Reclamation District 2035 Fish Screen Construction

Project Information

1. **Proposal Title:**

   Reclamation District 2035 Fish Screen Construction

2. **Proposal applicants:**

   Jim Staker, Reclamation District 2035

3. **Corresponding Contact Person:**

   Jim Staker
   RD 2035
   45332 County Road 25 Woodland CA 95776
   530 662-6200
   jstaker@yolo.com

4. **Project Keywords:**

   At-risk species, fish
   Fish Passage/Fish Screens
   Habitat Restoration, Instream

5. **Type of project:**

   Fish Screen

6. **Does the project involve land acquisition, either in fee or through a conservation easement?**

   No

7. **Topic Area**:

   Fish Screens

8. **Type of applicant:**

   Local Agency

9. **Location - GIS coordinates:**

   Latitude: 38.675

   Longitude: -121.628

   Datum:

   Describe project location using information such as water bodies, river miles, road intersections, landmarks, and size in acres.

The diversion is located immediately upstream of the Vietnam Veterans Bridge over the Sacramento River on Interstate Highway 5, at approximately River Mile 70.8 on the west bank of the Sacramento River.

10. **Location - Ecozone:**

    3.5 Verona to Sacramento

11. **Location - County:**

    Yolo

12. **Location - City:**

    Does your project fall within a city jurisdiction?

    No

13. **Location - Tribal Lands:**

    Does your project fall on or adjacent to tribal lands?

    No

14. **Location - Congressional District:**

    3

15. **Location:**

    California State Senate District Number: 4

    California Assembly District Number: 8

16. **How many years of funding are you requesting?**

    3

17. **Requested Funds:**
    a) Are your overhead rates different depending on whether funds are state or federal?

       No

       If no, list single overhead rate and total requested funds:

Single Overhead Rate:	N/a
Total Requested Funds:	$13,520,000

    b) Do you have cost share partners already identified?

Yes

If yes, list partners and amount contributed by each:

RD 2035 In-kind services

c) Do you have potential cost share partners?

Yes

If yes, list partners and amount contributed by each:

RD 2035 undetermined, see comment below

d) Are you specifically seeking non-federal cost share funds through this solicitation?

No

If the total non-federal cost share funds requested above does not match the total state funds requested in 17a, please explain the difference:

18. **Is this proposal for next-phase funding of an ongoing project funded by CALFED?**

Yes

If yes, identify project number(s), title(s) and CALFED program (e.g., ERP, Watershed, WUE, Drinking Water):

98-N01 RD 2035 Fish Screen Feasibility Study ERP

01-L206 RD 2035 Fish Screen Design and Environmental Review ERP

Have you previously received funding from CALFED for other projects not listed above?

No

19. **Is this proposal for next-phase funding of an ongoing project funded by CVPIA?**

    No

    Have you previously received funding from CVPIA for other projects not listed above?

    No

20. **Is this proposal for next-phase funding of an ongoing project funded by an entity other than CALFED or CVPIA?**

    No

    Please list suggested reviewers for your proposal. (optional)

21. **Comments:**

    #17a. RD 2035 will be contracting out essentially all the work to be completed, and therefore will have no overhead rate. #17b. RD 2035 will contribute in-kind services during the all stages of the project, including the annual costs of operating and maintaining the facility. #17c. RD 2035 is in the process of determining whether to buy the land at the proposed pumping plant location. If the land is acquired, the costs incurred will include administrative and aquisition costs.

Environmental Compliance Checklist

Reclamation District 2035 Fish Screen Construction

1. **CEQA or NEPA Compliance**
   a) Will this project require compliance with CEQA?

      Yes
   b) Will this project require compliance with NEPA?

      Yes
   c) If neither CEQA or NEPA compliance is required, please explain why compliance is not required for the actions in this proposal.

2. **If the project will require CEQA and/or NEPA compliance, identify the lead agency(ies).** *If not applicable, put "None".*

   CEQA Lead Agency: Reclamation District 2035
   NEPA Lead Agency (or co-lead:) U.S. Bureau of Reclamation
   NEPA Co-Lead Agency (if applicable):

3. **Please check which type of CEQA/NEPA documentation is anticipated.**

   CEQA
   -Categorical Exemption
   XNegative Declaration or Mitigated Negative Declaration
   -EIR
   -none

   NEPA
   -Categorical Exclusion
   XEnvironmental Assessment/FONSI
   -EIS
   -none

   If you anticipate relying on either the Categorical Exemption or Categorical Exclusion for this project, please specifically identify the exemption and/or exclusion that you believe covers this project.

4. **CEQA/NEPA Process**
   a) Is the CEQA/NEPA process complete?

      No

      If the CEQA/NEPA process is not complete, please describe the dates for completing draft and/or final CEQA/NEPA documents.

      Draft environmental documentation will be complete by March 2002. Final environmental documentation will be complete by April 2002.

b) If the CEQA/NEPA document has been completed, please list document name(s):

5. **Environmental Permitting and Approvals** (*If a permit is not required, leave both Required? and Obtained? check boxes blank.*)

LOCAL PERMITS AND APPROVALS

Conditional use permit	
Variance	
Subdivision Map Act	
Grading Permit	
General Plan Amendment	
Specific Plan Approval	
Rezone	
Williamson Act Contract Cancellation	
Other	Required

STATE PERMITS AND APPROVALS

Scientific Collecting Permit	
CESA Compliance: 2081	
CESA Compliance: NCCP	Required
1601/03	Required
CWA 401 certification	Required
Coastal Development Permit	
Reclamation Board Approval	Required
Notification of DPC or BCDC	
Other	

FEDERAL PERMITS AND APPROVALS

ESA Compliance Section 7 Consultation	Required
ESA Compliance Section 10 Permit	
Rivers and Harbors Act	
CWA 404	Required
Other	

PERMISSION TO ACCESS PROPERTY

Permission to access city, county or other local agency land. Agency Name: Conaway Conservancy Group	Obtained
Permission to access state land. Agency Name:	
Permission to access federal land. Agency Name:	
Permission to access private land. Landowner Name:	

6. **Comments.**

#5. Other local permits include any Yolo County Permits required.

Land Use Checklist

Reclamation District 2035 Fish Screen Construction

1. **Does the project involve land acquisition, either in fee or through a conservation easement?**

   No

2. **Will the applicant require access across public or private property that the applicant does not own to accomplish the activities in the proposal?**

   Yes

3. **Do the actions in the proposal involve physical changes in the land use?**

   No

   If you answered no to #3, explain what type of actions are involved in the proposal (i.e., research only, planning only).

   The fish screen facility will be constructed on land that is already designated for the pumping plant. Therefore, no changes in land use will be necessary.

4. **Comments.**

Conflict of Interest Checklist

Reclamation District 2035 Fish Screen Construction

Please list below the full names and organizations of all individuals in the following categories:

- Applicants listed in the proposal who wrote the proposal, will be performing the tasks listed in the proposal or who will benefit financially if the proposal is funded.
- Subcontractors listed in the proposal who will perform some tasks listed in the proposal and will benefit financially if the proposal is funded.
- Individuals not listed in the proposal who helped with proposal development, for example by reviewing drafts, or by providing critical suggestions or ideas contained within the proposal.

The information provided on this form will be used to select appropriate and unbiased reviewers for your proposal.

Applicant(s):

Jim Staker, Reclamation District 2035

Subcontractor(s):

Are specific subcontractors identified in this proposal? Yes

If yes, please list the name(s) and organization(s):

As needed	Montgomery Watson Harza
None	None
None	None
None	None
None	None

Helped with proposal development:

Are there persons who helped with proposal development?

Yes

If yes, please list the name(s) and organization(s):

Neil Schild	**Montgomery Watson Harza**
Amy Wade	**Montgomery Watson Harza**

Michelle Treinen **Montgomery Watson Harza**

Chris Leininger **Ducks Unlimited**

Comments:

Montgomery Watson Harza will be performing work as specified in the proposal. Many employees will be involved.

Budget Summary

Reclamation District 2035 Fish Screen Construction

Please provide a detailed budget for each year of requested funds, indicating on the form whether the indirect costs are based on the Federal overhead rate, State overhead rate, or are independent of fund source.

Independent of Fund Source

Year 1												
Task No.	**Task Description**	**Direct Labor Hours**	**Salary *(per year)***	**Benefits *(per year)***	**Travel**	**Supplies & Expendables**	**Services or Consultants**	**Equipment**	**Other Direct Costs**	**Total Direct Costs**	**Indirect Costs**	**Total Cost**
1	Project Management						70000			70000.0		70000.00
2	Bid and Award Services						35000			35000.0		35000.00
3	Construction Management						425000			425000.0		425000.00
4	Engineering Assistance During Construction						80000			80000.0		80000.00
5	Construction						7,000,000			7000000.0		7000000.00
6	O & M Manual						0			0.0		0.00
7	As-built Drawings						20000			20000.0		20000.00
8	Hydraulic Evaluation						0			0.0		0.00
9	Long-term Monitoring						0			0.0		0.00
		0	0.00	0.00	0.00	0.00	7630000.00	0.00	0.00	7630000.00	0.00	7630000.00

Year 2												
Task No.	**Task Description**	**Direct Labor Hours**	**Salary *(per year)***	**Benefits *(per year)***	**Travel**	**Supplies & Expendables**	**Services or Consultants**	**Equipment**	**Other Direct Costs**	**Total Direct Costs**	**Indirect Costs**	**Total Cost**
1	Project Management						70000			70000.0		70000.00
2	Bid and Award Services						0			0.0		0.00
3	Construction Management						425000			425000.0		425000.00
4	Engineering Assistance During Constriction						60000			60000.0		60000.00
5	Construction						5,000,000			5000000.0		5000000.00
6	O&M Manual						40,000			40000.0		40000.00
7	As-built Drawings						20000			20000.0		20000.00
8	Hydraulic Evaluation						115000			115000.0		115000.00
9	Long-term Monitoring						100000			100000.0		100000.00
		0	0.00	0.00	0.00	0.00	5830000.00	0.00	0.00	5830000.00	0.00	5830000.00

Year 3												
Task No.	**Task Description**	**Direct Labor Hours**	**Salary *(per year)***	**Benefits *(per year)***	**Travel**	**Supplies & Expendables**	**Services or Consultants**	**Equipment**	**Other Direct Costs**	**Total Direct Costs**	**Indirect Costs**	**Total Cost**
1	Project Management						10000			10000.0		10000.00
2	Bid and Award Services						0			0.0		0.00
3	Construction Management						0			0.0		0.00
4	Engineering Assistance During Construction						0			0.0		0.00
5	Construction						0			0.0		0.00
6	O & M Manual						0			0.0		0.00
7	As-built Drawings						0			0.0		0.00
8	Hydraulic Evaluation						0			0.0		0.00
9	Long-term Monitoring						50000			50000.0		50000.00
		0	0.00	0.00	0.00	0.00	60000.00	0.00	0.00	60000.00	0.00	60000.00

Grand Total=13520000.00

Comments.

Budget Justification

Reclamation District 2035 Fish Screen Construction

Direct Labor Hours. Provide estimated hours proposed for each individual.

N/a. Grant funds will be used by sub-contractors of RD 2035 to complete the tasks as described in the proposal. RD 2035 will contribute time and money as needed to complete the project.

Salary. Provide estimated rate of compensation proposed for each individual.

N/a. Grant funds will be used by sub-contractors of RD 2035 to complete the tasks as described in the proposal. RD 2035 will contribute time and money as needed to complete the project.

Benefits. Provide the overall benefit rate applicable to each category of employee proposed in the project.

N/a. Grant funds will be used by sub-contractors of RD 2035 to complete the tasks as described in the proposal. RD 2035 will contribute time and money as needed to complete the project.

Travel. Provide purpose and estimate costs for all non-local travel.

N/a. Grant funds will be used by sub-contractors of RD 2035 to complete the tasks as described in the proposal. RD 2035 will contribute time and money as needed to complete the project.

Supplies & Expendables. Indicate separately the amounts proposed for office, laboratory, computing, and field supplies.

N/a. Grant funds will be used by sub-contractors of RD 2035 to complete the tasks as described in the proposal. RD 2035 will contribute time and money as needed to complete the project.

Services or Consultants. Identify the specific tasks for which these services would be used. Estimate amount of time required and the hourly or daily rate.

Sub-contractors will be performing all work as indicated in the proposal. The estimated amount of time required to complete the work is 55,000 hours. The hourly rate ranges for the engineering work from $70/hr for Associate Engineer to $150/hr for Principal Engineer. For work to be completed by other consultants/contractors, a labor rate of $100/hr was used. This rate does not include the cost of construction materials.

Equipment. Identify non-expendable personal property having a useful life of more than one (1) year and an acquisition cost of more than $5,000 per unit. If fabrication of equipment is proposed, list parts and materials required for each, and show costs separately from the other items.

N/a. Grant funds will be used by sub-contractors of RD 2035 to complete the tasks as described in the proposal. RD 2035 will contribute time and money as needed to complete the project.

Project Management. Describe the specific costs associated with insuring accomplishment of a specific project, such as inspection of work in progress, validation of costs, report preparation, giving presentatons, reponse to project specific questions and necessary costs directly associated with specific project oversight.

Project Management subtasks are: Prepare Work Plan, $6000; Project meetings, general oversight, $28,000; Distribute project information and reports (local involvement), $22,000; QA/QC, $14,000

Other Direct Costs. Provide any other direct costs not already covered.

N/a. Grant funds will be used by sub-contractors of RD 2035 to complete the tasks as described in the proposal. RD 2035 will contribute time and money as needed to complete the project.

Indirect Costs. Explain what is encompassed in the overhead rate (indirect costs). Overhead should include costs associated with general office requirements such as rent, phones, furniture, general office staff, etc., generally distributed by a predetermined percentage (or surcharge) of specific costs.

N/a. Grant funds will be used by sub-contractors of RD 2035 to complete the tasks as described in the proposal. RD 2035 will contribute time and money as needed to complete the project.

Executive Summary

Reclamation District 2035 Fish Screen Construction

Reclamation District 2035 is applying for $13,520,000 for the construction phase of a positive barrier fish screen on the districts unscreened diversion and pump station. The 400 cfs pump station is located at approximately River Mile 70.8 on the Sacramento River, immediately upstream from the Vietnam Veterans Bridge on Interstate 5. This is a proposal for next-phase funding. The previous phase CALFED funding was for the engineering final design and environmental documentation for the fish screen facility. The goal of this project is to prevent the entrainment of fish in RD 2035s diversion from the Sacramento River. Construction of a fish screen facility will protect juvenile and migrating fish species, such as chinook salmon, steelhead trout, and Sacramento splittail, while still providing enough diversion water to supply the agricultural lands in Reclamation District 2035. This project addresses CALFED ERP Strategic Goal 1: At-Risk Species and Goal 4: Habitats-Fish Passage; and Sacramento Restoration Priorities SR-2 and SR-6. This project will also address the Central Valley Project Improvement Act Section 3406(b)(21). This project meets CVPIA goals by improving habitat for all stages of anadromous fish, improving survival rates of juveniles at diversions, and improving the opportunity for adult fish to reach their spawning habitat. This phase of the project will include the bid and award process, the construction of the fish screen facility, the post-construction evaluation, and accompanying tasks. The tasks will be completed within three years from the award of the grant funds. The grant funds requested will be used for project management including local involvement, bidding assistance, engineering assistance during construction, construction of fish screen, preparation of O&M Manual, creation of as-built drawings, hydraulic evaluation and long-term monitoring of the facility.

Proposal

Reclamation District 2035

Reclamation District 2035 Fish Screen Construction

Jim Staker, Reclamation District 2035

RECLAMATION DISTRICT 2035
POSITIVE BARRIER FISH SCREEN CONSTRUCTION

CALFED PROPOSAL

Submitted by

RD 2035
45332 County Road 25
Woodland, CA 95776

October 2001

A. PROJECT DESCRIPTION: PROJECT GOALS AND SCOPE OF WORK

1. Problem

The problem addressed by this project is the entrainment of juvenile migrating at-risk native fish species by an existing agricultural water diversion. Small juvenile salmon are relatively weak swimmers and can be entrained by high flow intake pumps. The target species and life stage of primary concern for this project is the Winter Run Chinook Salmon juvenile which was listed an endangered species in 1994.

RD 2035 currently operates a 400 cfs intake pump station at approximately River Mile 70.8 on the Sacramento River in Ecozone 3: Sacramento River, 3.5: Verona to Sacramento. The diversion is immediately upstream of the Vietnam Veterans Bridge on Interstate 5 (See **Figure 2-1**). The unscreened intake has been in operation since 1920. The current diversion facility has four 36-inch, 300 hp vertical impeller pumps located in a concrete pump house. Each pump has a maximum capacity of 110 cfs, for a total capacity of over 400 cfs.

The intake pumps generally operate during the months of April through October and impact all runs of Chinook Salmon including the Winter Run juveniles which migrate downstream during the months of July through March.

In 1998, a proposal was submitted to CALFED and approved for a feasibility/pre-design study to identify a preferred fish screen facility for the pump intakes. Four alternatives were examined in the Feasibility Study, and conceptual designs and construction cost estimates were presented for each alternative.

In 2000, a proposal was submitted to CALFED and approved for the design, specifications, and environmental evaluation of the preferred fish screen option. This phase of the project is currently underway.

This proposal requests next-phase funding for the construction costs associated with the implementation of the fish screen facility. The proposed fish screen construction would eliminate the negative impacts of the current diversion and assist in the stabilization of anadromous fish populations while providing sufficient flow for irrigation.

Relevant past studies include *White River Fish Screen Project Planning and Design* (1997), *M&T/Parrott Pumping Station and Fish Screen* (1998), and *Banta-Carbona Fish Screen Feasibility Study* (1996).

2. Justification

The justification including conceptual model, hypotheses, and selection of project type is not required for Fish Screen and Ladder Construction proposals. **Attachment 1** describes the justification for the Feasibility Study, which can also be applied to this phase of the project.

3. Approach

The proposed project will include all tasks necessary for the successful completion of the construction phase of the project. These tasks are described below. **Table 2** shows the work schedule for the project.

Task 1: Project Management. This task will span all elements of Tasks 2 through 9. This task will include preparing a work plan, participating in project meetings, distributing project information and progress reports, and instituting and maintaining a QA/QC Program. This task will also include the local involvement aspect of the project. Presentations and quarterly reports will be given to the AFRP Technical Team and other stakeholders interested in the project.

Task 2: Bid and Award Services. This task covers the services provided during the bid and award phase of the project. A pre-bid conference will be conducted to introduce the project to potential bidders. Consultation/interpretation of Contract Documents services will be provided in response to Bidders questions during the bid period. Contract Addenda will be prepared, if necessary, and transmitted to the Bidders. Bids will be evaluated for completeness and compliance, and checked for Bidder's bonds and insurance. RD 2035 will then award a contract to the selected bidder.

Task 3: Construction Management. This task covers the services provided during the construction phase of the project. The task will cover the day-to-day administration of the project's construction contract. Complete and accurate construction files will be developed and maintained for the project. Resident on-site inspection services are also included in this task. Construction Management will include the following services:

- Conforming Plans and Specifications
- Prepare proposed Contract Modifications (PCMs)
- Review Proposed Change Orders
- Assist in Claims Avoidance and Dispute Resolution
- Pay Estimates, Construction Schedules, Progress Summaries

Task 4: Engineering Assistance During Construction. This task includes all the work required by the engineer during the construction phase of the project. This assistance during construction includes the following:

- Pre-construction Conference
- Review Contractor Submittals
- Review Contractor's Request for Information (RFIs)
- Periodic Site Visits and Construction Progress Meetings

Task 5: Construction. The construction task includes construction of all aspects of the diversion facility. For the chosen alternative from the Feasibility Study (Alternative C), the following items will be included in the construction task:

- Mobilization and Demobilization
- General Civil Work

- Intake Structure
- Access Bridge
- Discharge Pipeline
- Gate Structure
- Outlet Structure with Pump Station
- Electrical/Instrumentation

Construction costs include all required materials and labor, the contractor's mobilization/demobilization, insurance/bonds, overhead, and profit.

Task 6: O&M Manual. This task consists of the preparation of a comprehensive operations and maintenance manual for the fish screen and pump station. The manual will include data for all equipment, as well as recommendations for operation and maintenance procedures.

Task 7: As-Built Drawings. As-Built Drawings will be drafted in order to document the final conditions of the constructed facility. These drawings must be dimensioned and include field modifications and verification to the design of the facility. The as-built drawings will be used for future maintenance of the facility and for any future accommodations.

Task 8: Hydraulic Evaluation. Post-construction evaluation of the fish screen facility is necessary to ensure that the velocities and flows through the fish screen facility meet the design criteria. The hydraulic evaluation will include inspecting the quality of the facilities, balancing the velocities to optimize the hydraulics of the fish screen facility, and documenting the final conditions of the facility. The fish screens will be evaluated using Son-Tek three-dimensional flow meters.

Task 9: Long-term Monitoring. Biological monitoring must be performed several times within the first year of operation to monitor the effectiveness of the fish screen facility in terms of fish protection. This biological monitoring will test the fish screen facility to make sure that fish are not being entrained on the fish screens.

4. Feasibility

Several design alternatives were examined during the feasibility phase of the project. The alternatives were developed based on RD 2035's operational requirements, current published criteria for fish passage facilities established by the National Marine Fisheries Service (NMFS 1997), the California Department of Fish and Game (CDFG 1997), American National Standards for Pump Intake Design (Hyd. Inst. 1998), current industry practice, and experience at similar facilities.

Examples of existing projects which contain elements similar to the cylindrical tee screen alternative considered for this project include the M&T/Parrot intake on the Sacramento River in Chico, and the Maxwell Irrigation District intake on the Sacramento River near Maxwell.

The work schedule for this project is shown in **Table 2**. This schedule is dependent on the successful completion of the engineering final design and environmental documentation phase of the project. The following permits and environmental authorizations will be obtained before the construction of the facility during the design and environmental review phase of the project:

- Environmental Document for CEQA and NEPA – EA/IS FONSI/Mitigated Neg. Dec.
- Army Corps of Engineers "404" Permit
- Regional Water Quality Control Board Storm Water Permit "401" Certification
- Archaeology – Field Survey and Record Search
- Endangered Species Act – Listings
- 1603 – Streambed Alteration, Department of Fish and Game
- Yolo County Permits
- State Reclamation Board - DWR

Based on the nature and goals of this project and experience with previous projects, no difficulty is expected in obtaining the required permits.

During the proposed phase of the project, the natural conditions of the river must be considered. The timing of in-river work will be coordinated with the appropriate government agencies. Also, excessive rain or flood flows on the river during the proposed construction time period could delay construction.

The new pump station and fish screen will be constructed on land owned by the Conaway Conservancy Group. The Conaway Conservancy Group has granted access to this land for surveying, geotechnical evaluation, environmental evaluation, construction, and operation. A copy of the letters requesting access and granting access are provided in **Attachment 3.**

5. Performance Measures

Project evaluation will be performed throughout all phases of the project, from the feasibility stage to post-construction. A list of project-specific performance measures for each of the general indicator categories defined in Attachment G of the 2002 PSP are listed in **Table 1**. These performance measures will be used to assess the project's success in relation to its goals and objectives.

Table 1. Performance Measures

Performance Measure	Metric	Target	Baseline
1) Participation by landowners and key resource managers at project planning/ coordination meetings	Number of representatives from interested agencies.	Full Participation for duration of the project.	Not Applicable
2) Establishment and implementation of QA/QC program	Steps to establish QA/QC program.	Successful implementation of QA/QC program by all involved in the project for the duration of the project.	Not Applicable
3) Completion and distribution of O & M Manual.	Steps to establish O&M Plan.	Successful completion of manual and full understanding of procedures by RD 2035 staff.	N/A
4) Completed structure	Number of operating components of fish screen facility.	Complete construction of facility	100% Design Documents
5) As-built Drawings	Number of completed drawings.	Drawings to match design documents	100% Design Documents
6) Hydraulic Evaluation	Approach and sweeping velocities	Meet all hydraulic design criteria established by NMFS and CDFG	Velocities at unscreened diversion
7) Protection of fish species	Number of fish entrained in fish screens	No injuries to fish due to diversion structure	Number of fish injured at unscreened diversion

6. Data Handling and Storage

Montgomery Watson Harza will maintain the data collected during the construction and start-up phase and will transfer the data to RD 2035 upon completion of constructed facilities. The data will be available for state and federal agencies to review upon request.

7. Expected Products/Outcomes

The primary expected product of this phase of the project is the complete, operating fish screen facility. Through the implementation of this product, several supplementary products and outcomes are likely. These include an O&M Manual, As-built Drawings, and the successful protection of fish species.

8. Work Schedule

The tasks described in the approach section will begin shortly after the final engineering design and environmental documentation are completed. The planned completion date for the final engineering design and environmental documentation is October 2002. The work scheduled to be completed under this proposal will begin in October 2002, as long as the CALFED grant contract has been awarded. The construction of the facility will be completed in 18 months, and the long-term monitoring will continue until October 2005.

The individual tasks, start dates, and finish dates for the Reclamation District 2035 Positive Barrier Fish Screen Project are identified in **Table 2**.

Table 2: Work Schedule

Task No. & Description Title	Start date (mo/yr)	Due Date (mo/yr)
Task 1– Project Management	Oct '02	Oct 05'
Task 2 – Bid and Award Services	Oct '02	Jan 03'
Task 3 – Construction Management	Jan '03	Aug '04
Task 4 – Engineering Assistance During Construction	Feb '02	Aug '04
Task 5 – Construction	Dec '02	Aug '04
Task 6 – O & M Manual	Jan '04	Aug '04
Task 7 – As-built Drawings	Aug '03	Aug '04
Task 8 – Hydraulic Evaluation	TBD	Aug '04
Task 9 – Long-term Monitoring	Jun 04'	Oct 05'

B. APPLICABILITY TO CALFED ERP GOALS AND IMPLEMENTATION PLAN AND CVPIA PRIORITIES

1. ERP and CVPIA Priorities

This project will include abandonment of an existing unscreened intake and construction of a new pump station with fish screens designed per the current National Marine Fisheries Service (NMFS 1997) and the California Department of Fish and Game (CDFG 1997) standards.

The new screens will allow migrating salmon, as well as other fish species, to pass by the intake pumps without risk of entrainment and without risk of impingement on the fish screens. The project therefore protects at-risk native species and meets Goal 1 and Goal 3 in the ERP strategic goals as noted in the PSP.

This project also addresses Restoration Priorities for the Sacramento Region as defined in the 2002 Proposal Solicitation Package. Specifically, construction of a fish screen will

address SR-2 by improving fish passage facilities along the Sacramento River, and SR-6 by continuing an ongoing fish screen construction project currently supported by CALFED of screening Reclamation District 2035's diversion from the Sacramento River. This project will also address the Anadromous Fish Screen Program authorized by Section 3406(b)(21) of the Central Valley Project Improvement Act.

2. Relationship to Other Ecosystem Restoration Projects

Several fish screening projects have been constructed in recent years in an effort to improve the survival rate of migrating salmon and other native fish species in the Sacramento River. It is expected that screening RD 2035's 400 cfs diversion will act in concert with other recent fish screen projects on the Sacramento River including the Glenn-Colusa Irrigation District intake located between River Mile 205 and 206 near Hamilton City, the M&T/Parrot intake in Chico, the Maxwell Irrigation District intake near Maxwell, the RD 108 intake near Grimes, and the Sacramento River Water Treatment Plant Intake (under construction) in Sacramento. The combined effects of these fish screening projects will be to increase the fish survival rates and aid in overall ecosystem restoration.

Also, water from the RD 2035 diversion on the Sacramento River is utilized in the irrigation off-season for groundwater recharge, which provides incidental waterfowl benefit. At times, this water can be obtained from the Yolo Bypass, but is often diverted directly from the Sacramento River. This water supplies food production and winter habitat for waterfowl.

3. Requests for Next-Phase Funding

This proposal is a request for next-phase funding of an existing CALFED project. The applicant received funding from CALFED for the "RD 2035 Fish Screen Feasibility Study" (98-N01), and "RD 2035 Fish Screen Design and Environmental Review" (01-L206). This proposal is dependent on the timely completion of the design and environmental review aspect of the project, which is currently underway. The final design documents will provide engineering drawings, technical specifications, contract documents, and bidding documents necessary to proceed with the construction of the fish screen facility. The environmental documentation will provide clearances for all permits and environmental work necessary for construction. Additional information about these phases and their current status is presented in **Attachment 1.**

An application for CVPIA funding was made to U.S. Department of the Interior, Bureau of Reclamation for the Feasibility Study. A CVPIA grant was offered (offer letter dated June 29, 1999), but because the study had been previously funded by CALFED, the CVPIA grant was declined.

4. Previous Recipients of CALFED or CVPIA Funding

For previous phases of the project, RD 2035 received the following funds:

CALFED Project No.	Project Description	Amount Received
98-N01	Feasibility Study	$100,000
01-L206	Design and Environmental Review	$1,820,000

No other CALFED or CVPIA Funding has been received.

5. System-Wide Ecosystem Benefits

System-wide ecosystem benefits will be gained from this project with the increase in population of endangered and threatened native species. Water diversions along the Sacramento River have historically created numerous obstacles for migrating salmon and steelhead trout, primarily entrainment of juvenile salmon. Although unscreened diversions have been harmful to all Chinook salmon and steelhead trout in the Sacramento River, they have been particularly detrimental to the winter-run Chinook salmon, listed as both a federal and state endangered species in California.

Some of the migration periods for juvenile Chinook salmon coincide with the normal season for irrigation water diversion at RD 2035. The new screened facility will prevent fish entrainment and therefore increase species' reproductive population. Reestablishment of more natural levels of native fish species will have a ripple effect on populations of both their predators and their food source and is a critical step in restoring the natural balance of the ecosystem.

6. Additional Information for Proposals Containing Land Acquisitions N/A

C. QUALIFICATIONS

Montgomery Watson Harza, MWH, is a full service civil and environmental engineering firm specializing in a variety of services including water and wastewater engineering, energy and infrastructure engineering, flood control, waste remediation, fisheries design, and environmental assessment and mitigation. The firm also works in a number of other industry sectors such as construction, finance, information technology, applied research, project management, laboratory services and government relations.

MWH - the result of a recent merger between Montgomery Watson and Harza Engineering Company – brings to the industry expertise in fish screen and water structure design and construction. With more than $721 million in revenue, MWH has 5,500 specialists in more than thirty nations and more than 231 years of combined experience. MWH is successful in delivering progressive environmental solutions that reflect the latest scientific and technological developments while recognizing the importance of protecting the environment and the quality of life in local communities. MWH is a recognized leader in water resources and environmental planning. MWH has been present in Northern California for many years and continues to provide engineering service to many local private and public clients. The company has expertise and the capability to perform all phases of a project from the planning phase to the construction and operation of the completed project.

Montgomery Watson Harza Engineers:

Neil W. Schild is a Principal Engineer with 41 years of experience in operation and maintenance of dams, water supply reservoirs, and power generation projects. He earned

a B.S. in Agricultural Engineering from Kansas State University and is a Professional Agricultural Engineer in California. During 20 years with the U.S. Bureau of Reclamation, he has proven his ability to provide reasonable and practicable solutions to even the most complex situations. His background includes design and construction of fish protection facilities, application of environmental regulations, management of water and land resources, transfer of water rights, water resource planning, project management, and administration of personnel. Mr. Schild was Project Manager for M&T Chico Ranch Fish Screen Facility, Gorrill Land Company Fish Screen and Ladders Project, and Banta-Carbona Irrigation District Fish Screen Feasibility Study. He is currently the Project Manager for the Pleasant-Grove Verona Fish Screen Feasibility Study and the Patterson Irrigation District Fish Screen Feasibility Study.

Wayne C. Dahl is a Principal Engineer with 23 years of experience in large civil engineering projects including planning, design, and construction management of water resources projects, including flood control and water supply. He received a B.S. in Civil Engineering from North Dakota State University, and completed graduate course study in Hydrology from Arizona State University. He is a Professional Civil Engineer in California and Arizona, and a Land Surveyor in California. Mr. Dahl has expertise in the design and construction of water distribution systems; hydrology and drainage projects; canals, channels, pipelines, and pumping stations; reservoir design; and bridges and roadways. Mr. Dahl is experienced in all phases of project and program implementation, including planning, analysis, design, plans and specifications, cost estimating, bidding, and construction management. He is the Project Manager for the American River Pump Station Project, and for Arcade Water District's Capital Improvement Program.

Janet L. Atkinson is a Supervising Engineer with 21 years of experience in the planning and design of water resource and general civil engineering projects with special emphasis on the design of pipelines and pumping plants. She received a B.S. in Civil Engineering from University of Oklahoma and is a Professional Civil Engineer in California and Oklahoma. She has served as project manager and project engineer for several planning and design projects for pump stations. She was responsible for leading the preliminary design effort for a 25 MGD pump station for the Contra Costa Water District. Ms. Atkinson also participated in the design of an irrigation distribution system for the Semitropic Water Storage District in Kern County, the preliminary design of the Central Utah Project Irrigation and Drainage System, and a conceptual engineering report for the San Francisco Water Department Alameda Creek Fishery Water Recapture Facility.

Dennis E. Dorratcague is a Principal Engineer and the water resources director in Montgomery Watson Harza's Northwest Region. He earned a B.S. from University of Notre Dame and his M.S. in Civil Engineering at Colorado State University. He is a Professional Civil Engineer in Washington, Oregon, Alaska, and California. He has been working in the field of hydrology and hydraulics since 1972, primarily concentrating on hydraulic structures and fisheries engineering. He has served as Technical Manager for the Banta-Carbona Irrigation District Fish Screen Feasibility Study and for the preliminary and final design for a fish screen, ladder, and tailrace barrier in Western Oregon. Mr. Dorratcague was also Project Manager for the development of the Feature

Design Memorandum for the Surface Bypass Spillway Project; the hydraulic modeling, preliminary and final designs, and construction services of a fish screen on the White River in Western Washington; the preliminary and final design of a fish screen facility for Pacific Power and Light Company; and the Salmon Falls Fish Passage Project.

Amy L. Wade is an Associate Engineer with experience in civil, environmental, and water resource engineering. She received a B.S. in Civil and Environmental Engineering from Brigham Young University. Her background includes the planning, analysis, and design of flood management and water intake facilities. Ms. Wade has served as Project Engineer on several major water resources projects including the Pleasant Grove-Verona Fish Screen Feasibility Study, and participated in the preliminary design phase for the Sacramento River Watershed Project.

Environmental Science Associates. Dr. Phillip Reiger has a Ph.D. in Fisheries Biology from Iowa State University, a M.S. in Aquatic Ecology and a B.S. in Biology and Geography. Dr. Reiger has broad experience in environmental and fisheries studies. With the Corps of Engineers, he managed and participated in environmental review of various water resource projects including dredging and dredged material disposal, flood control, reservoir development, and fisheries restoration projects. He managed the Los Angeles District Regulatory Functions Branch South Coast Section where he prepared over a hundred environmental assessments for water resources projects. Dr. Reiger has, in recent years, designed, managed, and participated in fish protection studies including several fish screening projects at hydroelectric dams in the Midwest; fish screens for anadromous fish protection on the American River, the Russian River, and Cross Canal adjacent to the Sacramento River.

D. COST

1. Budget

A detailed budget for this project is included in the application portion of the proposal.

2. Cost-Sharing

Reclamation District 2035 will contribute in-kind services as a cost-share for this project. RD 2035 will lead the operation and maintenance of the fish screen facility following the completion of the construction phase. All monitoring and maintenance procedures not described in this proposal will be provided by RD 2035. Estimated annual costs of the screening facility were developed in the Fish Screen Feasibility Study (2000). The estimated annual cost of operation for the alternative selected is $144,000.

E. LOCAL INVOLVEMENT

Notification has been provided to the following agencies that RD 2035 is currently studying options for screening their Sacramento River pump station intake and intends to design and construct a screened intake (See **Attachment 3** for a copy of these letters).

- Yolo County Flood Control and Water Conservation District
- City of Woodland
- City of Davis
- City of West Sacramento
- Yolo County
- Conaway Conservancy Group

The Conaway Conservancy Group has expressed strong support for the project. No opposition has been received from any of the above agencies.

The AFRP Technical committee was advised of the progress of this project at their March 12, 2000 meeting.

Future Involvement: During the environmental review process, an opportunity to comment on the project will be provided to the above agencies, individuals, and adjoining landowners.

Presentations and quarterly reports will be given to the AFRP Technical Team and other agencies that are stakeholders in the project.

F. COMPLIANCE WITH STANDARD TERMS AND CONDITIONS

The district is willing to accept the standard terms and conditions for the state and federal contracting. The applicant has reviewed the terms and conditions and is agreeable to the language as presented. All of the bid bonds and required documents will be utilized when the construction contracts are awarded.

G. LITERATURE CITED

American National Standards Institute Inc. *American National Standard for Pump Intake Design*. Sponsor: Hydraulic Institute. November 17, 1998.

CALFED Bay-Delta Program, *Ecosystem Restoration Program 2002 Proposal Solicitation Package*, 2001.

California Department of Fish and Game, *Fish Screen Criteria,*1997.

Department of California Fish and Game, *Projects Upstream on Merced and San Joaquin Rivers*, Personal knowledge of Fish and Game staff.

Montgomery Watson, *Banta-Carbona Irrigation District, Final Report, Fish Screen Feasibility Report*, 1996.

National Marine Fisheries Service, *Fish Screen Criteria for Anadromous Salmonoids*, NMFS Southwest Region, 1997.

Schild, Neil W., *M&T/Parrott Pumping Station and Fish Screen*. Presented at Fish Passageway Workshop, Sacramento, California, March 26, 1998.

West Yost & Associates, *Fish Screen Feasibility Study*. Prepared for Reclamation District 2035. August 29, 2000.

APPENDIX

ATTACHMENT 1

Summary of Existing Project Status:
RD 2035 Fish Screen Feasibility Study (98-N01)
and Design and Environmental Review (01-L206)

Project Description. Reclamation District 2035 completed a Feasibility Study funded by CALFED in August 2000 to examine the feasibility of screening the water that the District diversion from the Sacramento River to protect migrating fish. The Feasibility Study examined project alternatives, and provided preliminary design criteria, construction cost estimates, conceptual drawings of the facility, and recommendations for implementation. The four alternatives are given below:

A. In-river pump station with flat plate screens on both sides of structure and box girder conduit bridge, water lifted over the levee (minimizes levee excavation)

B. In-river pump station with flat plate screens on one side of structure and slab access bridge, with water pumped through the levee

C. Land-side pump station with cylindrical tee screen intake and slab access bridge, with water gravity draining through the levee

D. Land-side pump station with cylindrical tee screen intake and graded crane access ramp, with water gravity draining through the levee

Alternative C appears to be the most feasible alternative to achieve the engineering and cost design criteria. However, no project will be selected for construction until after the appropriate CEQA and/or NEPA environmental reviews. A schematic layout of Alternative C is provided in **Figure 2**.

Reclamation District 2035 has been approved for CALFED funding of the design and environmental aspects of the project. This design will include the following tasks: project management, environmental documentation, preliminary design, geotechnical investigations, surveying and mapping, 90 percent final design, 100 percent final design, and permits.

Scientific Merit

Hypotheses: This project will include the abandonment of the existing unscreened intake and construction of a new intake pump station with fish screens designed per the current standards. The new screens will allow migrating Chinook Salmon, as well as other fish species, to pass by the intake pumps without risk of entrainment.

Conceptual model: It is widely accepted that screening a pump intake will prevent fish from being entrained by the pump and killed. Fish screen design standards have been

developed by the National Marine Fisheries Service (NMFS 1997) and the California Department of Fish and Game (CDFG 1997). One key component of these standards is that the maximum velocity of water approaching the screens in a normal direction shall be less that 0.33 ft/sec. This low velocity assures that fish will not be pinned against the outside of the screens during pumping.

Adaptive Management: The adaptive management design will be incorporated in stages as follows:

1) Flexible design. Built-in design elements that can be easily modified after construction to fine tune facility performance.

2) Construction quality control phase. Inspection by an approved inspector to verify the facility was constructed per plans and specifications.

3) Hydraulic Testing. Measuring approach velocities across screen face. Adjusting, re-testing, and readjusting as needed for proper hydraulic conditions.

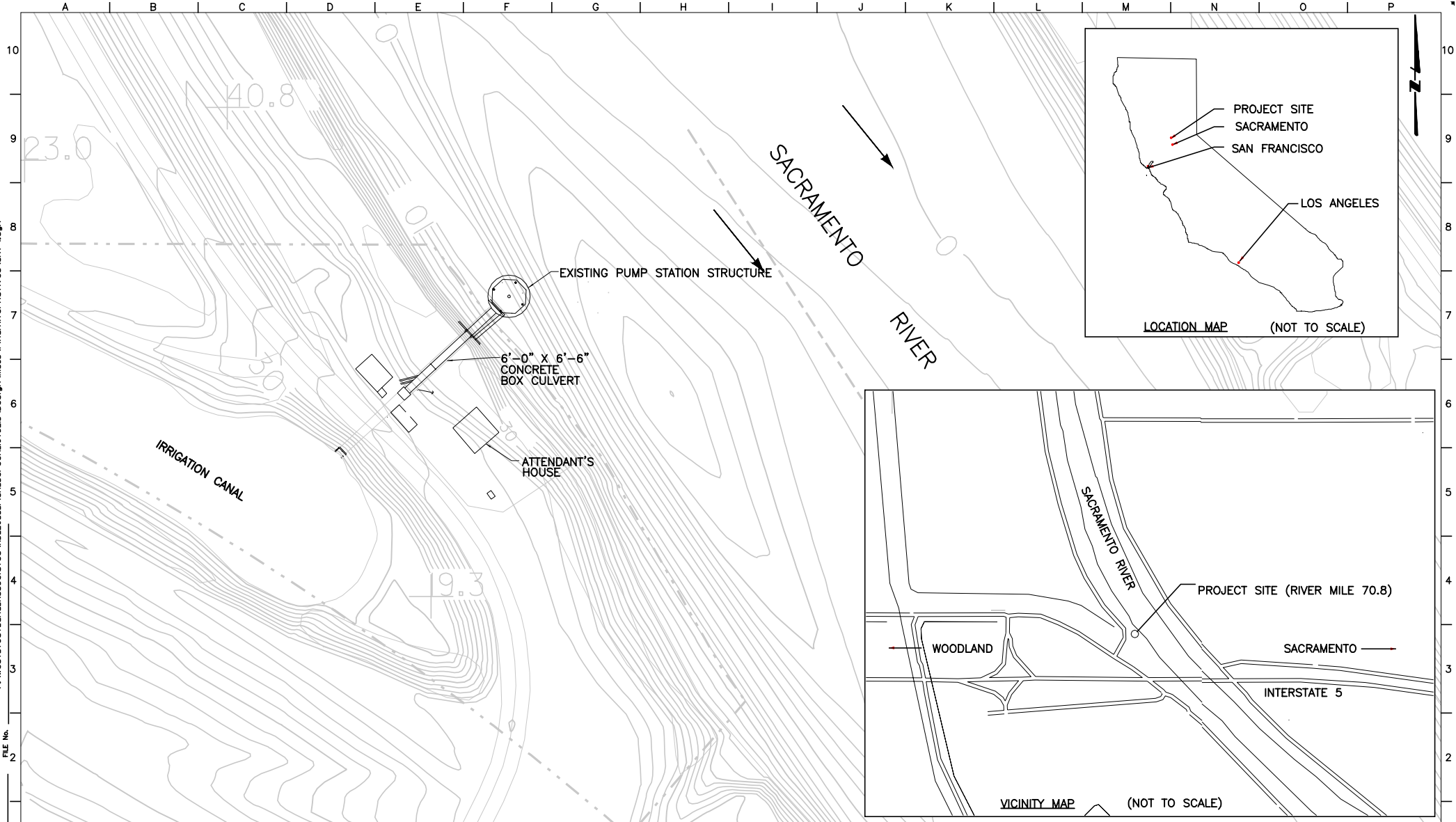
4) Biological Testing. Verify fish screens are preventing entrainment of fish and modify intake's equipment as necessary.

Current status. Reclamation District 2035 has obtained a grant contract from CALFED, and will begin work on the design and environmental phases of the project in October 2001. The design and environmental work are scheduled to be completed by October 2002. The schedule and budget are listed in the following table.

Task No. & Description Title	**Start date (mo/yr)**	**Due Date (mo/yr)**	**Total Costs**
Task 1– Project Management	Oct '01	Oct '02	$162,000
Task 2 – Environmental Documentation	Oct '01	April '02	$150,000
Task 3 – Preliminary Design	Oct '01	March '02	$345,000
Task 4 – Geotechnical Investigations	Dec '01	April '02	$55,000
Task 5 – Surveying and Mapping	Oct '01	Dec '01	$40,000
Task 6 – 90 Percent Final Design	April '02	Sept '02	$474,000
Task 7 – 100 Percent Final Design	Sept '02	Oct '02	$93,000
Task 8 – Permits	TBD	Sept '02	$65,000
			$1,384,000

ATTACHMENT 2

FIGURES



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MONTGOMERY WATSON
Sacramento, California

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DESIGNED P. SALZMAN
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ZONE	REV.	DESCRIPTION	BY	DATE	APP.

RECLAMATION DISTRICT 2035

FISH SCREEN FEASIBILITY STUDY

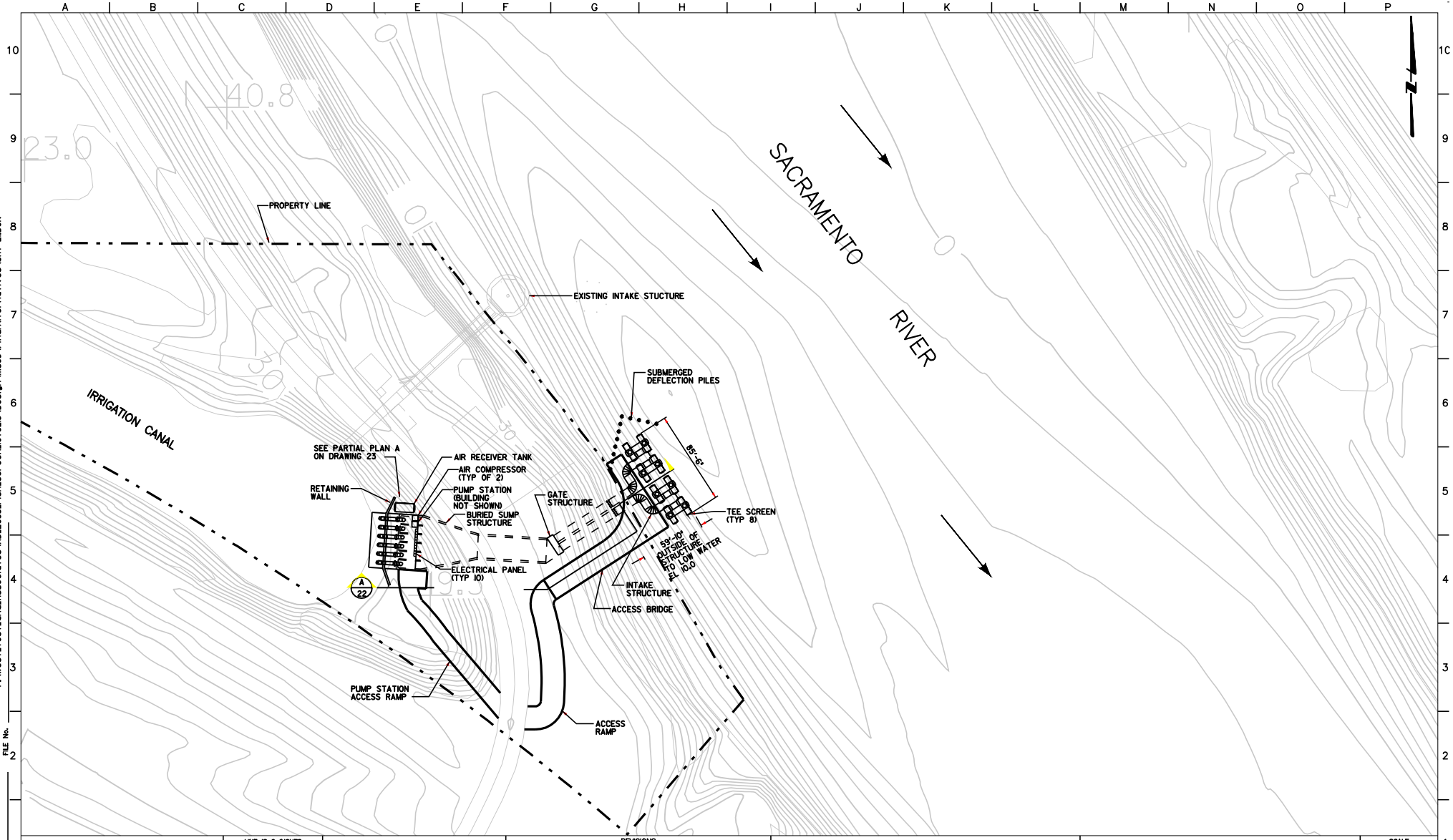
SITE, VICINITY AND LOCATION MAP

EXISTING PUMPING FACILITY

SCALE 1" = 40'

DRAWING NUMBER 1

PROJECT NUMBER



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RECLAMATION DISTRICT 2035

FISH SCREEN FEASIBILITY STUDY

SCALE

DRAWING NUMBER

PROJECT NUMBER

ATTACHMENT 3

LETTERS