

Application to the Department of Water Resources'
2004 Water Use Efficiency Grant Program:

Amador Transmission Project

Amador Water Agency

January 11, 2005

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List of Attached Documents

- Amador County Public Works Agency. Encroachment Permit. September 2004.
- Amador Water Agency. Revised Section 4.1 of the Environmental Impact Report (EIR) for the Amador Transmission Project (SCH #2000022106)
- Amador Water Agency. Notice of Availability of Revised Section 4.1 of the Environmental Impact Report (EIR) for the Amador Transmission Project (SCH #2000022106)
- Department of Fish and Game Sacramento Valley and Sierra Region. Notice of Determination. September 2004.
- EIP Associates. Amador Transmission Project Draft Environmental Impact Report SCH #2000022106: Prepared for Amador Water Agency. September 2000
- EIP Associates. Amador Transmission Project Final Environmental Impact Report SCB #2000022106: Prepared for Amador Water Agency. May 2001
- KASL Consulting Engineers. Evaluation and Update of the Amador Transmisison Main Project Pipeline Alternative. September 2000
- Kennedy/Jenks Consultants. Project Manual Including Specifications for Amador Water System Transmission Project (100% Design Submittal): Prepared for Amador Water Agency. August 2004
- Kennedy/Jenks Consultants. List of Drawings. August 2004
- Regional Water Quality Control Board Central Valley Region. CWA S401 Permit. July 2004
- Resume for Erik M. Christeson, Project Manager
- State of California Department of Transportation. Encroachment Permit. July 2004.

1 Statement of Work: Relevance and Importance

1.1 Setting

The proposed project is located in the North Fork Mokelumne River watershed which lies mostly in Amador County and partially within Alpine and Calaveras counties (Figure 1). The North Fork of the Mokelumne River is the major tributary to the main stem flowing approximately 55 miles from its source at the Sierras, near the Upper and Lower Blue Lakes, to its confluence with the South Fork Mokelumne River. Flow in the North Fork is mainly regulated by Pacific Gas & Electric's (PG&E) Mokelumne Hydroelectric Project. The North Fork subwatershed contains nearly all the major impoundments and diversion systems located in the Upper Mokelumne River Watershed including seven storage reservoirs storing approximately 220,000 acre-feet (AF) of water per year. Flow rates in the river are therefore governed by release rates from these reservoirs.

After the confluence with the South Fork, the main stem of the Mokelumne River drains into Pardee Reservoir. This reservoir is the primary water supply source (over 90 percent) for the East Bay Municipal Water Utility District (EBMUD) (EBMUD, December 2000). From Pardee Reservoir, a portion of Mokelumne River water is diverted and transported to EBMUD's service area in the San Francisco Bay Area. The remaining water drains into the Camanche Reservoir, another EBMUD facility. A portion of the raw water is then diverted to serve EBMUD's Camanche South Shore Recreation Area. The remaining water travels downstream to the confluence with Cosumnes River and onto the Bay-Delta system.

1.2 Amador Water Agency Background

The Amador Water Agency ("Agency") was formed in 1959 to provide water and wastewater services to residents of Amador County. The Agency's main source of fresh water supply is the North Fork of the Mokelumne River which originates in the California Sierra Nevada Mountains. Water supplied from rainfall and snowmelt is diverted from the river into the Tiger Creek Afterbay or Lake Tabeaud Forebay (Lake Tabeaud). From here, the water either gravity flows or is pumped to one of the Agency's treatment plants.

The Agency's two main water systems are the Amador Water System (AWS) and the Central Amador Water Project System (CAWP). These two systems provide water to the cities of Jackson, Ione, Sutter Creek, Amador City and Drytown as well as communities along Highway 88. The systems are shown in Figure 2.

Amador Water System (AWS)

The AWS consists of two water treatment plants at Sutter Hill (Tanner Water Treatment Plant) and Ione (Ione Water Treatment Plant). Mokelumne River water is first diverted to the Electra Tunnel, a PG&E facility, to Lake Tabeaud which serves as a forebay to the PG&E Electra Powerhouse. From here, the water is diverted into the Amador Canal and is gravity fed to the two water treatment plants. The AWS also provides raw water for agricultural, industrial, commercial, and domestic irrigation needs for customers located along the Amador Canal. Based on terms of a 1985 agreement with PG&E, the Agency is entitled to divert up to 15,000 acre feet (AF) per year of water stored at Lake Tabeaud at a peak flow rate of 30 cubic feet per second (cfs) (KASL Consulting Engineers, September 2000). However, at present, the agency is

unable to use the full entitlement of water due to limitations and conditions of Amador Canal. The remaining Lake Tabeaud water is driven through the Electra Powerhouse for hydropower generation and is then returned to the main stem of the Mokelumne River.

Central Amador Water Project System (CAWP)

The CAWP provides wholesale and treated water by pumping it from the Tiger Creek Afterbay, a PG&E facility, and treating it at the Buckhorn Water Treatment Plant. The Agency currently has the right to store 1,600 AF of water per year and divert 1,150 AF per year from the Tiger Creek Afterbay (Amador Water Agency, 2004).

The agency also provides water service to the Lake Camanche and La Mel Heights areas. The water supply for these areas does not originate from the Mokelumne River but is instead pumped from groundwater wells. Groundwater pumping averages approximately 200 AF per year (Amador Water Agency, 2004).

Some recycled water is also provided from two wastewater treatment plants in the Ione and North Shore Camanche areas. Recycled water is currently used to irrigate approximately 1,500 acres of farm and pasture land. The Agency has partnered with Amador County and the communities of Sutter Creek, Ione, and Jackson to develop a Regional Wastewater Consolidation Study. The study will determine the feasibility of expanding wastewater recycling in the region.

Further discussion on the Agency's service area and existing infrastructure will focus on the Amador Water System since the proposed project relates solely to the Amador Canal.

1.3 Transmission Pipeline Project Location and Background

As previously mentioned, the project is focused on the Amador Canal. As shown in Figure 2, the Canal begins adjacent to Lake Tabeaud and ends at Tanner Reservoir. It is approximately 23.5 miles long and carries raw water for treatment at the Agency's water treatment plants as well as serving the need for raw water use along the way. The Canal was constructed 134 years ago by the Sutter Canal and Mining Company and was bought by the Agency from PG&E in 1985. Water destined for the Canal is first diverted from the Mokelumne River at PG&E's Tiger Creek Afterbay into the Electra Tunnel which then discharges to Lake Tabeaud. A pump station at the Electra Tunnel outlet lifts the water through a 30 inch diameter pipeline to the Amador Canal. The Electra Tunnel pump station and pipeline are owned and operated by PG&E.

The Canal is generally an unlined trapezoidal-shaped conveyance ditch with a bottom width of approximately 6 feet, side slopes varying from nearly vertical to 2:1, and berm top widths varying from 4 to 8 feet. Limited portions of the Canal have been gunite-lined or hypalon-lined.

1.4 Transmission Pipeline Project Need

The canal system experiences deficiencies associated with water loss, reliability relative to conveyance of the water supply, water supply utilization, water quality, and operation and maintenance (O&M) costs. These deficiencies are described in more detail below.

Water Loss

The existing earthen open ditch canal system is subject to loss of water through evaporation, seepage, and inefficient operation. A four-year water balance for Amador Canal is shown in Table 1. On average, the Agency has documented annual losses ranging between 40 and 50 percent of the total intake volume. The Agency has attempted to control losses through repairs of leaks and seepage but new leaks appear constantly. The Agency also experiences operational water losses due to high surface runoff resulting in a compromised supply with extreme turbidity. In addition when weather changes reduce the need for water pumped into the canal, the water not needed is wasted down existing waste gates. Flows are also interrupted annually when the canal is cleared for maintenance activities including silt and debris removal or vegetation management.

Reliability and Conveyance

Based on Agency records, 117 leak repairs and two substantial blow-out and near blow-outs occurred between May 1999 and August 2000 (EIP Associates, September 2000). Water flow is also sometimes impaired by fallen trees and other debris. In addition, flow changes at the head of the 23-mile canal take approximately 24 hours before reaching the end of the canal at Tanner Reservoir. Due to this time lag in flow rate modifications, sudden changes in water demand can result in overflows or shortages.

Water Supply Utilization

The Agency currently has an Agreement with PG&E to obtain 15,000 AF of water per year at a maximum rate of 30 cfs. However, due to the open, earthen canal system, the amount of flow reaching Tanner Reservoir is reduced by forty to fifty percent. Based on Department of Finance projections of population and business growth for the Sutter Creek area, without conveyance improvements in the Canal, the area is estimated to experience water shortages of 2,503 AF in the year 2010 and 4,433 AF in 2020 (EIP Associates, September 2000). In contrast, with conveyance improvements, the area is estimated to experience a surplus of 2,747 AF in 2010 and 817 AF in 2020 (EIP Associates, September 2000).

Table 1 Amador Canal Water Balance

Year	Water In (Head Amador Canal) (AF)	Water Out (Accounted) (AF)							Water Loss (Unaccounted) (AF)	
		Tanner Plant	Ione Plant	Ione Canal	Ione Pipeline	Amador Canal (Metered)	Amador Canal (Unmetered)	Total Accounted Water	Acre- feet	% of Water In
2000	12,419	2,296.28	1,573.7	915	849.9	340.1	203.4	6,178.4	6,240.6	50.3%
2001	10,984	2,519.67	1,714.96	730	671.7	384	176.3	6,196.6	4,787.4	43.6%
2002	9,761	2,515.67	1,715.9	485	827.2	306.9	192.5	6,043.2	3,717.8	38.1%
2003	9,695	2,519.24	1,671.48	365	787.4	238.6	159.4	5741.1	3,953.9	40.8%
2004	8,101	2,260.46	1,433.39	274	955.1	309.9	180.8	5,413.7	2687.3	33.2%
Average	10,192	2,766	1,622	554	818	316	183	5,915	4,277	42%

Water Quality

The open canal system is subject to contamination of its water supply by runoff from adjacent agricultural, cattle grazing, and domestic land uses and atmospheric deposition. In addition, it may also be adversely impacted by potential septic field intrusion. The water quality is currently monitored by measuring coliform and fecal coliform from the head waters at Lake Tabeaud to the Tanner Water Treatment Plant. Table 2 provides data collected as total and fecal coliform levels over a six year period.

Table 2 Total Coliform (TC) and Fecal Coliform (FC) Levels along Amador Canal

		1996	1997	1998	1999
Tiger Creek (Water In)	Min. FC	2	2	2	2
	Max. FC	13	130	13	30
	Min. TC	2	4	2	2
	Max. TC	900	900	500	2,400
Lake Tabeaud (Water In)	Min. FC	2	N/A	N/A	2
	Max. FC	300	N/A	N/A	240
	Min. TC	4	N/A	N/A	2
	Max. TC	900	N/A	N/A	900
Tanner Reservoir (Water Out)	Min. FC	4	9	11	2
	Max. FC	300	240	300	900
	Min. TC	30	34	26	2
	Max. TC	2,400	1,600	2,400	2,400

As depicted in Table 2, the degradation of the water quality along the canal is significant. The open canal system is also susceptible to deliberate and/or accidental contamination of the water supply since it parallels or crosses twelve different public roads all providing easy access to the canal.

Operations and Maintenance Costs

Ongoing O&M costs incurred from leak repairs and weed and algae control activities are expensive due to the open earthen nature and age of the canal. Currently a crew of three staff members spends 90% of their time operating and maintaining it (EIP Associates, September 2000).

1.5 Transmission Pipeline Project Description

The Amador Transmission Pipeline Project proposes to replace the existing canal system with approximately 46,500 lineal feet (8.8 miles) of 30 to 36-inch diameter pressure main. The water transmission main would travel directly from Lake Tabeaud to Tanner Reservoir. Service to raw water customers would be provided by a raw water service line in the existing Amador Canal. The service line would be a 6 to 12-inch diameter pipeline buried within the existing route of Amador Canal. Amador Canal would therefore be dewatered and backfilled. The alignment of the existing Amador Canal and that of the proposed pipelines is shown on Figure 3. The water in the pipelines would flow by gravity to avoid the need for pumping. Further detail on each pipeline alignment is given in Section 2 (*Statement of Work : Technical/Scientific Merit and Feasibility*).

The project would be implemented in two phases. The water transmission main would be constructed during the first phase of the project with an estimated project duration of 21 months (March 2005 through November 2006). Design for Phase 1 has been completed and the Final Plans and Specifications have been attached to this application. This phase of the project is ready for construction. The second phase of the project would involve replacement of the existing Amador Canal with the raw water service line. This phase would have an estimated project duration of 2 years including one year for design completion and a second year for construction (October 2006 through October 2008). **It is important to note that funding is requested only for Phase 1 of the proposed Amador Transmission Pipeline Project.** Further detail on the proposed scope of work and schedule is given in Section 2 (*Statement of Work: Technical/Scientific Merit and Feasibility*).

1.6 Transmission Pipeline Project Objectives

In order to address the deficiencies outlined above, the proposed project objectives are to:

1. Reduce Water Loss:

Since the pipe would be sealed and buried below grade, all losses from seepage, leaks, and evaporation would be substantially eliminated. The pipeline would also provide improved operational control since it allows for almost instantaneous changes in flows, thereby eliminating the current procedure of wasting unneeded water via waste gates. As a result, the project would be consistent with CALFED's as well as the Agency's Urban Water Management Plan's policies on water conservation.

The CALFED 2000 Record of Decision (ROD) establishes an estimated statewide water savings from water use efficiency in the urban sector at 520,000 to 688,000 AF (CALFED, August 2000). This water is currently unavailable in part because it is lost to excessive evaporation. As shown in Table 1, the existing Amador Canal contributes to this excessive loss with approximately 4,300 AF lost annually through evaporation, seepage, and inefficient operation. The proposed project would therefore implement CALFED's goal to "reduce existing irrecoverable losses – by reducing losses currently unavailable for reuse ... , CALFED will increase the overall volume of available water." (CALFED, August 2000). In addition, the project would meet multiple objectives by making the volume of water savings available for in-stream flows in the North Fork of the Mokelumne River. As a result, the project will contribute to the overall improvement of in-stream habitat for anadromous fish and other species in this section of the river. The additional volume of in-stream flows will eventually reach EBMUD's Pardee Reservoir. The Agency has entered into an agreement with EBMUD to make this volume available for EBMUD's drought contingency flows.

As stated in their UWMP, elimination of excessive water loss in Amador Canal would also contribute to the Agency's goal of "ensuring the implementation of water conservation programs that will promote efficient use of the existing water supplies." (Amador Water Agency, 2004). More specifically, it would contribute to the established Urban Best Management Practice (BMP) of "System Water Audits, Leak Detection, and Repair" (i.e. the Agency's Water Demand Management Measure number three). Additional Water Demand Management Measures implemented to achieve this goal are described in Section 1.7 (*Water Demand Management Activities*). Since Amador Canal is also used to provide raw water service to customers along its route, its replacement can also be considered to implement the established Agricultural Efficient Water Management Practice (EWMP) of lining or piping ditches and canals.

2. Improve Reliability and Conveyance of the Water Supply:

The pipelines would not be subject to flow impedance from fallen trees or other debris. In addition, electrical power would not be required to supply the flow of water since no pumping would be needed. As a result, the water supply would not be subject to flow interruptions due to power failures.

3. Attain the Agency's Full Water Entitlement of 15,000 AF:

As described in their Urban Water Management Plan, the Agency has sufficient water to meet its customer needs through the year 2020, provided its full entitlement of water (15,000 AF) is available (Amador Water Agency, 2004). This entitlement would be available upon implementation of the proposed project since the proposed pipelines would not be subject to drastic water losses. As previously shown in Table 1, the current water demand is approximately 6,000 AF with an average of 4,300 AF lost through evaporation, seepage, leaks, or inefficient management. This amount would be instead made available for in-stream flows and when needed, EBMUD's drought contingency flows. Implementation of the proposed project would preserve local flexibility by making the Agency's full entitlement available when needed. It would therefore achieve CALFED's goal of "... maintaining the flexibility of implementing water use management and efficiency improvements at the local level ..." (CALFED, August 2000).

4. Continue Service to the Agency's Customers with Improved Reliability:

The current raw water customers would be served via a pipeline along the existing Amador Canal.

5. Improve Raw Water Quality:

The proposed pipelines would eliminate water supply contamination from surface runoff. In a July 24, 2000 letter, the Department of Health Services states that:

"The Department recommends that the Amador Water Agency continue to investigate the feasibility of piping the Amador Canal in order to protect the quality of raw water along the 23.5 [2]-mile distance that the open canal currently carries water to the treatment plant. Animals would not have direct access to the raw water along the former canal route and during winter storms, runoff would no longer have a degrading impact on the water quality downstream of the start of the pipeline at Lake Tabeaud." (EIP Associates, September 2000)

The new pipelines would therefore eliminate the risk of water supply contamination from livestock, human contact, or accidental discharges.

6. Reduce O&M Costs:

It is estimated that the agency would save approximately \$75,000 a year in routine O&M costs (EIP Associates, September 2000). These savings could be used to perform preventative maintenance on the Amador Water System distribution facilities.

1.7 Water Demand Management Activities

The objectives of the proposed project are consistent with water conservation goals and policies outlined in the Agency’s 2004 Urban Water Management Plan (UWMP). The UWMP has been attached to this application for reference purposes. Several water conservation measures have been implemented to ensure the efficient use of existing water supplies. These measures are described in detail in Section 6 of the UWMP and are listed and summarized in Table 3. The proposed Transmission Pipeline Project would specifically implement Demand Management Measure three (DMM3) (System Water Audits, Leak Detection and Repair).

Table 3 Amador Water Agency’s Water Demand Management Measures (DMM)

Water Demand Management Measure (DMM)	Description
DMM1 – Water Survey Program	This program offers free residential water surveys including sprinkler system efficiency.
DMM2 – Residential Plumbing Retrofit	The agency offers free water-saving kits that contain free shower head replacements and other devices to reduce toilet flush water requirements.
DMM3 – System Water Audits, Leak Detection and Repair	The Agency has a continuous water leak detection and repair program. Records are kept annually on water production versus consumption to track unaccounted water. High water losses in the conveyance system have been attributed to Amador Canal. However, these losses will be eliminated with implementation of the proposed project.
DMM4 – Metering with Commodity Rates	Properties currently under a flat rate service are required to convert to metered service upon transfer of ownership.
DMM5 – Large Landscape Conservation Programs	The Agency reviews landscape plans for proposed new developments. Drought tolerant plants are recommended and a demonstration garden is maintained for the public to view.
DMM6 – High-Efficiency Washing Machine Rebate Programs	This DMM was recently added to the Agency’s practices.
DMM7 – Public Information Programs	The Agency promotes public awareness of water conservation issues by developing bill inserts, brochures, special events and water conservation programs sponsored in local schools.
DMM8 – School Education Programs	Educational materials and videos are provided to schools upon request.
DMM9 – Conservation Programs for Commercial, Industrial, and Institutional	Review of plans for new commercial, industrial, and institutional customers is done upon request.
DMM10 – Wholesale Agency Programs	The agency does not have a wholesale program.
DMM11 – Conservation Pricing	Tiered rates for the Amador Water System are not currently in place. However, the does use tiered service rates for customers in the Central Amador Water Project System.

Water Demand Management Measure (DMM)	Description
DMM12 – Water Conservation Coordinator	This function is fulfilled by customer service representatives whose responsibilities include providing conservation information upon request.
DMM13 – Water Waste Prohibition	The Agency has both voluntary and mandatory conservation policies including unattended water prohibitions; shortening of irrigation season; car, boat, building, and trailer washing restrictions; restrictions on filling of swimming pools; etc.
DMM14 – Residential Ultra-Low-Flush Toilet Replacement Programs	This program is not currently in place.

2 Statement of Work: Technical/Scientific Merit, Feasibility

2.1 Description of Proposed Project and Pipe Materials

As previously described, the proposed project will replace the existing canal system with a water transmission main and raw water service line. It includes 46,521 linear feet (LF) of 30 to 36-inch water transmission main and approximately 117,600 LF of 6 to 12-inch raw water service pipeline. The proposed pipeline alignments are shown in Figure 3. Flow will be gravity driven thereby avoiding the need for pumping. In order to make the project more manageable for the Agency, construction of the pipelines will be divided into two phases. Phase 1 involves the construction of the water transmission main, while Phase 2 will replace the existing Amador Canal with a raw water service line to continue service to raw water customers. Details on each alignment and pipe materials are given below. **It is important to note that funding is only requested for Phase 1 of the proposed Amador Transmission Project.** The varying estimated project costs are different due to the size of the pipelines and the elimination of pre-installation activities in Phase 2 of the proposed project. As previously described, the proposed raw water service line will be buried within the existing route of Amador Canal. As a result, pre installation activities such as vegetation removal, clearing, and excavation will not be necessary. In addition, Phase 2 will be implemented with the Agency's forces and will not go out for bid.

Water Transmission Main (Phase 1) – (\$15,032,281)

The recommended water transmission main includes:

- 600 LF of intake pipe at Lake Tabeaud;
- 11,650 LF of pipeline located within public roadways;
- 33,560 LF of pipeline located within private easement areas; and
- 721 LF of pipeline located at the Tanner Water Treatment Plant Site.

The water transmission main will be a 30 to 36-inch pipe with a design flow of 30 cfs. Cement lined and wrapped Ductile Iron Pipe (DIP) will be used for pipe sections with pressures in excess of 150 psi. For pipe segments with 150 psi or less, DIP, PVC C905, or HDPE pipe will be used.

Nineteen easements were identified along the route of the proposed main. Three of these have been acquired by the Agency covering over forty percent of the alignment route. The remaining easements will be obtained upon recertification of the Final Environmental Impact Report (EIR) (see Section 2.3 - *Task List and Schedule* for a description of the status of environmental documentation and permits). Design of the main was completed by Kennedy/Jenks Consultants in August 2004. Copies of the Final Plans and Specifications have been attached to this application for reference purposes.

Service Pipe (Phase 2) – (\$2,500,000)

Current raw water services along Amador Canal will be maintained by construction of a service pipeline within the existing Amador Canal route (Figure 3). The raw water service pipelines will be HDPE pipes ranging in size from 6 to 12 inches in diameter. Design flows for the pipes depend on raw water demand and range from 0.01 to 1.7 cfs.

The planning and pre-design activities for construction of this pipeline were completed by the Agency and KASL Consulting Engineers. Final design is planned to begin in October 2006 or

sooner. Construction of the pipeline will be done with Agency's resources instead of going out to bid.

2.2 Description of Phase 1 Construction Methods, Procedures and Equipment

Clearing and Vegetation Removal

Where necessary, clearing will be conducted within the permanent and temporary construction easements. A 15-foot wide permanent easement will be required for the proposed transmission main together with a 20-foot wide temporary construction easement. The total area to be cleared was estimated to be approximately 26.5 acres (KASL Consulting Engineers, September 2000). This area will be revegetated upon completion of construction activities. Equipment needed for this clearing activity will include jackhammers, pavement saws, mowers, graders, front-end loaders, and trucks.

Traffic Control

Approximately 11,650 LF of pipeline is located within public roadways. Based on an average production rate of 150 LF per day of pipeline installation, approximately 80 days of traffic control will be required (KASL Consulting Engineers, September 2000).

Excavation

Construction will be completed using open trench installation using conventional cut-and-cover construction techniques. The typical trench section is shown in Figure 4. Approximately half of the excavation will be conducted in rock or on slopes. The proposed pipe was aligned to avoid rocky surface areas. However, in areas where rock outcroppings are visible and unavoidable, blasting may be required to remove the rock. Potential equipment to be used during excavation would include:

- Track mounted excavators
- Backhoes
- Cranes
- Dump trucks
- Concrete delivery trucks
- Welding equipment
- Compactors
- Water trucks
- Forklifts
- Compressors/jack hammers

Dewatering

Trench dewatering will be required at below-grade drainage and creek crossings. The proposed pipeline crosses 18 stream, creek, or drainage courses (KASL Consulting Engineers, September 2000). Amador Water Agency will obtain all necessary permits including the Waste Discharge Requirements and NPDES Permit for Stormwater and management during construction. All permit conditions will be followed during dewatering activities.

Aerial Crossings

There are two aerial crossings along the proposed alignment, one located over the South Fork of Jackson Creek and the second located over Jackson Creek. The first aerial crossing will be aligned along the existing bridge while the second will be placed upstream of the existing culvert.

Bored and Jack Crossings

There are two bore and jack crossings along the alignment. Both bores will require a 48-inch diameter steel casing.

Hauling

Native material excavated from the pipeline trench may not be suitable for bedding or initial backfill. As a result, unsuitable material will be either spread onsite or hauled offsite.

Bedding and Backfill

A 6-inch thick pipe bedding will be provided together with an initial 6 inches of backfill above the top of the pipe. Dump trucks will be used to deliver imported backfill, although native soil will be reused for backfill whenever possible (i.e. if it meets the properties necessary for compaction and stability). A vibratory compactor and jets of water would then be used to compact and consolidate the backfill material. Select native material with cobbles less than 3 inches in diameter would be used for the final backfill in easement areas.

Surface Restoration

After completion of backfill activities, the surface will be restored. Where the pipe is installed in a paved roadway, repaving will be conducted. For unpaved surfaces, restoration would involve replacing the topsoil and replanting.

Pipeline Testing

Once installation is complete, the pipeline will be pressure tested.

2.3 Task List and Schedule

The project plan for the proposed Phase 1 of the Amador Transmission Main project is outlined below. A schedule for this work is included at the end of this section. For reference purposes, this schedule also includes an abbreviated timeline of Phase 2 activities.

Task 1 – Easements (\$135,850)

This task consists of identifying and defining the required temporary construction and permanent easements and securing those easements. Nineteen permanent easements were identified along the water transmission main alignment. Three of these have been acquired covering over forty percent of the alignment. The remaining Phase 1 easements will be obtained following adoption of the final EIR at the end of February 2005.

Deliverables: plat maps and legal descriptions for up to 19 parcels along the pipeline alignments

Task 2 – Planning/Design/Engineering (\$1,240,694)

Subtask 2.1 Preliminary Design

This subtask would include design criteria development, materials evaluations, route evaluations, field reconnaissance, preliminary hydraulic and geotechnical analyses, and public outreach activities. This subtask has been completed by the Agency and several feasibility studies and preliminary design reports are available for review including:

- *Amador Water Transmission System Master Plan (Amador Water Agency, July 1991)* – In 1991, the Agency conducted master planning of a proposed pressure transmission main to replace the Amador Canal.
- *Amador Water System Transmission Project, Preliminary Design Report (Dewante & Stoewell, September 1994)* – This report described five transmission main alternatives and included estimated construction and acquisition costs. One alternative (Alternative E) was recommended based on cost, ease of construction, and ease of serving existing raw water customers.
- *Canal Life Extension Study (KASL Consulting Engineers, April 1999)* – this report studied the feasibility of extending the life of the existing Amador Canal. Capital improvements and operation and maintenance activities to reduce losses, improve conveyance, preserve water quality, and provide watershed management were evaluated and recommended.
- *Evaluation & Update of Amador Transmission Main Project Pipeline Alternative (KASL Consulting Engineers, September 2000)* - After completion of the 1994 report, the agency conducted preliminary environmental studies and discussions with property owners in the pipeline project area. This study evaluated the findings and recommendations made in the previous 1994 Preliminary Design Report to address the environmental concerns and respond to modifications requested by property owners. In addition, the study updated construction and acquisition costs to allow the Agency to conduct an up-to-date comparison with improvements recommended in the Canal Life Extension Study. Field investigations were conducted along the entire length of the previously recommended alternative (Alternative E) and proposed adjustments were made based on environmental, cultural, and residential concerns. This report also provided engineering support for completion of environmental

documents. The final recommended and updated water transmission main alignment was based on field findings, input from the Agency's environmental consultants, and input from the project area property owners. Public meetings were held to present updated findings and recommendations. Records of correspondence in support of this alternative have been attached to this application. A copy of this report has also been attached to this application for reference purposes.

Deliverables (attached to application): Evaluation & Update of Amador Transmission Main Project Pipeline Alternative (KASL Consulting Engineers, September 2000), correspondence in support of alternative

Subtask 2.2 Design

This subtask would include:

- Surveying and mapping and field reconnaissance along the proposed pipeline alignment.
- Researching existing underground utilities located within the pipeline corridor.
- Conducting a geotechnical investigation including development of geotechnical design recommendations, and review of the design documents to verify conformance with geotechnical recommendations.
- Conducting a corrosion investigation including field soil resistivity surveys along the pipeline route, laboratory analysis of soil samples for corrosivity, evaluation of data and development of corrosion protection alternatives.
- Developing the 30, 60, and 90 percent interim design submittals.
- Developing the final design submittal including final plans and specifications for bidding and construction.

With the exception of the corrosion investigation, all other Phase 1 (i.e. construction of water transmission main) design work has been completed. The corrosivity study will be completed once remaining Phase 1 easements are obtained. Copies of the water transmission main Final Plans and Specifications have been attached to this application for reference purposes.

Deliverables (attached to application): Water Transmission Main (Phase 1) Final Plans, Specifications, and Certification Statements

Task 3 – Permit Procurement and Development of Applicable Environmental Documentation (\$212,850)

Subtask 3.1 Environmental Documentation

The Agency began preparation of an Environmental Impact Report (EIR), as required by the California Environmental Quality Act (CEQA), in February 2000. A Notice of Preparation (State Clearing House Number 2000022106) and Initial Study were published on February 29, 2000. The Draft EIR was then published on September 20, 2000. After the 45- day review period, stakeholder comments were incorporated into the Final EIR which was certified by the Agency's Board on May 15, 2001. Copies of the NOP, Initial Study, and Draft EIR are attached to this application. The NOP and Initial Study can be found in Appendix A of the Draft EIR. The checklist accompanying the Initial Study has also been attached to this application and can also be found in Appendix A of the Draft EIR.

The Final EIR certification was subsequently challenged by members of the Protect the Historic Amador Waterways (PHAW) group and other private citizens. On August 12, 2004, the Agency Board of Directors set aside the Final EIR certification pursuant to the Peremptory Writ of Mandate issued on August 10, 2004 by the Amador County Superior Court in *Protect The Historic Amador Waterways v. Amador Water Agency* (Amador County Superior Court Case No. 01CV1191). The agency was mandated to rewrite Section 4.1 (Water Resources) of the Final EIR. The Agency has revised this section and has circulated it for public review and comment. The 45-day public review period ended on October 18, 2004 and the revised Final EIR is currently in the recertification process. The Agency plans to certify the revised Final EIR in February. Copies of the Final EIR and revised Section 4.1 (Water Resources) have been attached to this application.

Deliverables (attached to this application): Environmental Impact Checklist, Draft EIR, Final EIR, and Revised Section 4.1

Subtask 3.2 Permits

A list of required permits and associated jurisdiction is provided in the table below. The Agency has completed preparation of all required permit applications for Phase 1 of the proposed project (construction of water transmission main) and is awaiting approval notices. However, due to the recertification of the Final EIR, the Agency needs to reprocess permits granted based partly on EIR findings. These may include CWA Section 401 permits, Lake or Streambed Alteration Agreements, etc. Permits will be reprocess prior to construction. All comments received from the permitting agencies will be incorporated into the construction documents. Table 4 below describes the status of each permit application.

Task 4 – Construction (\$12,494,669)

Subtask 4.1 Bidding, Contract Award, and Notice to Proceed

The Agency foresees a minimum bid period of four weeks initiated by the formal advertisement for bids. A pre-bid conference will be conducted early in the bid period for interested contractors and material and equipment suppliers. Upon receiving bids, the Agency will review them for responsiveness and recommend to the Board award of the contract. After award of the contract by the Board, the Agency will issue a notice to proceed to the contractor.

Deliverables: Advertisement for bid, pre-bid conference agenda, bid package

Subtask 4.2 Construction & Construction Management

The Agency will oversee and manage construction of the project, including performing inspection, material testing, and observing construction to verify conformance with the contract documents. The construction contractor will execute the work in accordance with the construction contract document requirements and at the Agency's further direction. An operations and maintenance (O&M) manual will be prepared prior to commencing water delivery services. Quality Assurance and Quality Control (QA/QC) activities will be conducted to ensure all work is peer reviewed.

Table 4 Status of Permit Applications

Permit	Jurisdiction	Status
Section 401 and 404 of Clean Water Act	Regional Water Quality Control Board (RWQCB), Central Valley Region U.S. Army Corps of Engineers	Certification received on July 14, 2004. A copy of this certification has been attached for reference purposes. The Agency applied for a Nationwide Permit 12 (Utility Line Activities).
Waste Discharge Requirements and NPDES Permit (for discharge of stormwater associated with construction activities)	Regional Water Quality Control Board, Central Valley Region	The Notice of Intent (NOI) for the NPDES permit will be submitted once a contractor is selected.
Lake or Streambed Alteration Agreement	California Department of Fish & Game	Notice of Determination (NOD) received on September 9 th 2004. The NOD has been attached for reference purposes.
Caltrans Encroachment Permit	CalTrans	Encroachment permit awarded on July 19, 2004. The permit has been attached for reference purposes.
County Encroachment Permits	Amador County	Encroachment permit awarded on September 13, 2004. The permit has been attached for reference purposes.
Air Pollution Control Board District Authorization	Amador County Air Pollution Control District	Not Required
Section 10 Rivers & Harbors Act	U.S. Army Corps of Engineers	Not Required
National Wild & Scenic Rivers Act	U.S. Department of the Interior, National Park Service	Not Required
State Wild & Scenic Rivers Act	The Resources Agency of California	Not Required
National Historic Preservation Act	Office of Historic Preservation	Not Required
Endangered Species Act	U.S. Fish & Wildlife Service	Biological Assessment completed in 2003.
Underground Classification	CA Dept. of Industrial Relations	Agency received classification.
FERC (Section 851) approval	Public Utilities Committee	The Agency was granted approval.
Dam Safety Permit	California Department of Water Resources	The Agency applied for a Dam Safety Permit through PG&E. The permit was granted.

Deliverables: Construction documentation, including record drawings, submittals, construction correspondence, responses to contractor requests for information, construction meeting summaries, change order documentation, and contract document modifications. Final O&M Manual. QA/QC reports.

Subtask 4.3 Startup and Testing

Once installation of the pipeline is complete, the pipeline will be cleaned, flushed, and then filled for pressure testing. All appurtenances will be checked out for proper operational function. Agency staff will be trained in the operation and maintenance of the project facilities.

Subtask 4.4 Final Inspection and Acceptance

After successful startup and testing, final inspections and walk-through will be performed. A punch list will be generated of items remaining to be completed by the contractor. Upon successful completion and inspection of the punch list items, the Agency will accept the project and close out the construction contract.

Task 5 – Public Outreach (\$12,430)

Information about the project will be shared with the public through newspaper announcements and regular newsletters sent to Agency customers. Signage will be provided along the pipeline alignment during construction activities. Special outreach information with details on the project will be provided to stakeholders who are directly impacted by the project. Regular public board meetings will also be held monthly.

Deliverables: Newspaper announcements, Agency newsletters, and other public outreach documents

Task 6 – Monitoring and Assessment (\$12,430)

The Agency will continue to have a mechanism to track the system's water balance. A meter will be installed at the head works and end of the water transmission main to track any potential water losses. However, water losses through pipe leaks are expected to be minimal especially in the first years of the pipe's lifespan.

Task 7 – Project Management (\$923,358)

This task includes coordination of resources and provision of procedures and guidance documents to efficiently complete the work. Other activities will include constant communication with all team members, monitoring the status and performance of the project, and reporting progress to the Department of Water Resources, Office of Water Use Efficiency.

Subtask 7.1 Project Kick-off Meeting

A kickoff meeting will be conducted with the final design team, Agency staff, contractor, DWR Agency of Water Use Efficiency staff, and other pertinent Agency consultants. A review of the project's scope and purpose will be conducted. This kickoff meeting will be designed to ensure that the roles and responsibilities of each team member are clearly understood and to establish a communication approach between team members.

Deliverables: Kickoff meeting minutes and action item list

Subtask 7.2 Insurance Requirements

Meet and obtain all necessary legal and insurance requirements.

Subtask 7.3 Report Progress

Monthly progress reports will be submitted to the Agency's Board to describe the work accomplished during the reporting period, the anticipated work during the next reporting period and provide schedule and budget summaries. A project issue/resolution list will also be provided reflecting the nature of the issue as well as how and when it was solved. These monthly reports will be compiled into a quarterly report to be submitted to the Department of Water Resources, Office of Water Use Efficiency.

Deliverables: Quarterly progress reports

Subtask 7.4 Monthly Project Meetings

Regular monthly meetings will be held with the project team to review the progress of the work.

Deliverables: Monthly project meeting minutes

3 Statement of Work: Monitoring and Assessment (\$12,430)

Project monitoring will be conducted regularly to document water savings and water quality improvements.

The Agency routinely tracks the canal's water budget to identify losses in the system. A water balance is conducted monthly with records from flow meters at the head of Amador Canal (Water In) and at all water use points along the canal (i.e. Tanner and Ione water treatment plants, Ione Canal and pipeline, and raw water customers). Pre-project conditions on water supply are therefore well documented and will be used for comparison purposes. Upon project completion, flow records will be maintained at the intake and at all water use points along the pipelines. Water balances will be developed to track any potential water losses. Water savings will be identified by comparing flow records at the intake of the proposed pipelines with existing records of flow at the head of Amador Canal.

The Agency routinely monitors water quality in the existing canal system by measuring total and fecal coliform levels in the water. As a result, water quality data on pre-project conditions is available for comparison purposes. Upon project completion, the Agency will continue to monitor water quality into and out of the pipelines. Water quality samples will be taken at Lake Tabeaud (Intake) and immediately upstream of the Tanner Water Treatment Plant to monitor any potential water quality degradation along the pipeline. However, because the pipeline will be sealed, the water quality is not expected to vary significantly.

During the first five years following project completion, monitoring results will be summarized in annual reports to the Department of Water Resources, Office of Water Use Efficiency. These reports will also be available to the public upon request. A summary of water quality data on the system's raw water source will continue to be published annually in Amador Water Agency's Annual Consumer Confidence Report.

4 Qualifications of the Applicants and Cooperators

A resume for Mr. Erik M. Christeson, the Project Manager for the proposed Amador Transmission Main Project is attached to this application. Mr. Christeson is a registered civil engineer (CA C058428) with ten years of civil engineering design and construction management experience.

PG&E is a cooperator in this project in the sense that PG&E facilities (Electra Tunnel, Lake Tabeaud, and Electra Powerhouse) are interrelated to the Agency's Amador Water System. As previously described, water is diverted from the North Fork Mokelumne River via the Electra Tunnel to Lake Tabeaud. The agency then diverts its entitlement of water from Lake Tabeaud and the remaining supply is driven through the Electra Powerhouse. Upon implementation of the proposed Amador Transmission Project, the Agency will be able to divert significantly less than its full entitlement. The remaining water will be able to be driven through PG&E's Electra Powerhouse thereby augmenting their energy generation. The Agency has entered into an agreement with PG&E to be reimbursed for a portion of the electricity generated from surplus flows. PG&E has agreed to pay the Agency a maximum of \$8,000,000 (December 2004 dollars) in regular payments over the lifetime of the proposed project (25 years) (assuming a wholesale

energy price of approximately \$0.08/KWh). These payments will be put in a sinking fund to be used to repay project costs. Assuming a 6% interest rate over the 25 year lifespan of the project (i.e. A/F factor equal to 0.0182), the annualized payments would be approximately \$145,600. These payments have been included in the Agency's applicant share of construction costs. They have also been listed in Table C-6 as local monetary benefits. Additional details and calculations are described in Section 7 (*Benefits and Costs*).

The Agency has not received any previous water use efficiency grants. However, the Agency has implemented a number of water conservation programs, as described in Table 3.

5 Outreach, Community Involvement, and Acceptance

The environmental documents of the proposed project have been reviewed by the public and the Agency has received comments from numerous agencies, organizations, and individuals. Some of these included the California RWQCB, Department of Health Services, City of Jackson, East Bay Municipal Utility District, Jackson Valley Irrigation District, members of Protect The Historic Amador Waterways (PHAW), and other private citizens. Forty two comment letters were submitted on the Draft EIR. These were incorporated into Section 5 (Comments and Responses) of the Final EIR.

The Agency has encountered opposition to the project by members of PHAW and other private citizens. Concerns primarily consist of:

- Impacts to wildlife and other plant species along the canal;
- Adverse impacts to property values along the canal;
- Increased risk of fire hazard;
- Adverse effects on adjacent creeks (Jackson Creek and Sutter Creek) which currently receive additional flows from canal water seepage; and
- Impacts to the historic nature of the canal.

Opposition by PHAW resulted in a legal challenge to the Agency's adopted Final EIR. The Amador County Superior Court initially ruled against PHAW. However, the court's decision was subsequently reversed on appeal to the Third District Court of Appeal in Sacramento. As a result, on August 12, 2004, the Agency Board of Directors set aside the Final EIR certification pursuant to the Peremptory Writ of Mandate issued on August 10, 2004 by the Amador County Superior Court in *Protect The Historic Amador Waterways v. Amador Water Agency* (Amador County Superior Court Case No. 01CV1191). The agency was mandated to rewrite Section 4.1 (Water Resources) of the Final EIR. The Court of Appeal did not require the Agency to start the EIR process again. Instead, the Agency was only required to address deficiencies in Section 4.1 of the Final EIR. The Agency has revised this section and has circulated it for public review and comment. The 45-day public review period ended on October 18, 2004 and the revised Final EIR is currently in the recertification process. The Agency plans to certify the revised Final EIR in February. Copies of the original Final EIR and revised Section 4.1 (Water Resources) have been attached to this application. The Agency's Notice of Availability has also been attached to this application for reference purposes.

A partial list of impacts identified in the Draft EIR and associated mitigation measures are shown in Table 5 below. The complete list can be found in Table 2-1 of the Draft EIR. Detailed

descriptions of the impacts and mitigation measures are included in Section 4 (Environmental Analysis) of the Draft EIR and Section 2 (Revisions to the Draft EIR) of the Final EIR.

Table 5 Partial list of project impacts and mitigation measures (EIP Associates, September 2000)

Project Impacts ¹	Mitigation Measure(s)
4.3-1 “Construction and maintenance activities associated with the proposed project would disturb soils that could result in increased rates of erosion or could alter existing erosion patterns.”	“Prior to initiation of construction activities, the Agency shall develop an erosion control and sediment plan. The plan shall include the following, or equally effective measures: (i) The kinds and intensity of control work shall be adjusted to ground and weather conditions and the need for controlling erosion ...”
4.4-1 “Implementation of the proposed project could result in the damage or destruction of previously identified cultural resources.”	“Prior to initiation of any alteration to PA-94-13, the bridge shall be photo-documented with archival quality black-and-white photographs, analyzed by an architectural historian, and further research shall be conducted by a professionally qualified historian.”
4.4-2 “Implementation of the proposed project would alter the integrity of the appearance, design, materials, and workmanship of the Amador Canal.”	“Prior to initiation of any modifications to the Amador Canal, the canal and associated features shall be photo-documented with archival quality black-and-white photograph. Further research shall be conducted by a professionally qualified historian with a goal of the production of a professional quality publication that documents and partially preserves the memory of the canal. The report shall be made available to the general public through distribution to local schools and libraries.”
¹ Only impacts with a level of significance equal to or higher than Potentially Significant (PS) are shown. Impacts determined to have a level of significance less than PS are shown in Table 2-1 of the Draft EIR.	

As described in Task 5 (Public Outreach), information about the project will be shared with the public through newspaper announcements and regular newsletters sent to Agency customers. Signage will be provided along the pipeline alignment during construction activities. Special outreach information with details on the project will be provided to stakeholders who are directly impacted by the project.

6 Innovation

It is a well-known fact that unlined earthen canals lose water to evapotranspiration, seepage, and inefficient operation. The Amador Water Agency had documented annual losses ranging between forty and fifty percent. In this day and age, piped and closed conduits are the preferred facility for transferring water. A piped system can be pressurized so that the pipe can be placed in varied terrain elevations thereby reducing the length of the current 23-mile canal to 8.8 miles. In addition, piped systems react almost instantaneously to flow changes providing more flexibility for the water manager. The water quality is also improved since urban and agricultural runoff cannot enter the pipe. A piped system would significantly improve the efficiency of the current conveyance system.

7 Benefits and Costs

7.1 Table C-1: Project Costs (Budget)

The overall cost of Phase 1 is \$15,032,281. For a detailed breakdown of this cost, refer to the attached Table C-1. A description of assumptions taken to estimate project costs is given in Table 6. Unless otherwise specified, the applicant share of project costs was assumed to be equal to 75%. The overall cost share percentage (77%), as shown in row (o), column (V) of Table C-1, is higher due to the addition of costs incurred by the Agency since November 15th, 2002. These costs are described in Table 6 and are available for review upon request.

Table 6 Project Costs Assumptions

Category (from Table C-1)	Assumption
(a) Total Administration Costs	Assumed to be 5% of construction costs (Category j).
(b) Planning/Design/Engineering	Equal to design costs incurred by the Agency since November 15 th , 2002. Applicant share assumed to be 100%.
(c) Equipment Purchases/Rentals/Rebates/Vouchers	Not Applicable. Material costs are included in construction costs (Category j).
(d) Materials/Installation/Implementation	Not Applicable. Installation costs are included in construction costs (Category j).
(e) Implementation Verification	Include pressure testing and startup of system.
(f) Project Legal/License Fees	Equal to litigation expenses incurred by the Agency since November 15 th , 2002 (\$124,775) plus cost of insurance and bonds. Applicant share is greater than 75% due to addition of costs incurred after November 15 th , 2002.
(g) Structures	Not Applicable.
(h) Land Purchase/Easements	Equal to acquisition costs incurred by the Agency since November 15 th , 2002 (\$49,500) plus cost of sixteen remaining easements. Easement cost assumed to equal \$4,620/parcel. Applicant share is greater than 75% due to addition of costs incurred after November 15 th , 2002.

Category (from Table C-1)	Assumption
(i) Environmental Compliance/Mitigation/Enhancement	Equal to costs incurred by the Agency since December 31 st , 2002 (\$137,000) plus 0.5% of constructions costs (Category j). Applicant share is greater than 75% due to addition of costs incurred after November 15 th , 2002.
(j) Construction	Obtained from Engineer’s Cost Estimate. Includes material and installation costs.
(k) Other (specify) – Public Outreach	Assumed to be 0.1% of construction costs (Category j).
(l) Monitoring and Assessment	Assumed to be 0.1% of construction costs (Category j).
(m) Reporting Preparation	Not Applicable. Costs of report preparation included in administration costs as part of the project management.

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

Physical benefits realized by implementing the proposed project include:

1. Addition of in-stream flows for beneficial uses -

The volume of water that is currently lost in Amador Canal through seepage, leaks, and evaporation would remain in the Mokelumne River and would be available for in-stream beneficial uses until needed by Amador County. The duration of this benefit is difficult to estimate. However, as stated in the UWMP, “Once the open ditch conveyance system is replaced with a closed pipe delivery system, the Agency will be able to meet projected demand in the Amador Water System at least for the next 20 years (assuming a 2% growth rate).” (Amador Water Agency, 2004). In addition, Department of Finance Projections for the Sutter Creek vicinity, with conveyance improvements, indicate there would be a surplus of 2,747 AF in 2010 and 817 AF in 2020 (EIP Associates, September 2000).

The addition of in-stream flows for beneficial uses such as habitat enhancement is a local benefit and an indirect benefit to the Bay-Delta. The Mokelumne River’s in-stream habitat from the Electra Tunnel diversion to EBMUD’s Pardee Reservoir will be improved thus benefiting anadromous fish and other species in this stretch of the river. However, this benefit is somewhat limited to this local stretch of the river because of the existence of EMBUD’s Pardee Reservoir which poses a major obstacle for migratory fish species. In theory, if EBMUD did not need the surplus water, it would be allowed to pass their Pardee and Camanche reservoirs to eventually reach the confluence with Consumnes River and onto the Bay-Delta system. As a result, because of the numerous reservoirs below the Electra Tunner diversion, the addition of in-stream flows is an indirect benefit to the Bay-Delta system.

2. Addition of in-stream flows for downstream users –

The additional volume of in-stream flows will eventually reach EBMUD’s Pardee Reservoir. The Agency has entered into an agreement with EBMUD to make this volume available for EBMUD’s drought contingency flows. This Agreement is on an interim basis and the Agency retains the right to divert its full entitlement of water (15,000 AF) if needed.

The additional volume of in-stream flows will also be available for increased power generation by PG&E at Pardee Reservoir.

The addition of in-stream flows for downstream users is a local and direct benefit to the Bay-Delta water supply system since the proposed project would increase the overall volume of available water. These surplus flows would directly benefit EBMUD's drought contingency plans. EBMUD is a major Bay-Delta water user with service to residents of the San Francisco Bay Area's East Bay. Water diverted from the Pardee Reservoir provides over 90 percent of EBMUD's water supply.

3. Enhancement of raw water quality –
The proposed project would eliminate water supply contamination from surface runoff. The raw water quality reaching the Agency's water treatment plants and being served to raw water customers would therefore be improved. The improvement would be limited to the Amador Water System and is therefore a local benefit.
4. Preserve local flexibility to manage water supply sources –
Local flexibility would be preserved by making the Agency's full entitlement available when needed. The current canal system experiences losses of up to 50 percent. As a result, the Agency is unable to use its full entitlement of water. This improvement is considered a local benefit.
5. Reduction in O&M costs –
It is estimated that the agency would save approximately \$75,000 a year in routine O&M costs (EIP Associates, September 2000). These savings could be used to perform preventative maintenance on the Amador Water System distribution facilities. The benefit would be limited to the Agency's infrastructure and is therefore a local benefit.

7.3 Table C-6: Project Annual Local Monetary Benefits

Monetary benefits realized by implementing the proposed project are described in this table.

(a) EBMUD Annualized Payments -

EBMUD has agreed to pay the Agency \$4,500,000 for the increased water supply. This payment will be used to repay project costs. Assuming a 6% interest rate over the 25 year lifespan of the project (i.e. A/F factor equal to 0.0182), the annualized local benefit would be approximately \$81,900.

(b) PG&E Annualized Payments -

The Agency has entered into an agreement with PG&E to be reimbursed for a portion of the electricity generated from surplus in-stream water flows. PG&E has agreed to pay the Agency regular payments over the lifetime of the proposed project (25 years) up to a maximum of \$8,000,000. These payments will be put in a sinking fund to be used to repay project costs. Assuming a 6% interest rate over the 25 year lifespan of the project (i.e. A/F factor equal to 0.0182), the annualized payments would be approximately \$145,600.

(c) Avoided O&M Costs -

It is estimated that the agency would save approximately \$75,000 a year in routine O&M costs (EIP Associates, September 2000).

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

The applicant's cost share percentage is at 77%, or \$11,584,384. The proposed project has the potential to contribute significant annual water savings for beneficial in-stream uses and downstream users like EBMUD and PG&E. However, there are also significant local benefits including improved raw water quality, enhanced flexibility to manage its water supply system, reduction in O&M costs, monetary compensation from EBMUD and PG&E, and avoided costs of purchasing additional water supply. As a result, it was subjectively determined that the ratio of Bay-Delta benefits to local benefits was approximately 1:4. The corresponding cost share was set at 25% state share grant and 75% applicant share. With the addition of project costs incurred by the Agency after November 15th, 2002, the state's cost share decreased to 23% and the applicant's increased to 77%. These costs were described in Section 7.1. A summary table is provided below. Documents recording these costs are available for review upon request.

Table 7 Applicant's costs incurred after November 15th, 2002

Category	Amount
(b) Planning/Design/Engineering	\$ 1,240,694
(f) Project Legal/License Fees	\$124,776
(h) Land Purchase/Easements	\$49,500
(i) Environmental Compliance/Mitigation/Enhancement	\$137,000
TOTAL:	\$1,551,970

8 Bibliography

Amador Water Agency. Notice of Availability of Revised Section 4.1 of the Environmental Impact Report (EIR) for the Amador Transmission Project (SCH #2000022106)

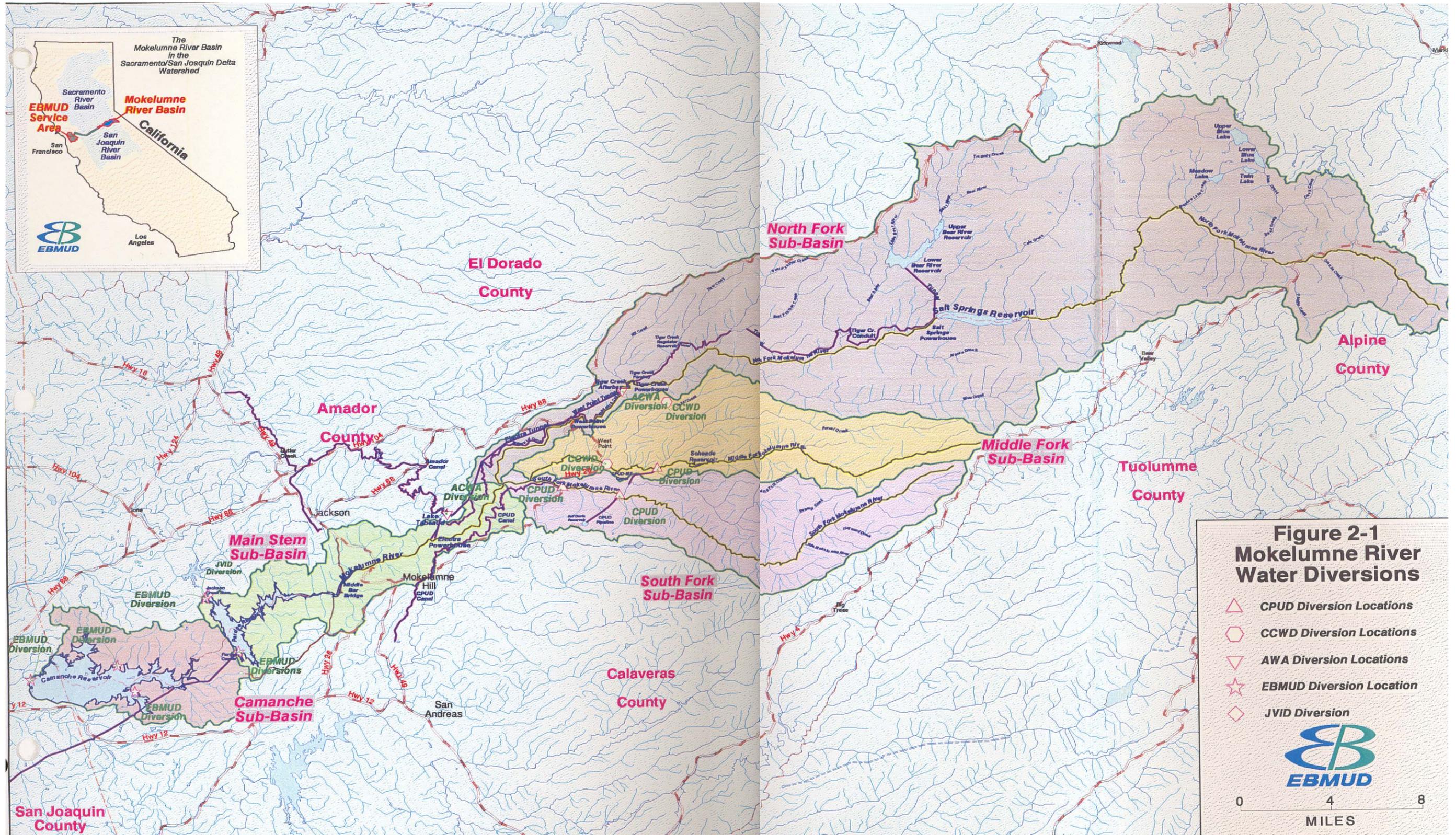
East Bay Municipal Utility District. Mokelumne River Watershed Sanitary Survey Update 2000. December 2000.

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EIP Associates. Amador Transmission Project Final Environmental Impact Report SCB #2000022106: Prepared for Amador Water Agency. May 2001

KASL Consulting Engineers. Evaluation and Update of the Amador Transmisison Main Project Pipeline Alternative. September 2000.

Figure 1 North Fork Mokelumne River Watershed



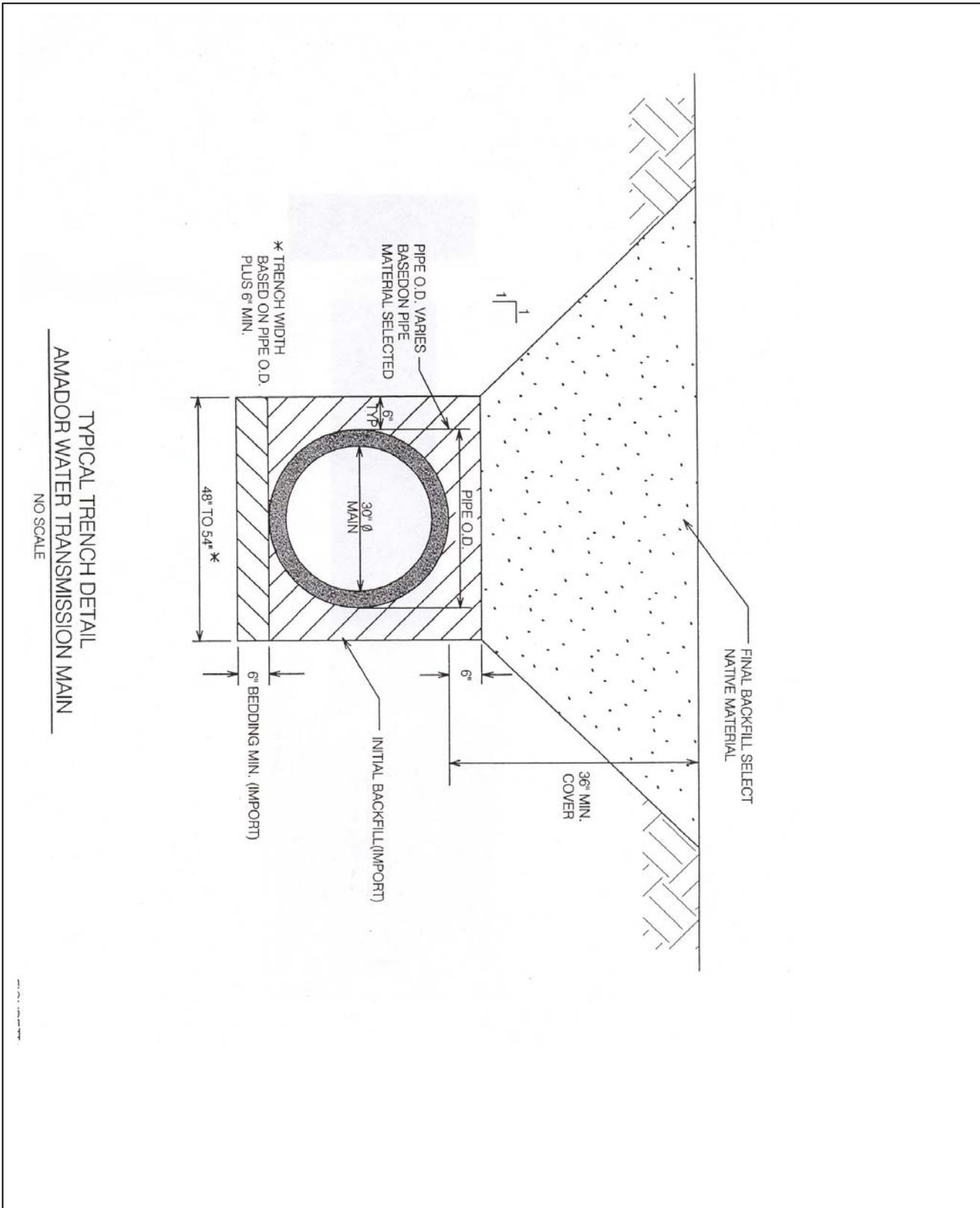
Source: EBMUD, December 2000

Figure 3 Alignments of Existing Amador Canal and Proposed Pipelines



Source: EIP Associates (September 2000)

Figure 4 Typical Trench Section



Source: KASL Consulting Engineers (September 2000)