CITY OF MARTINEZ **CITY COUNCIL AGENDA**
February 6, 2013

TO:	Mayor and City Council
FROM:	Tim Tucker, City Engineer
SUBJECT:	Allocating fund for the design of the Water Treatment Plant Electrical Upgrade Project
DATE:	January 31, 2013

RECOMMENDATION:

Adopt Resolution allocating fund for the design of the Water Treatment Plant Electrical Upgrade Project and authorizing the City Manager enter into an agreement for consultant services with Carollo Engineers to provide the design.

BACKGROUND:

The City Council approved the Water Treatment Plant (WTP) Master Plan in February of 2012. The plan identified twenty three projects to be completed over an estimated fifteen year period. One of the highest priority projects was to overhaul the electrical system at the main plant (Plant). The project was estimated to cost approximately $2,224,000. The Plant's electrical distribution systems were installed in 1967 and have reached the end of their useful lives. The aging electrical distribution system limits the operational reliability in several ways. First, the switchgear, switchboards, motor control centers, and cables are increasingly prone to failure. Second, the existing protective devices do not allow failures to be isolated, so small faults become plant-wide outages. Third, the parts are becoming increasingly difficult to obtain, making maintenance more difficult and prolonged. If the Plant electrical distribution system is not upgraded in the near future, operational reliability and personnel safety will decline. In the WTP Master Plan Study the electrical system was identified as being as the highest risk asset in the Plant.

Staff recommends hiring Carollo Engineer's complete the design. They are most knowledgeable of the electrical system having done the WTP Master Plan. They were also selected through a competitive process for On-call Water Engineering Services. The Council has authorized the City Manager to execute contracts through the On-call agreement previously approved, however, due to the importance of the project and size of the contract staff felt it best to bring the approval of the contract to the Council. Attached is their scope to complete the design in an amount not to exceed $325,700.

FISCAL IMPACT:

It is proposed to fund the design contract from the recently obtained water bond ($3.8M). In addition funds are required for staff support and Project Management in the amount of $50,000. Staff recommends the Council allocate surplus undesignated Water Funds (>$7M balance) to cover staff time.

Design Contract	$325,700	Water Bond funds
City Staff support	$50,000	Undesignated Water Fund

ACTION:

Adopt Resolution allocating fund for the design of the Water Treatment Plant Electrical Upgrade Project and authorizing the City Manager enter into an agreement for consultant services with Carollo Engineers to provide the design.

Attachment: Resolution, Scope

APPROVED BY:

City Manager

RESOLUTION NO. -13

ALLOCATING FUND FOR THE DESIGN OF THE WATER TREATMENT PLANT ELECTRICAL UPGRADE PROJECT AND AUTHORIZING THE CITY MANAGER TO ENTER INTO AN AGREEMENT FOR CONSULTANT SERVICES WITH CAROLLO ENGINEERS TO PROVIDE THE DESIGN

WHEREAS, on February 15, 2012 the City Council by motion approved the 2012 Water Treatment Plant Master Plan (Plan); and

WHEREAS, the Plan identified the Water Treatment Plant Electrical Upgrade Project (Project) as being the highest priority project in the Plan; and

WHEREAS, the City of Martinez determined that Carollo Engineers of Walnut Creek, California is best qualified to provide engineering services for this work; and

WHEREAS, Carollo Engineers has performed tasks for the City in the past on budget and in a timely and professional manner; and

WHEREAS, the scope and proposal provided by Carollo Engineers has been determined fair and equitable.

NOW, THEREFORE, BE IT RESOLVED that a the City Council allocates $325,700 of surplus Water Bond funds for the design of the Water Treatment Plant Electrical Upgrade Project and authorize the City Manager execute a standard Consultant Services Agreement with Carollo Engineers for said amount, for the design of the Project.

BE IT FURTHER RESOLVED that the City Council allocates $50,000 of undesignated surplus Water Fund reserves for staff oversight and Project Management of the Project.

* * * * * *

I HEREBY CERTIFY that the foregoing is a true and correct copy of a resolution duly adopted by the City Council of the City of Martinez at a Regular Meeting of said Council held on the 21st day of December, 2011, by the following vote:

AYES:

NOES:

ABSENT:

RICHARD G. HERNANDEZ, CITY CLERK
CITY OF MARTINEZ

City of Martinez, California

Water Treatment Plant

Electrical Power Distribution System Upgrade Project

INTRODUCTION

The main plant electrical distribution system assets at the City of Martinez (City) Water Treatment Plant (WTP) were installed in 1967, and have reached the end of their useful lives. The aging electrical distribution equipment is increasingly prone to failure, and without adequate protective devices to isolate these failures, small faults can cause plant-wide outages. Consequently, the current condition of the electrical system at the WTP presents an operational reliability and personnel safety risk to the City.

SCOPE OF SERVICES

This Scope of Services and associated fee estimate is based on the WTP electrical needs discussed in the Master Plan prepared for the WTP (Carollo, January 2012), and includes engineering services associated with the design and coordination for the replacement of all items discussed in Alternative 1 "Partial Electrical Upgrade." In short, the following elements will be specified for replacement:

- PG&E's original service transformer located near the old plant, and associated service conductors on the transformer secondary
- Main switchboard located near the old plant
- Motor control centers MCC-A, MCC-B, MCC-C, and MCC-G
- Feeder conductors and conduits between MCCs A, B, C, and G and equipment
- 100kVA transformer located in Plant 1
- Feeder conductors and exposed or underground conduits between the main switchboard and downstream motor control centers and equipment

In addition to replacement of the existing electrical equipment identified above, the construction documents will also include modifications to the existing plant control system to implement a load-shedding scheme. This load-shedding scheme will be designed and specified such that the plant control system will automatically control the starting of process equipment when the plant is powered from the 750kW stand-by generator to avoid overloading the generator.

The scope and fee estimate is also based on our understanding that the construction of the final design will be accomplished by procurement through a standalone, publically bid contract and will utilize the front ends developed for the Chemical Containment Project, recently bid..

TASK 1 – PROJECT MANAGEMENT

The Consultant's Project Manager will make staffing assignments, review work progress, and communicate progress to the City. The Project Manager will also manage the budget, schedule, and invoicing.

This task also includes a Project Kickoff Meeting at the Martinez WTP. This meeting will serve to kickoff the design effort; allow the introduction of the design team to the City staff, and to

allow Consultant to collect preliminary project-specific details. An important topic of discussion is how to implement the plant improvements while meeting plant operational requirements. Discussions will include timing and duration of allowable plant shutdowns to make required electrical tie-ins. City will provide the plant's current SCADA system program and ladder logic to aid in the identification of control wires into each MCC and plant operations staff will be available to discuss control mechanisms of each piece of equipment.

TASK 2 – DETAILED DESIGN

Construction documents will be prepared in compliance with applicable codes. Construction drawings will include applicable general, civil, structural, and electrical drawings.

Front End Contract Documents from the recent Chemical Containment Project will be used for this project. Consultant will provide technical specifications for project elements necessary to provide a complete bid package.

Consultant will prepare construction cost estimates for each project deliverable to the City. Estimates will be based on available quantity take-offs, manufacturer's quotes, and experience incorporating similar project elements at other treatment facilities, and will be escalated to the mid-point of construction. Estimates will be prepared to a level of accuracy consistent with the standards of the American Association of Cost Engineers.

In an effort to include City and WTP staff in the design process, Consultant will provide intermediate design submittals and conduct design review meetings at the 30%, 60%, and 90% levels of completion.

2.1 – Prepare 30% Design Documents

Based on our understanding of project needs identified in the WTP Master Plan, and information gathered during the Project Kickoff Meeting, consultant will prepare 30% design documents to be submitted to City for review. The 30% design submittal will include applicable drawings and a preliminary cost estimate.

Following the City's review of the design documents, Consultant will organize a meeting to discuss the design submittal with City staff and receive feedback regarding the preliminary layout and design details. Consultant will present key elements of the design and will record feedback from the City regarding any requested modifications to the design.

As a function of the early design process, Consultant will coordinate the transformer replacement with the electrical provider (PG&E). This includes assisting the City with relocation applications, meetings with the utility, and coordinating a site visit by PG&E with the City.

2.2 – Prepare 60% Design Documents

Consultant will conduct a detailed field investigation prior to commencing design after the 30% submittal to the City. This detailed investigation will include the tracing and identification of wires in conduit runs feeding the equipment to be replaced.

During this investigation, Consultant will work with plant staff to identify conduit and wire routing that require replacement (due to corrosion wear), but are not associated with the equipment to be replaced as a function of this Project. The "Conduit Replacement Needs" listing will be used

to estimate a probable cost for inclusion in the Bid Documents as a Contractor allowance item. This Scope of Services includes 40 hours of Consultant's time for fieldwork needed to identify the additional conduit needing replacement (and identify associated wiring replacement needs) and 40 hours of Consultant's time to for inclusion of the additional conduit and wire replacement needs within the design documents.

Based on the results of the field investigation, and following receipt of feedback from the City on the 30% design layout Consultant will prepare 60% design documents to be submitted to City for review. The 60% design submittal will include applicable drawings, select draft specifications, and an updated cost estimate.

After the City has reviewed the design documents, Consultant will organize a second design review meeting to discuss the 60% submittal with the City staff. Consultant will present key elements of the design and will record feedback from the City regarding any requested modifications to the design.

2.3 – Prepare 90% Design Documents

Consultant will conduct a final detailed field investigation to collect additional information needed for final design. Based on the results of the field investigation, and following receipt of feedback from the City on the 60% design layout, Consultant will prepare 90% design documents to be submitted to City for review. Consultant's internal quality management program will be initiated during the preparation of the 90% submittal. The 90% design submittal will include all drawings, specifications, and an updated cost estimate.

After City review of the 90% design documents, a final meeting will be arranged by the Consultant to present the final design to the City staff and to collect any final detail modifications requested by the City prior to the development of the final Bid Documents.

2.4 – Prepare Bid Documents

City comments on the 90% design submittal will be incorporated by Consultant, and a set of engineering documents suitable for public bidding will be prepared. Consultant's internal quality management program will be fully implemented during the preparation of the Bid Document submittal. The Bid Document submittal will include final design drawings, specifications, and associated cost estimate.

Summary of Deliverables and Meetings

Meeting(s): Project Kickoff Meeting
30% Design Review Workshop
60% Design Review Workshop
90% Design Review Workshop

Deliverable(s): 30% Design Drawings & Cost Estimate
60% Design Drawings, Specifications & Cost Estimate
90% Design Drawings, Specifications & Cost Estimate
100% Design Drawings, Specifications & Cost Estimate
(all submittals will include 2 half size hard copies and 1 electronic .pdf copy)

ASSUMPTIONS AND EXCLUSIONS

The following assumptions were made in the preparation of this Scope of Services:

- The front-end documents from the Chemical Containment Project will be used.
- Consultant's standard technical specifications (Divisions 01 through 17) will be used.
- Carollo's standard CAD software, templates, and symbols will be used in the development of the drawings.
- The scope assumes that no subsurface exploration will be required (potholing or geotechnical). This assumption is based on the understanding that all conduit runs associated with this Project are in utility trenches, and that structural design will be limited to the replacement of concrete equipment slabs at the locations that are currently utilized for the equipment to be replaced. Should the design require additional subsurface investigation, an amendment to the design contract may be required.
- The City will provide SCADA program and ladder logic files for all equipment that is automatically controlled, and staff will be available during consultant site visits to discuss control strategies for the plant.
- City will complete any necessary environmental documentation and/or permit requirements for the implementation of this Project. Environmental documentation and/or permitting is specifically excluded from this Scope of Services.
- This Scope of Services assumes that the replacement of conduit runs not associated with the electrical distribution components described herein will not require complicated coordination and/or extensive electrical design. If additional design effort is needed to direct Contractor during replacement of these non-Project conduits, an amendment to the design contract may be required.
- Existing as-built site plans and civil drawings accurately show all underground utilities.
- The City will hire a testing firm to test the existing transformer and electrical equipment for PCB and lead.
- Assistance during bidding, design addendums, construction management, and engineering services during construction are not included in the Scope of Services. If desired, Consultant will provide a separate proposal for these services.

PAYMENT

Consultant's compensation for the services described herein shall not exceed three hundred twenty five thousand seven hundred dollars ($325,700) without prior authorization from the City. These costs are developed in the attached Exhibit B, utilizing Consultant's current Fee Schedule.