

ATTACHMENT 3

Work Plan

3.1 - Project Description

Project Proponents: Improvement District No. 4 of the Kern County Water Agency. There are no other partners in this project

Project Background: Improvement District No. 4 (ID4) of the Kern County Water Agency (Agency) delivers surface water from its State Water Project (SWP) allocation (either directly or by exchange with Kern River or Friant-Kern Canal water) to the Henry C. Garnett Purification Plant for distribution to Metropolitan Bakersfield water purveyors. The water is used for domestic, municipal and industrial uses. Water is delivered through the Cross Valley Canal (CVC) and CVC Extension (both owned by Agency). ID4 also participates in groundwater banking projects along the Kern Fan that provide water to the Henry C. Garnett Water Purification Plant in dry years. ID4 maintains records of water availability, water usage, water deliveries and water losses. A summary of operations is prepared annually in the Improvement District No. 4 Report on Water Conditions. Two tables from this report are included as **Appendix 3.1**. The first table (page 39) is a summary of 2013 operations and also provides the current recharge and recovery capacities of its portion of the banking facilities. The second table (page 40) is a summary of the historical deliveries to the Henry C. Garnett Water Purification Plant by water source. The SWP and Recovered columns are the water supplies that ID4 delivers through the CVC Extension to the Henry C. Garnett Water Purification Plant.

The CVC Extension was designed and built as an earthen canal in 1975 to convey SWP water to the Henry C. Garnett Water Purification Plant. The CVC Extension is composed of two pools, Pool No. 7 and Pool No. 8, that are served by lift pumps and both pools were constructed in fill areas and cut sections. This application proposes to make improvements to Pool No. 8.

The CVC Extension is located in an area with sandy soils with high percolation rates resulting in high seepage losses (see **Attachment 2**). Lining the canal will reduce water losses due to seepage. The seepage losses reduce the volume of water delivered to the ID4 distribution system. These losses are especially detrimental in dry years when water supplies are limited. The earthen canal is also experiencing erosion, canal bank sloughing and aquatic weed growth. These problems can be remedied with concrete canal lining.

Site Photographs:



Photograph 1 - Cross Valley Canal Extension



Photograph 2 – Canal bank Erosion and Aquatic Weed Growth in Earth Canal

Project Description:

The proposed project includes lining approximately 6,400 lineal feet of earthen canal in Pool No. 8 of the CVC Extension with fiber reinforced concrete. The lining will reduce seepage, increase water supply reliability, reduce maintenance efforts and reduce the potential for canal breaches. **Figure 3.1** shows the project location, ID4 boundaries and the area covered by the Kern Integrated Regional Water Management Plan. **Figure 3.2** is a System Map that provides a more details of the project location, including the specific alignment of CVC Pool No. 8 that will be lined. The project covers the entire reach of Pool No. 8 and ends at the Henry C. Garnett Water Purification Plant.

Work Completed to Date:

Work completed to date includes a feasibility level analysis consisting of an evaluation of canal lining alternatives, preliminary design drawings, a channel analysis memorandum, and a preliminary cost estimate.

Alternative lining materials for the CVC Extension were investigated and several water districts were contacted to obtain information on their experience with different lining options. Lining options considered were different types of geomembrane, concrete cloth, concrete and a fiber-reinforced concrete. A fiber reinforced concrete liner was selected for the many benefits it offers including:

- Concrete liners have a 50-year life expectancy (as opposed to 25 years for geomembranes)
- Geomembrane liners pose safety hazards due to their slippery surface.
- Concrete channels can be cleaned with little risk of damaging the lining materials.
- The Agency has practical experience with concrete liners.
- Fiber reinforced concrete contains fibers (typically polypropylene) that help to control cracking due to plastic shrinkage and drying shrinkage, and also help reduce the permeability of concrete.
- In a report from November 2002 entitled *Canal-Lining Demonstration Project Year 10 Final Report*, the USBR stated that concrete lining has ‘excellent durability’, that ‘Maintenance requirements are relatively low for concrete (lining)’, and that exposed geomembranes require about twice the maintenance as concrete lining. They also looked at several concrete lining projects and found they had attractive benefit cost ratios ranging from 3 to 3.5.

Preliminary construction plans (approximate design level of 15%) have been prepared for the project that shows the limits of construction, the proposed cross sections, and construction details (see **Appendix 3.2**).

A channel analysis memorandum (**see Appendix 3.3**) documents a hydraulic analysis to optimize the canal configuration, and provides design details for the project.

Project Benefits

Major project benefits will include:

- Conservation of water through reduction in canal seepage
- Elimination of the need to recover seeped water through wells resulting in energy and cost savings
- Reduction in greenhouse gas emissions through energy savings
- Improved water reliability due to lower potential for canal breaches and higher surface water deliveries in dry years.
- Several other ancillary benefits listed in **Attachment 2**

Project beneficiaries will be ID4 and ID4 customers. The project will conserve water and reduce the cost of water deliveries. The region covering the Kern Groundwater sub-basin will also benefit from reduced groundwater demands in an overdrafted groundwater basin. Property owners adjacent to the canal will also benefit from a lower risk of canal breaching and flooding.

Project Life Expectancy:

The United States Bureau of Reclamation prepared a report in November 2002 entitled “*Canal-Lining Demonstration Project Year 10 Final Report.*” The report states that ‘concrete and earth canal linings have a typical service life of about 50 years’ (see **Appendix 3.4**).

Potential Adverse Physical Effects

Potential adverse physical effects of the project will be reviewed as part of California Environmental Quality Act compliance, and are expected to be limited to localized construction-related effects. Mitigation measures, if needed, will be implemented as part of the project.

3.2 - Consistency with IRWMP

This section documents that the project is within the boundaries of an adopted Integrated Regional Water Management Plan (IRWMP), the Agency adopted the IRWMP, and the proposed project is consistent with the IRWMP.

In accordance with CWC §10543, the Kern IRWM Group members voted to approve and adopt the *Tulare Lake Basin Portion of Kern County Integrated Regional Water Management Plan Final Update* (dated November 2011) on January 23, 2012. A copy of the meeting minutes documenting this action is included in **Appendix 3.5**. Proper noticing of the public occurred prior to the meeting, with a notice of the public hearing being published in the Bakersfield Californian newspaper on January 15 and 22, 2012 in accordance with Government Code §6066.

In addition, the Kern County Water Agency adopted the IRWMP on December 14, 2011 (see **Appendix 3.6**).

The proposed project, CVC Extension Lining Project – Pool No. 8, is formally included on the Kern Regional Water Management Group’s list of projects (See **Appendix 3.7**), and is listed as a ‘High Priority’ project. The proposed project is also consistent with the goals and objectives of the Kern IRWMP, as shown in **Table 1.3**.

Table 1.3: Kern IRWM Plan Objectives Addressed by Project

Kern IRWM Plan Objectives	CVC Extension Lining Project
Increase Water Supply (WS)	
Through cooperation and collaboration with other regions restore water supplies to levels that will mitigate for water lost from the Region and eliminate overdraft	X
Pursue and implement cost effective water use efficiency programs	X
Increase water storage capacity in the region by increasing recharge acreage and expanding groundwater banking programs before all prime recharge land has been developed 8,000 recharge acres as soon as practicable	
Increase/augment water supplies to meet region demands (e.g., M&I, agricultural, environmental) by 2050.	X
Improve Operational Efficiency (OE)	
Optimize local management of water resources to improve water supply reliability over the planning horizon	X
Improve Water Quality (WQ)	
Identify and preserve prime recharge areas in the Kern fan area and other areas	
Improve water quality for DACs and the watershed over the planning horizon	

Kern IRWM Plan Objectives	CVC Extension Lining Project
Continue to provide drinking water that meets or exceeds water quality standards; and support efforts to attain appropriate standards throughout the planning horizon	X
Maximize the use of lesser quality water for appropriate uses (landscaping, certain ag crops, “aesthetic” projects) throughout the planning horizon	
Promote Land Use Planning and Resource Stewardship (LU)	
Increase educational opportunities to improve public awareness of water supply, conservation, and water quality issues throughout the planning horizon	X
Improve and coordinate integrated land use planning to support stewardship of environmental resources, such as local rivers and streams and the Kern Fan, and integrate with habitat conservation plans and other ongoing planning efforts from this point forward	
Preserve and improve ecosystem/watershed health throughout the planning horizon	
Improve Regional Flood Management (FM)	
Improve regional flood management by addressing preparedness, response, and post flood actions throughout the planning horizon	
Identify and promote innovative flood management projects to protect vulnerable areas	X
Plan new developments to minimize flood impacts from this point forward	

3.3 - Description of Tasks

Task 1 – Direct Project Administration: Tasks include meetings with DWR, implementing the contracts and agreements, administration of the overall grant, administration of project, coordination and correspondence with sub-consultants, and preparation of quarterly invoices.

Task 2 - Labor Compliance Program: Work consists of labor compliance program development and implementation for pertinent contracts. A labor compliance consultant will be utilized to conduct reviews of contractor practices, conduct interviews, and prepare reports in accordance with the California Labor Code.

Task 3 - Reporting: Tasks include preparation of Quarterly Progress Reports, and Final Project Report in accordance with DWR requirements. A draft of the Final Project Report will be provided to DWR for review prior to finalizing.

Deliverables: Task 1 - meeting minutes; Task 2 - submission of Labor Compliance Program and reports by consultant; Task 3 - submission of Quarterly Progress Reports, Draft Report and Final Report.

Category Status: 0% - Work has not begun on the above tasks.

Task 4 – Land Purchase/Easements: Agency is currently in the process of identifying and obtaining temporary construction easements adjacent to the CVC Pool No. 8 right-of-way for the installation of the canal lining. These easements are expected to cover 15 acres.

Deliverables: Easement documents

Category Status: 10% - District is obtaining easement information and coordinating with landowners.

Task 5 - Assessment and Evaluation: Review the operational characteristics of the CVC, including pipelines used for siphons, canal turnouts/points of delivery and associated facilities in CVC Pool No. 8. Perform a hydraulic analysis to optimize the new channel cross-section to convey design flow, and to quantify the dynamic hydraulic impacts at CVC Pumping Plant No. 8 and other facilities within CVC Pool No. 8 with the new canal cross-section in place. Prepare preliminary construction plans, initial project cost estimates and project schedule.

Deliverables: 15% Construction Plans, channel analysis memorandum and preliminary cost estimate.

Task Status: 100% - Engineer has completed the feasibility evaluation of the project.

Task 6 - Final Design:

Subtask 6.1 – Survey and Utility Investigation: Agency will conduct topographic and boundary surveys along the CVC Pool No. 8 canal. Existing utilities will be identified and incorporated into plan and profile drawings. Review right-of-ways and perform required title searches.

Subtask 6.2 – Geotechnical Investigation: A licensed geotechnical firm will perform a comprehensive geotechnical review of the canal alignment including reaches adjacent to existing siphon structures and turnouts for the design of the project. Work will include field investigations (drilling), laboratory soils testing and a geotechnical report.

Subtask 6.3 – Project Design: A basis of design (BOD) memorandum will be prepared for the project that documents the assumptions, design criteria, and proposed design layouts. After approval of the BOD, the Plans, Specifications and Cost Estimates (PS&E) will be prepared for the canal lining. The PS&E will be prepared at 50%, 90%, and 100% design levels for review by Agency staff. QA/QC reviews will be conducted at each interval by a Principal level engineer. At completion of this subtask, the PS&E will be incorporated into contract documents for bid by Contractors.

Deliverables: BOD memorandum, 50%, 90%, and 100% PS&E, contract documents

Task Status: 10% - Conceptual design and cost estimate already prepared for project.

Task 7 - Environmental Documentation: Preparation of CEQA compliance documents including an Initial Study and biological review. Agency anticipates that a mitigated negative declaration will be necessary. Tribal notification will be included in the CEQA process.

Deliverables: Adopted CEQA document and all notices

Task Status: 30% - CEQA process has been started.

Task 8 - Permitting: This task involves applying for and securing the appropriate local and state permits for the project. NEPA is not needed since the project does not involve Federal funding or Federal facilities. The Agency owns and operates the CVC and does not need special permits to modify the canal. No major regulatory hurdles are expected to complete the project.

Subtask 8.1 – SWPPP: A Storm Water Pollution Prevention Plan (SWPPP) will be prepared in accordance with the State Water Resources Control Board (SWRCB) requirements and uploaded to their website.

Subtask 8.2 – DCP and ISR: A Dust Control Plan (DCP) and Indirect Source Review (ISR) will be prepared in accordance with the San Joaquin Valley Air Pollution Control District (SJVAPCD) requirements.

Deliverables: SWPPP, DCP, ISR

Task Status: 0% - Work has not begun.

Task 9 - Construction Contracting: Issue contract documents for a 60-day public noticed bid. Assist during bidding process including job walk, bid opening and bid review. Prepare addendums, if necessary, prior to contract bid date. Select lowest responsible qualified responsive bidder. Award contract.

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

Task Status: 0% - Work has not begun.

Task 10 - Construction:

Subtask 10.1: Mobilization and Site Preparation: CVC Pool No. 8 canal alignment will be staked by surveyors for construction. Contractors will locate existing utilities (USA) and mobilize equipment.

Subtask 10.2: Construction: Canal lining will be installed in accordance with the Plans and Specifications.

Subtask 10.3: Performance Testing & Demobilization: Canal lining shall be constructed in accordance with the documents provided to KCWA. Training will be conducted for the operators to ensure canal operation meets KCWA operational requirements.

Deliverables: Meeting notes for canal operations training

Task Status: 0% - Work has not begun.

Task 11 - Environmental Compliance/Mitigation/Enhancement: Prepare field reviews and compliance documentation in accordance with the SWPPP, DCP, and CEQA mitigation measures.

Deliverables: Field review reports and compliance documentation for the SWPPP, DCP and CEQA. Specific requirements will be identified when these documents are prepared (see Task 8 - Permitting).

Task Status: 0% - Work has not begun.

Task 12 - Construction Administration: Work consists of contract administration and oversight for lining 1.2 miles of earth canal with concrete. Work consists of processing contractor requests for payment, material submittal reviews, holding a pre-construction meeting, construction monitoring, soil compaction and materials testing, responding to requests for information (RFIs), issuing change orders as needed, preparation of project record drawings, and project closeout.

Deliverables: Advertisement for bids, bid results, construction contracting and award, preconstruction and progress meeting minutes, construction photographs, change orders, pay requests, record drawings, certificate of project completion

Task Status: 0% - Work has not begun.

Task 13 – Public Outreach: Public outreach will be performed to educate the public on the grant award, the construction schedule and the project benefits. Public outreach will be accomplished through the following: 1) A press release will be posted on the Agency website and submitted to local newspapers; 2) Adjacent landowners will be notified of the project; 3) Signs will be posted on the construction site explaining the project; 4), The grant award and project will be announced at an Agency Board of Directors meeting; and at a Kern Regional Water Management Group meeting. Currently there is no known opposition to the project.

Deliverables: Press release, notification letter to adjacent landowners, Board of Directors meeting minutes.

Task Status: 0% - Work has not begun.

Magnitude of Effort

The magnitude of effort for each task is reflected in the budget for each task (see **Attachment 4 – Budget**). The largest tasks are the Task 6 - Final Design and Task 10 - Construction. The Final Design will require about 2,200 hours of effort from the main consultant and several sub consultants. This is a large effort, but can easily be accomplished during the six months allocated in the schedule. The Construction will cost \$3,330,000 and involve lining 1.2 miles of canal. This is also a significant effort and will involve substantial quantities of concrete placement and earth moving. Only contractors that are large enough to complete the project will be selected. The schedule also includes 8 months for construction when only about 4 months should normally be required.

Appendices

3.1 - Improvement District No. 4 – Report on Water Conditions 2013

3.2 - Preliminary Design Drawings (15%)

3.3 - Pool No. 8 Channel Analysis Memorandum

- 3.4 - USBR Canal Lining Report
- 3.5 – IRWM Group Meeting Minutes
- 3.6 – IRWMP Adoption Resolution
- 3.7 – IRWMP Project Prioritization List