

**CITY COUNCIL  
COMMUNICATION:**

**ITEM \_\_\_\_\_**

**OFFICE OF THE CITY MANAGER  
CITY OF DES MOINES, IOWA**

**98-242**

**SYNOPSIS —**

**AGENDA:**

JUNE 15, 1998

**SUBJECT:**

**PROFESSIONAL  
SERVICES  
AGREEMENT  
AMENDMENTS  
NUMBER ONE AND  
NUMBER TWO TO  
PROVIDE  
ENGINEERING  
DESIGN SERVICES  
RELATED TO THE  
PROCESS CONTROL  
SYSTEM PROJECT  
AT THE WRA  
REGIONAL  
WASTEWATER  
TREATMENT  
PLANT.**

Agreement Amendments Number One and Number Two have been negotiated with the professional engineering firm of EMA Services, Inc., George Mathes, President, 1970 Oakcrest Avenue, St. Paul, MN 55113 to provide Phase II Engineering Services 1) for design work associated with the Process Control System Project, and 2) for work to design a Change Management program to create a more competitive organization at the Water Reclamation Authority (WRA) Regional Wastewater Treatment Plant. The proposed agreement amendments are based on actual cost plus a fixed fee and provide for Professional Engineering Services for the design phase of the proposed project. The proposed fee for Amendment Number One is \$241,991 plus a fixed fee of \$30,379 which results in a total maximum fee of \$272,370. The proposed fee for Amendment Number Two is \$154,017 plus a fixed fee of \$18,063 which results in a total maximum fee of \$172,080.

**TYPE:**

**RESOLUTION  
ORDINANCE  
RECEIVE/FILE**

**FISCAL IMPACT –**

Funds to support this project will be provided by fund account number 396663 utilizing funds on hand from the WRA Renewal and Replacement Fund. Funds have been accumulated in the Renewal and Replacement Fund account as a result of continuing planned monthly contributions by all the WRA constituent communities for WRA renewal and replacement purposes.

**SUBMITTED BY:**

**HAROLD SMITH  
CITY ENGINEER**

**RECOMMENDATION –**

**Approval of the proposed Engineering Services Agreement Amendments Number One and Number Two with EMA Services, Inc.**

## **BACKGROUND –**

### **Amendment Number One. Process Control System Design.**

- The WRA Wastewater Reclamation Facility (WRF) currently uses a Distributed Control System (DCS) that incorporates a JC 5000 computer system to perform vital operational and data acquisition functions at the wastewater treatment facility. The JC 5000 computer system is a proprietary system provided by Johnson Yokogawa Corporation (JYC) (formerly Johnson Controls). The original DCS consists of two area control centers (ACC) in addition to a central control center in the Administration Building. One ACC is located in the Sludge Processing Building and one is located in the Blower Building. The system also includes sixteen intelligent distributed control stations. Connections between the units are made via a dual fiber optic highway.

The facility also uses a Supervisory Control and Data Acquisition (SCADA) system for surveillance of over forty-five remote pumping stations. The SCADA system is linked to the WRF by Microwave Data Systems Transceivers.

The existing equipment was installed and placed in service at various times prior to 1990. The equipment is now becoming obsolete, as is the software utilized by the equipment. Breakdowns requiring hardware and software attention are frequent. Repairs to the proprietary hardware are expensive as a result of various essential parts being practically unavailable. Support for the programming and maintenance of the software is also expensive because of the proprietary nature of the software. The current annual cost for hardware repairs and software reprogramming and maintenance exceeds \$100,000 and is expected to increase in the future.

Since the installation of the current DCS system, the wastewater division of JYC has separated from its parent company and has formed Parsons Systems Engineers, Inc., which has recently filed for reorganization and has been purchased by another company. The many changes of ownership have fostered confusion with regard to responsibilities and costs concerning the proprietary hardware and software.

On August 27, 1997, by Roll Call No. 97-2709, the City Council gave approval for the Mayor to execute a Professional

Services Agreement with EMA Services, Inc. of St. Paul, MN, to provide engineering services for the Phase I - Process Control System Study to prepare a recommendation for complete replacement or reconstruction of the existing PCS System. That work has now been completed with the recommendation that the existing system be upgraded using current state-of-the-art process control equipment that may be available from more than one supplier. The estimated construction cost to provide and install the recommended equipment is \$3,486,985. The proposed cost for design of replacement Process Control System facilities as is outlined in this agreement is \$272,370.

**Amendment Number Two. Design a Change Management Program to be Competitive.** - The original agreement for evaluation of the Process Control System requirements also provided for work to assess the treatment plant's current operations and maintenance, as compared to other wastewater utilities both private and public and to identify areas where improvements in technology and/or practices could increase automation, productivity and lower O&M costs. The assessment recommended a program that will create a more competitive organization while maintaining high-quality customer service. The proposed program will include employee participation in a team based environment to ensure acceptance and sustained results.

It is very important to identify what needs to be done in order to be competitive. This means taking the time to identify the new practices and procedures before we design and select the tools to accomplish those new practices. In order to ensure that this is done systematically it is recommended that we follow a 3-Phase approach. Phase 1 is the Competitiveness Assessment, which has already been done. Phase 2 is the planning and design phase, which typically takes six to nine months to complete and is contemplated for this agreement. Phase 3 is the implementation phase, which lasts about twelve months.

The project approach is based on the following "best practices" currently used by contract operators and the most efficient public utilities.

1. Total Productive Operations
2. Program-Driven Maintenance
3. Less Attended Facilities
4. Workforce Flexibility

5. Technology as a Strategy
6. Organization as a Strategy

The Process Control System replacement project, which is the primary purpose of this agreement, will be an excellent opportunity to use Technology as a Strategy to increase productivity. Both Technology as a Strategy and Organization as a Strategy are enablers for the other “ best practices” . All six are interrelated.

This work effort will consist of the following tasks that will be performed primarily by the consultant at first. The work effort will transition to WRF staff as they become trained to do the work required in this competitiveness program.

1. Assess the Organization
2. Establish Team to Manage Change
3. Develop a Shared Purpose Vision
4. Communications Plan
5. Leadership Team Development
6. Mobilize Work Teams
7. Employee Transition Plan
8. Technology & Quick Wins

It is anticipated that two additional tasks will be required upon completion of the eight mentioned above, (1. Workforce Flexibility/SBC and 2. Competitive-ness Plan). A significant portion of the two additional tasks may be performed by WRF staff depending upon the extent that WRF employees have completed the training provided in the initial eight tasks. In all likelihood this agreement amendment will need to be amended again to provide for the consultants involvement in the additional work when a scope of services can be determined for the resulting Phase III effort. An agreement amendment will be negotiated with EMA Services, Inc. at that time to identify the appropriate scope of services and compensation for such.