Border Environment Cooperation Commission
Desert Shores Collection System Improvements

I. General Criteria

1.1 Project Type

The Salton Community Services District is proposing improvements to the existing wastewater collection system at Desert Shores, California. These improvements, replacing portions of the existing collection system and simplifying the pumping infrastructure, will address the problem of saltwater infiltration into the collection system and the percolation of brackish treated wastewater into the groundwater below the wastewater treatment ponds. The sewer replacement is designated to resolve environmental impacts to the groundwater down gradient from the ponds.

1.2 Project Location

The project is located within the community of Desert Shores in California. Desert Shores is situated on the western shore of the Salton Sea, in an unincorporated part of northwest Imperial County (see Figure 1). The elevation of Desert Shores is approximately 230 feet below mean sea level. There are hills immediately to the west, with a peak of 1,835 ft approximately 2.5 miles away. Several washes originate in these hills, flowing directly into the Salton Sea. The Torres Martinez Indian Reservation is immediately to the northwest and the Anza-Borrego Desert State Park is to the southwest.

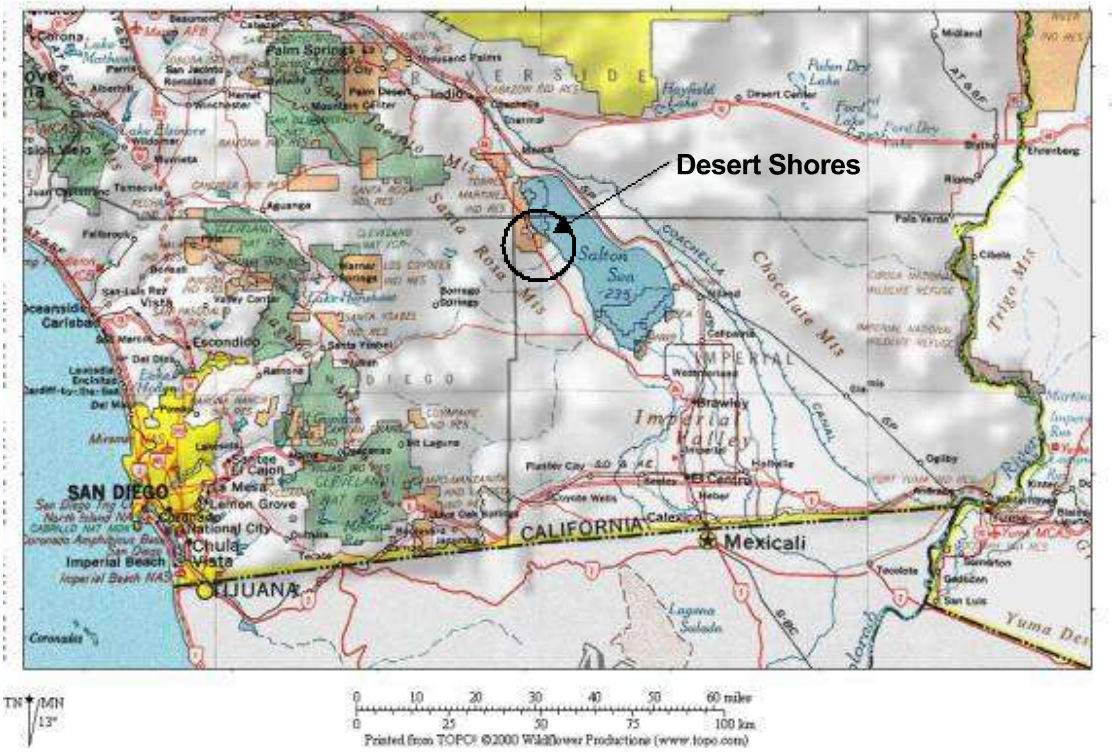

Figure 1 Location map of Desert Shores, CA

Few routes to the area exist, with Highway 86 being the principal access. Desert Shores lies east of Highway 86, seven miles north of Salton City. This community is approximately seven miles south of the intersection of Highways 86 and 195, 10 miles north of County Road S22, and 20 miles north of the intersection of Highways 86 and 78.

The wastewater treatment facility is located approximately one mile southwest of the residential area. Coolidge Springs Road, the sole access to the facility, is found to its east.

The southwest portion of the collection system is the project location. Generally, the infiltration problems are greatest along the peninsulas in this area. The proposed sewer replacements will take place on the streets along the peninsulas and the sewer main just east of the peninsulas. The project also includes improvements to two main pump stations that convey wastewater to the treatment facility.

1.3 Project Description and Work Tasks

Project Description

Six manmade and sewered peninsulas extend into the Salton Sea in the southeastern portion of the community. Because the Salton Sea nearly surrounds the peninsulas, the groundwater table is approximately five feet under the ground surface and is comprised of saline water. The existing sewer lines were placed at excessive slopes and depths (up to 20 ft), usually well below the groundwater table. The sewer lines are vitrified clay pipes (VCP), a fragile material susceptible to breakage as a result of differential settling. It is suspected that the VCP pipelines cracked as a result of differential settlement along the manmade peninsulas allowing saline groundwater to enter the collection system. The Salton Sea has an average total dissolved solids (TDS) concentration approximating 43,000 ppm. TDS for ocean water is typically about 35,000 ppm.

Salton Sea water infiltrating into the collection system along the peninsulas has caused a significant increase in the TDS concentration of wastewater in the whole system. After entering the collection system, the saline wastewater is pumped to the treatment facility located approximately 1.5 miles to the southwest. The treatment facility consists of seven earth-lined ponds; the effluent is disposed via percolation and evaporation. Because of the residence time in the ponds, the TDS concentrations increase further due to evaporation. The treatment process does not remove salts from the wastewater; thus, the result is percolation of treated wastewater with high total dissolved solids concentrations.

Property owners near the Desert Shores Wastewater Treatment Facility complained that the brackish treated wastewater percolating from the treatment ponds was affecting the water quality of their wells. In response to this complaint, the California Regional Water Quality Control Board Colorado River Region issued an Administrative Civil Liability action (ACL Complaint 97-122). ACL action required the Salton Community Services District to address this issue and undertake a project to repair the collection system and reduce the percolation of the high salinity wastewater into the local groundwater aquifer. After ACL Complaint 97-122 was issued, a time extension to complete these tasks was accepted, changing the completion date from December 1, 2000 to December 31, 2003. The RWQCB required the rehabilitation of the collection system to reduce the salinity of the effluent of the treatment plant. Once the collection system is rehabilitated and the performance of the treatment plant is evaluated, improvements to the facility may be required to address other deficiencies.

A screening study reported that: (1) the local groundwater TDS concentrations downstream of the treatment facility ranged from slightly over 2000 mg/l to well over 5000 mg/l; (2) the collection system was receiving groundwater infiltration from the Salton Sea, especially through the collection system s gravity pipelines along the Salton Sea s shoreline; and (3) the TDS (salinity) of wastewater to the Desert Shores wastewater treatment facility (WWTF) could be reduced to a satisfactory level (less than 2,000 mg/l) via an I/I reduction program. Thus, pond percolation could then be considered a viable option for ultimate disposal of wastewater from the Desert Shores WWTF without undermining the existing quality of the site s groundwater. The wastewater treatment facility may need improvements required by the Regional Water Quality Control Board, which will be addressed in a separate project at a later date.

Collection System

Approximately two miles of sewer pipelines will be replaced in this project. HDPE pipes will be installed along the same alignment as the existing system, but at a shallower depth. This will significantly reduce the infiltration of saline groundwater into the collection system. Aside from being installed at flatter slopes and shallower depths to inhibit infiltration, the plastic pipes are more flexible than vitrified clay and could structurally withstand impacts due to reasonable amounts of differential settlement.

The improvements to the wastewater collection system are listed below:

- Along the six peninsulas (Acapulco Lane, Honolulu Lane, Venice Lane, Naples Lane, Marseille Lane, and Capri Lane) and on the southern 500 feet of pipe along Thomas Avenue, 8-inch HDPE pipe will be installed to replace the existing 6-inch and 8-inch pipes. Use of 8-inch pipes will facilitate maintenance of the sewer lines and improve flow conditions through the system.
- Along Thomas Avenue between Lift Station No. 6 and Lift Station No. 2, an 18-inch HDPE pipeline will replace the existing 8-inch VCP pipe. This will allow the conveyance of wastewater collected in the project area, as well as wastewater from the southwestern portion of the system.

Pumping Infrastructure

Improvements to the collection system□s main pump stations (No. 2 and No. 6) will include replacing the existing pumps, and removing two 0.5 HP submersible pumps located within the project area. Lift Station No. 2 has two positive suction pumps that break down on a regular basis; as a result, they represent a large maintenance and reliability problem for the district. The proposed project considers replacing the existing pumps with three submersible pumps that will be placed within the existing wet well. The improvements to the wastewater pumping infrastructure are listed below:

- The existing positive lift pumps, motors, and controls at Lift Station No. 2 will be removed. While continuing to utilize the existing wet well, three submersible pumps and controls will be installed. This will be a more reliable system than the existing pumping system and maintenance burdens on the district will be significantly reduced. The improvements will also reduce the environmental and human health risks associated with sewage spills.
- The force main that originates at Lift Station No. 6 will be capped and abandoned in place. The wastewater collected at the lift station will now be pumped to the replaced gravity 18-inch pipeline along Thomas Avenue to Lift Station No. 2. The improvements include replacing the existing pumps and motors with units suited for the new operating conditions (low head □ high flow).
- The submersible pumps located within manholes on Capri Lane and at the intersection of Honolulu Lane and Thomas Avenue will be removed. The pipes will be placed at reasonable slopes and depths, so the submersible pumps will no longer be needed.

Project Work Tasks

The entirety of this project is involved in one task, which will include upgrading Lift Stations No. 2 and No. 6, replacing 8,100 ft of sewer lines along the peninsulas, installing an 18-inch pipeline along 3,200 feet of Thomas Avenue, removing two submersible pumps, plugging and abandoning the force main that originates at Lift Station No. 6, and constructing a 400 foot gravity line from Lift Station No. 6 to the 18-inch pipeline along Thomas Avenue.

Description of the Community

Due to the economic bases of the area, primarily retirement and agriculture, the population and the local housing occupation rates significantly fluctuate on a seasonal basis. Several sources were utilized in determining the current and future population figures for Desert Shores.

1990 US Census figures list the population of Desert Shores area at 637 with a housing vacancy rate of 41%. The occupied household density is 2.16 persons/household. 90% of uninhabited homes are listed as □seasonally, recreationally, or occasionally□ used, underlying the usage of the area by retirees.

The Salton Community Services District reports that 1,043 and 1,030 inhabitants discharged into the sewer system in 1998 and 1999, respectively. The SCSD reports that there are 257 homes in the community and approximately 60 trailer park homes. Given a housing density of 3.0, the population is is estimated to be 950.

The project area does not encompass the entire community. Approximately, 50 homes are located within the project area. There are fewer than five homes along each of the peninsulas. The majority of the lots in the project area are unimproved.

Table 1 Population estimates and projections for Desert Shores

Year and scenario	Population of Desert Shores	Population of project area
2001	1000	150

2020 (@2.4% growth)	1600	235
2020 (maximum buildout)	2190	700

The Salton Community Services District collects wastewater from the entire community through a system of gravity pipes and lift stations. The district also operates the wastewater treatment facility, which is located 1.5 miles southwest of the community

Project Alternatives

Three alternatives were considered to address the saltwater infiltration problem on the southeastern side of Desert Shores: (1) do nothing; (2) rehabilitate the deficient section of the existing collection system; and (3) replace the deficient sections of the existing system.

Alternative 1

The first alternative, the do nothing option, will not solve the infiltration problem. With this option, the saltwater from the Salton Sea will continue to infiltrate into the collection system and contaminate the water wells down gradient from the treatment ponds. Although it represents no cost, it does nothing to resolve the environmental and human health problems associated with the percolation of water with a high TDS value. Furthermore, this alternative will not be acceptable to the Regional Water Quality Control Board, and the district could be subjected to action by that regulatory agency.

Alternative 2

The second alternative, rehabilitation of the impacted sewer lines in the southeastern portion of the collection system, considers using a trenchless method for rehabilitation, including pipe-bursting (or in-line expansion), sliplining, cured in place pipe, and modified cross section liner.

The applicability of sewer rehabilitation methods depends on site specific characteristics. The pipe size and depth, materials, and soil characteristics limit most of these methods. Except for pipe bursting, these methods typically reduce the diameter of the existing pipe. Defective installation of pipe liners is difficult to rectify and can significantly increase the rehabilitation cost. However, rehabilitation methods usually take less time than conventional replacement methods.

Rehabilitation of the Desert Shores collection system is limited due to the depth of the existing sewer lines. The collection system configuration and layout would remain the same with most of the pipes running 15 to 20-ft deep, so the use of lift stations would still be required. In addition, most of the pipes along the peninsulas are 6-inch lines, which may make the process difficult. Although most of the rehabilitation methods reduce the infiltration rates on deteriorated pipes, most of the collection system in that area is below the groundwater table and some infiltration is expected, even if pipes are rehabilitated.

This second alternative may reduce, to some extent, the TDS concentrations of the influent to the treatment facility. However, since the sewer lines would still be located below the ground water table, TDS concentrations in the ponds at the treatment facility may not be reduced to the amount needed to reduce the impact on the surrounding area□s groundwater quality.

Alternative 3

The third option, replacement of deteriorated pipes in the southeastern portion of the collection system, considers using the same alignment of the existing sewer lines, but installing the new lines at shallower depths using HDPE pipes. The existing pipes would be plugged on both ends and abandoned in place. This alternative considers replacing the sewer lines along the peninsulas, Thomas Avenue, and Capri Lane.

Replacing sewer lines in the proposed area is feasible because most of the pipes are located adjacent to the street, on a stretch of soil next to the pavement. In addition, there are no significant impacts to traffic and the existing utilities that will complicate the process or increase costs. Since the peninsulas were built in the 1960s, significant differential settlement that may cause the new pipes to break is not expected. HDPE pipes are suited for minor settling, unlike VCP. Since the new lines would be installed above the groundwater table, the infiltration rate in that section of the collection system would be significantly reduced.

Replacing the sewer main along Thomas Avenue would allow wastewater collected in the drainage area of Lift Station No. 6 to be conveyed to Lift Station No. 2. This would eliminate the 8-inch force main that originates at Lift Station No. 6. Using only one force main to transfer wastewater to the treatment plant will provide a more reliable and efficient collection and pumping system.

In addition, locating the sewer lines shallower would eliminate the need for two of the submersible pump stations. The operation and maintenance costs will be reduced, as well as power consumption for pumping wastewater through the system.

Replacement and locating sewer lines above the groundwater table would significantly reduce the infiltration rate into the collection system. Lower TDS levels in the influent and effluent of the treatment ponds would protect the groundwater quality in the area from further degradation from high TDS concentrations.

1.4 Conformance with International Treaties and Agreements

The project site is located entirely within the United States of America and will not have any affect on surface water or groundwater in Mexico. The project will not discharge any waters into Mexico. No international treaties or agreements will affect this project.

II. Human Health and Environment

2.1 Human Health and Environmental Need

The project will significantly reduce the infiltration rates of saline groundwater into the collection system of the community of Desert Shores. Recent water quality tests performed on samples collected at several points throughout the collection system detected exceptionally high concentrations of Total Dissolved Solids (TDS) in sections adjacent to the Salton Sea As a result, the influent to the treatment ponds contains high levels of TDS. RWQCB monitoring reports indicate that TDS levels at the treatment ponds during 1995 were above 10,000 mg/L. TDS levels on samples taken at the monitoring wells adjacent to the treatment ponds recorded concentrations in the range of 12,000 □ 19,000 mg/L

The Salton Community Services District is under an order issued by the Regional Water Quality Control Board to reduce the TDS levels in the wastewater treatment ponds (ACL Complaint 97-122). ACL action requires the SCSD to address this problem by repairing the collection system to eliminate the percolation of wastewater with high TDS concentrations into the local groundwater aquifer.

Since the effluent is disposed through percolation, high TDS levels at the treatment ponds have deteriorated the groundwater quality of the area east of the treatment plant. Property owners adjacent to the treatment plant have filed complaints to the Salton Community Services District regarding degradation of the water quality of their wells.

Although high TDS levels in the treatment plant□s effluent has not caused a direct human health problem, degradation of groundwater quality could cause health and environmental impacts to the surrounding area.

As mentioned before, most of these problems are caused by the current layout and conditions of the collection system. The proposed improvements to the collection system will significantly reduce the infiltration rate of Salton Sea water into the system, eliminating the potential risks to human health and the environment.

2.2 Environmental Assessment

The proposed project includes replacement of a section of the collection system. No significant environmental impacts are expected as a result of the construction and operation of the proposed project. Due to the size and type of project, an Environmental Assessment is not required to comply with the California Environmental Quality Act or National Environmental Policy Act. A Categorical Exclusion will be issued by EPA. The US Fish and Wildlife Service has reviewed the proposed project and has not found any potential impacts to the project site.

2.3 Compliance with Applicable Environmental and Cultural Resource Laws and Regulations

Environmental Laws and Regulations

The California Regional Water Quality Control Board (RWQCB), Colorado River Basin, is the regulatory agency with jurisdiction over the Salton Community Services District (SCSD), which owns and operates the Desert Shores wastewater system. The proposed project will be reviewed by the RWQCB and any recommendations and comments issued by the Board will be incorporated into the final design phase.

The SCSD holds the discharge permit issued by the California RWQCB, Colorado River Basin Region. Board Order No. 98-008 includes waste discharge requirements for the Desert Shores

Wastewater Treatment Facility. The dry weather flow effluent limitations for the treatment basins are 0.2 mgd. The permit lists municipal supply and agricultural supply as the two beneficial uses of groundwater in the West Salton Sea Hydrologic Unit.

The permit states that the increase in TDS concentration in the influent to the treatment plant over that contained in the water supply to Desert Shores is not to exceed 400 mg/L. The direct discharge of effluent from the treatment plant to surface water or surface drainage is prohibited. Effluent disposal is to be through percolation and evaporation.

Archaeological and Cultural Resources Laws and Regulations

It is not expected that the proposed project will affect any archeological resources in the area. The State Historic Preservation Office (SHPO) for Imperial County has been contacted to identify any requirements such as an archeological survey or record search.

III. Technical Feasibility

Improvements to the collection system will significantly reduce infiltration of brackish groundwater in the southeastern portion of the system, on sewer lines along the peninsulas surrounded by the Salton Sea. Total Dissolved Solids concentrations measured throughout the collection system indicate that water from the Salton Sea infiltrates into the sewer lines through that section of the system. High TDS levels were measured consistently on samples taken on manholes along the peninsulas, Thomas Avenue and Capri Lane. However, samples taken on other portions of the system recorded significantly lower TDS concentrations. This indicates that the infiltration problem area is the portion of the system east of Thomas Avenue, along the peninsulas and Capri Lane. No significant infiltration is suspected on other sections of the system.

The original design of the collection system specified the use of vitrified clay pipe at depths below the ground water table. Vitrified clay pipes are installed using small segments joined together, which results in a large number of joints through which water can infiltrate into the pipe. In addition, since the material is fragile, it is susceptible to differential settling, which can easily crack or break the pipes. Because the peninsulas were built in the 1960s, further significant differential settling is not expected.

The proposed improvements will follow the layout of the existing collection system. Although the new sewer lines will follow the same alignment as the existing pipes, they will be installed at a shallower depth. The drainage area served by Lift Station No. 6 will be connected to a sewer main along Thomas Avenue with capacity to convey the wastewater flow from both drainage areas. This line will connect the sewer drainage area serviced by Lift Station No. 6 to the trunk sewer along Thomas Ave.

The proposed slopes used for calculating pipe sizes considers locating the sewer lines less than 5 ft below grade throughout the peninsula areas, maintaining the pipes above the groundwater table. Where needed, cleanouts will be installed to flush the system regularly. Several of the pipes will run at less than 20% capacity at initial flow conditions. Since the design flow conditions controlled the pipe size for most of the sections, the sewer lines will operate with excess capacity during the initial flow conditions. Design criteria for gravity sewer systems recommend that 15-inch or larger pipes be operated at less than 50% capacity. Smaller diameter pipes should not be operated at more than 75% capacity.

Initial flow conditions were used to calculate the required slope to maintain a velocity above 2 feet per second to reduce clogging and sediment buildup. Peak flow conditions were calculated using a peaking factor of 6, typical for small collection systems. In sections where the required slope to

maintain the minimum velocity would cause the pipes to be placed deeper than 6 feet, a cleanout will be installed and used to flush the pipes. This will allow installing the pipes at a flatter slope than that required to maintain the minimum velocity on initial flow conditions, since the pipes can be easily cleaned on a regular basis.

Fire truck equipment and hoses can be used to provide a water flow through the cleanouts into the pipes when flushed. The cleanouts will be constructed of 4-inch PVC pipe, connected to the sewer lines with a □Y□ fitting, and to a concrete box at ground level. A PVC cap will prevent debris from entering the cleanout and sewer line. The procedure for flushing the system will consist of opening the concrete box and the cleanout and inserting a hose through the cleanout and pumping water using a fire truck or other means. A reasonable flow of water is enough for removing any clogging materials and sediment. Cleanouts are generally installed at the end of a pipe section, but can also be installed at intermediate points if needed, depending on the length of the particular section.

For the maximum build out condition, the design flow conditions assumed all the available lots were constructed with a wastewater production rate 454 gpd per unit. The per unit wastewater generation flow was calculated from actual flows to the treatment plant and the current number of sewer connections to the system. The sewer lines were sized to accommodate maximum build out peak flow conditions, using the peak factor mentioned

3.1 Appropriate Technology

One of the most important tasks during development of a project is selection of appropriate technology. Selection of the alternatives should take into account the available human and technical resources of the community, as well as the short and long-term economic impact on the residents. The selected technology should be durable, cost effective, have an adequate level of complexity compared to the resources available, and be flexible enough to adapt to changing conditions within the community.

The proposed alternatives for reducing groundwater infiltration into the collection system included rehabilitation or replacement of the existing sewer lines. A □no project□ alternative was also considered to analyze the effects of continuing operation of the existing collection system on TDS concentrations in the treatment plant.

The selection process identified the replacement of the existing pipes to be the most adequate alternative to address the infiltration in the southeastern portion of the collection system. Rehabilitation by pipe bursting or lining was not found to be a feasible option due to the depth and size of most the pipes in that area. In addition, the current layout requires that the existing submersible pump lift stations operate to raise wastewater at several points in the system to continue gravity flow into the main pump stations.

The alternative of replacing the sewer lines includes removing two of the submersible pump lift stations, connecting the sewer drainage area serviced by Lift Station No. 6 to a sewer main along Thomas Avenue, and upgrading Lift Station No. 2 to submersible pumps. The proposed improvements will provide a more efficient collection system with less maintenance requirements, since the 8-inch force main will be abandoned and the submersible pumps will be removed. In addition, the risk of wastewater spills will be reduced by only using one main pump station and force main to convey wastewater to the treatment facility. Wastewater spills represent a threat to human health and the environment.

Removing the submersible pump lift stations will eliminate power consumption by those lift stations. Also, maintenance and repair requirements for the pumping system will be reduced. According to the Preliminary Engineering Report by Nolte Associates, no backup pump is installed at these lift stations.

The new sewer lines will be of high-density polyethylene (HDPE), a material proven to be durable and easy to install and maintain. HDPE has been used in wastewater applications, and its pipe size

application for wastewater ranges from 4-inch to 36-inch sewer lines. HDPE pipes are seamless, leak proof, and sections are bonded together with heat so no joints are needed to connect each pipe.

As a minimum, 8-inch diameter pipe will be used and all sewer lines will be installed shallower, at depths above the ground water table. This will facilitate the periodic cleaning of pipes by wastewater personnel, providing ease of maintenance and service, as well as significantly reducing infiltration of groundwater into the system in those areas.

3.2 Operation and Maintenance Plan

The proposed improvements to the collection system will generally require the same maintenance procedures as the existing system. However, replacement of the sewer lines at a shallower depth will facilitate maintenance and flushing of the sewer lines. In addition, since two of the submersible pump stations will be removed, operation and maintenance requirements of the pumping system will be reduced for that portion of the collection system.

The Salton Community Services District has adequate capacity and personnel for operating and maintaining the wastewater collection and pumping system. The district has prepared and follows an operation and maintenance manual for the daily operation of the wastewater system. SCSD personnel are qualified to perform any needed repairs on pumps, routine maintenance, and cleansing of the collection system. No additional training or certification of wastewater operators will be required, or preparation of additional operation and maintenance material. Additional recommendations on operation and maintenance from the manufacturer for the new type of pumps (submersible) for Lift Station No. 2 should be incorporated into the district□s operation and maintenance manual. Moreover, the sewer replacement project is streamlined to simplify the collection and pumping systems.

Start-Up Operation Plan

During replacement of sewer lines, it is customary to put the lines into operation as the pipes are installed between manholes. Upstream flow is temporarily diverted to downstream manholes using portable pumps so service to users is not interrupted. Old sewer lines will continue to be used until the new lines are installed and all users services in that portion of the system are connected to the new line. This will be possible due to the fact that old lines will be plugged and abandoned in place.

Start-up of the new pump station should be done under supervision of the engineer, the manufacturer and the contractor. This will ensure that the pumps, pipes, wiring, rails, and hoist are installed correctly and operate adequately. Instructions for adequate operation and maintenance given from the manufacturer will be followed and included in the existing maintenance program.

Contingency Plan

No additions to the existing contingency plan will be required during operation since the project will replace a portion of the collection system and upgrade a pump station. However, during construction, an emergency response plan will be required from the contractor. The plan will include actions to minimize risks to the residents and the environment if a problem develops during construction, such as a wastewater spill.

Several operational safety measures will be included in the final design. For the new pump station, a high water level alarm and back up pump will be provided. The high water alarm will alert the wastewater operators if any problems with the pumps occur. A portable pump and emergency power generator are available at the existing pump station for use during power outages or during repairs of the pumps. In addition, the wet well will have sufficient storage capacity to provide an adequate response time for operators to do any repairs needed.

Safety Plan

Safety considerations on clothing, material data sheets, procedures for emergencies due to injuries, and personal hygiene should be included as part of the operation and maintenance manual. Safety

procedures for wastewater operators for inspection, maintenance and repairs of the pump stations, as well as safety measures for maintenance of sewer lines and manholes will also be included.

Quality Assurance Plan

The final design will be based on generally accepted engineering criteria and good practice. The selected contractor will be required to submit and implement a quality control plan. The final engineering design will be reviewed by all involved agencies, including the Regional Water Quality Control Board, NADBank, BECC and US EPA

The engineer, the contractor and the pump manufacturer will inspect and approve the operation of the new pump station during startup of the facility. All new sewer lines will be inspected and tested for leaks on all joints and connections prior to being taken into service. All backfill material and compaction will be tested and monitored during construction. The contractor qualifications for construction of the project will be verified prior to selection.

Pollution Prevention Plan

The proposed project does not involve the use or generation of any pollutants that could potentially be released to the environment.

3.3 Compliance with Applicable Design Regulations and Standards

The Salton Community Services District and the Imperial County have not adopted engineering and planning design criteria for sewer line or pump station design.

The final engineering design will be reviewed by regulatory and financial agencies involved. Once the final engineering design is prepared, all documents will be reviewed by the Regional Water Quality Control Board, US Department of Agriculture, the North American Development Bank, and the US Environmental Protection Agency.

IV. Financial Feasibility and Project Management

4.1 Financial Feasibility

The financial analysis of the project was performed based on the estimated total cost of the project. There are no anticipated revenues to be generated as a result of this project. The district□s customer base is not expected to expand as a result of this project. The project will simplify the wastewater collection system and ease the maintenance burden on the district, thereby reducing the sewer maintenance expenditures. As a result, any debt service will be paid through existing revenue sources or an increase in sewer usage fees. The Salton Community Services District does not have any debt service obligations.

The estimated costs for the project are presented in Table 2.

Table 2 Estimated capital costs

Proposed Improvement	Estimated Capital Cost ($)
Construction of sewer lines, manholes and pumping infrastructure	$600,000
Administrative, legal, project inspection, engineering and construction management fees	$225,500
Equipment and miscellaneous	$96,500
Contingencies (15%)	$138,000
Total	**$1,060,000**

Three funding options were used to formulate pro forma financial statements. The first scenario entails grants financing 100% of the project. The second breakdown is a combination of 50% loans and 50% grants. The final funding option is comprised entirely of loans. In formulating the pro-forma financial statements, a 20-year loan period with a 5% annual interest rate compounded annually was assumed. A 4% annual inflation rate was added to the district□s expenditures and a 2.4% annual growth rate was used to formulate the revenue projections. One-time expenditures were high during fiscal year 2000, resulting in a deficit that was larger than normal. Therefore, the projections were based on unaudited fiscal year 2001 data.

Any revenue increase will likely be the result of an increased customer base due to population growth and/or an increase in the sewer user fee. The district□s Sewer Maintenance Fund has been running deficits during three of the past five fiscal years. As a result, the fund balance has decreased 25% during the same period. The break even analysis determines the monthly sewer user fee that must be established in order for the Sewer Maintenance Fund□s balance to remain at $364,507 at the end of 20 years, which was the fund□s unaudited balance at the end of Fiscal Year 2001. A 2.4% annual revenue growth resulting from population increases is assumed. Table 3 presents the resulting minimum user fee required for maintaining the Sewer Maintenance Fund balance.

Table 3 Minimum sewer user fees required to sustain Sewer Maintenance Fund balance

	Funding Scenarios

Year	100% loans	50% loans 50% grants	100% grants
2001	$5	$5	$5
2002-2010	$12	$10	$9
2011-2016	$16	$16	$14
2017-2020	$20	$16	$14
2021	$22	$18	$14

4.2 Fee/Rate Model

The sewer rates have remained the same since 1978. The majority of the lots in Desert Shores and Salton City are unimproved. Table 4 presents the current sewer rates for Desert Shores.

Table 4 Sewer rates for Desert Shores and Salton City, CA

Category	Monthly Fee	Annual Total
Sewered with assessment	$1.75	$21
Not sewered with assessments	$1.75	$21
Houses with assessment (sewer user fee)	$5	$60

The district has maintained its collection efficiency above 95% for at least the previous five years. Generally, the district collects above 98% of amount owed. On average over the last five years, the district has received 98.5% of the money owed.

User Fee Structure

To formulate the pro-forma budgets of the Sewer Maintenance Fund, two fee/rate schedules were employed. First, the existing monthly sewer user fee of $5 per month was used. For the second projection, the sewer user fee was doubled to $10 per month.

At least twice during the last five years, attempts have been made to raise the sewer fee to $10 per month. Both efforts were unsuccessful, however such a rate increase may be necessary to finance debt obligations. Doubling the rates would increase annual revenues by approximately $70,000.

4.3 Project Management

Organizational Structure

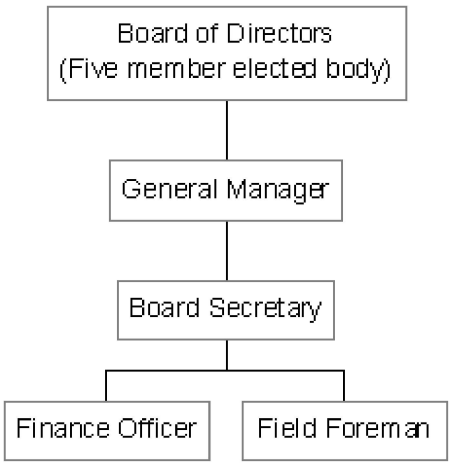

Figure 2 Salton Community Services District Organizational Chart

The organization chart of the Salton Community Services District below outlines the key management positions and department heads. These positions include the Board of Directors, General Manager, Secretary to the Board of Directors, Finance Officer, and Field Foreman.

The project will be managed by the SCSD. The district has adequate management capacity and staff to operate and maintain the proposed improvements to the collection system.

V. Community Participation

Comprehensive Public Participation Plan. The Salton Community Services District (SCSD) and the project steering committee submitted a public participation plan (Plan) to BECC on August 21, 2001, and was approved the following day. The Plan described the step the committee will take to comply with the objectives of public participation, identify and meet with local organizations, organize an informational outreach campaign, hold public meetings and develop and final report documenting public support for the project. The SCSD officially adopted a resolution pf approval of the public participation plan.

Steering Committee: The steering committee was organized on August 9, 2001 and included: Benney Bennett, Frank Kent, Robert Butler, David Urbanoski, David Erskine and Rosa Reagles. The committee counted with the technical support of Brain Napier of the SCSD and Bill Miller, consulting engineer, Fernando Ruiz and Dottie Rusinko residents of Desert Shores.

Local Organizations: The steering committee contacted Western Shores Youth Center, West Shores Health and Education Association, VFW, American Legion, West Shores Chamber of Commerce to present the project and solicit public support for it. Letters of support were received from the West Shores Youth Center, West Shores Health and Education Association, Veterans of Foreign Wars, West Shores Chamber of Commerce and the Fire Department.

Public Information: The certification, environmental and Facility Plan documents were available for public review at the Salton Community Services District, Desert Shores RV Park, Veterans of Foreign Wars local chapter and the Seafarer, the local newspaper, during and after work hours. Public meeting notices were published in the Imperial Valley Press, Desert Sun, Seafarer and Pelican Post newspapers and posted in local stores. A fact sheet was developed and handed out to residents and made available at the public meetings.

Public Meetings: Two public meetings were held per BECC requirements. The first meeting was held on September 17, 2001. The second meeting was held on April 30, 2002. An exit survey was carried out at both public meetings and 75% of those surveyed support the project.

VI. Sustainable Development

The project was developed within the context of sustainable development. Sustainable development integrates environmental, social and economic needs of a community through the protection of natural resources and its sustainable use.

Definition and Principles

The project followed the definition principles of sustainable development:

Principle 1 of the Sustainable Development Criteria indicates that a project must produce a benefit for human health. The project fulfills this principle as detailed below.

- The project will improve the quality of groundwater in the vicinity of the wastewater treatment facility by reducing TDS levels in the effluent. Water quality in wells of properties near the treatment facility has deteriorated, which can represent a risk to human health when used as a source of drinking water.

Principle 2 states that a project must be implemented in a way that provides equitable development both in present and in future. The project fulfills the principle as discussed below.

The project, while demanding higher initial costs than the other alternatives considered, will provide the present and future residents of Desert Shores with a more efficient and simplified collection and pumping system. The improved system will lower the operation and maintenance costs of the pumping system in two ways: (1) by removing two of the submersible pump stations energy consumption and labor for inspection, maintenance and repairs will be reduced; (2) and, by reducing infiltration rates the amount of wastewater pumped by the lift stations will be lower, reducing their operating time of each of the lift stations.

As mentioned, the proposed improvements to the collection system will protect the water resources in the area from further deterioration, ensuring its availability and quality for future generations.

Principle 3 indicates that a project must have an integrated component of environmental protection. The project contemplates the following.

The reduction of infiltration into the sewer system will reduce the total dissolved solids levels in the treatment ponds, which will protect and improve the groundwater quality in the surrounding area.

Principle 4 states that residents must participate in the development and implementation of the project.

A public participation plan will be prepared and implemented as part of the project. Residents will be informed of the social, environmental and economic impact of the project to the community. A local steering committee will be formed, and meetings with local organizations will be help to receive input from the residents about the project.

The Salton Community Services District will continue to operate and maintain the wastewater infrastructure. The proposed improvements will facilitate operation of the collection and pumping systems, and reduce the maintenance requirements.

Institutional and Human Capacity Building

The improved sewer system will be operated and maintained as required to serve the community of Desert Shores. Salton Community Services District personnel have operated and maintained the existing system within the community for several years. The staff of the community is both qualified and experienced in the operation and management of this system and will continue to do so after the improvements have been made.

Conformance with Applicable Local and Regional Conservation and Development Plans

The upgrade of the sewer system will take place on property already owned by the District and will not require the acquisition of additional property. The land is currently used for the same purposes and thus will not require any changes in the zoning laws to accommodate the project. No Community Conservation or Development Plans currently exist in Desert Shores.

Natural Resources Conservation

The proposed project reduces the infiltration of Salton Sea water into the sewer system, which flows to the wastewater treatment facility. Since the effluent is disposed of by percolation, the groundwater quality in that area has deteriorated. Recent tests on samples from wells adjacent to the treatment plant indicate that high TDS levels in the treatment plant effluent have impacted the quality of groundwater. The proposed project will protect the water resources in the area from further degradation, and improve the quality of the groundwater.

Community Development

Community development receives a positive impact by this project because once better fundamental services exist, the number of people who will want to live in this community will increase, this will bring new commercial establishments and more economic activity.

The project will reduce the environmental impact of the wastewater treatment facility. The expected costs for maintenance and repair of the existing system will be lower. In addition, the proposed improvements will provide a much more reliable collection and pumping systems.