the potential probability and severity of water shortages, both locally and for the Southern California region. Implementing local water supply projects will help to address current water shortages. The Project provides a local, reliable, potable water source that directly increases local supplies during both droughts and emergencies. The Project will provide sustained local water supply benefits both seasonally through the year and across the years.

C - INTEGRATED ELEMENTS OF PROJECTS

A description of synergies or linkages between projects that result in added value or require coordinated implementation or operation.

The Wells 21 and 22 Project will provide benefits by pumping impaired groundwater, producing a new local supply and removing nitrates and TDS concentrations from the Basin. The benefits to the Groundwater Basin include removing and beneficially using poor-quality groundwater and reducing or preventing the spread of poor-quality

groundwater into non-degraded aquifer zones. The Project utilizes unusable groundwater for higher quality purposes and it will help to reduce nitrate levels, salinity and hardness in the Basin which benefits all local producers. The recovered groundwater from the Project utilizes an otherwise unusable water source, improves regional water quality, reduces reliance on imported water, and diversifies local water supply.

It will also produce waste brine, high in salts and nitrates for discharge that will be discharged to the ocean through permit with the Orange County Sanitation District (OCSD), which contributes to reducing the salinity of the Basin. Managing salinity levels in the Basin and in recharge water is an important objective of the Orange County Water District (OCWD), the regional agency which manages the Orange County Groundwater Basin and is responsible for protecting and managing the groundwater resources within the Basin. As part of OCWD's management of basin water quality, OCWD encourages the pumping of poor-quality groundwater that does not meet drinking water standards in order to protect basin water quality and clean up and reduce the ability of this groundwater from spreading and impacting other portions of the Basin. The project will assist the OCWD with the management of the Basin.

D - COMPLETED WORK

The Wells 21 and 22 Project is subject to the environmental review process established in the California Environmental Quality Act (CEQA). IRWD complied with CEQA by preparing an Initial Study and adopting a Mitigated Negative Declaration. In addition, this Project was selected to receive federal funding through IRWD's Title XVI authorization and will require compliance with the National Environmental Protection Act (NEPA). An Environmental Assessment (EA) was also completed on this Project as required in federal funding assistance. CEQA and NEPA environmental review work for the Project began in August 2009 and environmental certification was completed on February 8, 2010.

The Preliminary Design Report shows 30% design of the project facilities (Preliminary Design Report (PDR) previously submitted). Based on the evaluation, to achieve the water quality goals for the Project, the PDR recommends the reverse osmosis (RO)

treatment technology. The treatment process will consist of pretreatment, reverse osmosis, decarbonation, chemical conditioning and disinfection, and will be designed to meet the State of California Title 22 requirements for drinking water. Treatment will be designed to achieve the desired nitrate concentration below 45 mg/L, as well as the desired TDS concentration below 500 mg/L, and reduce hardness levels to acceptable concentrations. IRWD awarded a design/build contract in August 2010 for the treatment plant and will award construction of the wellheads and pipelines by early 2011.

E - EXISTING DATA AND STUDIES

A brief discussion of the data that have been collected and studies that have been performed that support the Project(s) site location, feasibility, and technical methods. If necessary, include references to the page locations of the studies or reports that support the claims made in this discussion.

IRWD has given extensive consideration to the details involved in construction of a desalting facility in the proposed project area and has examined other alternatives, generally classified by 1) alternative technologies, 2) alternative locations, 3) raw water conveyance, 4) product water connections, and 5) brine disposal alternatives.

Preliminary engineering analysis was conducted in 2009 to ascertain the feasibility of equipping Wells 21 and 22 and treating the raw water for supply into IRWD's potable water system. The draft PDR and final PDR (March 2010) are referenced here. The PDR evaluated available treatment sites, viable treatment technologies, potential for additional wells, and brine disposal options. The PDR recommends the RO process RO membrane process will provide a barrier for rejecting the chemicals of concern.

Furthermore, because the RO are non-selective processes with high rejection rates, they are of great value in addressing future contaminants of concern.

The PDR summarizes the facilities necessary to utilize the degraded groundwater for potable water supply and reduce the demand for imported water. The PDR provides a thorough analysis of the water quality and treatment evaluations which show the amount of water treated and salts and nitrates removed by the Project. A copy of this study was provided to SAWPA for review as part of project selection. The raw groundwater is

expected to average 780 mg/l total dissolved solids (TDS) and 80 mg/l nitrate (as nitrate). The product water is estimated at 245 mg/l TDS and 26 mg/l nitrate.

Evaluation of Alternatives

Treatment Alternatives for Wells 21 and 22:

RBF Consulting developed a blending and treatment mass and flow balance model for Wells 21 and 22 water. The model included four water sources as inputs and tracks the resulting nitrate, TDS and hardness as the water is treated through RO membranes, ion exchange and bypassing. In addition to Wells 21 and 22 raw water, two other water source inputs were included to provide options for blending (Zone 1 water quality based on 2009 data and OC-58 Diemer effluent water report in MWD's 2008 annual water quality report). These were included to extend the utility of the model to scenarios that might achieve finished water goals through blending alone and combinations of blending and treatment.

Blending Alternative Evaluation:

Blending with existing IRWD potable water supplies was evaluated for treatment of Wells 21 and 22- raw water in order to meet the stated water quality goals. The two supply sources for blending in IRWD's Zone 1 are MWD imported water and groundwater supplied from Dyer Road Wellfield:

1. MWD imported water through the OC-58 turnout via the Orange County Feeder No. 2 Pipeline. A total of 10 cubic feet per second (cfs) or 4500 gpm is available for blending.

Imported water to IRWD's Zone 1 system is supplied through the Orange County Feeder No. 2 pipeline at various turnout locations, which is supplied by MWD's Diemer Filtration Plant. This facility receives a blend of water from the Colorado River Aqueduct and the SWP. Due to the recent court ruling limiting pumping from the Bay Delta, which impacts SWP supplies to Southern California, a major shift has taken place in the make-up of water coming from the Diemer Plant.

According to MWD's annual water quality report, the Diemer facility averages 54 percent of its supply from the SWP. In more recent Diemer data (December

2008), it has an average of just seven percent SWP. Colorado River supply has increased levels of TDS and hardness; therefore, this new blend ratio greatly impacts the viability of blending for treatment. It is unclear how long the cutback in SWP supplies will persist, as a result, IRWD has assumed the decrease will not change in the near future.

2. IRWD's Zone 1 water supplied from the Dyer Road Well Field (DRWF) and deep aquifer treatment system (DATS). The current capacity of this system is approximately 80 cfs or 36,000 gpm. The main source of supply to IRWD's Zone 1 system is the DRWF and DATS. These sources provide high water quality in all respects.

Blending Scenarios:

Blending Scenario 1 – Scenario 1 utilizes the full allotment of imported water from the OC-58 turnout and assumes average imported water quality from year 2007 (54 percent SWP). IRWD Zone 1 water is used, in addition to the imported supply, at a flow rate necessary to reach the water quality targets.

Blending Scenario 2 – Scenario 2 utilizes the full allotment of imported water from the OC-58 turnout and assumes imported water quality from the December 2008 Diemer plant data (seven percent SWP). IRWD Zone 1 water is used, in addition to the imported supply, at a flow rate necessary to reach the water quality targets.

Blending Scenario 3 – Scenario 3 uses no imported water for blending. IRWD Zone 1 water is used alone at a flow rate necessary to reach the water quality targets.

The three scenarios were analyzed using a model performing a mass balance calculation, tracking the constituents of concern based on the source water quality and flow rate inputs. Based on the analysis, significant drawbacks are associated with blending for treatment of Wells 21 and 22 raw water and this method of treatment was not recommended.

Treatment Alternative Evaluation:

Three different treatment trains, with a total of seven different flow-rate options, were evaluated. The treatment alternatives included:

- RO membrane with ion exchange side stream flow
- RO membranes
- Nanofiltration/RO (NF/RO) membranes hybrid

For operational flexibility and ease, the RO membrane treatment alternative is recommended. The IRWD Operations staff is familiar with RO treatment, as they have been operating the Irvine Desalter RO Plant for several years. The RO technology is a proven treatment process and would not require the additional DPH pilot testing that would likely be required of the NF/RO hybrid treatment process. The time required for DPH pilot testing would result in the project not meeting the USBR substantial completion date.

Treatment Site Identification

Ten potential treatment site locations were identified for evaluation to accommodate the recommended treatment facilities. The criterion used to evaluate the sites included:

- Adequate area for treatment plant
- Accessibility
- Land use/zoning
- Required site improvements
- Acquisition cost and difficulty
- Proximity to Wells 21 and 22, storm drains, product water discharge, and brine disposal
- Feasibility of additional on-site wells.

Based on the information in the PDR, IRWD conducted an extensive search of prospective treatment plant sites, which resulted in the identification of a 1.88 acre

property located at 1221 Edinger Avenue in Tustin as the preferred site. IRWD's Board approved the purchase of the site on March 22, 2010.

Raw Water Conveyance Pipelines

The alignment investigation of the raw water conveyance pipeline was predicated upon determining a primary route between the wells and proposed treatment site locations. The alternative raw water conveyance alignments to each of the proposed 10 candidate treatment sites were used as a preliminary evaluation tool to ascertain those treatment sites that were advantageous in terms of pipe length required and those in more desirable right-of-ways in which to construct. These potential alignments were narrowed down considerably based on the selection of the MCAS as the preferred treatment site.

Potential Connection Points

IRWD's existing potable water hydraulic model was utilized to determine potential tie-in (connection) points to the Zone 1 Central System. To minimize transmission pipeline costs, Wells 21 and 22 treated water is proposed to feed into the nearest Zone 1 facilities capable of accepting and distributing these supplies to IRWD customers, while adhering to the District's hydraulic standards. Connecting to the Zone 2 or Zone 3 systems would require miles of additional pipeline and/or crossing of the Interstate-5 freeway.

Brine Disposal

The recommended RO treatment process is anticipated to have a recovery rate near 85 percent; therefore, approximately 15 percent of treated flow as brine will require disposal. The PDR evaluated three alternatives for brine disposal. The recommended disposal alternative is to OCSD's existing sewer system draining to OCWD Wastewater Treatment Plant No. 1 due to its relatively close proximity to the Project. The study currently recommends constructing a brine disposal pipeline from the treatment plant, southerly, to connect to IRWD's Armstrong Truck Sewer located in Barranca Avenue. The Armstrong sewer drains to OCSD Plant No. 1. OCSD has precedence of allowing brine discharge from a similar water treatment plant in the City of Tustin. IRWD is in the process of working with OCSD on permitting the brine discharge. This discharge requires a surcharge above normal special discharge permit costs for additional TDS load

at OCSD Plant No. 1. These costs are estimated and included in the operations and maintenance estimates in Section 3.

No-Project Alternative:

The No-Project Alternative would avoid all impacts associated with the construction and operation of the proposed project but would not achieve any benefits or the project objectives.

Under the No-Project Alternative, no groundwater extraction and treatment facilities would be constructed to produce and treat an impaired, unusable supply for drinking water. Without the Project, the TDS and nitrate concentrations will remain in the Basin and ultimately be further concentrated in the Watershed. This would ultimately hinder the beneficial use of the local groundwater supply. The potential degradation of the groundwater by nitrates and salts could reduce future pumping for potable supplies, causing more surface water to be imported to the area to meet demands.

Under the No-Project alternative, additional imported water would be needed to meet growing demands in IRWD service area. The Project will produce approximately 6,330 AFY of drinking water. In absence of the project, and because IRWD's current production of local groundwater is fixed in the Orange County Basin, the incremental potable water demands associated with new development in the area would be met from additional imported water supplies provided by the MWD. Although, MWD has other water sources, the incremental imported water demand associated with increased development in the area would result in increases on either the Delta or Colorado River supplies to meet MWD's incrementally higher needs. In contrast, if the Project is built using local groundwater, then there will be no need for incremental Delta pumping or increase on Colorado River supplies. Beneficial use of this local water source will directly offset the demand for importing water.

F - PROJECT MAP



G - PROJECT TIMING AND PHASING

The proposed project is not part of a multi-phased project complex. The wells, treatment plant and pipeline are components of the proposed project which are proposed for the IRWM Implementation grant funding.

Part Two - Proposed Work Tasks

A - BUDGET CATEGORY (a): DIRECT PROJECT ADMINISTRATION COSTS

Task 1: Administration

IRWD staff will administer the project with consultants and construction management. IRWD administrative staff will prepare invoices and other deliverables as required.

Deliverables: Preparation of invoices and other deliverables as required.

Task 2: Labor Compliance Program

IRWD has retained Golden State Labor Compliance, LLC to perform labor compliance services including labor compliance program administration, meetings with contractors and subcontractors, review and monitoring of certified payroll records for payment of the proper prevailing wage rate, conduct regular random audits of the certified payroll reports and conduct field inspections to confirm proper jobsite postings, interview workers to confirm water rate classification.

Deliverables: Submission of Labor Compliance Program

Task 3: Reporting

IRWD shall prepare and submit quarterly, annual and final reports as specified in the Grant Agreement.

Deliverables: Submission of quarterly, annual and final reports as specified in the Grant Agreement.

B - BUDGET CATEGORY (b): LAND PURCHASE/EASEMENT

IRWD acquired the 1.88-acre site for the project treatment plant in March 2010. The pipelines for distribution system connection are primarily located within public street rights-of-way. IRWD will confirm right-of-way requirements in the design phase for all project elements.

C - BUDGET CATEGORY (c): PLANNING/ENGINEERING/ENVIRONMENTAL DOCUMENTATION

Task 4: Assessment and Evaluation

IRWD has given extensive consideration to the details involved in construction of a desalting facility in the proposed project area and has examined other alternatives, generally classified by 1) alternative technologies, 2) alternative locations, 3) raw water conveyance, 4) product water connections, and 5) brine disposal alternatives. Preliminary engineering analysis was conducted in 2009 to ascertain the feasibility of

equipping Wells 21 and 22 and treating the raw water for supply into IRWD's potable water system. The draft PDR and final PDR (March 2010) are referenced herein.

The PDR evaluated available treatment sites, viable treatment technologies, potential for additional wells, and brine disposal options. The PDR recommends the RO process RO membrane process will provide a barrier for rejecting the chemicals of concern. Further, because the RO are non-selective processes with high rejection rates, they are of great value in addressing future contaminants of concern.

The PDR summarizes the facilities necessary to utilize the degraded groundwater for potable water supply and reduce the demand for imported water. The PDR provides a thorough analysis of the water quality and treatment evaluations which show the amount of water treated and salts and nitrates removed by the treatment plant. The Preliminary Design Report was included with the project information on SAWPA's FTP site.

Deliverables: Technical studies

Task 5: Final Design

The Preliminary Design Report shows 30 percent design of the project facilities (PDR previously submitted). IRWD awarded a design/build contract in August 2010 for the treatment plant and will award construction of the wellheads and pipelines by early 2011. IRWD provides general administration over the final design and weekly meetings. The final design will include such tasks as:

- Surveying, site topography, contours, horizontal and vertical controls, and existing utilities, property lines and rights-of-way
- A preliminary geotechnical investigation will be performed prior to preparation of the final design documents to identify impediments to the planned alignment of the pipeline
- Review of geotechnical report
- Conduct pilot testing, if necessary

- Preparation and review of design drawings, including civil, hydraulic, process, architectural, structural, mechanical and instrumentation design for all project components
- Preparation and review of technical specifications
- Preparation and review of construction cost estimates at each stage of design completion
- Obtain permits, rights-of-ways and easements necessary for the project
- Review design drawings, technical specifications, and construction cost estimate for review at the 30 percent, 60 percent, and 90 percent completion stages
- Receive 100 percent final construction contract documents and engineer's estimate
- Prepare and review bid and contract documents

Deliverables: Completion of project plans and specifications at the 90 percent and final level.

Task 6: Environmental Documentation

The Wells 21 and 22 Project is subject to the environmental review process established in CEQA. IRWD complied with CEQA by preparing an Initial Study and adopting a Mitigated Negative Declaration. In addition, this project was selected to receive federal funding through IRWD's Title XVI authorization and will require compliance with NEPA. An environmental assessment (EA) was also completed on this project as required in federal funding assistance. CEQA and NEPA environmental review work for the Project began in August 2009. Environmental certification was completed on February 8, 2010.

Deliverables: Approved and adopted CEQA/NEPA documentation

Task 7: Permitting

Regulatory requirements for the Wells 21 and 22 Project include the following:

- State of California Department of Public Health, Office of Drinking Water, amended water supply permit
- Orange County Sanitation District, special purpose discharge permit
- Orange County Air Pollution Control District, permits to construct and operate
- City of Tustin, conditional use (courtesy review), encroachment and construction permits
- City of Irvine, encroachment permit
- Caltrans, encroachment permit
- OCTA Metrolink, right of entry/crossing permit
- The Irvine Company, right or entry/encroachment permit
- County of Orange, encroachment and flood discharge permits
- California Department of Fish and Game 1602 Streambed Alteration permit (jack and bore at Peters Canyon and Santa Fe channels)
- Regional Water Quality Control Board, storm water discharge during construction, and De Minimus permit for well water dewatering and plant air gap discharges

The treatment plant site was purchased by IRWD and pipelines for distribution system connection are primarily located within public street rights-of-way. IRWD will confirm right-of-way requirements in the design phase for all project elements.

Deliverables: Copies of applicable permits

D - BUDGET CATEGORY (d): CONSTRUCTION/IMPLEMENTATION

Task 8: Construction Contracting

IRWD awarded a design/build contract in August 2010 for the treatment plant and will award construction of the wellheads and pipelines by early 2011. During the bid phase engineering services include:

- Attend pre-bid conferences
- Interpret construction contract documents as needed
- Prepare addenda as required
- Attend bid openings and receive and review bids
- Prepare construction contracts for award

Deliverables: Advertisement for bids; pre-bid contractors meeting; evaluation of bids; award contract

Task 9: Construction

The construction task items will include:

- Installation of supply facilities (wellheads)
- Construction of groundwater transmission pipelines
- Construction of treatment facilities
- Construction of finished water transmission pipeline
- Construction of brine line
- a. Subtask 9.1 - Mobilization and Site Preparation

Construction crews will mobilize and prepare site for construction activities.

- b. Subtask 9.2 - Project Construction

Well Pump Construction.

Well pumps will be constructed for the existing Wells 21 and 22. The design criteria and hydraulic design parameter were combined with IRWD standards to determine the size, type, and candidate manufacturers for the mechanical equipment associated with the Project. Mechanical equipment includes

pumps/motors, control/isolation valves, flow meters, piping, backflow prevention, miscellaneous appurtenances, and provisions for surge control. Electrical and instrumentation control panels will also be included. The PDR recommends submersible pumps and electric motors for the wellhead pumps.

Groundwater conveyance pipeline.

An untreated water conveyance pipeline ranging in size from 16-inch to 24-inch diameter will be constructed to deliver 4,900 gallons per minute (gpm) of untreated water from the well sites to the treatment plant. The proposed groundwater pipeline will consist of two reaches: (1) approximately 750 lineal feet of 18-inch diameter pipe from Well 21 site to the Well 22 site; and (2) approximately 10,900 lineal feet of 24-inch diameter pipe extending from the Well 22 site to the proposed treatment plant site. Construction methods will include a combination of open-trench and trenchless construction methods. Trenchless, jack and bore construction, will be required for crossing the railroad and drainage channel along the untreated water conveyance pipeline. Open-trenching will require pavement replacement in paved right-of-way. Traffic control will be required during construction in compliance with the local agency requirements.

Treatment facilities.

The proposed treatment facility will be sized and constructed to treat approximately seven mgd of groundwater supplies from Wells 21 and 22 using RO membrane technology to treat the impaired groundwater. Primary components of the treatment plant construction include:

- Cartridge filters to remove residual sand and other particulates
- Acid and threshold inhibitor addition for scale control
- RO membrane feed pumps for boosting RO feed pressure
- RO membrane trains for removing dissolved solids and nitrates
- Decarbonators for post treatment pH adjustment and stabilization

- Post treatment chemical conditioning, including pH adjustment, disinfection and corrosion inhibitor.
- Product water pumps to transfer finished water to the distribution system
- Chemical storage and feed systems (for scale inhibitor, sulfuric acid, caustic soda, sodium hydroxide, sodium hypochlorite, ammonia, and corrosion inhibitor)
- Clearwell
- Bypass flows
- Brine pumps and discharge piping
- Electrical, instrumentation and controls
- Building

Product water Pipeline.

A 24-inch diameter product water pipeline will be constructed to deliver water from the treatment plant product water pump station to the proposed IRWD Zone 1 tie-in point. The Project consists of new facilities for treatment and connection to the IRWD potable water distribution system. No improvements to IRWD's potable water distribution system beyond the points of connection are included in this Project.

Brine generated from the treatment facility will be discharged to existing sewer facilities in Red Hill Avenue owned and operated by Orange County Sanitation District (OCSD). The proposed brine pipeline will convey the brine, under pressure, from the treatment plant site southerly and easterly to the existing 42-inch diameter sewer located at the intersection of Red Hill Avenue and Warner Avenue. The non-recoverable waste pumps from the treatment plant will be used to pump the brine through a force main to this connection. The brine will be disposed to OCSD's existing sewer system draining to OCWD Wastewater Treatment Plant No. 1.

c. Subtask 9.6 - Performance Testing and Demobilization

Start-up Testing tasks will include the following facilities:

- Supply facilities (wellhead) testing
- Groundwater transmission pipeline testing
- Treatment facilities testing
- Finished product water transmission pipeline testing

After operation of the project begins, the project yield, water quality, volume and concentration of influent and waste brines will be measured to determine effectiveness. Flow rates will be monitored and the water production of the treatment plant will be recorded for the potable system. In addition, the brine flows will be measured to determine the rate of recovery of the RO treatment processes. The success of the project components will be indicated by the annual production of potable water and by the amount of TDS and nitrates removed from the basin as waste brines are directly discharged to the ocean.

Wells will be monitor for Title 22 water quality compliance, including TDS and nitrates. The water quality will be used to assess the baseline quality and the performance of the potable treatment system. Both static water level and pumped water levels will be monitored to determine any changes in the direction of groundwater flow. The well field water levels will be incorporated into the groundwater monitoring programs administered by the OCWD. The wells will be monitored for Title 22 compliance of the finished product water from the potable stream. The efficiency of the RO membranes will be determined as well as the brine water quality. Because RO membranes will need to be replaced periodically, the RO systems will be monitored for fouling, scaling, and effectiveness of the membrane cleaning process.

As part of the Project, TDS and nitrates will be measured prior to the treatment plant and after treatment in the brine stream and the product water stream. Flow will be monitored using IRWD's Supervisory Control and Data

Acquisition (SCADA) system. Flow data will be collected and recorded in the system from each designated flow monitor. One flow monitor will be placed at each of the monitoring locations. The flow monitor will collect data every minute and record the flow at that time.

E - BUDGET CATEGORY (e): ENVIRONMENTAL COMPLIANCE/MITIGATION/ ENHANCEMENT

Task 10: Environmental Compliance/Mitigation/Enhancement

IRWD completed environmental review for the Project in February 2010. IRWD has adopted mitigation measures to be performed during and after construction of the Project facilities. These mitigation measures are in the areas of aesthetics, biological resources, cultural resources, geology, soils, noise, and transportation/traffic. With incorporation of adopted mitigation measures, the temporary impacts associated with construction would be reduced to less than significant levels and would not adversely affect the environment.

F - BUDGET CATEGORY (f): CONSTRUCTION ADMINISTRATION

Task 11: Construction Administration

Construction management tasks will include the following:

1. Contractor contract administration
2. Review contractor shop drawing submittals
3. Respond to requests for information
4. Attend progress meetings and review pay requests
5. Inspect construction
6. Perform materials testing
7. Prepare record drawings
8. Contract administration and close out
9. Coordinate with project auditors