



**PURCHASING ITEM  
FOR  
COUNCIL AGENDA  
Memo No. CP14-025**

**1. Agenda Item Number:**  
**37**  
**2. Council Meeting Date:**  
August 15, 2013

**TO: MAYOR & COUNCIL**

**3. Date Prepared:** August 5, 2013

**THROUGH: CITY MANAGER**

**4. Requesting Department:** Municipal Utilities

**5. SUBJECT:** Project Agreement to Atkins North America, Inc., for Surface Water Treatment Plant (SWTP) Improvements Design Services.

**6. RECOMMENDATION:** Staff recommends City Council award a project agreement to Atkins North America, Inc., for Surface Water Treatment Plant Improvements design services, pursuant to Annual Contract EN1313-101, Project No. WA1402-201, in an amount not to exceed \$39,880.

**7. BACKGROUND/DISCUSSION:** The 2013 Capital Improvement Program established a small on-going program to evaluate, prioritize, and rehabilitate aging infrastructure at the Surface Water Treatment Plant, located on Pecos Road. The project scope will provide a preliminary evaluation of plant repair and rehabilitation needs, and provide cost estimates and priorities for immediate and future infrastructure maintenance projects. Upon completion of this assessment, design and construction contracts may be brought to Council for approval.

**8. EVALUATION:** This project is being performed under the Annual Permitting, Study, Design, and Post-Design Services for Water and Wastewater facilities, Contract No. EN1313-101 to Atkins North America, Inc. The costs proposed for this project have been evaluated by staff and are determined to be reasonable. The contract completion time is 180 calendar days from Notice to Proceed.

**9. FINANCIAL IMPLICATIONS:**

Cost: \$39,880  
Savings: N/A  
Long Term Costs: N/A  
Fund Source:

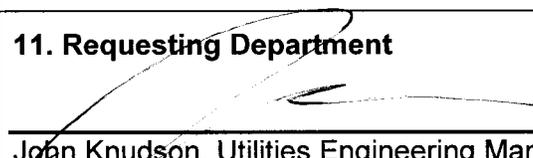
<u>Acct. No.:</u>	<u>Fund Name:</u>	<u>Program Name:</u>	<u>CIP Funded:</u>	<u>Amount:</u>
601.3820.6718.6WA209	Water Bonds	Water Treatment Plant Improvements	Yes	\$39,880

**10. PROPOSED MOTION:** Move City Council award a project agreement to Atkins North America, Inc., for Surface Water Treatment Plan (SWTP) Improvements design services, pursuant to Annual Contract EN1313-101, Project No. WA1402-201, in an amount not to exceed \$39,880.

**ATTACHMENTS:** Project Agreement, Location Map

**APPROVALS**

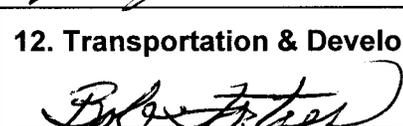
**11. Requesting Department**

  
John Knudson, Utilities Engineering Manager

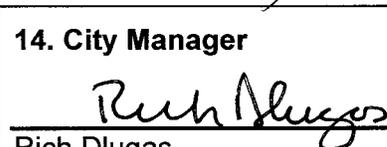
**13. Department Head**

  
Dave Siegel, Municipal Utilities Director

**12. Transportation & Development**

  
Bob Fortier, Capital Projects Manager

**14. City Manager**

  
Rich Dlugas



# SURFACE WATER TREATMENT PLANT (SWTP) IMPROVEMENT PROJECT NO. WA 1402-201



MEMO NO. CP14-025



PROJECT SITE



**PROJECT AGREEMENT  
PURSUANT TO ANNUAL CONTRACT NO. EN1313-101**

**PROJECT AGREEMENT NO: WA1402-201**

This PROJECT AGREEMENT is made this \_\_\_\_\_ day of \_\_\_\_\_, 2013, by and between the City of Chandler, a municipal corporation (hereinafter referred to as "CITY") and Atkins North America, Inc., a Florida Corporation, doing business in Arizona (hereinafter referred to as "Annual Consultant") and is a project agreement entered into pursuant to Annual Contract No. EN1313-101.

CITY and Atkins North America, Inc., in consideration of the mutual covenants herein set forth, agree as follows:

**ARTICLE 1 - DESCRIPTION OF WORK:**

This project is Surface Water Treatment Plant (SWTP) Improvements, Project Number WA1402-201. The scope of work consists of improvements at the SWTP, all as more particularly set forth in Exhibit A attached hereto and incorporated herein by reference.

The Annual Consultant shall not accept any change of scope, or change in contract provisions, unless issued in writing, as a contract amendment and signed by the Contract Administrator.

**ARTICLE 2 - CONTRACT PRICE:**

CITY shall pay Annual Consultant for completion of the Work in accordance with the Contract Documents a fee not to exceed Thirty Nine Thousand Eight Hundred Eighty Dollars (\$39,880) determined and payable as set forth in Annual Contract EN1313-101 and Exhibit B attached hereto and made a part hereof by reference.

**ARTICLE 3 - CONTRACT TIME:**

The contract time is One Hundred Eighty calendar days and Annual Consultant agrees to complete all work within One Hundred Eighty (180) calendar days of the date CITY issues a Notice to Proceed.

**ARTICLE 4 - GENERAL:**

This Project Agreement is entered into pursuant to Annual Contract No. EN1313-101 and the terms and conditions contained therein are incorporated herein by reference as if set forth in full.

IN WITNESS WHEREOF, the parties hereto have executed this Project Agreement on the day and year first written above.

This Project Agreement will be effective on this \_\_\_\_\_ day of \_\_\_\_\_, 2013.

CITY OF CHANDLER

FOR THE ANNUAL:

\_\_\_\_\_  
MAYOR DATE:

By: *K. Murphy*  
Title: Proj. Dir. / Asst. VP

ADDRESS FOR NOTICE  
City of Chandler  
P.O. Box 4008, Mail Stop 407  
Chandler, AZ 85244-4008  
480-782-3307

ADDRESS FOR NOTICE  
Mr. Kevin Murphy  
Atkins North America, Inc.  
20860 N. Tatum Blvd., Ste. 300  
Phoenix, AZ 85050

APPROVED AS TO FORM:

Phone: 480-419-7275  
Fax: 480-419-7202

\_\_\_\_\_  
City Attorney By: *[Signature]*

ATTEST:

\_\_\_\_\_  
City Clerk

## **EXHIBIT A SCOPE OF WORK**

### **I. PROJECT DESCRIPTION**

The City of Chandler (CITY) is seeking to make repairs or perform other rehabilitation work for various systems and pieces of equipment at its Surface Water Treatment Plant (SWTP). Under the Annual Permitting, Studies, Design and Post-design Services contract, the CITY has selected Atkins North America, Inc. (ANNUAL CONSULTANT) to provide a preliminary evaluation of the repair and rehabilitation needs for various items that have been identified by the SWTP maintenance staff as needing attention. The evaluation will include an estimate of the cost of the corrective work needed. In collaboration with the CITY, ANNUAL CONSULTANT will prepare recommendations for repairs and rehabilitation work to be performed at the SWTP under this program, within the constraints of the available budget funding. In a subsequent Task, ANNUAL CONSULTANT will perform the detailed engineering and design required for the selected repairs and rehabilitation work.

### **II. SCOPE OF SERVICES – TASK 1**

#### **TASK 1.1: COMMUNICATION AND COORDINATION**

ANNUAL CONSULTANT shall meet with representatives of the CITY to obtain information about the facilities needing repair and rehabilitation. Project objectives and design criteria will be discussed. A representative of the CITY will accompany ANNUAL CONSULTANT personnel to the SWTP site to observe the existing facilities and discuss needs for repair or rehabilitation.

ANNUAL CONSULTANT shall submit monthly billing statements. Each billing statement shall be accompanied by a progress report summarizing the work accomplished during the billing period and the overall status of the project.

#### **Summary of Task 1.1 deliverables:**

- Meeting agendas and minutes.
- Monthly project progress invoicing and progress reports.

#### **TASK 1.2: REVIEW EXISTING DESIGN AND DOCUMENTATION**

The CITY shall provide ANNUAL CONSULTANT with all available pertinent information regarding the project site and existing facilities, including as-built drawings, operating records, shop drawings and submittals, operations and maintenance manuals, and information about on-site utilities. This will include printed documents and electronic files, including, if available, the CAD files for the facilities as they exist at this time. ANNUAL CONSULTANT shall review the information and discuss questions or comments with the City.

#### **TASK 1.3: PRELIMINARY EVALUATION**

CITY maintenance staff have already developed a list of the five top-priority repair/rehabilitation actions to be evaluated. It is understood that available funding may not be sufficient to prepare detailed engineering and pay for the repairs needed. The five alternatives are to be evaluated, corrective actions identified, with planning-level opinions of cost for the five alternatives. Then the overall group will be reviewed to determine which ones will be addressed at this time within available funding and addressing the CITY's most-urgent needs.

Under a separate and subsequent task, ANNUAL CONSULTANT will perform the detailed engineering services (design, specifications or other) needed to implement the repairs or rehabilitation work.

The five items to be evaluated are:

1. Structural issues with the corner sweeps in the sedimentation basins on the conventional treatment trains.
2. The hypochlorite storage and feed system.
3. Solids handling issues at the plate settler and gravity thickener for sludge from the ballasted flocculation treatment train.
4. Control and allocation of flow between the raw water pumps feeding the conventional treatment train.
5. Leakage at the sluice gates at the finished water pump station.

For each item, the various alternative corrective actions defined herein, as well as others that may be developed in the course of the work, will be evaluated with respect to their effectiveness, reliability, cost, and operational impacts. A separate Technical Memorandum (TM) will be prepared for each of the items summarizing the issue, the alternatives considered, their advantages, disadvantages, and costs, and recommending the preferred method of repair or evaluation to correct the issue.

#### ***Task 1.3.1 Structural issues –corner sweeps***

Corner sweeps were added to the sedimentation basin solids collector rakes when the plan was expanded circa year 1997. Over time, the added weight of the corner sweeps is believed to have caused the original truss structure of the sediment rakes to twist out of its original configuration, causing the rake to displace out of its intended path. The rakes in their current condition do not do an efficient job of collecting sludge from the floor of the basin.

Possible corrective actions to be evaluated include:

- a. Removing the corner sweeps and returning the rakes to their original condition
- b. Reinforcing the rake structure to handle the added weight.
- c. Modifying the basins to prevent the accumulation of solids in basin corners, including possible concrete fillets to remove the settlement points
- d. Agitation or aeration of the corners to eliminate solids deposition
- e. Alternative methods of solids collection in the sedimentation basins.

#### ***Task 1.3.2 Hypochlorite storage and feed system***

The diaphragm pumps used to deliver sodium hypochlorite solution create an inordinate amount of vibration and shaking that has led to pipe breaks and maintenance issues. In addition, the piping arrangement in the hypochlorite system does not allow much flexibility to isolate the system or various process units for service or maintenance. SWTP staff have already made a number of maintenance repairs and modifications to address specific issues as they arose. A complete review of the hypochlorite system will be performed. Possible actions include:

- a. Determining if the existing pumps are performing within specifications and reasonable design expectations.
- b. Alternative styles of pumps that might provide more reliable service
- c. Piping system modifications and valving arrangements to provide greater flexibility.
- d. Additional pumps or alternative pumping capacities to match actual plant needs as determined through actual operating experience.

#### ***Task 1.3.3 Solids handling issues – plate settler and gravity thickener***

Solids from the ballasted flocculation (BF) treatment train added in the most recent expansion are settled using a lamella plate settler that has been on-site at the SWTP since its original construction, but unused until this most-recent expansion. There have been issues with control of the solids underflow from the settler, which flows to a gravity thickener for further settling, solids removal, and water recovery. The original arrangement of the piping between the plate settler and

the gravity thickener was reported to be prone to clogging and plant staff have installed a temporary connection between the settler and the gravity thickener.

Alternatives to be considered for this item include:

- a. A review to determine if a lamella plate settler is the proper choice for this application. If so, a further evaluation to determine if a newer unit would provide better results justifying replacement.
- b. Consideration of alternative methods of settling and thickening in place of the two existing units.
- c. Installation of a pump to provide positive control of the flow of settled sludge from the plate settler to the thickener and sufficient driving force to overcome clogging.
- d. Additional valving to provide for control of flows in this system.
- e. General maintenance and repair items for this equipment.

#### ***Task 1.3.4 Raw water pump station- pump capacity and control***

The raw water pump station serving the older half of the SWTP has issues with unbalanced capacity between the four existing pumps. Two of the pumps are driven by adjustable-frequency drives, and two are not. When that treatment train's capacity was de-rated as part of the 2007 expansion, it led to a situation where the AFD-driven pumps operate a large majority of the time and the constant-speed pumps are rarely used because their capacity is not a convenient match for the flows being handled by the older part of the plant under current conditions. It is desired to create a situation whereby the four pumps all share the pumping load on a roughly equal basis with respect to run-time. Possible approaches to be considered include:

- a. Modifying the pump bowls and impellers to adjust their capacity
- b. New, different, pumps and motors to match current needs
- c. Changes in control strategy for the pump station
- d. Providing AFDs for the two pumps that currently are constant-speed.

#### ***Task 1.3.5 Sluice gates- finished water pump station***

The sluice gates which isolate individual pumping chambers in the finished water pump station do not seal water tight, in fact they reportedly do not stop flow sufficiently to enable isolating the separate chambers. During the canal and plant dry-up period, it will be necessary to inspect the gates to determine the cause of the leakage and identify possibilities for repair.

#### **Summary of Task 1.3 deliverables:**

- Technical memoranda (total of five), one for each alternative. Each TM to discuss the issues, potential solutions, and a preliminary opinion of probable cost for each reasonable alternative action.
- Draft TMs will be submitted for City review and revised to address City comments.

#### **TASK 1.4 EVALUATION OF ALTERNATIVES**

Based on the results of the individual evaluations as presented in Task 1.3, an overall evaluation will be performed to determine which repair and rehabilitation alternatives are preferred and feasible to implement at the present time. The evaluation and comparison will be conducted in collaboration with City staff in a work shop meeting involving the various project stakeholders. The evaluation shall consider the urgency of the issues to be addressed, safety concerns, treatment process impacts, and cost considerations. Based on the results of the evaluation, a set of recommended repairs will be identified.

#### **Summary of Task 1.4 deliverable:**

- Meeting minutes and memorandum documenting the evaluation process and the means by which the decisions were reached. The memorandum will be submitted for CCITY review and revised to address CITY comments.

#### **TASK 1.5 REPORT AND PRESENTATION**

ANNUAL CONSULTANT shall prepare a report summarizing the results of the project. The report will include an overview of the various maintenance repair and rehabilitation issues at the SWTP as identified by City staff and summarize the five issues selected for further evaluation. The report will incorporate the finalized TMs prepared during Task 1.3. The report shall also include sections presenting overall findings and recommendations for repairs and rehabilitation at the SWTP based on the overall evaluation of the available alternatives.

ANNUAL CONSULTANT will submit a draft of the final report for review by the CITY and then revise and finalize the report based on CITY review comments.

ANNUAL CONSULTANT will attend and present the project results at meetings with CITY staff and stakeholder personnel.

#### **Summary of Task 1.5 deliverables:**

- Draft of final report.
- Revised final report to address CITY comments.
- Minutes of review meeting.

**EXHIBIT B  
FEE SCHEDULE**

Tasks	Personnel	Doug Kobrick, PE Project Manager	Scott Trainer, PE Senior Engineer	Staff Engineer	CAD technicians	Administrative staff	Total Hours	Value per Task	
	Hourly Billing Rate	\$180	\$170	\$130	\$110	\$80			
Task 1.1	Communication and Coordination		4			4	8	\$1,040	
Task 1.2	Review Existing Design and Documentation		8	8	16		32	\$4,880	
Task 1.3.1	Structural issues - corner sweeps		2	4	8	2	16	\$2,240	
Task 1.3.2	Hypochlorite storage and feed system		4	16	4	2	26	\$4,120	
Task 1.3.3	Solids handling issues - plate settler and garvity thickener		4	16	4	2	26	\$4,120	
Task 1.3.4	Raw water pump station - capacity and control		4	8	12	2	26	\$3,800	
Task 1.3.5	Sluice gates - finished water pump station		2	2	8	2	14	\$1,900	
Task 1.4	Evaluation of alternatives		12	12	16	2	42	\$6,440	
Task 1.5	Report and presentation		12	8	20	16	12	68	\$8,840
	<b>Total Hours and Labor Value</b>		<b>52</b>	<b>74</b>	<b>88</b>	<b>16</b>	<b>28</b>	<b>258</b>	<b>\$37,380</b>
	Direct Expenses and Subconsultants including 5%								\$2,500
	<b>Total Cost</b>								<b>\$39,880</b>