

California State Water Resources Control Board
Division of Financial Assistance
Office of Water Recycling

Water Recycling Facilities Planning Grant Application

A. Applicant Information

Agency Name: City of Benicia
 Street Address: 250 East L Street, Benicia, CA 94510
 Mailing Address: Same
 Authorized Representative (Name/Title/Phone): Brad Kilger, City Manager, 707-746-4200
 Contact Person (Name/Title/Phone): Carrie Wenslawski, Management Analyst, 707-746-4236

B. Facilities Planning Study Information

1. Study Title: Benicia Water Reuse Project
2. Regional Water Quality Control Board: San Francisco Bay
3. Estimated Project Schedule:
 - a. Study starting date: July 2015
 - b. Submittal of draft facilities plan: July 2016
 - c. Submittal of final facilities plan: December 2016
4. Plan of Study: Please submit a plan of study prepared according to the directions in the Water Recycling Funding Guidelines, Part Two. (Label this as Attachment 2.)

C. Study Budget

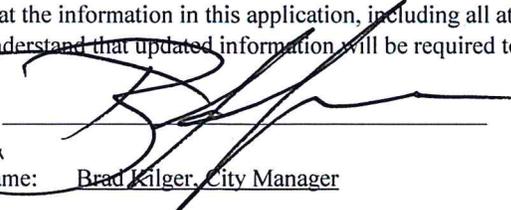
1. Total Study Cost: \$303,576
2. Requested Grant Amount: \$150,000
 The maximum grant is 50 percent of the total eligible study cost up to a maximum grant of \$75,000.
3. Funds for Cash Flow: The grant applicant is expected to have funds available to handle cash flow for the entire study cost, pending receipt of grant disbursements. Does the Agency have local funds on hand to cover the entire estimated study cost? Yes
4. Other Financial Assistance: Describe any other loans, grants, or other financial assistance being provided to the grant applicant to assist in this study.
March 3, 2015 submitted WaterSMART grant application to the U.S. Bureau of Reclamation (opportunity #R15AS00015) for \$150,000.00

D. Authorization

Submit a certified copy of a resolution adopted by the governing body authorizing the application and acceptance of a grant from the Water Recycling Facilities Planning Grant Program. A model resolution is provided for your reference. (Label this as Attachment 1.)

E. Certification and Signature of Authorized Representative

I certify that the information in this application, including all attachments, is true and correct to the best of my knowledge and belief. I understand that updated information will be required to be submitted later.

 Signature: 

 Date: 4/28/15

 Printed Name: Brad Kilger, City Manager

 Agency's Federal I.D. No.: 94-6000298

RESOLUTION NO. 15- 21

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF BENICIA IN SUPPORT OF GRANT APPLICATIONS TO THE FEDERAL BUREAU OF RECLAMATION AND THE STATE WATER RESOURCES CONTROL BOARD FOR FINANCIAL ASSISTANCE FOR A FEASIBILITY STUDY AND FACILITIES PLANNING REPORT FOR THE RECYCLED WATER PROJECT TO BENICIA VALERO OIL REFINERY

WHEREAS, the Federal Bureau of Reclamation WaterSMART Program is providing a funding opportunity for the development of feasibility studies under the Title XVI Water Reclamation and Reuse Program on a competitive basis; and

WHEREAS, the State Water Resources Control Board Water Facilities Planning Grant is providing a funding opportunity for the development of feasibility studies through the Water Recycling Funding Program on a competitive basis; and

WHEREAS, the City of Benicia wishes to submit a grant application for both said funding programs for a feasibility study and facilities planning report for the Recycled Water Project to Benicia Valero Oil Refinery; and

WHEREAS, The City has the capability, in the Wastewater Connection Fee Fund, to provide the non-grant funded local share portion of the cost of the feasibility study and facilities planning report.

NOW, THEREFORE, BE IT RESOLVED THAT the City Council of the City of Benicia supports submission of the grant applications that have been reviewed by the City Manager to the Federal Bureau of Reclamation and the State Water Resources Control Board for financial assistance for a feasibility study and facilities planning report for the Recycled Water Project to Benicia Valero Oil Refinery.

BE IT FURTHER RESOLVED THAT the City Council of the City of Benicia hereby authorizes the City Manager or his designee to apply for and execute funding contracts for financial assistance from the Federal Bureau of Reclamation and the State Water Resources Control Board for a feasibility study and facilities planning report for the project.

BE IT FURTHER RESOLVED THAT the City of Benicia hereby agrees and further does authorize the aforementioned representative or his designee to certify that the City has and will comply with all applicable regional, state and/or federal statutory and regulatory requirements related to any grant funds received.

BE IT FURTHER RESOLVED THAT upon award of Federal or State financial assistance that the City Manager or his designee is hereby authorized to negotiate and execute a grant contract and any amendments or change orders thereto on behalf of the City of Benicia.

BE IT FURTHER RESOLVED THAT the City will commit financially (via the Wastewater Connection Fee Fund, Acct #044-8044-8106) to the non-federal and/or non-state local share portion of the cost of feasibility study and facilities planning report.

BE IT FURTHER RESOLVED THAT The City will work with the Federal Bureau of Reclamation and the State Water Resources Control Board to meet established deadlines for entering into a cooperative agreement.

On motion of Council Member **Hughes**, and seconded by Council Member **Strawbridge**, the above Resolution was introduced and passed by the City Council of the City of Benicia at a regular meeting of said Council held on the 17th day of March, 2015, and adopted by the following vote.

Ayes: Council Members Hughes, Schwartzman, Strawbridge, and Mayor Patterson

Noes: None

Absent: Council Member Campbell



Elizabeth Patterson, Mayor

Attest:



Lisa Wolfe, City Clerk

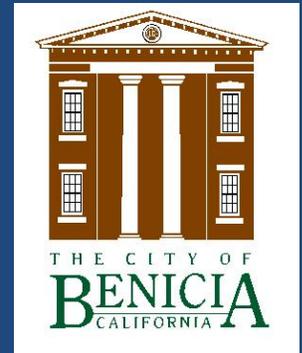
3-19-15
Date

ATTACHMENT 2

BENICIA WATER REUSE PROJECT

Plan of Study (POS) of the Proposed Facilities
Planning Study under the Water Recycling Funding
Program (WRFPP)

April 28, 2015



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INTRODUCTION

The City of Benicia is proposing a Facilities Planning Study for a water reuse/recycled water project which would recycle year-round approximately 2 million gallons per day, or 2,200 acre-feet per year, of effluent and deliver it from Benicia's Wastewater Treatment Plant (WWTP) to the Valero Benicia Refinery to be used for cooling tower makeup water. This is more than 20% percent of the City's typical fresh water demand, and would offset State Water Project demand and provide significant relief to the City's water supply problems due to the ongoing California drought and future droughts.

During drought years, the City of Benicia's water supply cannot reliably or consistently meet the demands of its customers. In a normal non-drought year the City's average annual water demand is over 10,000 acre-feet (AF). Approximately half of the demand is from residential customers (indoor and outdoor uses), municipal uses, and local businesses, and the remaining half is from the Valero Oil Refinery. The State Water Project (SWP) supplies 75% to 85% of the City's water from the Sacramento - San Joaquin Delta and the Solano Project (SP) supplies 15% to 25% of the City's water from Lake Berryessa. Lake Herman has historically been used as an emergency water supply and temporary storage reservoir.

This document is the Plan of Study (POS) for the proposed project and is Attachment 2 to the Water Recycling Facilities Planning Grant Application submitted to the California State Water Resources Control Board - Division of Financial Assistance - Office of Water Recycling on April 28, 2015. This POS includes all 11 required components (in *italics* in each section below) as outlined in the current Water Recycling Funding Program Guidelines (dated 7/15/2008.)

COMPONENT NO. 1

A description of the recycled water service area that will be studied.

Benicia is a waterfront city located in the San Francisco Bay area in Solano County, California. It is on the northern side of Carquinez Strait that connects San Pablo Bay and the Sacramento-San Joaquin Bay-Delta Estuary system. Figure 1 in Component No. 4 below is a vicinity map. The City is bordered on the west by the neighboring City of Vallejo. The City of Martinez is located across the Carquinez Strait to the south. The areas to the north and east of the City are unincorporated Solano County lands. Figure 2 in Component No. 4 below is an aerial photo of the City of Benicia and shows the relative location of the WWTP and the Valero refinery.

Benicia is a historic city and retains many of its historic buildings. It was founded in 1847, was one of the first two cities to incorporate in the State in 1850 and was the State Capital in 1853 and 1854. The downtown area is located along the waterfront, and residential development is to the north against the coastal hills. Industrial uses are primarily northeast of downtown along I-680. Benicia is a full-service city with an elected member Council and full-time City Manager. The City's water and wastewater services are owned, operated and managed through its Public Works Department. The population is about 28,000.

COMPONENT NO. 2

The potential sources of recycled water and a summary of the unit processes currently in use at existing treatment facilities.

The primary water source for the recycled water project is the Benicia WWTP effluent. The plant is located in Benicia and has an average dry weather flow of 2.2 million gallons per day (mgd), with a design capacity of 4.5 mgd. It provides secondary treatment of wastewater from domestic, commercial, and industrial sources within the City of Benicia. The service area population is approximately 28,000.

Wastewater treatment consists of screening, grinding, grit removal, primary clarification, biological secondary treatment, and disinfection. The secondary-treated effluent is disinfected and dechlorinated prior to discharge into Carquinez Strait which is part of the San Francisco Bay estuary. The study will evaluate groundwater as a potential source for reclamation, however preliminary information indicates that Benicia's groundwater resources are limited and of poor quality.

COMPONENT NO. 3

A description of the current disposal/reuse of the wastewater that is proposed to be recycled.

The Benicia WWTP discharges secondary effluent to the Carquinez Strait under NPDES Permit No. CA0038091 (Order R2-2014-0023).

The WWTP has implemented a small-scale pilot recycled water project to provide approximately 30,000 gallons per day for internal plant use that replaces potable water, and may expand that use and apply for a permit to use an additional 6,000 gallons per day recycled water for irrigation of landscaping at the WWTP site.

COMPONENT NO. 4

A map of the study area showing the sources of recycled water and potential service area(s).



Figure 1: Vicinity Map

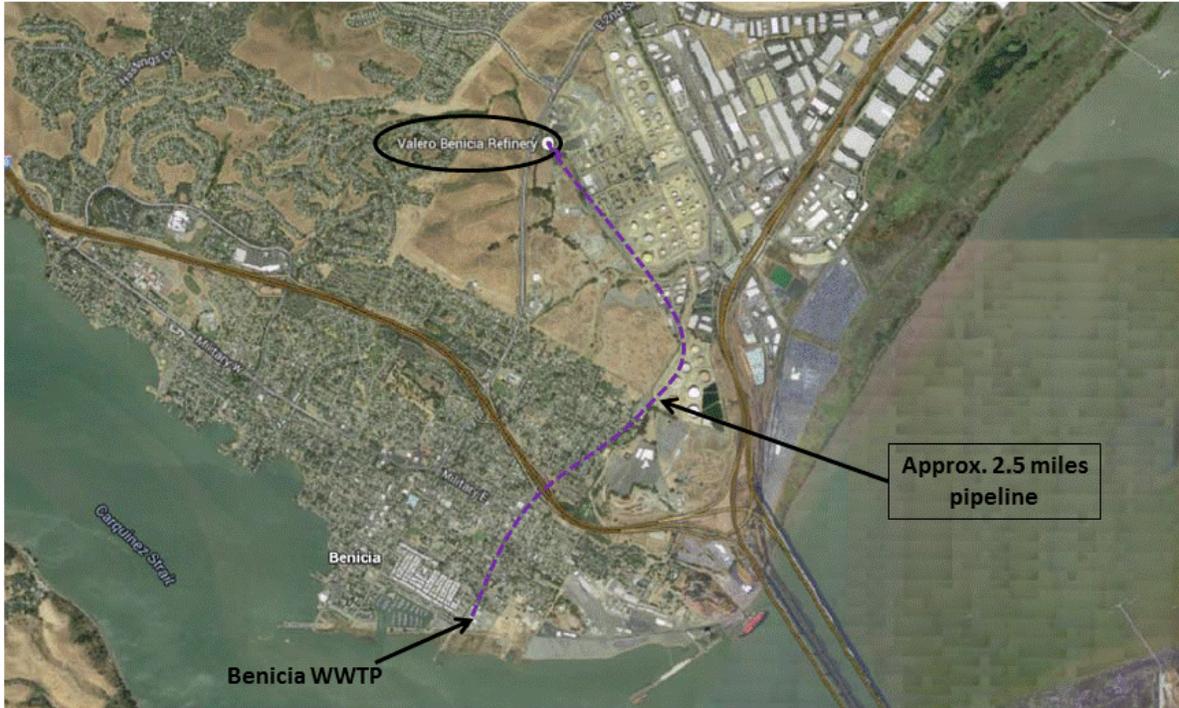


Figure 2 – Aerial View of the City of Benicia Showing Project Location

COMPONENT NO. 5

Identification of the water and wastewater agencies having jurisdictions over the sources of recycled water and/or the potential service area.

The City of Benicia is both the drinking water and wastewater agency with jurisdiction over the sources of recycled water and the service area. The City's water and wastewater services are owned, operated and managed through its Public Works Department.

COMPONENT NO. 6

A general description of water recycling and potable water supply alternatives that will be evaluated.

Potential uses for recycled water have been identified in a preliminary recycled water study performed by the City. The major identified use is the Valero refinery's cooling tower make-up water demand of 1.9 million gallons per day (mgd) and non-potable in-plant uses at the Wastewater Treatment Plant (WWTP) of 36,000 gallons per day (gpd). These two uses have a total demand of 1.94 mgd which is approximately equal to the WWTP's average

dry weather wastewater flow of 2.2 mgd. Additional possible uses to be evaluated in the feasibility study are a truck fill station for street sweepers and sewer collection system cleaning trucks and landscape irrigation at parks and a cemetery near probable alignments of the pipeline that will connect the WWTP to the refinery. Because of the limited available recycled water supply, the study will focus its search for additional potential users to those with compatible demands located along potential routes for the pipeline that will deliver the recycled water from the WWTP to the refinery, such as I-780 landscaping irrigation.

Water supply alternatives that will be assessed include the “No Project” alternative, desalination of Bay water, and the treatment of refinery process water. The available supply from each potential source and the necessary treatment to meet the quality needs of the refinery will be identified. Conceptual project costs will be developed for each alternative.

Various treatment process alternatives will be evaluated for the proposed project. A treatment process specialist will assess the viability of various recycled water treatment trains, as well as consider modifications to the secondary treatment process to improve tertiary recycled water quality. Based on preliminary information it is anticipated that filtration and ammonia removal will be required, but denitrification will not be required.

Potential distribution alignment alternatives for the pipe from the WWTP to the refinery will be identified that can cost effectively serve the refinery and maximize the potential for serving additional customers. Existing abandoned pipelines between the wastewater treatment plant and the refinery will be assessed for the potential of converting them for recycled water distribution. A new pump station at the treatment plant will be needed to pump the water to the refinery. A hydraulic analysis will be performed to identify pumping and storage tank needs for sizing of the pump station. For example, there is a moth balled two million gallon water storage tank near the potential pipeline alignment that could be used for recycled water storage.

COMPONENT NO. 7

A description of the opportunities for stakeholder participation, for example, public meeting with the local community members, potential recycled water users, and other agencies that have a stake in the study.

Community members, Valero staff and City staff met in 2008 and 2009 to study a water reuse project. With the drought and need to improve water supply reliability, city and Valero staff have been meeting to discuss project alternatives. The Benicia City Council must approve several steps in the feasibility study process, including approval of any grant agreement with the State. City Council meetings are open to the public and provide

opportunities for stakeholder comment and participation. Public meetings held as part of the CEQA process will provide another opportunity for stakeholder engagement.

The major potential recycled water user is the Valero refinery, and City staff members will hold on-going series of meetings with Valero staff to define the project's needs and requirements. City staff will meet with Caltrans and U.S. Army staff to discuss the use of recycled water along I-780 and at the Military Cemetery.

COMPONENT NO. 8

A schedule with the start and completion dates of major tasks associated with the facilities planning study.

The proposed schedule for the facilities planning report is given below:

Issue RFP for Facility Planning Report	May 2015
Consultant responses due	June 2015
Notice to Proceed (study start date)	August 2015
Preliminary Draft	July 2016
Final Report Completion	December 2016

COMPONENT NO. 9

A list of potential problems that may cause delay in the progress of the study and description of the proposed actions to reduce the impact of these potential problems.

City staff is not aware of any anticipated problems that would delay progress of the Facilities Planning Report.

COMPONENT NO. 10

Identification of the entities that will be conducting the study and description of their roles. This may include a description of proposed subcontracts with consultants or interagency agreements with other agencies, and any force account work.

It is anticipated that the facilities planning study will be conducted by a team of engineering, water quality, economic, and environmental studies consultants (see Table 2 in Component No. 11 below for more details on job titles, rate and hours.) An industrial

water quality specialist will review WWTP water quality data and identify the treatment required to meet the refinery’s water quality needs. A sub-consultant may be needed for the permitting aspect of the project. City staff and Valero staff would provide information to the consultants. An effluent characterization study may require laboratory staff time and purchase of analytical instrumentation.

COMPONENT NO. 11

Proposed budget for the study, including estimated costs of specific tasks, sources of financing, and sources of funds for cash flow until grant reimbursement.

The cost estimated to prepare the Facilities Planning Report for the proposed project is \$303,576. It is expected that the project will be completed by consultants and City staff. The City has funds available in its Wastewater Enterprise Connection/Capacity Fee Fund for cash flow until grant reimbursement and to fund the remaining share cost, including the share allocated to the Federal feasibility study grant.

The following tables present more detailed information. Table 1 summarizes the proposed funding sources. Table 2 identifies anticipated study costs.

Table 1. Proposed Funding Sources

Funding Sources	Funding Amount
1. SWRCB Facilities Planning Grant (if awarded)	\$75,000
2. U.S. Bureau of Reclamation WaterSMART Feasibility Study Grant (if awarded - applied on 3/3/15):	\$150,000
3. City of Benicia Wastewater Enterprise Connection Fee Fund	\$78,576
Total Proposed Study Funding Needed:	\$303,576

City of Benicia
Benicia Valero Refinery Recycled Water Project

Table 2
Budget Proposal

Budget Item Description	Computation		TOTAL COSTS
	Unit Cost	Quantity	
	\$/hr	hours	
Salaries and Wages			\$ -
Fringe Benefits			\$ -
Travel			\$ -
Equipment			\$ -
Supplies/Materials			\$ -
Contractual (includes Reporting)			\$ -
Project Manager	230	491	\$ 112,976.00
Project Engineer	180	740	\$ 133,200.00
Treatment Process Specialist	225	100	\$ 22,500.00
Industrial Water Quality Specialist	200	60	\$ 12,000.00
Environmental Planner	175	56	\$ 9,800.00
Public Finance Consultant	225	24	\$ 5,400.00
Graphic Support	120	60	\$ 7,200.00
Mileage and Tolls			\$ 500.00
Other			\$ -
Total Direct Costs			\$ 303,576.00
Indirect Costs			\$ -
Total Study Costs			\$ 303,576.00