Contra Costa Water District
Proposition 1E Grant Proposal
Attachment 3

Work Plan / md 1

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East Contra Costa County Region
Contra Costa Water District
Stormwater Flood Management Grant Proposal

ATTACHMENT 3 –
WORK PLAN

INTRODUCTION

The following members of the East County Water Management Association (ECWMA), including water agencies, wastewater agencies, flood control districts, and watershed management groups within the eastern portion of Contra Costa County (East County), have a long history of cooperative planning for the region.

- City of Antioch
- City of Brentwood
- Byron-Bethany Irrigation District
- Town of Discovery Bay
- Contra Costa County
- Contra Costa County Flood Control and Water Conservation District
- Contra Costa Water District
- Delta Diablo Sanitation District
- Diablo Water District
- East Contra Costa Irrigation District
- Ironhouse Sanitary District
- City of Pittsburg

Through their coordinated regional planning efforts, these East County agencies developed a Functionally Equivalent Integrated Regional Water Management Plan (IRWMP) based on planning completed through the following efforts:

- *East County Water Supply Management Study (1996)*
- *Future Water Supply Study (1996, Updated 2002)*
- *Stormwater Management Plan (1999)*
- *Delta Region Drinking Water Management Plan (2005)*
- *East Contra Costa County Habitat Conservation Plan (2006)*

These documents form the basis of the Functionally Equivalent IRWMP umbrella document, which serves to integrate the regional plans listed above into a single overarching regional water management plan for East County. Through development and adoption of the Functionally Equivalent IRWMP, the East County agencies identified a suite of water management projects and programs that, together, will improve water supply reliability and water quality for the region, reduce dependence on imported water, assist in achieving the regional objectives, provide multiple benefits, and eliminate or reduce pollution in sensitive habitat areas and areas of special biological significance.

Through the IRWMP effort, the agencies developed a process for prioritizing short-term and long-term priority projects for implementation which considers the ability of projects to achieve regional objectives, among other factors. Over time, the specific projects being considered for regional implementation have evolved to include additional projects targeted at reducing demands on Delta supplies as well as projects aimed at addressing critical water supply and water quality needs of DACs. The process has proven successful in its ability to respond to changing needs and conditions in the Region, and has continued to be utilized to identify priority projects for regional implementation.

The single project included in this proposal, the ***Contra Costa Canal Levee Elimination and Flood Protection Project,*** was identified in the East County IRWMP as a high priority for short-term regional implementation. This Project incorporates multiple water management elements, and addresses many of the regional objectives set forth in the Functionally Equivalent IRWMP.

Project Abstract

The full, five-phased Contra Costa Canal Levee Elimination and Flood Protection Project (Project) will replace 21,000 feet of the unlined Contra Costa Canal (the Canal) with a pipeline to improve source water quality available to the Contra Costa Water District (CCWD) by preventing intrusion of poor quality groundwater; eliminate up to eight miles of aging Canal embankments (unconsolidated dredging spoils from the original construction) that were not designed to provide flood protection and are not seismically sound; improve security and public safety by preventing access to the open water Canal; and install a Canal flood isolation structure that, combined with the pipeline project, will enable CCWD to remotely isolate the Canal from the San Joaquin-Sacramento River Delta in the event of a levee breach. Phase 1 of the Project, encasement of the Canal from Pump Plant #1 to Marsh Creek, was completed in 2009.

The Project included in this proposal is Phase 5 of the full Project, and involves replacing approximately 4,000 feet of the Canal with a pipeline from the headworks of the Rock Slough intake and eliminating associated Canal embankments. The proposed Project includes installation of a Canal flood isolation

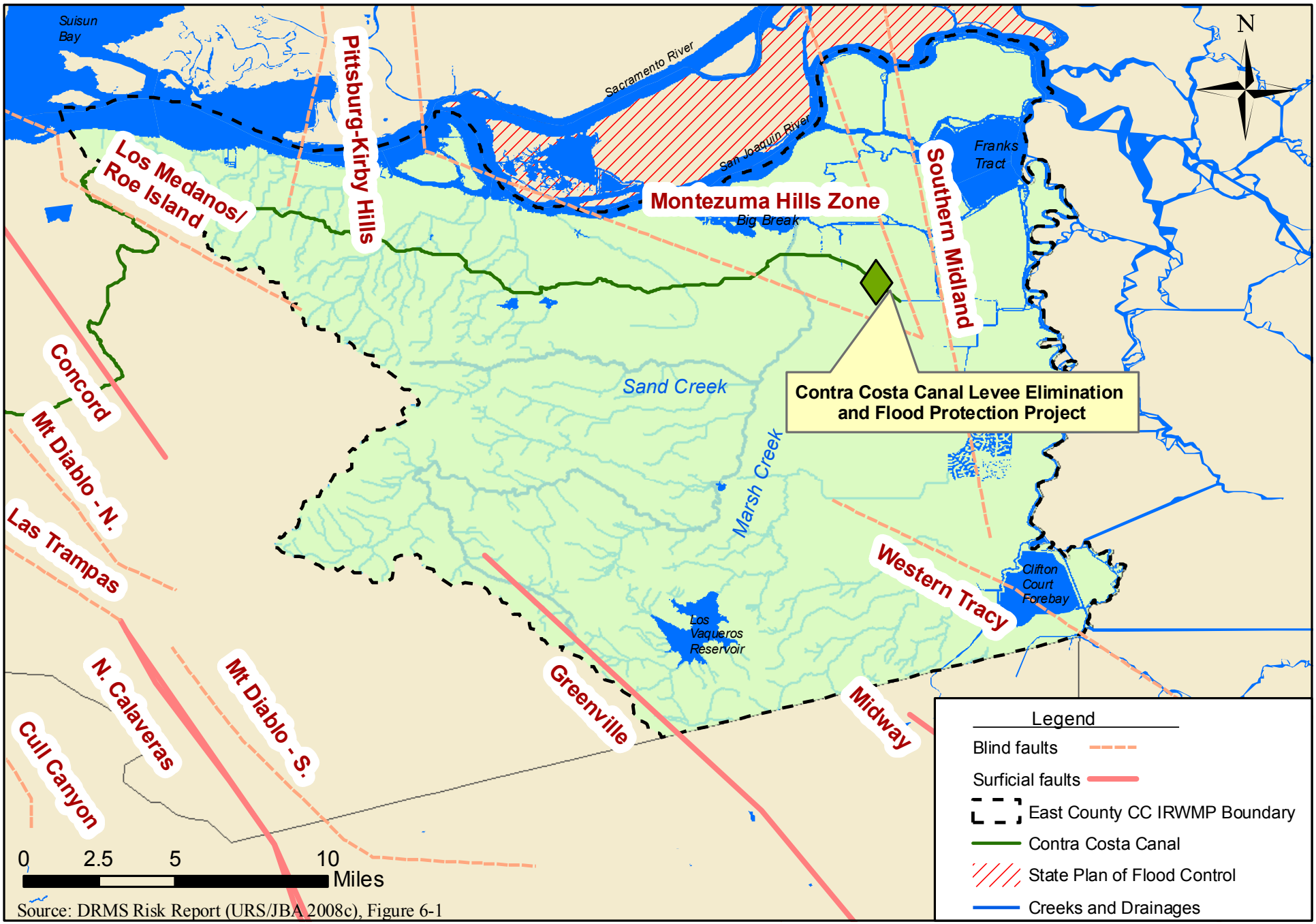
structure that, combined with the pipeline project, will enable CCWD to remotely isolate the Canal from the San Joaquin-Sacramento River Delta in the event of a levee breach. This Project represents a critical component of CCWD's seismic reliability program, as historical geotechnical investigations of the Canal system have indicated that the levees in the unlined portion of the Canal and the foundation are highly prone to liquefaction in the event of an earthquake (Seismic Reliability Improvements Project 1997, Geotechnical Engineering Report Intake Channel Levees Contra Costa Canal 2000, Geotechnical Engineering Investigation Contra Costa Water District Canal Replacement Project 2007).

Project Status

Planning and environmental documentation are complete. Design is scheduled for completion by December 2011. Construction contracting is expected to begin in December of 2011, with construction beginning in March 2012.

Regional Map

The map on the following page presents the location of proposed Project with respect to regional and local drainage systems, flood control level of protection, major water bodies and streams, flood management infrastructure, relation to the State Plan of Flood Control (SPFC), and relevant active faults.



Source: DRMS Risk Report (URS/JBA 2008c), Figure 6-1

Figure 3-1: Regional Map

Goals and Objectives of Proposal and Relation to IRWMP

Through implementation of the Project, this Proposal will achieve the following key goals and objectives:

- ✓ To advance the objectives of the IRWMP and further those projects collectively identified as regional priorities by the ECWMA.
- ✓ To improve flood protection, water supply reliability, and water quality for the community.
- ✓ To provide for protection of the natural resources in East Contra Costa County.

Advance the IRWMP Objectives and Further Regional Priorities

The Project was identified as a high regional priority through the prioritization process outlined in the East County IRWMP and through collective determination by the participating agencies, in part due to its ability to assist the Region in making significant progress toward achieving the IRWMP objectives. The East County regional objectives are shown in the following table.

Water Management Category	East County Regional Objectives Met
Water Supply	Maximize Dry Year Supplies
	Maximize Water Supply Reliability
Water Quality	Maximize Public Health Protection
	Protect and Enhance Source Water Quality
Ecosystem Restoration/ Preservation	Minimize Environmental Impacts
	Maximize Environmental Benefits
Flood Control	Protect Against Flooding
Implementability	Maximize Implementability (e.g., maximize regional coordination, conduct stakeholder outreach, maximize cost-effectiveness, etc)

Improve Flood Protection, Water Quality, and Water Supply

The proposed Project will provide enhanced flood protection, as well as significant water quality, water supply, and natural resources benefits. Environmental documentation, permits, and mitigation requirements for the entire Project have already been completed.

Flood Protection Benefits

Implementation of the Project will result in a present value of nearly $3.6 M in avoided flood damages (expressed in present value terms). The Canal was developed as part of the Central Valley Project in the 1930s and is an integral part of the water delivery system for CCWD. The unlined portion begins at Rock Slough and continues for four miles until it connects to the 44.6-mile concrete-lined Canal. The Canal levees in the unlined portion are in poor condition; they are not designed to provide flood protection and are not seismically sound. They are composed of unconsolidated dredging spoils from the original construction. At least seven square miles are currently at risk of flooding if the Canal levees failed,

including housing developments, roads, small businesses, working farms and a tidal marsh restoration project.

The Canal has experienced overtopping events in the past. In 1996 and 1997, the Canal experienced multiple major levee slumping and overtopping events at the western end of the Canal near Pump Plant #1. At the time, Los Vaqueros Reservoir was not completed, and water continued to be conveyed through the Canal. Due to the complete dependence on the Canal at that time, full repairs were not possible until the summer of 1998 (see attached photos). The repairs took approximately two weeks. Adjacent properties experienced limited flood damage due to emergency response to stabilize the levee. Emergency response and levee repairs cost just over $1M. The engineering report prepared at the time noted that investment was needed to prevent a complete failure of the reach. The greatest risk associated with the 1996-1997 levee damage was sewage from the Ironhouse Sanitation District flowing into the Canal from an adjacent property where sewage was land-applied. This section of the Canal (from Pump Plant #1 to Marsh Creek) was encased in 2009; encasing that portion of the Canal cost $13M (construction cost, not including permits and mitigation).

In February of 1998, the Canal failed at the intersection of Cypress Rd. The road was partially flooded and emergency repairs were made. Emergency repairs (sandbags) cost more than $13,000; rip-rap repairs to this section occurred the same month for an additional cost of $25,000. These cost estimates do not include time spent by Contra Costa County to provide emergency assistance or any repairs to adjacent properties.

The Canal is particularly vulnerable to seismic activity. In 1997, CCWD completed the Seismic and Reliability Improvement Project, which provided a comprehensive assessment of the seismic vulnerability of CCWD's untreated water and treated water systems. This Study identified five key projects necessary to protect CCWD's infrastructure in the event of an earthquake along the Concord fault line, which generally traverses CCWD's Treated Water Service Area from southeast to northwest and has the potential to cause significant damage including loss of water service, loss of firefighting capability and localized flooding and damage due to uncontrolled water discharge to water infrastructure and to above ground structures from collapse and fire.

The existing berms and levees along the Canal are not certified to flood control standards established by the Federal Emergency Management Agency (FEMA). An engineering and geotechnical study completed in 2002 confirmed the vulnerability of the berms and levees to a significant seismic event. The soils along the sides of the Canal were not engineered for flood protection. Development in select locations along the Canal would be vulnerable without sufficient flood protection in the event of elevated water stages in the Delta.

In addition, the historically agricultural land uses adjacent to the Canal are being converted to urban development. The Project is imperative to ensure compatibility with adjacent land uses, and manage and minimize potential risks to CCWD customers and surrounding neighborhoods. There is currently a population of 10,000 in the immediate area that would be affected by failure of the facility. By 2020, ongoing rapid residential development will result in 30,000 residents endangered by this facility including three primary/secondary schools. Failure of this facility would also compromise the water supply for nearly 550,000 people.

The proposed Project will remove the potential for flooding. By encasing the Canal in a buried pipeline, virtually all concerns with regard to system security and public safety are alleviated as well. Fences will be maintained along the 300-foot right of way boundary, maintenance roads will be maintained, and security personnel will patrol the area.

Water Quality Benefits

Implementation of the Project would yield significant water quality benefits for the Region as a whole. Water quality is an ongoing challenge facing East County water suppliers. Delta water quality is highly variable depending upon the season, the water year, and the intake location. During dry years and seasons Delta supplies contain high concentrations of total dissolved solids (TDS), chloride and bromide. Total organic carbon (TOC) concentrations in Delta supplies are also highly variable, with increases generally corresponding to periods of increased runoff. The Los Vaqueros Reservoir, which is owned and operated by CCWD, is used to improve the water quality delivered to CCWD's customers. Currently, water is pumped into Los Vaqueros during spring and early summer months when Delta water quality is good. During the late summer and fall, when Delta water quality is poor, Delta supplies are blended with the high quality water stored in Los Vaqueros Reservoir to improve the water quality delivered to CCWD's untreated and treated water customers.

The quality of Delta water is also dependent on maintenance of the Delta levee system as well as land and water management activities throughout the Delta and its larger watershed. Failure of the Delta levee system due to flooding or seismic events could dramatically increase levels of chloride, bromide, and TOC, and potentially render the water supply unusable for municipal or agricultural purposes. Similarly, changes in Delta land-use and water management practices, including many identified by CALFED, could increase levels of undesirable constituents at East County intake locations.

The proposed Project will encase a portion of the Canal, improving drinking water quality for 550,000 people in Contra Costa County by decreasing the amount of saline groundwater intrusion or stormwater into the Canal. This will reduce the concentrations of total dissolved solids (TDS), chloride, bromide and other constituents in CCWD's source water.

Water Supply Benefits

Implementation of the proposed Project would yield significant water supply benefits, at the local, regional and Statewide level.

All of the water suppliers in the ECWMA rely on Delta supplies. Three of these water suppliers (City of Pittsburg, City of Antioch, Diablo Water District) purchase untreated Sacramento-San Joaquin Delta supplies from CCWD. Brentwood has a Delta surface supply purchased from ECCID that is diverted by CCWD at its Delta intakes and also has well water. Also, CCWD serves a portion of Brentwood that lies within its service area boundaries. Improving current and future water supply reliability under all hydrologic conditions is a critical regional need, due to its current heavy reliance on Delta supplies.

Delta supplies are highly vulnerable to hydrologic changes, and water withdrawals can be severely restricted in dry years, reducing the quantity of supply available to the participating agencies. In addition, regulatory restrictions can limit the quantity of Delta supplies available in a given year. Conflicts between the need to divert water from the Delta and the legal requirements to protect

endangered species can result in pumping restrictions that severely limit the quantity of Delta water allowed to be withdrawn in a given year.

Implementing the Project will assist the region in improving water supply reliability, a critical water supply need. Specifically, the Project will improve water supply reliability on local, regional, and Statewide levels. By eliminating local degradation from groundwater seepage and runoff, this Project will increase overall water supply for the State Water Project and Federal Central Valley Project by reducing the need for upstream releases into the Delta to offset this local degradation.

Protect Natural Resources

Ecosystem restoration and habitat protection are linked to protecting the water quality and water supply reliability in East County. Protecting Delta water quality protects source water for the region and improves ecosystem habitat for the Delta's aquatic species while also protecting them from the harmful impacts of degraded water quality. Promoting the recovery of the Delta's endangered fish species improves water supply reliability by reducing regulatory conflicts between the legal requirements to protect endangered species and project operations to divert water from the Delta and. Tidal wetland and riparian restoration projects can sometimes create habitat for endangered species while at the same time reducing the amount of polluted runoff flowing into the Delta – a win for water quality, endangered species, and water supply reliability.

The Project will protect natural resources of the Delta and promote habitat restoration for sensitive species. Although construction of the full Project is not complete, the mitigation for the full Project is complete. CCWD purchased 47 acres of wetland and 98 acres of upland habitat as mitigation for the full Project. These lands provide habitat for species of concern such as Delta smelt, longfin smelt and the giant garter snake. Completion of the full Project will also promote the completion of the Department of Water Resources' (DWR's) Dutch Slough Tidal Marsh Restoration Project. DWR's Dutch Slough Tidal Marsh Restoration Project will restore a tidal wetland just to the north of the Project. The Project is a critical early action to improve the ecosystem health of the Sacramento-San Joaquin Delta. Completion of DWR's Dutch Slough Tidal Marsh Restoration Project is legislatively mandated (SBX7-1 Section 85085) and dependent on the construction of 11,000 ft of the pipeline adjacent to the Dutch Slough project site.

Purpose and Need

The full, five-phased Project will replace 21,000 feet of the unlined Canal with a pipeline to improve source water quality available to CCWD by preventing intrusion of poor quality groundwater; eliminate up to eight miles of aging Canal embankments (unconsolidated dredging spoils from the original construction) that were not designed to provide flood protection and are not seismically sound; improve security and public safety by preventing access to the open water Canal; and install a Canal flood isolation structure that, combined with the pipeline project, will enable CCWD to remotely isolate the Canal from the San Joaquin-Sacramento River Delta in the event of a levee breach.

As described previously, the Canal levees in the unlined portion are in poor condition; they are composed of unconsolidated dredging spoils from the original construction, are not designed to provide flood protection, and are not seismically sound. Further, the Canal has been found to be particularly vulnerable to seismic activity, and at least seven square miles are currently at risk of flooding if the Canal

levees failed, including housing developments, roads, small businesses, working farms and a tidal marsh restoration project.

The proposed Project will remove the potential for flooding. In particular, the flood isolation structure, which will be constructed as part of the proposed Project, provides a transition from the Canal into the pipeline and will be the point of hydraulic isolation between the Delta the unlined Canal. Currently, in the event of a Canal berm breach, water will flow uncontrolled from the Delta through Rock Slough and into the Canal. The Isolation Structure will rapidly isolate the Canal and prevent water from flowing through the breach and flooding adjacent land. The structure will be constructed from the existing Rock Trash Rack to the upstream inlet of the pipeline, near the new Rock Slough Fish Screen, and includes remote monitoring of water level and a remote controlled, automatically actuated slide gate at the pipeline inlet. In response to excessive flows through the Isolation Structure or report of a breach of the Canal, CCWD will initiate closure of the valve to prevent continued uncontrolled flows within approximately 15 minutes. As a result, completion of the proposed Project will provide all of the flood protection benefits attributable to the full 21,000-foot Project. Diagrams of this structure are attached to this document.

By encasing the Canal in a buried pipeline, virtually all concerns with regard to system security and public safety are alleviated as well. Fences will be maintained along the 300-foot right of way boundary, maintenance roads will be maintained, and security personnel will patrol the area.

The Canal was developed as part of the Central Valley Project in the 1930s. The Canal is an integral part of the water delivery system for CCWD. Prior to the completion of Los Vaqueros Reservoir in 1997, the Canal supplied nearly 100 percent of the water to CCWD's service area. Since the completion of the Los Vaqueros Reservoir, the Canal transports approximately 30 percent of the annual water diverted by CCWD, provides critical operational flexibility for untreated water service between Pumping Plant 1 and Pumping Plant 4, and is needed to supply CCWD's service area when the reservoir is being filled.

Without the use of the Canal, more water will need to be released from Los Vaqueros Reservoir to meet demands and the time to refill the reservoir increases substantially, leading to an overall decrease in water supply reliability, reduction in overall ability to meet water quality objectives, and significant increase in cost of water. The benefits of CCWD's investment in the Los Vaqueros Project and the Middle River Intake Project would also be significantly diminished without use of the Canal. In addition, several customers (between Pumping Plant 1 and Pumping Plant 4) are entirely reliant upon the Canal for surface water deliveries, including agricultural users and the City of Brentwood. Due to regulatory restrictions on diversions from the Delta, CCWD may be required to release water from Los Vaqueros during times when storage is diminished, reducing CCWD's ability to respond to an emergency. According to the 1997 Seismic and Reliability Improvement Project report on seismic risk and reliability of CCWD's complete distribution system, the unlined portion of the Canal was one of the least reliable portions of the system due to potential soil liquefaction and power outages at Pump Plant #1. The Los Vaqueros Reservoir and new intake facilities are more reliable than the Canal; consequently, encasing the Canal has been part of CCWD's long term capital improvements program.

Additional negative impacts associated with Proposal non-implementation may include:

- Local Flood Damages: If the Project is not completed, the risk of flood-related damages under catastrophic failure of the earthen embankments, Delta levee failure, or a significant seismic event will persist, inundating adjacent areas, damaging property, and endangering the public.
- Water Supply Impacts: Without the Project, degraded water quality at Rock Slough Intake will increase the amount of water upstream reservoirs must release to meet the Rock Slough water quality standard. Similarly, CCWD will also need to release more water to its delivered water quality goals.
- Local Water Supply Reliability Impacts: The proposed Project is also needed to improve supply reliability. Without this Project CCWD will rely more heavily on other infrastructure and will be more vulnerable to supply interruptions in the event of drought. Large quantities of Los Vaqueros Reservoir supplies will continue to be needed to blend with Delta supplies to meet treated water quality targets.
- Delta Water Quality Impacts: The proposed Project is needed to prevent water quality degradation for CCWD's raw and treated water customers. Without this Project, 550,000 people will continue to be impacted by water quality degradation caused by intrusion of saline groundwater.
- Public Endangerment, Injury and Death: At least 24 fatalities have occurred due to drowning in the open Canal since 1972 alone. If the Project is not completed, drownings in the Canal will continue to occur. In addition, occurrence of a seismic event could result in overtopping of the Canal's earthen embankments, inundating adjacent homes, damaging property, and endangering the public.
- Failure to Comply with Legislative Mandate: DWR's legislatively mandated (SBX7-1 Section 85085) Dutch Slough Tidal Marsh Restoration Project cannot be completed without prior completion of the Project. DWR's Project is dependent on the construction of 11,000 ft of the pipeline adjacent to the Dutch Slough Project site.

Consistency with Basin Plan

The Canal is located within Region 5, while portions of CCWD's service area that ultimately receive water that has been conveyed by the Canal are located in Region 2. This proposal is consistent with the Basin Plans for both the Central Valley (Region 5), and the San Francisco Bay Area (Region 2). Each Basin Plan identifies water quality objectives for water bodies within its respective region. Notably, the Region 5 Basin plan identifies water quality objectives for the Sacramento-San Joaquin Delta, based on determined beneficial uses. The Basin plan lists the following existing beneficial uses for the Sacramento-San Joaquin Delta:

- Municipal and Domestic Supply (Existing)
- Agricultural Supply – Irrigation and Stock Watering (Existing)
- Industrial Supply – Process and Service Supply
- Recreation - Contact and Other Non-Contact
- Freshwater Habitat – Warm and Cold
- Migration – Warm and Cold
- Spawning – Warm
- Wildlife Habitat

- Navigation

Similar beneficial uses have been determined for potentially affected water bodies in Region 2. Further, all groundwaters in Regions 2 and 5 are considered suitable, or potentially suitable, for municipal and domestic water supply, agricultural supply, industrial service supply, and industrial process supply, unless otherwise designated by the appropriate Basin Plan.

As described previously, in addition to providing enhanced flood protection, this Proposal seeks to improve both drinking water and receiving water quality. This Project will benefit water quality in Regions 5 and 2, and is therefore consistent with the appropriate Basin Plan(s). Specific water quality objectives for surface waters in the Region 5 and 2 Basin Plans include the following.

- Bacteria
- Bioaccumulation[1]
- Biostimulatory Substances
- Chemical Constituents
- Color
- Dissolved Oxygen
- Floating Material
- Mercury
- Methylmercury
- Oil and Grease
- pH
- Population and community ecology[1]
- Pesticides
- Radioactivity
- Salinity
- Sediment
- Settleable Material
- Suspended Material
- Sulfide[1]
- Tastes and Odors
- Temperature
- Toxicity
- Turbidity
- Un-ionized ammonia[1]

The proposed Project will prevent intrusion of saline groundwater into the Canal, directly contributing to achievement of Basin Plan chloride objectives for Canal. This Project would also be expected to improve taste and odor in delivered water. The Project is consistent with the Region 5 Basin Plan, which includes water quality objectives for the Canal.

While the Project-level reductions in pollutant loading and improvements in parameter concentrations noted above are generally expected to be too small to measure, the overall effect is an improvement in water quality, consistent with both Region 2 and Region 5 Basin Plan objectives.

Summary of Completed Work and Existing Data and Studies

Significant work has been completed on the Project to-date.

- Environmental documentation has been completed in accordance with the California Environmental Quality Act (CEQA) and National Environmental Protection Act (NEPA). A Negative Declaration was filed on November 30, 2007; it was determined that the Project will not have significant effects on the environment. A Finding of No Significant Impact (FONSI) was filed on July 11, 2007.
- Phases 1 and 2 of the pipeline design are expected to be completed by June of 2011.
- Several permits and agreements were secured in 2007, including: Central Valley Regional Water Quality Control Board 401 Permit, CA Department of Fish and Game 1600 and 2081 Permits, State Historic Preservation Officer MOU, US Army Corps of Engineers 404 Permit, National Marine Fisheries Service Letters of Concurrence, US Fish and Wildlife Coordination Act Letter, and Bureau of Reclamation/Western Area Power Administration (WAPA) NEPA EA/FONSI.

[1] Included in Region 2 Basin Plan only

- In addition, Phase 1 of the Project, which included encasing 1,900 linear feet of pipeline from Pump Station #1 to Marsh Creek, has been completed. Completed environmental mitigation has included 98 acres of upland habitat and 47 acres of wetland habitat in the adjacent Holland Tract.

Completed plans and specifications have been provided as separate files to this Attachment.

Integrated Elements of Proposed Project

The proposed Project is capable of providing the benefits claimed in the absence of other projects; as a result, implementation of the tasks described in this Attachment will yield full benefits, and the schedules of proposed Projects are not interdependent. However, this Project is an element of a larger program, and funding received through this grant opportunity will be leveraged to implement a component of a larger project.

The specific Project being proposed for funding is a component of a larger program to encase the Canal to reduce the risk of flooding, provide water quality benefits, and enhance public safety. Construction of the full Project is multi-phased. In total, there are five construction phases of the Project, which may be completed in series or in parallel. The first phase of the Project, completed in 2009, installed approximately 1,900 linear feet of pipeline from CCWD's Pumping Plant 1 to Marsh Creek.

The Project is also linked to DWR's Dutch Slough Tidal Marsh Restoration Project; both projects are listed as early actions in the Interim Delta Plan. The completion of DWR's Dutch Slough Tidal Marsh Restoration Project is legislatively mandated (SBX 7-1) and is dependent on the construction of 11,000 ft of the pipeline adjacent to the Dutch Slough project site. Mitigation term 3.1.1-5 of the Dutch Slough EIR Mitigation Monitoring and Reporting Program states "To avoid potential negative impacts to water quality within the Canal from groundwater intrusion, breaching of the Dutch Slough Tidal Marsh Restoration Project site will not commence until encasement of the Canal south of the site is complete."

Timing and Phasing

As described previously, construction of the Project is multi-phased. The first phase of the Project, completed in 2009, installed approximately 1,900 linear feet of pipeline from CCWD's Pumping Plant 1 (PP1) to Marsh Creek. Subsequent phases of the Project will involve installing a pipeline starting at the terminus of the completed Project and extending to East Cypress Road, and extending the pipeline to the Rock Slough Fish Screen (currently under construction , scheduled for completion in the summer of 2011). Permitting and mitigation negotiations for the full Project were completed in 2007. CCWD acquired wetland and upland habitat (burrowing owl & giant garter snake) mitigation land at Holland tract. CCWD has acquired 47 acres of wetland and 98 acres of upland habitat through Wildlands, Inc.

The proposed Project is Phase 5 of the full Project. It involves replacing approximately 4,000 feet of the Canal from the headworks of the Rock Slough intake with a pipeline and eliminating associated Canal embankments. The proposed Project also includes installation of a Canal flood isolation structure that, combined with the pipeline project, will enable CCWD to remotely isolate the entire unlined Canal from the San Joaquin-Sacramento River Delta in the event of a levee breach.

Tasks

This section includes a detailed discussion of the various tasks needed to implement the proposed Project. In accordance with the PSP, this section specifically addresses the following:

PSP Requirements

- ✓ Tasks are detailed and complete in order to demonstrate that projects can be implemented
- ✓ Work Item submittals are clearly indicated for each of the tasks
- ✓ A list of project permits and their current status, is provided
- ✓ The status of environmental compliance activities is discussed
- ✓ If applicable, plans and specifications have been submitted to demonstrate consistency with the design tasks noted in the Work Plan
- ✓ Scientific and technical information has been submitted to demonstrate feasibility
- ✓ There is a discussion of the data management and monitoring deliverables
- ✓ There is a site map showing the geographical location and site boundaries
- ✓ In addition, the project write-up below includes a discussion of the required items listed on page 31 of the PSP:
  - o Description of work to be performed and current status of each task
  - o Procedures by which the applicant will coordinate with its partner agencies
  - o Discussion of standards used in implementation
  - o Development of performance measures and monitoring plans
  - o Discussion of acquisition of land or rights-of-way status
  - o Discussion of merits of materials and computational methods

Project Summary:

CCWD's Project is needed to reduce the flood risk currently posed by the Canal. At least seven square miles are currently at risk of flooding if the Canal levees fail, including housing developments, roads, working farms and a tidal marsh restoration project. The full Project will replace four miles of the unlined portion of the Canal with a pipeline and eliminate eight miles of aging embankments. Other benefits of the Project include improving source water quality by preventing intrusion of saline groundwater, improving public safety by eliminating the drowning risk of the open water Canal, and improving CCWD's water supply reliability.

Construction of the Project is multi-phased. The first phase of the Project, completed in 2009, installed approximately 1,900 linear feet of pipeline from CCWD's Pumping Plant 1 (PP1) to Marsh Creek. Phases 2 through 4 will extend the pipeline from the end of Phase 1, through Marsh Creek, to just beyond Cypress Rd where Phase 5 begins. The proposed Project, Phase 5 of the full Project, will include installation of 4,000 linear feet of pipeline starting at the headworks of the Rock Slough intake and extending to the west, eliminating approximately 1.5 miles of earthen levees, and installing a flood isolation structure capable of remotely isolating the Canal from the Sacramento-San Joaquin River Delta in the event of a levee failure. Permitting and mitigation negotiations for the full Project were completed in 2007. CCWD acquired wetland and upland habitat (burrowing owl & giant garter snake)

mitigation land at Holland tract. CCWD has created 47 acres of wetland and 98 acres of upland habitat through the Wildlands Company.

The Project has been identified as an Early Action by the Delta Stewardship Council in the Interim Delta Plan. If the Project does not move forward quickly, DWR's Dutch Slough Tidal Marsh Restoration Project (legislatively mandated, SBX7-1 Section 85085) will be delayed. In addition, if the Project does not move forward, flood risks will persist if not increase, and water quality will continue to degrade, necessitating more treatment and more water released from storage to meet water quality delivery goals.

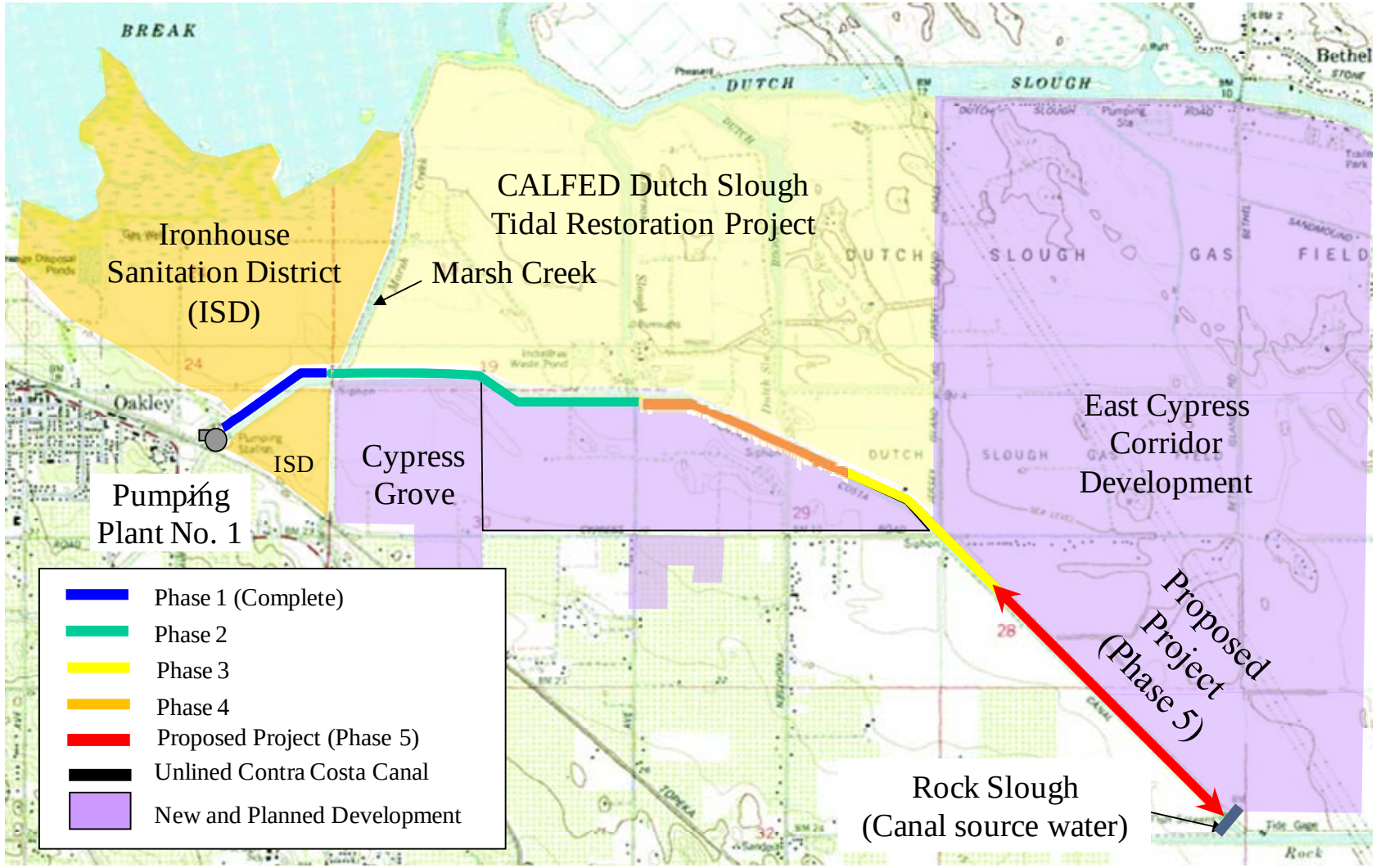
Technical Documentation:

Technical documents that support the feasibility of this Project include:

- Preliminary and Final Design
- Environmental Documentation
- Seismic Reliability Improvements Project, 1997
- Geotechnical Engineering Report Intake Channel Levees Contra Costa Canal, 2000
- Geotechnical Engineering Investigation Contra Costa Water District Canal Replacement Project, 2007

Project Map:

The Project Map is provided on the following page.



Attachment 1

Task 1 – Project Administration Tasks

Project administration tasks will include overall project administration and management, development of a Labor Compliance Program, and project reporting (including reporting on project monitoring and assessment).

Current Status:

No work has been completed on this task to-date.

Proposed Work Tasks & Deliverables:

Project administration tasks and deliverables are summarized in the following table.

Task	Description	Deliverables
1. Administration	This task involves general project administration including coordination with project partners and preparation of project invoices. In addition, this task includes development of the quarterly, annual and final reports required by the Grant Agreement and development of the Labor Compliance Program.	Invoices Quarterly, Annual and Final Reports Labor Compliance Program

Task 2 – Land Purchase/Easement Tasks

An easement will be required to be obtained from adjacent landowners to allow construction contractor access, staging, and dewatering disposal through irrigation of existing farmlands.

Current Status:

CCWD currently holds easements with the same landowners for construction of the Rock Slough Fish Screen, and those easements can be extended or amended as needed, or new temporary easements can be obtained.

Proposed Work Tasks & Deliverables:

Land purchase / easement tasks and deliverables are summarized in the following table.

Task	Description	Deliverables
2. Land Purchase / Easements	Obtain easements from adjacent landowners, allowing construction contractor access, staging, and dewatering disposal through irrigation of existing farmlands.	Plats, legal descriptions and final easement agreement

Task 3 – Planning/Design/Environmental Documentation Tasks

Project planning and design are nearly complete, and environmental documentation has been filed.

Current Status:

Planning and Design Status. Project planning and design are underway and are scheduled to be completed by December 2011.

Environmental Documentation Status**.** Environmental documentation is complete. CEQA was satisfied through filing of a Notice of Determination on Nov 30, 2006. The Project was found to have no significant effects on the environment. NEPA was satisfied through filing of a Finding of No Significant Impact (FONSI) on July 11, 2007.

Permitting Status**.** All applicable federal, state, and local permit applications have been filed. Permits are summarized in the following table.

Permit	Status
Central Valley Regional Water Quality Control Board 401 Permit	Approved in March 2007.
CA Department of Fish and Game 1600 Permit	Approved in September 2007.
CA Department of Fish and Game 2081 Permit	Approved in October 2007.
State Historic Preservation Officer MOU	Approved in October 2007.
US Army Corps of Engineers 404 Permit	Approved in August 2007.
National Marine Fisheries Service Letters of Concurrence	Approved in June 2007.
US Fish and Wildlife Coordination Act Letter	Approved in July 2007.
Bureau of Reclamation/Western Area Power Administration NEPA EA/FONSI	Approved in July 2007.

Proposed Work Tasks & Deliverables:

Project planning is complete, and environmental documentation has been filed. Final design will be completed as part of this Project.

Task	Description	Deliverables
3.1. Planning	Complete planning-level assessment of project feasibility (complete)	Not applicable
3.2 Design	Preparation of complete design documents including bid-ready plans and specifications (to be completed in December 2011)	100% Design
3.3 Environmental Documentation	CEQA / NEPA Documentation (complete)	Not applicable

Task 4 – Construction/Implementation Tasks

Construction tasks for the proposed Project are described below.

Current Status:

The initial phase of this Project, which included 1,900 feet of pipeline from Pump Station #1 to Marsh Creek, has been completed.

Proposed Work Tasks & Deliverables:

Construction phase tasks and deliverables are summarized in the following table.

Task	Description	Deliverables
4.1 Construction Contracting	This task includes all of the items necessary for entering into a construction contract, including bid advertisement, pre-bid conference, providing specific details and answering bidding questions, awarding the Project, holding a pre-job meeting , and meeting with the selected contractor and sub-contractors.	Construction Contract
4.2 Construction	Includes all construction-related tasks necessary to complete project implementation.	Completed facility
4.2.1 Mobilization & Closeout	Contractor insurance, submittals, material procurement and other initial project setup work	Construction Submittals
4.2.2 Site Clearing	Clear and grub the Project area, including removal of grass, weeds and other material, and complete environmental clearances.	Environmental clearance reports
4.2.3 Dewatering	Install groundwater dewatering wells and piping to remove and dispose of excess groundwater to allow pipeline construction	Installed groundwater dewatering wells
4.2.4 Bypass Pumping	Install and operate an approximately 100 cfs pumping system to maintain water supply to CCWD while the Canal is isolated.	Installed and operational bypass pumping
4.2.5 Procure and Fabricate Pipe	Order and fabricate the 10-foot diameter concrete pipeline	Pipeline Submittals
4.2.6 Pipeline Installation	Install pipeline from the existing Phase 1 terminus to Marsh Creek, and from the end of the Marsh Creek Crossing to the east to the transition structure	Marsh Creek pipeline
4.2.7 Canal Flood Isolation Structure	Install a concrete wing-walled transition structure from the Rock Slough headworks to the pipeline, including remote operated,	Flood Isolation Structure

Task	Description	Deliverables
	automatic actuating isolation slide gates (refer to diagrams included at the end of this attachment).	
4.2.8 Transition Structure	Install an earthen transition structure from the end of the pipeline back to the Canal with rip-rap armored embankments.	Transition Structure
4.2.9 Import Fill Material and Grading	Import fill material to match adjacent ground surface elevation and prevent drainage onto the right of way. Complete final grading and install access roads.	Final grading and access roads
4.2.10 WAPA Relocation	Lower the existing WAPA power poles on the southern levee	Lowered WAPA poles

Task 5 – Environmental Compliance/Mitigation/Enhancement Tasks

Environmental compliance and mitigation will include fish rescue, pre-construction surveys, biological monitoring, and weekly inspections.

Current Status:

Completed environmental mitigation includes 98 of acres upland habitat and 47 acres of wetland habitat on Holland Tract.

Proposed Work Tasks & Deliverables:

Environmental compliance and mitigation tasks and deliverables are summarized in the following table.

Task	Description	Deliverables
5. Pre-construction surveys, biological monitoring and weekly inspections	Complete biological surveys pre-construction, biological monitoring, and inspections	Biological surveys pre-construction, biological monitoring, and inspections

Task 6 – Construction Administration Tasks

This task will includes all construction administration activities, including advertisement for bids, bidding, contract award, insurance confirmation and tracking, submittal review and tracking, invoice review and payment, schedule maintenance, and contract closeout.

Current Status:

No work has been completed on this task to-date.

Proposed Work Tasks & Deliverables:

Construction administration tasks and deliverables are summarized in the following table.

Task	Description	Deliverables
6. Construction Administration	This task includes all construction administration activities, including advertisement for bids, bidding, contract award, insurance confirmation and tracking, submittal review and tracking, invoice review and payment, schedule maintenance, and contract closeout	Bid advertisement, responses to requests for information, construction contract award, insurance confirmation, payments, completed punchlist

Task 7 – Other Tasks

This task will include amending CCWD's existing permit with the Department of Fish and Game.

Current Status:

No work has been completed on this task to-date.

Proposed Work Tasks & Deliverables:

Permitting tasks and deliverables are summarized in the following table.

Task	Description	Deliverables
7. Amend DFG Permits	This task includes amending CCWD's existing DFG permits	Amended DFG permits

Additional Project Information

Additional detail about the Project, as requested by the PSP, is provided below.

Coordination with Partner Agencies:

Because there are no official project partners, required coordination will be minimal. However, CCWD will continue to coordinate with the region through regular participation in the East County Water Management Association.

Standards that Will Be Used in Implementation:

The project design was completed using CCWD's design standards. Project implementation will comply with industry construction standards as well as health and safety measures.

Performance Measures and Monitoring Plans:

Project monitoring will be conducted to assess and evaluate project performance. Additional information is provided in Attachment 6.

Merits of Materials and Computational Methods:

All applicable and appropriate water quality, building, and construction standards, materials, and methods have been and will be used in implementing the Project. These standards, materials and methods were initially identified in the preliminary design phase, and further documented during final design in the construction plans and specifications. The construction contract documents will contain a detailed description of all applicable standards, materials and methods. The specific construction standards, health and safety standards, laboratory analysis, and accepted classifications methods to be used in implementation can be found in the attached contract drawings and specifications.

Deliverables to DWR:

Quarterly reports will be prepared and submitted to DWR. These reports will include budget progress reports, milestone reports, results of assessments and program evaluations, invoices for billable activity, and goals for the next quarter. A final report will be prepared and submitted to DWR. The final report will consist of a final budget report (matching fund and grant funds accounting), deliverables report, results of programs assessments (copies of reports), and lessons learned.

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Supporting Information:

Photos of 1998 Levee Repairs

12/27/96 CANAL SLIPPAGE
FACING SW

12/27/96 CANAL
LEVEE SLIPPAGE
FACING NE

12/31/97 1045 HRS.

1045 HRS 12/31/97

7/9/98

7/9/98

Supporting Information:

Diagram of Proposed Flood Isolation Structure

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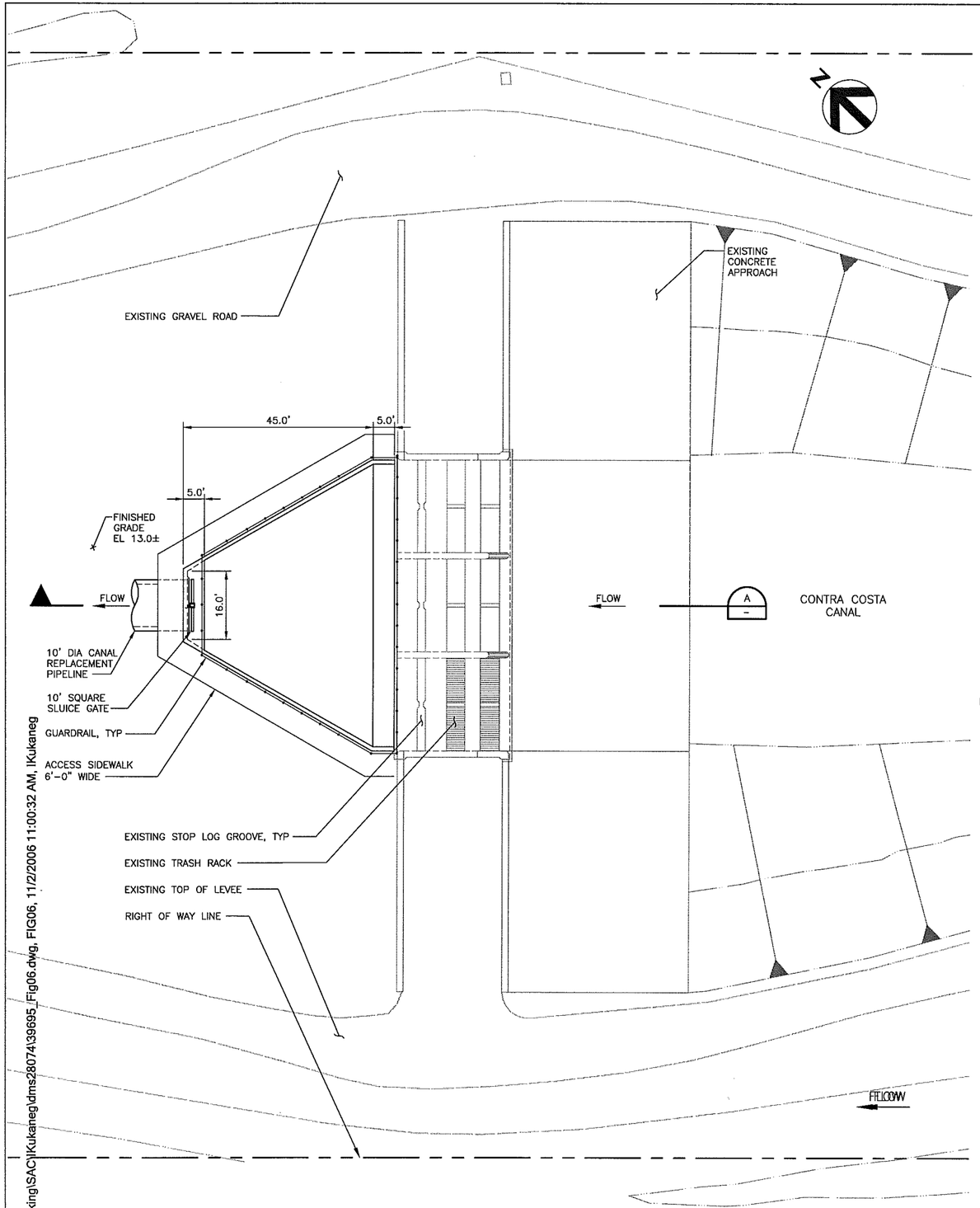

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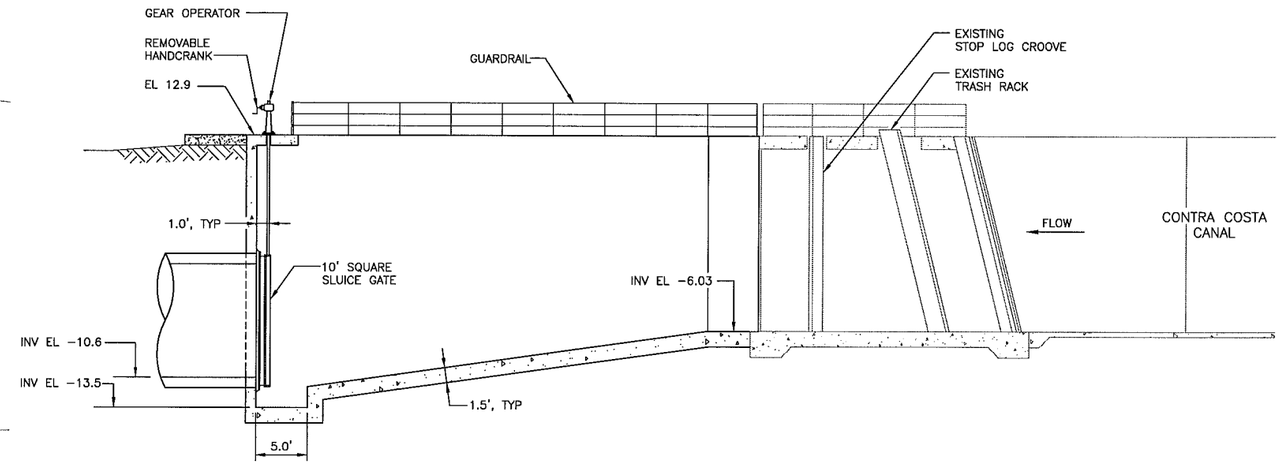

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DATE: X-X-XXX	FILE: XXXX
BROWN AND CALDWELL	CONTRA COSTA WATER DISTRICT CANAL REPLACEMENT PROJECT INTAKE STRUCTURE AT ROCK SLOUGH
	FIGURE 6

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Supporting Information:

- **Plans and Specifications** - Plans and Specifications have been submitted in hard copy and on CD, and have been uploaded to BMS along with this application (Att3_SWF_WorkPlan_2of3).

- **Documents supporting project need and technical feasibility** - The following documents supporting technical feasibility have been submitted on CD and uploaded to BMS along with this application (Att3_SWF_WorkPlan_3of3):

    - Seismic Reliability Improvements Project, 1997
    - Geotechnical Engineering Report Intake Channel Levees Contra Costa Canal, 2000
    - Geotechnical Engineering Investigation Contra Costa Water District Canal Replacement Project, 2007