Harold Snyder
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October 7, 2011

Nipomo Community Services District
148 Wilson Street
P.O. Box 326
Nipomo, CA 93444

(805) 929-1133 Phone
(805) 929-1932 Fax

Dear Michael LeBrun:

At the 8/23/11 public presentation, in reference to the currently proposed "Water Intertie Project / Supplemental Water Project" you stated:

> "1:28:20 Lebrun: so it's much more cost effective, especially when you look at the life cycle of operation this thing for 30 years.."

I searched the NCSD website for "life Cycle" and did not find any documents that relate to the "Life Cycle" "Costs" of the "Water Intertie Project / Supplemental Water Project"

I am making a public record request for a copy of the documentation of the "cost" for the "life cycle of operation" of the Water Intertie Project or Supplemental water project.

You state that it is "much more cost effective" so I am also requesting a copy of the documentation of the "Life Cycle" "Costs" of any alternatives that were used for comparison.

Thank You

Harold Snyder

NIPOMO COMMUNITY SERVICES DISTRICT

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LARRY VIERHEILIG, **VICE PRESIDENT**
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TINA GRIETENS, **UTILITY SUPERINTENDENT**
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148 SOUTH WILSON STREET POST OFFICE BOX 326 NIPOMO, CA 93444 - 0326
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October 14, 2011

Mr. Harold Snyder
P. O. Box 926
Nipomo, California 93444
kochcal@earthlink.net

Dear Mr. Snyder:

SUBJECT: OCTOBER 7, 2011 PUBLIC DOCUMENT REQUEST

In responding to the public document request dated and received in the District office on October 7, 2011 (Attached). We have printed an excerpt of Attachment 7 of the San Luis Obispo County Integrated Proposal for State of California Department of Water Resources IRWM Proposition 84 Round 1 Implementation Grant, submitted January 2011.

There are 45 pages contained in this excerpt and the fee for copying is $10.30.

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**************
* Nipomo CSD *
**************
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Very truly yours,

NIPOMO COMMUNITY SERVICES DISTRICT

Michael S. LeBrun
General Manager

Enclosure(s):

- 111007 Snyder Request

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                    148 S Wilson, PO Box 326
Nipomo, CA. 93444

October 14, 2011          Receipt #..: 73959
Friday 2:40 pm            Register #.: 000
By: KATHY                 Terminal ID: 10

COP

COPIES                                10.30

Total                                 10.30

Check #
Check Amt...:              .00
Cash.......:            10.30
Amt Tendered:           10.30
Total Paid..:                         10.30
Change.....:                            .00
Paid By.: SNYDER
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Attachment 7

San Luis Obispo County Integrated Proposal
Economic Analysis – Water Supply Costs and Benefits

Attachment 7 describes, calculates, and documents the high value of the water supply benefits that will be delivered by the San Luis Obispo County Integrated Proposal (SLOCIP). The projects in this proposal that deliver water supply benefits are:

- Project Number 2. Los Osos Community Wastewater Project
- Project Number 4. Nipomo Waterline Intertie Project

As will be documented in this Attachment, both projects are shown to be beneficial to the local area, region, and State. Table 7-1 summarizes the total water supply benefits for the projects which total $163,304,242, all attributable to the avoided project costs. The individual project costs as compared to the individual project benefits demonstrate the economic feasibility of each project as well as the overall proposal's economic feasibility.

This Attachment begins with a brief summary of the current state of the water supply and water quality in the San Luis Obispo region. Following that, both projects are analyzed for water supply benefits.

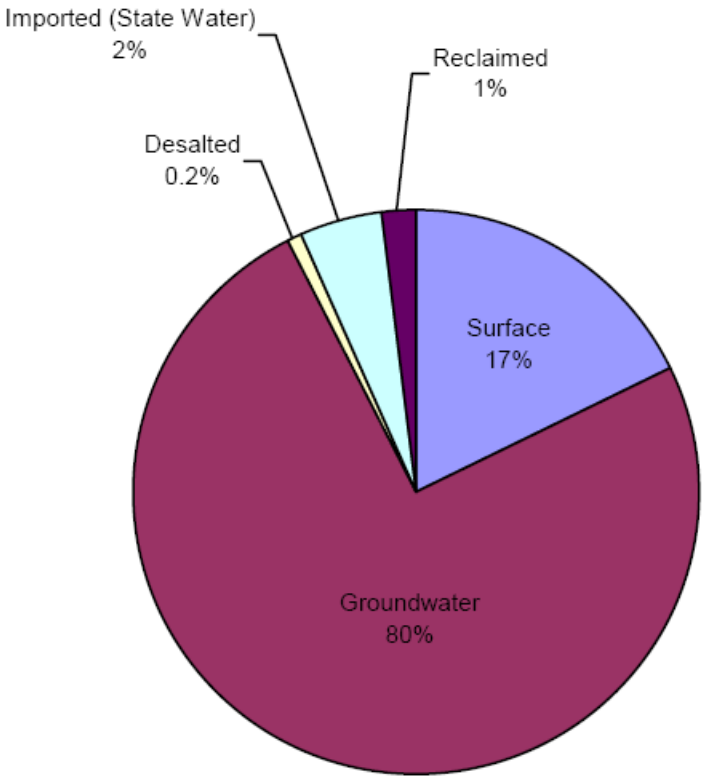
Table 7-1 Monetized Benefits of Proposal Projects

San Luis Obispo County Integrated Proposal				
Project	Total Discounted Water Supply Benefits	Total Discounted Avoided Project Costs	Other Discounted Water Supply Benefits	Total Present Value of Discounted Benefits
		Present Value		
Project Number 2. Los Osos Community Wastewater Project	$0	$65,337,940	$0	$65,337,940
Project Number 4. Nipomo Waterline Intertie Project	$0	$97,966,302	$0	$97,966,302
Grand Total	$0	$163,304,242	$0	$163,304,242

Regional Water Supply Background

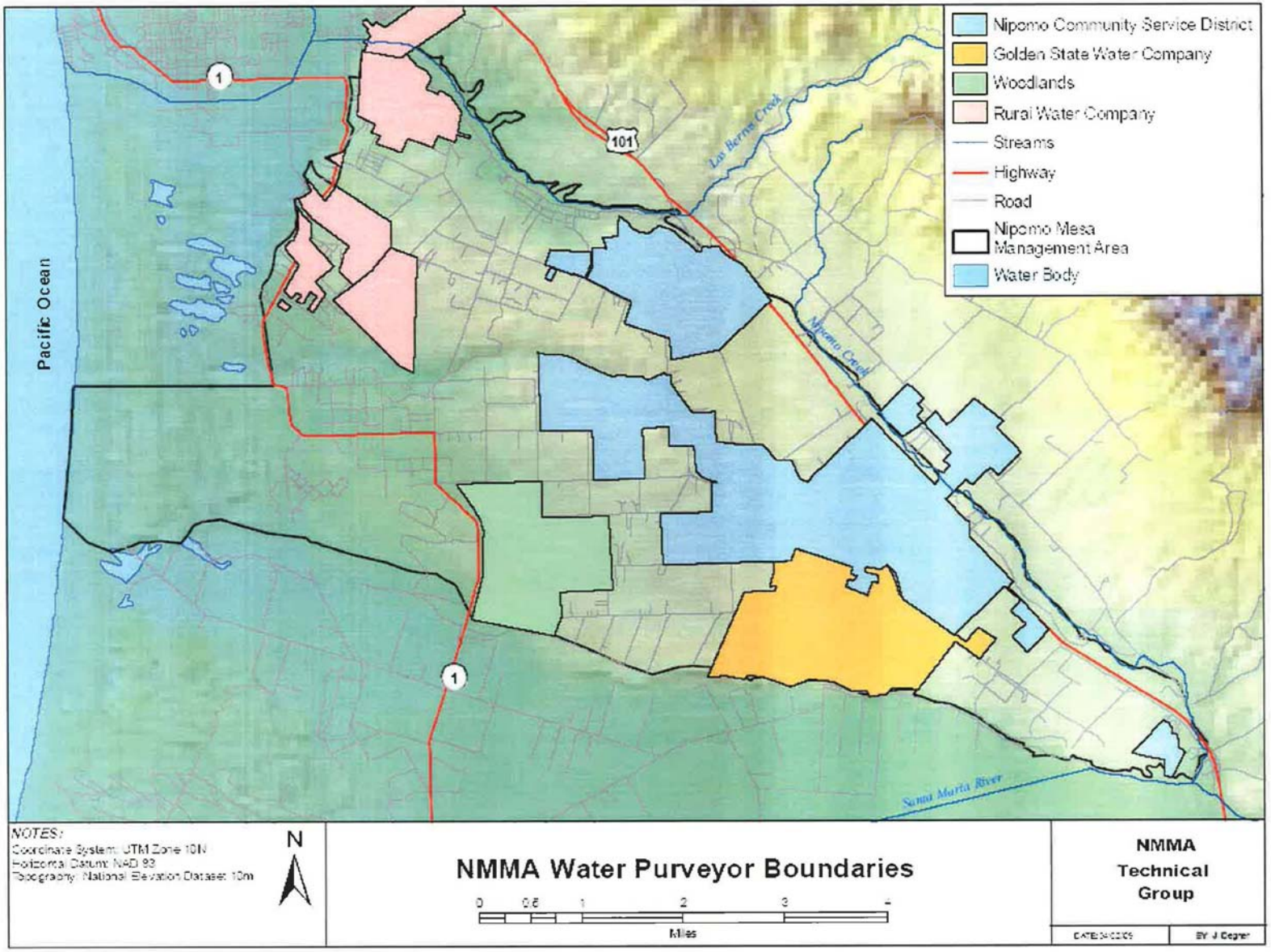
San Luis Obispo County obtains nearly 80 percent of its water from groundwater supplies and about 20 percent from reservoirs and other sources. Figure 7-1 illustrates the region's water supplies. From a regional perspective, the status of overall water supplies within the San Luis Region and their ability to meet projected demand over the next 20 years has improved dramatically with the 2004 decisions to implement the Nacimiento Water Project. Other water supply reliability concerns still continue – those that are in the more urban areas of the region are relatively "small quantity" needs for the communities of Arroyo Grande, Grover Beach and Morro Bay – all of whom have existing infrastructure connections to at least two surface water supplies in addition to their existing groundwater facilities. Thus, while those communities are developing alternatives and recommendations to meet their needs, the communities are in the meanwhile protected in emergencies and droughts as a result of existing facilities and opportunities for water transfers and exchanges.

Figure 7-1 San Luis Obispo Regional Water Supplies



One of the highest priority water supply issues in the region is addressing the Santa Maria Groundwater Basin Adjudication. In 1997, the Santa Maria Valley Water Conservation District filed a groundwater adjudication lawsuit involving the Santa Maria Groundwater Basin that stretches from Orcutt to the South to Pismo Beach to the North (Figure 7-2). The greater Santa Maria Groundwater Basin includes waters underlying the Nipomo Mesa area (at the time commonly known as the Nipomo Hydrologic Sub-basin). The parties to the lawsuit included the City of Santa Maria, landowners and other water purveyors that pump groundwater from the Santa Maria Groundwater Basin including Nipomo Community Services District (NCSD), Woodlands Mutual Water Company (WMWC), Golden State Water Company (GSWC) and Rural Water Company (RWC).

Figure 7-2: Nipomo Mesa Management Area Water Purveyors



Subsequently, many of the parties including NCSD, WMWC, GSWC, City of Santa Maria, and County of San Luis Obispo signed a June 30, 2005, Stipulation (the "Stipulation"). The Stipulation was approved by the Court and the parties were ordered to comply with the terms of the Stipulation. The Stipulation divides the Santa Maria Groundwater Basin into three management areas known as the Santa Maria Valley Management Area (Southern portion of the Groundwater Basin) the Nipomo Mesa Management Area (the NMMA) (the center portion of the Groundwater Basin) and the Northern Cities Management Area (the northern portion of the Groundwater Basin).

Pursuant to the Stipulation, WMWC, GSWC and RWC agreed to participate in the Nipomo Waterline Intertie Project that is the subject of the 2004 MOU. The Nipomo Waterline Intertie Project will import water from the City of Santa Maria in Santa Barbara County to the community of Nipomo. Currently groundwater is the only water source in Nipomo and this supply is approaching its limit. The San Luis Region has water supply opportunities not available to individual water suppliers within the Region. Water suppliers that form partnerships with other entities in the region can accomplish projects that provide benefits that no single agency could do alone. The NCSD partnership with the City of Santa Maria on the Nipomo Waterline Intertie Project will improve water supply reliability by establishing a connection with the neighboring water supply; increase operational flexibility by participating in regional groundwater management and conjunctive use; protect water quality by participating in regional watershed management; reduce costs by cooperating with other agencies on water conservation and outreach programs; and alleviate groundwater conflicts in the Region.

While the Los Osos community gained notoriety for its water quality challenges, the Los Osos Community Wastewater Project is designed to provide water supply benefits to the region. The project will include recycling of all collected wastewater and reusing it within the limits of the groundwater basin. The recycled water reuse plan is being developed as part of an inter-agency groundwater basin management plan that includes agency inter-ties and water exchange and cooperative monitoring and water conservation efforts. With project implementation, reclaimed water will be approximately 30% of urban water demand.

Regional Water Quality Background

The waters in the San Luis Region have the good fortune of being exposed to fewer pollutants than many of the urban areas of the State. However, despite the high quality water in many areas, the region also has some notable water quality challenges. Specific wastewater systems have been facing compliance challenges, other areas are exposed to groundwater pollutants from septic systems and other activities, and coastal areas are impacted by seawater intrusion.

The region's most notable – perhaps "notorious" – project is the Los Osos Wastewater Project, embroiled in decades of local debate and deliberation. Nitrate contamination of drinking water supplies is a pervasive and serious problem in the Los Osos Community. The State MCL for nitrate in public drinking water is 45 mg/L, which is essentially equivalent to the federal MCL of 10 mg/L nitrite-nitrogen (nitrate-N). In 1991, EPA set additional MCLs for nitrite – N (1 mg/L) and for total nitrate and nitrite N (10 mg/L). In Los Osos, the upper basin is no longer useable without treatment due to nitrate contamination. The current average nitrate level is 12.5 mg/l (as N). Additionally, the community of Los Osos has been subject to seawater intrusion. The impact of the intrusion has recently been estimated to by migrating 100 feet per year.

Recent studies prepared by the County indicated that there is both a strong potential for seawater intrusion into the Nipomo area and that intrusion may already be occurring. The Nipomo Waterline Intertie Project will improve these groundwater conditions by importing water that allows in-lieu recharge of the groundwater basin thereby increasing groundwater elevations and helping protect against seawater intrusion.

Project Synergies

Whether a public water system relies on surface water, groundwater, or a combination of the two, prevention of contamination is one of the most cost-effective methods of ensuring safe drinking water supplies. If source water becomes contaminated, expensive treatment or replacement of the water source may be required before safe drinking water can be delivered to users. The increased treatment or replacement costs are then passed on to users served by the public water system. The Los Osos Community Wastewater Project and the Nipomo Waterline Intertie Project are two of the highest water resources projects identified in the San Luis Obispo IRWMP. Both

projects protect the groundwater resources from future contamination and provide critically needed reliable local water supply resources.

Water Supply Synergies

The goal of the Water Supply Program is to improve regional water supply reliability and security, reduce dependence on imported water, reduce water rights disputes and protect watershed communities from drought with a focus on interagency conjunctive use of regional water resources without unfairly burdening communities, neighborhoods or individuals.

The Nipomo Waterline Intertie Project will import water from the City of Santa Maria in Santa Barbara County to the community of Nipomo. The Nipomo Community Services District (NCSD) partnership with the City of Santa Maria on the project will improve water supply reliability by establishing a connection with the neighboring water supply; increase operational flexibility by participating in regional groundwater management and conjunctive use; protect water quality by participating in regional watershed management; reduce costs by cooperating with other agencies on water conservation and outreach programs; and alleviate groundwater conflicts in the Region. The Nipomo Waterline Intertie Project supports the following IRWMP Water Supply Program objective:

- Implement inter-agency projects including emergency inter-ties between systems, jointly developed facilities, water exchanges, and other methods of enhancing reliability through cooperative efforts over the development of new supplies.

The Los Osos Community Wastewater Project supports the following water supply objectives by recycling all collected wastewater and reusing it within the limits of the groundwater basin. The recycled water reuse plan is being developed as part of an inter-agency groundwater basin management plan that includes agency inter-ties and water exchange and cooperative monitoring and water conservation efforts. With project implementation, reclaimed water will be approximately 30% of urban water demand.

- Implement inter-agency projects including emergency inter-ties between systems, jointly developed facilities, water exchanges, and other methods of enhancing reliability through cooperative efforts over the development of new supplies.
- Expand reclaimed water use to make up 5% of total water use by 2010 and 10% of total water use by 2020.

Water Quality Synergies

The goal of the Water Quality Program is to protect and improve water quality for beneficial uses consistent with regional interests and the Basin Plan in cooperation with local and state agencies and regional stakeholders without unfairly burdening communities, neighborhoods or individuals. The mission of the Los Osos Community Wastewater Project is to develop a wastewater treatment system for Los Osos, in cooperation with the community water purveyors, to solve the high-level water resource shortage and groundwater pollution problem, in an environmentally sustainable and cost effective manner, while respecting community preferences and promoting participatory government, and addressing individual affordability and environmental justice challenges to the greatest extent possible. The Los Osos Community Wastewater Project supports the following IRWMP Water Quality Program objectives:

- Protect and improve source water quality.
- Meet all federal and state drinking water standards.
- Support the development and implementation of TMDLs.
- Implement NPDES Phase II Storm Water Management Programs.
- Implement the California NPS Plan and the RWQCB Conditional Agricultural Waiver Program for irrigated agriculture.
- Comply with new waste discharge requirements.

The Nipomo Waterline Intertie Project primarily supports the following water quality objectives through the protection of the groundwater basin and the delivery of high quality drinking water:

- Protect and improve source water quality.
- Meet Drinking Water standards.

Groundwater Protection Synergies

The goal of the Groundwater Monitoring and Management Program is to monitor, protect, and improve the regions groundwater through a collaborative approach designed to reduce conflicts without unfairly burdening communities, neighborhoods or individuals.

The Los Osos Community Wastewater Project supports the following groundwater objectives with the development of an inter-agency groundwater monitoring program as a component of the overall groundwater basin management plan. Groundwater monitoring reporting and requirements for adaptive management to address any adverse effects of the project are also required by the projects Coastal Development Permit.

- Develop monitoring and reporting programs for groundwater basins in the region.
- Protect and improve groundwater quality from point and non-point source pollution, including nitrate contamination; MTBE and other industrial, agricultural, and commercial sources of contamination; naturally occurring mineralization, boron, radionuclide, geothermal contamination; and seawater intrusion and salts.
- Conduct public education and outreach about ground water protection.
- Identify areas of known or expected conflicts and target stakeholders on specific actions that they should take to help protect groundwater basin quality and supply.
- Recharge ground water with high quality water.

The Nipomo Waterline Intertie Project will allow in-lieu recharge of the groundwater basin; alleviate groundwater conflicts in the Region through implementation of groundwater adjudication stipulated agreement requirements; and continue a rigorous groundwater monitoring and reporting program. NCSD manually measures groundwater levels in its production wells on a monthly basis. In addition, the District has installed a real-time level transducer in one of its production wells and based on the performance to date, is now planning on installing transducers in three additional production wells when the well pumps are pulled for repair or maintenance in the future. The level data is reported to SLO County as well as the Nipomo Mesa Management Area (NMMA) Technical Group that is responsible for preparing a report to the Court on an annual basis regarding the health of the groundwater basin. The NMMA Technical Group has developed a Key Well Index to track overall basin groundwater levels. This program will continue when the Nipomo Waterline Intertie Project comes on-line so that the impact of the project on the health of the basin can be monitored.

The Nipomo Waterline Intertie Project supports the following groundwater objectives:

- Develop monitoring and reporting programs for groundwater basins in the region.
- Evaluate and consider Groundwater Banking Programs.
- Protect and improve groundwater quality from point and non-point source pollution, including nitrate contamination; MTBE and other industrial, agricultural, and commercial sources of contamination; naturally occurring mineralization, boron, radionuclide, geothermal contamination; and seawater intrusion and salts.
- Conduct public education and outreach about ground water protection.
- Identify areas of known or expected conflicts and target stakeholders on specific actions that they should take to help protect groundwater basin quality and supply.
- Recharge ground water with high quality water.

Los Osos Community Wastewater Project (Project Number 2)

The following water supply economic analysis for the Los Osos Community Wastewater Project has been developed according to the requirements outlined in the Proposition 84 Proposal Solicitation Package (PSP) and the guidelines document provided by the Department of Water Resources Division of Integrated Regional Water Management, and using available studies, reports, and technical documents. Components of the wastewater project are described in further detail in Attachment 3 of the Proposal.

Introduction and Approach

In 1983, the Central Coast Regional Water Quality Control Board (RWQCB) established a wastewater prohibition zone in the coastal community of Los Osos. In 2006, the RWQCB issued a Cease and Desist Order ordering the discontinuation of septic discharges in certain urban areas of the community. In 2007, a Settlement Agreement and Order was developed by the RWQCB. The Settlement Agreement mandated the construction of a wastewater facility and elimination of septic discharges for the Los Osos Community. Failure to construct the wastewater facility would lead to penalties being imposed on each of the dischargers (septic tank owners). The approved Settlement Agreement and Order states:

> The Parties acknowledge that pursuant to California Water Code section 13350, liability and remedies for violations of this Agreement are provided for including the authority of the Water Board to impose civil liability on a daily basis not to exceed $5,000 against the Discharger for each day the violation occurs. However, the Parties agree that California Water Code section 13350(e)(1)A) does not require the Water Board to impose a required minimum penalty of $500 for each day of discharge.

The County of San Luis Obispo, through AB 2701, has undertaken the responsibility on a discretionary basis for developing a project that complies with the Settlement Agreement.

With Project Conditions

The County developed the Los Osos Community Wastewater Project which complies with the Settlement Agreement and delivers the following water resources benefits:

- Reduction of nitrate concentrations in the upper groundwater basin of the community of Los Osos: The Basin Plan for Region 3 (Central Coast) identifies a number of beneficial uses for the Los Osos Groundwater Basin (Basin No. 3-8), including municipal use. However, the upper basin is no longer useable without treatment due to nitrate contamination. The current average nitrate level is 12.5 mg/l (as N). The proposed project will restore this beneficial use after a period of approximately 30 years based on previous water quality modeling efforts (Yates, 2003).

- Elimination of pathogen contamination source for Morro Bay Estuary: The Morro Bay Estuary has been identified as a 303(d) water quality limited water body for a number of contaminants, including pathogens. The EPA-approved list specifically identifies septic tank discharges as a source of pathogens. Fresh water seeps on the bay fringe have also been tested under a number of on-going monitoring programs (See Section 7), and bacterial limits for recreational use are periodically exceeds. The proposed project will eliminate a source of contamination for the estuary, and is expected to result in a measurable reduction in the fresh water bacteriological content of bay fringe seeps.

- Elimination of existing seawater intrusion and establishment of a sustainable water supply: The lower aquifer of the Los Osos Groundwater Basin is currently being degraded by approximately 450 ac-ft per year of seawater intrusion due to over pumping. The proposed project will provide an important source of reclaimed water for various recharge and re-use projects that will result in a balanced groundwater basin and will help mitigate seawater intrusion.

Without Project Conditions

If the Los Osos Community Wastewater Project were not implemented by the County, an alternative project or projects would have to be developed and implemented that:

- Eliminated the septic discharges;
- Fully complied with all other regulatory requirements; and
- Delivered equivalent water supply benefits.

Until reasonable progress to eliminate septic discharges can be demonstrated to the RWQCB, the community can be subject to fines of $5,000 per day per household as authorized in the Settlement Agreement.

Without the Los Osos Community Wastewater Project, the following conditions and approach are assumed to occur and are the basis for the without project conditions:

- Regional Board would fine all dischargers until adequate progress was made towards developing an alternative wastewater project. It is assumed that fines would be on the low end of the fine scale ($500 per day per discharger), and be implemented for one year (the time it would take for another agency to demonstrate to the Regional Board they were making adequate progress towards construction).

In addition to the fines, alternative water resources projects would have to be developed to treat the contaminated groundwater, meet the water supply demands for the community, balance the basin, and mitigate seawater intrusion. The most feasible alternative projects, as identified in the Fine Screening Report, are

- Project A: Pump and Treat Nitrate Remediation
- Project B: Import State Water to Eliminate Seawater Intrusion

The two alternatives, implemented together, would provide the same level of water resource benefits as the Los Osos Community Wastewater Project.

For economic analysis, the avoided costs of the discharge penalties are considered in Attachment 8 – Water Quality Economics, and the avoided costs of Projects A and B are considered in Attachment 7 – Water Supply Economics. The total avoided cost will be the sum of the water supply and water quality avoided costs as specified in Attachment 10.

Economic Costs (With and Without Project)

Costs considered in this economic analysis include initial implementation costs and estimated on-going costs associated with the administration, operation, and maintenance of the project, including replacement of project components. Even though the wastewater project is mandated by the state of California, both initial investments and on-going costs associated with the "without-project" alternatives that would be needed to accomplish full implementation of the project and achieve benefits identified in this analysis are considered. As outlined in the Proposition 84 guideline documents, costs reported in this economic analysis are consistent with costs reported in Attachment 4, and do not include sunk costs or costs spent in the past that have no recoverable value. Costs and benefits presented in the tables are expressed in 2009 dollars and are discounted according to the discount rates identified in the Proposition 84 PSP. Based on discussion with DWR's representative, costs for financing the construction of projects should not be considered in this economic analysis and should be excluded from the economic analysis tables. Also, based on DWR's guidance, costs reported for project administration, operation, maintenance, and replacement are reported in 2009 dollars and do not include assumed inflation during the project life cycle. A narrative description and associated cost details for the following project factors for with and without project conditions are included in this Attachment:

- Period of Economic Analysis
- Initial Project Costs

- Replacement Costs
- Operation & Maintenance Costs
- Water Supply Costs

Period of Economic Analysis (With and Without Project)

The economic analysis for the Los Osos Wastewater Project and the 'without-project' alternatives are based on a project life cycle of 50 years, which is a commonly used life cycle for wastewater treatment facilities.

Initial Project Costs (With Project)

Initial project costs for the wastewater project (see Table 7-2 on page 22) included in this economic analysis are based on the May 2010 Preliminary Engineers Report (PER) prepared for the United States Department of Agriculture, Rural Development (USDA). The PER was the basis for awarding over $87 million in American Recovery & Reinvestment Act (ARRA) funds for the project, and the PER has been deemed adequate by the State Revolving Loan Fund staff (SRF) to use as an application for over $80 million in SRF funds. Costs associated with the wastewater project are summarized in Attachment 4. In 2005 the project was designed, bid and partially constructed, with cost estimates used in this application developed from these actual bids.

Initial Project Costs (Without Project)

Two alternative projects have been analyzed that correspond to the water supply benefits identified as a result of implementing a wastewater system. These projects would increase water supply by addressing nitrate remediation and seawater intrusion. Table 7-3 on page 24 summarizes the present worth of avoided projects that would provide similar water supply benefits in lieu of the project. Since the Regional Board's order to construct a wastewater facility is based on water quality issues, the quantitative water quality impacts of "without project" are considered in Attachment 8. The alternative water supply projects are described in detail below.

Project A: Pump and Treat Nitrate Remediation

The geology of the upper aquifer has been extensively studied, including the ability to extract shallow groundwater and return recycled water. In addition, the mass quantity of nitrogen that will be removed from the basin has been estimated as part of the wastewater project design (Carollo, 2007). The water purveyors within the Los Osos community are currently considering implementing a nitrate removal system, with an estimated operations cost (including brine disposal) of approximately $600/acre ft. through a service agreement with an independent vendor. This does not include operator labor and electrical power at the well head, which would be comparable to pumping from other sources. Preliminary cost estimates of the capital costs of infrastructure for blending and delivery are in the range of $4.7 million. In order to provide the same volume of supply as recycled water, approximately 900 acre-ft per year would be pumped, treated for nitrates and blended with other potable water supplies. This alternative would provide similar water supply benefits as the wastewater project. However, without the removal of septic system discharges it is not expected to have an appreciable benefit to water quality.

Project B: Import State Water to Eliminate Seawater Intrusion

In lieu of 900 acre-ft of reclaimed water from the proposed project, State Water could be imported into Los Osos, if available. A number of recent studies have been completed that provide a basis for the estimated avoided cost as follows:

- The Fine Screening Report provides a basis for the annual water volume needed. In order to mitigate 450 acre-ft of seawater intrusion, an annual imported volume of 818 acre-ft would be required.
- In the Central Coast Region, the actual delivery of State Water averages 75% of the purchased entitlement, therefore a purchase of 1,090 acre-ft should be anticipated.
- The cost of pipeline facilities has been estimated in the Imported Water Technical Memorandum (See Exhibit 2N), and the cost construction is estimated at $2,300,000.
- The cost to buy-in to existing State Water infrastructure was estimated in the Imported Water Technical Memorandum from $15,000 to $20,000 per acre-ft, which results in a conservative total of $18 million.

Replacement Costs (With Project)

The USDA ARRA application required consideration of short-lived assets. A short-lived asset reserve schedule was developed in the PER and is summarized below. It is estimated that the annual replacement cost will be $206,300.

Replacement Costs (Without Project)

Replacement costs for the without project alternatives were estimated to be 3% of total project costs. Estimated annual replacement costs for State Water were derived from the Imported Water Tech Memo and are estimated to be $609,000. Replacement costs for well-head treatment are estimated to be $141,000.

Estimated 5, 10 and 15-Year Short-Lived Asset Reserve Schedule for Los Osos Wastewater Project

Facility/Components	Overall Life Span	Service Age			Type of Service Required	Equipment Cost	Total	Total	Total
		5	10	15					
Pocket Pump Stations									
04A									
Grinder Pump No. 1	15		X		Unit Replacement	$2,000	$0	$2,000	$0
Grinder Pump No. 2	15			X	Unit Replacement	$2,000	$0	$0	$2,000
Grinder Pump No. 3	15			X	Unit Replacement	$2,000	$0	$0	$2,000
07A									
Grinder Pump No. 1	15		X		Unit Replacement	$2,000	$0	$2,000	$0
Grinder Pump No. 2	15			X	Unit Replacement	$2,000	$0	$0	$2,000
08A									
Grinder Pump No. 1	15		X		Unit Replacement	$2,000	$0	$2,000	$0
Grinder Pump No. 2	15			X	Unit Replacement	$2,000	$0	$0	$2,000
09A									
Grinder Pump No. 1	15		X		Unit Replacement	$2,000	$0	$2,000	$0
Grinder Pump No. 2	15			X	Unit Replacement	$2,000	$0	$0	$2,000
Grinder Pump No. 3	15			X	Unit Replacement	$2,000	$0	$0	$2,000
09B									
Grinder Pump No. 1	15		X		Unit Replacement	$2,000	$0	$2,000	$0
Grinder Pump No. 2	15			X	Unit Replacement	$2,000	$0	$0	$2,000
09C									
Grinder Pump No. 1	15		X		Unit Replacement	$2,000	$0	$2,000	$0
Grinder Pump No. 2	15			X	Unit Replacement	$2,000	$0	$0	$2,000
10A									
Grinder Pump No. 1	15		X		Unit Replacement	$2,000	$0	$2,000	$0
Grinder Pump No. 2	15			X	Unit Replacement	$2,000	$0	$0	$2,000
11A									
Grinder Pump No. 1	15		X		Unit Replacement	$2,000	$0	$2,000	$0
Grinder Pump No. 2	15			X	Unit Replacement	$2,000	$0	$0	$2,000

Facility/Components	Overall Life Span	Service Age			Type of Service Required	Equipment Cost	Total	Total	Total
		5	10	15					
12A									
Grinder Pump No. 1	15		X		Unit Replacement	$2,000	$0	$2,000	$0
Grinder Pump No. 2	15			X	Unit Replacement	$2,000	$0	$0	$2,000
13A									
Grinder Pump No. 1	15		X		Unit Replacement	$2,000	$0	$2,000	$0
Grinder Pump No. 2	15			X	Unit Replacement	$2,000	$0	$0	$2,000
13B									
Grinder Pump No. 1	15		X		Unit Replacement	$2,000	$0	$2,000	$0
Grinder Pump No. 2	15			X	Unit Replacement	$2,000	$0	$0	$2,000
15B									
Grinder Pump No. 1	15		X		Unit Replacement	$2,000	$0	$2,000	$0
Grinder Pump No. 2	15			X	Unit Replacement	$2,000	$0	$0	$2,000
Palisades									
Grinder Pump No. 1	15		X		Unit Replacement	$2,000	$0	$2,000	$0
Grinder Pump No. 2	15			X	Unit Replacement	$2,000	$0	$0	$2,000
Spare Pumps (All Pocket Pump Stations)									
Grinder Pump No. 1	15				Unit Replacement	$2,000	$0	$0	$0
Grinder Pump No. 2	15				Unit Replacement	$2,000	$0	$0	$0
Grinder Pump No. 3	15				Unit Replacement	$2,000	$0	$0	$0
Grinder Pump No. 4	15				Unit Replacement	$2,000	$0	$0	$0
Grinder Pump No. 5	15				Unit Replacement	$2,000	$0	$0	$0
West Paso Pump Station									
Pump No. 1	15		X		Unit Replacement	$37,000	$0	$37,000	$0
Pump No. 2	15			X	Unit Replacement	$37,000	$0	$0	$37,000
Pump No. 3	15			X	Unit Replacement	$37,000	$0	$0	$37,000
East Paso Pump Station									
Pump No. 1	15		X		Unit Replacement	$7,100	$0	$7,100	$0
Pump No. 2	15			X	Unit Replacement	$7,100	$0	$0	$7,100 $7,100

Facility/Components	Overall Life Span	Service Age 5	Service Age 10	Service Age 15	Type of Service Required	Equipment Cost	Total	Total	Total
Baywood Pump Station									
Pump No. 1	15		X		Unit Replacement	$4,300	$0	$4,300	$0
Pump No. 2	15			X	Unit Replacement	$4,300	$0	$0	$4,300
Santa Ysabel Pump Station									
Pump No. 1	15		X		Unit Replacement	$7,100	$0	$7,100	$0
Pump No. 2	15			X	Unit Replacement	$7,100	$0	$0	$7,100
Lupine Pump Station									
Pump No. 1	15		X		Unit Replacement	$19,000	$0	$19,000	$0
Pump No. 2	15			X	Unit Replacement	$19,000	$0	$0	$19,000
Pump No. 3	15			X	Unit Replacement	$19,000	$0	$0	$19,000
Solano Pump Station									
Pump No. 1	15		X		Unit Replacement	$19,000	$0	$19,000	$0
Pump No. 2	15			X	Unit Replacement	$19,000	$0	$0	$19,000
Mountain Viewm Pump Station									
Pump No. 1	15		X		Unit Replacement	$4,300	$0	$4,300	$0
Pump No. 2	15			X	Unit Replacement	$4,300	$0	$0	$4,300
Sunny Oaks Pump Station									
Pump No. 1	15		X		Unit Replacement	$4,300	$0	$4,300	$0
Pump No. 2	15			X	Unit Replacement	$4,300	$0	$0	$4,300
Mid Town Pump Station									
Pump No. 1	15		X		Unit Replacement	$50,000	$0	$50,000	$0
Pump No. 2	15		X		Unit Replacement	$50,000	$0	$50,000	$0
Pump No. 3	15			X	Unit Replacement	$50,000	$0	$0	$50,000
Pump No. 4	15			X	Unit Replacement	$50,000	$0	$0	$50,000
Pump No. 5	15			X	Unit Replacement	$50,000	$0	$0	$50,000
Mag Meter	15			X	Unit Replacement	$6,000	$0	$0	$6,000
Headworks									
Influent Pump Station									
Influent Pump No. 1	15		X		Unit Replacement	$19,000	$0	$19,000	$0

Facility/Components	Overall Life Span	Service Age			Type of Service Required	Equipment Cost	Total	Total	Total
		5	10	15					
Influent Pump No. 2	15		X		Unit Replacement	$19,000	$0	$19,000	$0
Influent Pump No. 3	15			X	Unit Replacement	$19,000	$0	$0	$19,000
Influent Pump No. 4	15			X	Unit Replacement	$19,000	$0	$0	$19,000
Influent Screening									
Mechanical Bar Screen	10		X		Unit Replacement	$138,000	$0	$138,000	$0
Screenings Washer/Compactor	10		X		Unit Replacement	$62,000	$0	$62,000	$0
Odor Control									
Headworks Supply Fan	15			X	Motor Replacement/ Major Mechanical Refurbishment	$9,000	$0	$0	$3,600
Headworks Exhaust Fan	15			X	Unit Replacement	$9,000	$0	$0	$9,000
Septage Receiving									
Septage Receiving Tank	30								
Septage Transfer Pump	15			X	Unit Replacement	$16,000	$0	$0	$16,000
Oxidation Ditch No. 1									
Anoxic Mixer No. 1	20								
Anoxic Mixer No. 2	20								
Aerator No. 1	20		X		Minor Mechanical Refurbishment	$121,000	$0	$18,150	$0
Aerator No. 2	20			X	Minor Mechanical Refurbishment	$121,000	$0	$0	$18,150
Oxidation Ditch No. 2									
Anoxic Mixer No. 1	20								
Anoxic Mixer No. 2	20								
Aerator No. 1	20		X		Minor Mechanical Refurbishment	$121,000	$0	$18,150	$0
Aerator No. 2	20			X	Minor Mechanical Refurbishment	$121,000	$0	$0	$18,150

Facility/Components	Overall Life Span	Service Age 5	Service Age 10	Service Age 15	Type of Service Required	Equipment Cost	Total	Total	Total
Secondary Clarifier No. 1									
Clarifier Mechanism	20								
Scum Pump	15		X		Unit Replacement	$8,000	$0	$8,000	$0
Secondary Clarifier No. 2									
Clarifier Mechanism	20								
Scum Pump	15			X	Unit Replacement	$8,000	$0	$0	$8,000
RAS/WAS Pump Station									
RAS/WAS Pump No. 1	15		X		Motor Replacement/ Major Mechanical Refurbishment	$30,000	$0	$12,000	$0
RAS/WAS Pump No. 2	15			X	Unit Replacement	$30,000	$0	$0	$30,000
RAS/WAS Pump No. 3	15			X	Unit Replacement	$30,000	$0	$0	$30,000
RAS Mag Meter	15			X	Unit Replacement	$6,000	$0	$0	$6,000
WAS Mag Meter	15			X	Unit Replacement	$4,000	$0	$0	$4,000
Solid Handling Facilities									
Sludge Holding Tank	30								
Sludge Feed Pumps No. 1 (Progressive Cavity)	25		X		Motor Replacement/ Major Mechanical Refurbishment	$40,000	$0	$16,000	$0
Sludge Feed Pumps No.2 (Progressive Cavity)	25			X	Motor Replacement/ Major Mechanical Refurbishment	$40,000	$0	$0	$16,000
Belt Filter Press, Centrifuge or Screw Press	20						$0	$0	$0
Polymer Feed Unit	15			X	Unit Replacement	$31,000	$0	$0	$31,000
Solids Conveyor No. 1	20								
Solids Conveyor No. 2	20								

Facility/Components	Overall Life Span	Service Age			Type of Service Required	Equipment Cost	Total	Total	Total
		5	10	15					
Odor Control									
Solids Building Supply Fan	15			X	Motor Replacement/ Major Mechanical Refurbishment	$9,000	$0	$0	$3,600
Solids Building Exhaust Fan	15			X	Unit Replacement	$9,000	$0	$0	$9,000
Tertiary Filtration									$0
Disk Filter Unit No. 1	5	X			Unit Replacement	$8,000	$8,000	$0	$0
Disk Filter Unit No. 2	5	X			Unit Replacement	$8,000	$8,000	$0	$0
Disinfection									
NaOCl Storage Tank	30								
NaOCl Feed Pump No. 1	10		X		Unit Replacement	$12,000	$0	$12,000	$0
NaOCl Feed Pump No. 2	10		X		Unit Replacement	$12,000	$0	$12,000	$0
UV Bank No. 1	5	X			Unit Replacement	$163,320	$163,320	$0	$0
UV Bank No. 2	5	X			Unit Replacement	$163,320	$163,320	$0	$0
UV Bank No. 3	5	X			Unit Replacement	$163,320	$163,320	$0	$0
Effluent Pump Station									
Effluent Pump No. 1	25		X		Motor Replacement/ Major Mechanical Refurbishment	$80,000	$0	$32,000	$0
Effluent Pump No. 2	25			X	Motor Replacement/ Major Mechanical Refurbishment	$80,000	$0	$0	$32,000
Effluent Pump No. 3	25			X	Motor Replacement/ Major Mechanical Refurbishment	$80,000	$0	$0	$32,000
Plant Water Pump No. 1	25		X		Motor Replacement/ Major Mechanical Refurbishment	$21,000	$0	$8,400	$0

Facility/Components	Overall Life Span	Service Age 5	Service Age 10	Service Age 15	Type of Service Required	Equipment Cost	Total	Total	Total
Plant Water Pump No. 2	25			X	Motor Replacement/ Major Mechanical Refurbishment	$21,000	$0	$0	$8,400
Potable/Fire Water Storage									
Water Storage Tank	30								
Fire Pump (Engine Driven)	20								
Storm Water Pump Station									
Storm Water Pump No. 1	20								
Storm Water Pump No. 2	20			X	Unit Replacement	$15,000	$0	$0	$15,000
Totals									
Total Cost per Replacment Period							**$506,000**	**$603,000**	**$672,000**
Annual Cost per Replacement Period							**$101,200**	**$60,300**	**$44,800**
Total Annual Short-Lived Assets Reserve Fund Allocation					**$206,300**				

Operation and Maintenance Costs (With Project)

Since operation of the wastewater project will continue beyond the project life cycle, operation and maintenance costs continue throughout the project lifecycle. As previously described, based on guidance provided by DWR, estimated operation and maintenance costs are reported in 2009 dollars and do not include assumed inflation during the project life cycle.

Operation and maintenance costs for the wastewater project were developed for the USDA's Preliminary Engineer's Report. Estimated operation and maintenance for the gravity collection system, treatment plant, biosolids and recycled water reuse are summarized in the tables below. A summary of all project O&M costs is also included.

Estimated Annual Wastewater Project Collection System Operation and Maintenance Costs

Estimated Annual O&M Costs for Gravity Collection System				
Item	Units	Quantity	Unit Price ($)	Annual O&M ($)
Labor	Hrs/year	4,160(1)	40(2)	170,000
Power	Kwh/year	500,000(3)	0.12(2)	60,000
Equipment Maintenance				200,000
TOTAL O&M COST(4)				$430,000

(1) Based on 2 full-time employees and 2,080 hours per year.
(2) From Basis of Cost Evaluation Technical Memorandum.
(3) Based on energy required to convey 1.4 mgd to an out-of-town treatment facility.
(4) Septic hauling costs for homes outside of the Prohibition Zone are not included.

Annual O&M costs for each of the treatment alternatives were estimated for the following categories based on BioTran© modeling of unit process requirements.

- Labor
- Power
- Maintenance/ Equipment Replacement
- Allowances—Includes chemicals, screenings and grit disposal
- Unit cost curves for tertiary treatment per MGD

Estimated Annual Wastewater Project Treatment Process Operation and Maintenance Costs

Estimated Annual O&M Costs for Treatment Process				
Item	Units	Quantity	Unit Price ($)	Annual O&M ($)
Labor	Hrs/year	5,200	60(1)	310,000
Power	Kwh/year	900,000	0.12(2)	110,000
Equipment Maintenance				75,000
Allowances				50,000
Tertiary Filter O&M				100,000
TOTAL O&M COST				$645,000

(1) Labor costs are based on an average $60 hourly rate, including direct and indirect costs.
(2) Power costs based on $0.12 per kWh electrical rate.

The cost basis for biosolids processing was developed in the Fine Screening Report and is based on master planning efforts for a similar sized facility in Morro Bay, CA.

Estimated Annual Wastewater Project Biosolids Processing Operation and Maintenance Costs

Estimated Annual O&M Costs for Biosolids Processing	
Item	Annual O&M ($)
Thickening(1)	170,000
Mechanical Dewatering(1)	280,000
Hauling(2) (3)	190,000
TOTAL O&M COST	$640,000

(1) Includes labor, power, chemicals, and maintenance.
(2) Based on an average solids volume from primary and secondary treatment process of 4,000 pounds per day (dry weight) with dewatering to 18% solids.
(3) Based on a hauling and tipping fee at San Joaquin Composting facility of $42 per ton for Class B biosolids and $46 per ton for Sub-Class B biosolids.

The cost basis for recycled water reuse was developed in the Fine Screening Report, Appendix A, and is based on estimated energy costs for delivering recycled water to reuse locations and labor costs for routine maintenance.

Estimated Annual Wastewater Project Recycled Water Operation and Maintenance Costs

Estimated Annual O&M Costs for Recycled Water Reuse				
Item	Units	Quantity	Unit Price ($)	Annual O&M ($)
Leachfield Labor	Hrs/year	1,500	60(1)	90,000
Leachfield Power	Kwh/year	1,375,000	0.12(2)	165,000
Reuse Irrigation Power	Kwh/year	333,000	0.12(2)	40,000
TOTAL O&M COST				$295,000

Notes:
(1) Labor costs are based on an average $60 hourly rate, including direct and indirect costs.
(2) Power costs based on $0.12 per kWh electrical rate.
(3) Cost estimates summarized from Table A2 of Fine Screening Report (Carollo, August, 2007)

Estimated Annual Wastewater Project Total Operation and Maintenance Costs

Summary of Total Project Annual O&M Cost Estimate	
	Annual O&M
Collection System	
• Labor	$170,000
• Power	$60,000
• Equipment Maintenance	$200,000
Treatment Process	
• Labor	$310,000
• Power	$110,000
• Equipment Maintenance	$75,000
• Allowances	$50,000
• Tertiary Filter O&M	$100,000
Solids Handling	
• Thickening & Dewatering	$450,000
• Hauling	$190,000
Recycled Water Reuse	
• Leachfield Energy	$165,000
• Leachfield Labor	$90,000
• Reuse Irrigation Energy	$40,000
Miscellaneous Costs	
• Habitat Mitigation	$10,000
• County Overhead and Billing	$300,000
• Contingency/Operating Reserves	$50,000
Total Annual O&M Costs	**$2,370,000**

Operation and Maintenance Costs (Without Project)

For each project alternative, operation costs that are dependent on the amount of supplemental water delivered each year (dollars per acre-foot basis) of the project lifecycle are projected. Operation and maintenance costs for the alternative supply projects are based on the Imported Water Tech Memo and field experience from a Los Osos Water purveyor. Operation and maintenance costs are estimated to be $1,180/Acre Foot for State Water and is incorporated into the contract and part of the $600/Acre Foot for well head treatment.

Water Supply Costs (With Project)

There are no additional water supply costs associated with the Los Osos Community Wastewater Project. Tertiary treatment and 100% beneficial reuse of the treated effluent are part of the total wastewater project.

Water Supply Costs (Without Project)

There are no water supply costs associated with well head treatment. The cost to buy-in to existing State Water infrastructure was estimated in the Imported Water Technical Memorandum from $15,000 to $20,000 per acre-ft, which results in a conservative total of $18 million.

Total Project Cost (With Project)

The total project cost are reported in Table 7-2 (PSP Table 11) of this economic analysis are consistent with costs reported in Attachment 4, and do not include sunk costs or costs spent in the past that have no recoverable value. Costs are expressed in 2009 dollars and are discounted according to the discount rates identified in the Proposition 84 PSP.

Avoided Cost Benefits

As previously described, the Los Osos Wastewater Project is a mandated project by the Regional Water Control Board. Alternative means of providing supplemental water were evaluated, but the wastewater project should provide the water supply necessary to balance the basin. Even with other alternativeness available, the County has identified the wastewater project as being the most cost effective approach to improving the community's water supply

Since an alternative supplemental water project would need to be implemented if the wastewater project were not executed, this economic analysis considers benefits of the wastewater project in terms of avoided costs relative to the "without-project condition," which would involve implementation of the next most feasible project alternative with comparable objectives and benefits. The total present value of discounted avoided costs is **$65,337,940**, as presented in Table 7-3 (PSP Table 13).

Table 7-2: Annual Cost of Los Osos Wastewater Community Project (2 pages)

Annual Cost of Project Project: Los Osos Community Wastewater Project									
	Initial Costs	Operations and Maintenance Costs [1]						Discounting Calculations	
YEAR	(a) Grand Total Cost From Table 7 (row (i), column(d))	(b) Admin	(c) Operation	(d) Maintenance	(e) Replacement	(f) Other	(g) Total Costs (a) +…+ (f)	(h) Discount Factor	(i) Discounted Costs(g) x (h)
2009	$160,350,000						$160,350,000	1.000	$160,350,000
2010							$0	0.943	$0
2011							$0	0.890	$0
2012							$0	0.840	$0
2013							$0	0.792	$0
2014		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.747	$1,924,496
2015		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.705	$1,816,292
2016		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.665	$1,713,240
2017		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.627	$1,615,340
2018		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.592	$1,525,170
2019		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.558	$1,437,575
2020		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.527	$1,357,710
2021		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.497	$1,280,421
2022		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.469	$1,208,285
2023		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.442	$1,138,725
2024		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.417	$1,074,317
2025		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.394	$1,015,062
2026		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.371	$955,807
2027		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.350	$901,705
2028		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.331	$852,755
2029		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.312	$803,806
2030		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.294	$757,432
2031		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.278	$716,211
2032		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.262	$674,991
2033		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.247	$636,346
2034		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.233	$600,278

Annual Cost of Project

Project: Los Osos Community Wastewater Project

	Initial Costs	Operations and Maintenance Costs [1]						Discounting Calculations	
YEAR	(a) Grand Total Cost From Table 7 (row (i), column(d))	(b) Admin	(c) Operation	(d) Maintenance	(e) Replacement	(f) Other	(g) Total Costs (a) +…+ (f)	(h) Discount Factor	(i) Discounted Costs(g) x (h)
2035		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.220	$566,786
2036		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.207	$533,294
2037		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.196	$504,955
2038		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.185	$476,616
2039		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.174	$448,276
2040		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.164	$422,513
2041		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.155	$399,327
2042		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.146	$376,140
2043		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.138	$355,529
2044		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.130	$334,919
2045		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.123	$316,885
2046		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.116	$298,851
2047		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.109	$280,817
2048		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.103	$265,359
2049		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.097	$249,901
2050		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.092	$237,020
2051		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.087	$224,138
2052		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.082	$211,257
2053		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.077	$198,375
2054		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.073	$188,070
2055		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.069	$177,765
2056		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.065	$167,460
2057		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.061	$157,154
2058		$300,000	$1,585,000	$425,000	$206,300	$60,000	$2,576,300	0.058	$149,425
								Total Present Value of Discounted Costs (Sum of Column (i))	$191,896,794
								Transfer to Table 20, column (c), Exhibit F: Proposal Costs and Benefits Summaries	

Table 7-3: Annual Costs of Avoided Projects (2 pages)

Annual Costs of Avoided Projects											
Project: Los Osos Community Wastewater Project											
	Costs				**Costs**					**Discounting Calculations**	
(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(b)**	**(c)**	**(d)**	**(e)**		**(f)**	**(g)**
YEAR	Alternative (Avoided Project Name): Pump & Treat Nitrate Contamination *Avoided Project Description: Treat Nitrates at Well Heads* Avoided Capital Costs	Avoided Replacement Costs	Avoided Operations and Maintenance Costs	Total Cost Avoided for Individual Alternatives (b) + (c) + (d)	Alternative (Avoided Project Name): Imported State Water to Stop Sea Water Intrusion *Avoided Project Description: Import State Water* Avoided Capital Costs	Avoided Replacement Costs	Avoided Operations and Maintenance Costs	Total Cost Avoided for Individual Alternatives	*Total Costs Avoided All Alternatives (Sum of Total Cost Avoided for Individual Alteratives)*	Discount Factor	Discounted Costs (e) x (f)
2009	$4,700,000	$141,000	$540,000	$5,381,000	$20,300,000	$609,000	$ 1,124,000	$22,033,000	$27,414,000	1.000	$27,414,000
2010		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.943	$2,276,402
2011		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.890	$2,148,460
2012		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.840	$2,027,760
2013		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.792	$1,911,888
2014		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.747	$1,803,258
2015		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.705	$1,701,870
2016		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.665	$1,605,310
2017		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.627	$1,513,578
2018		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.592	$1,429,088
2019		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.558	$1,347,012
2020		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.527	$1,272,178
2021		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.497	$1,199,758
2022		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.469	$1,132,166
2023		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.442	$1,066,988
2024		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.417	$1,006,638
2025		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.394	$951,116
2026		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.371	$895,594
2027		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.350	$844,900
2028		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.331	$799,034

2029		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.312	$753,168
2030		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.294	$709,716
2031		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.278	$671,092
2032		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.262	$632,468
2033		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.247	$596,258
2034		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.233	$562,462
2035		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.220	$531,080
2036		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.207	$499,698
2037		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.196	$473,144
2038		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.185	$446,590
2039		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.174	$420,036
2040		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.164	$395,896
2041		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.155	$374,170
2042		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.146	$352,444
2043		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.138	$333,132
2044		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.130	$313,820
2045		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.123	$296,922
2046		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.116	$280,024
2047		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.109	$263,126
2048		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.103	$248,642
2049		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.097	$234,158
2050		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.092	$222,088
2051		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.087	$210,018
2052		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.082	$197,948
2053		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.077	$185,878
2054		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.073	$176,222
2055		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.069	$166,566
2056		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.065	$156,910
2057		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.061	$147,254
2058		$141,000	$540,000	$681,000		$609,000	$ 1,124,000	$1,733,000	$2,414,000	0.058	$140,012
										Total Present Value of Discounted Costs (Sum of Column (g))	$65,337,940
										(%) Avoided Cost Claimed by Project	100%
										Total Present Value of Discounted Avoided Project Costs Claimed by alternative Project (Total Present Value of Discounted Costs x % Avoided Cost Claimed by Project)	$65,337,940

Other Benefits

The wastewater project will provide immediate benefit to the local community. In addition to satisfying the legal requirements of the Central Coast Regional Water Quality Control Board, the project will improve water quality and increase water supply. Regional benefits include the availability of supplemental water to other communities, since Los Osos will not be using State Water or Nacimiento water. Statewide benefits include the increased protection of valuable marine resources. The table below highlights the benefits distributed to each category.

Los Osos Project Beneficiaries

Local	Regional	Statewide
The community of Los Osos will satisfy a Regional Water Board mandate, improve groundwater quality, and address seawater intrusion	Supplemental water sources will remain available to other communities	Protection of environmental resources within the Morro Bay State Marine Reserve

Total Water Supply Benefits

The total water supply benefit is simply the total present value of discounted avoided project costs from Table 7-3.

Table 7 -4: Total Water Supply Benefits Project: Los Osos Wastewater Project			
Total Discounted Water Supply Benefits (a)	Total Discounted Avoided Project Costs (b)	Other Discounted Water Supply Benefits (c)	Total Present Value of Discounted Benefits (d) (a) + (c) or (b) + (c)
$0	$65,337,940	$0	$65,337,940

Beneficiaries

The wastewater project will benefit groundwater users in the community of Los Osos, including municipal users, private residential users, and agricultural users. Decreased urban demand, beneficial reuse of treated wastewater, improved water quality, and decreased potential for seawater intrusion will allow private residential users of groundwater and agricultural users in Los Osos to continue to utilize groundwater as a municipal and agriculture supply of water.

Realization and Certainty of Benefits

The project's useful life is expected to be 50 years, with construction of the wastewater facility ending – and the community connected to a wastewater system – in 2014. Customers connected directly to the system will realize the benefits of wastewater treatment at project start up and those benefits will continue through operation of the facility. Benefits to groundwater users will be immediate due to reduced demand on the groundwater basin from water conservation. Additionally, groundwater users will see increasing benefits as treated effluent is used as a beneficial resource to replenish the groundwater basin.

Uncertainty of the Benefits (With Project)

The analysis provided is based on historical studies and assumptions made by independent consultants who are professionals in their respective fields. However, some uncertainty in the calculation of benefit still exists.

- Reduction of nitrate concentrations in the upper groundwater basin and restoration of its beneficial use: The reduction of nitrates introduced into the aquifer should begin once septic discharges cease. The rate of restoration of the groundwater basin to a beneficial use is estimated as approximately 30 years and based on water quality modeling. The modeling has numerous parameters that each have a level of uncertainty; therefore, the timing for restoration of the basin is less certain. Groundwater monitoring in accordance with the plan presented in Attachment 6 will monitor and measure the performance of the project and the project operation may have to be adjusted through adaptive management practices

- Elimination of existing seawater intrusion and establishment of a sustainable water supply: Undeveloped parcels are still subject to certain conditions before obtaining a building permit. However, it is still believed elimination of seawater intrusion and a sustainable water supply can be achieved because the project incorporates 100% beneficial reuse of the treated effluent.

Uncertainty of the Benefits (Without Project)

- Well Head Nitrate Removal: The increased use of septic tanks (assuming no wastewater treatment plant, may result in an increase in nitrate levels. Treatment at the well head may become difficult or impossible. Costs would also increase.

- State Water: State Water deliveries may be less than 100% during the projected project timeline. The inability to obtain the necessary water would have an impact on provided the assumed benefits.

Adverse Effects

Adverse effects from the wastewater project will consist of temporary construction disturbances that typically occur from collection system and treatment facility construction. Permit conditions requiring adaptive monitoring and management of biological resources will further prevent the project from having adverse effects.

Nipomo Waterline Intertie Project (Project Number 4)

Introduction and Approach

The following water supply economic analysis for the Nipomo Waterline Intertie Project has been developed according to the requirements and guidance outlined in the Proposition 84 Proposal Solicitation Package (PSP) and the Guidelines document provided by the Department of Water Resources Division of Integrated Regional Water Management, and using available studies, reports, and technical documents. Components of the Waterline Intertie Project are described in further detail in Attachment 3 of the Proposal.

The following documents are referenced in this water supply economic analysis and provided electronically:

- Evaluation of Supplemental Water Alternatives Technical Memorandum No. 1, Constraints Analysis (Boyle Engineering, 2007)
- Evaluation of Desalination as a Source of Supplemental Water Technical Memorandum No. 2 (Boyle Engineering, 2007)
- Evaluation of Supplemental Water Alternatives Technical Memorandum No. 3, Implementation of Water Supply from CCWA/ State Water Pipeline (Boyle Engineering, 2007)
- 2010 Nipomo Community Services District Strategic Plan Update (NCSD, 2010)
- Finalized Wholesale Water Supply Agreement (approved by the NCSD and the City of Santa Maria January 2010)
- Waterline Intertie Project Design Phase Status Report (AECOM, November, 2010)

The Nipomo Waterline Intertie Project responds to the Santa Maria Groundwater Basin adjudication and the stipulation for developing a supplemental water supply. Without the Project, an alternative project would need to be implemented. Alternative means of providing supplemental water were evaluated in the Evaluation of Supplemental Water Alternatives (Technical Memorandums 1 through 3, Boyle Engineering, 2007). This evaluation identified the Waterline Intertie Project as being the most cost effective approach to providing supplemental water, and desalination was identified as the next most feasible alternative. Desalination was also identified as the District's long-term approach for meeting future water demands (2010 NCSD Strategic Plan Update). Since an alternative supplemental water project would need to be implemented if the Waterline Intertie Project were not executed, the "without-project condition" involves implementation of an alternative project meeting comparable objectives. Therefore, benefits of the Waterline Intertie Project are considered in this economic analysis in terms of avoided costs, relative to implementation of the next most feasible alternative supplemental water project, and using Table 13 for qualifying avoided project costs. Since desalination has been identified as both the second most feasible supplemental water project and the District's long-term water supply strategy, the "without-project" condition is defined as construction of a desalination facility with a capacity and delivery schedule similar to the Waterline Intertie Project. Costs associated with the Desalination supplemental water supply alternative are documented in the Evaluation of Desalination as a Source of Supplemental Water (Technical Memorandum 2, Boyle Engineering, 2007).

Desalination has been identified as the second most feasible alternative and will be the basis for the 'without-Nipomo Waterline Intertie Project' condition.

The Nipomo Waterline Intertie Project as currently designed will provide a total of 3,000 AFY of supplemental water to the Nipomo Mesa Management Area. The project will provide 2,500 AFY of supplemental water pursuant to the stipulation and an additional 500 AFY of supplemental water to serve future development within the existing NCSD boundaries in accordance with the County of San Luis Obispo South County Area Plan (General Plan), September 2006. Both the Waterline Intertie Project and the alternative desalination project considered in this economic analysis would be capable of providing 3,000 AFY and satisfying legal requirements for a supplemental water supply. Additionally, the fixed water demands (3,000 AFY) satisfied by either project will continue beyond each project's lifecycle.

Economic Costs

Costs considered in this economic analysis include initial implementation costs and estimated on-going costs associated with the administration, operation, and maintenance of the Waterline Intertie Project, and replacement of project components. Similarly, both initial investments and on-going costs associated with the "without-project" alternative (Desalination) that would be needed to accomplish full implementation of the project and achieve benefits identified in this analysis are considered. As outlined in the Proposition 84 guideline documents, costs reported in Table 7-5 (Guidelines Table 11) of this economic analysis are consistent with costs reported in Attachment 4 (Guidelines Table 7), and do not include sunk costs or costs spent in the past that have no recoverable value. Costs and benefits presented in Tables 7-5, 7-6, and 7-7 are expressed in 2009 dollars and are discounted according to the discount rates identified in the Proposition 84 PSP. Based on discussion with DWR's representative, costs for financing the construction of projects should not be considered in this economic analysis and should be excluded from the economic analysis tables. Also, based on DWR's guidance, costs reported for project administration, operation, maintenance, and replacement are reported in 2009 dollars and do not include assumed inflation during the project life cycle. A narrative description and associated cost details for the following project factors for with and without project conditions are included in this Attachment:

- Period of Economic Analysis
- Initial Project Costs
- Replacement Costs
- Operation & Maintenance Costs
- Water Supply Costs

Period of Economic Analysis (With and Without Project)

The economic analysis for the Waterline Intertie Project and the 'without-project' alternative (Desalination) is based on a project life cycle of 75 years. This project life cycle coincides with the terms of the final Wholesale Water Supply Agreement approved by the NCSD and the City of Santa Maria (January 2010). This project life cycle also exceeds the projected operational life of the majority of the Waterline Interline Project components and the reverse osmosis membranes and other components of the Desalination facility. Projected operational life of project components are summarized in the Replacement Costs section, below.

Initial Project Costs (With Project)

Initial project costs for the Waterline Intertie Project included in this economic analysis are based on the current Engineer's Opinion of Probable Construction Cost (90-percent design cost opinion) included in the Waterline Intertie Project Design Phase Status Report (AECOM, November 2010), and information on incurred costs provided by NCSD. Costs associated with the Waterline Intertie Project are summarized in Attachment 4. Since the Waterline Intertie Project is currently at 90-percent design, and much of the required planning, design, and environmental documentation has been completed, these and other costs have been estimated and excluded from Table 7-5 costs, in accordance with the table below. Also, funds expended to date have been used for studies, preliminary design, environmental documentation, development of construction documents, and administration of the project, and no assets which would retain future value if the project was not implemented have been acquired. Therefore, no opportunity costs are included. Contingencies are also excluded from Table 7-5. Remaining initial costs associated with implementation of the Waterline Intertie Project are distributed in Table 7-5 over the projected construction period (2011 through 2012).

Nipomo Waterline Intertie Project Sunk and Future Project Costs

Budget Category	Cost Schedule		
	9/30/08 – 9/30/10	Future	Total
Direct Project Administration	$154,421	$292,612	$447,033
Land Purchase/Easement	$49,308	$275,821	$325,129
Planning/Design/Engineering/EIR	$1,299,925	$368,346	$1,668,271
Construction	$0	$15,878,200	$15,878,200
Environmental Compliance	$0	$160,000	$160,000
Construction Administration	$0	$2,666,274	$2,666,274
Other Costs	$0	$0	$0
Construction Contingency	$0	$2,946,000	$2,946,000
Grand Total	$1,503,654	$22,587,253	$24,090,907

1. Cost schedule based on Waterline Intertie Project Design Phase Status Report (AECOM, November 2010) and additional information on expended costs, provided by NCSD.
2. Total cost is consistent with Attachment 7, Project Budget.
3. Future cost, minus construction contingency, is distributed in Table 7-5 over projected construction period (contingencies are excluded).

Initial Project Costs (Without Project)

Capital costs for the alternative water supply project (Desalination) are based on the conceptual cost estimate for construction of a desalination facility capable of delivering 3,000 AFY of water, presented in the Evaluation of Desalination as a Source of Supplemental Water Technical Memorandum 2 (Boyle Engineering, September 2007). Since this alternative project would have been implemented in the fall of 2007 (when the District made the decision to pursue the Waterline Intertie Project), projected economic costs for the Desalination project are presented in Table 7-6 according to the preliminary schedule identified for the desalination project in the Evaluation of Desalination as a Source of Supplemental Water (Boyle Engineering, 2007). Costs associated with studies, planning, engineering and permitting would have begun in the fourth quarter of 2007 and, as projected in the desalination project schedule, ended in the first quarter of 2015. Total costs associated with these tasks are summarized in the table below. The sum of these costs has been evenly distributed according to the desalination project schedule. Annual distributed costs are also summarized in the table below. By consistently distributing projected costs for the alternative project similarly to the occurrence of costs associated with implementation of the Waterline Intertie Project over the past three years, this method of distribution allows a reasonable comparison of costs associated with the two supplemental water alternatives. As previously described, based on guidance provided by DWR, costs for financing projects should not be considered in this economic analysis and are not included in Tables 7-5 and 7-6.

Projected Distribution of Initial Costs for Desalination Project Alternative

Phase 1 Desalination Project Implementation	Probable Costs (a)		Distribution Period, years (c)	Annual Distributed Cost (d)
	(2007)	(2009)		
Planning, Studies, and Design				
Terrestrial and Freshwater Impact Studies	$440,000	$457,600		
Phase 1 Marine Impact Studies	$250,000	$260,000		
Cultural Resource Study	$66,000	$68,640		
Phase 1 Hydrogeologic Field Study	$360,000	$374,400		
Test-Scale Feasibility Study	$2,320,000	$2,412,800		
Phase 2 Hydrogeologic Field Study	$180,000	$187,200		
Preliminary Engineering	$210,000	$218,400		
CEQA/NEPA	$240,000	$249,600		
Public Outreach	$1,310,000	$1,362,400		
Design and Permitting	$3,870,000	$4,024,800		
Subtotal	*$9,246,000*	*$9,615,840*	7.5	$1,282,000
Contingency (b)	$2,272,000	$2,362,880		
Total Planning Studies and Design	$11,518,000	$11,979,000		
Construction				
Construction (Phase 1, 3,000 AFY)	$58,200,000	$60,528,000		
Project Management	$1,500,000	$1,560,000		
Subtotal	*$59,700,000*	*$62,088,000*	1.0	$62,088,000
Contingency (b)	$14,668,000	$15,254,720		
Total Construction Phase	$74,368,000	$77,343,000		
Desalination Project Total Probable Cost	$85,890,000	$89,322,000		

(a) Probable cost data based on Desalination Phase 1 (3,000 AFY) costs reported in the 2007 Evaluation of Desalination as a Source of Supplemental Water. Costs updated to 2009 dollars per DWR IRWM Prop 84 PSP Table 10 Update Factors, using a factor of 1.04 for 2007 dollars. Totals rounded to 1,000.

(b) Contingency used in the 2007 Evaluation of Desalination separated between overall Planning, Studies, and Design and Construction Phases.

(c) General distribution of project costs based on preliminary desalination project schedule.

(d) Total costs for planning studies, and design distributed evenly from Q4 2007 through Q1 2015. Total costs for construction phase distributed evenly from Q1 2015 through Q1 2016. Annual distributed costs do not include contingencies and are presented in 2009 dollars.

Replacement Costs (With Project)

It is assumed that the water demand satisfied by either of the projects will continue beyond the project life cycle, therefore, total replacement costs for each project include estimated replacement costs for all components of the project needed to continue operation through the identified period of analysis and beyond. Based on guidance provided by DWR, estimated replacement costs are reported in 2009 dollars and do not include assumed inflation during the project life cycle.

Costs associated with replacement of project components are accounted for as "replacement costs." For the Waterline Intertie Project, replacement costs are grouped by major project components and are based on initial construction costs. Replacement costs are distributed evenly over the estimated design life of each component. For

example, a project component with an initial construction cost of $50,000 in 2009 dollars and an estimated design life of 10 years would result in an annual distribution of estimated replacement cost for that component of $5,000 (2009 dollars) for each year of the overall project's design life (75 years in this case). In this way, projected replacement costs are budgeted annually instead of once over the duration of the component's design life. Construction costs for major and minor project components of the Waterline Intertie Project and estimated design lives and replacement schedules are summarized on page 33.

Replacement Costs (Without Project)

For the desalination project, replacement costs have been estimated as a combination of costs associated with reverse osmosis membranes and other general replacement costs, estimated as 1% of the project capital cost, annually. Membrane replacement costs are estimated using data reported by the Bureau of Reclamation (Desalination and Water Purification Research and Development Program Report No. 72, 2003) for desalination of seawater using reverse osmosis membrane technology. Membrane replacement costs are considered on a per acre-foot basis in 2009 dollars, according to the delivery schedule identified in the final Wholesale Water Supply Agreement approved by the NCSD and the City of Santa Maria (2010). Estimated annual replacement costs for the desalination project are presented on page 34.

Operation and Maintenance Costs (With Project)

Since the water demand satisfied by either of the projects will continue beyond the project life cycle, operation and maintenance costs continue throughout the project lifecycle. As previously described, based on guidance provided by DWR, estimated operation and maintenance costs are reported in 2009 dollars and do not include assumed inflation during the project life cycle.

Operation and maintenance costs for the Waterline Intertie Project have been developed based on available design information, estimated cost of consumables such as chloramination reagents, electricity, etc., and estimated staffing cost for operation of facilities, and a maintenance budget to account for routine operator tasks and materials used for preventative maintenance. Estimated operation and maintenance costs are summarized at the end of page 34.

Estimated Annual Replacement Cost for Waterline Intertie Project

Item	Component	Capital Cost	Estimated Component Life (Years)	Est. Annual Replacement Cost
1	Prestressed concrete reservoir (partially buried 500,000 gal.)	$1,432,800	100	$14,328
2	(4) 200-hp Vertical Turbine Pumps (2,000 gpm capacity)	$340,000	20	$17,000
3	Ductile Iron, Steel, and PVC Piping (various sizes)	$7,112,020	75	$94,827
4	Pump Station CMU Building (1300 FT^2)	$443,000	75	$5,907
5	Chloramination Facilities (5 sites)	$563,300	10	$56,330
6	Horizontal Direction Drilled 24-inch HDPE Pipe (2700 LF)	$4,828,000	100	$48,280
7	Control Valves (10 PRVs and 1 FCV)	$72,152	20	$3,608
8	Project Electrical	$279,500	20	$13,975
9	Project Controls (VFDs, SCADA connection)	$158,500	15	$10,567
10	Other	$648,928	20	$32,446
	Total	$15,878,200	n/a	$298,000

a. Capital costs are based on 90% design engineer's opinion of probable construction cost and exclude contingency. All costs are reported in 2009 dollars. Total estimated Annual Replacement Costs rounded to 000.
b. Line Item 1 includes cost for partially buried tank and appurtenances, excavation and structural backfill.
c. Line Item 2 includes cost for replacement/rebuilding of pumps and cans only.
d. Line Item 3 includes costs to replace all project piping, valves (except control valves), and appurtenances, with trenching, traffic control, sheeting and shoring and asphalt repair.
e. Line Item 4 includes cost to replace 1300 square foot CMU building and related site grading.
f. Line Item 5 includes cost to replace chloramination facilities including chemical tanks, dosing equipment, and analyzers.
g. Line Item 6 includes costs to replace approximately 2700-linear feet of 24-inch HDPE pipe across the Santa Maria River via HDPE and approximately 250-LF of deep 24-inch DIP between the levee jack-and-bore and HDPE entry.
h. Line Item 7 includes costs to replace five 6-inch pressure reducing valves (PRVs), five 2 ½-inch PRV, and one 16-inch flow control valve (FCV).
i. Line Item 8 includes costs to replace all electrical components on the project, including 300-KW standby generator and fuel tank, pump station lighting, and wiring of components.
j. Line Item 9 includes costs to replace controls components on the project including four VFDs for the 200-hP pumps, SCADA connections for the pump station, the chloramination facilities, control valves, and meters.
k. Line Item 10 includes other project replacement costs, calculated by subtracting costs for lines 1 through 9 from the total project capital cost. Components covered here include pump station/tank site landscaping and irrigation, access road to pump station/tank site, valve vaults, hatches, and ladders, sump pumps in the control valve and meter vaults, etc.

Estimated Annual Replacement Cost for Desalination Project

Operation Years	Scheduled Delivery, AFY (a)	Estimated Membrane Replacement Cost (b)		Probable Capital Cost (c)	General Annual Replacement Costs (d)	Est. Annual Replacement Costs
		$/ AF	$/ year			
Years 1 through 10	2,000	$46	$92,320	$60,528,000	$605,280	$697,600
Years 11 through 19	2,500		$115,400			$720,680
Year 20 through end of term	3,000		$138,480			$743,760

a. Delivery schedule based on the final Wholesale Water Supply Agreement approved by the NCSD and the City of Santa Maria (2010).
b. Membrane replacement cost based on data reported by the Bureau of Reclamation (2003) for desalination of seawater using reverse osmosis membrane technology (2003), presented in dollars/ AF of product water, and adjusted to 2009 dollars.
c. Probable cost data based on Desalination Phase 1 (3,000 AFY) construction cost reported in the 2007 Evaluation of Desalination as a Source of Supplemental Water. Costs updated to 2009 dollars per DWR IRWM Proposition 84 PSP Table 10 Update Factors, using a factor of 1.04 for costs considered in 2007 dollars.
d. General annual replacement costs assume 1% replacement of direct capital costs on an annual basis.

Estimated Annual Waterline Intertie Project Operation and Maintenance Costs

Operation Years	Scheduled Delivery, AFY (a)	Operation Costs (b)		Est. Annual Operator and Maintenance Cost (c)	Total Annual O&M Costs
		$/ AF	$/ year		
Years 1 through 10	2,000	$60	$120,000	$119,000	$239,000
Years 11 through 19	2,500		$150,000		$269,000
Year 20 through end of term	3,000		$180,000		$299,000

a. Delivery schedule based on the final Wholesale Water Supply Agreement approved by the NCSD and the City of Santa Maria (January, 2010)
b. Projected operations costs include energy usage, consumable chemicals for chloramination and residual disinfection, and do not include water supply cost, which are accounted for in the Water Supply Costs section below.
c. Estimated annual maintenance based on one full-time equivalent operator salary and estimated maintenance materials budget.

Operation and Maintenance Costs (Without Project)

For each project alternative, operation costs that are dependent on the amount of supplemental water delivered each year (dollars per acre-foot basis) of the project lifecycle are projected using the delivery schedule outlined in the final Wholesale Water Supply Agreement approved by the NCSD and the City of Santa Maria (January, 2010). Annual operation and maintenance costs for the desalination project are distributed evenly between columns "c" and "d" of Table 7-6 for respective delivery years.

Operation and maintenance costs for the alternative supply project (desalination) are based on the preliminary operation and maintenance cost estimates presented in the Evaluation of Desalination as a Source of Supplemental

Water Technical Memorandum 2 (Boyle Engineering, September, 2007) for a desalination facility capable of delivering 3,000 AFY of water. Operation and maintenance costs are provided in the table below.

Estimated Annual Desalination Project Operation and Maintenance Costs

Operation Years	Scheduled Delivery, AFY (a)	Estimated Operation & Maintenance Costs (b)	
		$/ AF	$/ year
Years 1 through 10	2,000	$1,100	$2,660,000
Years 11 through 19	2,500		$3,325,000
Year 20 through end of term	3,000		$3,990,000

a. Delivery schedule based on the final Wholesale Water Supply Agreement approved by the NCSD and the City of Santa Maria (January 2010) and is assumed for the desalination project, for consistency.
b. Operation and maintenance costs based on the O&M costs in the Evaluation of Desalination as a Source of Supplemental Water Technical Memorandum 2 (Boyle Engineering, September 2007).
c. Estimated annual maintenance based on one full-time equivalent operator salary and estimated maintenance materials budget.

Water Supply Costs (With Project)

Water supply costs for the Waterline Intertie Project are based on the final Wholesale Water Supply Agreement approved by the NCSD and the City of Santa Maria (January 2010). Annual water supply costs for the Waterline Intertie Project are calculated using the fixed cost per unit of water ($1270.22 per AF) and the annual delivery schedule outlined in the final Wholesale Water Supply Agreement (2010). Annual water supply costs are reported in Column "f" of Table 7-5. As previously described, based on guidance provided by DWR, estimated economic costs are reported in 2009 dollars and do not include assumed inflation during the project life cycle.

Annual Water Supply Costs

Operation Years	Scheduled Delivery, AFY	Annual Water Supply Costs	
		$/ AF	$/ year
Years 1 through 10	2,000	$1,270	$2,540,000
Years 11 through 19	2,500		$3,175,000
Year 20 through end of term	3,000		$3,810,000

a. Delivery schedule and unit cost for water based on the final Wholesale Water Supply Agreement approved by the NCSD and the City of Santa Maria (January 2010).

Water Supply Costs (Without Project)

There are no water supply costs associated with the alternative water supply project (desalination).

Total Project Cost (With Project)

The total present value of the discounted project costs is **$67,275,671** as reported in Table 7-5 (Guidelines Table 11). This calculation is consistent with costs reported in Attachment 4 (Guidelines Table 7), and do not include sunk costs or costs spent in the past that have no recoverable value. Costs are expressed in 2009 dollars and are discounted according to the discount rates identified in the Proposition 84 PSP.

Avoided Cost Benefits

As previously described, the Waterline Intertie Project responds to adjudication of the Santa Maria Groundwater Basin and the court stipulation for a supplemental water supply. Alternative means of providing supplemental water were evaluated in the Evaluation of Supplemental Water Alternatives (Technical Memorandums 1 through 3, Boyle Engineering, 2007). Through this evaluation, the District identified the Waterline Intertie Project as being the most cost effective approach to providing supplemental water. Desalination was identified as the next most feasible alternative and was also identified as the District's long-term supplement water supply approach for meeting future water demands in the 2010 NCSD Strategic Plan Update.

Since an alternative supplemental water project would need to be implemented if the Waterline Intertie Project were not executed, this economic analysis considers benefits of the Waterline Intertie Project in terms of avoided costs relative to the "without-project condition," which would involve implementation of the next most feasible project alternative with comparable objectives and benefits. The total present value of discounted avoided costs is **$97,966,302**, as presented in Table 7-6 (Guidelines Table 13). These costs and are based on available documentation and published literature, as described above.

Both the Waterline Intertie Project and the alternative desalination project considered in this economic analysis would be capable of providing 3,000 AFY and satisfying legal requirements for a supplemental water supply. Additionally, the fixed water demands (3,000 AFY) satisfied by either project will continue beyond each project's lifecycle.

Table 7-5: Annual Cost of Project

(All costs are in 2009 dollars)
Project: Nipomo Waterline Intertie Project

	Initial Costs	Operations and Maintenance Costs [1]					Discounting Calculations	
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
YEAR	Grand Total Cost From Table 7 (row (i), column(d))	Admin	Operation	Maintenance	Replacement	Other	Total Costs (a) +…+ (f)	Discount Factor	Discounted Costs(g) x (h)
2009							$0	1.000	$0
2010							$0	0.943	$0
2011	$9,820,627						$9,820,627	0.890	$8,740,358
2012	$9,820,627						$9,820,627	0.840	$8,249,326
2013			$120,000	$119,000	$298,000	$2,540,000	$3,077,000	0.792	$2,436,984
2014			$120,000	$119,000	$298,000	$2,540,000	$3,077,000	0.747	$2,298,519
2015			$120,000	$119,000	$298,000	$2,540,000	$3,077,000	0.705	$2,169,285
2016			$120,000	$119,000	$298,000	$2,540,000	$3,077,000	0.665	$2,046,205
2017			$120,000	$119,000	$298,000	$2,540,000	$3,077,000	0.627	$1,929,279
2018			$120,000	$119,000	$298,000	$2,540,000	$3,077,000	0.592	$1,821,584
2019			$120,000	$119,000	$298,000	$2,540,000	$3,077,000	0.558	$1,716,966
2020			$120,000	$119,000	$298,000	$2,540,000	$3,077,000	0.527	$1,621,579
2021			$120,000	$119,000	$298,000	$2,540,000	$3,077,000	0.497	$1,529,269
2022			$120,000	$119,000	$298,000	$2,540,000	$3,077,000	0.469	$1,443,113
2023			$150,000	$119,000	$298,000	$3,175,000	$3,742,000	0.442	$1,653,964
2024			$150,000	$119,000	$298,000	$3,175,000	$3,742,000	0.417	$1,560,414
2025			$150,000	$119,000	$298,000	$3,175,000	$3,742,000	0.394	$1,474,348
2026			$150,000	$119,000	$298,000	$3,175,000	$3,742,000	0.371	$1,388,282
2027			$150,000	$119,000	$298,000	$3,175,000	$3,742,000	0.350	$1,309,700
2028			$150,000	$119,000	$298,000	$3,175,000	$3,742,000	0.331	$1,238,602
2029			$150,000	$119,000	$298,000	$3,175,000	$3,742,000	0.312	$1,167,504
2030			$150,000	$119,000	$298,000	$3,175,000	$3,742,000	0.294	$1,100,148
2031			$150,000	$119,000	$298,000	$3,175,000	$3,742,000	0.278	$1,040,276
2032			$150,000	$119,000	$298,000	$3,175,000	$3,742,000	0.262	$980,404

Table 7-5: Annual Cost of Project

(All costs are in 2009 dollars)
Project: Nipomo Waterline Intertie Project

	Initial Costs	Operations and Maintenance Costs [1]					Discounting Calculations	
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
YEAR	Grand Total Cost From Table 7 (row (i), column(d))	Admin	Operation	Maintenance	Replacement	Other	Total Costs (a) +…+ (f)	Discount Factor	Discounted Costs(g) x (h)
2033			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.247	$1,088,529
2034			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.233	$1,026,831
2035			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.220	$969,540
2036			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.207	$912,249
2037			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.196	$863,772
2038			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.185	$815,295
2039			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.174	$766,818
2040			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.164	$722,748
2041			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.155	$683,085
2042			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.146	$643,422
2043			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.138	$608,166
2044			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.130	$572,910
2045			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.123	$542,061
2046			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.116	$511,212
2047			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.109	$480,363
2048			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.103	$453,921
2049			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.097	$427,479
2050			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.092	$405,444
2051			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.087	$383,409
2052			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.082	$361,374
2053			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.077	$339,339
2054			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.073	$321,711
2055			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.069	$304,083
2056			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.065	$286,455

Table 7-5: Annual Cost of Project

(All costs are in 2009 dollars)
Project: Nipomo Waterline Intertie Project

	Initial Costs	Operations and Maintenance Costs [1]					Discounting Calculations	
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
YEAR	Grand Total Cost From Table 7 (row (i), column(d))	Admin	Operation	Maintenance	Replacement	Other	Total Costs (a) +…+ (f)	Discount Factor	Discounted Costs(g) x (h)
2057			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.061	$268,827
2058			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.058	$255,606
2059			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.054	$237,978
2060			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.051	$224,757
2061			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.048	$211,536
2062			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.046	$202,722
2063			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.043	$189,501
2064			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.041	$180,687
2065			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.038	$167,466
2066			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.036	$158,652
2067			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.034	$149,838
2068			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.032	$141,024
2069			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.030	$132,210
2070			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.029	$127,803
2071			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.027	$118,989
2072			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.025	$110,175
2073			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.024	$105,768
2074			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.023	$101,361
2075			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.021	$92,547
2076			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.02	$88,140
2077			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.019	$83,733
2078			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.018	$79,326
2079			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.017	$74,919
2080			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.016	$70,512

Table 7-5: Annual Cost of Project

(All costs are in 2009 dollars)
Project: Nipomo Waterline Intertie Project

	Initial Costs	Operations and Maintenance Costs [1]					Discounting Calculations	
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
YEAR	Grand Total Cost From Table 7 (row (i), column(d))	Admin	Operation	Maintenance	Replacement	Other	Total Costs (a) +…+ (f)	Discount Factor	Discounted Costs(g) x (h)
2081			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.015	$66,105
2082			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.014	$61,698
2083			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.013	$57,291
2084			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.013	$57,291
2085			$180,000	$119,000	$298,000	$3,810,000	$4,407,000	0.012	$52,884
							Total Present Value of Discounted Costs (Sum of Column (i))		$67,275,671
							Transfer to Table 20, column (c), Exhibit F: Proposal Costs and Benefits Summaries		

(1) The incremental change in O&M costs attributable to the project.

Table 7-6: Annual Costs of Avoided Project						
(All avoided costs are in 2009 dollars)						
Project: NCSD Waterline Intertie Project						
	Costs				**Discounting Calculations**	
(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**
YEAR	Alternative : Phase 1 Desalination Project *Avoided Project Description: Desalination facility for providing 3,000 AFY of supplemental water supply.* Avoided Capital Costs	Avoided Replacement Costs	Avoided Operations and Maintenance Costs	Total Cost Avoided for Individual Alternatives (b) + (c) + (d)	Discount Factor	Discounted Costs (e) x (f)
2007	$641,000			$641,000	1.040	$666,640
2008	$1,282,000			$1,282,000	1.010	$1,294,820
2009	$1,282,000			$1,282,000	1.000	$1,282,000
2010	$1,282,000			$1,282,000	0.943	$1,208,926
2011	$1,282,000			$1,282,000	0.890	$1,140,980
2012	$1,282,000			$1,282,000	0.840	$1,076,880
2013	$1,282,000			$1,282,000	0.792	$1,015,344
2014	$1,282,000			$1,282,000	0.747	$957,654
2015	$62,088,000			$62,088,000	0.705	$43,772,040
2016		$697,600	$2,660,000	$3,357,600	0.665	$2,232,804
2017		$697,600	$2,660,000	$3,357,600	0.627	$2,105,215
2018		$697,600	$2,660,000	$3,357,600	0.592	$1,987,699
2019		$697,600	$2,660,000	$3,357,600	0.558	$1,873,541
2020		$697,600	$2,660,000	$3,357,600	0.527	$1,769,455
2021		$697,600	$2,660,000	$3,357,600	0.497	$1,668,727
2022		$697,600	$2,660,000	$3,357,600	0.469	$1,574,714
2023		$697,600	$2,660,000	$3,357,600	0.442	$1,484,059
2024		$697,600	$2,660,000	$3,357,600	0.417	$1,400,119
2025		$697,600	$2,660,000	$3,357,600	0.394	$1,322,894
2026		$720,700	$3,325,000	$4,045,700	0.371	$1,500,955
2027		$720,700	$3,325,000	$4,045,700	0.350	$1,415,995
2028		$720,700	$3,325,000	$4,045,700	0.331	$1,339,127
2029		$720,700	$3,325,000	$4,045,700	0.312	$1,262,258
2030		$720,700	$3,325,000	$4,045,700	0.294	$1,189,436
2031		$720,700	$3,325,000	$4,045,700	0.278	$1,124,705
2032		$720,700	$3,325,000	$4,045,700	0.262	$1,059,973
2033		$720,700	$3,325,000	$4,045,700	0.247	$999,288
2034		$720,700	$3,325,000	$4,045,700	0.233	$942,648
2035		$720,700	$3,325,000	$4,045,700	0.220	$890,054
2036		$743,800	$3,990,000	$4,733,800	0.207	$979,897
2037		$743,800	$3,990,000	$4,733,800	0.196	$927,825
2038		$743,800	$3,990,000	$4,733,800	0.185	$875,753

Table 7-6: Annual Costs of Avoided Project

(All avoided costs are in 2009 dollars)
Project: NCSD Waterline Intertie Project

	Costs				Discounting Calculations	
(a)	(b)	(c)	(d)	(e)	(f)	(g)
YEAR	Alternative : Phase 1 Desalination Project *Avoided Project Description: Desalination facility for providing 3,000 AFY of supplemental water supply.* Avoided Capital Costs	Avoided Replacement Costs	Avoided Operations and Maintenance Costs	Total Cost Avoided for Individual Alternatives (b) + (c) + (d)	Discount Factor	Discounted Costs (e) x (f)
2039		$743,800	$3,990,000	$4,733,800	0.174	$823,681
2040		$743,800	$3,990,000	$4,733,800	0.164	$776,343
2041		$743,800	$3,990,000	$4,733,800	0.155	$733,739
2042		$743,800	$3,990,000	$4,733,800	0.146	$691,135
2043		$743,800	$3,990,000	$4,733,800	0.138	$653,264
2044		$743,800	$3,990,000	$4,733,800	0.130	$615,394
2045		$743,800	$3,990,000	$4,733,800	0.123	$582,257
2046		$743,800	$3,990,000	$4,733,800	0.116	$549,121
2047		$743,800	$3,990,000	$4,733,800	0.109	$515,984
2048		$743,800	$3,990,000	$4,733,800	0.103	$487,581
2049		$743,800	$3,990,000	$4,733,800	0.097	$459,179
2050		$743,800	$3,990,000	$4,733,800	0.092	$435,510
2051		$743,800	$3,990,000	$4,733,800	0.087	$411,841
2052		$743,800	$3,990,000	$4,733,800	0.082	$388,172
2053		$743,800	$3,990,000	$4,733,800	0.077	$364,503
2054		$743,800	$3,990,000	$4,733,800	0.073	$345,567
2055		$743,800	$3,990,000	$4,733,800	0.069	$326,632
2056		$743,800	$3,990,000	$4,733,800	0.065	$307,697
2057		$743,800	$3,990,000	$4,733,800	0.061	$288,762
2058		$743,800	$3,990,000	$4,733,800	0.058	$274,560
2059		$743,800	$3,990,000	$4,733,800	0.054	$255,625
2060		$743,800	$3,990,000	$4,733,800	0.051	$241,424
2061		$743,800	$3,990,000	$4,733,800	0.048	$227,222
2062		$743,800	$3,990,000	$4,733,800	0.046	$217,755
2063		$743,800	$3,990,000	$4,733,800	0.043	$203,553
2064		$743,800	$3,990,000	$4,733,800	0.041	$194,086
2065		$743,800	$3,990,000	$4,733,800	0.038	$179,884
2066		$743,800	$3,990,000	$4,733,800	0.036	$170,417
2067		$743,800	$3,990,000	$4,733,800	0.034	$160,949
2068		$743,800	$3,990,000	$4,733,800	0.032	$151,482
2069		$743,800	$3,990,000	$4,733,800	0.030	$142,014
2070		$743,800	$3,990,000	$4,733,800	0.029	$137,280
2071		$743,800	$3,990,000	$4,733,800	0.027	$127,813
2072		$743,800	$3,990,000	$4,733,800	0.025	$118,345

Table 7-6: Annual Costs of Avoided Project **(All avoided costs are in 2009 dollars)** **Project: NCSD Waterline Intertie Project**						
	Costs				**Discounting Calculations**	
(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**
YEAR	Alternative : Phase 1 Desalination Project *Avoided Project Description: Desalination facility for providing 3,000 AFY of supplemental water supply.* Avoided Capital Costs	Avoided Replacement Costs	Avoided Operations and Maintenance Costs	Total Cost Avoided for Individual Alternatives (b) + (c) + (d)	Discount Factor	Discounted Costs (e) x (f)
2073		$743,800	$3,990,000	$4,733,800	0.024	$113,611
2074		$743,800	$3,990,000	$4,733,800	0.023	$108,877
2075		$743,800	$3,990,000	$4,733,800	0.021	$99,410
2076		$743,800	$3,990,000	$4,733,800	0.020	$94,676
2077		$743,800	$3,990,000	$4,733,800	0.019	$89,942
2078		$743,800	$3,990,000	$4,733,800	0.018	$85,208
2079		$743,800	$3,990,000	$4,733,800	0.017	$80,475
2080		$743,800	$3,990,000	$4,733,800	0.016	$75,741
2081		$743,800	$3,990,000	$4,733,800	0.015	$71,007
2082		$743,800	$3,990,000	$4,733,800	0.014	$66,273
2083		$743,800	$3,990,000	$4,733,800	0.013	$61,539
2084		$743,800	$3,990,000	$4,733,800	0.013	$61,539
2085		$743,800	$3,990,000	$4,733,800	0.012	$56,806
Total Present Value of Discounted Costs (Sum of Column (g))						$97,966,302
(%) Avoided Cost Claimed by Project						100%
Total Present Value of Discounted Avoided Project Costs Claimed by alternative Project (Total Present Value of Discounted Costs x % Avoided Cost Claimed by Project)						$97,966,302

Other Benefits

In addition to benefits considered in terms of avoided cost (described above), the Waterline Intertie Project will decrease demand on the Nipomo Mesa Hydrologic Sub-Area resulting from urban uses and will reduce overall groundwater pumping. The imported water will also contribute return flow to the groundwater sub area. Reduced demand and return flow from imported water will contribute to balancing of the groundwater sub area and will reduce potential for seawater intrusion. Finally, return flow from the project will improve groundwater quality (since the supply has lower TDS than local groundwater currently used to satisfy the District's demands and use of wells exhibiting high TDS will be significantly reduced or eliminated). Improvement to groundwater quality is described and quantified further in Attachment 8.

Total Water Supply Benefits

The total water supply benefit is simply the total present value of discounted avoided project costs from Table 7-6.

Table 7-7: Total Water Supply Benefits
Project: Waterline Intertie Project

Total Discounted Water Supply Benefits (a)	Total Discounted Avoided Project Costs (b)	Other Discounted Water Supply Benefits (c)	Total Present Value of Discounted Benefits (d) (a) + (c) or (b) + (c)
$0	$97,966,302	$0	$97,966,302

Beneficiaries

The Waterline Intertie Project will benefit groundwater users in the Nipomo Mesa region, including municipal users, private residential users, and agricultural users. Decreased urban demand, return flow from imported water, improved water quality from return flow, and decreased potential for seawater intrusion will allow private residential users of groundwater and agricultural users in the Nipomo Mesa region to continue to utilize groundwater as a municipal and agriculture supply of water. Municipal and agricultural water supply benefits have been identified in the Central Coast Water Quality Control Plan (Basin Plan, SWRCB). Additionally, the project will benefit NMMA member agencies by satisfying the requirements of adjudication of the Santa Maria Groundwater Basin and eliminate the need to implement a more costly alternative supplemental water supply project in the near future.

Realization and Certainty of Benefits

Benefits from the project will be realized once the Waterline Intertie projected is constructed and in operation. The current schedule projects system start up in December 2012. Customers connected directly to the system will realize the benefits at project start up and those benefits continue through operation of the facility. Benefits to groundwater users will also be immediate due to reduced demand on the groundwater basin. Additionally, groundwater users will see increasing benefits as return flow from imported water recharges the groundwater basin.

The Nipomo Waterline Intertie Project is the cornerstone of the physical solution recognized by the court as establishing a legal and physical mean for ensuring the groundwater basins long-term sustainability. The project will be monitored through the existing court approved monitoring plan through the Nipomo Mesa Management Area Technical Group to ensure that the anticipated benefits are realized and certain.

Adverse Effects

Adverse effects from the Waterline Intertie Project will consist of temporary construction disturbances typical of a transmission pipeline and booster station construction project.