



Memorandum

TO: HONORABLE MAYOR
AND CITY COUNCIL

FROM: Kerrie Romanow
Julia Cooper

SUBJECT: SEE BELOW

DATE: May 28, 2013

Approved  Date 5/29/13

SUBJECT: DISTRIBUTED CONTROL SYSTEM UPGRADE AT THE SAN JOSE/SANTA CLARA REGIONAL WASTEWATER FACILITY

RECOMMENDATION

1. Approval of an agreement with ABB Inc. for a Distributed Control System Upgrade at the San José/Santa Clara Regional Wastewater Facility, formerly referred to as the San José/Santa Clara Water Pollution Control Plant, for a term beginning from the date of execution through December 31, 2015, for a total amount not to exceed \$1,814,785 for all hardware, software, professional services, and training, and;
2. Approve a 10% contingency in the amount of \$181,479 to cover unanticipated expense during the term of the agreement.

OUTCOME

Hardware and software upgrades to the existing distributed control system are required to support reliable operations of the wastewater facility. The upgrade will also provide enhanced system functionality and increased capacity to support the many new capital improvements being planned for the wastewater facility.

BACKGROUND

The San José/Santa Clara Regional Wastewater Facility (RWF) is an advanced wastewater treatment facility designed to handle 167 million gallons per day (mgd) of average dry weather flow and 271 mgd of peak wet weather flow. A complex distributed control system is required to support its many operational areas. The current distributed control system (DCS) has been in place since the early 1990s and was originally installed by ABB. The system is comprised of both software and hardware components including servers, workstations, a graphical user

interface (GUI), distributed control units (DCU), field connections known as input/output points (I/O points), and a fiber optic communications network along with various other ancillary equipment.

Functionally, the DCS is used to monitor and control many critical aspects of the RWF's electrical, hydraulic, biological and chemical processes. Typical parameters monitored include flows, levels, pressure, temperature, pH, water turbidity, equipment status indications, and alarm indications. Equipment status along with real-time data are displayed in the form of graphics on a GUI that is monitored by operators on a 24/7 basis. The GUI, also known as the human machine interface (HMI), allows operators to remotely control and monitor the various process equipment.

The DCS has worked reliably for more than 20 years; however, its existing feature set and expansion capability is limited. The existing system is built on software and hardware that are nearing obsolescence. Replacement hardware is difficult to obtain and the software does not support many advanced functions that are needed to manage new process equipment. ABB Inc. (ABB) has indicated that the existing HMI platform (Conductor NT) is being phased out starting in 2015 along with reduced technical support offerings. A new upgraded GUI platform (800xA) is available and provides more advanced features and expansion capabilities, which is important as new capital improvement projects and equipment are brought online.

ANALYSIS

A Request for Proposals (RFP) was advertised using the City's e-procurement outreach platform on August 28, 2012 for the purpose of describing the DCS Upgrade project and pre-qualifying vendors that demonstrated the requisite skills and experience for this project. ABB was the sole proposer. Staff from the Finance Department's Purchasing Division reviewed the proposal and determined ABB is qualified to perform the upgrade. Staff recommends awarding the contract to ABB for the following reasons:

1. ABB meets the minimum qualifications and experience requirements as set forth in the RFP. Proposers were required to have completed at least two control system upgrade projects similar in size and scope within the last five years. ABB met this requirement.
2. The DCS is a large and complex system that is vital to facility operations. Any upgrades to the system must be done in a reliable and efficient manner and without error. ABB has a proprietary software tool that automates the graphics conversion process. Other third-party integrators could potentially perform the same work using laborious, manual methods that will likely add time and cost, and increase the likelihood of errors. A conversion error could result in an unstable process and put the RWF at risk for a violation of its National Pollutant Discharge Elimination System (NPDES) wastewater discharge permit.

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3. Hundreds of graphics and control logics have been custom built for the RWF over the past 20 years. Converting these graphics is a complex and lengthy process and requires specialized knowledge of the existing graphics interface and control system configurations. ABB has in-depth knowledge of both the newer 800xA and legacy DCI System Six Conductor NT control systems, and has the institutional knowledge necessary to implement a project of this magnitude and operational sensitivity.
4. During and upon completion of the DCS upgrade, a significant amount of testing and training will be needed. ABB has a large pool of trained technical staff available to perform lengthy testing and qualified to provide detailed training to operations staff.

The total contract amount recommended for award is not to exceed \$1,996,264 which includes a ten percent contingency in the amount of \$181,479 for change orders. In addition, an estimated tax liability of \$42,793 for sales and use tax will be submitted directly to the City's Finance Department.

The term of agreement will be from the date of contract execution through December 31, 2015. The contract is a firm fixed price and shall be paid to the contractor upon successful completion, and City's acceptance of milestones. As part of the contract's performance based payment structure, a total of \$332,535.00 will be retained until successful completion of the project as determined by the City. A limited liability clause is also included which allows the City up to one year after final acceptance of the project to submit a claim for issues with the project up to a maximum amount of \$5 million.

Staff has evaluated the cost proposal and coordinated review of the limited liability clause with the Office of Risk Management and the City Attorney's Office and believes it is reasonable for the work and services to be provided.

EVALUATION AND FOLLOW-UP

No additional follow up actions with City Council are expected at this time. A separate but related capital project to install additional fiber optic cables and ancillary equipment around the RWF to provide additional capacity and functionality is currently underway and will be brought forth to Council for approval on June 18, 2013.

POLICY ALTERNATIVES

Alternative #1: Utilize existing City staff to perform the project with some minimal consultant support.

Pros: Staff is familiar with the existing controls system and understands the operational sensitivity of the project.

Cons: An estimated five to seven years would be required to complete the project if using in-house staff on a part-time basis.

Reason for not recommending: The availability of experienced and technical staff to perform this project in-house is limited. It is also not practical or prudent to divert staff priorities away from the day-to-day operations of the facility.

PUBLIC OUTREACH/INTEREST

- Criterion 1:** Requires Council action on the use of public funds equal to \$1 million or greater. **(Required: Website Posting)**
- Criterion 2:** Adoption of a new or revised policy that may have implications for public health, safety, quality of life, or financial/economic vitality of the City. **(Required: E-mail and Website Posting)**
- Criterion 3:** Consideration of proposed changes to service delivery, programs, staffing that may have impacts to community services and have been identified by staff, Council or a Community group that requires special outreach. **(Required: E-mail, Website Posting, Community Meetings, Notice in appropriate newspapers)**

This memorandum will be posted on the City's website for the June 18, 2013 City Council Agenda.

COORDINATION

This memorandum and the contract recommended for approval have been coordinated with the Finance Department, the City Manager's Budget Office, and the City Attorney's Office. The item is scheduled to be heard at the June 13, 2013 Treatment Plant Advisory Committee.

COST SUMMARY/IMPLICATIONS

1.	AMOUNT OF RECOMMENDATION/COST OF PROJECT:	\$1,814,785
	Project Delivery	\$ 631,702*
	Contract	\$1,814,785
	Contingency (10%)	\$ 181,479
	TOTAL PROJECT COST	\$2,627,966

Expenditures to Date: \$ 447,347
 REMAINING PROJECT COSTS: \$2,180,619

*Project Delivery includes \$42,793 for Sales and Use Tax.

2. COST ELEMENTS OF AGREEMENT/CONTRACT:

Software & Hardware \$ 489,060
 HMI Conversion Services 745,880
 Project Management 106,050
 Technical & Operator Training 217,275
 System Commissioning Acceptance & Testing 256,520

TOTAL AGREEMENT AMOUNT \$1,814,785

3. SOURCE OF FUNDING: 512 – San José-Santa Clara Treatment Plant Capital Fund.

4. FISCAL IMPACT: Existing funds are available for this project. No additional appropriation action is required.

BUDGET REFERENCE

Funding for the Distributed Control System Upgrade is included in the 2012-2013 Adopted Capital Budget and the 2013-2017 Capital Improvement Program (CIP). The table below identifies the appropriation and funds proposed to fund the contract recommended as part of this memorandum.

Fund #	Appn #	Appn. Name	RC #	Total Appn	Amt. for Contract	2012-2013 Adopted Capital Budget	Last Budget Action (Date, Ord. No.)
Remaining Project Costs				\$2,180,619			
Total Current Funding Available							
512	7394	Treatment Plant Distributed Control System	170565	\$2,500,000	\$1,814,785	V-170	06/19/2012 Ord. 29102
Funding in Future Years of CIP (if applicable)							
Total Funding for Projects				\$2,500,000	\$1,814,785		

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CEQA

Not a Project, File No. PP10-066(a), Agreements/Contracts.

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KERRIE ROMANOW
Director, Environmental Services

/s/
JULIA COOPER
Director, Finance

For questions please contact Ashwini Kantak, Assistant Director, at (408) 975-2553, or Mark Giovannetti, Purchasing Division Manager, at (408) 535-7052.