COACHELLA VALLEY WATER DISTRICT

IRRIGATION LATERAL 99.8-0.51 IMPROVEMENT PROJECT

UNITED STATES BUREAU OF RECLAMATION
APPLICATION FOR A
WaterSMART: WATER AND ENERGY
EFFICIENCY GRANTS FOR FY 2015

FUNDING OPPORTUNITY ANNOUNCEMENT NO. R15AS00002

JANUARY 2015

Coachella Valley Water District
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TABLE OF CONTENTS

TABLES

FIGURES

TECHNICAL PROPOSAL FOR IRRIGATION LATERAL 99.8-0.51 IMPROVEMENTS

I. EXECUTIVE SUMMARY

A. Applicant Information:

Date: January 15, 2015
Applicant Name: Coachella Valley Water District
City/County/State: Palm Desert, Riverside County, California

B. Project Summary:

The Coachella Valley Water District (CVWD) proposes to improve approximately 18,500 linear feet of concrete irrigation pipe and 11 concrete baffle stands along Irrigation Lateral 99.8-0.51 (Project) in order to reduce significant operational and pipeline water losses and to increase the efficiency of canal water deliveries. CVWD operates and maintains 485 miles of irrigation distribution pipeline on behalf of the United States Bureau of Reclamation (Reclamation) as part of CVWD's obligations under the Boulder Canyon Project All American Canal Contract for Construction of Distribution System, Protective Works, and Drainage Works, dated December 22, 1947. The Project is intended to be a model project for the improvement of other critical irrigation pipelines within the distribution system.

Lateral 99.8-0.51 experiences more surges and leaks than any other irrigation pipeline in the irrigation distribution system. Hydraulic surges causes water to escape from the open baffle stands and through the pipe joints. The project is expected to result in water savings of **1,535 acre-feet annually** (Task A benefits) which will allow conserved Colorado River water to be used for other beneficial purposes. New meters and SCADA equipment will be installed in order to improve water management and to increase the efficiency of water deliveries. The SCADA equipment will utilize solar panels as the power source. In addition, the proposed improvements will reduce the additional vehicle trips currently needed to operate the pipeline, which in turn will reduce carbon emissions (Task B benefits). The conserved water will be used to help supply irrigation water in lieu of groundwater and/or potable water to landscaped areas within golf courses and Homeowner Associations (HOAs) as part of CVWD's Urban Water Management program (Task D benefits). The use of conserved water for irrigation purposes in urban areas will improve the sustainability of CVWD's overall water supply (Evaluation Criterion E benefits).

The Project **Task A - Water Conservation** components include:

- Canal Lining/Piping
  - Constructing conveyance improvements, including using pressure-rated PVC pipe in place of concrete pipe.
  - Eliminate the existing open vertical baffle stands to eliminate water losses.
  - Install an inline automated downstream valve to control pressure in the pipeline to manage irrigation deliveries.

- Irrigation Flow Measurement
  - Replace twenty-one (21) old vertical flow customer delivery meters with new, more accurate horizontal-type flow meters.
  - Install upstream and downstream mainline flow meters within the lateral to better manage the delivery of approximately 6,000 acre-feet of water on an annual basis to minimize over-deliveries.
- SCADA and Automation
  - SCADA will be installed for both the upstream and downstream mainline flow meters to better manage the annual delivery of approximately 6,000 acre-feet of water through remote flow measurement. The SCADA information will be used to manage delivery of water through the lateral, thereby minimizing over-deliveries at the end of the pipeline.
  - An Automated Meter Reading (AMR) device will be installed on a selected customer meter to determine if this technology can provide additional benefits, such as allowing the customer to better manage his on-farm water use with real time data while minimizing trips to read the meter. Solar panels will be used to power the unit.

The Project **Task B – Energy-Water Nexus** components include:

- Increasing Energy Efficiency in Water Management
  - The improvements will reduce vehicle miles driven due to an expected decrease in operational needs of the pipeline. The service workers currently make extra trips along this lateral as they attempt to reduce the hydraulic surges by making multiple valve adjustments. It is estimated that carbon emissions will be reduced by **2 tons** annually upon completion of the project.
  - The new SCADA equipment installed on the meters will utilize solar panels for power, which will result in some minor energy savings estimated at **$1,289** per year.

The Project **Task D – Water Marketing** strategies include:

- The conserved water will be utilized as a source of irrigation water for golf courses and HOAs located primarily in Palm Desert and La Quinta. CVWD plans on converting 48 additional golf courses and HOAs to a blend of recycled water and Colorado River water in lieu of existing groundwater and potable water sources over the next 10 years.

The Project **Evaluation Criterion E – Other Contributions to Water Supply Sustainability** include:

- The conserved water from the Project will improve the sustainability of CVWD's water supply while reducing groundwater pumping in the area. This strategy will reduce overdraft of the groundwater basin while maximizing the beneficial use of CVWD's current entitlement of Colorado River water.

The total project cost is estimated at $8,185,567. CVWD will be contributing $7,185,567, or 88% of the project cost through its Capital Improvement Budget. The remaining $1 million will be funded from Funding Group II if this project is selected for the WaterSMART grant.

C. Project Schedule:
The lateral improvements will be constructed in three phases (approximately 1 mile of new pipeline per phase) within the next 36 months. The preliminary project milestones are:

- Complete the NEPA environmental compliance documentation: June 2015
- A consultant has been retained to prepare the plans and specifications. Complete the construction drawings and specifications (three phases): July 2015
- Award Phase 1 construction contract: October 2015
- Complete Phase 1 construction: May 2016
- Award Phase 2 construction contract: August 2016
- Complete Phase 2 construction: March 2016
- Award Phase 3 construction contract: June 2017
- Complete final report with evaluation results: March 2018

D. Federal Facility Information:
The Project improvements will be constructed within the existing United States Bureau of Reclamation pipeline easements. As a result, no additional right-of-way will be needed for the new pipeline. Reclamation will continue to retain ownership of its facilities.

II. BACKGROUND DATA

A. Geographic Location:
CVWD is located in Riverside County in Southern California. A location map for CVWD is shown in Figure 1 below.

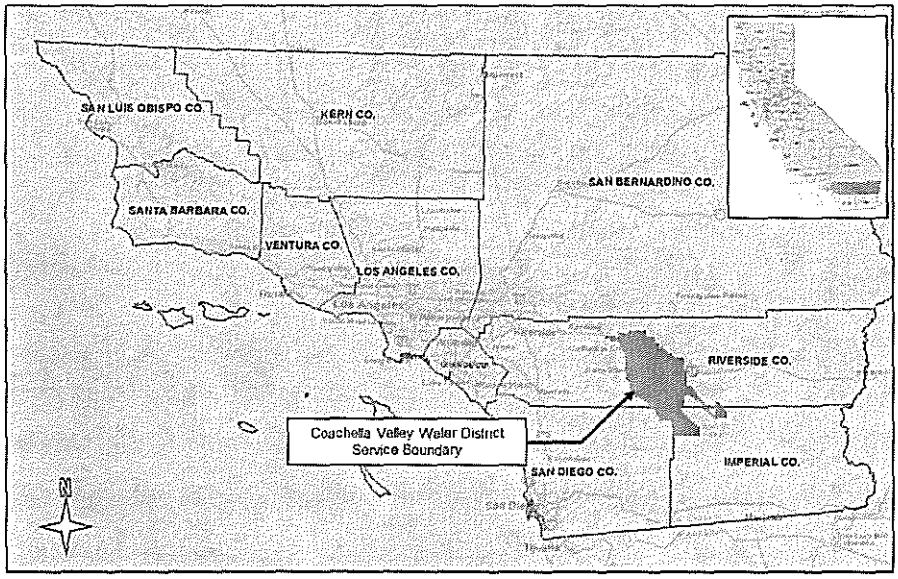


Figure 1. Coachella Valley Water District Location Map

The Project is located approximately 7.5 miles south of Interstate 10 and 3.5 miles northwest of the town of Mecca as shown in Figure 2.

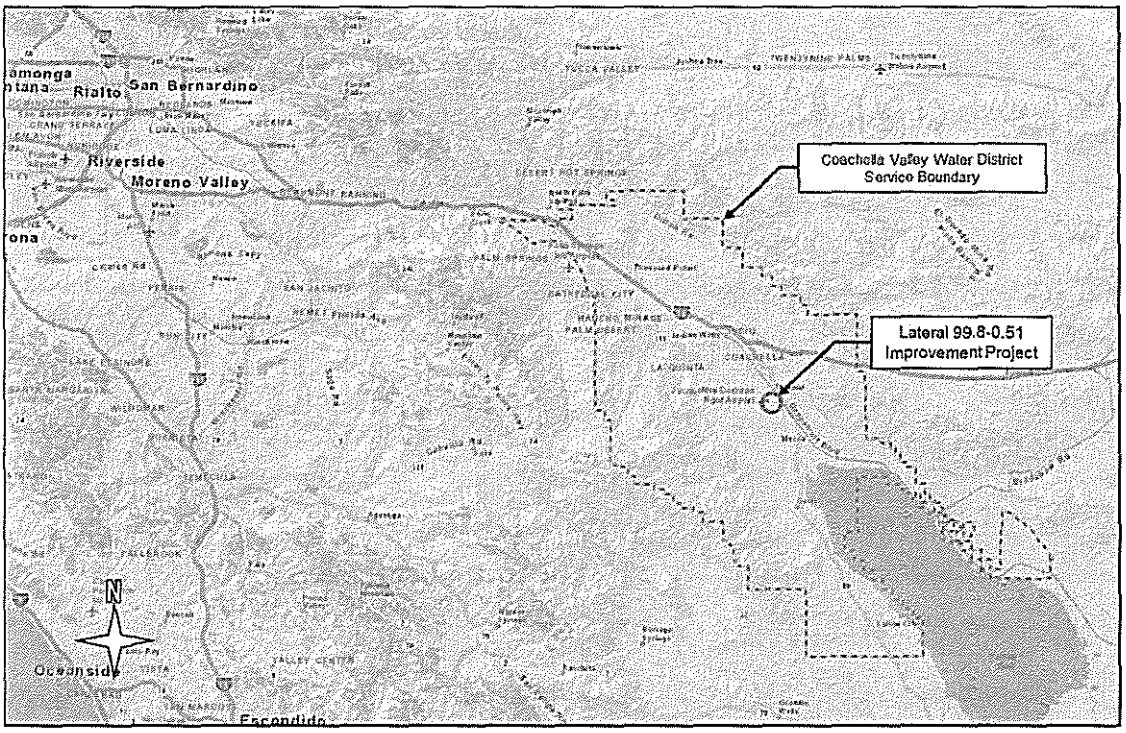


Figure 2. Project Vicinity Map

B. Water Supply:

CVWD is a county water district organized under the California County Water District law and delivers Colorado River water in Riverside County for irrigation purposes. CVWD is a contractor with the United States for delivery of Colorado River water as authorized by the Boulder Canyon Project Act (Act of December 21, 1928). Under the Quantification Settlement Agreement (QSA), dated October 10, 2003, CVWD has a Priority 3a entitlement of 330,000 ac-ft/year of Colorado River water. This amount increases by 4,000 to 5,000 ac-ft per year based on the Compromise QSA Delivery Schedule (Schedule C) contained in the QSA. Any entitled water not used by CVWD may be used by the other lower-priority contractors, such as the fourth and fifth priority agency known as Metropolitan Water District of Southern California (MWD).

CVWD delivers approximately 275,000 acre-feet (ac-ft) of Colorado River water annually, via the Coachella Canal, to approximately 1,060 agricultural accounts representing about 67,300 acres of farmland in Riverside County. Major crops include vegetables, dates, table grapes, citrus, strawberries, and watermelon. An additional 41,500 ac-ft/year of Colorado River water is diverted for other non-agricultural uses, such as golf course, landscape irrigation, and groundwater replenishment.

C. Water Delivery System:
The irrigation distribution system was constructed in the late 1940's by the United States Bureau of Reclamation. CVWD is responsible for the operation and maintenance of the distribution system on behalf of Reclamation as part of CVWD's obligations under the Boulder Canyon Project All American Canal Contract for Construction of Distribution System, Protective Works, and Drainage Works, dated December 22, 1947. CVWD is one of the more efficient and innovative water districts since the entire 123 miles of canal are lined and the 485 miles of distribution system is comprised of concrete pipelines and open concrete baffle stands. Please refer to the Appendix for an exhibit titled ***Typical gravity flow delivery lateral*** for a cross-sectional depiction of the system.

D. Past Working Relationships with Reclamation:
CVWD has had a long-term relationship with Reclamation for over 85 years since the beginning of the Boulder Canyon Act in 1928 and the subsequent 1934 contract for construction of the All American Canal project. CVWD operates and maintains the 123 miles of the Coachella Branch of the All American Canal (Canal) and 485 miles of the irrigation distribution system on behalf of Reclamation. CVWD works with Reclamation's Yuma, Arizona and Boulder City, Nevada offices on a daily basis regarding construction, repair, relocation, and abandonment of Reclamation facilities. CVWD also meets with the Yuma office on a biannual basis to collaborate on topics of mutual concern. CVWD has also partnered with Reclamation on the following projects:

- CVWD executed Cooperative Agreement No. 05FC340010 – Agricultural Conservation of Colorado River Water in the Coachella Valley, California with Reclamation in 2005. This project involved redirecting conserved agricultural water to recharge the groundwater basin, thereby banking water for future use by agricultural and urban users.
- CVWD worked closely with Reclamation on the recently completed Coachella Canal Lining project. This project lined 36 miles of the Coachella Canal at a total cost of $120 million.
- CVWD worked closely with Reclamation on the recently completed relocation of 4,700 feet of the Coachella Canal that had subsided through the SilverRock Golf Course in La Quinta. Work was substantially completed in December 2014
- CVWD also recently completed the construction phase of the Lateral Automation Pilot Project in November 2014 as part of Reclamation Agreement No. R12AP34007. This project automated the delivery of canal water to two farmer's reservoirs by constructing new meters, motor-operated valves, and a SCADA system to automatically deliver irrigation water based on reservoir levels. The intent of the project is to better manage and increase the efficiency of the delivery of irrigation water to farmers.

III. TECHNICAL PROJECT DESCRIPTION

Project Description:
Irrigation Lateral 99.8-0.51 is located along Fillmore Street between 58th Avenue and 64th Avenue northwest of the community of Mecca in Riverside County as shown in Figure 3. On average, over 6,000 ac-ft of Colorado River water is delivered on an annual basis via gravity to 21 customers within this reach. The concrete pipeline was constructed in 1950 and ranges in size from 27-inches to 36-inches in diameter. There are 11 open concrete baffle stands that control the hydraulic grade line and water deliveries. About 920 acres of farmland are served by this portion of the lateral. The entire 99.8 pipeline serves over 5,600 acres of farmland.

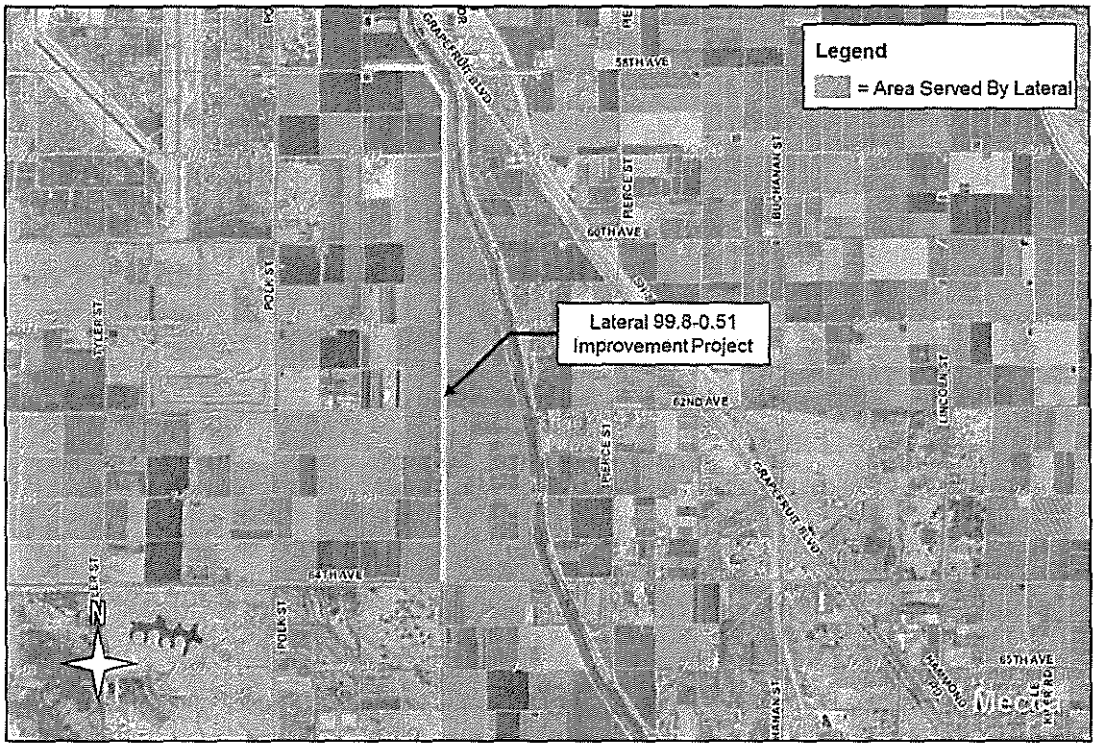
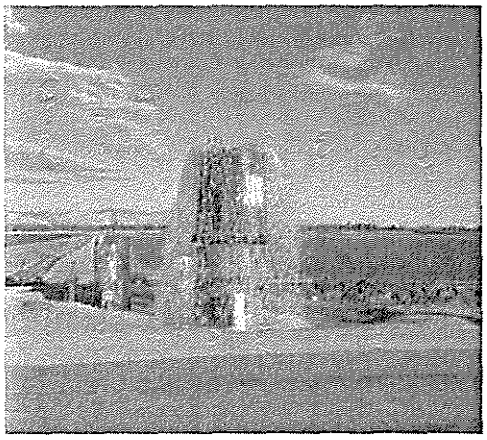


Figure 3. Project Location Map



This portion of the pipeline experiences constant surges through the open baffle stands, which results in significant operational water losses. The surges have occurred since construction was completed over 65 years ago. This phenomenon was studied by Reclamation in 1954 in Engineering Monograph No. 17 titled *Surge Control on the Coachella Pipe Distribution System*.

The Project will improve the efficiency of the delivery system, eliminate surges, install new metering equipment, provide for remote flow readings to better manage water deliveries, and conserve 1,535 ac-ft. of irrigation water on an annual basis. The major work activities include:

Task 1 – Project Management

CVWD's project manager will coordinate the project activities among staff, customers, Reclamation, consultants, and contractors from inception through construction. This work includes the management of the design consultant, contract administration, communication and coordination with Reclamation, public outreach, and ensuring that schedule milestones are met. The preparation of reports and other necessary documents for Reclamation is included in this task.

Task 2 – Research

Work activities include obtaining construction drawings of existing facilities, performing utility research, obtaining survey data, and plotting of Reclamation easements. This task is almost completed.

Task 3 – Environmental Documentation

CVWD is currently preparing the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) documentation needed for the Project in collaboration with Reclamation's Yuma Area Office. Reclamation will be the lead agency for NEPA compliance. This work includes consultation with the appropriate agencies and entities.

Task 4 – Engineering Studies

A Preliminary Design Report (PDR) was prepared by the design consultant. This report analyzed the pipe surges, hydraulics, flow controls, and preferred construction methods and sequencing. A geotechnical investigation will also be conducted in order to characterize the soil conditions, determine appropriate soil compaction requirements, and investigate if groundwater is present. Pipeline trench calculations will be prepared based on the geotechnical study.

Task 5 – Preparation of Construction Drawings and Specifications

Based on the PDR, CVWD's consultant is currently preparing the final engineering construction documents for the Project. This includes preparing plans and specifications for the bidding and construction of the lateral improvements in three phases beginning at the downstream section. Phase 1 will construct the pipeline improvements along Fillmore Street from 64th Avenue to 62nd Avenue. Phase 2 will construct the pipeline improvements along Fillmore Street from 62nd Avenue to 60th Avenue. Phase 3 will complete the construction along Fillmore Street from 60th Avenue and along Avenue 58$^{th.}$ A revised Theory of Operation will also be implemented to better manage the delivery of water to customers using the mainline meter information to minimize over-deliveries. Please refer to Figure 4.

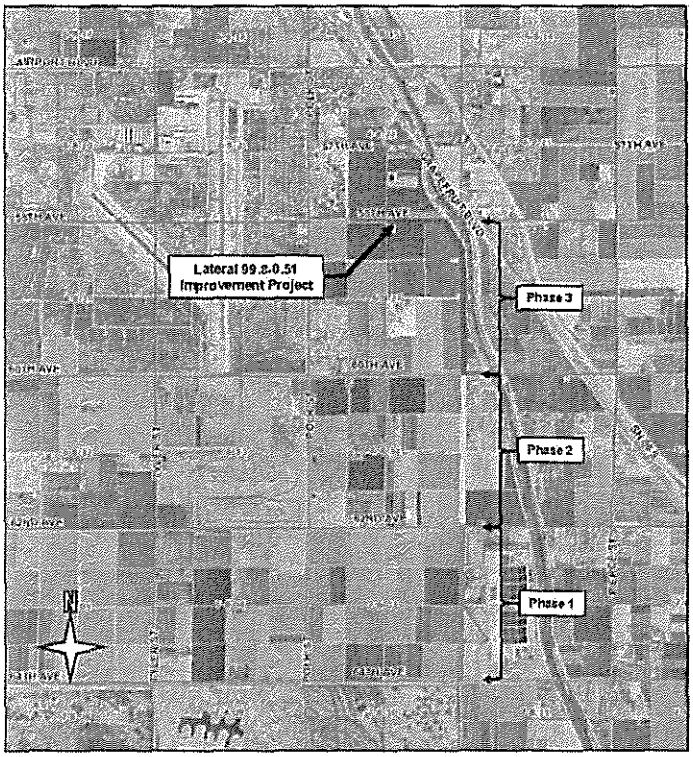


Figure 4. Project Phasing Map.

Task 6 – Construction
This task involves the bidding and construction of the pipeline, metering devices, and SCADA system in 3 phases as noted in Task 5. The construction of the entire pipeline improvements is expected to take approximately 27 months. CVWD staff will provide construction management and inspection for the work.

Task 7 – Performance and Evaluation
CVWD will monitor the performance of the improved pipeline system based on the evaluation criteria contained in subsequent sections of this document. Semi-annual reports, financial reports, and a final report will be prepared after Project completion in order to document the amount of water conserved.

IV. EVALUATION CRITERIA

A. Evaluation Criterion A: Water Conservation (28 points)

CVWD delivers Colorado River water to approximately 67,300 acres of farmland, some of which is double-cropped, in Riverside County, California. CVWD currently consumptively uses about 348,691 ac-ft. of Colorado River water annually and sells approximately 275,000 ac-ft to its agricultural customers while the remaining balance is used for golf course irrigation, landscape irrigation, groundwater replenishment, and system losses. The irrigation lateral distribution system, which was constructed in the late 1940's by Reclamation, receives its water from the Coachella Canal. Reclamation owns the facilities while CVWD operates and manages the system. The irrigation pipelines consist of reinforced concrete pipe that are butted joint-to-joint and concrete sealed. The system is also designed with above-ground, open vertical concrete baffle stands to provide the pressure head needed to deliver water to customers through a vertical propeller meter.

The laterals tend to surge whenever there are slight changes to flow, either at the canal or along the delivery points. Surging in this lateral has always occurred since construction was completed over 65 years ago. The surges cause water losses when water overflows open baffle stands and is forced through the pipe joints due to the increase in water pressure.

This project will install pressure-rated pipe and remove the open baffle stands which will conserve 1,535 ac-ft. of water due to the elimination of surges and pipeline leaks. The improvements contained in this Project will become a model project for other irrigation lateral improvements in Reclamation's 485-mile irrigation distribution system. The conservation of Colorado River water continues to be a key priority for CVWD and other arid west stakeholders.

Subcriterion No. A.1 Quantifiable Water Savings (24 points)

Describe the amount of water saved:

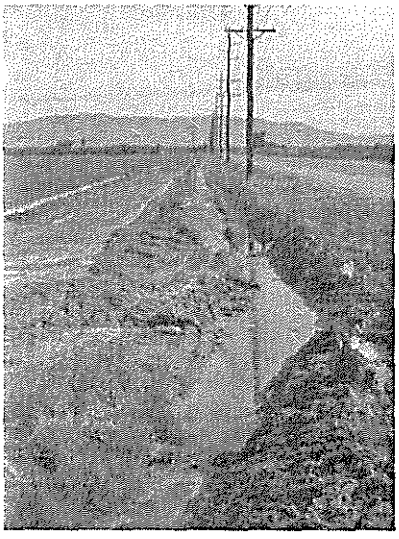
The Project will conserve 1,535 ac-ft. of water on an annual basis. This conserved amount was calculated by measuring current operational water losses in the bar ditches using channel geometry and flow depth, historical flow meter data, and water losses through the pipe joints based on an assumed conservative estimate of 5% of delivered water. The calculations are included in the appendix of this report. Based on the water loss calculations and customer meter data, about 6,945 ac-ft of canal water is conveyed through this lateral while only 5,050 ac-ft of water is delivered annually to customers. The remaining 1,895 ac-ft of water per year is lost from the baffle stands, pipe joints, and at the end of the pipeline delivery system. The lost water flows into bar ditches or percolates into the ground, which causes ongoing maintenance issues and impacts to adjacent property. The conserved water will be used in CVWD's non-potable water program. This program substitutes non-potable water for groundwater pumping and/or potable water for use by homeowner associations and golf courses for irrigation in order to reduce groundwater overdraft. CVWD has aggressively targeted 48 new non-potable water connections to HOAs and golf courses over the next 10 years.

Canal Lining/Piping:

This project will replace the existing concrete pipe with pressure-rated PVC pipe, remove intermediate baffle stands, and install new meters and SCADA equipment to better manage deliveries.

a) *How has the estimated average annual water savings that will result from the project been determined? Please provide all relevant calculations, assumptions, and supporting data.*

   This project is estimated to save 1,535 ac-ft. of water annually by eliminating baffle stand overflows, eliminating pipeline leakage, and reducing the water lost at the end of the lateral system due to over-deliveries.



b) *How have average annual canal seepage losses been determined? Have ponding and/or inflow/outflow tests been conducted to determine seepage rates under varying conditions? If so, please provide detailed descriptions of testing methods and all results. If not, please provide an explanation of the method(s) used to calculate seepage losses. All estimates should be supported with multiple sets of data/measurements from representative sections of canals.*

Not applicable.

c) *What are the expected post-project seepage/leakage losses and how were these estimates determined (e.g., can data specific to the type of material being used in the project be provided)?*

The reduction in post-project leakage losses are based on the elimination of the existing open baffle stands and concrete pipe joints that allow water losses when the system surges. The baffle stands will be removed and the new pipeline will be PVC pipe with pressure-rated pipe joints. It is expected that the operational water losses through the bar ditches will be eliminated. Refer to the calculations in the appendix.

d) *What are the anticipated annual transit loss reductions in terms of acre-feet per mile for the overall project and for each section of canal included in the project?*

Not applicable.

e) *How will actual canal loss seepage reductions be verified?*

The irrigation lateral pipeline loss reductions will be verified by visually observing the elimination of water overflowing the baffle stands and the elimination of water flowing in the roadside bar ditches.

f) *Include a detailed description of the materials being used.*

The pipeline materials to be used include:

- PVC DR 25 pipe with a pressure rating of 165 psi per AWWA standard C905
- All pipeline fittings and valves will have a minimum pressure rating of 150 psi
- Existing open baffle stands will be removed

Irrigation Flow Measurement:

A major component of this project will be to improve the accurate measurement of water through the lateral and to CVWD customers. The Project will install two inline flow meters within the pipeline at the upstream and downstream reaches to better manage the delivery of approximately 6,000 acre-feet of water. The inline meter information will allow CVWD to improve the efficiency of deliveries by reducing over-deliveries.

The upstream and downstream inline meters will transmit information on a regular basis to CVWD headquarters which will allow the control operators and Zanjeros to monitor the flows into and out of the system. This information, along with customer meter data, will quantify the water savings that will be gained by improvements to the existing concrete pipeline and baffle system.

Currently, the only measurement of water is at the customer delivery point through the old vertical flow meters. This Project includes replacing the twenty-one (21) vertical flow customer meters with more accurate horizontal propeller meters.

a) *How have average annual water savings estimates been determined? Please provide all relevant calculations, assumptions, and supporting data.*

The average annual water savings have been calculated by measuring operational water losses through the bar ditches using channel geometry and flow depth, historical flow meter data, and water losses through the pipe joints based on an assumed estimate of 5% loss of delivered water. The calculations are included in the appendix of this report. Based on the water loss calculations, 1,895 ac-ft of water is lost per year. The annual water savings will result from the elimination of surges that escape through the open baffle stands and the elimination of leaks through the pipeline. It is assumed that some minor water losses will continue to occur at the end of the delivery system.

b) *Are flows currently measured at proposed sites and if so what is the accuracy of existing devices? How has the existing measurement accuracy been established?*

Existing flows are currently measured at the customer delivery points. The vertical meters are essentially the same meters that were originally installed by Reclamation over 65 years ago. The accuracy of the existing meters have not been established. However, the proposed horizontal propeller meters are generally accurate to within 2% of the actual flow per the manufacturer's specifications. In addition, two new inline meters will be installed within the pipeline to measure flows before and after the customer deliveries to better manage water orders through the lateral.

c) *Provide detailed descriptions of all proposed flow measurement devices, including accuracy and the basis for the accuracy.*

The proposed horizontal flow meters will be McCrometer Water Specialties meter model ML04 (www.mccrometer.com/products) or equal. Specifications include an accuracy of +/- 2%, 150 psi pressure rating, and a 4-20 mA and pulse rate output. CVWD has used these meters in other parts of our system.

d) *How will actual water savings be verified upon completion of the project?*

Actual water savings will be verified by visually observing the elimination of surges over the baffle stands and the elimination of operational water losses flowing in the roadside bar ditches. The new meter data will also be used to verify the amount of water entering and exiting the system through the metered deliveries and mainline meters.

SCADA and Automation:

SCADA and automation have been a key component to the operation of the Coachella Canal at CVWD for over 30 years. This project will incorporate the use of SCADA by collecting flow data from the upstream and downstream inline meters as well as utilizing AMR for one customer meter. The incorporation of SCADA and AMR to report flow through a customer meter will allow for the customer to better manage his use of irrigation water on a real-time basis by accessing the information through the internet. Through SCADA and AMR, CVWD expects to better manage approximately 6,000 ac-ft. of water delivered through this lateral on an annual basis. This water volume was obtained from historical water sales records averaged over the past three years.

a) *How have average annual water savings estimates been determined? Please provide all relevant calculations, assumptions, and supporting data.*

The average annual water savings have been calculated by measuring operational water losses through the bar ditches using channel geometry and flow depth, historical flow meter data, and water losses through the pipe joints based on an assumed estimate of 5% loss of delivered water. The calculations are included in the appendix of this report. Based on the water loss calculations, 1,895 ac-ft of water is lost per year. The annual water savings of 1,535 ac-ft. per year will result from the elimination of surges that escape through the baffle stands and the elimination of leaks through the pipeline. It is assumed that some minor water losses will continue to occur at the end of the delivery system.

b) *Have current operational losses been determined? If water savings are based on a reduction of spills, please provide support for the amount of water currently being lost to spills.*

Operational water losses have been calculated as noted in item a) above.

c) *Will annual farm delivery volumes be reduced by more efficient and timely deliveries? If so, how has this reduction been estimated?*

This Project is not expected to result in a reduction of annual farm delivery volumes, although a more accurate measurement of flows will occur with the installation of the new propeller meters compared to the vertical meters.

d) *Will canal seepage be reduced through improved system management? Ifso, what is the estimated amount and how was it calculated?*

It is expected that over-deliveries will be reduced once SCADA and the inline meters have been installed. The volume of water sent through the lateral compared to the volume of water measured at the downstream meter can be easily reviewed to minimize over-deliveries.

e) *How will actual water savings be verified upon completion of the project?*

Actual water savings will be verified by visually observing the elimination of surges over the open baffle stands and the elimination of operational water losses flowing in the roadside bar ditches. The new meter data will also be used to verify the amount of water entering and exiting the system through the metered deliveries and inline meter data.

Subcriterion No. A.2 - Percentage of Total Supply (4 additional points)

Percentage of Total Water Supply Conserved:
The total percentage of water supply conserved is equal to:

Estimated Amount of Water Conserved = 1,535 AF = 0.44%
CVWD's Average Annual Water Supply 348,691 AF

B. Evaluation Criterion B: Energy-Water Nexus (16 points)
The Project will include the installation of renewable energy components and will be considered under:

Subcriterion No. B.2 - Increasing Energy Efficiency in Water Management (4 points)

Describe any energy efficiencies that are expected to result from implementation of the water conservation or water management project (e.g., reduced pumping).

The Project will result in reduced vehicle miles driven, which will reduce carbon emissions. Due to the constant surges, the service worker typically makes three daily round trips up and down the lateral to adjust the delivery valves. A typical normal run to set the customer valves is one round trip. Each round trip is 9.2 miles and thus the service worker currently drives 3 x 9.2 miles x 5 days a week x 52 weeks = 7,176 miles per year. The miles driven will be reduced by 4,784 miles per year (two round trips per day) once the Project is completed. The reduction in miles driven translates to over 2.9 metric tons of reduced carbon emission per year as shown in the calculation in the appendix from the website *calculator.carbonfootprint.com/calculator.*

This project will also include renewable energy components by installing solar panels to provide power to the SCADA equipment at the three meters, i.e., at the upstream flow meter, downstream flow meter, and one customer AMR meter. This will result in some energy savings for the project estimated at $1,031 per year for the two inline meter sites plus an estimated $258 at the AMR meter site (assuming 50% of the power is needed compared to the mainline meter sites) for a total annual savings of **$1,289** based on current power rates.

The approximate savings are calculated as follows using an average of 6 hours of available sunlight per day per site:

Solar Panel Production (One mainline meter site):

327 Watts x 6 panels = 1962 Watts	per hour
x 6 hrs	sunlight per day
11.77 kWh	per day
x 365 days	
4,296.05 kWh	per year
x $ 0.12	per kWh
$515.53	savings per year per site

C. Evaluation Criterion C: Benefits to Endangered Species (12 points)
This project will not directly benefit endangered species.

D. Evaluation Criterion D: Water Marketing (12 points)
CVWD is aggressively promoting the use of canal water and recycled water in lieu of using potable water and groundwater for golf course irrigation and HOA landscaped areas in order to reduce groundwater overdraft. The Non-Potable Water System will be expanded to serve new customers over the next ten years with the goal of providing 85% of the golf courses in the Coachella Valley with nonpotable water. Please refer to Figure 5. The water marketing component of the Project will utilize the conserved agricultural irrigation water as a water source for CVWD's new non-potable customers. This strategy is discussed in detail in CVWD's Water Management Plan 2010 Update.

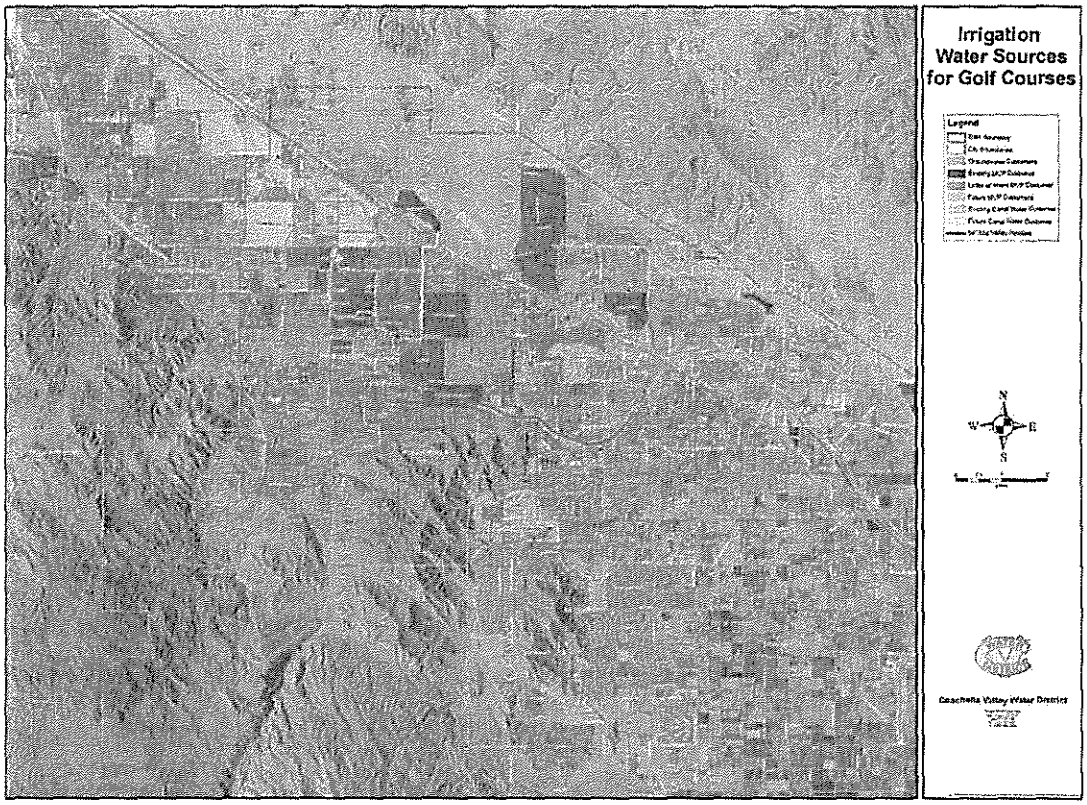


Figure 5. Irrigation Water Sources for Golf Courses

a) The estimated amount of water to be marketed is the conserved 1,535 ac-ft of Colorado River for use in CVWD's Mid-Valley Pipeline (MVP) to supplement non-potable water deliveries to additional golf course and HOA customers.

b) CVWD currently delivers blended Colorado River water and recycled water to several customers from the Non-Potable Water System. CVWD plans on expanding the MVP infrastructure to serve up to 48 additional non-potable water customers within the next ten years as shown in Figure 5.

c) CVWD currently has 20 customers that use a blend of Colorado River water and recycled water. Canal water is used to augment the recycled water supplies, especially during the peak hot summer months of the year. The Water Management Plan 2010 Update estimates that an additional 37,000 ac-ft/year of canal water will be used by 2020.

d) There are not any legal issues related to the use of canal water for irrigation purposes in urban areas. The increased use of canal water for golf course irrigation is a major element of CVWD's Water Management Plan 2010 Update.

e) The duration of the use of the conserved water by golf courses and HOAs will continue into the future indefinitely.

E. Evaluation Criterion E: Other Contributions to Water Supply Sustainability (14 Points)

Subcriterion E.1: Addressing Adaptation Strategies in a WaterSMART Basin Study (14 points)

Through the WaterSMART Basin Study Program, Reclamation works with State and local partners, as well as other stakeholders, to comprehensively evaluate the ability to meet future water demands within a river basin. The Basin Study program allows Reclamation and its partners to evaluate potential impacts of climate change to water resources within a particular river basin, and to identify adaptation strategies to address those impacts.

a) This Project includes strategies to address future water supply and demand imbalances as described in the Colorado River Basin Water Supply and Demand Study (Colorado River Basin Study) dated December 2012. Specifically, conserved agricultural water will be used for urban irrigation uses. The use of conserved water will minimize impacts to CVWD's existing Colorado River water entitlement.

b) The adaption strategy that is specifically addressed by this project is a Reduction in Demand through Agricultural Water Conservation with Transfers. The Colorado River Basin study identified a potential water savings through agricultural water conservation of about 1,000,000 acre feet by 2035. This Project will conserve 1,535 ac-ft of canal water annually and will help ease the demands for Colorado River water by transferring the conserved agricultural water to new non-potable water customers within CVWD's service area.

c) CVWD participated in the review and approval of the Colorado Basin Study as a major Reclamation water customer on the Colorado River.

d) The Project will result in future collaboration with the Basin Study partners. In fact, CVWD is an active participant in the Colorado River Basin Water Supply and Demand Study Moving Forward Agricultural Conservation and Transfers Workgroup – Phase 1.

Subcriterion E.4: Other Water Supply Sustainability Benefits (10 points)

The Project will increase awareness of Colorado River water and/or energy conservation and efficiency efforts by becoming a showcase project for future improvements to the irrigation distribution system through the conservation of water, improved water management through SCADA and remote metering information, and energy savings by reducing vehicle miles driven while using renewable energy technology. CVWD plans to highlight these benefits to the community through public outreach upon completion of the project.

F. Evaluation Criterion F: Implementation and Results (10 points)

Subcriterion No. F.1—Project Planning

1. The Project components are consistent with the following CVWD planning documents:
    a. Coachella Valley Water District Agricultural Water Conservation Plan 2011
    b. Coachella Valley Water District Water Management Plan Update 2010
    c. Coachella Valley Integrated Water Management Plan December 2010
    d. Coachella Valley Water District 2010 Urban Water Management Plan
    Please find a copy of the report covers in the Appendix.

2. The Project meets the goals of the previously-mentioned planning documents as described below:

    a) The **CVWD Agricultural Water Conservation Plan,** approved in November 2011, states that CVWD will reduce its agricultural water use through conservation by 14% by 2020. This lateral improvement project will achieve this goal by reducing spills from surging baffle stands, eliminate pipeline losses, and minimize over-deliveries at the end of the line.

    b) **CVWD Water Management Plan Update 2010 (WMP 2010)** estimates an increase in water demand in CVWD's service area from 678,600 acre-feet in 2010 to 885,400 acre- feet in 2045. A vast majority of this water will go to domestic/urban, municipal, industrial, and golf course customers. The need to preserve the groundwater basin and firm up future water supplies is critical. Water conservation is one of the primary ways to achieve this goal. The three types of water conservation described in the WMP 2010 are Agricultural, Urban and Golf Course Conservation to meet the increased water demand. A target reduction in use of 23,300 ac-ft. per year by agricultural users is listed in the WMP 2010. This project plans to save 1,535 ac-ft. towards the overall goal of 23,300 ac-ft. on an annual basis.

Subcriterion No. F.2—Readiness to Proceed

CVWD has prepared the project schedule based on the assumption of receiving preliminary notification of the award of a grant by June or July 2015, pending completion of Reclamation's financial assistance agreement. The proposed Project Schedule is shown on the following page. CVWD authorized engineering services for the Project on August 26, 2014 for the preparation of a Preliminary Design Report, final plans, and specifications. The Preliminary Design Report was submitted to CVWD in January 2015.

The only permits needed for the Project will be an encroachment permit from the County of Riverside since the Contractor's activities will encroach into the public right-of-way. The pipeline improvements will take place within Reclamation's existing easements.

File No. 0322.12

Coachella Valley Water District
Irrigation Lateral 99.8-0.51 Improvement Project
Project Schedule

	2015						2016												2017												2018								
Project Activity	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September
Complete Environmental Compliance	XXX																																					
Complete Plans & Specs	XXX																																					
Advertise Bids for Phase 1		XXX																																				
Open Phase 1 Bids			XXX																																			
Board Approval				XXX																																		
Notice of Award/Proceed				XXX																																		
Construct Phase 1					XXX	XXX	XXX	XXX	XXX	XXX	XXX																												
Advertise Bids for Phase 2												XXX																											
Open Phase 2 Bids													XXX																										
Board Approval														XXX																									
Notice of Award/Proceed														XXX																									
Construct Phase 2															XXX	XXX	XXX	XXX	XXX	XXX	XXX																		
Advertise Bids for Phase 3																						XXX																	
Open Bids																							XXX																
Board Approval																								XXX															
Notice of Award/Proceed																								XXX															
Construct Phase 3																									XXX	XXX	XXX	XXX	XXX	XXX	XXX								
Semi-Annual Reports									XXX						XXX						XXX						XXX												
Final Report																																	XXX						

Subcriterion No. F.3—Performance Measures

A. Performance Measure No. A: Projects with Quantifiable Water Savings
CVWD plans to quantify the pre- and post-project water savings for the Irrigation Lateral 99.8-0.51 Improvement Project based on the performance measures listed below.

Performance Measure No. A.1—Canal Lining/Piping
The effectiveness of the pipeline and baffle stand improvements will be measured by calculating:

Conserved water = Pre-project water delivery losses – Post-project water delivery losses, where

- Pre-project water delivery losses = pre-project flows in the existing bar ditches + pipeline leaks + flow through the downstream regulatory meter, and

- Post-project water delivery losses* = post-project flows measured at the upstream mainline meter – customer meter flows

*This volume will be checked with the inline downstream meter data

Performance Measure No. A.2—Measuring Devices
CVWD is a leader in the delivery of agricultural irrigation water since all customer deliveries are metered, including the measurement of flows through the Coachella Canal. This project will further improve water measurement by installing two new inline flow meters upstream and downstream in Lateral 99.8-0.51 where none existed before.

Measuring Devices: a. Municipal Metering
The two new inline meters will have SCADA for remote-read capability. The inline meter data will allow CVWD to better manage water deliveries by being able to minimize over-deliveries through the lateral and improve leak detection by tracking water use in conjunction with customer meter information. In addition, this project will upgrade twenty-one existing vertical flow meters to more accurate horizontal propeller meters. This will provide for more accurate demand assessment and more accurate billing. One selected customer meter will be upgraded to an automatic meter reading system (AMR) in order to evaluate the feasibility of this technology. This Project will not change the pre- and post-project rate structures.

Measuring Devices: b. Irrigation Metering
As discussed above, two new inline meters and 21 more accurate horizontal customer meters will be installed. The meters will provide improved delivery system measurement and quantification of system losses and over-deliveries.

Pre-project estimations of baseline data for the 21 customer meters will be based upon collecting data on deliveries through the existing vertical meter sales.

The post project water savings will be measured by collecting water sale data through the new propeller meters. A month to month comparison will be made between the pre- and post-project meter billing information to determine if there have been any significant changes to the amount of water delivered/billed to each customer.

Performance Measure No. A.3—SCADA and Geographic Information Systems (GIS)
The incorporation of SCADA into the two new inline meters will provide CVWD with new real-time information that can be used to adjust flows going into the lateral at the Coachella Canal. This information will help increase the efficiency of water deliveries by reducing end-of-line over-deliveries/water losses. In addition, CVWD will select one customer meter for incorporation of SCADA and AMR for real-time remote-read capabilities via a web-based interface. The intent is to determine if this capability will be used by the customer to better manage their water needs.

The SCADA meter information at the upstream and downstream reaches of the pipeline will provide CVWD with real-time information on water flow rate in the pipeline in order to minimize over-deliveries. The Zanjeros currently operate the system by over-delivering water to ensure each customer receives their water order due to constant fluctuations in flows caused by the surges. The SCADA information will be used to make more accurate water deliveries by monitoring the amount of flow leaving the system compared to water entering the pipeline.

The SCADA system will be maintained by CVWD's current in-house staff of electronic technicians. CVWD electronic technicians will be notified of any SCADA failures/outages by CVWD's Control operators.

As previously mentioned, the incorporation of SCADA will allow CVWD to minimize over-deliveries based on the flow rate data provided by the two new meters.

Pre-project estimations of baseline data will be determined by:

- Collect data on deliveries to water users from historical meter sales.
- Document service worker/Zanjero pre-project time spent operating the lateral and valves.

Post-project methods for quantifying benefits of SCADA includes:

- Use the new flow measurement data from the inline meters to better manage deliveries and minimize over-deliveries.
- Collect the water sale data from the new AMR customer meter. Survey the customer to determine if the web-based flow information facilitates the management and conservation of on-farm water use.
- Transmit data from the mainline meters to CVWD's Control Center. Determine the reduction in the Zanjero's time and vehicle miles driven to operate the pipeline.

Performance Measure No. B: Projects With Quantifiable Energy Savings

The Project will utilize renewable solar energy to power the SCADA and battery equipment for the two flow meters as noted below.

Performance Measure No. B.1—Implementing Renewable Energy Improvements Related to Water Management and Delivery

There will be some minor costs savings associated with the use of solar cells to provide power to the SCADA and battery equipment. The solar cells will provide an estimated 4296 kWh of power on an annual basis. Based on the current cost of power from the local power provider (Imperial Irrigation District) it is estimated that the use of solar power will provide an annual savings of $1,289 per year.

Performance Measure No. B.2—Increasing Energy Efficiency in Water Management

The Project is expected to increase energy efficiency by reducing the amount of vehicle miles driven by the Zanjeros. Due to the constant surges, the Zanjero typically makes three daily round trips up and down the lateral to adjust the delivery valves. A typical normal run to set the customer valves is one round trip. Each round trip is 9.2 miles and thus the service worker currently drives 3 x 9.2 miles x 5 days a week x 52 weeks = 7,176 miles per year. The miles driven will be reduced by 4,784 miles per year (two round trips per day) once the Project is completed. The reduction in miles driven translates to over 2.9 metric tons of reduced carbon emission per year as shown in the calculation in the appendix from the website *calculator.carbonfootprint.com/calculator*. The cost savings from reduced fuel consumption is estimated at 4,784 miles/15 miles per gallon = 319 gallons of fuel saved per year x $3.00 per gallon equals $957 in fuel savings per year. This is in addition to savings from reduced wear and tear on the trucks.

Performance Measure No. D: Projects That Establish a Water Market

CVWD plans to make the 1,535 ac-ft of conserved canal water available as irrigation water for golf courses and HOAs in lieu of groundwater pumping. CVWD relies upon the groundwater basin as the potable water source in the Coachella Valley. As a result, it is important to maximize the use of non-potable resources for use as irrigation water in urban settings in order to reduce groundwater overdraft.

The performance measures listed below will be used to quantify the pre- and post-project use of canal water by golf courses and HOAs.

Performance Measure No. D.3—Other Transfers

Collect pre-project irrigation groundwater and/or potable water meter data from golf courses and/or HOAs that will be converted to a non-potable.

Collect post-project meter data for groundwater pumping and/or potable water use. Also collect meter data for canal water use to determine the reduction in groundwater and potable water use for each particular golf course and HOA.

Subcriterion No. F.4—Reasonableness of Costs

The Project is estimated to cost $8,185,567 with an annual water savings of 1,535 ac-ft. The pipeline improvements are expected to last a minimum of 50 years or more based on industry-accepted life expectancy for PVC pipe. In fact, a major PVC pipe manufacturer, JM Eagle, offers a 50 year warranty on its PVC pipe. A copy of the warranty is included in the appendix. The specified PVC pipe will have a working pressure rating of up to 165 psi, although the actual operating pressure of the system will be in the range of 10 psi. As a result, CVWD expects a 100-year life expectancy for the pipe. Other benefits include using the conserved water for urban and golf course irrigation in lieu of pumping groundwater which will reduce groundwater overdraft.

G. Evaluation Criterion G: Additional Non-Federal Funding (4 points)
CVWD will be funding the majority of the Project costs as shown below:
The percentage of non-Federal funding provided is:

$$= \frac{\text{Non-Federal Funding}}{\text{Total Project Cost}} = \frac{\$7,185,567}{\$8,185,567}$$

= **88%**

H. Evaluation Criterion H: Connection to Reclamation Project Activities (4 points)
The Coachella Canal and irrigation distribution system was constructed by Reclamation as part of the Boulder Canyon Project Act of 1928 to deliver Colorado River water to approximately 67,300 acres of farmland in the Coachella Valley. CVWD operates and maintains these facilities under contract with Reclamation. The Project improvements will be owned by Reclamation.

V. ENVIRONMENTAL AND CULTURAL RESOURCES COMPLIANCE

CVWD has prepared the following responses to the questions contain in the grant application in order to allow Reclamation to assess the probable environmental and cultural resources impacts and costs associated with this Project.

(1) *Will the project impact the surrounding environment (e.g., soil [dust], air, water [quality and quantity], animal habitat)? Please briefly describe all earth-disturbing work and any work that will affect the air, water, or animal habitat in the project area. Please also explain the impacts of such work on the surrounding environment and any steps that could be taken to minimize the impacts.*

The project is proposed within the road shoulder and within Reclamation easements along existing Fillmore Street adjacent to highly-disturbed agricultural lands. All project construction impacts will be temporary with no significant effects on environmental resources. Trenching for the pipeline will take place within previously disturbed soils (road construction/maintenance and adjacent agricultural activities). Dust control BMPs (i.e. water truck, track-out plates, washing vehicles) will be implemented during construction activities. There are no natural waterways located along the proposed project alignment. Since there is very little vegetation located along the project, there is no known wildlife habitat located along the site.

(2) *Are you aware of any species listed or proposed to be listed as a Federal threatened or endangered species, or designated critical habitat in the project area? If* so, *would they be affected by any activities associated with the proposed project?*

The proposed project is located within the boundaries of the Coachella Valley Multiple Species Habitat Conservation Plan (HCP) area, but not within or adjacent to one of the 27 Conservation Areas associated with the HCP. The Conservation Areas were established to protect sensitive habitat and listed species within the Coachella Valley. The project will not affect any Federal listed species, proposed-to-be-listed species, or designated critical habitat.

(3) *Are there wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as "waters of the United States?" If* so, *please describe and estimate any impacts the project may have.*

No natural waterways are located along the project alignment; therefore, no jurisdictional waters or wetlands are located along or immediately adjacent to the project alignment.

(4) *When was the water delivery system constructed?*

This portion of the irrigation system was constructed in 1950.

(5) *Will the project result in any modification of or effects to, individual features of an irrigation system (e.g., headgates, canals, or flumes)? If* so, *state when those features were constructed and describe the nature and timing of any extensive alterations or modifications to those features completed previously.*

The proposed project will involve modification of two existing concrete baffle stands located at the upstream and downstream project limits. The intermediate baffle stands within the project limits will be removed. These features were constructed in 1950. No modifications have previously been made to these structures.

(6) Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places? A cultural resources specialist at your local Reclamation office or the State Historic Preservation Office can assist in answering this question.

A review of the National Register of Historic Places through SHPO did not show listings for any buildings, structures, or features within the or near the proposed project location.

(7) Are there any known archeological sites in the proposed project area?

There are no known archaeological sites located along or adjacent to the proposed project alignment. The project site has been previously disturbed by construction of Fillmore Street and intensive farming on the adjacent agricultural lands.

(8) Will the project have a disproportionately high and adverse effect on low income or minority populations?

The proposed 3.4-mile pipeline within the road shoulder of Fillmore Street will not have an adverse effect on low-income or minority populations.

(9) Will the project limit access to and ceremonial use of Indian sacred sites or result in other impacts on tribal lands?

Tribal lands associated with the Torres Martinez Desert Cahuilla Indians are located on the southwest corner of the Fillmore Street/Avenue 54 intersection. However, the project alignment is proposed along the eastern road shoulder of Fillmore Street and will not affect tribal lands nor limit access to or ceremonial use of Indian sacred sites or result in other impacts on tribal lands.

(10) Will the project contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area?

Measures, such as washing of vehicles and equipment before bringing onsite, will be implemented during project construction activities to prohibit the introduction and/or spread of noxious weeds or non-native invasive species.

VI. REQUIRED PERMITS OR APPROVALS

Environmental documents, permits and approvals anticipated for the proposed project are discussed below. CVWD has in-house environmental staff with in-depth experience in preparation of environmental documents, and coordination with resource/permitting agencies to procure required approvals and permits.

- National Environmental Policy Act (NEPA) –CVWD staff is coordinating closely with Reclamation's Yuma Area Office, the NEPA lead agency, to prepare the required environmental surveys and studies needed for preparation of the appropriate NEPA environmental document. It is anticipated that a NEPA Environmental Assessment/Finding of No Significant Impact (FONSI) or Categorical Exclusion will be prepared and filed for the project.
- California Environmental Quality Act (CEQA) -CVWD environmental staff is currently completing the required environmental surveys and studies needed for preparation of the CEQA environmental documents for the Project. It is anticipated that a CEQA Categorical Exemption will be prepared and filed for the project.
- Federal Endangered Species Act/California Endangered Species Act – The project is proposed along a road shoulder immediately adjacent to intensively farmed agricultural lands; therefore, Federal and State-listed species and associated habitat are not likely along the project alignment. However, CVWD will ensure that all FESA/CESA compliance criteria are met for approval of this project.
- Section 106 of National Historic Preservation Act – CVWD will ensure that the appropriate field surveys, studies, and coordination are completed for the project in order to comply with all Section 106 guidelines.
- County of Riverside – A standard encroachment permit for construction activities within the public right-of way will be needed for each phase of work. CVWD obtains similar permits from the County of Riverside on a routine basis.
- PM10 Dust Control Plan – CVWD's contractor will prepare and implement a Dust Control Plan during construction activities associated with the project.
- Storm Water Pollution Prevention Plan (SWPPP) – CVWD and/or the contractor will prepare and implement a SWPPP during construction activities associated with the project.

Letters of Project Support

CVWD has historically received numerous telephone calls and complaints from customers served from this lateral due to the surges and operational water losses. It is expected that the complaints will stop once the Project is completed.

VII. OFFICIAL RESOLUTION

CVWD's Board of Directors approved Resolution No. 2014-247 on December 9, 2014 for authorization to submit this application and commit to a 50% cost share of up to $1 million for the Project. A copy of this resolution is included on the following page.

RESOLUTION OF THE BOARD OF DIRECTORS OF
COACHELLA VALLEY WATER DISTRICT

RESOLUTION NO. 2014-247

BE IT RESOLVED by the Board of Directors of the Coachella Valley Water District assembled in regular meeting this 9th day of December, 2014, that the Board of Directors hereby authorizes the appropriate officers to execute and submit to U. S. Bureau of Reclamation a WaterSMART Water and Energy Efficiency Grant Application for Irrigation Lateral No. 99.8-0.51; and

BE IT FURTHER RESOLVED that the Board of Directors of this District authorizes staff to work collaboratively with the USBR to meet established deadlines for entering into a cooperative agreement for the Irrigation Lateral 99.8-0.51 Improvement Project.

* * * * * * * * *

I, JULIA FERNANDEZ, Secretary of the Board of Directors of the Coachella Valley Water District, DO HEREBY CERTIFY that the foregoing is a full, true and correct copy of Resolution No. 2014-247 adopted by the Board of Directors of said District at a regular meeting thereof duly held and convened on the 9th day of December, 2014, at which meeting a quorum of said Board was present and acting throughout. The Resolution was adopted by the following vote:

AYES: Five

Directors: Powell, Nelson, O'Dowd, Pack, Estrada

NOES: None

Dated this 9th day of December, 2014.

(SEAL)

Julia Fernandez
Board Secretary

VIII. PROJECT BUDGET

A. Funding Plan:

The Lateral 99.8-0.51 Improvement Project will be constructed using a combination of CVWD and Reclamation Funds. CVWD has an annual Capital Improvement Budget (CIB) for Irrigation and Canal Facility Replacement and Construction Projects. The CIB is a multi-year plan used to identify and coordinate public facility and equipment needs in a way that maximizes the return to CVWD customers. The CIB items for Irrigation and Canal Water projects are funded through canal water rates and tax revenue. In fiscal year 2014-2015 (beginning July 1, 2014), CVWD budgeted $8,774,610 for Canal Water CIB projects with $7,334,610 in projects funded through unrestricted reserves. CVWD's 5-year Canal Water CIB ranges from $9 million per year up to $12 million per year in project expenditures.

CVWD will fund its $7.2 million share of the $8.2 million project cost for the Irrigation Lateral 99.8-0.51 Improvement Project from the CIB. The Project will be phased over the next 3 fiscal years with estimated expenditures ranging up to $3,000,000 per year with funding coming from CVWD's Canal Water Fund CIB. See CVWD's funding commitment letter included at the end of this section.

1) *How you will make your contribution to the cost share requirement, such as monetary and/or in-kind contributions and source funds contributed by the applicant (e.g., reserve account, tax revenue, and/or assessments).*

   CVWD will fund approximately $7.2 million of the project costs from its CIB as noted above and as shown in Table 1. CVWD will manage the design and construction phases of the Project. CVWD's Environmental Resources department will work with Reclamation to process the necessary environmental documentation. In addition, the Project construction activities will be inspected by CVWD's Inspection group. There will also be some SCADA programming work for the three meters that will be performed by CVWD.

2 & 3) *Describe any in-kind costs incurred before the anticipated project start date that you seek to include as project costs.*

   CVWD will not seek reimbursement of in-kind costs this fiscal year ending on June 30, 2015.

4) *Provide the identity and amount of funding to be provided by funding partners, as well as the required letters of commitment.*

   This Project will not rely upon other funding partners.

5) *Describe any funding requested or received from other Federal partners. Note: other sources of Federal funding may not be counted towards your 50 percent cost share unless otherwise allowed by statute.*

This Project will not be receiving funding from any other Federal partners.

6) *Describe any pending funding requests that have not yet been approved, and explain how the project will be affected if such funding is denied.*

There are no other funding requests for this project.

Table 1. Summary of Non-Federal and Federal Funding Sources

Funding Sources	**Funding Amount**
Non-Federal entities	
1. Coachella Valley Water District	$7,185,567
Non-Federal subtotal:	$7,185,567
Other Federal entities	
1. None	$0
Requested Reclamation funding	$1,000,000
Total project funding	$8,185,567

Table 2. Funding Group II Funding Request

Funding Group II Request			
	Year 1 (FY 2015)	**Year 2 (FY 2016)**	**Year 3 (FY 2017)**
Funding requested	$330,000	$330,000.00	$340,000.00

B. Budget Proposal:
The project budget funding source is shown in Table 3. Table 4 shows the Project's budget proposal. A more detailed construction cost and Project estimate is shown in Table 5.

Table 3. Funding Sources

Funding Sources	Percent of Total Project Cost	Total Cost by Source
Recipient funding	88%	$7,185,567
Reclamation funding	12%	$1,000,000
Other Federal funding	0%	$0
Totals	**100%**	**$8,185,567**

Table 4. Budget Proposal

	Computation			
Budget Item Description	**$/Unit**	**Quantity**	**Quantity Type (hours/days)**	**Total Cost**
Salaries and wages				
CVWD Project Manager	$58.00/hour	1,000	Hours	$58,000
CVWD Environmental Specialist	$43.27/hour	120	Hours	$5,192
Inspectors	$45/hour	2,000	Hours	$90,000
Electronics Technician	$45/hour	400	Hours	$18,000
Fringe benefits				
Full-time employees 40%	% Direct Labor	3,520	Hours	$68,477
Travel	$/Trip	0	Days	
Equipment	$/Hour	0	Days	
Supplies/Materials	$/Item	0		
Contractual/construction				
Design Consultant	Lump Sum	1 EA	Lump Sum	$268,755
General Contractor	Lump Sum	1 EA	Lump Sum	$6,609,460
Other				
Reporting				
Total direct costs				$7,117,884
Indirect Costs – 15%				$1,067,683
Total Project Costs				**$8,185,567**

Table 5. Budget Level Construction and Project Costs

Description	Quantity	Unit	Unit Cost	Total Cost
Mobilization	1	EA	$300,000.00	$300,000.00
Demolition - Sub Total				$441,000.00
Baffle & Meter Removal	32	EA	$8,000.00	$256,000.00
Pipeline Removal	18500	LF	$10.00	$185,000.00
Dewatering (wells, operation, water storage, disposal)	1	EA	$296,000.00	$296,000.00
Irrigation Bypass System (36" Pipe)	1	EA	$1,200,000.00	$1,200,000.00
Pipeline Work Subtotal				$2,550,000.00
27" to 42" PVC Pipe	18500	LF	$120.00	$2,220,000.00
Box Stand Modification	2	EA	$160,000.00	$320,000.00
Surface Improvements	500	SF	$20.00	$10,000.00
Irrigation Turnouts & Meters	21	EA	$50,000.00	$1,050,000.00
Upstream Meter Vault - Subtotal				$100,000.00
Earthwork and Site Work	1	EA	$10,000.00	$10,000.00
Structural	1	EA	$15,000.00	$15,000.00
Piping & Mechanical	1	EA	$75,000.00	$75,000.00
Downstream Meter Vault - Subtotal				$98,900.00
Earthwork and Site Work	1	EA	$10,000.00	$10,000.00
Structural	1	EA	$13,900.00	$13,900.00
Piping & Mechanical	1	EA	$75,000.00	$75,000.00
Downstream Control Vault and Valve - Subtotal				$234,110.00
Earthwork and Site Work	1	EA	$10,000.00	$10,000.00
Structural	1	EA	$24,000.00	$24,000.00
Piping & Mechanical	1	EA	$200,110.00	$200,110.00
Survey, Traffic Control, Power, Soils Testing	1	EA	$100,000.00	$100,000.00
Electrical Controls and SCADA Upstream Box Stand	1	EA	$56,750.00	$56,750.00
Electrical Controls and SCADA Downstream Box Stand	1	EA	$87,100.00	$87,100.00
Electrical Controls and SCADA Other	1	EA	$14,400.00	$14,400.00
Construction Subtotal:				**$6,609,460.00**
Engineering Consultant	1	EA	$268,755.00	$268,755.00
CVWD Project Management	1	EA	$81,200.00	$81,200.00
CVWD Forces (Inspection, Technicians, etc.)	1	EA	$158,469.00	$158,469.00
Contingency @ 15%				$1,067,683.00
Estimated Project Budget				**$8,185,567.00**

C. Budget Narrative:

Salaries and Wages
CVWD will perform the project management, processing of the environmental documentation (in collaboration with Reclamation), construction inspection activities, and installation/programming of the SCADA equipment. The Project Manager will be Dan Ruiz, PE, Senior Engineer. Refer to Table 4 for hourly rate information.

Fringe Benefits
The fringe benefit rate of 40% for CVWD employees shown in Table 4 is for application purposes only. Benefits include insurance (medical, dental, vision, life), retirement benefits, disability insurance, and worker's compensation insurance.

Travel
Travel expenses are not anticipated for this project.

Equipment
The use, purchase, or rental of equipment by CVWD is not needed for this project.

Materials and Supplies
CVWD will not need to purchase materials for the project. All material purchases will be contained with the construction contracts.

Contractual
An engineering consultant has already been retained to prepare the engineering studies, construction plans, specifications, and related work. The budgeted cost for the engineering consultant is based on CVWD's executed professional services agreement with the consultant. The construction cost shown in Figure 5 was based on recent bids received by CVWD for other irrigation pipeline projects. A standard 15% contingency is included in the total project cost due to the preliminary level of information available at this time and for unforeseen circumstances.

Environmental and Regulatory Compliance Costs
The Environmental and Regulatory Compliance budget was estimated by CVWD's Environmental Resources staff based on the current status of the environmental documentation. The new pipeline will be placed within Reclamation's existing easement. The project area is disturbed due to active farming. Based on the project description, existing conditions, and staff experience with Reclamation on other projects, an appropriate amount of time was budgeted. As a result, the environmental compliance work effort can be completed for less than 1% of the total project cost.

Reporting
CVWD's project manager will be responsible for the preparation of the financial reports, semi-annual reports, and other documents needed by Reclamation, such as project update memos, in order to ensure compliance and consistent communication with Reclamation. This cost has been included in the Project Management budget.

Other Expenses
No other expenses are anticipated for the proposed project.

Indirect Costs
There are no indirect costs for the Project.

Total Costs
The total Project cost is estimated to be **$8,185,567**. Of this amount, CVWD's grant request under Funding Group II is **$1 million**. CVWD will fund the remaining project balance of **$7,185,567**.

Established in 1918 as a public agency
Coachella Valley Water District

Directors:
John P. Powell, Jr., President - Div. 3
Franz W. De Klotz, Vice President - Div. 1
Ed Pack - Div. 2
Peter Nelson - Div. 4
Debi Livesay - Div. 5

Officers:
Jim Barrett, General Manager
Julia Fernandez, Board Secretary

Best Best & Krieger LLP, Attorneys

January 20, 2015

File No. 0322.12

Bureau of Reclamation
Acquisition Operations Branch
Attn: Shaun Wilken
Grants Management Specialist
Mail Code 84-27852
PO Box 25007
Denver, CO 80225

Dear Mr. Wilken:

Subject: WaterSmart Grant Lateral 99.8-0.51 Improvement Project

The Coachella Valley Water District has adequate cash reserves in its Canal Water Fund to commit to the Irrigation Lateral 99.8-0.51 Improvement Project in the amount of $7,185,567. The funds will be available over the next three upcoming fiscal years. There are no time constraints on the funding nor are there any other contingencies associated with the funding commitment.

If you have any questions, please do not hesitate to call me at 760-398-2661, extension 2240.

Sincerely,

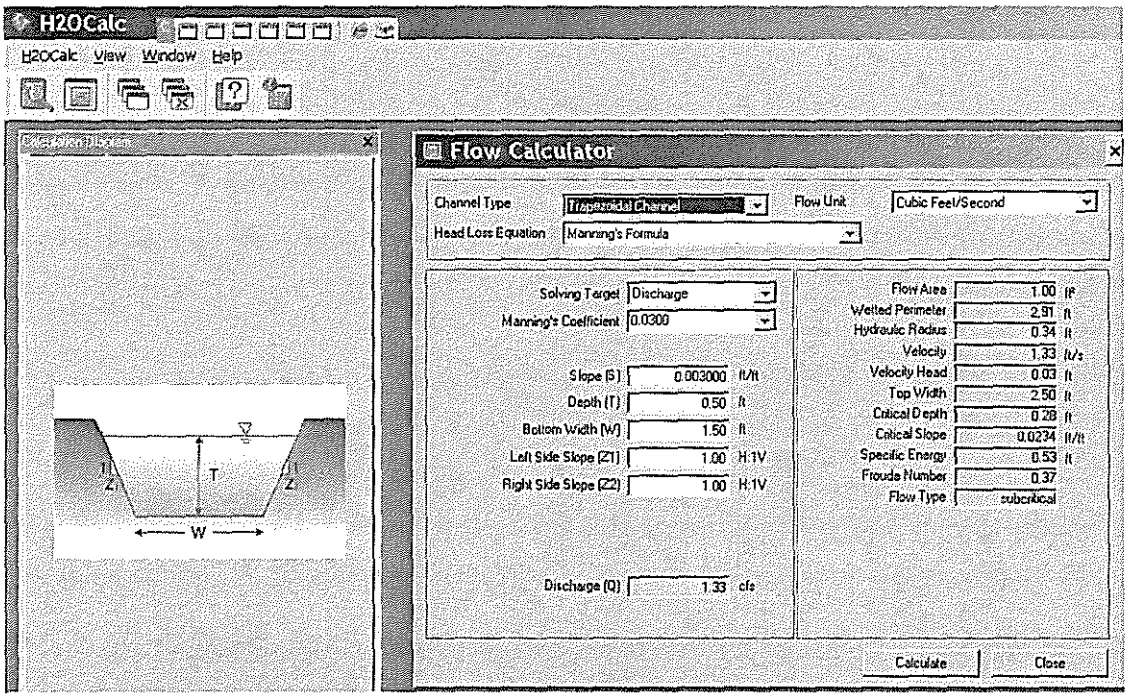
Katherine K. Godbey
Finance Director

APPENDIX

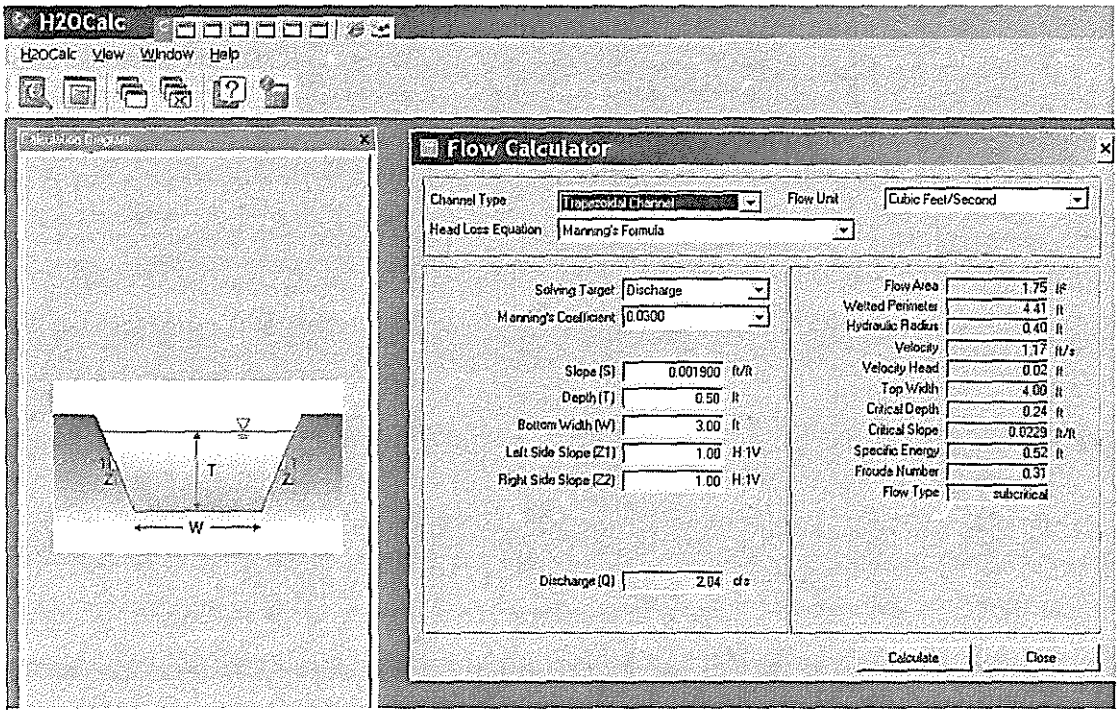
- Channel Flow and Conserved Water Calculations
- Typical Canal Gravity Flow Delivery Lateral Exhibit
- Green House Gas Calculation
- Reclamation Easement Plat Exhibit Along Fillmore Street
- Reclamation - Colorado River Basin Water Supply and Demand Study December 2012 cover page (complete document can be provided upon request)
- Colorado River Water Agricultural Water Conservation Plan 2011 cover page and CVWD Board Resolution No. 2011-194 (complete document can be provided upon request)
- Coachella Valley Water Management Plan Update 2012 cover page (complete document can be provided upon request)
- Coachella Valley Integrated Regional Water Management Plan December 2010 cover page (complete document can be provided upon request)
- 2010 Urban Water Management Plan Final report July 2011 cover page (complete document can be provided upon request)
- PVC Pipe 50 Year Warranty (JM Eagle)

Coachella Valley Water District
Lateral 99.8-0.51 Improvement Project – January 2015
Channel Flow and Conserved Water Calculations

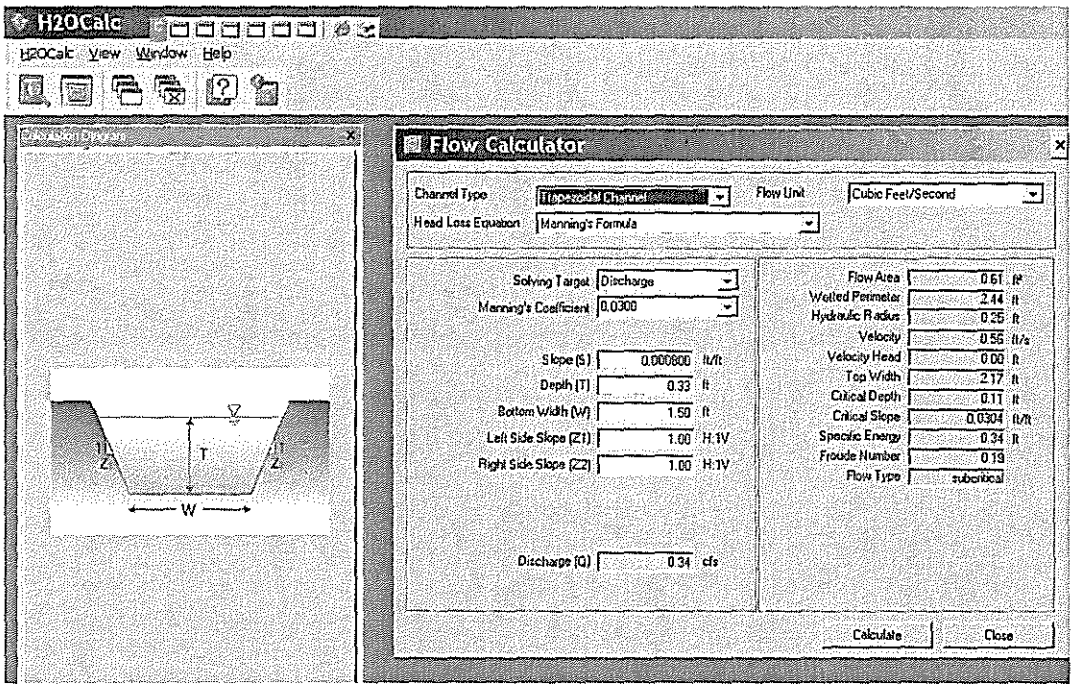
Channel 1 at 64th Avenue east of Fillmore Street:



Channel 2 along Fillmore Street south of 64th Avenue:



Channel 3 at Fillmore 0.5 and Division Box 7.5:



Total Water Lost Through Lateral 99.8-0.51:

Canal water loss calculations due to surges and losses through the pipeline:

= Channel 1 + Channel 2 + Channel 3 + regulatory water + pipeline leaks (assume pipeline leaks are equal to 5% of delivered water)

Flow in channels = 1.3 cfs + 2.0 cfs + 0.3 cfs = 3.6 cfs where channels flow 5 days per week for 9 months = 180 days per year (conservative)

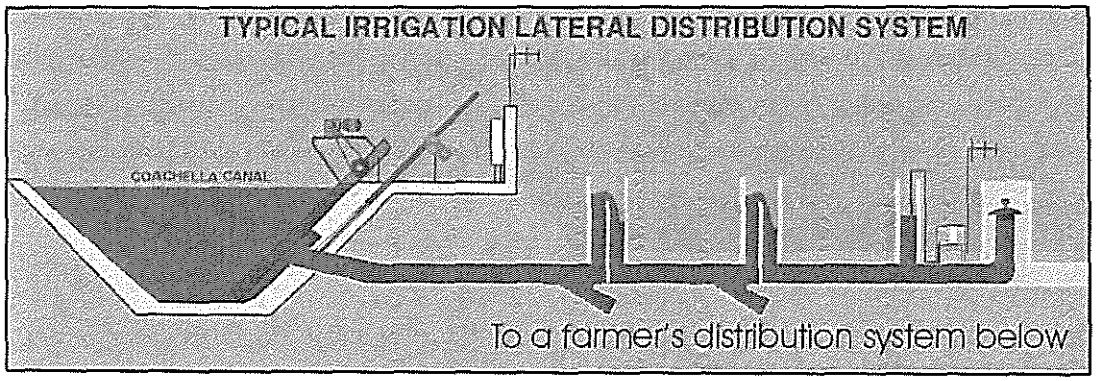
So, annual water lost in channels is 3.6 cfs x 180 days x 1.98 ac-ft/day/ 1 cfs = **1,283 ac-ft/yr**

Water lost at end of delivery (regulatory water) = **360 ac-ft/yr** based on historic meter data

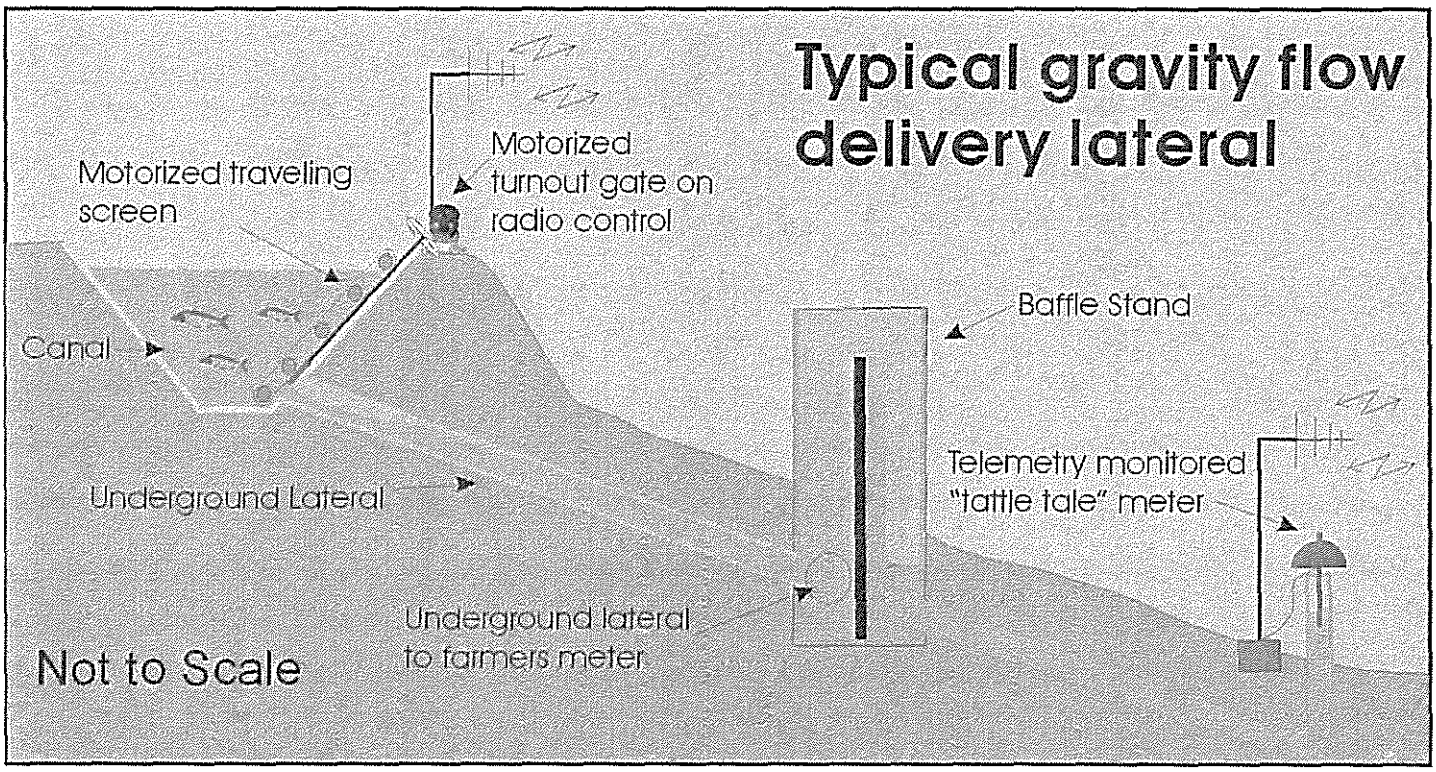
Water lost through pipe joints = 5% x delivered water = 0.05 x 5,050 ac-ft year (average)
= **252 ac-ft/yr**

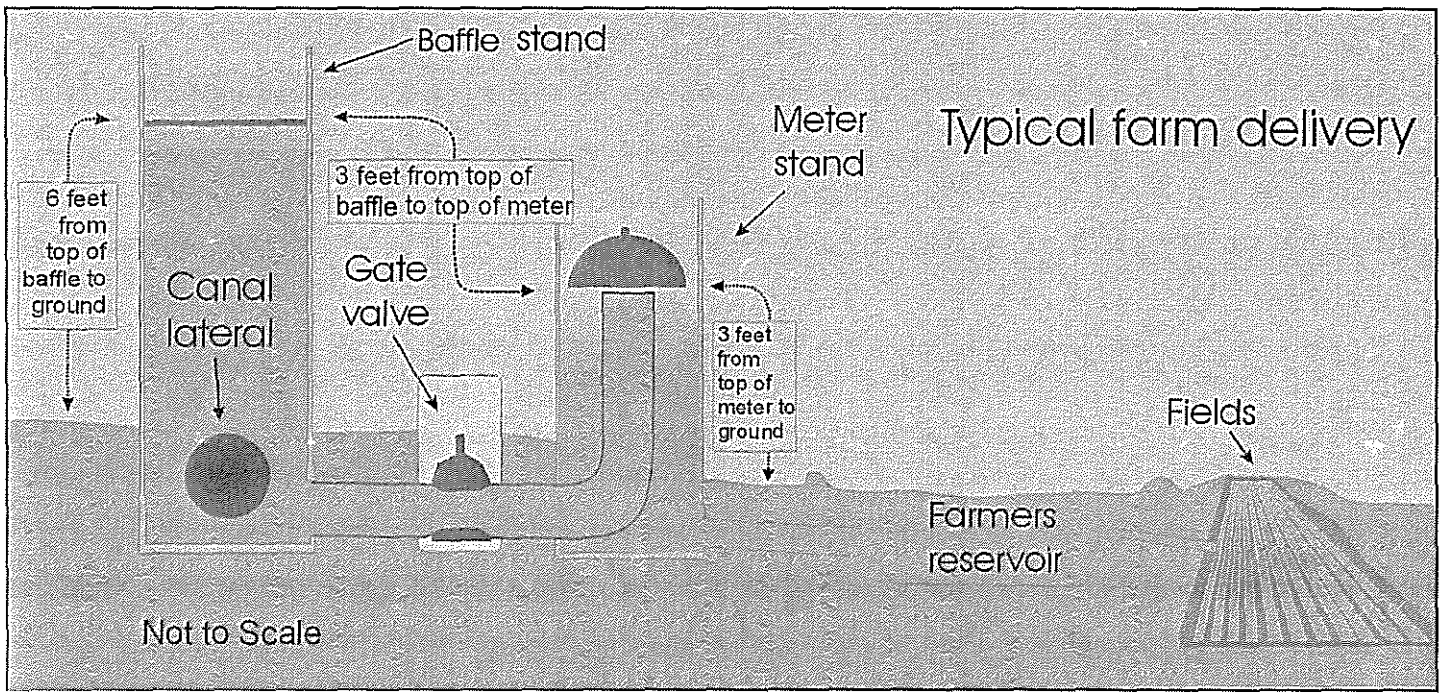
Total Water Lost Through Lateral 99.8-0.51 = 1,283 + 360 + 252 = 1,895 ac-ft/yr

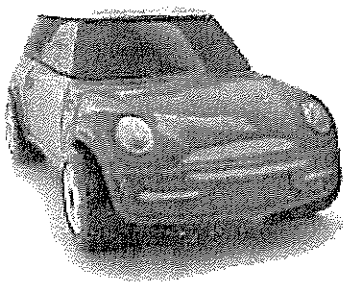
Project improvements will eliminate surges, flows in channels, and losses through pipe joints = 1283 + 252 = **1,535 ac/ft per year of CONSERVED WATER!**



WATER DISTRICT







Car carbon footprint calculator

You can enter details for up to 2 cars

Mileage: [ ] miles

Choose vehicle: USA car database

- select year of manufacture -

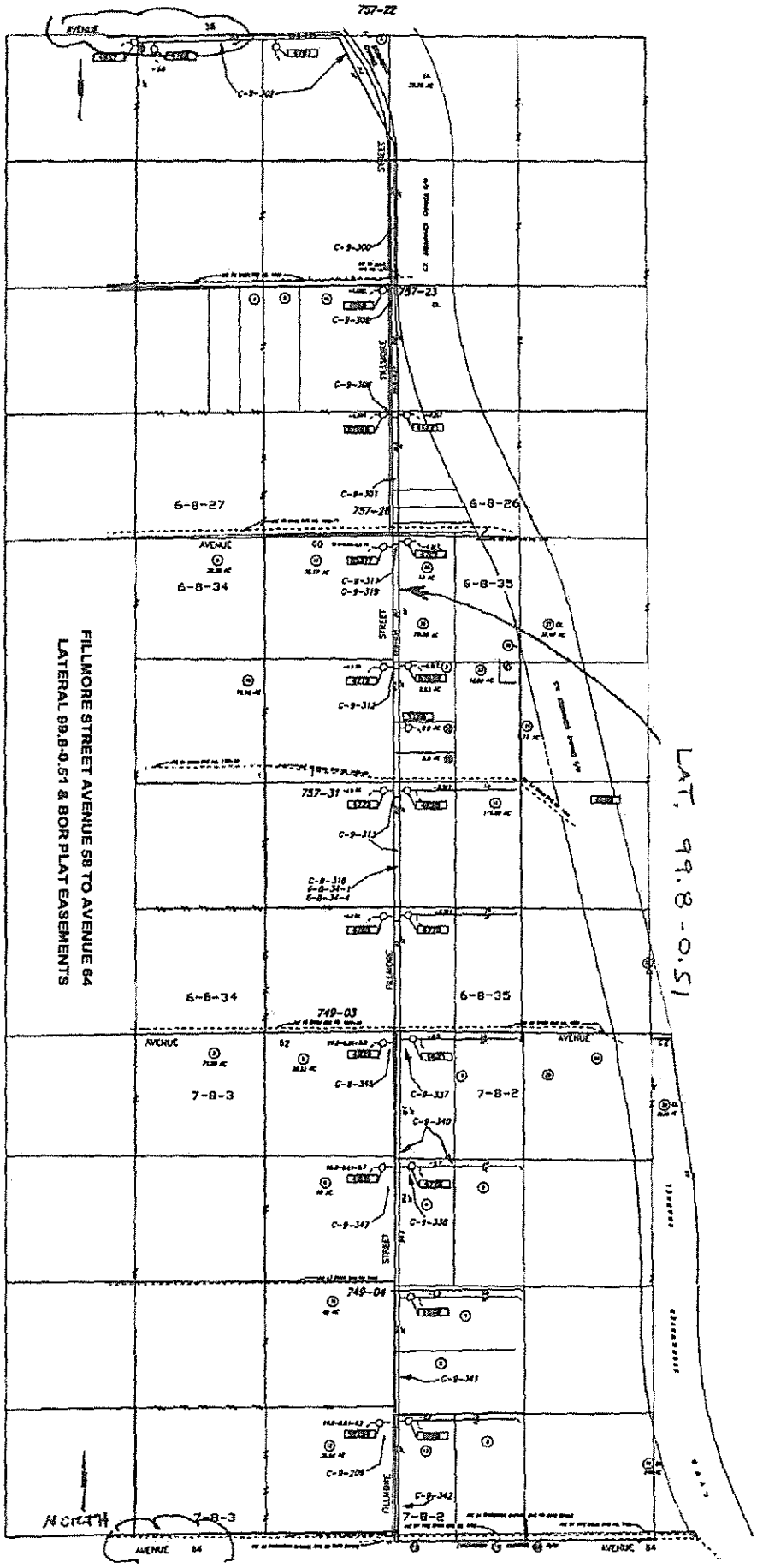
Or enter efficiency: [ ] g/km (+15%) petrol

Calculate & Add To Footprint

Total Car Footprint = 2.91 metric tons of CO_2e Offset Now

2.91 metric tons: 4784 miles in a USA 2010 Ford Division F150 PICKUP 2WD FMX Index:185 Eng:4.6 Cyl:8 Auto(A4) [remove]

< Flights A A A Motorbike >

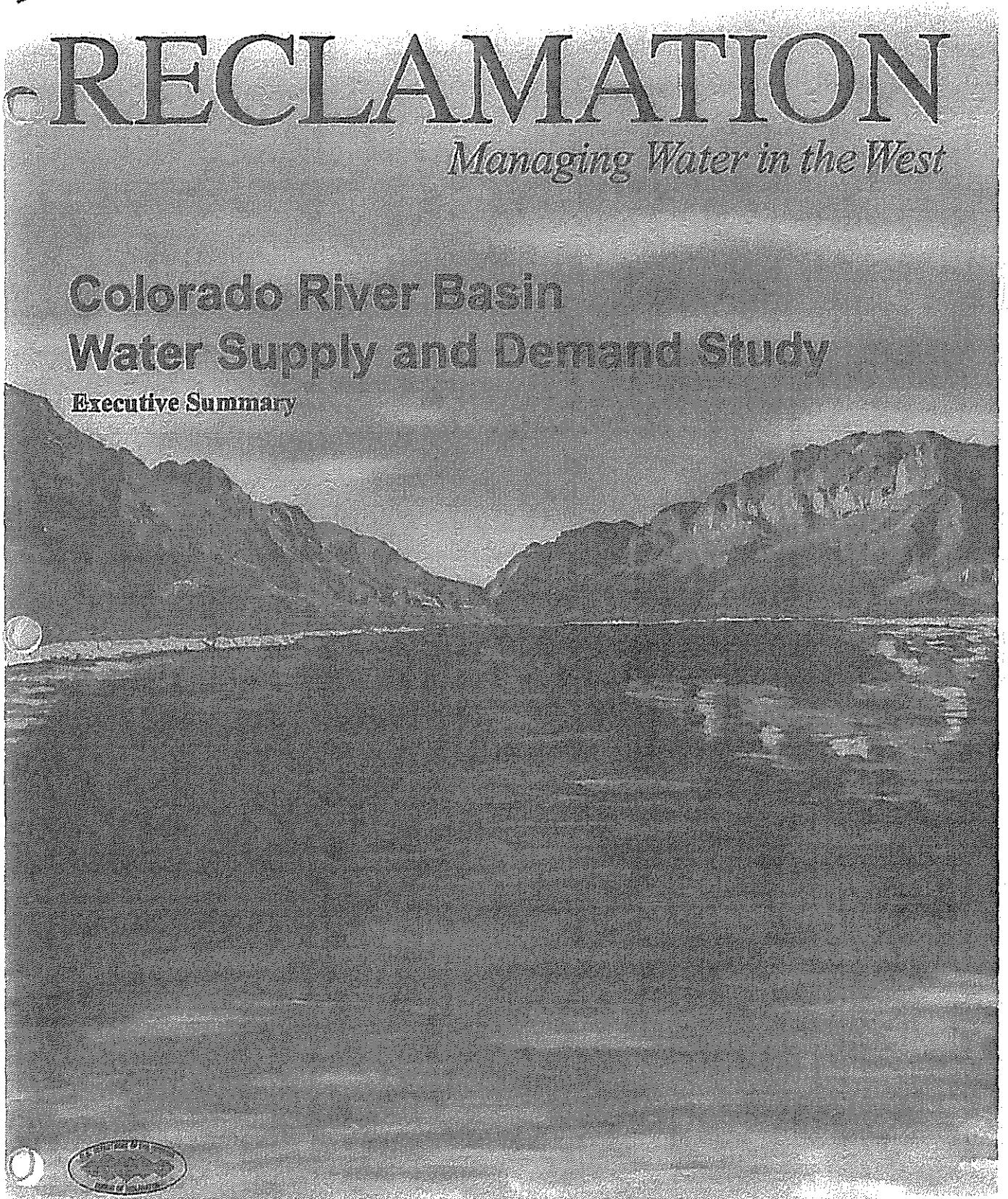

FILLMORE STREET AVENUE 58 TO AVENUE 64
LATERAL 99.8-0.51 & BOR PLAT EASEMENTS
LAT. 99.8-0.51
757-22
757-23
757-28
757-31
749-03
749-04
6-8-27
6-8-26
6-8-34
6-8-35
7-8-3
7-8-2
AVENUE 58
AVENUE 60
AVENUE 62
AVENUE 64
FILLMORE STREET
NORTH

RECLAMATION

Managing Water in the West

Colorado River Basin Water Supply and Demand Study

Executive Summary



U.S. Department of the Interior
Bureau of Reclamation

December 2012

Coachella Valley Water District

Colorado River Water

Agricultural Water Conservation Plan

United States Bureau of Reclamation
Lower Colorado Region

2011

RESOLUTION OF THE BOARD OF DIRECTORS OF
COACHELLA VALLEY WATER DISTRICT

RESOLUTION NO. 2011-194

BE IT RESOLVED by the Board of Directors of the Coachella Valley Water District assembled in regular meeting this 22nd day of November, 2011, that it hereby authorizes the Board President to execute the Coachella Valley Water District Colorado River Water, Agricultural Water Conservation Plan 2011 written as required by the United States Bureau of Reclamation, Lower Colorado Region.

****

STATE OF CALIFORNIA)
COACHELLA VALLEY WATER DISTRICT) ss.
OFFICE OF THE SECRETARY)

I, ISABEL LUNA, Assistant Secretary of the Board of Directors of the Coachella Valley Water District, DO HEREBY CERTIFY that the foregoing is a full, true and correct copy of Resolution No. 2011-194 adopted by the Board of Directors of said District at a regular meeting thereof duly held and convened on the 22nd day of November, 2011, at which meeting a quorum of said Board was present and acting throughout. The Resolution was adopted by the following vote:

AYES: Five

NOES: None

ABSTAIN: None

Dated this 22nd day of November, 2011.

(SEAL)

Assistant Board Secretary

PREPARED FOR
COACHELLA VALLEY
WATER DISTRICT

Coachella Valley Water Management Plan Update

FINAL REPORT
EXECUTIVE SUMMARY

January 2012

MWH.

BUILDING A BETTER WORLD

Water Consult

CVRWMG
Coachella Valley
Regional Water Management Group

FINAL

Coachella Valley Integrated Regional Water Management Plan

Prepared by

Coachella Valley Regional Water Management Group

In collaboration with the Planning Partners

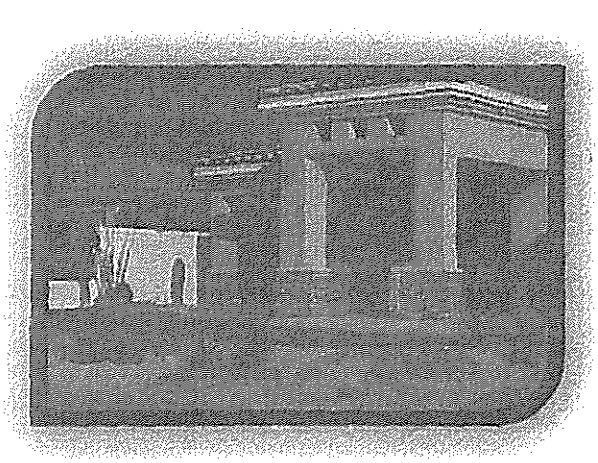
December 2010

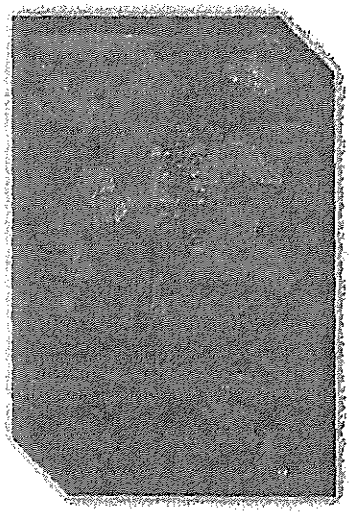
City of Coachella

DESERT WATER

CSA

Coachella Valley Water District





2010 Urban Water Management Plan

Final Report

July 2011

WATER DISTRICT

MWH

Building essentials for a better tomorrow™

LIMITED WARRANTY

1. PERIODS AND SCOPE OF COVERAGE

JM Eagle™ warrants that the pipe products certified to the standards of the American Water Works Association (AWWA) for water distribution, transmission and force sewer mains including C900, C905, C909, C901 and C906 products manufactured by JM Eagle™ (each a "Product" and collectively, the "Products")* are manufactured in accordance with the following AWWA, ASTM, ANSI/NSF, and UL standards as follows: **(1)** AWWA C900 and ASTM 1784 cell class 12454; Gaskets meet ASTM F477; Joints meet ASTM D3139; ANSI/NSF-61, UL 1285 for the C900, **(2)** AWWA C905 and ASTM 1784 cell class 12454; Gaskets meet ASTM F477; Joints meet ASTM D3139; ANSI/NSF-61, UL 1285 for C905, **(3)** AWWAC909 and UL 1285; Gaskets meet ASTM F477; Joints meet ASTM D3139 for C909 and **(4)** AWWA C901/906, ASTM D2239, ASTM D2737, ASTM D3035, F714, cell class per ASTM D3350, PPI listed material (TR-4) PE3408/3608 & PE4710, ASNI/NSF-14 for C901 and C906. JM Eagle™ warrants that each of these Products manufactured by JM Eagle™ leaves our plant free from defects in workmanship and materials. These Products as manufactured by JM Eagle™ are backed by our unprecedented fifty (50) year Limited Warranty. This Limited Warranty provides that Products manufactured by JM Eagle™ meet the above stated quality standards published by the AWWA, ASTM International (ASTM), American National Standards Institute/NSF International (ANSI/NSF), and Underwriters Laboratories (UL).

If any Product is determined within fifty (50) years from the date of invoice by JM Eagle™ to be defective because it failed to meet the above stated standards, JM Eagle™ will then provide replacement product of the same type, size and quantity of the product and pay for the costs directly related to its replacement*** or issue credits, offsets or a combination thereof for the wholesale purchase price of the defective product.

JM Eagle™ also warrants that the design of our Products are independently tested and/or certified by AWWA, NSF and UL to meet their respective standards and that our plants manufacturing the Products are already certified or in process of being certified to ISO 9001 certification** as part of our program to develop manufacturing processes that consistently produce high quality plastic pipe.

JM Eagle™ quality control programs encompass three critical aspects of the manufacturing process: the incoming raw material, pipe production, and the finished goods.

2. EXCLUSIONS FROM COVERAGE AND EXCLUSIVE REMEDY:

Products manufactured by JM Eagle™ are marked with JM Eagle, PW Eagle or US Poly stencil markings. This limited warranty excludes any Product not manufactured by JM Eagle™, even if it is sold by JM Eagle™, and also excludes defects or failures caused after shipment by:

- improper installation (including, without limitation, misalignment),
- use in improper applications or conditions or in conjunction with improper materials (including, without limitation, improper lubricants, pastes, solvents or sealants),
- contact with aggressive chemical agents, freezing or overheating of liquids in the Product, or unusual pressure surges or pulsation,
- vibration,
- temperature shocking,
- U.V. degradation,
- failure to adhere to JM Eagle™'s instructions concerning the proper handling, installation, testing and use of the Product,
- failure to adhere to applicable standards set forth by local laws, codes, or regulations and the applicable industry standards, or
- any other improper activities not listed above or damage caused by the fault or negligence of anyone other than JM Eagle™.

Building essentials for a better tomorrow™

THE WARRANTIES IN THIS LIMITED WARRANTY ARE THE ONLY WARRANTIES APPLICABLE TO THE PRODUCTS. THERE ARE NO OTHER WARRANTIES, REPRESENTATIONS OR CONDITIONS OF ANY KIND, EXPRESS OR IMPLIED, STATUTORY OR OTHERWISE, WITH RESPECT TO THE PRODUCTS SUPPLIED HEREUNDER INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. ALL SUCH WARRANTIES ARE HEREBY SPECIFICALLY DISCLAIMED AND JM EAGLE™ SHALL NOT BE LIABLE IN THIS RESPECT NOTWITHSTANDING JM EAGLE'S™ ACTUAL KNOWLEDGE OF THE PRODUCT'S INTENDED USE OR ANY ADVICE OR REPRESENTATIONS THAT MAY HAVE BEEN RENDERED BY JM EAGLE™ CONCERNING THE DESIGN, MANUFACTURE, FABRICATION, SALE, USE, INSTALLATION OR PROVISION OF THE PRODUCTS. NO STATEMENT, CONDUCT OR DESCRIPTION BY JM EAGLE™ OR ITS REPRESENTATIVES, IN ADDITION TO OR BEYOND THIS LIMITED WARRANTY, SHALL CONSTITUTE A WARRANTY.

BUYER AGREES THAT ITS SOLE AND EXCLUSIVE REMEDY FOR BREACH OF THIS LIMITED WARRANTY, AND THE SOLE AND EXCLUSIVE OBLIGATION OF JM EAGLE™ IN RESPECT OF ANY CLAIMS FOR BREACH OF THIS LIMITED WARRANTY, SHALL BE (1) THE REPLACEMENT OF THE SAME TYPE, SIZE AND LIKE QUANTITY OF NON-DEFECTIVE PRODUCT, AT THE ORIGINAL POINT OF DELIVERY AND COSTS RELATED TO ITS REPLACEMENT*, OR (2) CREDITS, OFFSETS, OR A COMBINATION THEREOF, FOR THE WHOLESALE PURCHASE PRICE OF THE DEFECTIVE PRODUCT. IN NO EVENT SHALL JM EAGLE™ BE LIABLE FOR LOST PROFITS, LOSS OF GOODWILL, LOSS OF BUSINESS OPPORTUNITIES, DAMAGE TO REPUTATION, SPECIAL DAMAGES, INDIRECT DAMAGES, DELAY DAMAGES, PUNITIVE DAMAGES, EXEMPLARY DAMAGES, CONSEQUENTIAL DAMAGES OR INCIDENTAL DAMAGES.**

3. REQUIREMENTS FOR MAKING CLAIMS:

Every claim for breach under this warranty shall be void unless it is made in writing to JM Eagle™ and postmarked **within five business (5) days** of the date the defect was discovered or in the exercise of ordinary care should have been discovered and, in any event, the claim must also be made within fifty (50) years of the date of the JM Eagle™ invoice. As noted above, Products manufactured by JM Eagle™ are marked with a JM Eagle, PW Eagle or US Poly stencil. This limited warranty excludes any Product not manufactured by JM Eagle™, even if it is sold by JM Eagle™.

Any claim for breach of warranty must be sent to:

Product Assurance Department
JM Eagle
5200 W. Century Boulevard
Los Angeles, CA, 90045

For questions regarding claims, the Product Assurance Department may be also contacted at 1-800-621-4404 or JMWebSupport1@jmeagle.com.

No claim under this limited warranty will be valid unless (1) proof of purchase with the date thereof as well as a description of the alleged defect in reasonable detail is presented to the satisfaction of JM Eagle™, (2) written permission and/or a Return Goods Authorization (RGA) is obtained from JM Eagle™, (3) JM Eagle™ is given a meaningful and reasonable opportunity to inspect the allegedly defective Product and its installation at the site and (4) at JM Eagle™'s request, representative samples of the allegedly defective Product are returned to JM Eagle™ in accordance with JM Eagle™'s instructions.

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* Products covered by this Limited Warranty include similar PW Eagle and US Poly products manufactured by JM Eagle after July 1, 2007.
** JM Eagle's Conroe Texas plant in the process of obtaining ISO 9001 certification. The other plants are already certified to ISO 9001.
*** Replacement costs shall be reasonable and based on industry standard cost parameters such as those listed in the RS Means Assemblies Cost Data Book.