



**AMENDMENT NO. 1 TO
CONSULTANT SERVICES AGREEMENT**

**PECOS SURFACE WATER TREATMENT PLANT SCADA UPGRADES - PROGRAMMING
Project No. WA2103.452**

Council Date: June 13, 2024

THIS AMENDMENT NO. 1 ("Amendment No. 1") to the professional services agreement dated August 22, 2023, (the "Agreement") is made by and between the City of Chandler, an Arizona municipal corporation, ("City") and **Jacobs Engineering Group Inc.**, a Delaware corporation, ("Consultant"), on this ____ day of _____, 2024, ("Effective Date" by Clerk). (City and Consultant may individually be referred to as "Party" and collectively referred to as "Parties").

RECITALS

- A. The Parties entered into the Agreement for: **Consultant Services** ("Services") for the **Pecos Surface Water Treatment Plant SCADA Upgrades - Programming** project.
- B. The Parties have determined that it is necessary and desirable for the Consultant to perform services for the City under the terms and conditions set forth in this Amendment No. 1 and the Agreement.

AGREEMENT

NOW, THEREFORE, in consideration of the premises and mutual promises contained in the Agreement and this Amendment No. 1, the Parties agree to amend and modify the Agreement as follows.

SECTION I - CONSULTANT'S SERVICES

The Consultant's Services are modified as described in the Exhibit "A" attached to and made part of this amendment by reference.

SECTION II – PERIOD OF SERVICE

The Period of Service is increased by 726 calendar days for a revised total of 1,091 calendar days.

SECTION III – PAYMENT OF COMPENSATION AND FEES

The Fees are increased by \$1,398,805 and will be payable in accordance with Exhibit "B" attached to and made part of this amendment by reference, for a revised total not to exceed \$4,118,905.

SECTION IV – NOTICES

Parties to whom notice is to be given as set forth in the Agreement are revised as follows:

To City:	City of Chandler - Public Works & Utilities Department Attn: CIP City Engineer: Daniel Haskins, P.E. P.O. Box 4008, Mail Stop 407 Chandler, AZ 85244-4008 Phone: 480-782-3335 Email: daniel.haskins@chandleraz.gov		
With a copy to:	City of Chandler - Public Works & Utilities Department Attn: Russ Slotnick, Project Manager P.O. Box 4008, Mail Stop 407, Chandler, AZ 85244-4008 Phone: 480-782-3411 Email: russ.slotnick@chandleraz.gov		
To Consultant:	LEGAL COMPANY NAME:		Jacobs Engineering Group Inc.
	Mailing Address:	1501 W. Fountainhead Pkwy., Ste. 401, Tempe, AZ 85282	
	Physical Address:	1501 W. Fountainhead Pkwy., Ste. 401, Tempe, AZ 85282	
	Statutory Agent Name:		CT Corporation System
	Statutory Agent Mailing Address:		3800 N. Central Ave., Ste. 460 Phoenix, AZ 85012
	Statutory Agent Physical Address:		3800 N. Central Ave., Ste. 460 Phoenix, AZ 85012
	CONSULTANT'S AUTHORIZED PROJECT REPRESENTATIVE		
	Name:	Fair Yeager, P.E.	
	Title:	AZ Water Market Client Account Manager	
	Phone:	Office: 480-377-6249; Mobile: 480-225-4102	
	Email:	fair.yeager@jacobs.com	

CONSULTANT'S PROJECT MANAGER	
Name:	Teresa Smith-DeHesus, P.E., DBIA
Title:	Project Manager
Phone:	Office: 480-377-6233; Mobile: 480-331-0005
Email:	teresa.smithdehesus@jacobs.com

SECTION V – CONFLICT AMONG DOCUMENTS

The Agreement, this amendment, and any previous amendments constitute the complete agreement between the Parties concerning the subject matter of the Agreement and replace any prior oral or written communications between the Parties. If a conflict or ambiguity arises between the Agreement and this amendment, the instrument in the following order prevails and controls: (1) this amendment; (2) any previous Amendments from most recent to oldest; and (3) the Agreement.

SIGNATURE PAGE TO FOLLOW

IN WITNESS WHEREOF, the Parties hereto have caused this Amendment No. 1 to be duly executed. Each Party warrants and represents that its respective signatories whose signatures appear below have been and are on the date of signature duly authorized to execute this Amendment No. 1.

"CITY" CITY OF CHANDLER

"CONSULTANT"

JACOBS ENGINEERING GROUP INC.

MAYOR

 15 May 2024
Signature Date

RECOMMENDED BY:


Daniel Haskins, P.E.
CIP City Engineer

Fair Yeager
Print Name

Client Account Manager
Title

fair.yeager@jacobs.com
Signer Email Address

APPROVED AS TO FORM:

City Attorney 

ATTEST:

City Clerk Seal

Amendment No. 1 (cont.)
Project No. WA2103.452

These changes result in the following adjustments of Agreement amount and/or time:

Amendment authorized by Owner name: Danny Sargent		Date: 4/11/24
Consultant email: fair.yeager@jacobs.com		
Original Agreement amount:	\$2,720,100	
Previous Amendment(s) total:	n/a	
Last Agreement amount approved by Council:	\$2,720,100	
This Amendment:	\$1,398,805	
This Amendment + previous Amendment(s) not approved by Council total:	\$1,398,805	
Revised Agreement total:	\$4,118,905	
Council Approval Required (yes indicates approval required)	Yes	No
Amendment(s) total over \$100,000:	☒	☐
Amendment(s) total causes Agreement to exceed \$100,000:	☐	☒
Agreement Time		
Agreement time prior to this Amendment (including previous amendments):	<u>365</u> Calendar Days	
Net change resulting from this Amendment:	<u>726</u> Calendar Days	
Revised Agreement time (including this Amendment):	<u>1,091</u> Calendar Days	
Council Approval (if applicable)		
Council Approval Date: <u>June 13, 2024</u> Item No. <u>Pending</u>		

cc: Project Manager, Consultant, Owner, File

EXHIBIT A

SCOPE OF WORK

EXHIBIT "A"
CITY OF CHANDLER
PROFESSIONAL SERVICES AGREEMENT
PECOS SURFACE WATER TREATMENT PLANT SCADA UPGRADES
Project No. WA2103.452
AMENDMENT 1 - Programming Services
SCOPE OF WORK
May 3, 2024

PROJECT UNDERSTANDING AND BACKGROUND

The City of Chandler Pecos Surface Water Treatment Plant (PSWTP), located at 1475 East Pecos Road, was put into service in 1989 and PSWTP produces drinking water for the City's residential and commercial customers. Additionally, the control of the City's potable water distribution network is also housed at PSWTP. In order to protect the health and safety of the water customers, City staff relies heavily on automation to reliably communicate with water facilities. This automation is in the form of the Supervisory Control and Data Acquisition (SCADA) system. SCADA controls and monitors PSWTP equipment and 55 remote potable production facilities. The SCADA system also includes remote monitoring capabilities for 21 remote wastewater sites. Beyond system control, SCADA also captures numerous data points for system analysis and regulatory reporting. The City's 2019 SCADA Master Plan identified a project to replace the existing Foxboro system.

The PSWTP SCADA Upgrade project will modernize and improve the City's existing system and will include upgrades to legacy hardware and software. The project will replace the existing Foxboro I/A Distributed Control System (DCS) with Modicon PLCs and Wonderware HMI. This effort will entail hardware replacement, upgrades to operational technology (OT) (i.e. the systems that control and monitor treatment plant functions), integration with remote facilities, and possible replacement of other obsolete equipment, such as power supplies or radio components. The project will include procurement and installation of new virtual machine servers, software packages, Win911 applications with cellular modem and domain servers, and creation of SCADA software screens. No treatment process upgrades are contemplated. The project will use a Construction Manager at Risk (CMAR) delivery approach and is expected to be completed on a fixed budget and schedule.

This document describes the scope of work for services to be provided by Jacobs Engineering Group Inc. (CONSULTANT) for the City of Chandler (City and OWNER) for the Pecos SWTP SCADA Upgrade Construction Management Project WA2103.451 for execution of the work covered in Amendment 1 for Programming. Tasks include:

- Commissioning of the SCADA System (Programming remaining focused on the field testing and programming/software cut-over after all hardware upgrades are installed by the CMAR)
- SCADA Training for City Operations Staff (To ensure the plant operators are trained on the new SCADA system prior to cutover)
- Plant Electronic O&M Manual (Replacement of defunct overall plant operations manual using new cloud-based software)

PROJECT TASKS

1. PROGRAMMING AND COMMISSIONING

Programming tasks being done under a separate project were removed. Remaining programming tasks herein are for work during construction for field testing and commissioning which will be completed after hardware upgrades are installed by the CMAR. In addition, commissioning tasks are included for coordination with information provided by the CMAR on any field changes and performing the software cut-over for the system.

A. Task 4.1.1 – Configuration Management

- i. Cutover Meetings bi-weekly for 78 weeks

B. Cutover and Startup Plan

C. Task 4.1.7 HMI and PLC Commissioning

Commissioning of the newly installed and modified control cabinets and motor starters, networking equipment, and HMI servers will be performed by the Consultant.

- i. Combined effort between CMAR and CONSULTANT to confirm that Process Control System, including applications software, is ready for operation.
 - a. Prerequisite: Completion of hardware testing by CMAR.
 - b. Joint test with CONSULTANT. Repeat of CONSULTANT's Factory Acceptance Test (FAT), except using real field sensors and equipment. Plant interlocking and communications with PLCs and HMI shall be tested on loop-by-loop basis.
 - c. Test procedures provided by CONSULTANT based on Loop specifications.
- ii. Performance Acceptance Tests (PAT):
 - a. Once a facility area has been started up, perform a witnessed PAT on complete Process Control System and software to demonstrate that it is operating as required by the Contract Documents and software loop descriptions. Demonstrate each required function on a paragraph-by-paragraph, loop-by-loop basis.
 - b. Loop-specific and non-loop-specific tests same as required for FAT except that entire installed SCADA system will be tested using actual process variables and all functions demonstrated.
 - c. Perform local and manual tests for each loop before proceeding to remote and automatic modes.
 - d. Where possible, verify test results using visual confirmation of process equipment and actual process variable. Unless otherwise directed, exercise and observe devices supplied by others, as needed to verify correct signals to and from such devices and to confirm overall system functionality. Test verification by means of disconnecting wires or measuring signal levels is acceptable only where direct operation of plant equipment is not possible.
 - e. Make updated versions of documentation required for PAT available to Owner at Site, both before and during tests.

2. SCADA TRAINING FOR CITY OPERATIONS STAFF

This work is focused on bringing the City plant operations staff up to speed on the new SCADA system. This work is traditionally included as part of construction costs, but is included in CM services as it is being performed by Jacobs as the SCADA designer and system integrator.

A. Task 4.2.1 Training Workshops

- i. The CONSULTANT will prepare and lead 1 workshop to train the City staff on the new system.
- ii. Training will be recorded and materials provided to the City for their use.

3. PLANT ELECTRONIC O&M (EOM) MANUAL

Maintaining an overall Plant O&M manual is a regulatory requirement of MCESD. Pecos SWTP had an electronic plant O&M manual developed during the 2006 60-mgd expansion project and this manual is now defunct as the software it was provided in is obsolete. A new and plant EOM will be provided with updated content using new software.

A. Task 4.3.1 Plant EOM Manual Development

- i. The CONSULTANT will prepare an electronic O&M manual for the PSWTP using a modern cloud-based web development software. The EOM Manual development will be utilize the historic files from the previous outdated plant EOM as much as practical, and updated content incorporating the new P&IDs, SCADA HMI, SOPs, etc.

B. Task 4.3.2 Plant EOM Training

- i. The CONSULTANT will prepare materials and host training sessions for the general plant O&M staff on the use and maintenance of the EOM. One on one training for select O&M staff will be provided for the responsible for editing future content.

4. PROJECT MANAGEMENT

A. Task 4.4.1 Monthly Progress Reports, Schedule Updates, and Invoices

- i. The CONSULTANT's Project Manager will prepare monthly progress reports each calendar month. The report will contain progress against schedule and scope, as well as relevant budget information. The Project Manager will oversee the preparation and submission of monthly invoices.
- ii. Consultant assumes a maximum of 24 progress reports and invoices

B. Task 4.4.2 Management Coordination Calls

- i. The CONSULTANT's Project Manager will conduct weekly progress calls of up to 1 hour in length with the OWNER's staff to discuss any delivery issues that might impact the scope, schedule, or budget of this Project. Notes will be taken during the meeting and posted for the team.
- ii. Consultant assumes 104 weekly meetings will be held.

5. ALLOWANCES

A. Allowances

- i. The allowances below are estimates for optional work to be done at the direction and approval of the City. The following allowances are included:

1. Re-tagging Allowance - for incorporating the new utility-wide tagging syntax into the work, including updating control narratives, HMI and PLC programming. Updates to drawings will be covered in the As-built task for the CM contract.
 2. Owner's Contingency Allowance – for additional services as directed by the Owner.
- ii. Work done under the allowances will be on a time and material basis. Additional scope definition may be necessary to confirm the level of effort and fee for additional work under these allowances.
 - iii. Work done under the allowances may require an adjustment to the delivery schedule.

SCHEDULE

Work will be performed in alignment with the construction schedule developed by the CMAR. The target CMAR NTP is July 1, 2024 and construction is anticipated to take 18 months. It is anticipated that an additional 6 months after construction completion will be needed to complete the professional services included herein, for a total duration of 24 months.

COMPENSATION

The work will be done on a time and material basis with a not to exceed (NTE) upper limit as indicated in the attached Level of Effort and Fee spreadsheet. Allowances are provided for optional work to be done at the direction and approval of the City.

ASSUMPTION, CLARIFICATIONS, AND EXCLUSIONS

1. Scope of Services represents Jacobs professional services for programming and commissioning for the Chandler Pecos SCADA Upgrade based on the completed design from Project WA2103.201.
2. All Allowances will only be utilized with prior written approval from the City representative.
3. Direct Reimbursable Expenses are included for normal reimbursable expenses on the project. Items must be billed at cost and backup must be provided with pay applications.
4. Budgets will be managed at the Phase and Main Task level. Jacobs will track task budget overruns and underruns and reconcile funds for tasks as needed within the overall project NTE budget. Any scope changes will be accommodated within the overall project budget to the extent possible; Jacobs will inform the City on any changes that may require additional funds via use of an allowance or a change order.
5. To facilitate rapid distribution of information, deliverables will be furnished electronically wherever possible. Unless otherwise indicated, final deliverables will be provided as native electronic files (Microsoft Word®, Microsoft Excel®, Microsoft Access®, and AutoCAD® as appropriate). Reproduction of any additional required copies shall be performed by the OWNER.
6. The CONSULTANT will use a project site as a repository for all electronic deliverables to be shared with the OWNER and CMAR team via file transfer protocol (FTP), SharePoint, or Microsoft® Teams.
7. The Project Manager, Design Manager, subject matter experts (SMEs) and discipline staff will attend meetings as appropriate for the specific topic or type of meeting per the LOE.

8. Travel for commissioning activities is estimated in the Direct Reimbursable Expenses estimate provided with the LOE attached.
9. The OWNER will conduct the scheduling and coordination of necessary participants of City staff as well as contractor and operations staff necessary to have efficient meetings and coordination. The OWNER's Project Manager and Plant Manager will coordinate with City's staff to ensure optimal participation at meetings and in site activities.
10. The OWNER will provide access to facilities and will assist the CONSULTANT with any necessary entry permits, scheduling, notification, and other requirements to gain access to perform the work.
11. Programming and commissioning assumptions:
 - a. PLC and HMI programming will be developed with Schneider Electric EcoStruxure control expert software utilizing the GPL (General Purpose Library)
 - b. Total I/O = 3761 based on the final design documents prepared by Jacobs:
 1. Remote Facilities I/O = 563
 - a. Santan Vist I/O = 396
 - b. Water and Waterwater Remotes = 167 (representing 5 example sites as selected by the OWNER)
 2. Pecos WTP I/O = 3198
 - c. Effort for programming and commissioning is based on the detailed build up for each panel as provided in the attached spreadsheet *Pecos SCADA Upgrades Configuring and Programming Fee Backup (Task 4.6).xls*.
 - d. HMI and PLC programming hours were calculated at 0.75 hours per IO point
 - e. HMI and PLC programming hours for VFDs were calculated at 4.0 hours per VFD
 - f. HMI programming hours for TeSysT were calculated at 0.5 hours per TeSysT
 - g. PLC programming hours for TeSysT were calculated at 1.0 hours per TeSysT
 - h. Hours for configuration of field devices were calculated at 2 hours per field device.

EXHIBIT B
FEE SCHEDULE

EXHIBIT B
Chandler Pecos SCADA Upgrades
Professional Services - Amendment 1 for Programming Services
Phase 4: Implementation and Commissioning
LEVEL OF EFFORT

No.	Task Description	Teresa Smith-Dehesus	Jay Hardison	Hong Zhang	Nick Edgett	Various	Getnet Ali	Josh Blume	Navneet Jat	Naitik Shah	Ryan/Talitha	Joseph Chang (Various)	Total	Subtotal	Expenses	TOTAL
		Principal/Project Manager	SCADA Design Manager	Technical Advisor (Modicon)	Technical Advisor (Wonderware)	HMI Programmers	PLC Programmers	Cybersecurity / Operational Technology	CM	SCADA/ I&C Designer	Staff I&C Engineer	Process / Digital Solutions Engineer	Labor Hours	Labor		
	Bill Rate	\$ 280.00	\$ 270.00	\$ 205.00	\$ 205.00	\$ 205.00	\$ 205.00	\$ 250.00	\$ 125.00	\$ 150.00	\$ 125.00	\$ 175.00				
4.1	Programing and Comissioning															
4.1.1	Configuration Management (78 weeks and 50 cutover plans)	95	95	201	351		201				251		1194	\$237,990		\$237,990
4.1.2	Not Used												0	\$0		\$0
4.1.3	Not Used												0	\$0		\$0
4.1.4	Not Used												0	\$0		\$0
4.1.5	Not Used												0	\$0		\$0
4.1.6	Not Used												0	\$0		\$0
4.1.7	Commissioning (1896 hours calculated in backup spreadsheet)		171	268	136	250	315	192		200	364		1896	\$368,315	\$72,000	\$440,315
	Subtotal	95	266	469	487	250	516	192	0	200	615	0	3090	\$606,305	\$72,000	\$678,305
4.2	SCADA Training for City Operations Staff															
4.2.1	Training Workshop	4	6	10	10			4					34	\$7,840	\$10,000	\$17,840
	Subtotal	4	6	10	10	0	0	4	0	0	0	0	34	\$7,840	\$10,000	\$17,840
4.3	Plant Electronic O&M (EOM) Manual															
4.3.1	EOM Development	40	40	160				200	200	200		460	1300	\$215,300	\$6,000	\$221,300
4.3.2	EOM Training	8	8	8				40				80	144	\$25,040		\$25,040
	Subtotal	48	48	168	0	0	0	0	240	200	200	540	1444	\$240,340	\$6,000	\$246,340
4.4	Project Management															
4.4.1	Monthly Progress Reports, Schedule Updates, and Invoices (24mo)	96	96						96				288	\$64,800		\$64,800
4.4.2	Management Coordination Calls	104	104		104				104				416	\$91,520		\$91,520
	Subtotal	200	200	0	104	0	0	0	200	0	0	0	704	\$156,320	\$0	\$156,320
4.5	OWNERS ALLOWANCES															
4.5.1	Re-tagging Allowance												0	\$0		\$250,000
4.5.2	Owner’s Contingency Allowance												0	\$0		\$50,000
	Subtotal	0	0	0	0	0	0	0	0	0	0	0	0	\$0		\$300,000
	TOTAL	347	520	647	601	250	516	196	440	400	815	540	5,272	\$1,010,805	\$88,000	\$1,398,805