Chandler · Arizona
Where Values Make The Difference

PURCHASING ITEM FOR COUNCIL AGENDA
Memo No. CP14-139

1. Agenda Item Number: 6

2. Council Meeting Date: March 13, 2014

TO: **MAYOR & COUNCIL**

THROUGH: **CITY MANAGER**

3. Date Prepared: February 24, 2014

4. Requesting Department: Municipal Utilities

5. SUBJECT: Project Agreement with CH2M HILL Engineers, Inc., for Hahn Water Production Facility (WPF) Rehabilitation Design Services.

6. RECOMMENDATION: Staff recommends City Council award a Project Agreement to CH2M HILL Engineers, Inc., for Hahn Water Production Facility (WPF) Rehabilitation Design Services, pursuant to Annual Contract No. EN1308-101, Project No. WA1411-201, in an amount not to exceed $283,234.

7. BACKGROUND/DISCUSSION: This project is a continuation of the Municipal Utilities department's ongoing efforts to rehabilitate and modernize the City's older water production facilities. The Hahn WPF, located at 490 East Warner Road, was originally constructed to support water distribution needs in the central part of the City. The Hahn WPF consists of a two-million gallon steel reservoir and an associated 7.6 million gallons per day (MGD) capacity pumping station.

The project scope of work consists of performing a condition assessment, design of the related improvements, preparation of drawings and specifications for bidding, and bidding assistance for rehabilitation of the Hahn WPF.

8. EVALUATION: This project is being performed under the Annual Permitting, Study, Design, and Post-Design Services for Water and Wastewater facilities Contract, No. EN1308-101, to CH2M HILL Engineers, Inc. The costs proposed for this project have been evaluated by staff and are determined to be reasonable. The contract completion time is 270 calendar days following Notice to Proceed.

9. FINANCIAL IMPLICATIONS:

Cost:	$283,234
Savings:	N/A
Long Term Costs:	N/A

Fund Source:

Acct. No.:	Fund Name:	Program Name:	CIP Funded:	Amount:
601.3820.6718.6WA230	Water Bond	Water Production Facility Improvements	Yes	$283,234

10. PROPOSED MOTION: Move City Council award a Project Agreement to CH2M HILL Engineers, Inc., for Hahn Water Production Facility (WPF) Rehabilitation Design Services, pursuant to Annual Contract No. EN1308-101, Project No. WA1411-201, in an amount not to exceed $283,234.

ATTACHMENTS: 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

PROJECT AGREEMENT
PURSUANT TO ANNUAL CONTRACT NO. EN1308-101

PROJECT AGREEMENT NO: WA1411-201

This AGREEMENT is made this ____ day of _____ 2014, by and between the City of Chandler, a municipal corporation (hereinafter referred to as "CITY") and CH2M Hill Engineers, Inc., a Delaware corporation, licensed in the State of Arizona (hereinafter referred to as "Annual Consultant") and is a project agreement entered into pursuant to Annual Contract No. EN1308-101.

CITY and CH2M Hill Engineers, Inc., in consideration of the mutual covenants herein set forth, agree as follows:

ARTICLE 1 - DESCRIPTION OF WORK:

This project is Hahn Water Production Facility Rehabilitation, Project Number WA1411-201. The scope of work consists of performing a condition assessment and design improvements for the refurbishment and commissioning of an existing water storage and booster pumping facility, 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 Two Hundred Eighty Three Thousand Two Hundred Thirty Four Dollars ($283,234) determined and payable as set forth in Annual Contract EN1308-101 and Exhibit B attached hereto and made a part hereof by reference.

ARTICLE 3 - CONTRACT TIME:

The contract time is Two Hundred Seventy calendar days and Annual Consultant agrees to complete all work within Two Hundred Seventy (270) 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. EN1308-101 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_____, 2014.

CITY OF CHANDLER

_____

MAYOR DATE:

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

APPROVED AS TO FORM:

_____

City Attorney By:

ATTEST:

_____

City Clerk

FOR THE ANNUAL:

By: Thomas McLean

Title: VICE PRESIDENT

ADDRESS FOR NOTICE
Mr. Tom McLean
CH2M Hill Engineers, Inc.
1501 W. Fountainhead Pkwy., Ste. 401
Tempe, AZ 852-1868

Phone: 480-377-6239
Fax: 480-784-6239

EXHIBIT A
SCOPE OF WORK

Task 1: Project Administration
The Annual Consultant will provide project management services that include planning, organizing, staffing, and coordinating the work efforts of the team members and sub-consultants. In addition, the project manager will be responsible for preparing monthly status reports, invoices, meetings with the City's Project Manager, quality control, and project delivery.

Task 1.1: Project Management
Prepare Scope, Budget, and Work Plan: A detailed scope, schedule, and work plan will be prepared and periodically updated describing the project elements, specific staffing levels, schedule, responsible persons, deliverables, budget, quality assurance, and health and safety.

Prepare Progress Reports: The Annual Consultant- will prepare and submit a monthly progress report and invoice to the City. The reports will include information on the status of the project, budget spent, budget remaining, conformance to the schedule, reasons for any deviation from the plan, and a listing of critical items anticipated to occur the following month.

Project Coordination: The Annual Consultant- will coordinate the work of sub-consultants, including surveying and SCADA integration.

Task 1.2: Project Meetings
It is anticipated that the Annual Consultant- will meet with City staff on four separate occasions, including; i) Kick-off meeting, ii) Meeting to review the results of the Condition Assessment iii) 60-percent deliverable, and iv) 90-percent deliverable. These meetings will be attended by the Consultant's Principal In Charge and Project Manager. The purpose of these meetings is to review the project status, budgets, schedule, and performance issues. The Consultant will also attend one pre-bid meeting.

During the kick-off meeting, it is anticipated that the Annual Consultant and City will establish project and system performance objectives.

Deliverables:

- The Annual Consultant will prepare and distribute meeting minutes to the project team via e-mail.

Task 1.3: Provide Quality Assurance
Senior Annual Consultant staff will review the work plans and provide input to project management. These staff will also review work products for quality assurance and quality control.

Task 2: Facility Condition Assessment and Preliminary Design
Task 2.1: Review Records
At the kick-off meeting, the Annual Consultant will collect from the City all requested information from the City. Annual Consultant will review shop drawings of the tank, piping, suction header, and mechanical appurtenances to determine locations of field joints, potential points of corrosion, as well as identify features in the tank and piping that warrant inspection and validation during field testing. The Annual Consultant will review as-built drawings for the presence of cathodic protection, insulating flanges, and available test stations.

Additional information to be reviewed includes the following:

- Geotechnical reports
- Tank and pump station maintenance records
- Historical performance and testing information, and
- City's related operational data
- Generator maintenance reports
- Drywell maintenance reports

Task 2.2: Facility Condition Assessment
The Annual Consultant will conduct a site tour and facility condition assessment with the City. It is assumed that the site visit will include the Annual Consultant's Principal In Charge, Project Manager, and task managers for the corrosion, mechanical, civil, structural and electrical design portions of the project. The intent of the facility condition assessment will be to evaluate all portions of the water production facility, including:

- Storage tank and pump station,
- Arsenic vessels
- Disinfection systems,
- Power, SCADA, controls systems,
- Hydraulic capacity of the inlet/outlet piping,
- Normal operating procedures,
- Interface with local distribution system,
- Electrical service and standby power,
- Building roof corrosion,
- Site grading and drainage

Investigation of the steel storage tank will be conducted through the use of internal inspection of the tank. It is assumed that the tank has been fully taken out of service and that the City will prepare the tank for a confined space entry, and that the Annual Consultant will follow the City's standard procedures for a confined space entry. The Annual Consultant will make a confined space entry into the storage tank to perform a visual inspection, including an evaluation of lining system, steel thickness, pipe penetrations, floor, roof and vent condition. The Annual Consultant will evaluate the coating system at the tank, including coating thickness, and whether the coating is lead-based. The City will be present during the tank inspection and will provide step ladders and other equipment as necessary to allow Annual Consultant's inspectors to inspect the interior roof of the tank. The City will also provide historical videos of the tank interior inspections conducted by the City.

Corrosion evaluation of the pump cans will include a visual inspection of the cans, and it is assumed the City will remove the pumps prior to the inspection, and will also provide the Annual Consultant a video of the pump cans. Exposed steel within the pump cans will be inspected and thickness measured using ultrasonic gauging. Excavation to expose the buried piping and exterior of the pump cans is not included in this scope of work, and the Annual Consultant will not assess the soil corrosivity on buried piping, pump cans, and tank.

The Annual Consultant will also inspect the roof of the pump building for corrosion. The City will be present during the building inspection and will provide step ladders and other equipment as necessary to allow Annual Consultant's inspectors to inspect the roof of the building.

Task 2.3: Survey and Subsurface Utility Excavation (SUE)
It is assumed that existing electronic survey of the project site is not available. The Annual Consultant will prepare a topographic survey for this site, to include spot elevations, contours, depiction of existing above-ground utilities and painted marks for the below ground utilities, drainage features, facilities, and major vegetation. One permanent monument will be set at locations deemed necessary to support construction. It is assumed that the coordinate system for establishing the Project Control Network will be North American Datum of 1983 (NAD-83)(1992) adjustment, Arizona State Plane Coordinate System in feet with both grid and ground coordinates. The vertical datum will be North American Vertical Datum of 1988 (NAVD88). The Coordinate system will be confirmed with the City prior to proceeding.

Task 2.4: Report of Findings and Recommendations for Improvements
Based on the data review and facility condition assessment, the Annual Consultant will provide written recommendations to the City as to what improvements should be made to the existing facilities. Additionally, the Annual Consultant will work with the City to develop the hydraulic criteria to establish design flow-rate and pressure for the pump station. A technical memorandum (TM) will be developed to summarize the findings and recommended improvements, as well as clarify the design

criteria for the improvements to be performed. The following is a list of items that will be included in the TM:

- Tank lining condition and recommendation
- Hydraulic evaluation and pump selection criteria,
- Piping materials and pressure classes,
- Thrust restraint methods,
- Valve selection and location,
- Cathodic protection systems,
- Disinfection requirements,
- Preliminary SCADA control concepts,
- Generator and diesel tank evaluation,
- Construction access,
- Site grading and drainage improvements and
- Building roof corrosion and recommendation

Deliverables:

- The Annual Consultant will prepare 5 copies of a DRAFT TM, and will incorporate City's review comments to prepare 5 copies of the FINAL TM.

Task 3: Engineering Design

The purpose of this task is to prepare final construction drawings, specifications, construction schedule and construction cost estimate. Deliverables for this task will include design submittals at 60, and 90 percent-complete and final construction documents. The specifications will be completed using the Consultant's master specifications using the new CSI 49 Division Specifications format, and drawings will be created in Microstation using the Consultant's drawing standards.

For the 60 percent submittal, the Annual Consultant will prepare:

- Design Development drawings,
- Technical specifications, and
- Process control descriptions.

For the 90 percent submittal, the Annual Consultant will prepare:

- Detailed design drawings;
- Technical specifications; and
- Engineer's cost estimate.

The Annual Consultant will provide five copies (11"X17") of the 60 and 90 percent deliverables to the City. The list of project drawings provided below will be refined as the project progresses.

CITY OF CHANDLER – HAHN WATER PRODUCTION FACILITY

Drawings

Title Sheet and Location Map

General

General Notes and Index

Civil and Mechanical Legend and Notes

Structural Notes

Electrical Legend and Notes 1

Electrical Legend and Notes 2

Instrument and Control Legend 1

Instrumentation and Control Legend 2

Civil/Mechanical

Overall Site Plan

Storage Tank Rehabilitation Plans, Section and Elevation

Storage Tank Rehabilitation Details

Pump Station Plan

Pump Station Sections

Pump Station Details I

Pump Station Details 2

Structural

Structural Plans and Sections

Structural Details

Gate Details

Instrumentation and Controls

P&ID Storage Reservoir

P&ID Booster Pumps

Control Panel Elevations

Electrical

Power Plan – Site and Partial Plan – Booster Pump Station

Booster Pump Station Power One Line Diagram and MCC Elevation

Power Plan – Booster Pump Station

Generator Plans

Control Schematic – Pump Controls 1

Control Schematic – Pump Controls II

Control Schematic – Local Control Panel I

Control Schematic – Local Control Panel II

Control Schematic – Control Valves

Panel Schedules

Cable and Conduit Schedule

Supplemental Electrical Details I

Supplemental Electrical Details II

Civil

Site Grading Plan

Drywell Details

The Annual Consultant will conduct meetings to review the City's comments at the 60 and 90 percent submittal phases. Prior to the workshops, the City will prepare one set of collated comments and submit them to the Annual Consultant. The Annual Consultant will adjudicate all of the City's comments prior to moving to the next stage of design. The meetings will be held at the City.

The Annual Consultant will modify the contract documents to reflect all agreed-upon final review comments from the City, and the Annual Consultant's quality control review team. One reproducible set of 100 percent complete mylars and 5 copies of the final Bid Documents (full size drawings and specifications) will be submitted to the City. Electronic drawings will be delivered to the City in AutoCAD format.

Task 3.1: Mechanical Design
The mechanical design will include the following tasks:

3.1.1 Storage Tank Rehabilitation and Lining System: The Annual Consultant will prepare drawings and specifications for the rehabilitation of the storage tank, including lining removal, surface preparation, new lining systems, exterior coatings, and other cathodic protection systems as required from the preliminary findings. Additionally, the Annual Consultant will design improvements and replacements of tank appurtenances, and other supporting mechanical features, if necessary.

3.2.2 Pump Selection: Based on the results of the final hydraulic calculations and capacity needs, the Annual Consultant will identify pump suppliers for consideration by the City. System curves, pump curves, and specifications for the recommended pumping units will be provided to the City for review.

3.2.3 Arsenic Vessels Rehabilitation: Based on the inspection, Annual Consultant will prepare a performance specification for media removal, cleaning, recoating and repairing the manways on the Arsenic storage tanks.

Task 3.2: Structural Design
The Annual Consultant will use existing structures to the extent possible. It is anticipated that the structural design elements will include tank repairs, building roof repair, gates and any miscellaneous concrete work.

Task 3.3: Electrical Design
The Annual Consultant will determine power and standby power requirements for the upgraded pump station. A storage tank and pump station one-line diagram will be prepared for the purpose of identifying reservoir and pump station power distribution layout, motor control, preliminary demand and connected electrical loads and utility service requirements.

The existing diesel tank that the buried underground will be removed. A new above ground fuel storage tank will be installed. The generator will be reused or replaced based on recommendation from the condition assessment phase.

Task 3.4: Instrumentation and Controls (I&C)
SCADA integration of the systems controls will be performed by Jensen Systems. It is assumed the integration and programming of local and remote hardware and software during Construction, as well as providing testing, commissioning, documentation, and training of City personnel will be performed during the Construction phase and is not included in this Scope.

Design I&C: As part of the condition assessment, it is assumed that all instrumentation within the storage tank and at the pump station will be replaced. The existing PLC will be reused. The Annual Consultant will select and specify required replacement instrumentation, such as level sensors and transmitters at the reservoir and flow and pressure instrumentation at the pump station. The design will also include protection and demand power instrumentation for pumps and power distribution equipment.

The Annual Consultant will provide a control philosophy (local control, supervisory control, level of automation, etc.) for the project. It is assumed that a SCADA telemetry infrastructure is in place and capable of incorporating pump station controls.

It is assumed telemetry and communication with central SCADA will be implemented using licensed radios and that the City has the required frequency licenses, master polling radio(s) and connections with central SCADA. It is assumed an additional telemetry path analysis is not required to incorporate the pump station into the City's existing telemetry system.

The Annual Consultant's design will include a common interface enclosure for all control signals, and will provide a one-stop tie-in point for SCADA interface.

The following are task items included in the scope of services:

- Specifications of Electrical and local I&C equipment. It is assumed that calibration and integration to the SCADA system will be performed by the City;
- Motor and instrumentation control diagrams; and
- Process control loop descriptions.

It is assumed that during the Construction phase, the Contractor will provide and assemble all local instrumentation and control components and hardware (instruments, enclosures, control panels, wiring and etc.).

Task 3.5: Civil Design
Drywells will be designed to be installed on the north side of the pump station to accommodate any accidental flooding caused due to pipe breaks. Civil design will include minor adjustments to site grading to regrade washouts caused by erosion.

Task 3.6: Cost Estimating
The Annual Consultant will prepare an engineering cost estimate at the 90 percent design phase.

Task 3.7: Permitting
The Annual Consultant will assist the City in preparing an Approval to Construct permit. The Annual Consultant will submit 90% deliverables to Maricopa County Department of Environmental Services (MCESD) for review, and will incorporate MCESD comments into the final deliverable. The Annual Consultant has assumed permit fees of approximately $2,500, which is included as an additional expense in this scope of work. It is assumed that the Approval of Construction permit and As-Built certification will be performed by the Contractor.

Task 3.8: Bidding Services

The Annual Consultant will attend one pre-bid meeting to answer questions asked during the meeting, and will respond to further inquiries during the bidding period. It is assumed that contractor inquiries will be routed through the City and the Annual Consultant will respond directly to the City. It has been assumed that the City will communicate directly with all contractors. The Annual Consultant will also support the City in the evaluation of qualified bid submittals.

Deliverables:
- The Annual Consultant will submit responses to bidding questions to the City electronically.

Responsibilities of City
The following are responsibilities of the City staff during the project:

- Make available pertinent data affecting design, geotechnical reports, maintenance records, historical performance and testing information, operational data, and record drawing of City facilities within the limits of the project;
- Reproduce bidding documents; and
- Distribute bidding documents to prospective bidders.

List of Assumptions
- No new geotechnical work will be required at the project site.
- The current power supply to the site is adequate, and new power supply will not be required.

- A system-wide hydraulic, surge, and water quality evaluation will not be required for this project.
- A drainage report will not be required for this work, as site grading should not appreciably change.
- Improvements to exterior site perimeter wall and access roads are not required.
- Site security, and other security systems within the project site are assumed to be adequate and do not require upgrading.
- The Approval of Construction Permit and as-built certification will be performed separately.
- The Annual Consultant will reasonably rely upon the accuracy, timeliness, and completeness of existing information.
- Any cost opinions or project economic evaluations provided by Annual Consultant will be on a basis of experience and judgment, but, since Annual Consultant has no control over market conditions or bidding procedures, Annual Consultant cannot warrant that bids, ultimate construction cost, or project economics will not vary from these opinions.

Design Schedule

Notice to Proceed with Design	TBD
Kick-off Meeting and Site Visit with City	NTP + 2 weeks
Site Visit and Corrosion Inspection	NTP + 4 weeks
Complete Survey	NTP + 4 weeks
Submit DRAFT Report of Findings	NTP + 6 weeks
Pre-Design Workshop	NTP + 8 weeks
Submit FINAL Report of Findings	NTP + 10 weeks
Submit 30-Percent Design	NTP + 16 weeks
City Review of 30-Percent Complete	NTP + 18 weeks
Submit 60-Percent Design	NTP + 24 weeks
City Review of 60-Percent Complete	NTP + 26 weeks
Submit 90-Percent Design and Specifications	NTP + 32 weeks
City Review of 90-Percent Complete	NTP + 34 weeks
Submit 100-Percent Contract Documents	NTP + 36 weeks

EXHIBIT B
FEE SCHEDULE

Task Summary	Principal in Charge	Senior Technologist QA/QC	Senior Technologist Health/Safety	Project Manager	Design Manager	Cost Estimator	Civil	Structural	Corrosion Specialist	Mechanical	Electrical/I&C	Technical Editor	CAD	Admin Assistant	Total
Tasks															
Task 1 - Project Administration	12	62	34	49	102	0	0	0	16	16	16	0	0	80	387
1.1 - Project Management	10		34	39	78									80	241
1.2 - Project Meetings	2			10	16				16	16	16				76
1.3 - Provide Quality Assurance		62			8										70
Task 2.0 - Facility Condition Assessment and Preliminary Design	0	0	0	16	36	0	20	12	36	56	36	0	0	0	212
2.1 - Review Records				0	8				8	16	16				48
2.2 - Facility Condition Assessment				8	8			8	16	16	8				64
2.3 - Survey and Subsurface Utility Excavation							16								16
2.4 - Report of Findings and Recommendations for Improvements				8	20		4	4	12	24	12				84
Task 3.0 - Engineering Design	0	0	0	8	60	72	52	64	80	208	228	40	528	0	1340
3.1 - Mechanical Design									80	204		14	284		582
3.2 - Structural Design								64				6	64		134
3.3 - Electrical Design											224	16	128		368
3.4 - I&C Design															0
3.5 - Civil Design							52					4	52		108
3.6 - Cost Estimating						72									72
3.7 - Permitting					40										40
3.8 - Bidding Services				8	20					4	4				36
Total Hours	12	62	34	73	198	72	72	76	132	280	280	40	528	80	1939
Labor Category	Principal Project Manager	Senior Technologist	Senior Technologist	Project Manager	Associate Engineer	Project Engineer	Project Engineer	Associate Engineer	Senior Technologist	Project Engineer	Project Engineer	Senior Engineering Tech	Junior Engineering Tech	Office/Clerical/Acct	
Billing Rate	$ 180.00	$ 168.00	$ 168.00	$ 168.00	$ 150.00	$ 150.00	$ 150.00	$ 125.00	$ 168.00	$ 150.00	$ 150.00	$ 132.00	$ 85.00	$ 80.00	
Estimated Labor Revenue	$ 2,160	$ 10,416	$ 5,712	$ 12,264	$ 29,700	$ 10,800	$ 10,800	$ 9,500	$ 22,176	$ 42,000	$ 42,000	$ 5,280	$ 44,880	$ 6,400	$ 254,088

CH2MHILL

Total Labor	$254,088
Travel and other direct cost	$2,445
Total Cost	$256,533

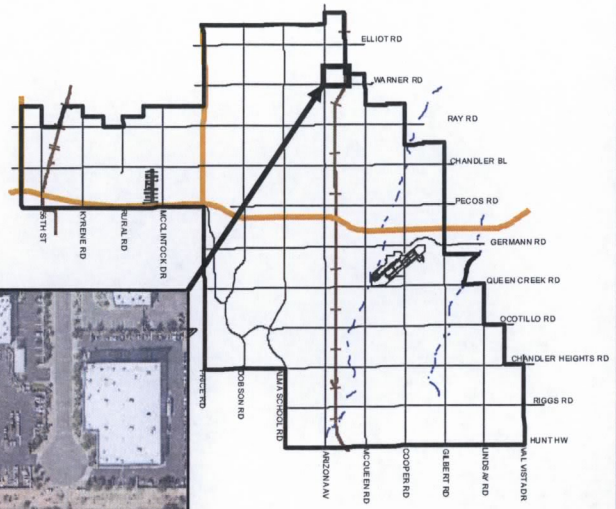
SUBCONSULTANTS

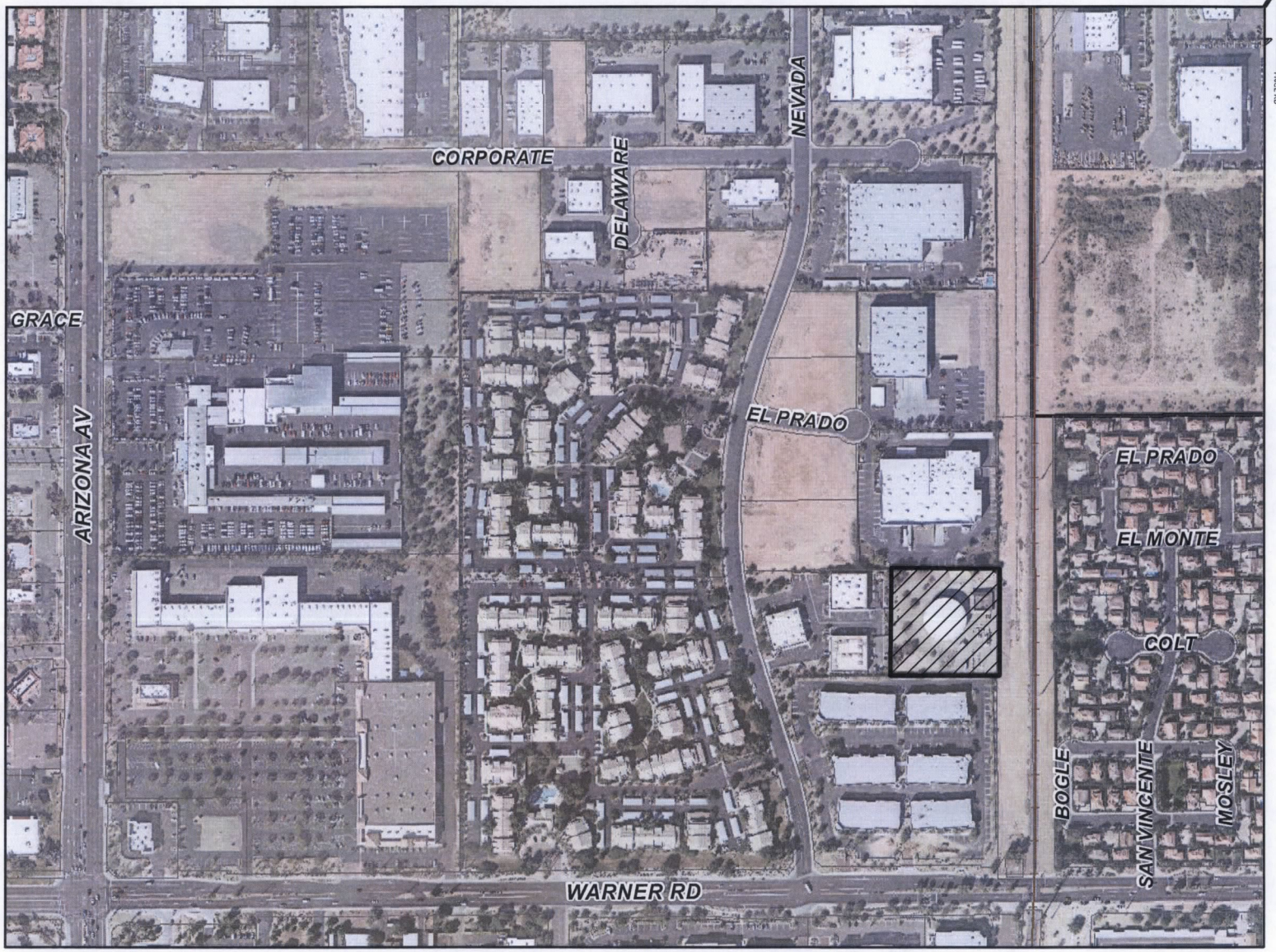
Survey (AZTEC Engineering)	$6,751
Drywall Inspection (Torrent Resources)	$1,950
I&C (Jensen Systems)	$18,000
Total	$26,701

Total Proposed Cost $283,234

Chandler + Arizona

HAHN WATER PRODUCTION FACILITY
PROJECT NO. WA1411-201





MEMO NO. CP14-139

PROJECT SITE

NTS

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