Section B

Glenn Colusa Irrigation District Regional Drain Water Regulation Reservoir Feasibility Study

Research and Development; Feasibility Studies, Pilot, or Demonstration Projects; Training, Education or Public Information; Technical Assistance Outline

Due January 11, 2005, by 3 pm

Section B-15a, Project Information Form

Applying for:

1. (Section A) **Urban or Agricultural Water Use Efficiency Implementation Project**
   - ❑ Urban ☑ Agricultural
   - ❑ (a) implementation of Urban Best Management Practice, #_____
   - ❑ (b) implementation of Agricultural Efficient Water Management Practice, #_____
   - ❑ (c) implementation of other projects to meet California Bay-Delta Program objectives, Targeted Benefit # or Quantifiable Objective #, if applicable _____
   - ❑ (d) Specify other: _____
2. (Section B) **Urban or Agricultural Research and Development; Feasibility Studies, Pilot, or Demonstration Projects; Training, Education or Public Information; Technical Assistance**
   - ☑ (e) research and development, feasibility studies, pilot, or demonstration projects
   - ❑ (f) training, education or public information programs with statewide application
   - ❑ (g) technical assistance
   - ❑ (h) other
3. Principal applicant (Organization or affiliation): Glenn-Colusa Irrigation District
4. Project Title: Glenn-Colusa Irrigation District (GCID or District) Regulatory Reservoirs Feasibility Study to Address Quantifiable Objectives 13, 20, 27, 30, and 35
5. Person authorized to sign and submit proposal and contract

Name, title	O.L. "Van" Tenney, General Manager
Mailing address	P.O. Box 150, Willows, CA 95988
Telephone:	530/934-8881
Fax	530/934-3287
E-mail	vtenney@gcid.net

6. Contact person (if different):

Name, title	Ben Pennock, District Engineer
Mailing address	P.O. Box 150, Willows, CA 95988
Telephone:	530/934-8881
Fax	530/934-3287
E-mail	bpennock@gcid.net

7. Grant funds requested (dollar amount): *(from Table C-1, column VI)*	$257,000
8. Applicant funds pledged (dollar amount):	$51,400
9. Total project costs (dollar amount): (from Table C-1, column IV, row n)	$308,400
10. Percent of State share requested (%) (from Table C-1)	83%
11. Percent of local share as match (%) (from Table C-1)	17%
12. Is your project locally cost effective?	
Locally cost effective means that the benefits to an entity (in dollar terms) of implementing a program exceed the costs of that program within the boundaries of that entity.	❑ (a) yes
(If yes, provide information that the project in addition to Bay-Delta benefit meets one of the following conditions: broad transferable benefits, overcome implementation barriers, or accelerate implementation.)	☑ (b) no
13. Is your project required by regulation, law or contract?	
If no, your project is eligible.	❑ (a) yes
If yes, your project may be eligible only if there will be accelerated implementation to fulfill a future requirement and is not currently required.	☑ (b) no

Provide a description of the regulation, law or contract and an explanation of why the project is not currently required.

14. Duration of project (month/year to month/year):	Assembly District 2
15. State Assembly District where the project is to be conducted:	Senate District 4
16. State Senate District where the project is to be conducted:	Congressional District 3
17. Congressional district(s) where the project is to be conducted:	Easterly half of Glenn, Colusa, and Yolo Counties
18. County where the project is to be conducted:	Colusa
19. Location of project (longitude and latitude)	Long -122°11″38″ LAT 39°31′15″
20. How many service connections in your service area (urban)?	NA
21. How many acre-feet of water per year does your agency serve?	845,000

22. Type of applicant (select one):	❑ (a) City ❑ (b) County ❑ (c) City and County ❑ (d) Joint Powers Authority ❑ (e) Public Water District ❑ (f) Tribe ❑ (g) Non Profit Organization ❑ (h) University, College ☑ (i) State Agency ❑ (j) Federal Agency ❑ (k) Other ❑ (i) Investor-Owned Utility ❑ (ii) Incorporated Mutual Water Co. ❑ (iii) Specify _____
23. Is applicant a disadvantaged community? If 'yes' include annual median household income. (Provide supporting documentation.)	☑ (a) yes, $35,062 (1999) median household income[a] ❑ (b) no

[a]Compared to median household income of California $47,493.

Source: Website: http://quickfacts.census.gov/qfd/states/06/06011.html

U.S. Census Bureau: State and County QuickFacts. Data derived from Population Estimates, 2000 Census of Population and Housing, 1990 Census of Population and Housing, Small Area Income and Poverty Estimates, County Business Patterns, 1997 Economic Census, Minority- and Women-Owned Business, Building Permits, Consolidated Federal Funds Report, 1997 Census of Governments

Last Revised: Friday, 09-Jul-2004 09:00:29 EDT

Section B-15b, Signature Page

By signing below, the official declares the following:

The truthfulness of all representations in the proposal;

The individual signing the form has the legal authority to submit the proposal on behalf of the applicant;

There is no pending litigation that may impact the financial condition of the applicant or its ability to complete the proposed project;

The individual signing the form read and understood the conflict of interest and confidentiality section and waives any and all rights to privacy and confidentiality of the proposal on behalf of the applicant;

The applicant will comply with all terms and conditions identified in this PSP if selected for funding; and

The applicant has legal authority to enter into a contract with the State.

O. L. "Van" Tenney
General Manager
Glenn-Colusa Irrigation District

Dated: January 10, 2005

Section B-15c, Statement of Work
Section 1: Relevance and Importance

Project Objective: *To investigate increased water use efficiency through reduction of operational spills, by taking advantage of storm peaks, utilizing excess winter flows and spring rice field drainage water. This feasibility study will investigate the viability of adding a regulating reservoir to GCID's conveyance system to achieve that goal*

Background

The Glenn-Colusa Irrigation District

Service Area and Distribution System

Glenn-Colusa Irrigation District is located in the central portion of the Sacramento Valley on the west side of the Sacramento River, as shown in Attachment 1. The District's service area extends from northeastern Glenn County near Hamilton City to south of Williams in Colusa County. The west side of the District stretches toward the Coastal Range and Tehama-Colusa Canal Authority (TCCA). Its main facilities include a 3,000-cubic foot per second (cfs) pumping plant and fish screen structure, a 65-mile Main Canal, and approximately 900 miles of laterals and drains.

Glenn-Colusa Irrigation District (GCID or District) claims a water right, under pre-1914 postings, to divert water from the natural flow of the Sacramento River. The water right dates back to 1883, when Will S. Green posted notices for the appropriation and diversion of irrigation water on the west bank of the Sacramento River, at the upstream end of the Oxbow Channel near the current diversion at the Main Pump Station. The Sacramento River serves as the principal water source for the District. Its diversion, the largest surface water diversion on the river, lies at the head of the District, just north of Hamilton City. The District also has the ability to supplement its supply with groundwater from local production wells through a voluntary conjunctive use program. The extensive canal system conveys water year-round as part of its commitment to its stakeholders and neighboring wildlife refuges.

With 175,000 acres, GCID is the largest irrigation district not only in the Colusa Sub-basin, but also in the Sacramento Valley itself. The soils are considered some of the most prime soils for agriculture in the world. The low infiltration rates of the tight soils are conducive to furrow and border irrigation. To that end, rice is the District's predominant crop. Other food crops include tomatoes, vine crops, sunflowers, prunes, almonds, and walnuts. In typical years, more than 75 percent of its irrigated acreage is planted in rice.

GCID uses an arranged schedule to deliver irrigation water to District customers. The main canal is the primary conveyance of water for the District, running generally along the west side of the District and supplying various laterals that supply individual farms and refuges. GCID currently receives a portion of its water supply through the Tehama-Colusa Canal

Authority (TCCA) via two points of interconnections with the Tehama-Colusa Canal (TCC). The connections have a total capacity of approximately 1,200 cfs, and consist of an intertie near the Glenn and Colusa County boundary line and a crosstie west of Williams.

Since its formation, GCID has continuously improved its irrigation system. Major improvements have included replacing the original pump station in 1984, upgrading the main canal, and improving various canal structures (siphons, turnouts, etc.). Key among these projects was the enlargement and improvement of the fish screen facility at the Hamilton City Pump Station, and the construction of a river gradient restoration in the Sacramento River. State and Federal funds have assisted in the implementation of these capital projects totaling more than $100 million. The District has provided local cost share that has varied per project on the order of 12.5-25 percent.

Agricultural Land Use

Land use within GCID's service area is primarily rice, due to the presence of fine textured and poorly drained soils within the majority of the District. Other key crops include alfalfa, tomatoes, and cotton. Rice accounts for more than 75 percent of the District's irrigated acreage on an annual basis (DWR, Northern District). Water requirements are typically highest during the summer months (July and August) due to the requirements of rice and the area's hot, dry climate. Cultural practice water needs for rice are greatest early in the growing season associated with the flooding up of previously dry rice fields. Although surface water is the primary source of irrigation water, groundwater is used in drought years on an individual grower basis, as well as for Districtwide purposes in accordance with well owner agreements with the District.

Annual cropping patterns have remained fairly constant over the last few decades, other than in response to farm programs in the early 1980s. Associated water requirement needs and associated diversions have therefore been more a function of water-year type and climate than changes in cropping.

In response to increasingly stringent limitations on burning of rice stubble, many of the District's landowners flood a portion of their fields to clear their land of leftover rice straw by allowing the rice stubble to decompose. Approximately 20,000 acres have been flooded in the past, a trend that is expected to continue or increase, assuming other options (including the sale of stubble for ethanol production) are not determined to be more economically feasible. GCID estimates that approximately 30,000 acres were flooded in 1999, and that future totals could be as high as 50,000 acres. This practice provides additional winter habitat for waterfowl above what has been available within the Sacramento Valley since the development of agriculture.

Future irrigation season cropping patterns and associated water requirements are anticipated to remain similar to current conditions.

Municipal and Industrial Use

Although GCID overlays the agricultural communities of Willows, Maxwell, and Williams, the District currently does not serve these or other major M&I users. The District has been involved in water transfer programs with municipalities in the past where growers within GCID are given incentives to pump groundwater that can in turn be transferred to eligible

candidates. Future transfers will be dependent on water availability and overall economics. M&I water demand within the vicinity of the District is anticipated to increase only slightly, with additional annual water requirements in the year 2020 expected to increase by less than 10,000 ac-ft compared to 1995 estimated levels (DWR, Northern District). All water consumed for M&I purposes (in addition to current demands) is assumed to be groundwater. While lands that are incorporated within a municipality are currently uncoupled from the District, GCID could serve at least a portion of the current and/or future M&I water requirement given a mutual agreement.

Environmental Use

GCID conveys water to three National Wildlife Refuges (Sacramento, Delevan, and Colusa) encompassing approximately 22,500 acres. The District was selected as the preferred alternative to convey water to the refuges on a year-round basis, and has done significant work to upgrade its delivery system to better accommodate the refuges during the late fall and winter months. The construction of a large siphon at Stony Creek in 1998, and various other structures in the years that followed, eliminated the need for a seasonal dam and allows for winter deliveries.

The District serves approximately 700 acres of privately owned duck clubs. Approximately 8,350 acres of riparian vegetation are estimated to be incidentally supplied by irrigation, including vegetation directly adjacent to delivery laterals or influenced through seepage. Such vegetation includes elderberry shrubs, which provide habitat for the listed valley elderberry longhorn beetle, as well as habitat used by the giant garter snake.

During the winter, many of the District's landowners flood a portion of their fields to allow rice stubble to decompose. This practice provides valuable habitat for migratory waterfowl that use the area as part of the Pacific Flyway and reduces the need to burn rice straw, thus decreasing air quality impacts. Rice fields that are not flooded also provide habitat for waterfowl and upland birds as resting areas.

Project Definition—A Feasibility Study and System Analysis

Overview of Project Intent and Objectives

The goal of this project is to increase regional water use efficiency through reduction of operational spills, by taking advantage of storm peaks, utilizing excess winter flows and rice field tailwater recovery systems. This feasibility study will investigate the viability of adding a regulating reservoir to GCID's conveyance system where it terminates on the Colusa Basin Drain to achieve that goal. The feasibility study would address basic project components that would be essential to design, construction (e.g., environmental surveys, permitting), and implementation (e.g., public involvement) of a successful project.

Project Need

Regional Flexibility and Reliability

The current state of the GCID conveyance system can result in unintentional, yet often unavoidable, tailender problems such as spills. GCID Main Canal spills, rice field tailwater spills combined with natural Colusa Basin Drain flows, can range from 100 cfs to 2,000 cfs

weekly. Further, unintentional spills lead to peaking flows that act as undesirable attraction flows for fisheries. The peaking flows are unreliable and can result in fish becoming stranded within the Colusa Basin Drain (the outfall of which is on the Sacramento River by Knights Landing). The District has been improving its system in recent years to more efficiently utilize the water supply and prevent unnecessary outflows such as spills. Managing and controlling flow fluctuation could yield flow benefits of hundreds of acre-feet daily.

Drainwater Reuse

GCID's existing drainwater reuse practice relies on local diversion of available drainwater directly into adjacent supply laterals, similar to drainwater reuse practices in other Sacramento Valley districts. A key limitation of direct diversions is the limited ability to manage the timing of drainwater supply to match irrigation demands, or to manage the timing of GCID's drain outflows in order to smooth-out variations in supply for down-stream users. Flows in the drains vary on a daily and weekly basis, driven by on-farm operations such as draining and filling of rice fields and normal tail-end spills of main-tenance flows. Irrigation demands are also variable over the short term, based on the season, weather, and on-farm management practices. When drain supply exceeds local demands or the diversion capacity, the water continues downstream and eventually leaves the GCID and several adjacent water district service areas. When drain flows are low and irrigation demands high, there may be spare diversion capacity but the irrigation demands must be met with increased canal supply. Drainwater regulating reservoirs, operating in a manner similar to supply-side regulating reservoirs for irrigation systems, could be used to improve both local and regional management of drainwater flows.

Project Goals and Objectives

One of **CALFED's target goals, highlighted in Detail 13 of the Quantifiable Objectives, is to reduce critical- or dry-period diversions at the Glenn-Colusa Irrigation District (GCID) intake from the Sacramento River by 951.0 acre feet. GCID shares this goal,** and the purpose of this effort is to support attainment of this objective. **GCID's primary goals** for this feasibility study are to (1) **develop a project to significantly reduce the District's diversion from the Sacramento River during March, April, and May;** (2) **provide flexibility to increase the District's water supply for beneficial uses;** and (3) **provide instream flow to improve aquatic ecosystem conditions.** These primary goals would be achieved by reducing instream diversions from the Sacramento River during critical fish migration periods and making more efficient use of the District's drainage flows both within and outside the District. The project is a study to evaluate the technical and economic feasibility of developing a water storage/regulating facility on the Colusa Basin Drain (CBD) and associated conveyance systems.

This project will address Quantifiable Objectives 13, 20, 27, 30, and 35 by providing flow to **improve aquatic ecosystem conditions and by providing long-term diversion flexibility to increase the water supply for beneficial uses**. Project water-quality improvements, including reduced contaminants and salinity, would directly benefit downstream water users, anadromous fish, and other aquatic species. Equalizing CBD pulse flows, which act as attraction flows to anadromous fish, would reduce entrainment of potential adult spawners

into CBD. The reservoirs would provide additional supply of stored water for rice straw decomposition in the fall, reducing river demands during October, November, and December, and enhancing wetland habitat for migratory waterfowl and other wetland and aquatic species.

The proposed project consists of a 30,000 acre-foot regulating reservoir and conveyance facilities located near the Davis Weir on CBD. This reservoir will be used to store drainwater, reduce peak drain outflows, improve water quality by blending, and allow more efficient reuse of drain flows. The reservoir may also be used in conjunction with the future Sites Reservoir Project, by which it could be used as a regulating reservoir for release of water to the downstream Sacramento River.

Project Methods: The study will be performed under the following tasks:

- Task 1 – Contract Management and Administration
- Task 2 – Collect Existing Data, Reports, Mapping, and Other Information
- Task 3 – Coordinate with Other Studies and Groundwater Models
- Task 4 – Develop Project Alternatives
- Task 5 – Evaluate Alternatives
- Task 6 – Prepare Implementation Schedule
- Task 7 – Develop Cost Estimates
- Task 8 – Legal/Regulatory/Permitting Requirements
- Task 9 – Feasibility Report

The District must take an action-specific approach to determine how much water can be recharged between June and September and extracted at the start of the irrigation season. They must also determine the amount of drainwater that can be recaptured. The proposed study would enable the District to more accurately quantify the flow that can be provided to the Sacramento River/Delta system to improve aquatic ecosystem conditions. The success of this project would be enhanced through cooperative efforts between the District and adjacent districts and landowners.

Project Objectives: The project objective seeks to optimize and integrate all water supplies and reduce annual Sacramento River diversions and peak diversions during March, April, May, October, November, and December through conjunctive use of drainwater. This would result in a more secure, reliable, and flexible water supply for the GCID and neighboring districts. The project would reduce diversion from the Sacramento River (CALFED Quantifiable Objectives 13, 20, and 30) and provide long-term diversion flexibility to increase the water supply for beneficial uses (CALFED Quantifiable Objectives 25 and 35).

The primary objectives include improving system efficiency, resulting in a larger and more secure water supply, which would improve water quality to benefit aquatic species and habitats and create and restore wetlands habitat for migratory waterfowl and other wildlife. Project water quality improvements would directly benefit anadromous fish and other aquatic species. Equalizing CBD pulse flows, which act as attraction flows to anadromous fish, would reduce entrainment of potential adult spawners into CBD. Releases of stored water and use of groundwater during fall, winter, and early spring would enable the District to reduce flows through the GCID main pump station fish screens when migrating salmon are present in fall and winter, thereby reducing juvenile fish exposure to the screens.

The reservoirs would provide additional water for rice straw decomposition and enhanced wetland habitat for migratory waterfowl and other wetland and aquatic species. This project would address Quantifiable Objectives 13, 20, 27, 30, and 35 by providing flow to improve aquatic ecosystem conditions and long-term diversion flexibility to increase the water supply for beneficial uses.

Consistency with CALFED ROD

A key CALFED issue is to optimize and integrate all water supplies to reduce annual Sacramento River diversions and peak diversions during March, April, May, October, November, and December through conjunctive use of groundwater, surface supply, and drainwater. GCID wants to optimize its available water supply and improve water quality to promote CALFED goals of fish, wildlife, and habitat enhancement and restoration. The focus of this study will be the enhancement of system flexibility by regulating drainwater flows and potentially capturing late season flood flows to meet CALFED and regional water management objectives such as reducing CBD pulse flows that result in fish attraction and entrainment. Further, more efficient use of regional water supply could potentially result in decreased Sacramento River diversions resulting in increased in-stream flows. The regulating reservoir would not be intended as an off-stream storage facility and as such would not be large enough to contain extensive winter flood flows, however, there may be benefit to capturing late season (spring) flood flows. The conjunctive use of groundwater and surface supplies is being evaluated through other regional investigative venues such as through the Integrated Storage Investigation Stony Creek Partners Program and the Sacramento Valley Water Management Program.

The program considered in the proposed feasibility study would lend itself to the following CALFED objectives:

- Reduce existing irrecoverable losses – by reducing losses currently unavailable for reuse (because they flow to salt sink, inaccessible or degraded aquifer, or the atmosphere), CALFED will increase the overall volume of available water.
- Achieve multiple benefits - by reducing losses that currently return to the water system (either as groundwater recharge, river accretion, or direct reuse) CALFED can achieve multiple benefits, such as making water available for irrigation or in-stream flow during dry periods, improving water quality, decreasing diversion impacts, and improving flow between the point of diversion and the point of reentry.
- Preserve local flexibility - …maintaining the flexibility of implementing water use management and efficiency improvements at the local level while exploring regional program to maximize benefits.
- Use incentive-based over regulatory action. Principal incentives include planning, technical, and financing assistance to local water users and suppliers.
- Build on existing water use efficiency programs, CALFED will enhance the positive momentum established by the existing programs.

- Provide assurance of high water use efficiency - Water Use Efficiency assurances are structured to ensure that urban and agricultural water users and suppliers implement appropriate efficiency measures. These assurances include limiting access to CALFED benefits and conditions on new storage facilities. Additional consequences of inadequate water use efficiency are being considered through the urban certification process.
- Maximize use of existing District drainage facilities to return water to the District distribution system.

Quantifiable Objectives:

13, 20, and 30 ~

Description of Quantified Targeted Benefit: More closely emulate seasonal streamflow patterns in dry and normal year- types by allowing late-winter or early-spring flow events of approximately 8,000 to10,000 cfs in dry years and 15,000 to 20,000 cfs in below normal water-years to occur below Keswick Dam; Maintain base flows of 6,000 to 8,000 cfs during fall.

Quantifiable Objective: 30 - 60 TAF per year

Possible Actions (provided as examples; proposers are encouraged to consider local actions that are not listed): Improve farm irrigation management (such as irrigation scheduling) and more uniform irrigation methods (such as shorter furrows, sprinkler, or drip). Reduction in operational spill through improved management, canal automation or regulatory storage. Reduction in canal seepage through canal lining or piping.

27 and 35 ~

Description of Quantified Targeted Benefit: Cooperatively manage agricultural lands and restore seasonal, semipermanent, and permanent wetlands consistent with the CV Habitat Jt Venture and N. Am. Waterfowl Mgmt. Plan.

Quantifiable Objective: 27 ~ 7.9 TAF per year
35 ~ 4.5 TAF per year

Possible Actions (provided as examples; proposers are encouraged to consider local actions that are not listed): Improve farm irrigation management (such as irrigation scheduling) and more uniform irrigation methods (such as shorter furrows, sprinkler, or drip). Reduction in operational spill through improved management, canal automation or regulatory storage. Reduction in canal seepage through canal lining or piping.

Consistency with Regional Water Management

In the 1990s, GCID's ability to divert their full entitlement was reduced because of the endangered species limitations associated with the District's previous fish screen operation. In addition, several years were classified as "critical years," and contract supplies were reduced to 75 percent of entitlements. The District managed several programs to supplement these reduced supplies, including the conjunctive use program mentioned previously. Other programs included a water conservation program, which at one time required water use patrols around the District, and a water reuse program.

GCID has used its water management programs to significantly reduce its surface water diversions and irrigation demands. Within the last decade, GCID diversions have been reduced by an estimated 25 percent, in large part because of conservation practices and precision farming techniques. Further, the District is continuously striving to increase the efficiency of their system through automation and water reuse.

The District manages a number of programs aimed at improving water use efficiency. These include a water reuse program, water conservation program, groundwater conjunctive use program, and an in-basin water transfer program. An aggressive drainwater recapture program, which includes both groundwater seepage and tailwater runoff from cultivated fields from within GCID's service area, is a part of the District's overall water management program. GCID recaptures this water with both gravity and pump systems. Recaptured water is delivered to either laterals or the Main Canal for reuse. Currently, GCID recycles approximately 155,000 acre-feet (ac-ft) annually.

Much of GCID's drainwater is captured for use by downstream districts such as Provident Irrigation District (PID), Princeton-Codora-Glenn Irrigation District (PCGID), and Maxwell Irrigation District (MID). Glenn-Colusa Irrigation District is one of the irrigation districts that signed the Five Party Agreement of June 2, 1956. This agreement represents a cooperative effort by GCID, PID, PCGID, MID, and two entities that have since dissolved to share operation and maintenance of the drains within their respective service areas and to share the right to recirculate the water in those drains. In addition, Colusa Basin Drain Mutual Water Company members (57,000 acres, gross) rely on tailwater from GCID and other upstream water users.

GCID adopted a Water Transfer Policy in 1995. This policy identifies agricultural water users within the Sacramento Valley as the highest priority, and environmental purposes as the second highest priority for future water transfers. An In-basin Water Transfer Program was introduced in 1997, which provides for up to 20,000 ac-ft to be transferred to neighboring lands in full water supply years.

DWR Storage Investigations

DWR is currently studying the feasibility of constructing the Sites Reservoir west of the Town of Maxwell. While it is not envisioned that the proposed regulating reservoir providing benefit to the diversion of water from the Sacramento River to Sites Reservoir due to its downstream location, there is a benefit to the reintroduction of water from Sites Reservoir, through the District's Main Canal, to the CBD Drain and then to the Sacramento River. For example, the water from Sites Reservoir could be blended with drain flow from the District to improve water quality released to the downstream system. In addition drain water from the regulating reservoir could be pumped back upstream, check by check, in the Main Canal and diverted to Sites Reservoir.

Sacramento Valley Water Management Program

The Sacramento Valley Water Management Program (SVWMP or Program) is a regional and statewide cooperative effort to manage water resources within California. This unprecedented agreement was developed by Sacramento Valley water users, downstream water users (e.g., Metropolitan Water District), the California Department of Water Resources (DWR), and U.S. Bureau of Reclamation (USBR) as an alternative to a potentially

contentious process within Phase 8 of the State Water Resources Control Board (SWRCB) Bay-Delta Water Rights Hearings. The intent of the Agreement is to establish a framework to meet water supply, water quality, and environmental needs through a cooperative project development process. (The Sacramento Valley Water Management Short-term Agreement [Short-term Agreement] signatory pages are provided as Attachment 2. The full agreement is available upon request.) A letter of support from the Northern California Water Association for the GCID program as an integral part of the overall integrated Sacramento Valley Water Management Program is included in Attachment 3.

Sacramento River Basinwide Water Management Plan

The District has collaborated with other water purveyors within the Sacramento Valley in the formulation of the Sacramento River Basinwide Water Management Plan (finalized in 2004). Within the document, six technical memoranda describe the planned appropriate management of Sacramento Valley water resources. The stakeholders, consisting of 10 water suppliers, recognize the importance of a cooperative groundwater plan to ensure long-term availability of the resource as a supplement to the continually oversubscribed surface water supply. Additionally, USBR and DWR were sponsors and contributors to the preparation of the plan. As one component of the SVWMP, the GCID Program will provide benefits to both local and downstream users.

Implementation of Existing Water Management Activities

GCID has long been involved in state and federal programs that promote CALFED objecttives and has support from a variety of local agencies, landowners, and other stakeholder groups. The fish screen project(s) and refuge water supply projects, developed in cooperation with state and federal agencies with state and federal funding, directly benefit anadromous fish and provide wetlands enhancement. Other CALFED-compatible programs that GCID participates in include the Stony Creek Task Force, BDAC, SB 1086, Sacramento River Watershed Planning, Inland Surface Water Plan, AB 3616, AB 3030, the potential Glenn County Water Management Model and Conservation Plan, and Tehama-Colusa Canal Authority (TCCA) supply proposals. All of these programs have the ability to provide information that could contribute to the proposed project. This information could contribute to developing the Regional Water Management Plan (an outgrowth of the BWMP) and the Conjunctive Water Management Plan. Potential project supporters and collaborators include California Department of Fish and Game (CDFG), U.S. Fish and Wildlife Service (USFWS), Reclamation, Regional Water Quality Control Board (RWQCB), DWR, TCCA, Orland Unit Water Users' Association, Glenn and Colusa counties, Reclamation District 2047, Princeton-Codora-Glenn Irrigation District, Provident Irrigation District, Maxwell Irrigation District, and other basin water users.

Section B-15d, Statement of Work
Section 2: Technical/Scientific Merit and Feasibility

Methods:

The objectives of this project are to reduce diversion from the Sacramento River (CALFED Quantifiable Objectives 13, 20, and 30) and provide long-term diversion flexibility to increase the water supply for beneficial uses (CALFED Quantifiable Objectives 27 and 35). This project would identify proposed actions and provide a rough estimate of the corresponding contribution towards a quantifiable objective. The project's components, costs, right-of-way requirements, partners (if any), and benefits cannot currently be specifically identified. The objectives of this study are to develop these specific details, using the first specific approach in Phase 1, Pre-design, and the quantifiable approach in subsequent phases.

The action-specific approach to achieving these goals would be to conceptually develop the reservoir and associated conveyance facilities. The proposed feasibility study would be a necessary step in developing these facilities. Information that the feasibility study would provide includes the total surface-water supply, including the District's water rights and potentially recaptured peak flows from CBD. Drain flow volume and hydrologic data would be compiled and evaluated. Existing water quality data would be used to evaluate the effects of implementing a reservoir. The storage/regulation facility, associated components, and operating characteristics are described below.

Procedures:

Any seasonal excesses of diverted water and excess peak drainage flows from CBD could be pumped to the proposed reservoir and stored for future releases during critical times of the year. This study would determine how much additional water supply could be developed, how much surface supply could be freed up in the Sacramento River, the optimal timing to diverting specific quantities of river water, water demands, water quality of discharged drainwater, blending of water sources, and other benefits. Alternatives would be developed and screened; and flexibility and reliability, capital costs, operational scenarios and costs, and institutional issues would be addressed.

Facilities/Equipment:

The regulating reservoir facility, with an estimated capacity of 30,000 acre-feet would include a pump station on CBD, improvements to the existing lateral canal from the District's main canal, a CBD bypass, an outlet control system, and water quality and flow volume monitoring instrumentation. Water would be conveyed to the reservoir by gravity flow and pumping from CBD, and by gravity flow from the District's main canal. Water from these sources could be blended. The reservoir would help regulate peak flows from CBD and equalize the year-round flow to provide more assurance to basin users of adequate

water supply. Reducing peak flows would reduce attraction flows and anadromous fish entrainment into CBD. Entrainment occurs at the Knight's Landing CBD outfall upstream of Sacramento. Other benefits of the lower regulating reservoir include improved water quality, created waterfowl and wetlands habitat in the new reservoir, improved water conservation, and enhanced system efficiency. A future benefit may be a supply source for a future Sites Reservoir.

Project Scope:

The scope of this project includes the hydrological study of implementing a reservoir at the lower end of the GCID's system and the head of the CBD, evaluating existing water quality data relative to the reservoir, and determining how this facility will operate to achieve the project objectives. The proposed tasks are listed below.

Work Plan

Task 1—Contract Management and Administration: This task includes managing project costs and schedule; administering grant funds; developing work plans; coordinating with other initiatives and agencies; attending meetings with agencies, landowners, and other districts; coordinating and overseeing the activities of the project team; communicating with agency staff; and providing financial and technical reports to CALFED. The applicant would prepare monthly reports summarizing the degree of completion, activities during the reporting period, costs incurred, and major upcoming milestones. Quarterly fiscal and programmatic reports will be submitted electronically in PDF form to DWR on January 15, April 15, July 15, and October 15 throughout the project.

Task 2—Collect Existing Data, Reports, Mapping, and Other Information: Review existing reports, data, mapping, water rights, and other related information, generated by DWR, Reclamation, and other federal, state, and local agencies regarding CBD. GCID would compile water quality and flow data on its Sacramento River diversion and drain system. Other needed information includes water quality data in CBD and other areas of potential discharge.

Task 3—Coordinate with Other Studies: Under CALFED and other state and federal programs, future studies may include the GCID service area, such as CBD water quality and quantity, and fish barriers on the CBD. In addition, DWR, Reclamation, and other agencies may review the need for offstream storage that may require the use of District lands or facilities. The District would coordinate with other agencies and programs to implement the project.

Task 4—Develop Project Alternatives: GCID would develop alternatives that vary in the operation and usage of a 30,000 AF reservoir located at the Davis Weir location on the CBD to maximize the regional benefits. This would involve determining the types of facility components needed, such as drainwater return and water supply pump stations, pipelines or canals, flow regulation reservoirs, flow and water quality monitoring facilities, spreading basins, inlet/outlet structures, and other canal structures.

Technical Memoranda Nos. 1, 2, and 3 would be prepared under this task and would include all data compiled in Tasks 2 through 4.

Task 5—Evaluate Alternatives: Each alternative would be evaluated against the following criteria and other criteria to be developed:

- Overall ecological benefits
- How the system would be operated
- Flexibility in providing water within and outside the District
- Compatibility with the rice decomposition program and winter waterfowl habitat programs
- Water quality improvement, including salinity
- Reduction of peak flows and resulting approach velocities at the District's MPS fish screens during the quantified flow target periods of March, April, May, October, November, and December when fall-run, spring-run, and winter-run chinook salmon juveniles are present
- Reduction of pulse flows in CBD
- Reduction in drainwater leaving the District
- Creation of "new" water and its disposition
- Third-party impacts

Each of the alternatives would be evaluated for its ability to improve conditions for fish and wildlife, compatibility with the District's existing systems, and its ability to meet other goals of the project. A "No Project Alternative" would also be included in the evaluation. "Order of Magnitude" cost estimates would be prepared for the apparently viable alternatives. The best alternative or "No Project Alternative" would be selected for each of the three proposed reservoir sites, spreading basins, and pumping facilities.

Task 6—Prepare Implementation Schedule: An implementation schedule would be prepared for the selected alternative that would include the development of additional studies required to verify project size and types of components, preliminary design, final design, environmental documentation, permitting, and construction.

Task 7—Develop Cost Estimates: Capital cost and operational and maintenance costs would be estimated. A benefit-cost estimate would be prepared, and funding alternatives would be evaluated.

Task 8—Legal/Regulatory/Permitting Requirements: The Proposal Solicitation Package states that permitting, water rights, and environmental documentation requirements must be met prior to funding disbursement. This proposal is for the first phase, Feasibility Study. In Task 8, GCID would identify potential project permit requirements and the appropriate level of National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) environmental documentation that would be required for the next recommended project phase. The NEPA/CEQA documentation may be tiered off the CALFED Programmatic Environmental Impact Statement/Environmental Impact Report (EIS/EIR) and the SVWMP Programmatic EIS/EIR, and incorporate appropriate mitigation measures

from the CALFED Record of Decision. Any potential environmental documentation and permitting would be completed in future project phases.

Task 9—Prepare Feasibility Report: GCID would prepare a draft report, distribute it to DWR to address written and verbal comments, and prepare a final report for public and DWR distribution. This report would be available for reference for other studies by CALFED and other funding programs.

Budget and Schedule

Table 1 provides a cost estimate for the feasibility study as presented by task. The study is estimated to cost $308,400 of which the applicant is expecting to cost share approximately 17%. The grant request is for $257,000.

Work Schedule: The proposed project schedule and quarterly expenditure projection are shown in Attachment 4. The grant and contract is expected, per the application instructions, to be in place by December 01, 2005. Therefore, the project is scheduled to begin the following Monday, December 05, 2005. The Feasibility Study is anticipated to be completed within 13 months of the start date.

TABLE 1
Allocation of Costs by Task

Task No.	Task Description	GCID Labor ($)	GCID Expenses ($)	Travel ($)	Consultants ($)	Direct Costs ($)	Total Costs ($)
1	Management	3,200		800	21,000	5,000	30,000
2	Data Collection	7,800	15,000	800	5,600		29,200
3	Coordinate with Other Studies	4,000		300	7,600	2,500	14,400
4	Develop Alternatives	2,100		400	55,000	5,500	63,000
5	Evaluate Alternatives	1,500		200	83,000	4,000	88,700
6	Implementation Schedule	500			8,000	2,000	10,500
7	Cost Estimates	1,000			7,500		8,500
8	ROW/Permitting/Legal	15,000		400	1,000	5,400	21,800
9	Final Report	1,300			35,000	6,000	42,300
	Totals	36,400	15,000	2,900	223,700	30,400	308,400
	Total Cost Share	36,400	15,000				51,400
	Total State Grant Request			2,900	223,700	30,400	***257,000***

Environmental Documentation

No infrastructure or land disturbance is directly associated with the proposed feasibility study. Biological field surveys, resource database review, and other cursory reconnaissance efforts will be used to determine CEQA and NEPA requirements, as well as key permitting requirements for any project recommended by the feasibility study. Appropriate permissions and right of entries will be acquired for fieldwork and biological surveys. This task will also identify potential areas of special environmental or cultural concern as applicable to site and alignment selection. The principal objective will be to set the course for environmental documentation and permitting in subsequent project phases.

Section B-15e, Statement of Work
Section 3: Monitoring and Assessment

Progress toward the QO would be measured against a detailed workplan that would be developed for the project. Each task would be separated into various subtasks, each with a cost and deliverables. An action item list would be initially prepared and monitored throughout the project and would be addressed at each progress meeting, to be held a minimum of each month.

An early task in the proposed project would be to compile existing water quality data on CBD. The development of a District wide watershed management program that includes flow and water quality monitoring capabilities would contribute to the overall management of the Sacramento-San Joaquin basin for beneficial uses, including habitat restoration.

Task 8 of the proposed feasibility study for the reservoir is to identify all legal and regulatory issues that would affect project implementation. The cost of compliance and mitigation is not included in this proposal. Development of the reservoir and associated components would require compliance with CEQA and possibly NEPA, particularly if federal funding is involved. CEQA and NEPA compliance, in turn, require consideration of the state and federal Endangered Species Acts and laws and regulations regulating treatment of cultural resources. If wetlands are potentially affected by the reservoir project, Section 404 of the Clean Water Act would apply, which would require wetland delineation and an impact mitigation plan to be overseen by the Corps. Under Section 404, Section 106 of the National Historic Preservation Act also would apply, which would ensure prescribed treatment of affected cultural resources.

Section B-15f, Qualifications

Applicant

O. L. "Van" Tenney, GCID General Manager
B.S., Engineering Mechanics

Van Tenney's 31 years of experience includes 20 years managing utilities and irrigation districts. He has been responsible for customer service, personnel management, engineering operations, system maintenance, and construction of capital improvements. For the Maricopa-Stanfield Irrigation District he administered a $100 million, 5-year capital improvement program to construct a water distribution system. For GCID, he is administering design of the permanent fish screening and river restoration facilities for the Main Pump Station in cooperation with state and federal agencies.

Van has participated in a variety of statewide groundwater and water transfer forums, including CALFED's Water Transfer Advisory Group, CALFED's Conjunctive Use Advisory Team and CALFED's Ag Use Efficiency steering Committee. He is also the current Chairman of the Northern California Off-stream Storage Technical Advisory Committee, and a member of the Glenn County Water Advisory Committee.

Van implemented a major in-lieu recharge program while working for Maricopa-Stanfield Irrigation District in Arizona. This project involved the management of nearly 400 deep-water wells and the development of an inter-agency drought protection program for the cities of Phoenix and Tucson. He has also been involved in numerous water management issues with respect to the protection and enhancement of threatened and endangered species while at GCID.

Previous WUE Grant Projects:

Drainwater Operations Study: (June 2003) The study evaluated potential alternatives for GCID to increase its reuse of agricultural drainwater flows, in support of the CALFED Quantifiable Objectives (QO) for the Sacramento River watershed. These QOs include increasing agricultural water use efficiency, improving regional flexibility in the timing and quantity of diversions from the Sacramento River, and reducing agricultural return flows.

The study evaluated increased drainwater reuse by expansion of current reuse practices and identified the potential use of drainwater regulating reservoirs. (The feasibility study proposed within this grant application would evaluate a regulating reservoir configuration identified within the drainwater study.)

External Cooperators

Mark Van Camp, P.E, with MBK Engineers, would potentially serve as senior reviewer to GCID's selected project team, providing input to the team and critical review of issues related to salinity control and drainwater recapture and release. He will evaluate effects of the lower two drainage regulating reservoirs on operation of the CBD. Mr. Van Camp has extensive expertise on the operations of the CBD and on CALFED quantifiable objectives.

Section B-15g, Outreach, Community Involvement, and Acceptance

GCID has long been involved in state and federal programs that promote CALFED objecttives and has support from a variety of local agencies, landowners, and other stakeholder groups. The fish screen project(s) and refuge water supply projects, developed in cooperation with state and federal agencies with state and federal funding, directly benefit anadromous fish and provide wetlands enhancement. Other CALFED-compatible programs that GCID participates in include the Stony Creek Task Force, BDAC, SB 1086, Sacramento River Watershed Planning, Inland Surface Water Plan, AB 3616, AB 3030, the potential Glenn County Water Management Model and Conservation Plan, and Tehama-Colusa Canal Authority (TCCA) supply proposals. All of these programs have the ability to provide information that could contribute to the proposed project. This information could contribute to developing the Regional Water Management Plan (an outgrowth of the BWMP) and the Conjunctive Water Management Program. Potential project supporters and collaborators include California Department of Fish and Game (CDFG), U.S. Fish and Wildlife Service (USFWS), Reclamation, Regional Water Quality Control Board (RWQCB), DWR, TCCA, Orland Unit Water Users' Association, Glenn and Colusa counties, Reclamation District 2047, Princeton-Codora-Glenn Irrigation District, Provident Irrigation District, Maxwell Irrigation District, and other basin water users.

Project Outreach and Benefits

The proposed project is the first step and outgrowth of the BWMP and is tightly linked to this essential initiative. The BWMP has a strong public information and involvement component. During the development of the BWMP, numerous meetings have been and continue to be held, including monthly management meetings of participating water contractors (i.e., Settlement Contractors) with DWR and Reclamation staff, and presentations made. Informational meetings have been and are continuing to be held with Settlement Contractor Boards of Directors, as well as other water users and environmental interest groups to solicit stakeholder input and disseminate information about the BWMP.

Because most of the project encompasses disadvantaged rural communities, outreach efforts would include the economically disadvantaged communities, including extending the benefits of the feasibility study to all tribal entities. By making more efficient use of water, the project would benefit the Bay-Delta ecosystem and all Californians.

The proposed project is among the recommendations of the BWMP for more efficiently managing the water supply, improving water quality and water supply reliability, and proving additional water for beneficial uses, including ecosystem improvements. The BWMP participants include all of the Sacramento Valley Settlement Contractors, DWR, and Reclamation. Information developed during this project would be disseminated to these agencies and to the public via the BWMP public involvement process. The ongoing planning effort associated with the development of the BWMP provides a formal framework for

disseminating inflow/outflow information. The participants are keenly aware of the need to share this information to ensure successful water supply management at the sub-basin level.

The project files would be stored at GCID's office. A website would be established for the project, affording access of information to all parties. The website would maintain an updated project schedule, dates of upcoming meetings, minutes of meetings, and other project information.

Partnerships

GCID is in partnership with all participants in the BWMP and would disseminate project information through these partnerships. ***The project is a recommendation of the BWMP and would potentially benefit all parties to the BWMP, thereby strengthening and promoting these partneships.*** Formal partnerships have not been developed among the numerous potential benefactors of the project. Development of these partnerships would be part of the implementation of the project. For example, for the development of a groundwater and Stony Creek surface supply, GCID will need to work closely with TCCA, the Orland Unit Water User's Association, Tehama and Glenn counties, Capay Rancho Water District, and the private landowners using groundwater supplies.

As noted elsewhere, previous GCID projects, particularly those that relate to habitat restoration such as the fish screening project and the refuge water supply project, have been partially funded by a variety of state and federal agencies. GCID has contributed millions of dollars of its own funds for these projects. GCID projects have had broad support among local, state, and federal agencies, local landowners and District customers, and other stakeholders, including conservation groups. Along with CDFG, USFWS, Reclamation, and DWR, it is anticipated that the project would receive local support, including Glenn and Colusa counties, Reclamation District 2047, Princeton-Codora-Glenn Irrigation District, Provident Irrigation District, and Maxwell Irrigation District. GCID fosters such support through effective public participation and outreach programs. Sites for the reservoirs and associated conveyance systems would be purchased or leased, as needed, from willing parties. The District's legal counsel, DeCuir and Somach, would address any project-related land ownership and water rights issues. Again, development of these partnerships would be part of the implementation of the project.

Training, Employment, and Capacity Building

Although the project per se does not directly involve training, employment, or capacity building, it does support the ultimate goal of more efficient management of agricultural water supplies. This, in turn, would potentially make more water available for beneficial uses. A more reliable, better managed water supply would help sustain the California economy by accommodating growth in industry and agriculture, including growth in employment opportunities in all economic sectors.

District employees would receive training and have a better understanding of Integrated Water Management.

Disseminating Information

The proposed project is among the recommendations of the BWMP for more efficiently managing the water supply, improving water quality and water supply reliability, and proving additional water for beneficial uses, including ecosystem improvements. The BWMP participants include all of the Sacramento Valley Settlement Contractors, DWR, and Reclamation. Information developed during this project would be disseminated to these agencies and to the public via the BWMP public involvement process. The ongoing planning effort associated with the development of the BWMP provides a formal framework for disseminating inflow/outflow information. The participants are keenly aware of the need to share this information to ensure successful water supply management at the sub-basin level.

The project files would be stored at GCID's office. GCID's website would be affording access of information to interested parties. The website would maintain an updated project schedule, dates of upcoming meetings, minutes of meetings, and other project information.

DWR would receive quarterly reports and a copy of the Final Feasibility Study.

Implementation Challenges

At a reconnaissance level of study, implementation challenges are likely to be minimal. The most significant challenges to the successful and thorough completion of the study could include laying the groundwork for a successful project past the reconnaissance level (e.g., laying the groundwork for public outreach and initiating contact with landowners that might be directly affected by the project). The project that could evolve from the feasibility study would occur in several incremental stages, each of which would have significant challenges. Many of these challenges would be inherent to any project of this size and complexity. Significant environmental issues are related to such a large-scale project, with the environmental issues being paramount. The project would need to be developed in a manner that supports the objectives of local and regional management plans.

Coordination among Public and Private Entities

Strong coordination would be required among local, state, and federal entities such as GCID, USFWS, USBR, and DWR. The governmental agencies would have strong interests associated with the project and indirectly as it may affect other interests in the area. It is highly probable that because of the complexity and far-reaching implications of the project, competing interest may arise. Reliable communication and integrated coordination would be required to create a successful project.

Section B-15h, Innovation

GCID's proposed feasibility study breaks outside of conventional water conveyance practices that are traditionally District specific. The project to be evaluated in the study recognizes water resource management on a sub-basin level.

This is the first project in the Sacramento Valley that uses the concept of recapturing drain water during peak runoff from rice fields by use of a large storage/regulating reservoir. The District currently has a drain recapture program in place, but, it is in essence a "run of the drain recapture program." The District can capture existing flows up to the size of the recapture pump facilities. It can not recapture large flows that currently exist in late spring and late summer. The proposed project allows the District to use return flow in lieu of their surface flow, provides the water users along the CBD a more stable water supply, and allows for more uniform discharge of drain flow into the Sacramento River to aid in the downstream passage of juvenile fish in late summer. The study will also determine if the proposed reservoir will improve the discharge of drain water into the Sacramento River.

The Reservoir's location allows for the tailwater runoff to be recaptured and reregulated from 16 other water districts that are draining into the CBD above this location. Therefore, this is a prime component of a regional tailwater and runoff management plan.

Section B-15i, Costs and Benefits

Benefits

The expected beneficiaries of this program include GCID, downstream users, the environment, and the Sacramento-San Joaquin Delta. Although no direct benefits will result from the feasibility study, benefits to in- and out-of-basin users could be derived from a project that results from the study. The following benefits are discussed in this section:

- Water Supply
- Water Management
- Delta Water Quality
- Environment
- Groundwater Recharge
- GCID Operations

Water Supply

The most significant benefit and predominant goal of the project is to capture and store water supply that may not otherwise be exploited, e.g., pulse flows from winter storms. Water supply benefits are expected to include:

- **Increased In-stream Flows—**The potential for decreased surface water diversions could be mutually beneficial to in-basin and out-of-basin users. During dry years, the additional river flows afforded by the decreased diversions would provide much-needed habitat for aquatic and riparian species, increased available supply to downstream users, and increased inflows to the Delta. The reservoirs would allow an increase in system flexibility, affording the District flexibility with diversions that could thereby increase in-stream flows when most needed.

- **Increased Reliability of Supply—**This project could provide stakeholders and refuges with increased reliability of supply during critical dry years when the possibility exists that allowable surface water supplies could be decreased. Although the reservoir is likely to be low during prolonged periods of drought (more than 1 or 2 years), the initial availability of supply would provide a maximum of 30,000 ac-ft otherwise unavailable to downstream users. Additionally, drainwater releases to downstream users (such as those on the CBD) could be better regulated to meet supply needs.

- **Aquifer Recharge—**The reservoirs would be unlined natural earth basins, which would naturally recharge groundwater through infiltration.

Water Management

- This project may potentially provide water management benefits primarily by increasing conveyance efficiency, providing flexibility in the timing of surface water diversions primarily on the Sacramento River, increasing the ability to store and target

releases of surface water supplies, and providing increased flexibility and reliability through management of both surface- and groundwater supplies.

- The project would accumulate pulse flows, which are a result of normal operations, farm releases, and weather, in the system that may not otherwise be efficiently utilized. These flows have been estimated at a maximum of 2,000 cfs weekly. The reservoirs would be able to handle the excess flows to enhance the water management capability of the District and downstream users. Downstream water users would be able to improve their water management decisions by using increased regulation and storage of pulse flows.

Water Quality

Water quality benefits of the project generally stem from increased in-stream flows and water retention. Improvements to both temperature and constituent properties of the river and outflows from the reservoirs would be the most probable results of the increased in-stream flows and water storage. These benefits would need to be evaluated and modeled on a regional basis to determine impacts on water quality in the Sacramento River and the Delta. Depending upon implementation and configuration of the project, there may be temperature improvements to the GCID intra-district supply. The regulating reservoir could essentially increase the temperature of the supply, making the water more desirable for downstream rice farmers.

Environment

The environmental benefits associated with this project would be quantified throughout the various stages of the project, from feasibility study through final design. Some environmental benefits that have been identified at this level of investigation include:

- **Sacramento-San Joaquin Delta—**The decrease in surface water diversions and addition of artificial groundwater basin recharge has the potential for increasing available seasonal in-stream flows to the Delta. The downstream users' potentially decreased diversions, a maximum of 30,000 ac-ft, is a quantifiable number that directly reflects the potential increased available supply in the Sacramento River.

- **Aquatic/Riparian Habitat—**The reservoirs would provide habitat for local wildlife such as waterfowl by essentially creating a human-made wetland. It has been suggested that the Off-canal Storage Reservoir could incorporate islands specifically designed to attract waterfowl and provide safe breeding grounds for said birds. Furthermore, improved in-stream flows would generate expected fisheries benefits, both in terms of water quality and sheer volume of water. Flow management could yield environmental benefits by achieving the Quantifiable Objective (QO) of reducing salmonid attraction flows into the Sacramento River at Knights Landing.

- **Firmer Supply to Refuges—**Although in dry years environmental entities such as wildlife refuges are not among the top two priorities for water delivery, they do benefit from an increased reliability in supply.

- **Attraction Flows for Fisheries—** Drainwater releases to downstream users (such as those on the CBD) could be better regulated to minimize cyclical pulse flows that result in attraction flow for fish (at peak) and stranding fish (at low).

Glenn-Colusa Irrigation District Operations

The load-shedding component of the reservoirs maximizes the pumping of water supplies into storage during off-peak energy consumption periods and the releasing of flows during on-peak periods, thereby enabling the system to shed load demands on the power grid.

Costs

Table 2 provides a cost break down as requested in Appendix C of the grant solicitation package for the feasibility study. The study is estimated to cost $308,400 of which the applicant is expecting to cost share approximately 17 percent. The grant request is for $257,000.

TABLE 2
PROJECT IMPLEMENTATION COSTS TABLE

APPLICANT: Glenn-Colusa Irrigation District

Project Title: Regional Drain Water Regulation Reservoir Feasibility Study

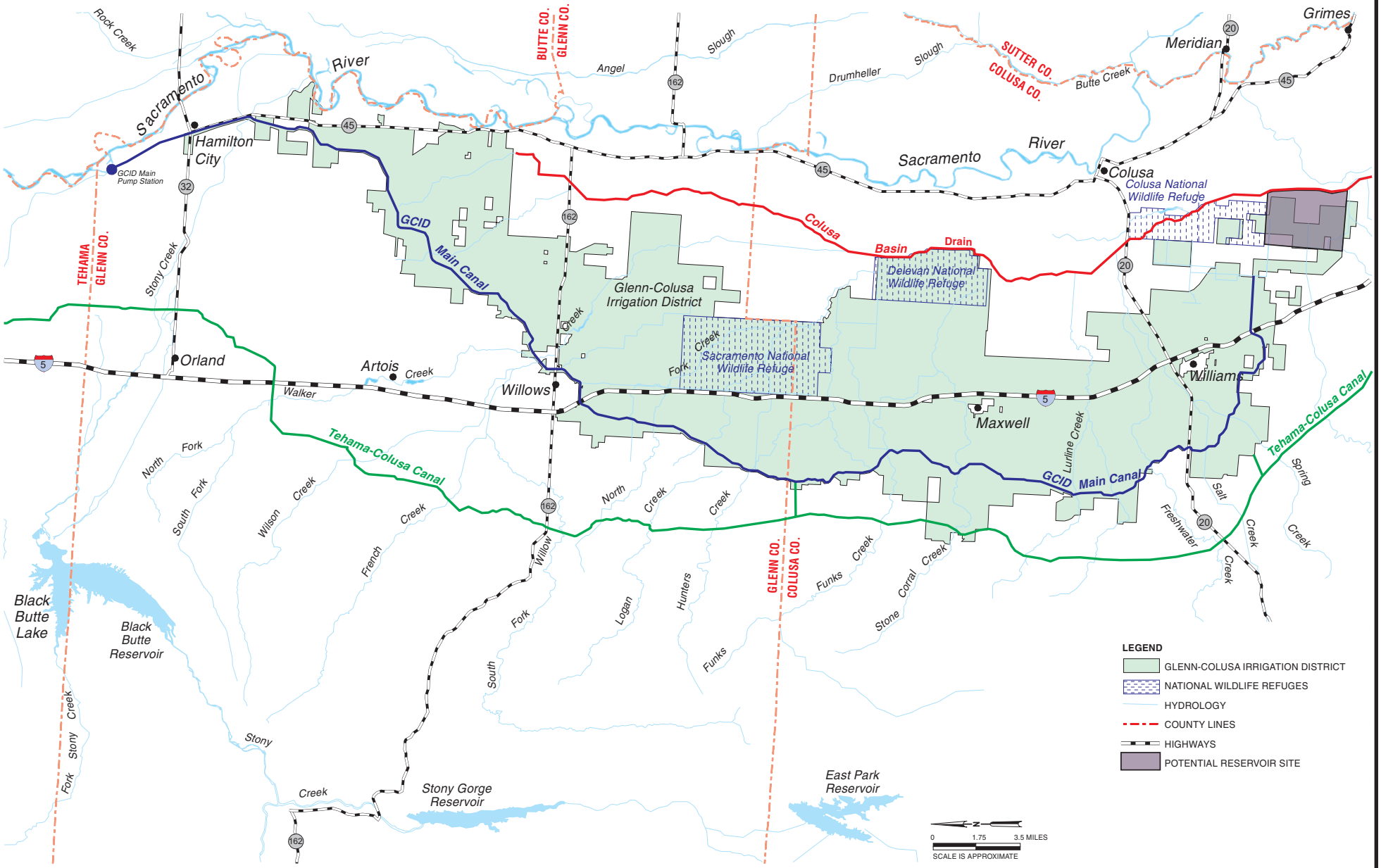
If using the excel tables on DWR website, complete shaded areas only.

Section A projects must complete Life of Investment, column VII and Capital Recovery Factor, column VIII. Do not use 0.
Table C-1: Project Costs (Budget)

	Category	Project Costs ($)	Contingency % (ex. 5 or 10)	Project Cost + Contingency ($)	Applicant Share ($)	State Share ($)	Life of investment (Years)	Capital Recovery Factor (Table C-4)	Annualized Costs ($)
	(I)	*(II)*	*(III)*	*(IV)*	*(V)*	*(VI)*	*(VII)*	*(VIII)*	*(IX)*
	Administration (for initiation of project)								
	Salaries, wages								
	Fringe benefits								
	Supplies								
	Equipment								
	Consulting services								
	Travel								
	Other								
(a)	Total Administration Costs[1]								
(b)	Planning/Design/ Engineering	308,400	--	308,400	51,400	257,000			
(c)	Equipment Purchases/ Rentals/Rebates/Vouchers								
(d)	Materials/Installation/ Implementation								
(e)	Implementation Verification								
(f)	Project Legal/License Fees								
(g)	Monitoring and Assessment								
(h)	Report Preparation								
(i)	Structures								
(j)	Land Purchase/Easement								
(k)	Environmental Compliance/ Mitigation/Enhancement								
(l)	Construction								
(m)	Other (Specify)								
(n)	TOTAL (=a+…+m)	308,400	NA	308,400	51,400	257,000	NA	NA	
(o)	Cost Share Percentage	NA	NA	NA	(row n, column V/ IV) x 100	(100 – row o, column V)	NA	NA	NA

1 (Excludes administration O & M costs)

Attachment 1
Project Location Map



ATTACHMENT 1
PROJECT LOCATION MAP
GCID REGULATORY RESERVOIR FEASIBILITY STUDY

W012005005RDD_22 (1/10/05)

Attachment 2
Short-term Agreement Signatures

IN WITNESS HEREWITH, the Parties hereto have executed this Agreement.

- DEPARTMENT OF WATER RESOURCES

DATED: 3/23/01

By _____
Thomas M. Hannigan
Director

Approved as to legal form and sufficiency:

Asst. Chief Counsel, DWR

APPROVED AS TO LEGAL FORM AND SUFFICIENCY

OFFICE OF REGIONAL SOLICITOR
DEPARTMENT OF THE INTERIOR

- UNITED STATES BUREAU OF RECLAMATION
MID-PACIFIC REGION

DATED: 3/16/01

By _____
Lester A. Snow
Regional Director

- STATE WATER CONTRACTORS

DATED: 4/3/01

By _____
John C. Coburn
General Manager

- SAN LUIS & DELTA-MENDOTA
WATER AUTHORITY

DATED: 3/30/01

By _____
Daniel G. Nelson
Executive Director

- CONTRA COSTA WATER DISTRICT

DATED: 4/3/01

By _____
Walter J. Bishop
General Manager

- NORTHERN CALIFORNIA WATER ASSOCIATION

DATED: 4/2/01

By _____
David J. Guy
Executive Director

Attachment 3
Northern California Water Association Letter of Support

Northern California Water Association

To promote the economic, social and environmental viability of Northern California by enhancing and preserving the water rights, supplies and water quality of our members.

January 6, 2004

Debra Gonzalez
California Department of Water Resources
Office of Water Use Efficiency
P.O. Box 942836
Sacramento, CA 94236-0001

RE: Support of 2004 WUE Grant Funding for the Glenn-Colusa Irrigation District (GCID) Regulating Reservoir Feasibility Study

Dear Ms. Gonzalez:

The Northern California Water Association (NCWA) supports the Glenn-Colusa Irrigation District (GCID) Regulating Reservoir Feasibility Study 2004 Water Use Efficiency grant application.

NCWA represents 70 agricultural water districts and agencies, private water companies, and individual water rights holders with senior rights and entitlements to the surface waters of the Sacramento Valley. NCWA's members also have overlying and appropriative water rights to groundwater resources in Northern California, from the Northern reaches of Shasta County to Sacramento County, from the edge of the Sierra Nevada Mountains in El Dorado County to Glenn County which extends to the Coast range.

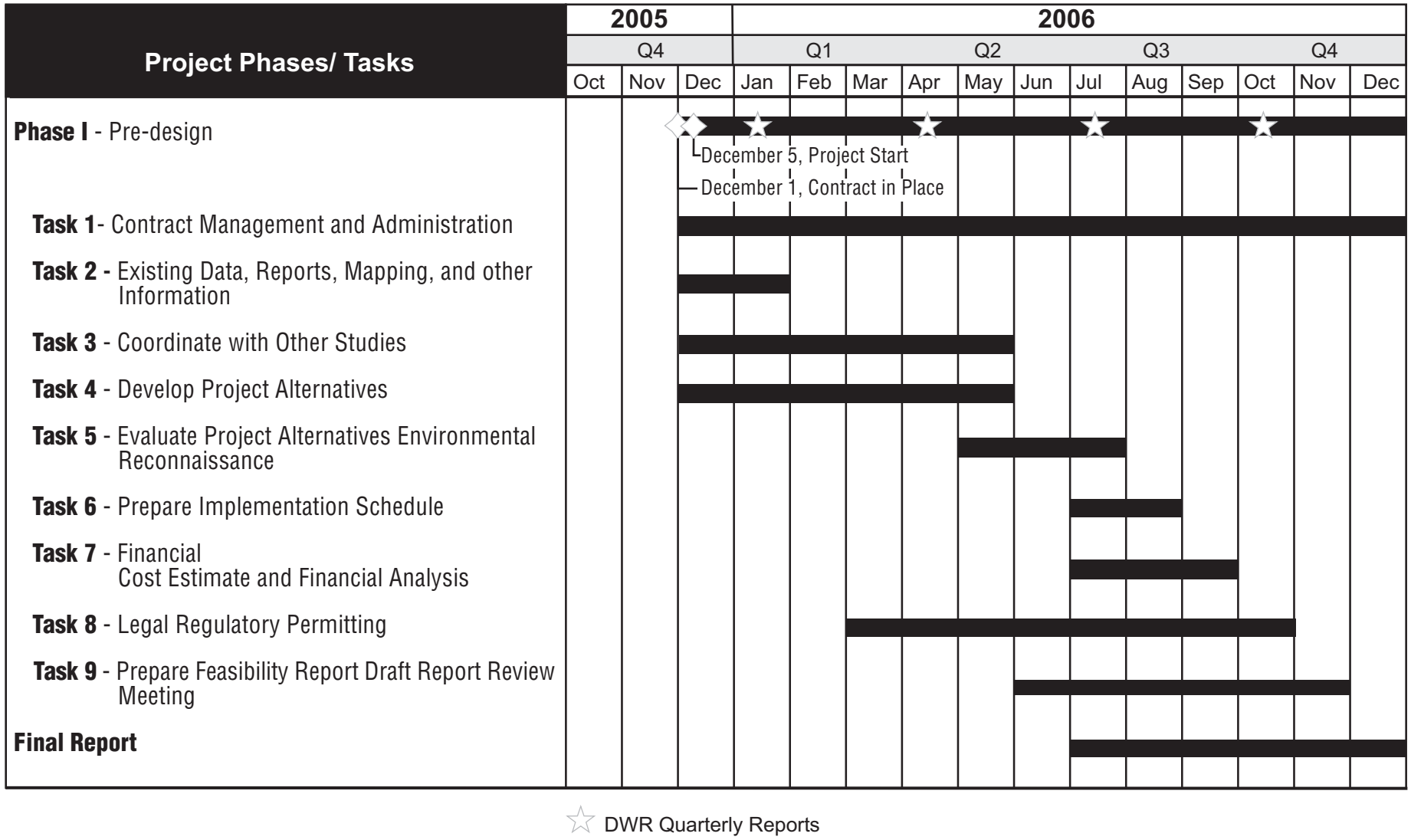
This project is a study to evaluate the technical and economic feasibility of developing regulating reservoirs within the GCID conveyance system to enable the District to optimize overall water system efficiency and maximize the District's water supply for beneficial uses, including habitat enhancement and restoration as well as meeting CALFED sub-regional quantifiable objectives.

The NCWA supports this project and the role it will play in the development of an integrated regional water management program for the Sacramento Valley. We encourage you to fund the Glenn-Colusa Irrigation District (GCID) Regulating Reservoir Feasibility Study.

Sincerely,

Todd N. Manley
Director of Government Relations

Attachment 4
Work Schedule



☆ DWR Quarterly Reports

ATTACHMENT 4
WORK SCHEDULE
GCID REGULATORY RESERVOIR FEASIBILITY STUDY

W012005005RDD_01 (1/10/05)