American River Basin: Antelope Creek Improvement Project

Attachment 3: Work Plan

Introduction

The American River Basin (ARB) Integrated Regional Water Management (IRWM) planning region, approved by the California Department of Water Resources (DWR) during the 2009 Regional Acceptance Process (RAP), covers a geographic area of more than 1,200 square miles with a population of more than 1.5 million inhabitants (see Figure 1). At the heart of the region are the lower American and Cosumnes Rivers. The lower American River is the only nationally-designated wild and scenic river running through a major metropolitan area in the United States, and the Cosumnes River is the only river on the western slope of the Sierra Nevada without a large rim dam. Being at the intersection of a large urban population and the valuable natural resources within the region has presented many challenges to a sustainable water supply, including:

- Increasing the potential for flooding-related damages as urban growth moves closer to the rivers;
- keeping supply paced with some of the fastest growth areas in the State;
- substantial cones of depression in the underlying groundwater basins;
- regionally-extensive groundwater contaminant plumes resulting from defense-related activities; and
- the need to balance environmental and water supply needs.

These challenges could have thrown the region into a crisis, resulting in gridlocked water supplies and environmental degradation. Instead, beginning in 1993, regional stakeholders from a broad spectrum of interests came together to negotiate, for nearly seven years, a balanced solution for future water supply and environmental protection. The result was the landmark April 2000 Water Forum Agreement (WFA), which was signed by 40 stakeholder groups from a diverse representation of local government, environment, and business interests from Sacramento, Placer and El Dorado Counties. The WFA brought forth a new era of regional planning and collaboration based on two co-equal objectives:

1. Provide a reliable water supply for planned development to the year 2030; and
2. Protect and preserve the Lower American River.

In 2001, the Regional Water Authority (RWA) was formed as a joint powers authority (JPA) to assist local purveyors in the planning needed to implement the WFA. In 2004, RWA launched its initial effort to begin developing an IRWM planning region centered primarily on the stakeholders and projects involved in the Water Forum process. This resulted in the adoption in 2006 of the *American River Basin Integrated Regional Water Management Plan* (ARB IRWMP). RWA began the process of comprehensively updating its IRWM Plan using planning and stakeholder forums identified in its RAP application in 2009. Through these forums, the breadth of the planning effort has expanded beyond just the stakeholders involved in the Water Forum process to a much broader group of interests. The current geographic and demographic composition of the ARB IRWM region presents great opportunity to benefit local water supply for all users, expand habitat, improve flood protection, and ultimately provide benefits

to the Sacramento-San Joaquin Delta adjacent to the region, which is partially within and primarily immediately downstream of the region.

The Antelope Creek Improvement project, included in this Proposition (Prop) 1E IRWM Stormwater Grant Program Proposal (Proposal) was one of three stormwater-related projects identified through an inclusive stakeholder process (described in Attachment 1 of this Proposal). These three projects (the Antelope Creek Improvement Project, the Downtown Combined Sewer Upsizing Project, and the Upper Unionhouse Creek Flood Protection Project) contribute significantly to the Program Preferences included in the *Proposition 84 & Proposition 1E IRWM Guidelines* (DWR, August 2010), and each are discussed further in this attachment.

The Placer County Flood Control and Water Conservation District (PCFCD or the District) is submitting this Proposal on behalf of itself, Placer County Water Agency (PCWA) and the rest of the ARB IRWM Planning Region to request $2,919,873 in grant funding to implement the project described herein.

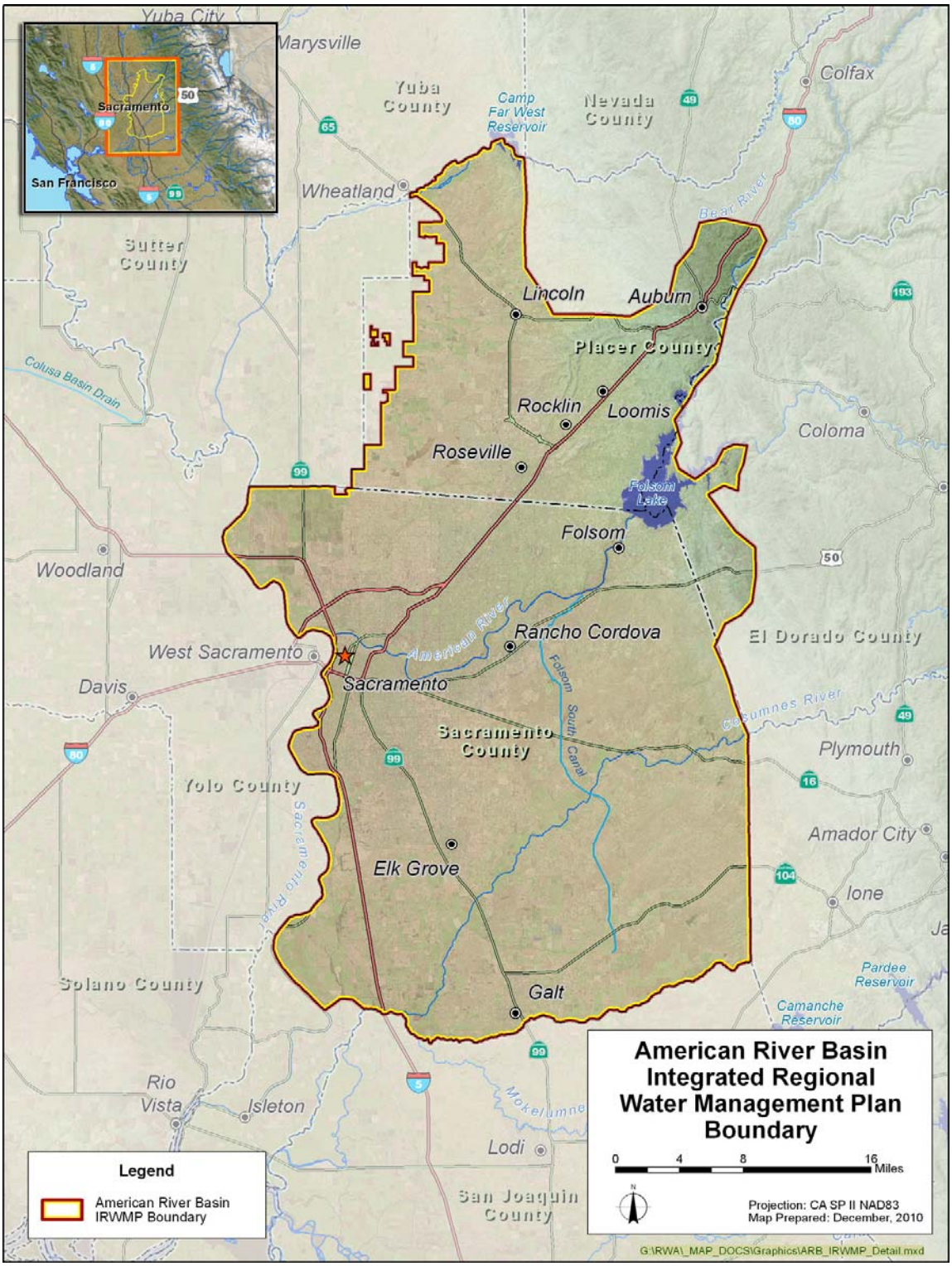

Figure 1: ARB IRWMP Region Boundaries

Goals and Objectives

The goal of this Proposal is to implement the current stormwater-related priority projects that best contribute to meeting the ARB IRWM objectives. While RWA is currently leading an effort to comprehensively update the American River Basin IRWM Plan to meet revised State standards, the objectives identified in the IRWM Plan adopted in May 2006 all serve to meet the adopted IRWM Plan's mission "to preserve the economic and environmental health and well being of the region through the development of a program that focuses on watershed stewardship and comprehensive management of water resources in a reliable, cost effective, and responsible manner." The IRWM Plan Update will serve to update, expand, and quantify the existing objectives. The current adopted objectives of the ARB IRWM Plan include:

Stormwater and Floodplain Management – Provide the highest practicable level of achieving flood control and stormwater quality in the region.

Water Supply – Plan for and implement programs and projects that develop the highest level of reliability in public drinking water suppliers and equitably distribute capital and operating costs.

Groundwater Management – Protect and enhance groundwater resources and groundwater quality in accordance with adopted Groundwater Management Plans in the region.

Ecosystem Restoration – Coordinate with agencies developing plans that identify and implement ecosystem restoration projects along sensitive wildlife habitat areas in the region and Bay-Delta.

Recycled Water – Move forward in the long term planning of recycled water use to improve water use efficiency in the region, reduce TMDLs for certain constituents in receiving waters of treated wastewater effluent.

Potable Water Quality – Continuously look for innovative solutions in providing the highest level of protection in raw water sources used for potable drinking water supplies.

Other – Implement regional water management strategies that provide the highest level of understanding and financial support for regional programs and projects to meet the ARB IRWM Plan objectives**.**

This project was selected as it helps the ARB Region towards achieving its goal. Specifically, the goals and objectives of the Antelope Creek Improvement Project include:

- Providing regional flood control benefits to critically impacted areas of Roseville and unincorporated Placer County.
- Improving an existing recreational corridor through the enhancement of an existing multi-purpose public trail system.
- Improving water quality in Clover Valley Reservoir, Clover Valley Creek and Antelope Creek through the reduction of sedimentation in the Clover Valley Reservoir and downstream water courses.

- Restoring the Antelope Creek riparian corridor and floodplain habitat, removing invasive species and replanting with native species.
- Improving public education through the addition of an interpretative trail sign system.
- Increasing PCWA's water system operational stability.

Purpose and Need

The purpose of this Proposal for the Antelope Creek Improvement Project, and the corresponding proposals for the Sacramento Downtown Combined Sewer Upsizing Project and the Sacramento Area Flood Control Agency Upper Unionhouse Creek Flood Protection Project, is to continue implementation of the vision of Integrated Water Resources Management initially visualized by the ARB Region through the development of the Water Forum Agreement, and being promoted by the State to ensure sustainable water supplies for future generations. The ARB Region has greatly expanded its outreach to stakeholders and has found that there is tremendous need to implement projects across a broad spectrum of water interests that will benefit the natural and human environments.

As described in Attachment 1 (Authorization and Eligibility Requirements) of this Proposal, the Antelope Creek Improvement Project was identified through an open call for projects to representatives of more than 100 distinct stakeholder organizations throughout the region to ensure that the most current projects providing the greatest value to the region were identified and evaluated. This call for projects followed a series of stakeholder meetings on the IRWM Plan and its planned update.

While the IRWM Region's priority projects, such as the Project described herein, address the aforementioned IRWM goals and objectives in multiple ways, the Antelope Creek Improvement Project, combined with the Downtown Combined Sewer Upsizing Project and the Upper Unionhouse Creek Flood Protection Project, achieves significant progress toward meeting these IRWM goals and objectives in water supply, stormwater and floodplain management, ecosystem restoration, recreation and water quality. Each of these is discussed further below.

Stormwater and Floodplain Management

The Antelope Creek Improvement Project improves the ARB Region's stormwater and floodplain management capabilities. The flood control structures on Antelope Creek will reduce the peak flow of a 100-year storm event by as much as 1,000 cubic feet per second (cfs) at critical locations within downtown Roseville. This has significant potential to reduce flood damages for both residential and commercial properties located downstream of the project site both in downtown Roseville and in portions of unincorporated Placer County. Within the region, this is one of the highest priority flood control projects that does not fall within the State Plan of Flood Control.

The Downtown Combined Sewer Upsizing Project will reduce the frequency of combined sewer overflows in the Downtown Sacramento Region by replacing existing pipelines with larger pipes, by paralleling the existing pipeline and/or by connecting new pipes to upsized portions of pipes. These pipeline improvements will eliminate the bottleneck sections of combined sewer pipeline that currently exist and will lower the hydraulic grade line in this portion of the City with critical and high-value real estate that has experienced flooding in the past.

Another critical flood reduction project in the ARB region is the Upper Unionhouse Creek Flood Protection Project. This project will remove 250 to 300 homes from the floodplain, relieving the homeowners of the burden of costly flood insurance. The lower reach of Unionhouse Creek, below Franklin Boulevard has already been improved under the South Sacramento Streams Group (SSSG) project (Federal Project). The reach between Franklin Boulevard and Center Parkway has been under study as a part of the SSSG, but the project would enable this reach to be removed from the Federal Project, keeping it out of the State Plan of Flood Control and avoiding state liability for its maintenance. The project will solve flooding issues in the project reach at a lower cost than could be achieved with the Federal Project, and removing this reach from the Federal Project will leverage other federal, state and local funds for underfunded flood control needs elsewhere in the Morrison Creek watershed. The channel widening that will be completed as part of the Upper Unionhouse Creek Flood Protection Project will ultimately contain 100-year flows or more in this reach of the creek.

Water Supply

The Antelope Creek Improvement Project will increase the capacity of the region to conjunctively manage its surface water and groundwater resources. The project will impound stormwater behind two new weirs during and following storm events, thereby allowing for groundwater infiltration. Similarly, the removal of sediment from Clover Valley Reservoir will improve the percolation capacity of the bottom of the reservoir, allowing for improved groundwater recharge. In a similar manner, the widening of Upper Unionhouse Creek as part of the Upper Unionhouse Creek Flood Protection Project will provide for limited earthen areas which will allow for groundwater infiltration during and following storm events.

While the Downtown Combined Sewer Project will not provide any direct water supply benefits, the project will reduce the frequency of raw sewage discharges to the Sacramento River. This river is a major source of water supply for much of the greater Sacramento area, and drinking water intakes do exist downstream of the downtown area. Reducing the frequency of raw sewage discharges to the river will, in turn, reduce the number of times downstream intakes may have to curtail surface water diversions as a result of severe water quality impacts.

Ecosystem Restoration

This Proposal strongly recognizes the relationship between a healthy ecosystem and stormwater runoff management. The Antelope Creek Improvement Project will include aquatic and riparian habitat restoration and improvement as a result of the Clover Valley Reservoir dredging and as part of the weir and pipeline construction. As part of this project implementation, invasive vegetation will be removed and replaced with native vegetation.

Water Quality

A key aspect of the Antelope Creek Improvement Project, Downtown Combined Sewer Upsizing Project and the Upper Unionhouse Creek Flood Protection Project is the associated improvement in water quality. The Antelope Creek Improvement Project will significantly reduce the sediment loading to Clover Valley Reservoir, and subsequently to downstream reaches of Clover Valley Creek and Antelope Creek. The Downtown Combined Sewer Upsizing Project will significantly reduce the number of raw sewage releases resulting from the combined sewer overflow events, thereby reducing the introduction of bacteria, viruses and other runoff-borne contaminants to the Sacramento River. Finally, the widening of

Upper Unionhouse Creek that will occur as part of the Upper Unionhouse Creek Flood Protection Project will slow stormwater flows, thereby allowing for the settling and subsequent removal of pollutants prior to discharges downstream.

Project List

The ARB IRWM Region is presenting three stormwater and flood reduction projects from its list of priority projects: the Antelope Creek Improvement Project, the Downtown Combined Sewer Upsizing Project and the Upper Unionhouse Creek Flood Protection Project. Once these projects are implemented, the result will be measurable progress towards the Region's overall stormwater and water resource management objectives.

Table 1 summarizes the three projects being put forth by the ARB IRWM region; an abstract for each project, the current status of each project in terms of percent completion of design (as of April 2011), and the implementing agencies are noted. Figure 2 displays the project locations and the regional boundaries. Note that these are general project locations. More detail on the project location of the Antelope Creek Improvement Project is provided in the detailed work plan later in this section. Details on the project locations for the other projects are provided in their respective applications.

Table 1: ARB Prop 1E Stormwater Project List

Project Name	Abstract	Implementing Agency	Percent Design Complete
Antelope Creek Improvement Project	The Antelope Creek Improvement Project is a collaboration between Placer County Water Agency (PCWA) and Placer County Flood Control and Water Conservation District (District). This multi-objective regional flood control, water supply and water quality improvement project is located within the Dry Creek Watershed area of the American River Basin and will be completed in three phases. The project will meet multiple planning objectives by improving water supply and water quality, increasing flood protection, restoring local ecosystems and expanding an existing public recreation corridor. Phases 1 and 2 of this multi-purpose effort includes a regional flood control project on Antelope Creek, a major tributary of the larger Dry Creek. Through the design and construction of two on-channel weirs along an existing open space-protected reach of the creek, the project will provide flood control and flood damage reduction benefits to repeatedly damaged areas of downtown Roseville. The project will reduce peak flood flows over a wide range of flood events, improve the timing of flood flows, enhance existing riparian corridor ecosystems, and improve water quality through groundwater recharge and the natural treatment of temporarily-stored flood waters within the floodplain. Both ecosystem restoration and public recreational opportunities will be enhanced wherever possible within the floodplain of Antelope Creek, which currently includes a multi-purpose public trail system. In-stream improvements will include bank re-contouring to ensure overbank flows, specific habitat enhancements for fisheries, removal of invasive plant species and replanting with natives. An interpretive trail sign system and a public trailhead/community node are also proposed to improve access to the multi-purpose trail system while helping to educate the public on the project. The Antelope Creek Improvement Project also includes improvements to the upstream Clover Valley Reservoir, which regulates water deliveries in the lower Antelope Canal and Clover Valley Creek, a tributary to Antelope Creek, and is operated by PCWA. The unlined portion of the Antelope Canal, near the Union Pacific Railroad track crossing, feeds the reservoir and has experienced severe erosion and down-cutting causing the reservoir to become silted and impairing the reservoir capacity. This phase of the project will construct a pipeline to convey the water from the Antelope Canal to the reservoir to reduce or eliminate erosion, and will include dredging of the reservoir to remove existing sediment and silt, restoring reservoir capacity and improving water quality both in the reservoir and in the downstream creek.	Placer County Flood Control and Water Conservation District & Placer County Water Agency	Conceptual (10%) Design
Downtown Combined Sewer Upsizing Project	The City of Sacramento's Combined Sewer System (CSS) serves the Downtown, East Sacramento and River Park, Land Park, Curtis Park, and Oak Park neighborhoods and totals 7,500 acres of the City. An additional 3,800 adjacent acres contribute sanitary sewer to the system, but the stormwater drainage is separate. These areas were separated as a result of efforts in the past to improve operational efficiency by diverting drainage and thus reduce the surcharging caused by high runoff flows. The CSS also includes two major pumping plants, Sump 1/1A and Sump 2/2A, and treatment plants that perform primary treatment (the Combined Wastewater Treatment Plant and Pioneer Reservoir). In 1990, the Central Valley Regional Water Quality Control Board (Regional Board) served the City with a Cease and Desist Order that directed the City to devise a plan to reduce its combined sewer overflows (CSOs) and CSS outflows. Over the next four years, the City developed the Combined Sewer System Improvement Program (CSSIP), obtained approval from the Regional Board and City Council, and since then has largely implemented it. This effort, with the ultimate goal of eliminating CSS outflows for 10-year, six hour storms, has resulted thus far in reduction in outflow volumes of about 60% since the inception of Phase 1 of the CSSIP, based upon hydraulic model results. This was achieved by increasing pumping capacity at Sump 1/1A and at Sump 2, and by constructing additional in-line and offline storage. Remaining projects in Phase 1 of the CSSIP mostly consist of completing the Downtown Sewer Upsizing Project, which, thus far, has been designed and constructed in sections due to funding constraints. To complete the Downtown Combined Sewer Upsizing Project, it is necessary to continue the "upsizing" in 7th Street to connect with a section upstream that was constructed out of sequence due to timing constraints, and to extend this network of upsized pipes in L, G, F, and 8th Street. For the project to function properly, it is necessary that it be continuous, without the bottleneck sections that currently exist. Once completed, the network of upsized and parallel pipes will serve to lower the hydraulic grade line in this portion of the City with critical and high value real estate that has experienced flooding of combined sewer in the past. The Downtown Combined Sewer Upsizing Project will be implemented in three phases, replacing existing pipelines with larger pipes, paralleling existing pipeline, or by connecting new pipes to upsized portions, whichever approach is determined to be most practical. Phase 1 of the project will address the pipeline on P Street between 5th and 7th Streets, and on S Street between 14th and 17th Streets. Phase 2 of the project will retrofit or replace the pipeline on 7th Street from P Street to K Street, while Phase 3 of the project will retrofit or replace the pipeline on G Street from 7th Street to 9th Street and on F Street from 13th Street to 15th Street.	City of Sacramento	60% design completed for Phase 1; Phases 2 and 3 are in conceptual design

Project Name	Abstract	Implementing Agency	Percent Design Complete
Upper Unionhouse Creek Flood Protection Project	Unionhouse Creek is a tributary to Morrison Creek in the southern part of the City of Sacramento and in unincorporated Sacramento County. This creek floods out of bank in 100-year and more frequent storms; an estimated 250 to 300 homes are in the 100-year floodplain. The proposed Upper Unionhouse Creek Flood Protection Project seeks to keep 100-year flood flows within the channel from the confluence of Unionhouse and Strawberry Creeks, downstream to Franklin Boulevard where the federal South Sacramento Streams Group (SSSG) project will commence. The project will remove the 250 to 300 homes from the floodplain, relieving the homeowners of the burden of flood insurance, and removing this project reach from the federal project, which will free up funds for the currently underfunded Federal Project elements elsewhere within the watershed. The project will resolve flooding issues in the project reach, and removing this reach from the Federal Project will free up other federal, state and local funds for underfunded flood control projects elsewhere in the Morrison Creek watershed. The Upper Unionhouse Creek Flood Protection Project consists of the widening of Unionhouse Creek between Strawberry Creek and Franklin Boulevard. The channel widening of the Upper Unionhouse Creek Flood Protection Project will contain 100-year flows or more in this reach of the creek.	Sacramento Area Flood Control Agency	Conceptual (10%) Design

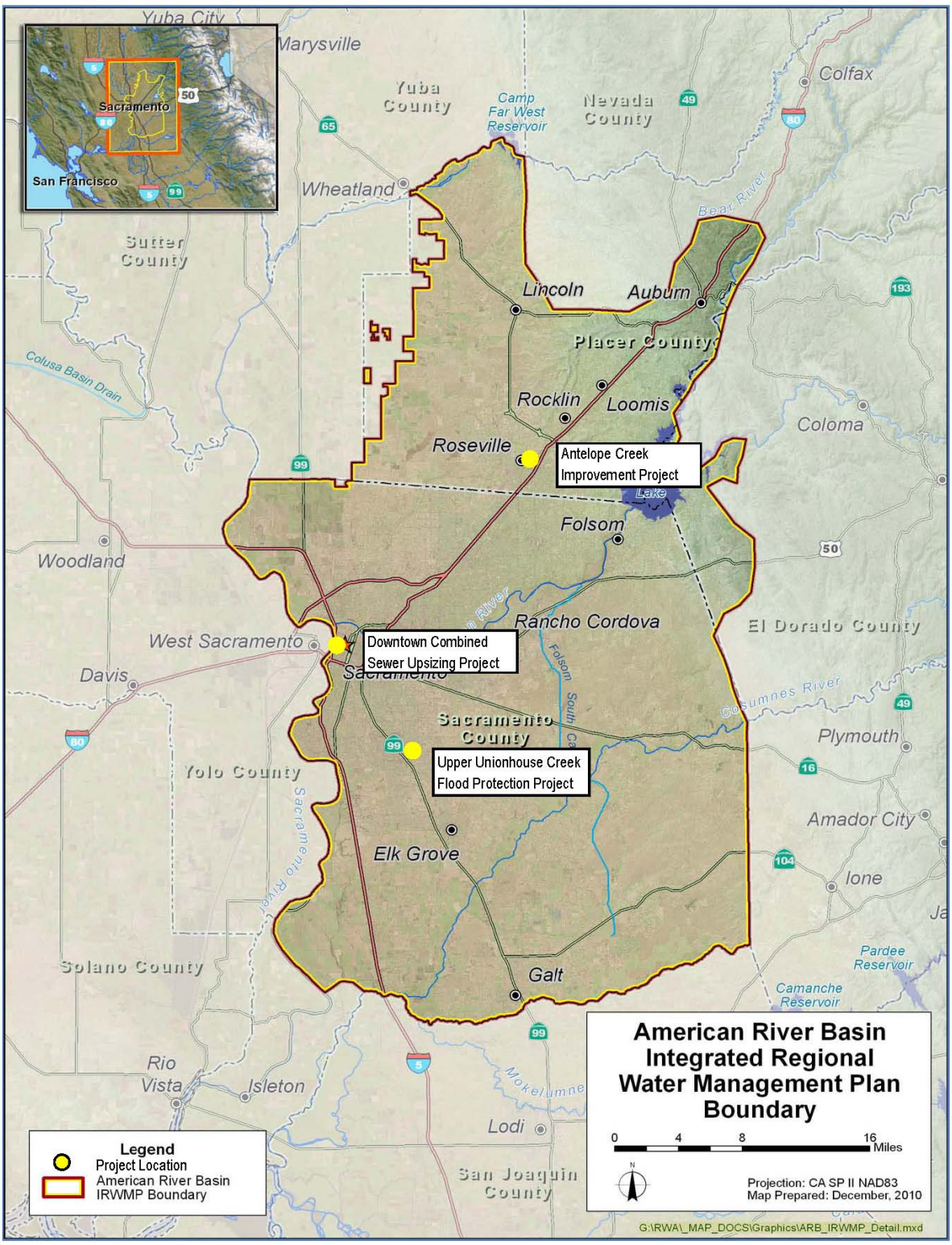

Figure 2: Project Locations and ARB Regional Boundaries

Integrated Elements of Projects

This Proposal for the Antelope Creek Improvement Project, and its sister proposals for the Downtown Combined Sewer Upsizing Project and the Upper Unionhouse Creek Flood Protection Project, is highly integrated from a regional perspective (e.g., implementing elements of the Water Forum Agreement and IRWM Plan) and, in many cases, at the project level. Beginning with the Water Forum Agreement (WFA), water managers and planners in the ARB IRWM Region have strived to efficiently utilize the region's precious water resources to ensure a future supply and protect and preserve the natural environment. Through coordinated efforts, integrated regional water management planning has been, and will continue to be, maximized through the use of overarching water management strategies spread throughout the region.

Combining multiple water management strategies to achieve multiple objectives allows for a diversified approach to problem solving. Specifically, the three projects summarized above all link to regional objectives for flood damage reduction, however each project also provides for water quality and/or water supply benefits. These integrated categories are described in more detail below, and where applicable, specific synergies or linkages at the project level are also described.

Protection from flood-related damage is a key goal in the ARB region, given its proximity to several of California's major rivers. As previously noted, the American River Basin is located between some of the Central Valley's most noted rivers, and as such, is acutely aware of the importance the rivers play in the environment – from recreation to critical habitat. Oftentimes, a floodplain or flood protection project can be linked with an environmental protection and enhancement project, maximizing benefits. The Antelope Creek Improvement Project is a prominent example of this integrated benefit.

The **Antelope Creek Improvement Project** is a multi-benefit project being proposed by the Placer County Flood Control and Water Conservation District (PCFCD or the District) and Placer County Water Agency (PCWA). The benefits of this project are so varied that this project provides significant Water Supply, Water Quality and Other benefits in addition to the Flood Protection. The project consists of dredging and improvements to Clover Valley Reservoir, which supplies PCWA with water supply operational flexibility and improves water supplies through the improvement of the reservoir bottom, allowing for increased groundwater percolation. Additionally, maintenance of the reservoir and construction of a pipeline from the adjacent canal system to the reservoir extends the life of the project and improves downstream water quality by significantly reducing sediment loading the reservoir and creek systems. The Antelope Creek Improvement Project also includes the construction of two new weirs on Antelope Creek. These weirs will create two temporary (seasonal) impoundments on Antelope Creek which will also allow for additional stormwater percolation to local groundwater aquifers, and will remove pollutants from stormwater runoff by stilling water and allowing pollutants to settle from the flows prior to spilling downstream. This project meets multiple planning objectives by also restoring local ecosystems and expanding an existing public recreation corridor. The idea for this project spawned from participation in the ARB IRWM effort.

The **Downtown Combined Sewer Upsizing Project** provides direct relief from combined sewer overflows and flooding in downtown Sacramento. Through the upsizing of undersized sewer pipeline, the project eliminates bottlenecks that currently exist and cause flooding to occur during 10-year 6-hour storm events. Additionally, this project provides significant water quality benefits through the elimination of raw sewage discharges to the adjacent Sacramento River and by minimizing the potential for the public to come into contact with raw sewage (e.g. reducing potential public health risks). Finally, this project also provides water supply benefits indirectly through the improvements to water quality. The Freeport Regional Water Project intake is located on the Sacramento River, directly downstream of the proposed project. Raw sewage releases to the Sacramento River has the potential to significantly impact river water quality which, in turn, has the potential to result in cessation of river intake operations due to severe water quality concerns. By reducing the potential for combined sewer overflows, these water quality concerns, and subsequently the potential water supply impacts, are ameliorated.

The **Upper Unionhouse Creek Flood Protection Project** is first and foremost a flood damage reduction project. This project will widen Upper Unionhouse Creek between Strawberry Creek and Franklin Boulevard, thereby removing up to 300 houses from the 100-year floodplain for the creek and relieving the homeowners of the burden of flood insurance. The project will also support the development of the currently-threatened extension of the light rail from downtown Sacramento to Cosumnes River College (a project which will reduce pollution and traffic congestion and contribute to sustainable development) by reducing potential flooding impacts to the project, allowing for transportation project funding and permitting. Finally, the project will provide some water quality benefits by slowing the flow of floodwaters in Upper Unionhouse Creek, allowing for the settling of pollutants as the flow moves downstream.

Regional Map

The Antelope Creek Improvement Project, the Downtown Combined Sewer Upsizing Project and the Upper Unionhouse Creek Flood Protection Project are all located within the ARB Region, which encompasses much of Sacramento County and the lower watershed portions of Placer and El Dorado Counties. The boundaries of the ARB IRWMP Plan area are defined by the boundaries of the participants' services areas and include Placer County Water Agency (PCWA), City of Lincoln (Lincoln) and Sacramento County boundaries on the north, the lower watershed boundaries on the east, the Sacramento County boundary on the south (to the west bank of the Sacramento River), and the Sacramento River/Sacramento County line on the west. Most of the region overlies the North American, South American, or the Cosumnes Groundwater Subbasin and/or receives water supply, directly or indirectly, from the American, Sacramento, and/or Cosumnes Rivers. These common water supply sources, and related water supply issues and physical features, link the participating agencies together and make the region appropriate for integrated regional water planning and management.

The DACs in the ARB region were identified by evaluating geographic information system (GIS) files prepared by the U.S. Census Bureau. The data show average income by census tract. DACs are those with an annual median household income (MHI) below 80% of the statewide MHI. Identified DACs are shown in Figure 3. Each DAC lies within the boundary of a water purveyor, city, or county that has been involved in past regional planning efforts. Unlike some parts of the state, the DACs in the Region are not

isolated communities with particular water supply or quality concerns (for example, the Central Valley community of Allensworth is isolated with few alternatives to its high-arsenic groundwater supply). The flood protection, water supply and water quality needs of DACs in the ARB region are generally served effectively by water purveyor and/or special district (e.g. SAFCA and PCFCD) efforts to provide high quality water supplies and a high level of flood protection to their entire service area and through the ARB Region's IRWM planning efforts.

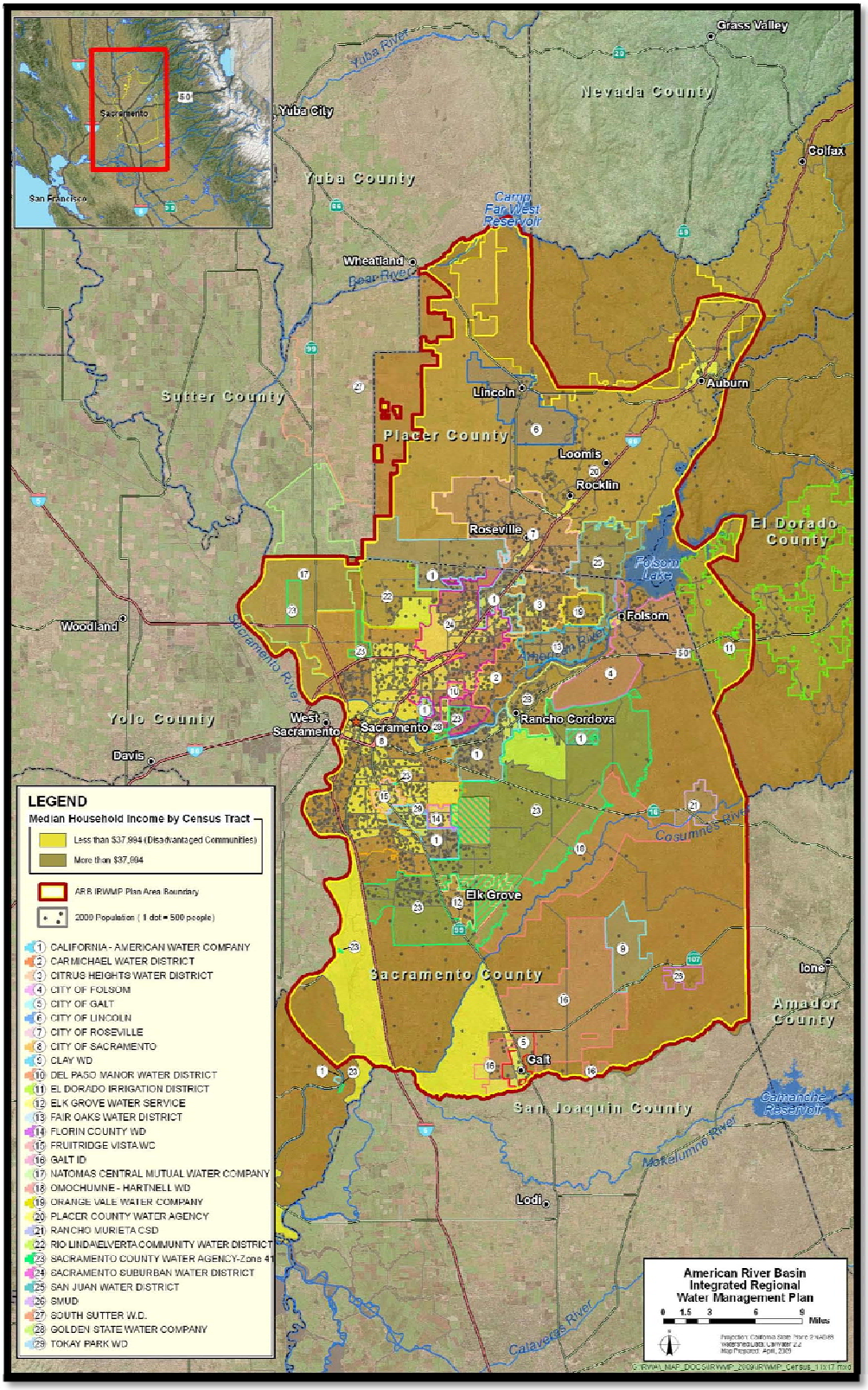

Figure 3: DACs in the ARB Region

Completed Work and Existing Data and Studies

To date, the engineering feasibility study of the Antelope Creek Improvement Project has been completed and the project is ready to move directly into the permitting and additional design phases. The following studies have been completed for the Antelope Creek Improvement Project:

- The *2010 Update to Dry Creek Watershed Flood Control Plan Draft* (Civil Engineering Solutions and RBF Consulting, November 2010) has identified the Antelope Creek Improvement Project as the number one ranked regional project for implementation based on flood mitigation and cost. The plan is expected to be finalized by April 2011.
- *Antelope Creek Water Efficiency and Flood Control Project Flood Damage Reduction Analysis* (RBF Consulting, December 2010) included a benefit analysis of the flood control project using HEC-FDA tools as developed by the U.S. Army Corps of Engineers.
- *Sediment Sampling and Analysis Results* (GEOCON Consultants, Inc., September 2010) evaluated the general physical and environmental characteristics of the sediment in the Clover Valley Reservoir.
- *Clover Valley Reservoir Remotely Operated Vehicle (ROV) Underwater Investigation (*Above & Below the H_2O, March 2010) documented the condition of the culvert under the Union Pacific Railroad track and of the outlet structure.
- *Preliminary Delineation of Wetland and Other Water Bodies for the Clover Valley Reservoir Desilting and Supply Pipeline Project* (ICF International, June 2010) determined the location, size and quality of wetlands located near the proposed project. Out of a total delineation area of 18.123 acres examined, 3.814 acres of the total were classified as a wetland or water body, with 3.057 of those acres being the Clover Valley Reservoir.

Additionally, the 10% Design of the project has been completed for all project phases.

Program Preferences

The implementation of the ARB IRWM Region's proposals for the Antelope Creek Improvement Project, the Downtown Combined Sewer Upsizing Project and the Upper Unionhouse Creek Flood Protection Project meets multiple Program Preferences presented in the *Proposition 84 & Proposition 1E IRWM Guidelines* (Guidelines, DWR, August 2010) including the following:

- Include regional projects or programs
- Effectively integrate water management programs and projects within a hydrologic region
- Contribute to attainment of one or more of the objectives of the CALFED Bay-Delta Program
- Effectively integrate water management with land use planning
- Address Statewide priorities

Additional detail regarding how these projects contribute to the Program Preferences is included in Attachment 11of this Proposal.

Project Map

The locations of the ARB IRWM Region's Prop 1E projects (the Antelope Creek Improvement Project, the Downtown Combined Sewer Upsizing Project and the Upper Unionhouse Creek Flood Protection Project) are shown in Figure 2. Monitoring locations for the projects will generally be at the project sites and in the general vicinity of the construction. More detailed maps for each project are included in the Project Tasks section of their respective project proposals.

Project Timing and Phasing

While the ARB IRWM Region's Prop 1E projects (the Antelope Creek Improvement Project, the Downtown Combined Sewer Upsizing Project and the Upper Unionhouse Creek Flood Protection Project) are ready to proceed upon award notification, there is flexibility in terms of delaying commencement of projects. Each of the three submitting agencies (Placer County Flood Control and Water Conservation District, the City of Sacramento and the Sacramento Area Flood Control Agency, respectively) is prepared to work with DWR to accommodate the timing of the availability of appropriations from the Proposition 1E bond.

All of the proposed ARB projects (including the one described in this Proposal) are stand-alone projects and do not require the implementation of other phases or projects to provide benefits to the ARB Region. Further, each project is part of a larger, phased project, as described below.

Antelope Creek Improvement Project

This project is proposed in three phases; the first two phases include the design and construction of two on-channel flood control weirs along Antelope Creek. The Phase 1 weir is located near Atlantic Street in Roseville while the Phase 2 weir is located at the bike path crossing at Roseville Parkway. Phase 3 of the Antelope Creek Improvement Project involves improvements to the upstream Clover Valley Reservoir, which regulates water deliveries in the lower Antelope Canal, and eventually flows into Antelope Creek. The improvements include desilting of the reservoir and constructing a pipeline to bypass the unlined portion of the Antelope Canal that has experienced severe erosion and down-cutting. Although all three phases of the project are in the Antelope Creek Watershed, the timing of the phases does not impact one another.

Downtown Combined Sewer Upsizing Project

In 1990, the Central Valley Regional Water Quality Control Board served the City with a Cease and Desist Order that directed the City to devise a plan to reduce its CSOs and CSS outflows. Over the next four years, the City developed the Combined Sewer System Improvement Program (CSSIP), obtained approval from the Regional Board and City Council, and since then has largely implemented it. This effort, with the ultimate goal of eliminating CSS outflows for 10-year, six hour storms, has thus far reduced outflow volumes by about 60% since the inception of the CSSIP, based upon hydraulic model results. This was achieved in earlier project phases by increasing pumping capacity at Sump 1/1A and at Sump 2, and by constructing additional in-line and offline storage. Remaining projects in the first part of

the CSSIP mostly consist of completing the Downtown Sewer Upsizing Project, which, thus far, has been designed and constructed in sections due to funding constraints.

Upper Unionhouse Creek Flood Protection Project

Unionhouse Creek is a tributary to Morrison Creek in the southern part of the City of Sacramento (City) and in unincorporated Sacramento County (County). Both creeks converge just to the west of the Union Pacific Railroad (UPRR) line, about one-half mile north of the Sacramento Regional Waste Water Treatment Plant (Treatment Plant). The portion of Unionhouse Creek between Franklin Boulevard and the UPRR line has been improved as part of the federally-authorized South Sacramento Streams Group (SSSG) Project (Federal Project). A new flood wall has been inserted into the levee along the northern bank of the creek and the southern bank has been lowered to allow high flows to spill into the Beach-Stone Lake floodplain east of the Treatment Plant. This non-federal phase of the larger Morrison Creek watershed flood reduction projects proposes to address the existing flood risk along Unionhouse Creek by expanding the width and adjusting the depth of the existing channel between Franklin Boulevard and Bruceville Road. This project would significantly reduce the likelihood of overbank flooding in this portion of the creek and would provide at least a 100-year level of flood protection to the lands adjacent to the creek in this area, thus removing 250 to 300 homes from the regulated floodplain and relieving the homeowners of the burden of costly flood insurance. Subsequent phases of the larger flood protection effort in the Morrison Creek watershed will further reduce flood damage this area; these phases will be implemented as funding allows.

Data Management and Monitoring Deliverables

The ARB IRWM Region adopted data management and plan performance monitoring standards in its May 2006 IRWM Plan. Associated with this, a project database is currently maintained by RWA and a website is used to disseminate plan information (http://www.rwah2o.org/rwa/programs/irwmp/). RWA will be updating its IRWM Plan in 2011 and 2012 as described in the region's September 28, 2010 Prop 84 IRWM Planning Grant Application. One of the key tasks described in the application is the development of a web-based interface where information will be collected and disseminated. The interface will use an input form that, at a minimum, will include all information required to complete a project review process as described on page 21 of the DWR IRWM Guidelines (August 2010). This interface will populate a database developed to store and disseminate information via the web interface. The interface will include an option to upload associated files (for example, a PDF file of project plans). Any required monitoring specific to a project will be collected consistent with applicable standards (for example, SWAMP and CASGEM) and reported to the State. These substantial improvements are scheduled to be completed by August 2011, so they will be in place generally coincident with beginning implementation of the project in this Proposal. Proponents of the three ARB IRWM region projects (the Antelope Creek Improvement Project, the Downtown Combined Sewer Upsizing Project and the Upper Unionhouse Creek Flood Protection Project) have agreed to coordinate with RWA to acknowledge and commit to the requirements if providing data and monitoring consistent with IRWM guidelines.

Project Tasks

Summarized in the following section is a project work plan for the Antelope Creek Improvement Project. This project work plan contains a summary description of the project plus detailed descriptions of each task that will be conducted to implement the project. These same tasks are reflected under the same project headings in Attachment 4 - Budget and Attachment 5 - Schedule, where the task-specific and overall project budgets and schedules are presented.

Detailed Description

The Antelope Creek Improvement Project is a collaboration between Placer County Water Agency (PCWA) and Placer County Flood Control and Water Conservation District (District). This multi-objective regional flood control, water supply and water quality improvement project is located within the Dry Creek Watershed area of the American River Basin and will be completed in three phases (Figure 4). The project will meet multiple planning objectives by improving water supply and water quality, increasing flood protection, restoring local ecosystems and expanding an existing public recreation corridor.

Phases 1 and 2 of this multi-purpose effort include a regional flood control project on Antelope Creek, a major tributary of the larger Dry Creek (Figure 5). Through the design and construction of two on-channel weirs along an existing open space-protected reach of the creek, the Project will provide flood control and flood damage reduction benefits to repeatedly damaged areas of downtown Roseville. The project will reduce peak flood flows over a wide range of flood events, improve the timing of flood flows, enhance existing riparian corridor ecosystems, and improve water quality and increase water supply through groundwater recharge and the natural treatment of temporarily-stored flood waters within the floodplain. Both ecosystem restoration and public recreational opportunities will be enhanced, wherever possible, within the floodplain of Antelope Creek which currently includes a multi-purpose public trail system. In-stream improvements will include bank re-contouring to ensure overbank flows, specific habitat enhancements for fisheries, removal of invasive plant species and replanting with natives. An interpretive trail sign system and a public trailhead/community node are also proposed to improve access to the multi-purpose trail system while helping to educate the public on the project.

Phase 1 of the Antelope Creek Improvement Project consists of the design and construction of a new on-channel flood control weir structure near Atlantic Street in Roseville. This phase of the project was included as a project in the American River Basin's Proposition (Prop) 84 Implementation Grant Application, and if funded under that program, will not be supported by any funding received from this Prop 1E Grant Program. Phase 2 of the Antelope Creek Improvement Project involves replacement of the existing bike path crossing at Roseville Parkway along with the design and construction of a flow control structure that would improve low flow conveyance and increase the volume impounded before being overtopped. The new structure near Atlantic Street is currently planned as a 10- to 12-foot high embankment on the floodplain with a Con/Span Arch culvert with a span of 32 feet and a rise of 7.5 feet. This second weir is planned to replace the existing bike bridge, raising the bridge deck about four to six feet. An embankment or wall is planned to tie in the crest of the new structure to existing ground to limit overtopping to the desired area. Additionally, a public trailhead/community node will be constructed

under Phase 2 and will consist of a parking lot with garbage receptacles and benches and may also include widening of the street along Antelope Creek to accommodate additional public parking.

Phase 3 of the Antelope Creek Improvement Project involves improvements to the upstream Clover Valley Reservoir, which regulates water deliveries in the lower Antelope Canal, all of which eventually flow into Antelope Creek (Figure 6). The proposed Phase 3 improvements include desilting of the reservoir and constructing a pipeline to bypass the unlined portion of the Antelope Canal, near the Union Pacific Railroad track crossing, that has experienced severe erosion and down-cutting causing the reservoir to become silted, impairing the reservoir capacity, and increasing sediment-loading to Clover Valley Creek and further downstream Antelope Creek. Desilting of the reservoir will increase the flow-regulating capacity of the reservoir (minimizing releases downstream during flood events) and will provide PCWA with increased operational flexibility, especially during the fall months when PG&E's Bear River Canal is shut down for maintenance. PCWA receives a significant amount of their water supplies from the Bear River Canal, and during PG&E's annual canal maintenance, PCWA must store enough water in their system to meet shortfall. The added capacity provided by the reservoir desilting will help PCWA offset the shortfalls experienced annually and provide the retail purveyor with more water system stability. The pipeline will improve the water quality within Clover Valley Creek and Antelope Creek by reducing sedimentation to Clover Valley Reservoir.

Aside from the individual benefits of each phase of the project, the overall Antelope Creek Improvement Project will provide flood reduction, water supply, and water quality benefits to the region. The desilting of the reservoir in Phase 3 of the project, along with the two weirs from the first two project phases, will allow for better flood management of Clover Valley and Antelope Creeks and for the overall Dry Creek Watershed. Additionally, the third phase of the project will reduce the long-term operational costs of the first two phases by possibly reducing the sediment load in Antelope Creek by reducing the frequency of weir maintenance activities.

The *2010 Update to the Dry Creek Watershed Flood Control Plan* is about to be completed by the District and has identified the Antelope Creek Improvement Project as the number one-ranked regional project for implementation. The flood reduction benefits from this project far outweighed the benefits of other projects in the study, producing as much as 1,000 cubic feet per second (cfs) of peak flow reduction at critical locations within downtown Roseville during a 100-year event. Significant flood damage reduction benefits will be realized by residential and commercial properties located downstream of the project site through downtown Roseville and portions of unincorporated Placer County as a result of project implementation. These flood damage reduction benefits have been identified in an analysis performed using HEC-FDA tools as developed by the United States Army Corps of Engineers (USACOE). Additionally, the Antelope Creek Improvement Project meets the goals of the Dry Creek Regional Greenway Vision Plan by increasing public access and recreational opportunities. Combined with the water supply and water quality benefits provided by all project phases, the Antelope Creek Improvement Project meets the Prop 1E criteria for projects yielding multiple benefits.

As previously noted, a Prop 84 Implementation Grant application submitted by the American River Basin (ARB) IRWM Region in January of 2011 included the Phase 1 portion of the Antelope Creek Improvement Project. If funding is received through Proposition 84, funding for this project phase is not requested under the Proposition 1E grant program; Prop 1E funding is, however, requested for Phases 2 and 3. If funding is not awarded for the ARB region's Prop 84 Implementation grant application, then funding awarded under this Proposition 1E grant application should include all three project phases.

Agency Involvement

The implementing agencies for this project are the Placer County Water Agency and Placer County Flood Control and Water Conservation District. Cooperating agencies include: Placer County, City of Roseville, the California Department of Fish and Game, and California Department of Water Resources (state sponsor of downstream and in-watershed flood protection projects),

Project Benefits

The Antelope Creek Improvement Project will provide multiple benefits. By constructing the two weirs and increasing the storage capacity of the upstream Clover Valley Reservoir, the project will lessen the flooding concerns in downtown Roseville. Further, by constructing a pipeline that bypasses the unlined portion of Antelope Canal and desilting the reservoir, the Project will provide water quality benefits through the reduction in sediment loading to Clover Valley and Antelope Creeks. Additionally, the pipeline will reduce the amount of sediment that reaches the two weirs that are to be constructed in the first two phases of the project, thereby reducing maintenance costs for the weirs.

The project also provides water supply benefits by increasing the capacity of the Clover Valley Reservoir (thereby increasing the potential for groundwater recharge) and through the addition of impoundments behind the two new weirs, increasing the wetted areas in the Antelope Creek system and thereby increasing groundwater recharge. Additionally, PCWA will receive the benefit of increased water supply reliability through the increased reservoir storage, offsetting shortfalls typically experienced during PG&E canal maintenance activities. Finally, the Antelope Creek Improvement Project provides other benefits in the form of increased/improved recreational and educational opportunities and improved wildlife habitat. The construction of a public trailhead/community node and interpretive trail sign system will help educate the public while the re-contouring of the creek banks, removal of invasive species, enhancements to fish habitat and other in-stream improvements, which will all be based on a fluvial geomorphological analysis, will provide benefits to the local ecosystem. The enhancements to fish habitat include improvements that will benefit two threatened and endangered species, including Chinook Salmon and Steelhead Trout.

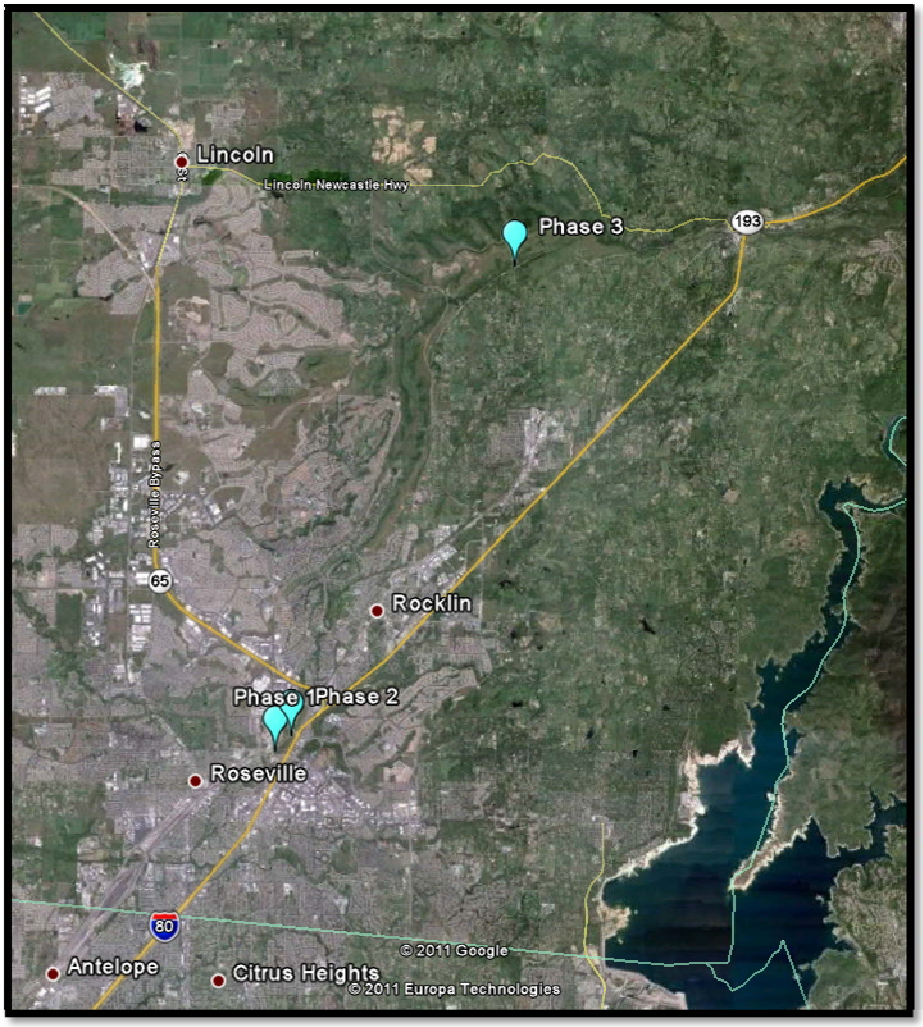

Figure 4: Location of the Three Phases of the Antelope Creek Improvement Project

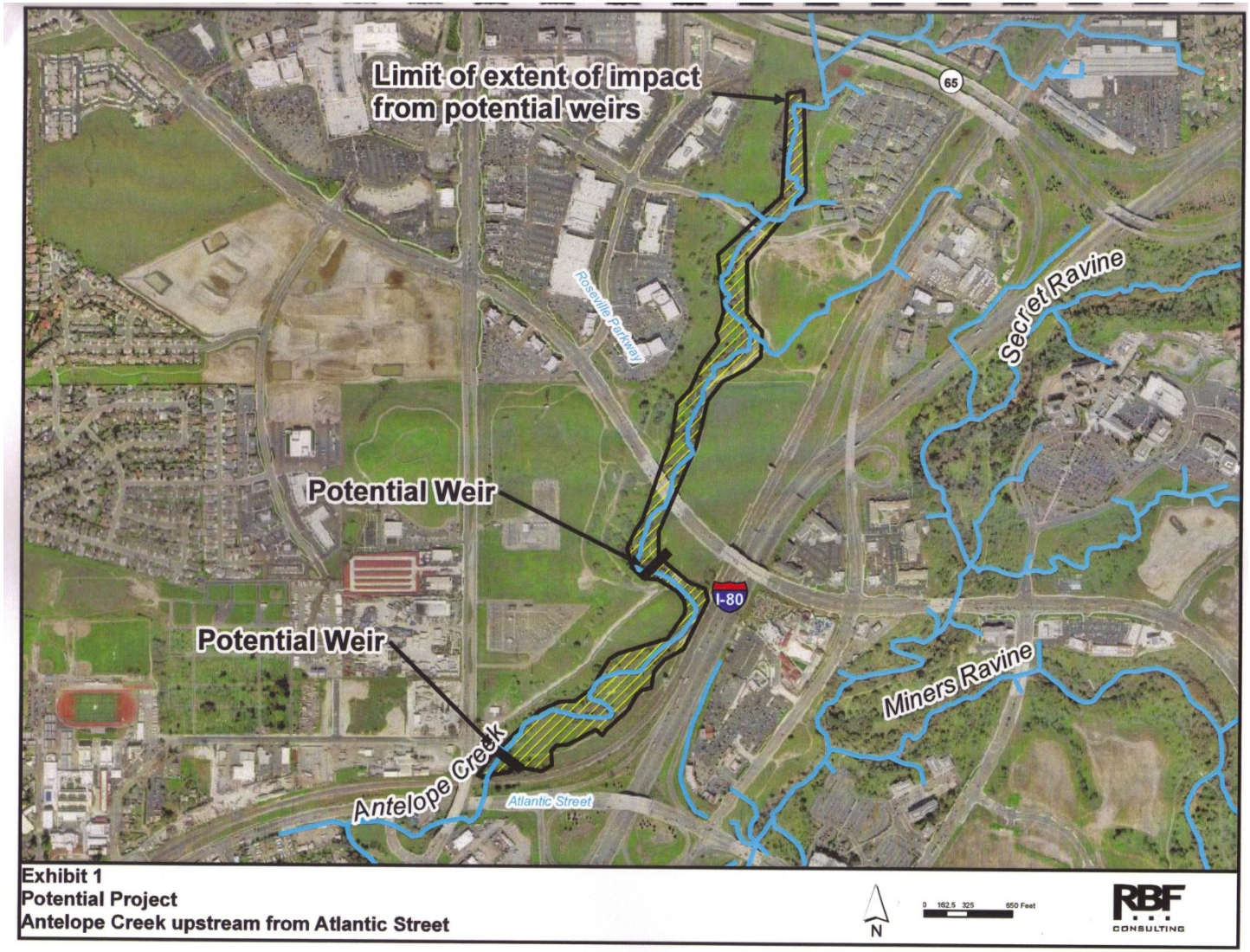

Figure 5: Location of Phases One and Two of the Antelope Creek Improvement Project

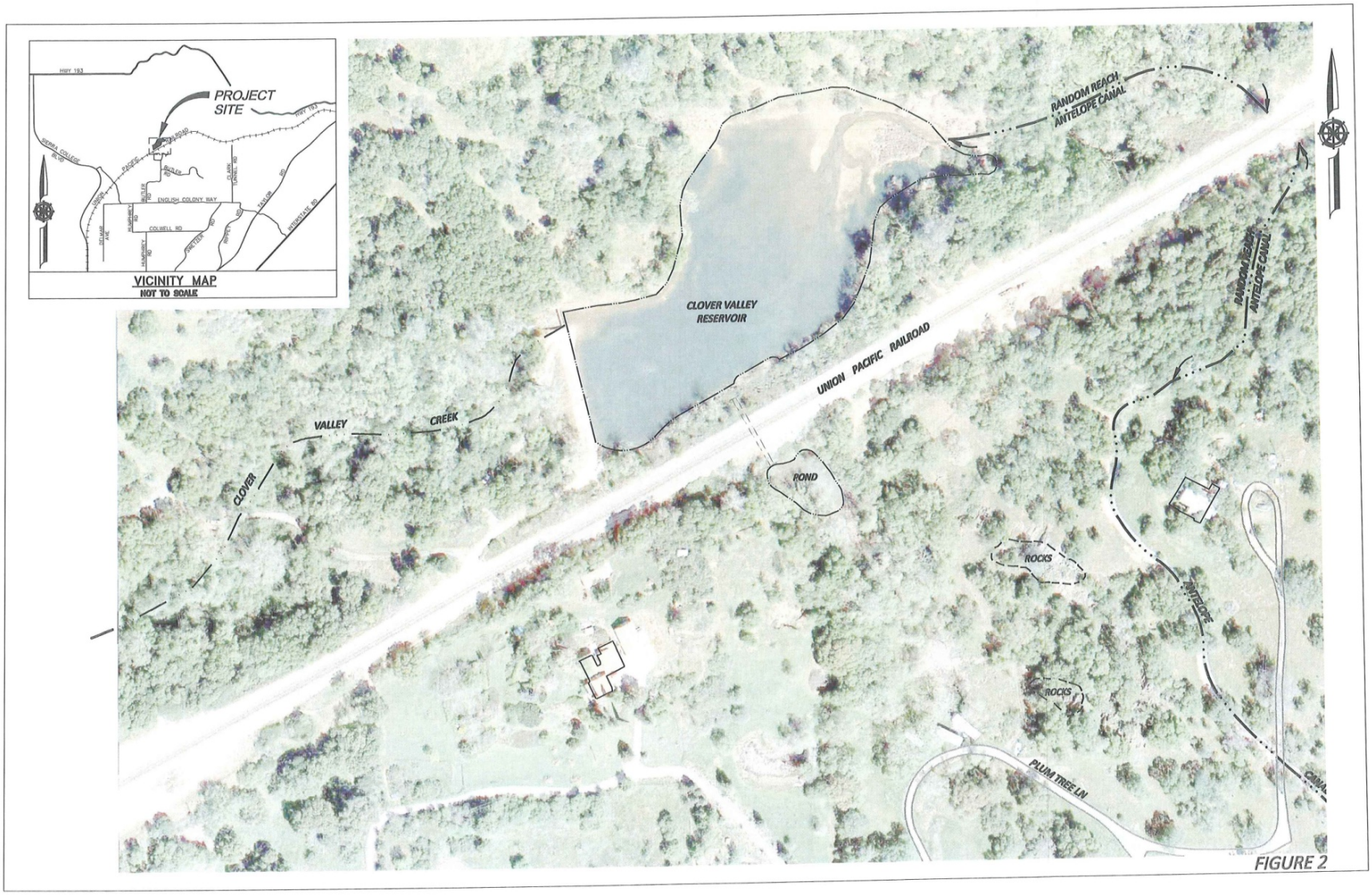

Figure 6: Location of Phase Three of the Antelope Creek Improvement Project

Budget Category (a): Direct Project Administration Costs

Direct project administration costs include general project administration tasks (claim preparation, communications with the California Department of Water Resources [DWR], and PCWA's and the District's Boards), Labor Compliance Program (LCP) implementation, and reporting (quarterly reports and final report). Included under this budget category are three tasks: administration, a labor compliance program, and reporting.

Task 1: Administration

Work to be completed as part of Task 1, Administration, includes Board communications, project status meetings, and communication with DWR and contractors and communication between the two participating agencies (PCWA and the District). For this project, the District will be the primary project sponsor. To facilitate the transfer of grant funds, the District and PCWA have entered into an agreement through which any grant funding can be utilized.

Task 2: Labor Compliance Program

PCWA and the District do not currently have a Labor Compliance Program (LCP), therefore, a third-party's labor compliance program will be used, as has been done previously. The labor compliance services will include, at a minimum, monitoring and preparation of summary and status reports, receiving, reviewing, and processing certified payroll reports, conducting interviews, as well as collecting, reviewing, and processing other data. Annual reports to the Department of Industrial Relations (DIR) will also be prepared and submitted.

Task 2 Deliverables:

- Certified Labor Compliance Program
- Annual DIR Reports

Task 3: Reporting

Following execution of the grant agreement, quarterly reports will be prepared assessing the progress and accomplishments of the Antelope Creek Improvement Project. A project completion report will also be prepared at the end of the project, anticipated to be in July 2014. PCWA and the District will keep all records and documents pertaining to the project for three years after project completion.

Task 3 Deliverables:

- Quarterly reports as specified in the Grant Agreement
- Completion report as specified in the Grant Agreement

Budget Category (b): Land Purchase/Easement

The City of Roseville (City) owns and maintains the current open space-zoned 8.6-acre property in which Phase 1 and Phase 2 of the project are located. The land was dedicated to the City of Roseville in 1996. The City is a member agency of the Placer County Flood Control and Water Conservation District and is in support of the proposed project. It is anticipated that a permanent, no-cost flood control and conservation easement will be issued to the District from the City. The District has also identified three private property owners with lands only slightly impacted by the project. The District plans to meet with these owners and negotiate flood and conservation type easements across their lands. If necessary, the District is empowered to implement eminent domain proceedings to acquire said easements as necessary.

For the third phase of the project, easements will be required to allow access to the canal facility where the intake structure for the pipeline will be located and to maintain sections of the pipeline. PCWA has already begun preliminary discussions with adjacent landowners. Temporary easements will also be required for construction activities.

Budget Category (c): Planning/Design/Engineering/Environmental Documentation

Planning documents have been prepared to demonstrate the viability of the project; these documents are listed below. At this time, all three phases of the project are past the conceptual (10%) design stage. The environmental documentation and final design for the first two phases of the project are both expected to be completed in June 2012. For the third phase of the project, the environmental documentation is expected to be completed in October 2012 and the final design in August 2012.

Task 4: Assessment and Evaluation

The following studies have been completed for Phases 1 and 2 of the project, demonstrating the need and effectiveness of the project:

- The *2010 Update to Dry Creek Watershed Flood Control Plan Draft* (Civil Engineering Solutions and RBF Consulting, November 2010) has identified the Antelope Creek Improvement Project as the number one ranked regional project for implementation based on flood mitigation and cost. The plan is expected to be finalized by April 2011.
- *Antelope Creek Water Efficiency and Flood Control Project Flood Damage Reduction Analysis* (RBF Consulting, December 2010) included a benefit analysis of the flood control project using HEC-FDA tools as developed by the US Army Corps of Engineers.

For Phase 3 of the project, the following studied have completed:

- *Sediment Sampling and Analysis Results* (GEOCON Consultants, INC., September 2010) evaluated the general physical and environmental characteristics of the sediment in the Clover Valley Reservoir.
- *Clover Valley Reservoir Remotely Operated Vehicle (ROV) Underwater Investigation (*Above & Below the H_2O, March 2010) documented the condition of the culvert under the Union Pacific Railroad track and of the outlet structure.

- *Preliminary Delineation of Wetland and Other Water Bodies for the Clover Valley Reservoir Desilting and Supply Pipeline Project* (ICF International, June 2010) determined the location, size and quality of wetlands located near the proposed project. Out of a total delineation area of 18.123 acres examined, 3.814 acres of the total were classified as a wetland or water body, with 3.057 of those acres being the Clover Valley Reservoir.

Task 4 Deliverables:

- None (studies previously completed).

Task 5: Final Design

The 10% Design for all phases of this project has been completed. A total of eight design submittals are expected for this project, corresponding to the 30%, 60%, 90% and 100% (Final) Design documents (the design submittals for the first two phases will be combined). An engineering consultant firm will be hired to design all three phases of the project. A geotechnical consultant will review weir designs at all stages and make foundation recommendations.

During design, American Water Works Association (AWWA), American ASTM Construction Standards, and Occupational Safety & Health Administration (OSHA) regulations and industry standard practice will be used as construction standards and health and safety standards. City of Roseville standards for grading, encroachments and tree mitigation will be followed and necessary permits will be acquired. The District's Stormwater Management Manual (SWMM) and 2010 *Updated Dry Creek Watershed Flood Control Plan* standards will also be followed. PCWA's *Natural Resource Management Training Manual* Best Management Practice (BMP) 1b will also be used for the third phase of the project.

Task 5 Deliverables:

- 30% Design
- 60% Design
- 90% (pre-final) Design
- Final Plans and Specifications

Task 6: Environmental Documentation

Preparation of a Mitigated Negative Declaration (MND) is expected to begin February 2012, with completion of the final document by June 2012 for the first two project phases. For the third phase of the project, the MND is expected to be completed in October 2012. A separate MND is required for the third project phase as the responsible party for this portion of the project is different than that for the first two project phases. No additional environmental documentation is anticipated for the project.

Mitigation measures anticipated to be incorporated into the MNDs include mitigation for loss of trees in the floodplain due to construction of the weirs, temporary habitat impacts that will be mitigated through creek restoration components, and implementation of construction-related best management practices. Mitigation measures will be implemented under Budget Category (e) Environmental Compliance/ Mitigation/Enhancement.

Task 6 Deliverables:

- Phase 1 & 2 Approved Mitigated Negative Declaration
- Phase 3 Approved Mitigated Negative Declaration

Task 7: Permitting

The following permits will be required to implement the first two phases of the project and are expected to be issued by March 2013, prior to the start of construction:

- Regional Water Quality Control Board 401 Water Certification to ensure compliance with State water quality standards.
- U.S. Army Corps of Engineers Section (USACOE) 404 Encroachment Permit to allow work within waters of the U.S.
- Department of Fish and Game Section (CDFG) 1602 Streambed Alteration Agreement allowing for work within the stream channel.
- A Central Valley Flood Protection Board (CVFPB) Encroachment Permit to ensure the proposed project does not impact flood control efforts.
- Section 7 Endangered Species Act Consultation with the US Fish and Wildlife Service and the National Marine Fisheries Service.
- City of Roseville Grading and Encroachment Permit to allow grading and encroachment on City of Roseville Open Space areas.
- City of Roseville Tree Mitigation Permit to allow for the removal of trees within the City of Roseville city limits.

Similarly, the following permits will be required to implement Phase 3 of the project and are expected to be issued by February 2013, prior to the start of construction:

- Regional Water Quality Control Board 401 Water Certification to ensure compliance with State water quality standards.
- U.S. Army Corps of Engineers Section 404 Encroachment Permit to allow work within waters of the U.S.
- U.S Fish and Wildlife Service Section 7 Consultation to ensure the project allows for the continued existence of a listed species or does not result in the destruction or adverse modification of designated critical habitat.
- Placer County Planning Department Tree Removal Permit to allow for the removal of trees within the Place County limits.
- State Historic Preservation Office Section 106 Consultation to ensure that the project takes into account any impacts on historic properties.
- Union Pacific Railroad Permit to allow construction within 200 feet of the Union Pacific-owned railroad tracks.

In addition to the aforementioned permits, the contractor will file and comply with a Stormwater Pollution Prevention Plan which will be submitted to the City of Roseville and Placer County.

Task 7 Deliverables:

- Complete permit package including all permits

Budget Category (d): Construction/Implementation

Task 8: Construction Contracting

All work under Task 8 is expected to begin in March 2013 for the all phases of the project. Work items include Bid Advertisements, Notices of Award (NOA)/Notices to Proceed (NTP), and monthly progress reports. The NOAs are expected to be released in May 2013. The Final Design Packages completed during Task 5 will be used for the bid advertisements.

Task 8 Deliverables:

- Notices of Award
- Notices to Proceed
- Monthly Progress Reports

Task 9: Construction

Construction of the first phase of the Antelope Creek Improvement Project is anticipated to begin in June 2013 with a completion date in December 2013; the second phase of project construction is expected to begin in December 2013 and end in June 2014, while the third phase of construction is to begin in May 2013 and end in May 2014. Task 9 is divided into three categories: mobilization and site preparation, project construction, and performance testing and demobilization, as described in the following sections

Mobilization and Site Preparation

Upon receipt of the NTP, the contractor will begin mobilization and site preparation activities. These activities will include selective clearing and grubbing of debris and invasive species within the floodplain construction areas, instituting tree protection measures, creating construction access roads that minimize impacts to the environment and to adjacent property owners, and following all prescribed SWPPP measures.

Project Construction

Following completion of site preparation activities, construction of the Atlantic Street Weir (Phase One) will begin. Construction will include general site grading, excavating and hauling for weir construction, floodplain restoration, forming and pouring the concrete flood control weir, installation of the ALERT stream level gauges, re-landscaping, installing a temporary irrigation system, installing interpretive signs, and a public trailhead/community node that will consist of street widening to allow for access, benches, and trash receptacles. Upon completion of Phase 1, the installation of the Roseville Parkway Weir (Phase 2) will begin. Construction work items are identical for first two project phases.

Construction for Phase 3 of the project includes removing the accumulated sediment from Clover Valley Reservoir either with a floating vacuum dredge or by draining the reservoir and removing the sediment with earth moving equipment, constructing an intake facility to transfer the water from the canal to the pipeline, and constructing the temporary and permanent pipelines (a temporary pipeline is required to continue deliveries to downstream customers during construction).

Performance Testing and Demobilization

During completion of construction activities, the contractor will perform required materials testing and monitoring. This includes geotechnical testing of flood control weir base materials, earthwork compaction testing, concrete materials testing and plant establishment and monitoring. Following construction site cleanup activities, the District will begin the three-year plant establishment monitoring period and begin monitoring the stream level gauges to determine storage and peak flow reduction results. Similarly, PCWA will sample the reservoir to ensure that the sediment load has decreased. Final inspection and project certification will also be performed, along with contractor demobilization.

Budget Category (e): Environmental Compliance/Mitigation/Enhancement

Task 10: Environmental Compliance/Mitigation/Enhancement

Mitigation measures for the first two phases of the project include measures to reduce impacts resulting from the loss of trees and riparian restoration components due the temporary impacts on habitat during construction. Environmental enhancement actions include removal of invasive plants from the Antelope Creek riparian corridor and replacement with naturally-occurring trees and shrubs, planting native trees to mitigate loss of any trees within the floodplain or canal outfall areas, creek bank re-contouring to improve floodplain storage and connectivity, addition of fish habitat improvements within the stream channel, protecting Elderberry bushes near the construction sites, and public education through the installation of interpretive signage. Required mitigation measures for the third phase of the project are currently unknown. Costs of expected mitigation measures were estimated based on prior experience with similar projects. Additionally, a Project Performance Monitoring Plan will be prepared for this project to direct longer-term project monitoring to ensure successful project implementation and operation.

It should be noted that, while the schedule for this project shows that project performance monitoring and reporting will cease at the completion of project construction, it is understood the project performance monitoring will continue for 10 years following project completion, with annual project performance reporting.

Budget Category (f): Construction Administration

Task 11: Construction Administration

Construction Administration includes Construction Management services and other administrative activities relating to project implementation. General contract administration and field inspections will be performed by PCWA and District staff. A third-party construction management firm may be utilized for the project.

Construction management for this project will include the following work items:

- Review contractor's schedule and make recommendations
- Manage and coordinate all project inquiries, serve as focal point
- Manage and coordinate all contractor correspondence
- Maintain detailed project records
- Receive, log, and distribute all submittals for review

- Inspect completed construction
- Recommend final payment and submit all project files for archiving

Budget Category (g): Other Costs

Included in this budget category are permit fees and Task 12, Project Performance Monitoring Plan.

Task 12: Project Performance Plan

As part of the overall grant application, a Project Performance Monitoring Plan will be prepared for implementation under the grant award. This plan will be prepared to:

- Provide a framework for assessment and evaluation of project performance.
- Identify measures that can be used to monitor progress toward achieving project goals.
- Provide a tool to monitor and measure project process and guide final project performance reporting that will fulfill grant agreement requirements.
- Provide information to help improve current and future projects.
- Maximize the value of public expenditures to achieve desired environmental results.

This document will identify the problem to be addressed by the project, summarize the project tasks, specifying the project goals and desired outcomes, and include a project performance measures table presenting output and outcome indicators, measurements tool and methods to be implemented and performance targets.

Task 12 Deliverables:

- Project Performance Monitoring Plan

Budget Category (h): Construction/ Implementation Contingency

A construction/implementation contingency of 15% will be used for the first two phases of this project and 20% for the third phase of this project. These percentages are based on previous projects of similar nature and the current design of the project.

Supporting Documentation

The following supporting documents are included for this proposal:

- *2010 Update to Dry Creek Watershed Flood Control Plan, Draft* (Civil Engineering Solutions and RBF Consulting, November 2010)
- *Antelope Creek Water Efficiency and Flood Control Project Flood Damage Reduction Analysis* (RBF Consulting, December 23, 2010)
- *Sediment Sampling and Analysis Results*(Geocon Consultants, Inc. September 9, 2010)
- *Clover Valley Reservoir Remotely Operated Vehicle (ROV) Underwater Investigation* (Above & Below the H_2O, 2010)
- *Preliminary Delineation of Wetland and Other Water Bodies for the Clover Valley Reservoir Desilting and Supply Pipeline Project* (ICF International, June 2010)

- *Miners Ravine Off-Channel Detention Basin Facility Mitigation Monitoring Plan* (Placer County Flood Control and Water Conservation District, January 2006)
- Letter of Support from City of Roseville (April, 2011)