

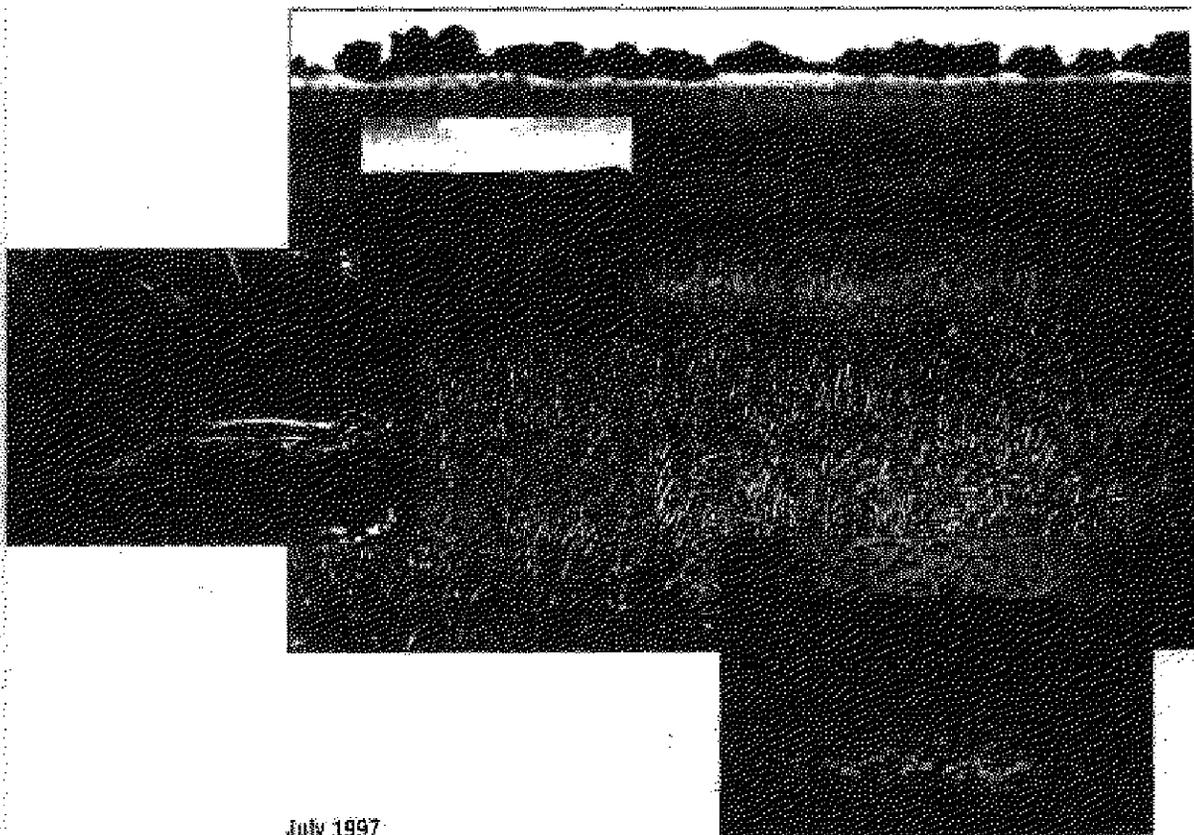
GLENN-COLUSA  
IRRIGATION  
DISTRICT

DWG. 1111-10007  
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Proposal for the  
CatFen Bay-Delta Program

FI-183

# *GCID System Optimization for Fisheries, Waterfowl Habitat, and Delivery System Efficiency*



July 1997

# Executive Summary

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## **Project Title and Applicant Name**

*Title:* GCID System Optimization for Enhancement of Fisheries, Waterfowl Habitat, and Delivery System Efficiency

*Applicant:* Glenn-Colusa Irrigation District

## **Project Description and Primary Biological/Ecological Objectives**

The project is a study to evaluate the technical and economic feasibility of developing three off-stream water storage/regulating facilities and associated conveyance systems along with conjunctive use of groundwater with recharge and extraction capabilities. These facilities would enable the District to optimize overall water system efficiency and maximize the District's water supply for beneficial uses, including habitat enhancement and restoration. The three reservoirs also would serve as settling basins for sediment and allow blending of high quality water with drain water to reduce salinity and concentrations of agricultural chemicals, thereby significantly improving water quality.

The primary biological/ecological objectives include improving system efficiency, resulting in a larger and more secure water supply; improving water quality to benefit spring-run, late-fall-run, and winter-run chinook salmon; creating and restoring wetlands habitat for migratory waterfowl and other wildlife. Project water quality improvements, including reduced contaminants and salinity, would directly benefit anadromous fish and other aquatic species. Equalizing Colusa Basin Drain (CBD) pulse flows, which act as attraction flows to anadromous fish, would reduce entrainment into the CBD of potential adult spawners. Releases of stored water and use of groundwater during fall, winter, and early spring would enable the District to reduce flows through the Main Pump Station (MPS) 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.

## **Approach/Tasks/Schedule**

The District's fish screen project at the MPS will be completed by 2001. The screens will enhance fish protection at the District's intake and allow the District to resume pumping at required capacity. The approach is to increase water storage capacity and efficiency by means of three regulating reservoirs and conjunctive use of groundwater to allow releases of stored water during critical times of the year. The conjunctive use of allocated water, stored excess flows from the Colusa Basin drainage system, and a groundwater supply with recharge and extraction capabilities would increase and regulate the overall supply available to the District to provide a more secure year-round supply for beneficial purposes.

The proposed feasibility study for the three reservoirs, associated conveyance facilities, and the groundwater extraction and recharge system would include nine tasks: contract management and administration; collect existing data, reports, mapping, and other information; coordinate with other studies and groundwater models; develop project alternatives; evaluate alternatives; prepare implementation schedule; financial analysis; legal and regulatory analysis. The feasibility study would be initiated in November 1997 and is expected to result in a final feasibility report by the end of 1998.

## **Justification for Project and Funding by CALFED**

GCID wants to optimize its available water supply and improve water quality to promote CALFED goals of fish, wildlife, and habitat enhancement and restoration.

## **Budget Costs and Third Party Impacts**

The estimated project cost is \$480,000. GCID proposes to assume 25 percent of the cost, while CALFED provides 75 percent.

Third parties that the project could ultimately benefit include Basin water users and all environmental, agricultural, and M&I users of Sacramento River water downstream of the District. Increased supplies also create the potential for water exchanges outside the District. Should land purchases become necessary to develop project facilities, no lands would be acquired from unwilling sellers.

## **Applicant Qualifications**

GCID delivers water to 175,000 acres in Glenn and Colusa counties, including 20,000 acres of wildlife refuges. GCID has an extensive history of successfully implementing large, complex capital improvements with the cooperation and funding support of state and federal agencies, including upgrading the main irrigation canal and replacing the aging MPS in the early 1980s and constructing interim fish screens at the MPS. The District is currently working with state and federal agencies on the permanent fish screen and refuge water supply conveyance projects. The fish screen project is being developed in partnership with the U.S. Bureau of Reclamation, California Department of Fish and Game, the U.S. Army Corps of Engineers, and federal and state resource agencies.

## **Monitoring and Data Evaluation**

An early task in the proposed project is to compile existing water quality data on the CBD and groundwater elevations in the Stony Creek Fan. Where sufficient data are unavailable, monitoring would occur during the project. If additional monitoring wells are needed (their cost is not included in the budget for the proposed project), GCID would coordinate with other agencies that might install wells to share groundwater elevation data.

## **Local Support/Coordination with Other Programs/Compatibility with CALFED Objectives**

GCID has long been involved in state and federal programs that promote CALFED objectives 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 Basin-wide Management Plan, 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 supply proposals. All of these programs have the ability to provide information that could contribute to the proposed project. This information can contribute to developing the Basin-wide Management Plan and a conjunctive use plan.

Potential project supporters and collaborators include: CDFG, USFWS, Reclamation, RWQCB, Department of Water Resources, Glenn and Colusa counties, Reclamation District 2047, Princeton-Codora-Glenn Irrigation District, Provident Irrigation District, and Maxwell Irrigation District, and other basin water users.

# Title Page

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## Title of Project

GCID System Optimization for Enhancement of Fisheries, Waterfowl Habitat, and Delivery System Efficiency

## Applicant

Glenn-Colusa Irrigation District

P.O. Box 150

Willows, California 95988

Phone: 916/934-8881 Fax: 916/934-3287

Contact: O.L. "Van" Tenney, General Manager

Email: vtenney@aol.com

## Type of Organization and Tax Status

Governmental Agency Operating Under Section 11 of the California Water Code

## Tax Identification Number and/or Contractor License, as applicable

FEIN# 94-6000690

## Technical and Financial Contact Person(s), address, phone/fax/E-mail (if different from above)

*Technical Contact:* Same as above

*Financial Contact:* Dennis Michum, Controller  
Glenn-Colusa Irrigation District  
P.O. Box 150  
Willows, CA 95988

Phone: 916/934-8881 Fax: 916/934-3287

E-mail: dmichum@aol.com

## Participants/Collaborators in Implementation

CH2M HILL, DeCuir and Somach, Department Of Water Resources, Glenn County, Colusa County, Reclamation District No. 2407, Princeton-Codora-Glenn Irrigation District, Provident Irrigation District, Maxwell Irrigation District, California Department of Fish and Game, United States Fish and Wildlife Service, and United States Bureau of Reclamation.

## RFP Project Group Types(s) (Construction; Acquisition; Other Services)

Other Services

# Project Description

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## Project Description and Approach

The proposed project would evaluate the feasibility of developing three off-stream water storage/regulating facilities and associated conveyance systems along with conjunctive use of groundwater with recharge and extraction capabilities to optimize beneficial uses of GCID's water resources. Upon completion of the fish screen project in 2001, the District's diversions will be screened through state-of-the-art screening facilities that meet all applicable biological criteria. Any seasonal excesses of diverted water and excess peak flows from the CBD could be pumped to the proposed reservoirs and stored for future releases during critical times of the year. Stored water from these various sources would subsequently be distributed from the reservoirs by gravity flow to enhance fisheries and waterfowl/wildlife habitat and other beneficial uses. Water also could be used for groundwater recharge to store the water for use during droughts or seasonal shortages.

Among project objectives are to optimize use of the District's water resources; level CBD peak flows (which would reduce pulse flows that attract and entrain anadromous fish); improve water quality, reduce flows at the MPS at times when juvenile fish are present; and initiate conjunctive use of allocated surface water, recaptured drain water, and managed groundwater resources.

The approach to achieving these goals will be to develop the three reservoirs and associated conveyance facilities and incorporate conjunctive use of groundwater by developing a groundwater extraction and recharge system in the Stony Creek Fan (Figure 1). The proposed feasibility study is 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 the CBD, as well as potential groundwater supplies. Drain flow volume data, groundwater elevation data, and hydrologic data will be compiled and evaluated. In addition, various storage and conveyance facility alternatives will be evaluated. The three storage/regulation facilities, associated components, and operating characteristics are described below.

The **upstream regulating reservoir** and associated facilities (Figure 2) will include a pump station and pipeline to convey water to the reservoir from the District's main canal, a recharge basin along Stony Creek with extraction facilities, a pipeline from the reservoir to the recharge basin, and a flow volume and water quality monitoring system. The reservoir would be filled with surplus water diverted at the MPS and from excess surface runoff. This stored water could be pumped upstream to the recharge basin when required, and later extracted for beneficial uses. The upstream reservoir also will enable the reuse of excess flows in Stony Creek. New wildlife and waterfowl habitat will be created in the new reservoir.

The **mid-system (Maxwell) regulating reservoir** will include pump stations to pump waters tributary to the CBD to the reservoir and from the reservoir to the District's main canal, and flow volume and water quality monitoring instrumentation (Figure 3). This reservoir and conveyance system will recapture CBD water and other surface runoff for various beneficial uses. The mid-system reservoir also will reduce drain outflows, improve water quality by serving as a sediment catch basin, enhance water conservation and overall system efficiency, reduce deliveries at the District's MPS (thereby lowering approach flow velocities), and create wetlands and waterfowl habitat in and around the new reservoir.

The downstream (Davis) regulating reservoir facilities will include a pump station on the 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 (Figure 4). Water would be conveyed to the reservoir by both gravity flow and pumping from the CBD and by gravity from the District's main canal. Water from these sources can be blended. The reservoir would help regulate peak flows from the CBD and equalize the year-round flow to provide more assurance to Basin users of adequate water supply. Reducing peak flows will reduce attraction flows and anadromous fish entrainment in the 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.

### **Location and/or Geographic Boundaries of Project**

The project is located in the Colusa Basin Watershed in portions of Glenn, Colusa, and Yolo counties. It will affect portions of the Sacramento River, the CBD and Stony Creek. Project benefits would be realized throughout the watershed. Figure 1 shows the boundaries of the District and potential locations of the proposed storage and conveyance facilities.

### **Expected Benefit(s)**

**Stressor Category:** Alteration of Flows and other Effects of Water Management

**Stressor Sub-category:** Hydrograph Alteration

**Restoration Actions:** The optimization of diversions, addition of storage/regulating capacity represented by the three new reservoirs, recapture of excess drain water, and incorporation of conjunctive groundwater use would create a more efficient and secure year-round water supply.

The District also would develop water budgets for the closed "watersheds" or water balance cells. Improved conservation through water budgeting for farm and refuge lands could better assure sufficient flows for these and other beneficial uses, including wetlands and migratory waterfowl habitat enhancement.

**Stressor Category:** Water Quality

**Stressor Sub-category:** Contaminants Due to Herbicides/Pesticides/Salts

**Restoration Actions:** The reservoirs would serve as detention basins for sediments and would provide salinity and non-point source contaminant reduction through Best Management Practices.

**Benefits:** The benefits from reducing the two stressor categories described above will include increased water supply, reliability, and quality. The proposed regulating reservoirs would help to equalize flows in the CBD, especially pulse flows at Knights Landing where CBD flows return to the Sacramento River. Presently, pulse flows attract all four runs of salmonids into the CBD, where potential adult spawners can become stranded. The feasibility study will determine whether, and how much, excess flows from the Drain can be recaptured and stored in the reservoirs. This recaptured water, along with newly developed groundwater resources and seasonally "excess" water stored in the reservoirs, could later be released for beneficial uses. Each of the three reservoirs would include constructed islands and other enhanced wetland and wildlife habitat to benefit the waterfowl and other wetland species.

The feasibility study will also examine the ability of the regulating reservoirs to detain drainage flows when water quality instrumentation indicates the presence of stressor chemicals or excess salinity.

Detaining the water would allow some chemicals to volatilize before the water is returned to the river, and the stored water could also be diluted with high quality water from the GCID main canal. The resulting water quality improvements downstream of the District would directly benefit all four runs of anadromous salmonids as well as other CALFED target species and habitats that are susceptible to contaminants.

Ecological benefits from this phase of the project, which is a feasibility study, are secondary benefits. The benefits described in the preceding paragraphs will become primary benefits when the findings of the feasibility study are implemented.

The project represents potential third party benefits to District customers, Basin water users, and downstream users, including all environmental, agricultural and M&I users, by providing more secure water supplies. Downstream users would benefit from improved quality of drain water returned to the river. More efficient and increased supplies also create the potential for water exchanges outside the District. The project will benefit all CALFED programs and related programs that address water quality, water supply, salmonid and migratory waterfowl restoration, and perennial and seasonal wetlands.

## **Background and Biological/Technical Justification**

### **Background**

The proposed project is part of a larger, ongoing watershed planning effort by GCID to optimize beneficial uses of the District's water resources, incorporating conjunctive use of groundwater in the Stony Creek Fan and excess peak flows in the CBD. The District is exploring the development of regulating reservoirs and operating procedures to optimize the beneficial use of its water supply.

The feasibility study will address portions of a larger watershed management program. The program includes the fish screen, a conservation program, a conjunctive use program, groundwater basin exploration, the rice straw decomposition program, baseline fish passage studies, the CVPIA AFRP, and the wildlife refuge year-round water supply conveyance program. The fish screen and refuge conveyance projects utilized state and federal funding, some of which was authorized under the CVPIA. To date, GCID has committed to cost share in the \$20 million refuge water supply program and advanced nearly \$9 million of District funds to the \$40 million to \$60 million fish screen project. Partners in the fish screen project include the CDFG, Reclamation, DWR, U.S. Army Corps of Engineers, USFWS, and NMFS.

Programs that the District participates in that promote habitat restoration or support other CALFED programs include the Basin-wide Water Management Planning, Stony Creek Task Force, SB 1086, Sacramento River Watershed Planning, Inland Surface Water Plan, AB 3616, AB 3030, BDAC, a potential Glenn County Water Management Model and Conservation Plan, and Tehama-Colusa Canal Authority water supply/storage proposals.

### **Biological/Technical Justification**

The proposed regulating reservoir system, along with the interrelated projects and programs listed above, will contribute to safe fish passage within and adjacent to the GCID irrigation system and the ability of the District to provide year-round, secure water conveyance to the wildlife refuges. Completion of the fish screen project will enable the District to divert its entire water supply, and the proposed reservoir project would contribute to optimizing efficiency of the District's system. The regulating reservoirs would provide:

- Equalization of CBD pulse flows
- Reduced entrainment of all four anadromous salmonid runs

- Conjunctive use of recaptured pulse flows, groundwater, and surface water
- Increased year-round conveyance capabilities for the refuges and rice straw decomposition flooding
- Catch-basins for trapping sediment and reducing salinity and other contaminants
- Constructed wetland habitat in the new reservoirs

### **Proposed Scope of Work**

**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, coordinating and overseeing the activities of the project team, communicating with agency staff, and providing financial and technical reports to CALFED. The applicant will prepare monthly reports summarizing the degree of completion, activities during the reporting period, costs incurred, and major upcoming milestones.

Meetings with the USFWS and the CDFG will address the potential for increasing wildlife habitat and design criteria for rearing habitat and constructed wetlands. Coordinate with the fishery agencies to identify the impacts of entrainment into the CBD on the upstream migration of anadromous fish.

**Task 2—Collect Existing Data, Reports, Mapping, and Other Information:** Review existing reports, data, mapping, water rights, and other related information regarding the Stony Creek water supply and groundwater basin and CBD generated previously by DWR, USBR, and other federal, state, and local agencies. The review of the Stony Creek groundwater basin will also include land ownership, geotechnical data, and the location and yield of existing wells.

The District will compile water quality and flow data on their Sacramento River diversion and drain system.

Other needed information includes water quality data in the CBD and other areas of potential discharge, design criteria for enhancing wildlife in shallow reservoirs (i.e., shoaling habitat), and the relationship of pulse flows in the CBD to migrating adult salmon.

**Task 3—Coordinate with Other Studies and Groundwater Models:** Other studies concerning the development of groundwater within Glenn County have been proposed by others. This work includes the development of a computer model of the Stony Creek aquifer to be used as a basis for a water plan that would identify optimum uses for the amount of water available. GCID would coordinate the proposed work with studies by others. For example, the District would enter data into the model, such as location and size of surface recharge basins, recharge flows into the Stony Creek Fan, and location and size of wells to recover the District's stored water.

Under CALFED and other state and federal programs, studies may occur that will include GCID lands, such as CBD water quality and quantity, fish barriers on the CBD, etc. In addition, the DWR, Reclamation, and other agencies may also be reviewing the need for off-stream storage that may require the use of District lands or facilities. Cooperation between the District and the agencies will be needed for implementation.

**Task 4—Develop Project Alternatives:** GCID will develop alternative projects for storing water in the upper, middle, and lower part of the District. Developing alternatives will involve determining the types of facility components needed, such as drain water 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.

Each component will be sized for various flow criteria and multiple uses, where appropriate, and an appropriate degree of water quality enhancement obtainable. Technical Memoranda Nos. 1-3 will include all data compiled in Tasks 1-4. These memoranda will be updated after Task 5.

**Task 5—Evaluate Alternatives:** Each alternative will be evaluated against the following considerations:

- Overall ecological benefits
- How the system will be operated
- Flexibility in providing water within and out of 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 that period of time when spring-run and winter-run chinook salmon juveniles are present
- Reduction of pulse flows in the CBD
- Reduction in sediment transport out of the District
- Ability to create wetlands and wildlife rearing habitat
- Reduction in drain water leaving the District
- Creation of "new" water and its disposition
- Third party impacts
- Water rights impacts
- Ability to permit

Each of the alternatives will be evaluated for the ability to improve the production of fish and wildlife, compatibility with the District's existing systems, and to meet other goals of the project. A "No Project Alternative" will also be included in the evaluation. "Order of Magnitude" cost estimates will be prepared for the better alternatives.

The best alternative or "No Project Alternative" will be selected for each of the three proposed reservoir sites, spreading basins and pumping facilities.

**Task 6—Prepare Implementation Schedule:** An implementation schedule will 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. Results of this task will be documented in Technical Memorandum No. 4.

**Task 7—Financial:** Capital cost and operational and maintenance costs will be estimated. A benefit-cost estimate will be prepared. Funding alternatives will be evaluated. Results of cost and financial analyses will be documented in Technical Memorandum No. 5.

**Task 8—Legal/Regulatory/Permitting Requirements:** Impacts on the District's and others water rights and other legal issues will be investigated. Hearings will be held to present the findings of the study and to determine the course of action the District will take. Key permitting issues will be identified. Results of this task will be documented in Technical Memorandum No. 6.

**Task 9—Prepare Feasibility Report:** GCID will prepare a Draft Report, distribute it to the public, conduct hearings to address written and verbal comments, and prepare a final report for public distribution. This report will be available for reference for other studies by CALFED and other funding programs. The report will include updated Technical Memoranda Nos. 1-3 and Technical Memoranda Nos. 4-6.

### **Monitoring and Data Evaluation**

An early task in the proposed project is to compile existing water quality data on the CBD and groundwater elevations in the Stony Creek Fan. Where sufficient data are unavailable, monitoring would occur during the project. If additional monitoring wells are needed (their cost is not included in the budget for the proposed project), GCID would coordinate with other agencies that might install wells to share groundwater elevation data.

The development of a District-wide watershed management program that includes flow and water quality monitoring capabilities will contribute to the overall management of the Sacramento-San Joaquin basin for beneficial uses, including habitat restoration.

### **Implementability**

One task of the proposed feasibility study for the reservoirs is to identify all legal and regulatory issues that will affect project implementation. The cost of compliance and mitigation is not included in this proposal. Development of the three reservoirs and associated components will require compliance with the California Environmental Quality Act (CEQA) and possibly the National Environmental Policy Act (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 projects, Section 404 of the Clean Water Act will apply, which will require wetland delineation and an impact mitigation plan to be overseen by the U.S. Army Corps of Engineers. Under Section 404, Section 106 of the National Historic Preservation Act also will apply, which will ensure prescribed treatment of affected cultural resources.

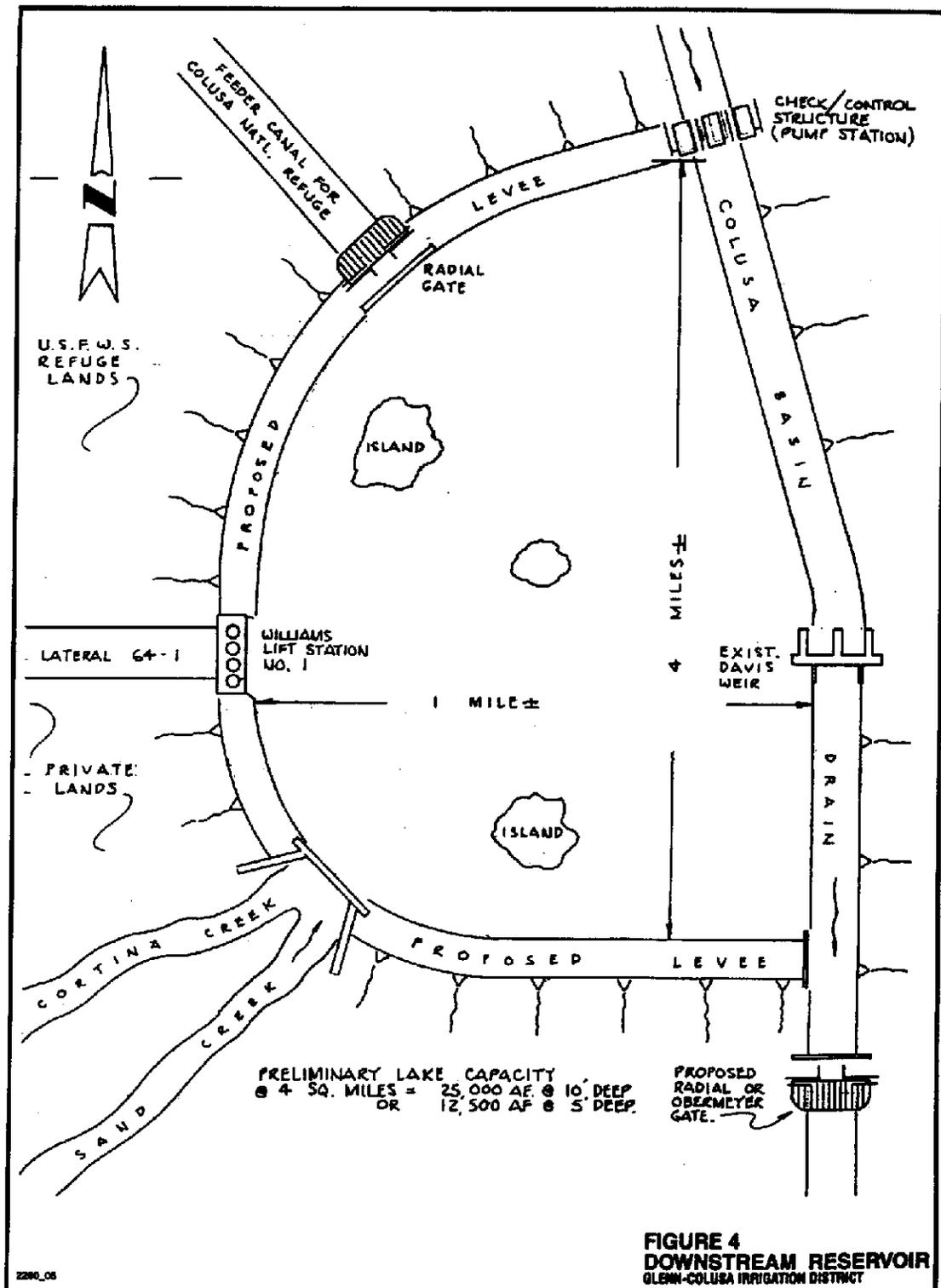
As noted elsewhere, previous GCID projects, particularly those that relate to habitat restoration, such as the fish screening project and the refuge water supply project, have been partially funded by a variety of state and federal agencies. GCID has contributed millions of dollars of its own funds for 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 will 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 will be purchased or leased, as needed, from willing parties. The District's legal counsel, DeCuir and Somach, will address any project-related land ownership and water rights issues.

GCID is willing to assume 25 percent of project cost.









**FIGURE 4**  
**DOWNSTREAM RESERVOIR**  
 GLENN-COLUSA IRRIGATION DISTRICT

# **Costs and Schedule to Implement Proposed Project**

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## **Budget Costs**

The following table (Figure 5) illustrates cost allocated by task. Funding sources are expected to include CALFED (75 percent) and GCID (25 percent). GCID costs are further broken down to reflect direct salary and benefit costs, indirect overhead labor costs, and costs of service contracts. The latter, including service contracts with CH2M HILL and DeCuir and Somach, are shown as lump sums.

The project phase for which funding is presently sought is a feasibility study. At this project phase, O&M and material acquisition costs are not applicable.

## **Cost Sharing**

GCID is prepared to assume 25 percent of the total project cost identified in Figure 5, with the balance to be funded by CALFED.

## **Subcontract Bid and Evaluation Process**

GCID selected CH2M HILL as its subconsultant for this project. CH2M HILL has been the District's engineering consultant for more than 50 years. The firm provided engineering studies and design for the District's main canal rehabilitation project; a groundwater resource development study and well design in the Stony Creek Fan; MPS design; interim fish screen design and numerous associated engineering studies; and is currently designing the permanent fish screen in cooperation with the U.S. Army Corps of Engineers and U.S. Bureau of Reclamation.

## **Schedule Milestones**

Figure 6 illustrates our proposed project schedule.

Figure 5

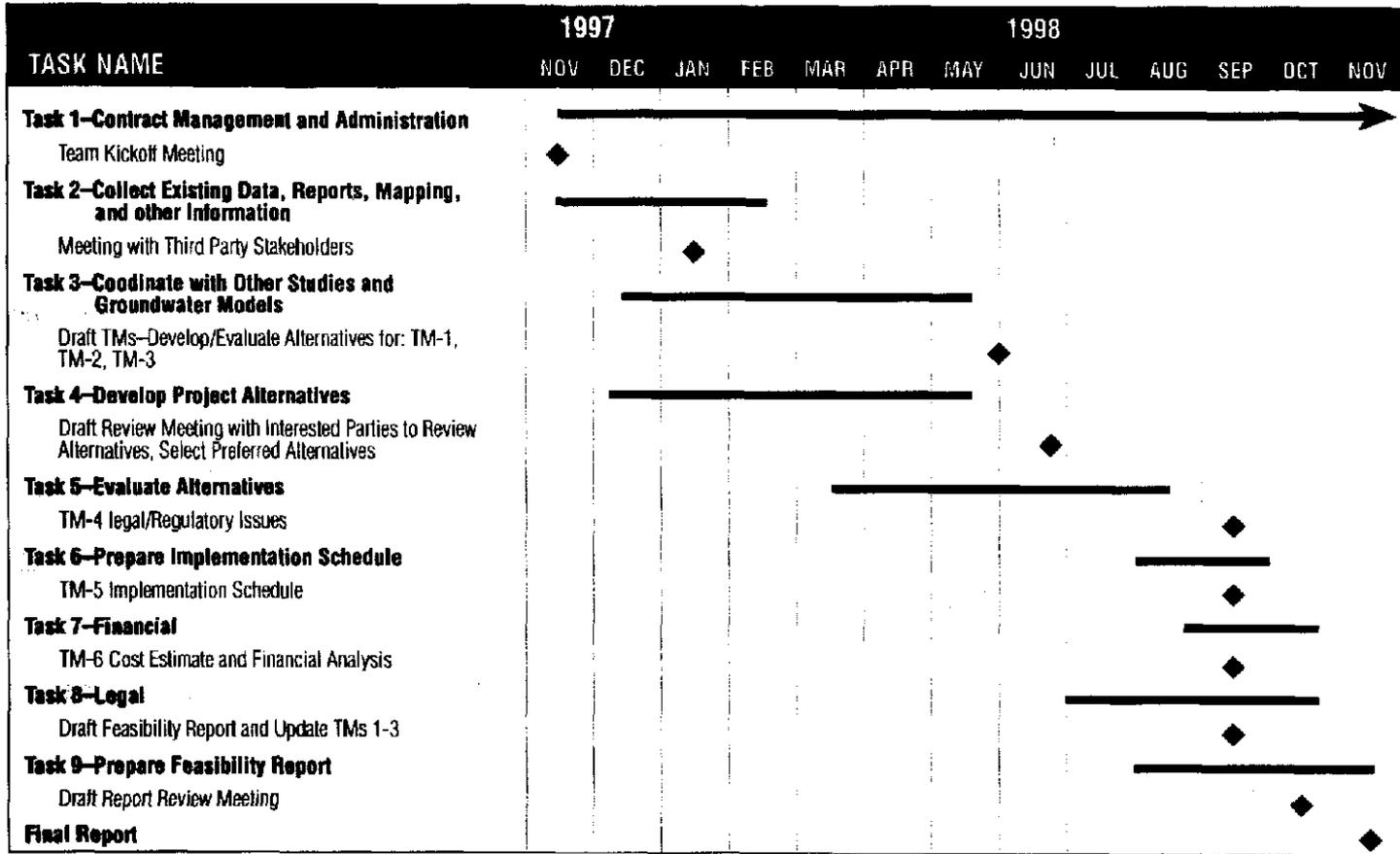
Cost Breakdown

GCID System Optimization for Enhancement of Fisheries, Waterfowl Habitat, and Delivery System Efficiency

Project Phase/ Task	Employees	Average Hourly Rate	Direct Labor Hours	Direct Salary/ Benefits	Overhead Labor	Total Labor	Service Contracts	Material/ Acquisition Contracts	Misc./Direct Costs	Total
Task 1	GCID	\$53.60	78	\$80.40	\$160.80	\$12,500	\$31,000		\$1,500	\$45,000
Task 2	GCID	\$23.38	123	\$35.07	\$70.14	\$8,600	\$11,000		\$1,400	\$21,000
Task 3	GCID	\$25.26	103	\$37.89	\$75.78	\$7,800	\$9,000		\$1,200	\$18,000
Task 4	GCID	\$59.70	112	\$89.55	\$179.10	\$20,000	\$88,000	\$5,000	\$2,000	\$110,000
Task 5	GCID	\$53.60	86	\$80.40	\$160.80	\$13,800	\$136,000		\$2,200	\$152,000
Task 6	GCID	\$53.60	12	\$80.40	\$160.80	\$1,900	\$13,000		\$100	\$15,000
Task 7	GCID	\$54.22	11	\$81.33	\$162.66	\$1,800	\$15,000		\$200	\$17,000
Task 8	GCID	\$82.66	175	\$123.99	\$247.98	\$43,500	\$6,000		\$500	\$50,000
Task 9	GCID	\$53.60	0	\$80.40	\$160.80	\$0	\$49,000		\$3,000	\$52,000
<b>Total</b>			<b>700</b>			<b>\$109,900</b>	<b>\$358,000</b>	<b>\$5,000</b>	<b>\$12,100</b>	<b>\$480,000</b>

I-004140

1-004141



**FIGURE 6**  
**PROJECT SCHEDULE**  
 GLENN-COLUSA IRRIGATION DISTRICT

1-004141

# Applicant Qualifications

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## Glenn-Colusa Irrigation District Qualifications

GCID delivers water to 175,000 acres in Glenn and Colusa counties, including 20,000 acres of wildlife refuges. GCID has an extensive history of successfully implementing large, complex capital improvements with the cooperation and funding support of state and federal agencies, including upgrading the main irrigation canal and replacing the aging MPS in the early 1980s and constructing interim fish screens at the MPS. The District is currently working with state and federal agencies on the permanent fish screen and refuge water supply conveyance projects. The fish screen project is being developed in partnership with the U.S. Bureau of Reclamation, California Department of Fish and Game, the U.S. Army Corps of Engineers, and federal and state resource agencies. The fish screen and refuge conveyance projects utilized state and federal funding, some of which was authorized under the CVPIA. To date, GCID has committed to cost share in the \$20 million refuge water supply program and advanced nearly \$9 million of District funds to the \$40 million to \$60 million fish screen project. Partners in the fish screen project include the CDFG, Reclamation, DWR, U.S. Army Corps of Engineers, USFWS, and NMFS.

## CH2M HILL Qualifications

CH2M HILL, one of the nation's largest consulting engineering firms, derives nearly 70 percent of its revenues from water resources management. CH2M HILL has served as GCID's engineering consultant for more than 50 years. CH2M HILL provided engineering studies and design for the District's main canal rehabilitation project; a groundwater resource development study and well design for the Stony Creek Fan; design of the new Main Pump Station; design and engineering and hydraulics studies for the interim fish screen; and design of the permanent fish screen in cooperation with the COE and Reclamation. CH2M HILL has served as a consultant to CALFED and many of its partner agencies.

## Key Personnel

GCID General Manager, **O. L. "Van" Tenney**, will administer the project. He will be responsible for budget and schedule management and will act as liaison to other cooperating agencies and organizations. GCID District Engineer, **Ben Pennock**, will coordinate on technical matters between GCID and the CH2M HILL engineering and technical team. **Martin Nicholson**, P.E., will be project manager for the CH2M HILL team. He will be the District's point of contact in coordinating with the team. His responsibilities also will include managing the CH2M HILL budget and schedule and ensuring that all deliverables meet the expectations of GCID and CALFED. **Howard Wilson**, P.E., will serve as senior reviewer for the CH2M HILL team, providing input to the team and critical review of all submittals. **Fritz Carlson**, R.G., will be the project hydrogeologist, addressing groundwater issues. CH2M HILL environmental planner, Mark Oliver, will manage environmental permitting and regulatory issues. **Ken Iceman**, P.E., will address system hydrology and hydraulics. **Tim Hamaker** will provide expertise in fisheries and ecology. **Todd Hunziker**, P.E., will be project engineer. He will coordinate among all of the technical experts to provide technical memoranda and a feasibility report that incorporate multidiscipline input. **Sandra Dunn**, attorney of the law firm DeCuir & Somach, legal counsel to GCID, will analyze any water rights, land ownership/use, and other legal issues that may affect the project.

#### **Glenn-Colusa Irrigation District Personnel**

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

**Van Tenney's** 27 years of experience includes 16 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 facilities for the Main Pump Station in cooperation with state and federal agencies.

**Ben Pennock, District Engineer**  
B.S., Water Science and Engineering

**Ben Pennock** has been with the district for 18 years, managing water system master plan projects. His activities include: the GCID Long Range Reconnaissance Study for water supply reliability; District AB 3030 groundwater program; technical advisory committees for SB 1086 and Upper Sacramento River Restoration Program; AB 3616 agricultural subcommittee for developing MOU between ag. and environmental interests regarding EWMPs, salmonid fish passage study program for GCID Sacramento River diversion; and technical advisory committee member for fish screen design and EIR/EIS.

#### **CH2M HILL Personnel**

**Martin Nicholson, P.E., Project Manager**  
M.S., Agricultural Engineering; B.S., Agricultural Engineering; Registered Professional Engineer in California, Oregon, Nevada, and Washington

**Martin Nicholson** has extensive project management experience in large-scale water resources projects. He has been project administrator/manager for treatment facilities, irrigation system design and rehabilitation, utility projects, and major conveyance systems. He serves on CH2M HILL's executive leadership team for the Southern Nevada Water Authority's \$1.5 billion water treatment and delivery system project.

**Howard Wilson, P.E., Senior Reviewer**  
B.S., Civil Engineering; Registered Professional Engineer in Nevada, Washington, California

**Howard Wilson**, has more than 30 years of engineering experience in agricultural irrigation systems, pumping, and fish protection facilities, encompassing project management, design, construction management, and agency coordination. He has managed GCID undertakings, including feasibility studies, design, and construction of the Main Pump Station interim fish screens and is senior consultant for design of the permanent fish screens. He was senior consultant for the feasibility study, alternatives analysis, preliminary design, and final design of the 800 cfs Wilkins Slough Positive Barrier Fish Screen project for Reclamation District 108.

**Fritz Carlson, R.G., Hydrogeologist**

M.S., Hydrology; B.A., Geology; Registered Professional Geologist in California

**Fritz Carlson** has more than 22 years of experience in groundwater hydrology, including developing and protecting groundwater resources, developing basin-wide water budgets, estimating groundwater recharge, evaluating groundwater quality, well field design, aquifer testing, and modeling groundwater flows.

**Ken Iceman, P.E., Hydraulic Engineer**

M.S., Engineering; B.S., Mathematics; Registered Professional Engineer in California

**Ken Iceman** has managed numerous water resource projects. He has 6 years involvement in GCID's Interim Fish Screen project. He worked with the resource agencies to develop screen design criteria with regard to channel hydraulics and flow velocities. He is the hydraulic designer for the GCID permanent fish screen.

**Mark Oliver, Permitting**

B.S., Environmental Policy Analysis and Planning

**Mark Oliver** is an environmental planner for water resources projects. He has managed impact studies and permit acquisition for federal, state, local, and private clients. He managed a joint NEPA/CEQA document for a siphon and associated water conveyance facilities on Butte Creek for the Western Canal Water District and USFWS. He also directed the NEPA/CEQA documentation for water conveyance facilities to seven wildlife refuges in the Sacramento and San Joaquin valleys for Reclamation and USFWS. He is managing a joint EIS/EIR to restore the Trinity River fishery for the USFWS, Hoopa Valley Tribe, and Trinity County.

**Tim Hamaker, Fisheries Specialist**

B.S. Fisheries Biology; Certified Fisheries Scientist in California

**Tim Hamaker** has 20 years of experience as a certified fisheries biologist, conducting habitat inventories, aquatic ecological investigations, contaminant studies, and water quality assessments. He was fisheries biologist for the CVPIA PEIS for Reclamation. He prepared a biological assessment for the CVP Long-term Operations Criteria and Plan, which evaluated the effects of Shasta Dam and other CVP operations on winter-run salmon. He investigated fisheries conditions for the Tehama-Colusa Fish Facility.

**Todd Hunziker, P.E., Project Engineer**

B.S., Civil Engineering; Registered Professional Engineer in Arizona

**Todd Hunziker** has 13 years of agricultural and water resources engineering experience. He was project engineer for a Merced Irrigation District study of water supply and resource management options, including conjunctive use modeling. For Imperial Irrigation District, he developed a capture and reuse system for irrigation tail water. He managed the City of Tempe's Water Resources Master Plan. He also developed groundwater recharge and wastewater reuse systems and designed irrigation facilities.

# **Compliance with Standard Terms and Conditions**

GCID agrees to all terms and conditions stated in Attachment D to the RFP.

NONDISCRIMINATION COMPLIANCE STATEMENT

COMPANY NAME

Applicant Name: Glenn-Colusa Irrigation District

The company named above (hereinafter referred to as "prospective contractor") hereby certifies, unless specifically exempted, compliance with Government Code Section 12990 (a-f) and California Code of Regulations, Title 2, Division 4, Chapter 5 in matters relating to reporting requirements and the development, implementation and maintenance of a Nondiscrimination Program. Prospective contractor agrees not to unlawfully discriminate, harass or allow harassment against any employee or applicant for employment because of sex, race, color, ancestry, religious creed, national origin, disability (including HIV and AIDS), medical condition (cancer), age, marital status, denial of family and medical care leave and denial of pregnancy disability leave.

CERTIFICATION

*I, the official named below, hereby swear that I am duly authorized to legally bind the prospective contractor to the above described certification. I am fully aware that this certification, executed on the date and in the county below, is made under penalty of perjury under the laws of the State of California*

OFFICIAL'S NAME

O.L "Van" Tenney

DATE EXECUTED

7/22/97

EXECUTED IN THE COUNTY OF

Glenn

PROSPECTIVE CONTRACTOR'S SIGNATURE

PROSPECTIVE CONTRACTOR'S TITLE

General Manager

PROSPECTIVE CONTRACTOR'S LEGAL BUSINESS NAME

Glenn-Colusa Irrigation District