CII/Multi-family Large Landscape Sub-meter/ET Controller Installation Program

For

EL DORADO IRRIGATION DISTRICT 2004 Urban Water Use Efficiency Program Grant Application

Submitted to:

California Department of Water Resources
Office of Water use Efficiency
1416 Ninth Street, Room 338
Sacramento, CA 95814
Attention: Debra Gonzalez

January 11, 2005

By

El Dorado Irrigation District
Office of Water use Efficiency
2890 Mosquito Road
Placerville, CA 95667
530-642-4126
Attention: Cari DeWolf

2004 EID Water Use Efficiency Grant Proposal

APPENDIX A: Project Information Form

Applying for: ☒ Urban ❑ Agricultural

1. (Section A) **Urban or Agricultural Water Use Efficiency Implementation Project**

☒ (a) implementation of Urban Best Management Practice, # 5

❑ (b) implementation of Agricultural Efficient Water Management Practice, #_____

❑ (c) implementation of other projects to meet California Bay-Delta Program objectives, Targeted Benefit # or Quantifiable Objective #, if applicable _____

❑ (d) Specify other: _____

2. (Section B) **Urban or Agricultural Research and Development; Feasibility Studies, Pilot, or Demonstration Projects; Training, Education or Public Information; Technical Assistance**

❑ (e) research and development, feasibility studies, pilot, or demonstration projects

❑ (f) training, education or public information programs with statewide application

❑ (g) technical assistance

❑ (h) other

3. Principal applicant (Organization or affiliation): EL DORADO IRRIGATION DISTRICT

4. Project Title: EID CII/Multi-family Large Landscape Sub-metering & ET Controller Installation Project

5. Person authorized to sign and submit proposal and contract:

Name, title	Ane D. Deister, General Mgr.
Mailing address	2890 Mosquito Road
	Placerville, CA 95667
Telephone	530-642-4041
Fax.	530-622-1195
E-mail	adeister@eid.org

6. Contact person (if different):	Name, title.	David Witter, Director Water Policy Coordination
	Mailing address.	2890 Mosquito Road Placerville, CA 95667
	Telephone	530-642-4103
	Fax.	530-622-8597
	E-mail	dwitter@eid.org
7. Grant funds requested (dollar amount): *(from Table C-1, column VI)*		**$83,098**
8. Applicant funds pledged (dollar amount):		$84,201
9. Total project costs (dollar amount): *(from Table C-1, column IV, row n)*		$167,299
10. Percent of State share requested (%) *(from Table C-1)*		50%
11. Percent of local share as match (%) *(from Table C-1)*		50%
12. Is your project locally cost effective? *Locally cost effective means that the benefits to an entity (in dollar terms) of implementing a program exceed the costs of that program within the boundaries of that entity.* *(If yes, provide information that the project in addition to Bay-Delta benefit meets one of the following conditions: broad transferable benefits, overcome implementation barriers, or accelerate implementation.)*		❑ (a) yes ☒ (b) no

11. Is your project required by regulation, law or contract? If no, your project is eligible.

    If yes, your project may be eligible only if there will be accelerated implementation to fulfill a future requirement and is not currently required.

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

- ❑ (a) yes
- ☒ (b) no

El Dorado Irrigation District (EID) is a Special District that is governed by the laws and regulations established by the County of El Dorado. However, EID is continually evaluating its rate structure to coincide with water use trends.

12. Duration of project (month/year to month/year):	**Dec/2005 to Nov/2008**
13. State Assembly District where the project is to be conducted:	**4th**
14. State Senate District where the project is to be conducted:	**1st**
15. Congressional district(s) where the project is to be conducted:	**4th**
16. County where the project is to be conducted:	El Dorado
17. Location of project (longitude and latitude)	2346115.9629, 391306.5226
18. How many service connections in your service area (urban)?	34,636
19. How many acre-feet of water per year does your agency serve?	33,453

20. Type of applicant (select one):

- ❑ (a) City
- ❑ (b) County
- ❑ (c) City and County
- ❑ (d) Joint Powers Authority
- ☒ (e) Public Water District
- ❑ (f) Tribe
- ❑ (g) Non Profit Organization
- ❑ (h) University, College
- ❑ (i) State Agency
- ❑ (j) Federal Agency

❑ (k) Other

❑ (i) Investor-Owned Utility

❑ (ii) Incorporated Mutual Water Co.

❑ (iii) Specify _____

21. Is applicant a disadvantaged community? If 'yes' include annual median household income.

(Provide supporting documentation.)

❑ (a) yes, _____ median household income

☒ (b) no

A. Relevance and Importance

Nature, Scope, and Objectives:

El Dorado Irrigation District (EID) is targeting the California Urban Water Conservation Council (CUWCC) Large Landscape Best Management Practice (BMP) 5, which requires water budgets for landscape water uses. Within California, there are untapped water sources in the Commercial, Industrial and Institutional (CII) and Multi-family mixed-use meters for interior and landscape irrigation. These meters are incapable of fully measuring actual irrigation water usage, and numerous studies have been conducted statewide demonstrating significant amounts of water are lost due to over-irrigation.

In addition, customer landscape managers are hampered by the inability to accurately and objectively evaluate irrigation water usage and monitor potential water waste. Even with the implementation of large landscape water surveys and water budgets, results are unquantifiable and estimates at best.

Recent trends show CII/Multi-family customers are extremely resistant and adverse to change when approached to install dedicated landscape meters. Expressed areas of customer concern are cash flow constraints, the high cost for sub-meter installations, the potential loss of business, water service downtime, sidewalk and parking lot construction issues, the cost of irrigation system re-designs and upgrades to adapt to a dedicated landscape meter and limited staff time.

EID is proposing a Large Landscape Sub-metering/ET Controller Installation Project that will convert 50 CII/Multi-family mixed-use metered accounts with noticeable increases in seasonal demand to separate potable meters with dedicated landscape sub-meters. This project will attempt to overcome the obstacles standing in the way of mixed-use meter conversions and evaluating potential water savings. The project will offer CII/Multi-family customers, with parcel sizes over one acre and at least 8,500 square feet of landscape, the opportunity to install dedicated landscape meters at reasonable costs. In addition, participating customers will receive a full-scale irrigation system water survey with a detailed evaluation report containing recommendations for

irrigation system maintenance improvements and suggestions on management practices. A customized ET (EvapoTranspiration) water budget is created based upon plant requirements, soil types and weather data. The water budget also provides an estimate of efficient landscape irrigation scheduling which is used to benchmark efficient irrigation applications. To establish an ET-based water budget, a landscape survey is conducted to measure the landscape area, distribution uniformity (DU) and functioning status of the irrigation system. A formula is then calculated to obtain the appropriate amount of irrigation water to apply using ET data, reference ET (ETo) information, landscape co-efficient, etc.

One year after the initial installation of the dedicated landscape sub-meter and after an irrigation water usage baseline has been established the customer will be offered an ET "Smart" weather-based irrigation controller at no cost for both the unit and installation. The ultimate goal is to obtain additional water savings and to aid customers in remaining within their newly established water budget while supporting customers in upgrading the landscape irrigation system. ET controllers have been proven to save water by changing the irrigation schedules much more frequently and more accurately than controllers that are manually adjusted by customer irrigation management staff. Customers will also have a direct means to measure water consumption provided by the District's meter reading and billing. Customer billing statements will be designed to incorporate the reporting of consumption and their water budget target, and the District will become equipped to evaluate the implementation of rate structures tied to a water budget-based standard for irrigation efficiency.

This project is designed to reduce customer capital outlay requirements and provide assistance with the installation while reducing the risk of any change in the level of water service. The project costs are designed for the District to cover the cost of the capital outlay items, which include the landscape sub-meter equipped with radio read technology, a backflow prevention device, a utility box with lid, any right-of-way/easement agreements and document recordings, and inspections of the post-landscape sub-meter to irrigation system hook-up to the service line.

The costs for the initial landscape survey, customer's irrigation system report, water budget recommendation and the ET controller and installation costs would be covered by this grant.

The customer will be responsible for the connection to the sub-meter, any and all upgrades to their irrigation system (except for the ET controller) and the ET controller signal service. Note: Customers are required to have their irrigation system connection ready to coincide with the District's scheduled irrigation sub-meter installation and connection to the customer's irrigation system.

B. Technical/Scientific Merit, Feasiblility

This project is consistent with CALFED objectives and project outcomes. Benefits will directly and indirectly contribute to CALFED goals. The results of the outcomes and physical changes are both quantifiable and non-quantifiable. The quantifiable values of the physical changes will occur when the physical changes are made.

The project is designed to assist in balancing the Bay-Delta ecosystem by reducing water demand, supply source pressures, surface runoff and contaminant transportation which ultimately provide flow to resist salt water intrusion, better water quality by increasing fresh water supply sources and potential habitat restoration. Only improvements within a customer's irrigation system and water applications to appropriate ET will result in reductions in runoff accounted for in net water savings.

The project will offer CII/Multi-family customers with parcel sizes larger than one acre and with at least 8,500 square feet of landscape the opportunity to install dedicated landscape meters at reasonable costs. The District has identified potential participants for this program. Participating customers will receive a full-scale irrigation system water survey with a detailed evaluation report containing recommendations for irrigation system maintenance improvements and suggestions on management practices. A customized ET water budget is based upon plant requirements, soil types and weather data.

To establish an ET-based water budget, a landscape survey is conducted to measure the landscape area, distribution uniformity, and functioning status of the irrigation system. A formula is then calculated to obtain the appropriate of irrigation water to apply using ET data, reference ET information, landscape co-efficients, etc.

A water budget provides an estimate of efficient landscape irrigation scheduling, which is used to benchmark efficient irrigation applications. One year after the initial installation of the dedicated landscape sub-meter and an irrigation water usage baseline is established, the customer will be offered an ET "Smart" weather-based irrigation controller at no cost for the unit and installation.

The District will cover the cost of the following capital outlay items, which includes the landscape sub-meter equipped with radio read technology, a backflow prevention device, a utility box with lid, any right-of-way/easement agreements and document recordings, and inspection of the landscape sub-meter hook-up to the customer's irrigation system service line.

The costs for an irrigation contractor to conduct the landscape survey, preparation of the customer's irrigation system report with a water budget and the cost of the ET controllers and contractor to provide the installation service for the ET controller would be covered by the grant.

Customers will be responsible for the connection to the sub-meter, any and all upgrades to their irrigation system (except for the ET controller) and the ET controller signal service. Note: The customer is required to have the irrigation system connection ready

to coincide with the District's scheduled irrigation sub-meter installation and connection to the customer's irrigation system.

The direct, quantifiable improvements in water use efficiency are the reductions in outdoor watering due to irrigation system repairs, water budgeting, the replacement of 50 mixed-use meters that are accurate measuring devices and installation of ET based controllers.

The EID service area lies within Sunset Climate Zones 11, 13 and 14 with cumulative evapotranspiration rates by ETo zones ranging from 53 to 57 inches per year.

It is assumed the irrigable areas for customers' irrigation systems are on average 1.5 acres and have an average consumption use of 2.07 af/acre per 6-month summer period between April through October. Current acreages with large landscape within the EID service area range from 1 to 56 acres. The actual accounting of water use and savings will be measured through the dedicated landscape meter and recorded on the customer's billing records. The irrigation system repairs, water budgeting and replacement of 50 mixed-use meters to dedicated sub-meters has an estimated annual water savings of 20.8 ac-ft/year, or 416 acre feet over the estimated 20-year life of a sub-meter.

Current ET-based irrigation controller studies conducted by IRWD, Solano Irrigation District and EBMUD show potential additional water savings for mixed landscapes with 80% of ET at 20 to 50%. The current estimated life of an ET- based controller is 10 years. The District estimates there will be 35% additional water savings once the ET-based irrigation controller is installed. The potential added annual average water saving is 7.28 ac-ft/yr with a combined total as 28.1 ac-ft per year, or 261 ac-ft over the estimated 10-year life of an ET-based controller. The combined water savings estimate over 20 years is 489 ac-ft/year.

The ET controller matches plant and soil water requirements with current weather conditions to accurately apply appropriate amounts of water in real time while sustaining healthy plant materials. It consists of solenoid valve controllers that control a group of sprinkler heads linked to a weather station, CIMIS station, satellite services and central control computer. Daily ET data on evapotranspiration, wind, rain, fog and other factors important to irrigation are communicated to the central computer that is programmed with software to maximize irrigation efficiency. The central computer, the satellite controllers and weathers stations are connected by radio, phone line or hard wire. There is no cost for structures as the ET controller equipment is already designed to withstand the elements in suitable enclosure structures. There is an estimated 10-year life assumed for the ET controllers, and long-term maintenance costs are subtracted from the annual costs.

The project will implement an ET-based controller direct installation program through an outside contractor(s) and vendor. Once the grant approval is received, a schedule and task list will be used, and ET controller manufacturers and/or installation companies will be scheduled to go through the District's RFP process. At this point the equipment will be ordered and contracts will be assigned.

Quantifiable physical changes, expected benefits and beneficiaries are:

a) 20.8 ac-ft estimated during the first year, then 28.1 ac-ft per year for the next 10 years or the estimated 10-year life of an ET-based controller, or 301 ac-ft., with a combined water savings estimate total of 489 ac-ft/year over the 20 year life of the project.
b) CALFED is the primary beneficiary with the increased in-stream flows into the American River located upstream of the Bay-Delta system. The Bay-Delta ecosystem becomes more balanced through improved water quality by: the reduction of surface runoff and contaminant transportation; the resistance to salt water intrusion with increasing fresh water supply sources; and the added potential of habitat restoration projects.
c) An overall change in habits of landscape irrigation managers when they are able to track water usage.
d) Reduced runoff contaminants, which are considered a source of non-point pollution.
e) ET controllers match the plant and soil water requirements with current weather condition to accurately apply appropriate amounts of water in real-time while sustaining healthy plant materials.
f) Energy savings from reduced pumping and energy generation from hydropower production with USBR and EID as the beneficiaries.

Expected benefit: More attractive landscapes and aesthetics; improved condition and utility of recreation fields; better water quality in streams.
Beneficiaries are: CALFED, the American River, EID and customers, local residents, visitors and wildlife downstream of the EID service area.

Non-quantifiable benefits are:

a) Landscape conditions improve when applying irrigation water only in the amounts needed.
b) Irrigation managers will become more informed about irrigation system management practices.
c) Reductions of green waste dumped into urban landfills. Green waste is caused by stimulating growth through over-irrigation.
d) Reductions in green waste assist with air quality through less use of mowing and trimming equipment, less road time to disposal sites and less waste processing.
e) Water supply and demand responses may be streamlined by reducing the number of spikes during peak-season periods.
f) Better water management and drought response planning.

There is a negative impact with the annual loss of revenue in wastewater commodity charges that are based on the industry sector when a customer converts to a dedicated landscape sub-meter. Those losses are yet to be determined, but are estimated at approximately $850 per sub-meter, or $42,500 annually or $850,000 over the 20-year life of the project. In addition, there is an additional loss of revenue in annual water sales due to the decrease in irrigation water consumption caused by accurate measuring devices and knowledge, estimated at $30,000 annually, for a combined

estimated revenue loss of $72,500 per year or $1,450,000 over the 20 year life of the project. Note: Irrigation and storm run-off does not enter into the wastewater collection system as all run-off flows travel through storm drain systems into area creeks.

The District ensures there will be adequate staffing to implement the program as specified in the grant.

Preliminary Plans and Specifications and Certifications Statements are not applicable.

No environmental mitigation is necessary. This project is exempt from CEQA under Section 15301 of the CEQA Guidelines. This Section of the CEQA Guidelines deals with operation, repair, maintenance or minor alteration of existing public or private structures, facilities, mechanical equipment, or topographical features, involving negligible or no expansion of use beyond that previously existing. (Note: Notice of Exemption is included with this proposal)

C. Monitoring and Assessment

Extensive monitoring and assessments will be completed during the course of the project. Each participant site will have a dedicated landscape sub-meter for one year to obtain a water usage baseline, and water savings will be assessed through billing histories. EID will report the findings on a quarterly basis until the grant contract expires, at which time annual reporting on consumption and program results will be provided over a five-year period.

The project is broken into multiple phases that are noted in the task list below.

Task List Schedule

Phase One:

Start Date – December 1, 2005 End Date – February 28, 2006

1) Identify mixed-use meter sites with high savings potential – completed January 2005
2) Develop action plan and marketing strategy to identify:
   a. program components - sub-meter/ET based irrigation controller, installation programs
   b. methods of communication – EID website, direct mailing, telemarketing, workshops, etc.
   c. staffing requirements
   d. timeline – water surveys, sub-meter and ET controller installations, baseline data collection, etc.
   e. customer response handling – returned mail, in-coming calls, etc.
   f. customer applications, agreements, approval and denials
   g. contractor reporting to customer and district
   h. DWR/CALFED reporting format
   i. product deliveries - water surveys, pre-irrigation sub-meter hook-up inspections, etc.
   j. customer satisfaction feedback surveys

k. Determine fee/payment schedule for water survey and ET controller contractors

3) Develop documents for:
   a. customer applications, agreements,
   b. approval and denial documents
   c. customer irrigation system reports
   d. liability
   e. easements
   f. delivery of services
   g. reporting to DWR/CALFED and District

Phase Two:

Start Date – March 1, 2006 End Date: April 15, 2006

1) Solicit and award contract for large landscape survey program contractor through District RFP process – includes water survey, customer report, establishment of ET-based water budget

Phase Three:

Start Date – March 1, 2006 End Date – October 31, 2008

1) Target list of large landscape customers on mixed used meters with high usage during peak demand periods over three year
2) Issue program notices and participant recruitment
3) Develop on-site water use data and obtain Reference ET (ETo) for landscape site of project participant
4) Implement water surveys for participants
5) Determine if water use meets established water budget for period using ET data for that period.
6) Conduct sub-meter installations
7) Prepare quarterly reports with water use data for participating customers, and invoices for grant reimbursements beginning end of first quarter 2006 through 2009

Phase Four:

Start Date – March 1, 2007 End Date – April 15, 2007

1) Solicit and award contract to ET based controller installation contractor(s) through District RFP process – contractor may provide both the ET-based controller and installation, or there may be a contractor for each service

Phase Five:

Start Date – March 1, 2007 End Date – October 31, 2009

1) Review12 month post installation water use data to obtain baseline prior to ET controller installation
2) Conduct ET-based irrigation controller installations

Phase Six:

Start Date: December 1, 2005 End Date: December 1, 2012

1) Continual evaluation of project results and marketing strategies to adapt as appropriate

2) Prepare annual Monitoring and Assessment Reports beginning in 2006 through 2012
3) Prepare final report presenting project results, water budget data, water use results and savings, summary of the outcome of the overall project

D. Qualifications of the Applicants and Cooperators

1. Please note that resumes for the project manager(s) are attached at the end of this proposal.

2. This project will be administered and conducted primarily by El Dorado Irrigation District. The City of Placerville may be considered an external cooperator with El Dorado Irrigation District. EID is the wholesale agency for the City of Placerville, and the City has entered into contract with EID to coordinate and administer its water efficiency programs which fulfills the California Urban Water Conservation Council BMP 10 requirement.

3. In 2001, El Dorado Irrigation District was awarded a DWR/CALFED Proposition 13 grant for $60,000 to initiate a "Low-Income Ultra Low Flow Toilet (ULFT) Voucher/Rebate Program" for its low income customers.

4. In 2003, EID, with the Regional Water Authority (RWA) and multiple water agencies, was awarded a Proposition 13 "Large Landscape Irrigation Incentive Program" grant.

E. Outreach, Community Involvement, and Acceptance

This program targets Commercial, Industrial and Institutional (CII) and Multi-family accounts and is designed to stimulate customers with large landscapes with high water usage during peak demand period to convert to dedicated landscape sub-meters. The program will use various means to communicate the project. The District will use its website, telemarketing, direct contact, press releases and mailings to gain customer awareness. The District may also incorporate workshops into the strategy to help achieve expectations.

F. Innovation

Many large landscapes within the EID service area are on mixed-use meters, and recent trends show CII/Multi-family customers are extremely resistant and adverse to change when approached to install dedicated landscape meters. This project will attempt to overcome the obstacles standing in the way of mixed-use meter conversions and evaluating potential water savings.
The project is designed to reduce customer capital outlay requirements and provide assistance with the installation while reducing the risk of any change in the level of water service.

Participating customers will receive a full-scale irrigation system water survey with a detailed evaluation report containing recommendations for irrigation system

maintenance improvements, suggestions on management practices and recommended efficient irrigation scheduling. A customized ET water budget will be created to give the customer an irrigation application target and baseline for usage.

One year after a dedicated landscape sub-meter has been installed and an irrigation water usage baseline has been established, the customer will be offered the installation of an ET "Smart" weather-based irrigation controller. ET controllers have been proven to save water by changing the irrigation schedules much more frequently and more accurately than controllers that are manually adjusted by customer irrigation management staff. Customers will also have a direct means to measure water consumption through the District's meter reading and billing statements.

The ultimate goal is to obtain additional water savings and to aid the customer in remaining within their newly established water budget while supporting the customer in upgrading and maintaining their landscape irrigation system. In addition, the District becomes better equipped to evaluate water demand trends to evaluate and possibly implement rate structures tied to water budget-based standards for irrigation efficiency.

G. Benefits and Costs

Project costs to develop and implement this program with a 7.5% contingency are summarized in Table 1. The estimated total cost is $167,299. District staff labor and overhead account for approximately 15% of this total. Outside evaluation consultants' labor to perform the water surveys, create individual customer irrigation system reports, customized water budgets, and ET-based irrigation controller installations is $25,000 or 15%. The cost of 50 ET-based irrigation controllers is estimated at $50,000 or 30% of the total. The meter capital cost is estimated at $50,000 or 30% of the total and derives from an estimate of 50 sub-meter installations and $1,000 for the average for large meter with radio read technology, backflow prevention devices, meter boxes and lids and post installation inspection of the sub-meter to the irrigation system service line.

EID will save money on avoided costs of new water supply at $288 acre-foot of water saved, with EID and the customer as beneficiaries. The physical change is the reduction in water use as landscape irrigation managers are able to track applied water. Expected benefit is an estimated 20.8 af /yr during the first year, then 28.1 ac-ft per year for the next 10 years or 301 ac-ft over the estimated 10-year life of an ET-based controller with a combined water savings estimate total of 489 ac-ft/year over the estimated project life of 20 years. CALFED is the beneficiary with increased in-stream flow water in the American River located upstream of the Bay-Delta system, the use of local water supplies more efficiently and reductions in irrigation run-off.

However, there will be an annual loss of revenue from both sewer commodity fees (estimated at $42,500 annually) and water sales (estimated at $30,000 annually) for a combined estimate of $72,500 per year or $1,450,000 over the 20 year life of the project. Note: Irrigation and storm run-off does not enter into the wastewater collection system for re-treatment as all run-off flows travel through storm drain systems into area creeks.

2004 Water Use Efficiency Proposal Solicitation Package
APPENDIX B: Signature Page

By signing below, the official declares the following:

The truthfulness of all representations in the proposal;

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

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

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

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

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

_____	Ane D. Deister, General Manager	January 11, 2005
Signature	Name and title	Date

APPENDIX C: Project Costs and Benefits Tables

Table C- 1: Project Implementation Costs (Budget)

Table C- 2: Annual Operations and Maintenance Costs

Table C- 3: Total Annual Project Costs

Table C-4: Capital Recovery Factor

Table C- 5: Project Annual Physical Benefits (Quantitative and Qualitative Description of Benefits)

Table C- 6: Project Annual Local Monetary Benefits

Table C- 7: Project Local Monetary Benefits and Project Costs

Table C- 8: Applicant's Cost Share and Description

APPENDIX C
PROJECT IMPLEMENTATION COSTS TABLE

APPLICANT: _____

Project Title: _____

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

Section A projects must complete Life of Investment, column VII and Capital Recovery Factor, column VIII. Do not use 0.

Table C-1: Project Costs (Budget)

	Category	Project Costs $	Contingency % (ex. 5 or 10)	Project Cost + Contingency $	Applicant Share $	State Share $	Life of investment (Years)	Capital Recovery Factor (Table C-4)	Annualized costs $
	(I)	*(II)*	*(III)*	*(IV)*	*(V)*	*(VI)*	*(VII)*	*(VIII)*	*(IX)*
	Administration (for initiation of project)								
	Salaries, wages								
	Fringe benefits								
	Supplies								
	Equipment								
	Consulting services								
	Travel								
	Other								
(a)	Total Administration Costs[1]								
(b)	Planning/Design/ Engineering								
(c)	Equipment Purchases/Rentals/ Rebates/Vouchers								
(d)	Materials/Installation /Implementation								
(e)	Implementation Verification								
(f)	Project Legal/License Fees								
(g)	Monitoring and Assessment								
(h)	Report Preparation								
(i)	Structures								
(j)	Land Purchase/Easement								
(k)	Environmental Compliance/Mitigation/ Enhancement								
(l)	Construction								
(m)	Other (Specify)	25000							
(n)	TOTAL (=a+…+m)	150024	NA				NA	NA	
(o)	Cost Share Percentage	NA	NA	NA	(row n, column V/ IV) x 100	(100 – row o, column V)	NA	NA	NA

1 (Excludes administration O & M costs)

Table C-2: Annual Operations and Maintenance Costs

Operations (1) *(I)*	**Maintenance** *(II)*	**Other** *(III)*	**Total** *(IV)* *(I + II + III)*
			0

(1) Include annual O&M administration costs here.

Table C-3: Total Annual Project Costs

Annual Project Costs (1) *(I)*	**Annual O & M Costs** (2) *(II)*	**Total Annual Project Costs** *(III)* **(I + II)**

(1) From Table C-1, row (n) column *(IX)*
(2) From Table C-2, column *(IV)*

Table C-4: Capital Recovery Factor

(for a discount rate of 6%)

Life of Project (in years)	**Capital Recovery Factor**	**Life of Project (in years)**	**Capital Recovery Factor**
1	1.0600	26	0.0769
2	0.5454	27	0.0757
3	0.3741	28	0.0746
4	0.2886	29	0.0736
5	0.2374	30	0.0726
6	0.2034	31	0.0718
7	0.1791	32	0.0710
8	0.1610	33	0.0703
9	0.1470	34	0.0696
10	0.1359	35	0.0690
11	0.1268	36	0.0684
12	0.1193	37	0.0679
13	0.1130	38	0.0674
14	0.1076	39	0.0669
15	0.1030	40	0.0665
16	0.0990	41	0.0661
17	0.0954	42	0.0657
18	0.0924	43	0.0653
19	0.0896	44	0.0650
20	0.0872	45	0.0647
21	0.0850	46	0.0644
22	0.0830	47	0.0641
23	0.0813	48	0.0639
24	0.0797	49	0.0637
25	0.0782	50	0.0634

Table C-5: Project Annual Physical Benefits (Quantitative and Qualitative Description of Benefits)

QUALITATIVE DESCRIPTION - REQUIRED OF ALL APPLICANTS[1]				QUANTITATIVE BENEFITS –(where data are available) [2]
Description of physical benefits (in-stream flow and timing, water quantity and water quality) for:	**Time Pattern and Location of Benefit**	**Project Life: Duration of Benefits**	**State Why Project Bay-Delta benefit is Direct[3], Indirect[4] or Both**	**Quantified Benefits (in-stream flow and timing, water quantity and water quality)**
Bay-Delta:				
Local:			**Not Applicable**	

[1]The qualitative benefits should be provided in a narrative description. Use additional sheets to describe the benefits.
[2] The project benefits that can be quantified (i.e. volume of water saved or mass of constituents reduced) should be provided.
[3] Direct benefits are project outcomes that contribute to a CALFED objective within the Bay-Delta system during the life of the project.
[4]Indirect benefits are project outcomes that help to reduce dependency on the Bay-Delta system. Indirect benefits may be realized over time.
.

Table C-6. Project Annual Local Monetary Benefits

ANNUAL LOCAL BENEFITS	ANNUAL QUANTITY[4]	UNIT OF MEASUREMENT	ANNUAL MONETARY BENEFITS (Thousands $/yr)
(a) Avoided Water Supply Costs (Current or Future Sources)			
(b) Avoided Energy Costs			
(c) Avoided Waste Water Treatment Costs			
(d) Avoided Labor Costs			
(e) Other (describe)			
(f) Total [(a)+(b)+(c)+(d)+(e)]	**NA**	**NA**	

[4] Examples include avoided cost of current water supply (or future supply if available), energy savings, labor savings, waste water treatment.

Table C-7: Project Local Monetary Benefits and Project Costs

(a) Total Annual Monetary Benefits (Table C-6, row(f))	$
(b) Total Annual Project Costs (Table C-3, column III)	$

Table C-8: Applicant's Cost Share and Description

Applicant's cost share (%): (from Table C-1, row o, column V)	
Describe how the cost share (based on relative balance between Bay-Delta and Local benefits) is derived (see Section A-7 for description). Provide description in a narrative form.	

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