

STATEMENT OF QUALIFICATIONS

EXHIBIT B - RFQ RESPONSE

CITY OF GOODYEAR

**Site 12 Treatment Expansion and Site Work,
2 New Production Wells and Reservoir
Response to RSOQ 17-3977**

July 11, 2017

Submitted To:

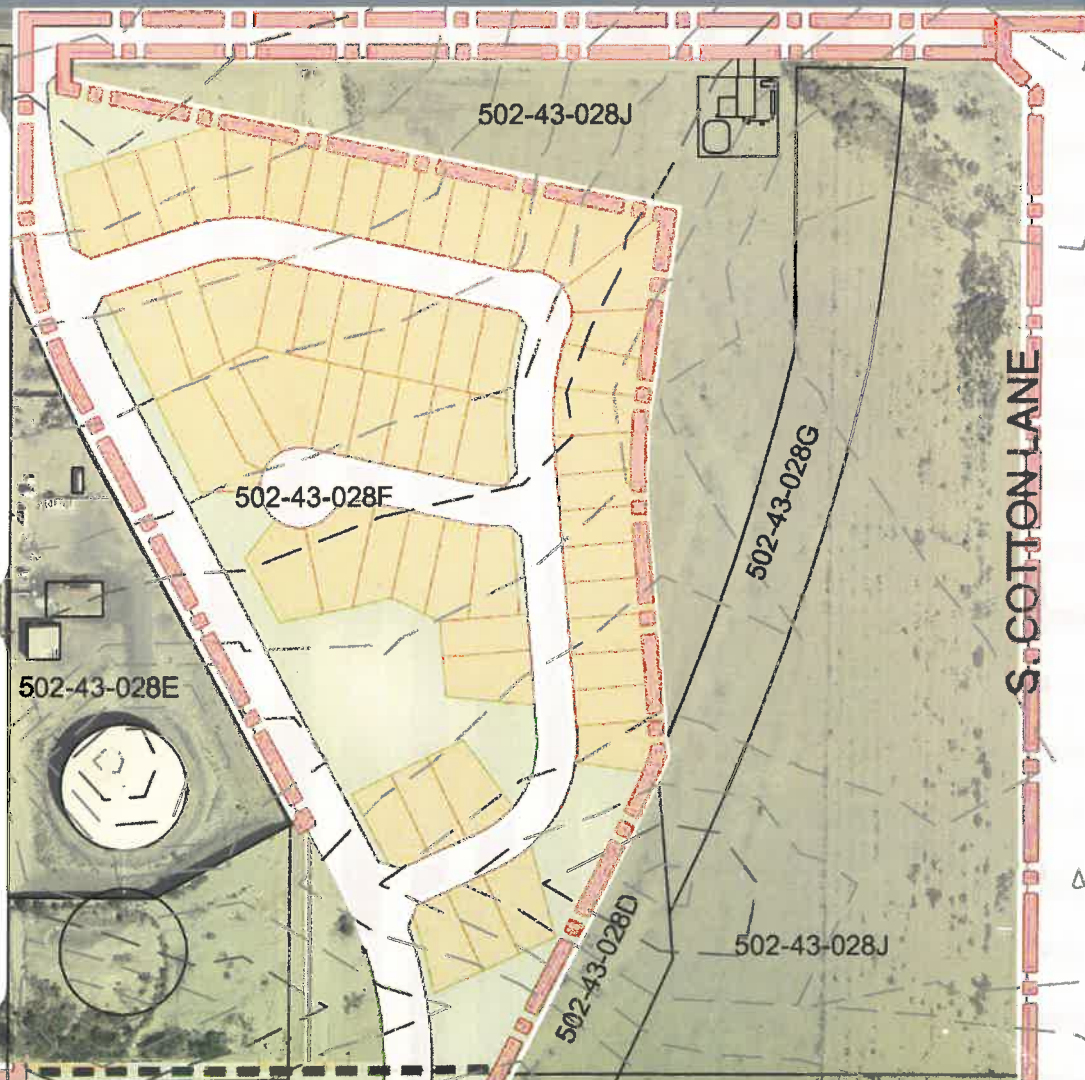
Attn: Victoria Jackson, CPPB,
Procurement Officer
City of Goodyear, Purchasing
190 N. Litchfield Road
Goodyear, AZ 85338

Submitted By:

Hunter
CONTRACTING CO.



Design-Build Team



Hunter Contracting Co.

701 N. Cooper Rd.
Gilbert AZ 85233
480-892-0521 (main)
480-892-4932 (fax)
www.huntercontracting.com

Chuck English, Vice President
(Principal signer)
chucke@huntercontracting.com
480-632-4954 desk
520-954-3016 cell phone

Rob Padilla, President
(Principal signer)
robp@huntercontracting.com
480-632-4931 desk
602-359-2012 cell phone

List of Principals:

Rob Padilla, President
Allen Andrews, Sr. Vice President
Chuck English, Vice President
Robert S Carlson, Vice President
Amy Ostwinkle, Secretary
Max Taddei, Treasurer

July 11, 2017

City of Goodyear, Purchasing
190 N. Litchfield Road
Goodyear, AZ 85338
ATTN: Ms. Victoria Jackson, CPPB, Procurement Officer

RE: **Design-Build Preconstruction Phase**
Site 12 Treatment Expansion and site work, 2 New Production Wells, and Reservoir
RSOQ No. 17-3977

Dear Ms. Jackson and Selection Committee Members:

Thank you for the opportunity to submit this SOQ for the Design/Build Services for the Site 12 Treatment Expansion, Wells and Reservoir project. Hunter Contracting Co. (Hunter) has teamed with NCS Engineers (NCS) for this project. Our firms have worked together for the past 20 years on Water Production, Treatment and Rehabilitation projects here in the Phoenix area for a variety of clients. Our team has the experience and the expertise to meet the City's goals on schedule and budget, while providing quality design, construction, equipment and services that also minimizes O&M costs. Our team will expedite the well testing, design, submittal, and procurement process to meet the schedule required by the City. We are confident our experience coupled with our relationships with industry vendors and manufacturers, and local well drilling contractors, will deliver your project on time and on budget.

We have assembled a dynamic and uniquely qualified team of experts to assist the City with this project. This includes Clear Creek Associates, the local expert in groundwater supplies and well drilling and Ludvik Electric, our exclusive Electrical Subcontractor for the predesign phase. The team understands the City's expectations and preferences for well equipping, membrane treatment, disinfection systems, steel tanks, booster stations, and PLC/SCADA programming, as evidenced by the following credentials:

- Proven experience at the City's water and wastewater facilities and well sites, having completed several million dollars worth of projects.
- Our management team of Jason Robinson and Ram Narasimhan, P.E. will provide timely and seamless customer service. We have over 50 years of combined experience with the City on similar planning, design, and well site development projects.
- The team of Hunter, Clear Creek and NCS have previously worked together on 20 similar well drilling and equipping, design and treatment projects in the region.
- Hunter and NCS offer an experienced and integrated team - we have teamed together and completed over \$10 M in D-B and CM@Risk projects for water and wastewater facilities in the Valley. These include treatment projects for the City of Phoenix, Global Water, Apache Junction Water District, and various Native American Tribes.
- Hunter has specific experience in the public involvement aspects of this project for the City's well sites. Our public relations (PR) expert is Theresa Makenen of MakPro.

REQUIRED STATEMENTS

- Contact Person: Chuck English, 480-632-4954 chucke@huntercontracting.com
- Key Personnel Availability: 22 key persons are shown in the SOQ, with more than ample availability to complete the work as per the schedule.
- Principal Office Location and Role: Hunter is located at 701 N. Cooper Rd., Gilbert AZ 85233 and NCS is located at 202. E. Earll Drive, Suite 110, in Phoenix, AZ. All work will be performed and managed by these local offices, with the exception of specialized subconsultants for water quality.
- Number of employees: 277
- Length of time in Business: 56 years
- Areas of Specialty for this project: Hunter - General Contractor with project management, civil, infrastructure, concrete, mechanical, piping, treatment expertise; NCS - Prime Design firm with water, wells, structural treatment, and mechanical expertise; Clear Creek Associates - hydrogeology; Ludvik - Electrical Contracting; Well Drilling (3 subcontractors identified); Delta Systems - Electrical Design; Ritoch Powell Associates - Civil/Site Design; Navin Pathangay - Architect; MakPro - PR.
- Reasonable diligence has been exercised in the preparation of this SOQ, all contents are true, accurate and complete, to the best of the signer's knowledge.
- No exceptions are taken to the contents of the RFQ and Design-Builder Agreement.

Our team commitment to the city is to design and construct a fully operational site that meets all concerns while maintaining day to day plant operations with minimal interruptions to service.

We look forward to this opportunity to be working with the City of Goodyear.

Best regards,



Chuck English
Vice President

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	City Of Goodyear	Office of Procurement 190 N. Litchfield Road P.O. Box 5100 Goodyear, AZ 85338 Phone: 623-882-7845
	Offer and Acceptance	

DESCRIPTION OF SERVICES: Site 12 Treatment Expansion and Site Work, 2 New Production Wells and Reservoir

OFFER

To the City of Goodyear: The undersigned Contractor hereby offers and agrees to furnish the goods and/or services in compliance with this Contract, as the term Contract is defined in this document.

By signing and submitting this Offer, Contractor certifies and warrants that Contractor: has read, understands and agrees to comply with the Contract as defined here; Contractor is qualified to perform all Services required herein; has no known, undisclosed conflict of interest; has not made an offer of any gift(s), payment(s) or other consideration to any City employee, elected official who has or may have had a role in the procurement process for this Contract; pursuant to A.R.S. § 41-4401, Contractor and its subcontractors will comply with all immigration laws and regulations that relate to its employees and A.R.S. § 23-214; and the signatory is an officer or duly authorized agent of the Contractor with full power and authority to submit binding offers for the goods and/or services as specified herein.

Arizona Transaction (Sales) Number: 07-064318-G
 City of Goodyear Business Registration No. 17-00003456
 Hunter Contracting Co.

Arizona Contractor License Number: 070961A
 Privilege Tax License Number: 07-064318-G

Sign: 

Contractor's Company Name

Signature of Person Authorized to Sign Offer

701 N. Cooper Rd.

Chuck English

Address

Printed Name

Gilbert

AZ

85233

Vice President

7/11/2017

City

State

Zip Code

Title

Date

480-892-0521 480-632-4931

chucke@huntercontracting.com

Telephone

Email

ACCEPTANCE OF OFFER - CITY OF GOODYEAR

Contractor's Offer is hereby accepted and a Contract awarded by the City. Contractor is now bound to provide the goods and/or services as specified in Scope of Work of this Contract. Contractor shall not start any billable work or provide any material/services until the Contractor receives an executed purchase order or written notice to proceed.

 City Manager, City of Goodyear (if applicable)

Attested by:

 Maureen Scott, City Clerk
 City Seal

 Official File

Eff. Date: _____

 Jacque Behrens, Procurement Manager

 Date

Approved as to form:

 Roric Massey, City Attorney



City Of Goodyear

Attachment A

Non Collusion Affidavit

Office of Procurement
190 N. Litchfield Road
P.O. Box 5100
Goodyear, AZ 85338
Phone: 623-882-7845

NON-COLLUSION AFFIDAVIT

SITE 12 TREATMENT EXPANSION AND SITE WORK, 2 NEW PRODUCTION WELLS AND RESERVOIR

State of Arizona County of Maricopa

Chuck English, affiant,
the
Vice President of
(TITLE)
Hunter Contracting Co.
(NAME OF COMPANY)

The person, corporation or company responsible for the accompanying Request for Qualifications, having first been duly sworn, deposes and says:

That such Request for Qualifications is genuine and not sham or collusive, nor made in the interest of or on behalf of any person not herein named, and that the Contractor has not directly or indirectly induced or solicited any other Contractor to put in a sham submittal, or any other person, firm or corporation to refrain from submitting, and that the Contractor has not in any manner sought by collusion to secure for itself an advantage over any other Contractor.

Chuck English

Chuck English

Vice President

(TITLE)

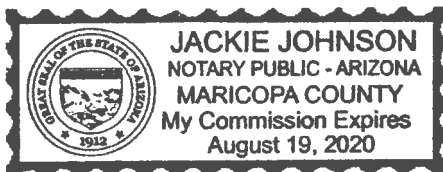
Subscribed and sworn to before me this 11th Day of July, 2017

Jackie Johnson

SIGNATURE OF NOTARY PUBLIC
IN AND FOR THE

COUNTY OF Maricopa

STATE OF Arizona My Commission Expires 8-19-20





Solicitation Amendment No. 1

Solicitation No. 17-3977

Solicitation Due Date: July 11, 2017 Time: 3:00 pm

Office of Procurement
190 N. Litchfield Road
P.O. Box 5100
Goodyear, AZ 85338
Phone: 623-882-7845

RFQ- Design Build - Site 12 Treatment Expansion and Site Work, 2 New Production Wells and Reservoir

CLARIFICATION 1: Section IV – State of Qualifications Evaluation Criteria, remains as written.

CLARIFICATION 2: Section V – Evaluation and Selection Process and Schedule, item 4 – SOW Evaluation and Ranking Process, replace with the following.

REPLACE WITH THE FOLLOWING:

The City intends to award a Contract to the most qualified Contractor based on demonstrated competence and qualifications. SOQ submittals that are materially satisfy to the requirements of this RFQ will be evaluated by the Selection Committee and awarded points for each stated criteria item as follows:

	<u>Maximum Achievable Points</u>
1. Project Understanding and Approach	400
2. Experience of Key Personnel and Subcontractors	300
3. Experience of the Prime Firm	200
4. Subcontractor Selection Plan	<u>100</u>

Total Available Points 1000

QUESTION 1: Does the City require a cover letter and a separate signed transmittal letter? Page 8, Section III, part 2 requests both a cover letter and signed transmittal letter. Section III, part 3.3 – Cover Letter outlines the details of the cover letter requirements, however transmittal letter requirements are not specified.

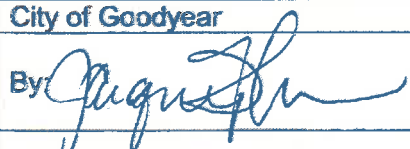
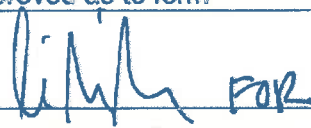
ANSWER 1: The transmittal letter identifies the contents of the package, the sender the recipient, and other relevant information. The transmittal letter, title page, and cover letter are separate documents conveying different information.

QUESTION 2: On Page 8, Section III, part 2 – Format it states "Do not include any design concepts, ..." Please elaborate on the term "design concepts" as used in this context and how it may coincide with our approach to addressing key project issues?

ANSWER 2: Remove the words "design concepts" from this paragraph.

No other terms, conditions, or performance standards written or implied are changed.

Procurement Officer: Victoria Jackson, CPPB

City of Goodyear	Approved as to form
By: 	By:  FOR
Jacques Behrens, CPPB	Roric Massey, City Attorney


Acknowledgement by Contractor

Contractor hereby acknowledges receipt and understanding of the above amendment. Contractor shall sign and return with their submittal.

Contractor Signature: 

Date: 07/11/17

Chuck English

	Solicitation Amendment No. 2	Office of Procurement 190 N. Litchfield Road P.O. Box 5100 Goodyear, AZ 85338 Phone: 623-882-7845
	Solicitation No. 17-3977 Solicitation Due Date: July 11, 2017 Time: 3:00 pm	

**RFQ- Design Build - Site 12 Treatment Expansion and
Site Work, 2 New Production Wells and Reservoir**

CLARIFICATION 1:

Section 1 – General Information – Item 3 Project Schedule, page 5 Change to the following:

PROJECT SCHEDULE

Design-Builder Pre-construction Phase Services Contract award	August 2017
Construction Phase Guaranteed Maximum Price (GMP) contract award	June 2018
Project Construction Documents complete and approved for permits	June 2018
Construction NTP	July 2018
Project completion	April 2019

CLARIFICATION 2:

Section VIII – Special Terms and Conditions, Item 17 – Bonding:

ADD – Contractor must include with their SOQ response a Bonding Capacity Certification Letter. The Letter must be submitted from a surety company or companies holding a certificate of authority to transact surety business in this state issued by the Director of the Department of Insurance pursuant to title 20, chapter 2, article 1.

CLARIFICATION 3:

Page 8, Item 2, Format, Contractors shall submit one (1) original marked “original” and **five (5) copies**. The SOQ shall not exceed **twenty (20) pages** total in length **excluding front and back cover pages, cover letter, title page, table of contents, section dividers, signed transmittal letter, Affidavit of Non-Collusion, Offer and Acceptance, and any addenda issued**. Pages shall be single sided 8 ½” X 11”, except **three (3)** pages may consist of **three (3)**, 11 X 17 foldout. Font size shall be no less than 11 point font.

QUESTION 1:

Section IV, Statement of Qualifications Evaluation Criteria, Item. 3., Experience of the Prime Firm, sub-item j., requires respondents to “provide at least three (3) general references” for each submitted reference project.

For reference projects of similar size, budget, and complexity, it can often be difficult to identify three individuals associated with the Owner’s organization that would have significant in-depth knowledge of a project to provide the information typically asked of a person in the position of a “project reference.” This type of association with the specifics of a project is often limited to one to two individuals within an Owner’s organization. It is more typical to see similar solicitations to require projects used to demonstrate similar experience to provide only **one** client reference.

Is it possible to change the requirement of Section IV, Item 3.j, from three general references to one general reference?

ANSWER 1:


Please provide one (1) reference per project.

QUESTION 2:

Page 9, paragraph 3.3 states that the cover letter must be one page maximum. Would the City consider expanding the cover letter maximum to two pages, to better accommodate all cover letter items required in paragraph 3.3?

ANSWER 2:

Page 9, Item 3.3, Cover Letter, may be **two (2)** single sided pages. Font size remains as stated in RFQ.

	Solicitation Amendment No. 2	Office of Procurement 190 N. Litchfield Road P.O. Box 5100 Goodyear, AZ 85338 Phone: 623-882-7845
	Solicitation No. 17-3977 Solicitation Due Date: July 11, 2017 Time: 3:00 pm	

QUESTION 3: Page 8, paragraph 2 also states that "Pages shall be single-sided 8 ½" x 11", except one page may consist of an 11" x 17" foldout." Would the City consider allowing more than one 11x17 page?

ANSWER 3: Please refer to Clarification 3.

QUESTION 4: Page 8, paragraph 2 states that "The SOQ shall not exceed fifteen (15) pages total in length..." Would the City consider increasing the maximum page count, for improved readability and spacing of the required SOQ items?

ANSWER 4: Please refer to Clarification 3.

QUESTION 5: The RFQ wording stated on Page 11, Paragraph 4, Section b. entitled "Subcontractor Selection Plan" allows either qualifications based selection only or by a combination of qualifications and price. The Sample Contract language stated on Page 17, Section 2.9.2 entitled "The Design-Builder" states that subcontractors will be selected on qualifications then low price. Please clarify.

ANSWER 5: The Sample Contract language shall prevail.

QUESTION 6: Page 7 of 33, item 5c, Does the Offer and Acceptance document count towards the page count, or can this document be included in the appendix?

ANSWER 6: Please refer to Clarification 3.

QUESTION 7: Page 11 of 33, item 3 h & i,
a. We're not exactly sure how these two bullet points are to be addressed.
i. Do you anticipate these two questions as a Yes or No answer?
ii. We (also assuming the other contractor teams) have the "Specific municipal experience..." and "Overall ability to provide the services".

ANSWER 7: All SOQ's will be scored based on the evaluation criteria as set forth under section IV Statement of Qualifications Evaluation Criteria. Contractors shall provide adequate information in their SOQ response for the evaluation panel to determine experience and ability of firm(s) to perform the job as described in the solicitation.

QUESTION 8: Does the City require the proposed facility to produce a certain minimum capacity, including blending, to meet demand projections? If so, what is that capacity?


ANSWER 8: The City is looking to increase capacity by 4 MGD.

QUESTION 9: Will the blending sources be raw well water, City water, or both?

ANSWER 9: Can be either or both.

QUESTION 10: What is the TDS goal of the blended water?

ANSWER 10: 500 mg/L

	Solicitation Amendment No. 2	Office of Procurement 190 N. Litchfield Road P.O. Box 5100 Goodyear, AZ 85338 Phone: 623-882-7845
	Solicitation No. 17-3977 Solicitation Due Date: July 11, 2017 Time: 3:00 pm	

QUESTION 11: Should the RO facility be designed for future expansion? What future capacity is desired?

ANSWER 11: We do not anticipate expansion of the RO facility.

QUESTION 12: Please provide pump curves and any other available information about the existing booster pumps.

ANSWER 12: Please refer to attachment A, drawings.

QUESTION 13: Section IV, page 11, item 3. h: "Specific municipal experience similar to scope provided." Please explain what the City is seeking in this item. The municipal experience and relevance of a given reference project is usually presented in the project description section (e.g., 3 a.). Given the limited number of pages in this proposal, we would like you to consider removing this item.

ANSWER 13: Refer to Answer 7.

QUESTION 14: Section IV, page 11, item 3. i: "Overall ability of the firm to provide required services." Is this intended as a qualitative evaluation to be performed by the City in its review or as an additional explanation to be provided by proposers?



ANSWER 14: Refer to Answer 7.

QUESTION 15: Section IV, page 11, item 3. j: "Provide at least three general references." At the pre-offer conference, the City indicated that these are to be presented as additional general references for the proposer separate from those presented specifically for each project description. Please confirm.

ANSWER 15: Refer to Answer 1.

No other terms, conditions, or performance standards written or implied are changed.

Procurement Officer: Victoria Jackson, CPPB

City of Goodyear	Approved as to form
By: 	By:  FOR
Jacquie Behrens, CPPB	Roric Massey, City Attorney

Acknowledgement by Contractor

Contractor hereby acknowledges receipt and understanding of the above amendment. Contractor shall sign and return with their submittal.

Contractor Signature:



Date: 07/11/2017

Chuck English, Vice President

7/5/2017



City of Goodyear, City Hall
Victoria Jackson, CPPB
190 North Litchfield Road
P.O. Box 5100
Goodyear, AZ 85338

Re: HUNTER CONTRACTING CO – BOND INFORMATION

Project Name: Site 12 Treatment Expansion and site work, 2 New Production Wells,
and Reservoir Solicitation Number: 17-3977 Project Number: WA-1710

To Whom It May Concern,

We are the Bonding and Insurance agent for **Hunter Contracting Co.** This relationship began some 30+ years ago. Throughout this time, we have never received a claim on any of their bonds, nor has **Hunter Contracting Co** ever been denied a bond request.

Currently, **Travelers Casualty and Surety Company of America** is the Surety Company for **Hunter Contracting Co.**, and, we have bonded single projects in excess of \$75,000,000 for them. Their aggregate limit is in excess of \$200,000,000.

We can respond within hours with Performance and Payment bonds upon notice of award. Of course, prequalification and approval would be conditioned upon acceptable underwriting considerations, such as: contract terms, bond forms, confirmation of satisfactory financing, and a favorable review of current underwriting information at the time of the request for the bond(s).

This letter is not an assumption of liability, nor is it a bid bond or a performance bond. It is issued only as a bonding reference, requested from us by our client.

Travelers Casualty and Surety Company of America

A.M. Best Rating: A++


William J. Passey
Attorney-In-Fact



Passey-Bond Co., Inc.
Insurance and Bonds
28 North Center Street P.O. Box 819 Mesa, Arizona 85211
(480) 969-2291 FAX (480) 833-4833
www.passeybond.com





POWER OF ATTORNEY

Farmington Casualty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.
St. Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company

St. Paul Mercury Insurance Company
Travelers Casualty and Surety Company
Travelers Casualty and Surety Company of America
United States Fidelity and Guaranty Company

Attorney-In Fact No.

231435

Certificate No. 007056391

KNOW ALL MEN BY THESE PRESENTS: That Farmington Casualty Company, St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company are corporations duly organized under the laws of the State of Connecticut, that Fidelity and Guaranty Insurance Company is a corporation duly organized under the laws of the State of Iowa, and that Fidelity and Guaranty Insurance Underwriters, Inc., is a corporation duly organized under the laws of the State of Wisconsin (herein collectively called the "Companies"), and that the Companies do hereby make, constitute and appoint

William J. Passey, and C. Passey

of the City of Mesa, State of Arizona, their true and lawful Attorney(s)-in-Fact, each in their separate capacity if more than one is named above, to sign, execute, seal and acknowledge any and all bonds, recognizances, conditional undertakings and other writings obligatory in the nature thereof on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed and their corporate seals to be hereto affixed, this 30th day of November, 2016.

Farmington Casualty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.
St. Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company

St. Paul Mercury Insurance Company
Travelers Casualty and Surety Company
Travelers Casualty and Surety Company of America
United States Fidelity and Guaranty Company



State of Connecticut
City of Hartford ss.

By:

Robert L. Raney
Robert L. Raney, Senior Vice President

On this the 30th day of November, 2016, before me personally appeared Robert L. Raney, who acknowledged himself to be the Senior Vice President of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company, and that he, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

In Witness Whereof, I hereunto set my hand and official seal.
My Commission expires the 30th day of June, 2021.



Marie C. Tetreault
Marie C. Tetreault, Notary Public

This Power of Attorney is granted under and by the authority of the following resolutions adopted by the Boards of Directors of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company, which resolutions are now in full force and effect, reading as follows:

RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President, any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary may appoint Attorneys-in-Fact and Agents to act for and on behalf of the Company and may give such appointee such authority as his or her certificate of authority may prescribe to sign with the Company's name and seal with the Company's seal bonds, recognizances, contracts of indemnity, and other writings obligatory in the nature of a bond, recognizance, or conditional undertaking, and any of said officers or the Board of Directors at any time may remove any such appointee and revoke the power given him or her; and it is

FURTHER RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President may delegate all or any part of the foregoing authority to one or more officers or employees of this Company, provided that each such delegation is in writing and a copy thereof is filed in the office of the Secretary; and it is

FURTHER RESOLVED, that any bond, recognizance, contract of indemnity, or writing obligatory in the nature of a bond, recognizance, or conditional undertaking shall be valid and binding upon the Company when (a) signed by the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary and duly attested and sealed with the Company's seal by a Secretary or Assistant Secretary; or (b) duly executed (under seal, if required) by one or more Attorneys-in-Fact and Agents pursuant to the power prescribed in his or her certificate or their certificates of authority or by one or more Company officers pursuant to a written delegation of authority; and it is

FURTHER RESOLVED, that the signature of each of the following officers: President, any Executive Vice President, any Senior Vice President, any Vice President, any Assistant Vice President, any Secretary, any Assistant Secretary, and the seal of the Company may be affixed by facsimile to any Power of Attorney or to any certificate relating thereto appointing Resident Vice Presidents, Resident Assistant Secretaries or Attorneys-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and any such Power of Attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding on the Company in the future with respect to any bond or understanding to which it is attached.

I, Kevin E. Hughes, the undersigned, Assistant Secretary, of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 5th day of July, 2017

Kevin E. Hughes
Kevin E. Hughes, Assistant Secretary



To verify the authenticity of this Power of Attorney, call 1-800-421-3880 or contact us at www.travelersbond.com. Please refer to the Attorney-In-Fact number, the above-named individuals and the details of the bond to which the power is attached.

General Information

Background

Hunter Contracting Co. (Hunter) is an Arizona-based corporation serving the greater southwest since 1961. We are an experienced Design-Build (DB) / CM@Risk contractor focused on delivering best-value projects. Since the inception of alternative project delivery methods (APDM) in 2001, Hunter has successfully completed over 140 APDM projects valued over \$600 M. These include well and water/wastewater infrastructure projects, complex roadway infrastructure projects to destination parks many for repeat clients, proving that Hunter can manage multiple APDM projects, meet project goals, and exceed client expectations.

Hunter has been providing quality services to the City of Goodyear (City) since 1993 spanning several water, wastewater and roadway projects totaling \$8.7 M, including our recently completed Corgett WRP modifications. In all our DB projects we use a high quality, value-based, schedule driven approach, benefiting the owner by providing the most advantageous aspects of the project.

Hunter has chosen to partner with NCS Engineers, an experienced water and wastewater treatment firm, with proven drinking water, well and membrane treatment expertise, specifically in the West Valley. Hunter and NCS have partnered on multiple DB, water and wastewater projects over the past 20 years in the Valley including projects for the City of Phoenix, Global Water, Apache Junction Water Company and for several local Native American communities.

Corporate Stability

Hunter has been in continuous operation since our inception in 1961. Hunter has won awards to numerous to mention for our projects in Arizona. Hunter has the necessary financial and staff resources to complete your project on time and on budget.

Claims History

Hunter and our officers have never had a contract or a subcontract terminated, nor have we had a claim arise from a contract that resulted in litigation or arbitration. Hunter has completed all awarded contracts and subcontracts. There are no judgments, claims or suits pending or outstanding against Hunter or our officers.

1. PROJECT UNDERSTANDING & APPROACH

a) Key Issues and the Hunter Advantage

This production well drilling, equipping and reverse osmosis (RO) treatment expansion and modifications project presents an ideal opportunity to add new groundwater resources to meet increased demands. The new wells will be sited near the existing Site 12 facilities and close coordination with the developer and adjacent community will be required to ensure a successful project. (See figure on page 3) Estimated production rates are between 1,200 and 1,500 gpm and water quality issues are anticipated (TDS and nitrates primarily).

Key Well Design Considerations

Project coordination and attention to planning details will be critical to the success of this project. The specific issues to be resolved may include the need for noise abatement for well installations near neighboring residences, or regulatory/logistical coordination for discharging well testing water, or even health and safety issues specific to site-specific working conditions. The Hunter/NCS DB team has extensive experience in addressing all these issues, and our proficiency in this area will enable us to proactively anticipate and resolve most problems before they develop. In addition, our subconsultant Clear Creek Associates (CCA) is very knowledgeable of all ADWR permitting requirements. Detailed initial studies and complete documentation of the well installation program are critical to the success of this project. For this reason, continual communication will be maintained between the Hunter/NCS team, the program manager, and representatives of the City.

Well Equipping and Treatment System Considerations

Well Pump and Lubrication System: For each site, NCS will perform an evaluation of line shaft pumps and consider efficiency, life span, desanding equipment, manufacturer, lubrication type, noise, and start/stop impacts. These alternatives and costs will be reviewed with the City and arrive at a final decision.

Desanding Unit: The need to design well desanders (hydrocyclones, etc.) will be determined and reviewed with the City, based on site conditions and data.

Well Pumpout Locations: During predesign, the well pumpout location and routing to the nearby locations will be identified for each well. The standard design will include an automatic control valve system and timer to transition from the pumpout to the system. Other alternatives such as 2-stage drywells in a retention area will be considered.

RO Treatment, Pretreatment and Post Treatment Considerations: Feed water quality in an RO system is critical to the success of the project. A reliable and consistent pre-treatment is a must to minimize potential

for fouling and scaling the RO membrane elements. One of the greatest advantages of RO is the flexibility to produce a custom designed water quality. This can be achieved by multiple stages and passes. The degree of purity and permeate product water impact the final project capital and O&M costs. Various purity options surpassing the water quality standards will be evaluated with their cost impact and discussed with the City during the predesign phase and the selected option will be designed. Based on initial well testing and zonal sampling data, the need for pretreatment chemicals, pH adjustment, and anti scalants will be considered based on our vast experience with similar projects. RO membranes are prone to scaling and fouling and must consider carbonate, sulfate and silica control. Depending on the hydraulic recovery, the concentration of salt ions and silica in the feed water can be concentrated during treatment by as much as ten times. If ion concentrations exceed the solubility limits of the compound, potential scale-forming minerals (scale precipitates) can form in the membranes causing a deterioration of productivity, decreased permeate flux and diminished permeate quality. More importantly, it can cause failure of the membranes. The most common scale-forming minerals in fresh waters include calcium carbonate (CaCO_3), calcium sulfate (CaSO_4), barium sulfate (BaSO_4), strontium sulfate (SrSO_4) and silica (SiO_2). **The Hunter/NCS team will conduct water quality testing at the new wells for parameters of concern including calcium, barium, strontium, sulfates, chlorides and silica along with conventional water quality parameters such as pH, temperature, alkalinity, hardness, nitrates, iron/manganese, etc.**

The Hunter/NCS team proposes to perform field testing and water analysis to identify the most economical, but reliable pretreatment technology to select. We will bring our own specialized equipment to conduct Silt Density Index (SDI) and Modified Fouling Index (MFI) testing which will be helpful in developing pretreatment processes. Depending upon the groundwater water quality, the pretreatment may consists of simple microstrainer or cartridge filtration to chemical pretreatment including oxidation (iron and manganese), antiscalants, and pH adjustment (membrane materials dependent). The treated water may be corrosive and could require post treatment (pH and/or alkalinity adjustment) for corrosion control depending on the blend ratios used.

Partial Treatment: The treated water quality goals are TDS of 500 mg/L and arsenic and nitrate below 80% of the maximum contaminant levels. Assuming a groundwater TDS level of 1,200 mg/L and RO treatment TDS reduction of 95% with 15% concentrate production (optimized with pre-treatment), approximately 39% of untreated groundwater can be blended with the treated RO water (see table below and figure on next page). In this manner, the City can reduce the overall treatment costs including those related to precious water resources (and reduce concentrate volume). The estimated well production rate is 5.6 MGD with all three wells operational to produce 4 MGD of treated water. Assuming that each RO skid has a nominal capacity of 0.5 MGD, six skids will be required to meet the treatment capacity.

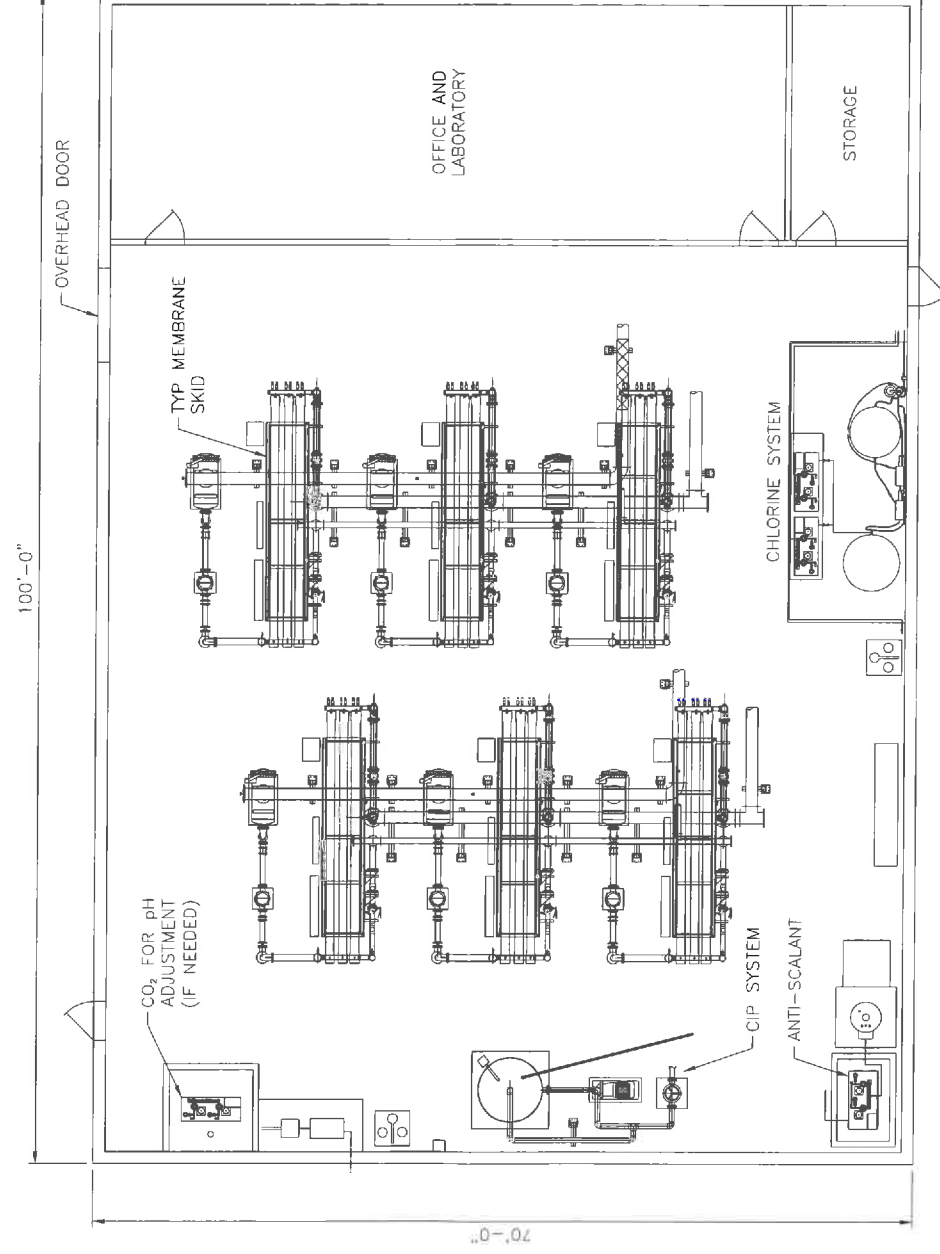
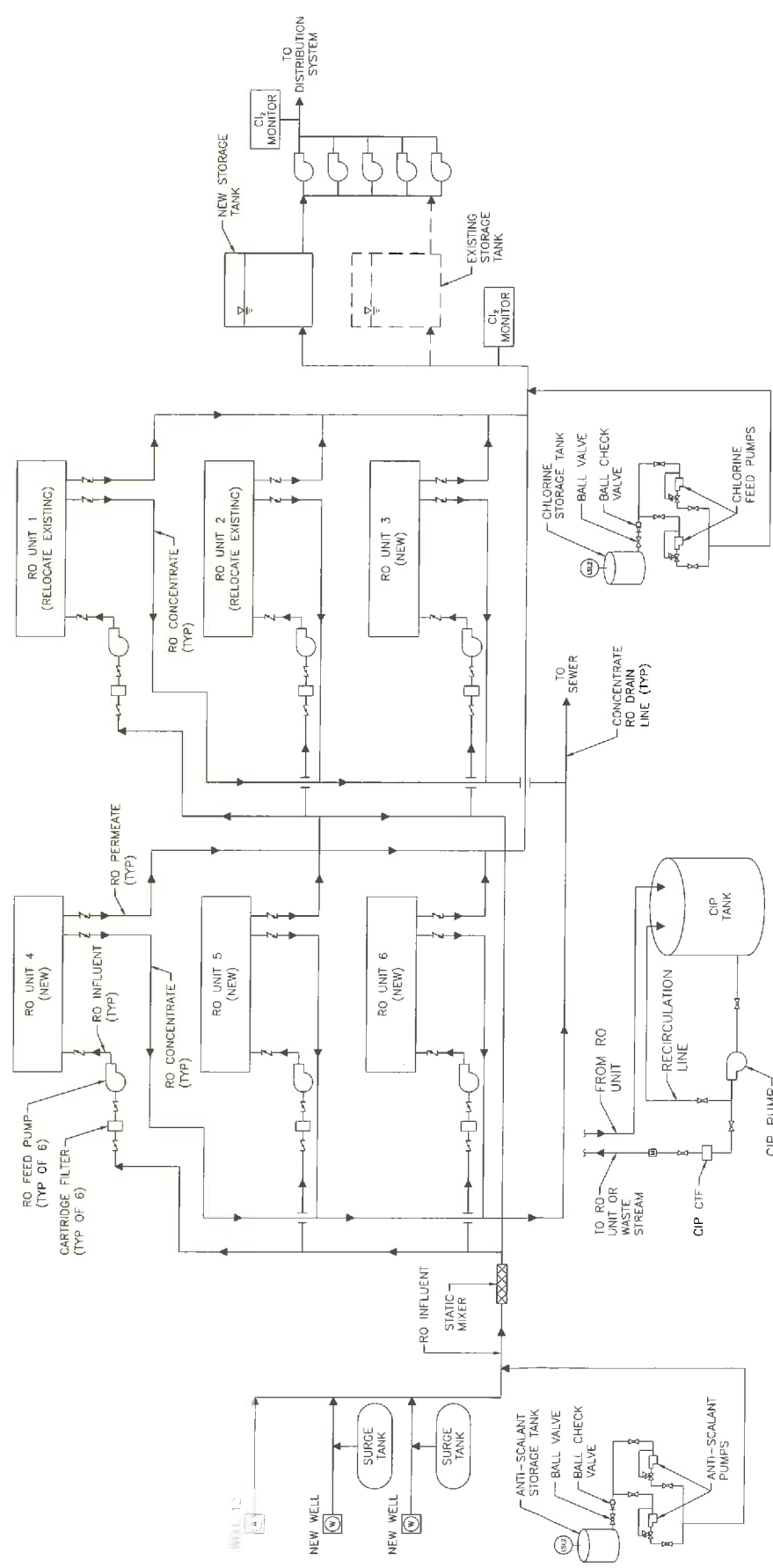
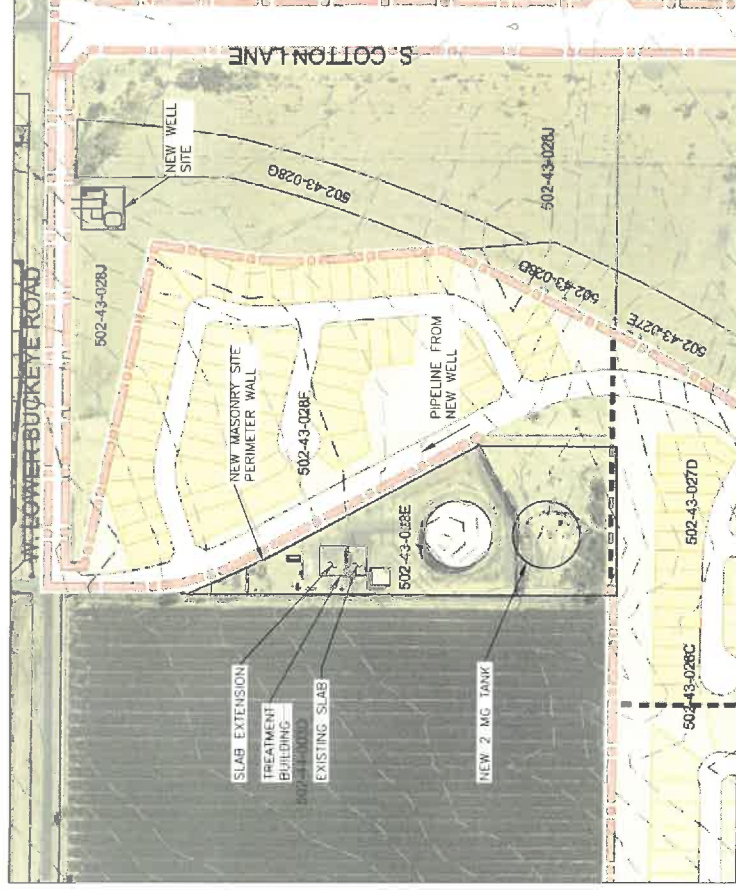
Selection of Membranes: The current RO treatment facility at Site 12 utilizes GE skids with 80% recovery. The Hunter/NCS team has experience with multiple manufacturers and will conduct modeling to identify the best applicable membranes based on the groundwater water quality. The Hunter/NCS team has access to various computer modeling software to identify the best membranes and membrane system design for the project.

Brine Characterization and Optimizing Brine Volume: Residuals handling and disposal from an RO system requires special attention as the brine contains concentrated ions. At present, the concentrate from the RO treatment facility is discharged to the sanitary sewer. The City may continue with the same strategy of concentrate management and the estimated increase in TDS in the wastewater treatment effluent is approximately 370 mg/L. **NCS will verify the acceptability of this TDS increase in the wastewater and make adjustments as needed.**

Relocating Existing RO Units: The existing two GE skids will be relocated into the new treatment building, and integrated with the new RO skids. The relocation will occur during the winter of 2018 when demands are lower. Based on consultation with the City, the membranes can be replaced if needed.

Nitrate and Arsenic: As needed, the RO system will be used for nitrate and arsenic removal as well. It is envisioned that TDS will govern the design criteria of the RO system, but nitrates up to 16 mg/L and arsenic up to 16 ppb can also be treated for, as needed.

Reverse Osmosis System Design Criteria Summary		Scenario 1	Scenario 2
Groundwater TDS Level	mg/L	1,200	1,500
Total well flow	MGD	5.6	5.7
Potable water production	MGD	5.0	5.0
Untreated bypass flow	gpm	1,350	1,040
RO permeate Flow	gpm	2,150	2,450
% TDS reduction		95	95
RO treated flow TDS	mg/L	60	75
Blended water TDS	mg/L	500	500
% Flow bypassed		39	30
Concentrate Flow	gpm	403	461
Concentrate TDS	mg/L	6,080	7,600
# of Skids, 0.5 MGD each		6	6
Mass of TDS in concentrate	lb/d	21,400	32,000
Increase in wastewater TDS (beyond current RO)	mg/L	366	377



Size and Functionality of New Building: Based on a similar RO facilities design by NCS, a treatment area of 70' x 80' is needed for the six RO skids and pretreatment facilities. This area can be expanded by an additional 20' to provide an office area, storage and lab testing space (as shown in the figure on the previous page). To construct the building efficiently, a prefabricated building with a steel frame and shell, and an architectural finish, is proposed. Hunter/NCS have completed 10 such treatment building projects in the region and are well versed in the coordination and design issues. Proper HVAC systems suitable for the equipment will be provided (not evaporative cooling).

Reuse Existing Equipment Slab for New Building: The existing slab located outside next to the skids is approximately 50' x 40' and a preliminary assessment indicates it could be used as a foundation for the treatment building. Once confirmed during pre-design, an additional section of foundation will be poured for the extra space that is needed.

Distribution System Impacts: The increase in water production capacity along with construction of a new reservoir and booster pumping capacity will require an evaluation of adequacy of the existing distribution system capacity. NCS is an expert in hydraulic modeling of distribution systems including surge and transient analysis associated with pump operations and pipeline sizes to carry increased water flows. The 4,800 gpm booster pump station will be modeled and appropriate distribution system improvements can be identified.

Well Hydraulics and Surge Analysis: NCS will consider the impacts of well shutdown and startup and power failure on the treatment system to ensure that hydraulic surges do not cause a failure of the treatment vessels (rupture or collapse). This is also a concern for the booster station and the distribution system and high pressures can cause surge related failures to pumps and piping and valves. NCS will perform a surge analysis using computer software to determine what mitigation measures are needed (surge relief valves and surge tanks, etc.).

Aesthetic Treatment for Walls: Our Architect, Navin Pathangay, will provide various architectural concepts for the new site wall, including various colors, block patterns and themes. These will be reviewed with the City and the adjacent developer to select an option that integrates into the overall design concept for the community.

Steel Tank Design: A new steel tank conforming to AWWA D-100 Standards will be designed and constructed to match the existing tank configuration. Enhanced high solids epoxy coatings (60 mils) will be considered to extend the asset life of the tank and minimize future recoating and O&M costs. Given the size and availability of fabricators, this tank will be designed and bid early as a separate package to meet the project schedule.

PLC Programming, SCADA and Telemetry: Our team will work with the City to implement the preferred approach for PLC programming and SCADA communications. We are familiar with the current approach to use Ethernet communications, fiber optic cable, and the Modicon PLC - M340, and SCADA radios (HSQ, MDS or similar brands). We understand the site requirements are unique and may require a combination of fiber optic and radios to ensure proper communication with the central SCADA network. In all likelihood, a combination of technologies and communication approaches will be used to install the optimal system that is fully integrated with SCADA.

Public Involvement and Communication: Successful public outreach is essential during the design and construction phases of these facilities. Our PR Expert, Teresa Makinen, will conduct workshops during the design phase to discuss aesthetic and other concerns with the new facilities, and obtain input from the surrounding neighbors. She will also distribute flyers, and use phone and web communications during construction to keep all neighbors aware of activities. Hunter/NCS has implemented similar programs for over 30 well projects.

Disinfection System Selection: We understand that the City is currently evaluating various disinfection options to implement at their water facilities. At site 21 and the Adaman wells, a simple 5 percent liquid feed system was used. However, since this is a larger centralized site, the daily usage is estimated to be around 60-100 lbs/day of chlorine. Therefore an on-site generation system will also be evaluated in addition to the liquid feed system for this application.

New Electrical Services: For each well site and the Site 12 central facility, Hunter/NCS will compute anticipated loads for the facility and coordinate a new service install with APS during the design phase. This can be a long lead item that takes several months of coordination to complete. Therefore, this is on the critical path and will be initiated early.

b) Approach to Providing Services

Estimating: Hunter uses Hard Dollar cost estimating software. Take-off engineers utilize CAD, On-Screen Takeoff, and AGTEK to perform detailed plan takeoffs and 3D earthwork modeling. Our cost models and GMP are completely transparent and open book. Once we have a thorough understanding of the project requirements and goals at the scoping meeting, we will prepare an initial cost model for the project. Once the City has vetted the cost model and is satisfied that it captures the project expectations, we will continually update the cost model as design progresses as well as provide cost information on potential design alternatives enabling Goodyear to make informed budget decisions.

Estimating System: Hunter uses a Holistic Cost Control process for effective project cost control that starts

with establishing project objectives and priorities and aligning them with the available budget. Especially on a project of this magnitude, where each element plays a unique role in the overall functionality of the system and has a unique cost impact, it is critical to carefully avoid scope creep. Active and early engagement from all key stakeholders will be necessary to identify and decide on key design elements. Hunter will provide accurate initial budgeting and regular budget checks as design progresses to control the cost. Our budgeting approach provides clear direction and valuable input to the City and differs from other teams who simply provide a GMP. We will provide ongoing real time cost modeling and cost estimates for design alternatives so that Goodyear can make informed design decisions. All of Hunter's cost models and GMPs are fully transparent and open book.

Constructibility Analysis: As your DB Partner on this project, Hunter will provide our construction expertise to complementing the design efforts. We will review the design documents throughout the design process and aid in producing a complete and accurate set of construction documents. All key members of the Hunter team are involved in constructibility analysis, including the project superintendent who brings valuable field perspective. Our pre-construction team will also review design documents to eliminate biddability issues to ensure accurate subcontractor pricing. Further, the design expertise of NCS with similar facilities and the proven DB expertise of the Hunter/NCS team will ensure a timely and smooth pre-construction phase constructibility with minimal biddability issues. **This will deliver Goodyear a complete and accurate set of construction documents with Zero change orders.**

Technical Approach

We have reviewed the Scope of Work (SOW) described in the City's Request for Qualifications (RFQ) and embrace the proposed scope; the following project approach offers enhancements to the SOW. Our project approach will result in the installation of new wells with the optimal groundwater productivity, capacity, water quality, and long-term reliability that can reasonably be achieved.

Well Evaluation and Testing: The production wells for the Site 12 project are a key component of the project and a critical path item in the overall schedule. To develop the required water production and water quality data necessary for the treatment design, our team member CCA envisions two alternatives. Each alternative will utilize the gravel envelope method for the collection of depth-specific (zonal) groundwater quality samples. In addition, CCA will implement their substantial experience with falling head testing and analysis to assess the aquifer characteristics of hydraulic conductivity and transmissivity (water production). Combining the aquifer characteristics and water quality from each zone, CCA will predict the future wells water production capabilities at a specific amount of drawdown along with blended or composite water quality. Utilization of this approach will greatly reduce the project's overall timeline. Specific attention will be paid to arsenic, TDS, chromium and nitrates to minimize the presence of these contaminants and reduce treatment costs. Zonal samples (depth specific) will be collected and submitted to a certified laboratory for analysis of water quality parameters of interest.

Alternative 1) Exploratory Boring Approach: This approach utilizes the exploratory boring or "slim hole" method to gather site specific data required for design of the production well and treatment, including lithology, groundwater quality and aquifer parameters. Slim holes are typically a 6.5-inch to 7-inch diameter open boreholes that are drilled using the direct mud rotary method. The advantages of this approach include:

- The boring can be drilled in as little as 3 to 4 days because of the small diameter and no requirements for plumbness and alignment.
- A smaller drilling rig can be used, which reduces mobilization costs and increases the list of available drillers capable of performing the work.
- Zonal sampling purge times (purging is required prior to sample collection to ensure representative water quality samples are collected) can be reduced due to the use of the mud rotary drilling method and the small borehole diameter, thus reducing the overall data collection time frame and cost.
- Because the slim hole boring is drilled, tested, and backfilled and a cased well is not installed - this analytical method can be conducted at candidate well sites that have not yet been acquired by the City, and are in escrow, pending results of the slim hole analysis.

Both Alternatives will be discussed with the City during the contracting process to select a preferred approach.

Alternative 2) Pilot Hole Approach: This approach utilizes the pilot hole method to gather the site specific data required for design of the production well and treatment, including lithology, groundwater quality and aquifer parameters. The pilot hole method typically involves drilling a 16-inch to 17-inch diameter borehole using the flooded reverse circulation rotary drilling method. The advantages of this approach include:

- The pilot borehole does not need to be abandoned after completion because it will be reamed out to accommodate the new well based on the final well design;
- Completion of the final well can be expedited because the surface casing is already in place; and
- The same drilling rig is typically used for the pilot hole, borehole reaming and well installation, which reduces contracting time frames and avoids multiple mobilization charges of drilling rigs.

Analysis of Existing Data: CCA has reviewed the lithologic log for COG-12B. The borehole was drilled to 835 feet below land surface (bls) and the well was screened from 715 to 815 feet bls. The depth to groundwater was reported to be approximately 68 feet bls on February 7, 2002.

From the observed lithology, there appears to be a thick clay-bearing sequence (over 500 feet thick) from about 180 to 690 feet bls. This would explain why COG-12B was screened solely in the deeper coarse grained sediments.

Lithologic log for Well COG-12B

- 0-60 feet bls - Sandy clay
- 60-110 feet bls - Sand & gravel
- 110-170 feet bls - Clayey sand
- 170-180 feet bls - Sandy gravel
- 180-690 feet bls - Clay with some sand
- 690-835 feet bls - Sand & gravel with some clay

CCA also reviewed the lithologic log from the well that COG-12B replaced. That borehole was drilled to a total depth of 1,070 feet bls. This log confirms the presence of clay, but also indicates a thick sequence of sand, gravel and boulders from 770 to 1,030 feet bls where bedrock was encountered. ***The RFQ states that the anticipated depths of the wells will be 500 feet bls, but CCA believes that greater well depths will likely be required to achieve the desired production rates.*** It is anticipated that the quality of the shallow groundwater will be extremely poor due to impacts from excess applied irrigation water. Water quality and water production will be confirmed using either Alternative 1 or 2.

Once the data has been processed, CCA will develop two to three potential well designs for review and approval by the City. CCA is currently in the process of replacing COG-18 and COG-19 and will utilize a similar design with respect to the casing and well screen material, access tubes, filter pack media, etc. Each proposed design will be presented to City with the anticipated water production rate and estimated blended water quality. This will allow the team to develop the best option for City based of water supply demands and treatment requirements.

The Hunter/NCS DB team has identified multiple Arizona-Licensed drilling firms with the capability to mobilize two drilling rigs simultaneously, and who have experience with the type of borehole analyses envisioned in Alternative 1 or 2. Drilling both wells simultaneously would also shorten the overall project schedule. Driller availability will be critical to maintaining the project schedule. Having already identified multiple drillers will ensure timely completion.

Our approach incorporates the following critical elements related to the site-specific evaluation and documentation that will be required for this project:

Permitting and Technical Specifications: Depending on the specific conditions at each well site, an Arizona Pollution Discharge Elimination System (AZPDES) Deminimus permit may be required to discharge water from the well during drilling and/or testing. We will obtain the AZPDES permit if required. We will also coordinate other discharge permits with such entities as the Roosevelt Irrigation District, County Flood Control District, or other local agencies, if required. The specifications will detail the requirements for drilling, protection of the site & noise abatement, well construction materials, construction methods, well development, reporting and submittal requirements, plumbness and alignment requirements, and final testing.

Well Design: The well design and operational practices for production wells will be consistent with the site-specific pilot hole data, so that both maximum water production and optimal water quality are produced by the well. CCA will conduct a geochemical analysis to assess the impact of such constituents as redox, dissolved oxygen, pH, etc.

Field Inspection of Well Construction: The field inspection of well drilling and installation is a critical task. The observations of an on-site hydrogeologist may indicate a need for immediate modifications to the well design or construction techniques. We will provide full-time inspection during well construction. The productivity and ultimate value of the well relies greatly on the drilling contractor's adherence to the materials and technical standards that have been specified; therefore, construction inspection by a knowledgeable hydrogeologist is essential to prevent inadequacies in the final well that has been installed.

Post-Construction Development and Aquifer Testing: Well development is a crucial step in the well installation process. CCA will develop a specific swab-and-airlift and pump-and-surge development plan for each new production well, and verify it is implemented correctly by the driller. A step-rate pumping test will provide an indication of the efficiency of the new well, in addition to the specific capacity and optimum water production rate of the well. A constant rate aquifer test provides additional information about the long-term performance of the well, and provides an indication of any hydrologic boundaries (due to formation changes or buried faults) that could impact water production or recharge characteristics of the new well. The Hunter/NCS team will also collect water samples for comprehensive water quality analysis (required for New Source Approval) from each new well.

Well Installation Report (WIR) Preparation: The WIR format utilized by CCA provides detailed and comprehensive documentation of the well installation for the City. The WIR will include summaries of pertinent information collected during well drilling and installation, as well as appendices with the detailed records such as pipe tallies, grout records, penetration rate logs, geophysical logs, the lithologic log, zonal water sample results, gyroscopic survey log, well construction photographs, and the final video log. The WIR will also include CCA's recommendation of the optimum pumping rate and pump setting, and a detailed As-Built drawing of the new production well.

Final Design Phase

Conduct Field Verification Activities: The team will conduct field verification activities to verify the actual condition of the well site, treatment site, topography, geotechnical conditions and site boundaries.

Prepare Basis of Design Report: NCS will prepare a Basis of Design Report (BODR) outlining the proposed well design, pump specifications, header, pumpout line, treatment system components, RO skid design specifications including pretreatment filters, membranes, chemical feeds, flow meters and control valves, civil/site layout, pumpout line, disinfection system, booster pump specifications and layout, steel tank configuration, instrumentation and controls, and telemetry and SCADA elements. The Hunter/NCS team will follow the City design standards for the project (Chapter 5, City of Goodyear, Engineering Design Standards and Policies Manual) along with applicable ADEQ/Maricopa County and industry standards for developing designs for the project facilities. The Hunter/NCS team will identify critical design issues, develop suitable engineering solutions and obtain consensus with the City's representatives before proceeding with the design of project facilities.

The existing RO treatment system treats the entire flow which is not efficient. As described under the Project Understanding section, the Hunter/NCS team proposes a partial stream treatment and blending with untreated water to achieve project water quality objectives. In this manner, the size of the RO treatment facilities can be reduced resulting in a cost effective design. The amount of concentrate is also reduced using partial stream treatment compared to full stream treatment, resulting in costs savings for the City and reducing TDS impacts on wastewater.

To increase the booster pumping capacity from 2,000 gpm to 4,800 gpm, the Hunter/NCS team will interview the operations personnel to identify any issues with the current booster pumping station. Every effort will be made to include expand the existing pumping capacity by utilizing pumps similar to the existing pumps. The BODR will also address all ancillary components such as PLC programming and logic, SCADA interface, membrane cleaning system, rinse streams, membrane performance, and issues related to startup.

Perform Final Design: NCS will prepare plans and specifications of all facilities identified above and coordinate activities with the City. Our emphasis is to create a construction document package that is reviewable, biddable, and buildable, with minimal potential for change orders.

We envision a design package with the following sheet list:

- Cover and General Drawings (5 sheets)
- Civil Drawings and Details (10 sheets)
- Architectural Drawings for Wall and Building (4 sheets)
- Well, Pump/Motor, Header, Pretreatment System, Disinfection, Booster Station, Steel Tank and Mechanical Drawings (20 sheets)
- Structural Drawings (5 sheets)
- RO System Sheets: Skid Plan and Sections, CIP System, Skid Pad Layout, System P&IDs, System Details (7 sheets)
- Electrical and Instrumentation Drawings (25 sheets)
- HVAC drawings (2 sheets)

Coordinate Environmental Permitting and Regulatory Approvals:

NCS will coordinate with Maricopa County to obtain design and construction approvals. This task will include preparing forms, transmitting design information and drawings, and preparing correspondence. We will also coordinate permitting of structural and electrical components with the City's Development Services Department and obtain all approvals and building permits.

Project Management and Meetings: Hunter/NCS use proactive methods for project management. Each of our projects is always preceded with a work plan, a detailed scope of work and budget. Hunter/NCS will work with the City to specify what will be included (and not included) with interim deliverables (60%, 90%). This will help ensure that the project is moving forward to the satisfaction of the City and that rework is limited. Hunter/NCS will monitor task progress against expenses to protect against cost overruns.

Construction Phase Inspection Services

Factory Inspections: The Hunter/NCS team is an advocate of performing factory inspections of RO treatment equipment prior to final assembly and shipping to ensure that the design objectives and quality control criteria are met and no problems are encountered.

Completion of Start-Up, Functional Testing, Validation Testing, and Commissioning: Hunter/NCS has completed validation and commissioning for more than 30 similar facilities in the Valley. We are knowledgeable of the County's expectations and will provide a certified Grade 4 Water Treatment Operator, Erin Mulligan, for startup. We also verify connectivity using loop checks and verifying PLC programming and remote communications.

Facility Transition and Operator Training: Hunter/NCS will verify all components are functioning as designed and working to your satisfaction. Our staff members, many of whom are certified water system operators, will work with the City's staff and ensure that they are well trained on this facility before we leave the site.

c) Project Management Approach and Team Organization

Over the past 15 years, Hunter has successfully built DB projects and has developed a comprehensive project management approach focused on providing our clients best value services throughout the design, construction and

warranty phases of a project. The benefits our project management approach and team organization provides on your Site 12 Expansion and Well project are described below.

Planning: Our proactive project planning starts in the design phase with comprehensive pre-construction process. Our team will develop site access and traffic control plans that has minimal impact to the Site 12 area traffic. We will prepare detailed activity work plans, a project schedule and a construction phasing plan to ensure on time and within budget completion of the project. We will also prepare site specific safety plan and quality control plan for the project. Jason Robinson will communicate these plans to Goodyear during pre-construction through design progress meetings. Gary Hornberger will continue communicating construction plans to Goodyear during weekly construction progress meetings.

Scheduling: Jason will develop a detailed critical path design and construction schedule using Primavera P6 after the initial scoping meeting. This schedule will be utilized to track key milestones and ensure team commitment. During construction, Gary will develop and update a three-week look ahead schedule to discuss in progress meetings. These schedules provide daily status of construction progress and information on upcoming inspection and public notification needs.

Team Continuity: Jason, Project Manager, will be your primary point of contact from pre-construction through construction and warranty, providing continuity throughout the project. Involvement of Gary, Project Superintendent, in the pre-construction phase provides hands on knowledge to the constructibility reviews in the design phase. Our DB team will feature vital Project Management and communication approaches during the design, pre-construction phases.

Partnering: A cornerstone of our successful DB history is our unwavering belief in the philosophy of partnering. With a fast moving design process, this project will require regular interactions between the entire project team to ensure decisions are made in a timely manner. You will find the Hunter team engaged with Goodyear and other stakeholders throughout the design phase by providing solutions to challenges, best value alternatives, and timely and accurate cost/schedule information to facilitate the decision making process.

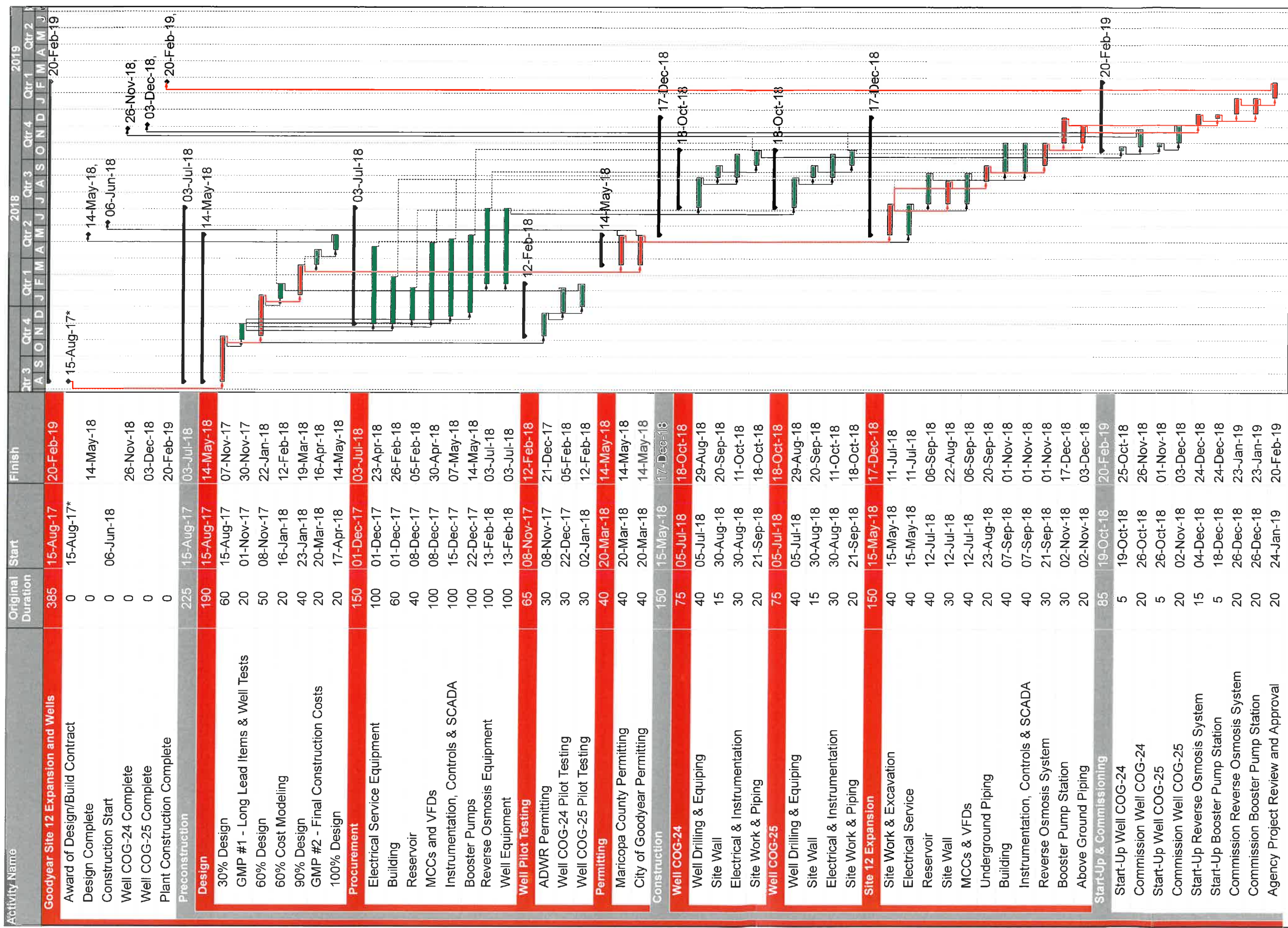
Team Organization During Design and Construction: Our proposed key team members for this project will stay intact throughout the pre-construction and construction phases. As your Project Manager, Jason, will be your primary point of contact for both phases. He will be supported by Dig Karki, Pre-construction Manager, and Hunter's estimating resources and prequalified subcontractors for constructibility reviews, value engineering and cost estimates. During construction Jason is supported by Gary, Project Superintendent, and two project engineers, Hunter specialty crews, subcontractors, and Hunter's safety and equipment department to effectively manage a safe, quality, and on-time project. Chuck English, Vice President, will ensure our project team functions at the highest level of efficiency by providing technical guidance and executive support.

Goal Oriented Scheduling: Hunter's approach to scheduling is to first establish the end goal with Goodyear. We know that the schedule goal for the new wells is to have them online and producing water by February of 2019. From here we work backwards to identify key milestones critical to meet this goal. Once we have established milestones, we will break down detailed design and construction tasks sequencing required to meet each milestone and determine the critical path. These sequences enable the team to move forward without pauses or backtracking to address unresolved issues. Our preliminary design and construction schedule is on the following page. We recommend expediting well pilot testing and long lead equipment ordering to commence construction as soon as possible.

Effective Communication: Effective communication and ability of team members to respond quickly on issues is critical to the success of the project. Hunter firmly believes in clear, concise and candid communication. Our team will foster respectful listening, insightful responses, and thorough documentation. We will meet with Goodyear staff to assess project goals, priorities, and budget and schedule milestones. We propose weekly project meetings thereafter to ensure adequate information flow between team members on design progress, issue resolution, and both budget and schedule updates. Hunter will take meeting minutes and maintain an action item list with responsible party and action needed by date for any outstanding issues. We will continue the weekly project meetings during the construction phase to discuss project schedule, coordination issues, public outreach items, submittals, RFIs, and other construction related items.

Quality Control

As project specifications are developed, the Hunter team will identify important quality control measures such as testing frequencies, tolerances, construction procedures, and means and methods to monitor quality. Work Plans will then be developed for each major scope of work. These plans will include all of the required quality control methods for equipment, materials and execution of the activity. Supplier and Subcontractor submittals will be reviewed for compliance to the specifications and then included in the Work Plans to insure that they are followed during construction. When closing out the project, our quality control efforts are substantiated with close-out documents that are maintained from the beginning of the project within our document control system.



City of Goodyear
Site 12 Expansion and New Wells Project

Hunter Contracting
Co.

Throughout construction, the Hunter team will use these established processes to verify that all material, equipment and workmanship conform to the plans and specifications. With support from Jason, Gary will be in charge of quality control once construction begins. Gary will work closely with the Engineer and City inspectors and any third party QA/QC firms to ensure construction is to specifications and all applicable standards are met or exceeded.

Dispute Resolution

Jason will establish a dispute resolution ladder to identify levels of authority and communication. The resolution ladder includes decision time frames and escalation process. Timely issue resolution is imperative to maintain the project schedule and focus on the work. We take a proactive approach handling all issues at the lowest level to remedy the situation in a timely manner before impacting the project - preserving good relationships with all parties involved and the integrity of the project. Hunter's history with repeat clients in the CMAR and Design/Build delivery methods proves our company's commitment and team's ability to resolve issues effectively.

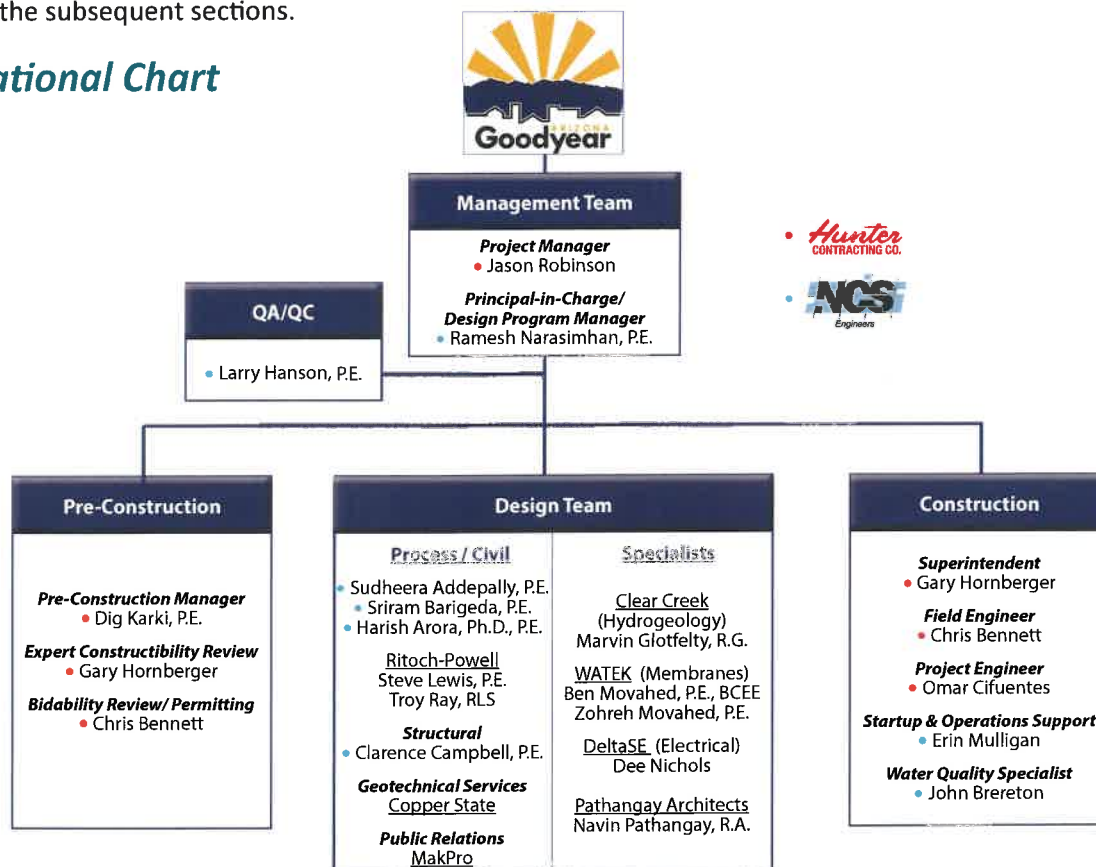
Safety Management

At Hunter, safety is our highest priority. We believe that Safety is a choice that our employees make multiple times a day. We train extensively to insure that our people make the right decisions to be safe. Safety begins with careful planning. Our Work Plans include safety information and procedures to be followed throughout the activity. By requiring that these Work Plans be shared with the crews prior to performing work, we further help our crews make the safe decision. Throughout the project, Hunter's safety department will conduct independent site inspections, safety training, and pre-job risk and task hazard analysis. Together with the project Superintendent, they will develop a job-site specific safety plan with input from the project team and all subcontractors. Hunter will require a site safety orientation program for each subcontractor or vendor when they come to the project. These orientations will include participation from senior management from each subcontractor. Potential safety hazards for each scope of work are discussed and safety measures are identified and incorporated into the site safety plan. All workers are required to complete a site orientation prior to performing any work on the project. ***This safety process that our team will implement contributes to our current EMOD ratio of 0.768, compared to the industry average of 1.0.***

2. EXPERIENCE OF KEY PERSONNEL & SUBCONTRACTORS

Hunter offers a dynamic team of in-house experts and specialized subconsultants that are capable and qualified to perform this work, as shown in the design-build organizational chart below. The expertise of each individual is discussed in the subsequent sections.

Organizational Chart





Jason Robinson | Project Manager

Years of Experience: 20 Total - 9 with Hunter | **Education:** Business Management Studies

Mr. Robinson is a team oriented leader and manager with over 20 years of construction experience. He is skilled in project management, team development and leadership, strategy development, process implementation and public speaking. His track record of delivering projects with a high level of excellence & customer service is second to none.

Comparable Projects:

- **Pinal Valley Well No. 34** - Design, Construct, and Equip Pinal Valley Well No. 34, and a Cooling Tower and Arsenic Removal Facility at the Arizona City Tank Site in Pinal Valley water system.

Role: Project Manager | **Project Costs:** \$5.3 M original / \$4.9 M anticipated | **Dates:** 3/17 - 10/17 anticipated

Owner: AZ Water Company | **Reference:** James Wilson 602-240-6860

- **Alamosa Water Production Facility** - Design-build project that included engineering this new 2.0 MG circular prestressed concrete reservoir; a new 3,000 square foot building; a new booster can pump station that included vertical turbine pumps, discharge piping, valves, magnetic flows, instrumentation; and pump controls, including coordination with the City's SCADA system.

Role: Project Engineer | **Completed Contract Value:** \$7.9 M | **Dates:** 12/04 - 4/06 | **Owner:** City of Chandler

Reference: Victoria Sharp, City of Chandler 480-782-3628

Dig Karki, P.E. | Pre-Construction Manager

Years of Experience: 19 Total - 7 with Hunter | **Education:** M.S. Construction, B.S. Civil Engineering

Mr. Karki has more than 19 years of industry experience in engineering and construction. He has completed over \$150 million in projects over the span of his career in various capacities, including design, field and project engineer, superintendent, estimating, and project management. For the last three years he has focused on pre-construction activities and has been responsible for the pre-construction activities on 17 DB and CMAR projects valued at more than \$48 Million, consisting of: site development including infrastructure utilities, roads, parks including infrastructure, water and wastewater projects and utility improvements projects.

Comparable Projects:

- **Pinal Valley Well No. 34** (see details on page 9)

- **JGM & STWTP Filter Rehab CMAR** - Hunter, as a CMAR contractor provided for maintenance activities at the JGMWTP and STWTP. The project included rehabilitation of the plant filters, under drains and back wash systems.

Role: Pre-construction Manager | **Project Costs:** \$4.2 M | **Dates:** 12/15 - 3/17 | **Owner:** City of Tempe

Reference: Erich Bonz 480-850-5827

Gary Hornberger | Project Superintendent

Years of Experience: 39 Total - 19 with Hunter | **Education:** General Contractors Association

Mr. Hornberger will play a key role during the pre-construction period planning as well as facilitate the construction operations. He has broad knowledge of pumps, equipment, piping systems, tanks, and industrial construction means and methods. He provided field supervision for a 6,000 GPM arsenic treatment facility and for rehabilitation of the water system at Kitt Peak National Observatory. This blend of knowledge and experience provides a foundation for the team on which to base construction cost and scheduling evaluations for this CMAR project. As Project Superintendent, he will apply his 36 years as an industry millwright and field supervisor during the pre-construction phase to identify constructibility issues, confirm that the means and methods are appropriate given the specified materials, and help develop the construction schedule. During construction, he will be responsible for field operations and strict adherence to site and project safety protocols. He will monitor and maintain the project schedule, provide quality assurance, and work directly with qualified subcontractors. **Mr. Hornberger has experience with successfully installing and commissioning new valve/piping and controls systems, as shown below:**

Comparable Projects (see section 3):

- **Direct System Wells** - Project Superintendent

- **JGM & STWTP Filter Rehab CMAR** - Project Superintendent (see details above)

Chris Bennett | Project / Field Engineer

Years of Experience: 25 Total - 1 with Hunter | **Education:** B.S. Construction Management

Mr. Bennett is a recent graduate from Arizona State University's Del E. Webb School of Construction, joined Hunter Contracting mid 2016 bringing a fresh perspective to the projects he works on. His enthusiasm and attention to detail find additional value engineering ideas providing project owners with better than expected results. Mr. Bennett began

his career proudly serving in the US military before entering the construction industry. He has worked as a laborer, leadman, and foreman before and while attending college. His focus is on water/wastewater projects, while in college he interned with several local construction firms, that coupled with his military training and experience with scheduling and managing supplies and suppliers bring additional value to his projects. During his tenure at Hunter he has proven to be a valuable asset to both Hunter and project owners.

Comparable Projects (see section 3):

- **Corgett Water Reclamation Facility Dome Replacement** - Project Engineer, Superintendent, & Asst. Project Manager
- **JGM & STWTP Filter Rehab CMAR** (see details above)

Omar Cifuentes | Project Engineer

Years of Experience: 12 Total - 1 with Hunter | Education: B.S.

Mr. Cifuentes joined Hunter Contracting Co. in 2014 as a project engineer. His attention to detail and enthusiasm bring added value to each of his projects. He began his career in the construction industry working at his family's business. His deep roots in the construction industry are evident in his ability to analyze each project and develop strategies for performing the work in a safe and consistent manner. Mr. Cifuentes is responsible for overseeing all project activities starting with the pre-construction services to everyday general construction services. He ensures that project-specific requirements and permits are issued and in place to keep projects on schedule. Mr. Cifuentes attends all pre-construction, design, and review meetings for his projects. He provides project scheduling, daily production reporting, job costing, pay estimates, on-site tracking of materials, subcontractors, and on-site daily project management.

Comparable Projects:

- **JGM & STWTP Filter Rehab CMAR** (see details on page 10)
- **Palm Valley WRF Mechanical** - Expansion to 5.8 MGD capacity, new headworks, two SBR basins, blower building, SBR blowers, electrical room, pumps, centrifuge, media, all necessary interconnections, piping, electrical work, instrumentation, structural work, shoring, and earthwork.

Role: Project Engineer | **Project Costs:** \$4.9 M original / \$3.2 M final | **Dates:** 8/16 - 8/17 | **Owner:** Liberty Utilities

Reference: Rich Cohen 714-614-8930



Ramesh "Ram" Narasimhan, P.E. | Project Principal & Design Program Manager

Years of Experience: 29 Total - 20 with NCS | Education: M.S. Environmental, B.S. Civil Engineering

Mr. Narasimhan has 29 years of experience in all aspects of water quality and treatment, civil and environmental engineering, and regulatory compliance. Mr. Narasimhan is known for his strong background and outstanding reputation in the areas of groundwater treatment, well equipping, disinfection systems, surface water treatment, solids disposal, water system planning, and water quality research. He has managed over \$50M of work in the West Valley. These include well equipping, water treatment, and steel tank projects. He has served as a Project Manager (PM) for over 60 contaminant reduction projects since 1995 (arsenic, iron/manganese, nitrates, radionuclides, TDS, etc.)

- He is a hands-on principal committed to client satisfaction and on-time delivery within budget.
- His offers nationally recognized expertise in optimizing membrane treatment design, brine handling and disposal issues, water system planning, research, and construction management.
- Mr. Narasimhan has served as PM for 50 similar steel tank and 20 well projects.

Desalination Experience:

- He has extensive experience with planning and implementation of desalination and reverse osmosis projects for the City of Phoenix; City of Patterson, CA; Thunderbird Farms Improvement District; Coyote Creek Mutual Domestic Water Users Association, NM; and Rio Rancho, NM (Wells 12 & 23).

Comparable Projects (see section 3 for details): Principal for projects 2, 3, 4, 5, 8, 9.

Sudheera Addepally, P.E., LEED | Design Team Leader

Years of Experience: 15 Total - 13 with NCS | Education: M.S. Environmental, B.S. Civil Engineering

Ms. Addepally has over 15 years of civil engineering experience in water/ wastewater treatment, process design and construction phase services. Ms. Addepally offers expertise in well design, arsenic/nitrate treatment, bench and pilot testing, chemical feed facilities and water chemistry.

- Ms. Addepally offers extensive experience in managing advanced water treatment projects, with a focus in the west Valley. She has a positive working relationship with the City's engineering and operations staff, and understands how to engage City staff positive manner and coordinate design related activities.
- She has managed multi-million projects involving wells, booster stations and advanced water treatment facilities.

- She served as lead design engineer for the Coyote Creek and Rio Rancho RO system and well projects.
- Ms. Addepally has also designed several prefabricated buildings for operations and treatment equipment.

Comparable Projects (see section 3): Project Engineer for projects 2, 3, 4, and 9.

Sriram Barigeda, P.E. | Well Site & Steel Tank Design

Years of Experience: 10 Total - 7 with NCS | Education: M.S. Civil Engineering

- Mr. Barigeda is a PM and CM with NCS and possesses 10 years of experience in construction administration with concrete and steel structures, buildings, pipelines, electrical, and treatment facilities.
- He assisted the City of Phoenix, City of Santa Fe, Mohave County, Navajo Nation, and Town of Mammoth on various construction management activities for water and wastewater facilities. These included wells, storage tanks, force mains, gravity lines, pump stations and pressure piping.
- He has completed the design of several steel tanks for the cities of Phoenix, Avondale, and Mammoth.
- He also managed the construction and startup of the facilities, piping and pumping systems.
- Mr. Barigeda reviewed shop drawings and submittals, which involved groundwater treatment equipment, water treatment residuals handling systems, and civil, mechanical and structural systems.
- His duties included performing daily inspections, completing inspection reports, reviewing payment applications, coordinating field activities, and resolving potential conflicts.

Comparable Projects (see section 3): Project Manager for project 2, PE for projects 3 and 9.

Larry Hanson, P.E. | QA/QC Officer

Years of Experience: 39 Total - 15 with NCS | Education: B.S. Civil Engineering

Mr. Hanson has 40 years of project management, design, permitting, and construction administration experience on a wide range of water and wastewater treatment and infrastructure projects. Most recently, he has served as assistant PM for the design of several water treatment, buildings, and well facilities for the cities of Avondale, Phoenix, and Rio Rancho. In this role he coordinated the engineering disciplines required for design of the treatment systems and buildings including process, electrical, instrumentation and controls, architectural, structural, plumbing, HVAC, and civil, as well as interfacing with the City's Engineering, Utility Department, and operations and maintenance staff.

- He has participated on design teams for more than twenty groundwater treatment facilities located in Arizona, New Mexico, and Nevada. The treatment technologies have included membrane, filtration and adsorption processes, and varied in capacity from 500 gpm to 9,000 gpm. Construction costs on these projects varied from \$1.5 to \$7.5M.
- Mr. Hanson has extensive experience with building codes and client design standards.
- He has managed the design of 15 treatment buildings including prefabricated structures.
- PM for several well drilling and equipping projects.

Comparable Projects: QA/QC Officer for project 2. PM for projects 4 and 8.

Harish Arora, Ph.D, P.E. | Process Engineer and Water Quality

Years of Experience: 27 Total - 14 with NCS | Education: Ph.D & M.E. Environmental, B.S. Civil Engineering

Dr. Arora is a Vice President with NCS and is the National Director of Water Treatment processes. Dr. Arora has authored over a dozen papers on advanced water treatment and technology and is a leader in AWWA committees on water quality.

- He is a national expert on water treatment and quality issues including application of advanced treatment technologies.
- Dr. Arora has authored over a dozen papers on advanced water treatment and technology and is a leader in AWWA committees on water quality.
- His recent related projects include developing membrane treatment strategies for TDS reduction for Rio Rancho, NM for wells 12 and 23 and for the City of Patterson and Stanislaus County in California.
- He also developed design and treatment protocols for the Western Canal Water Treatment Plant brine concentration pilot investigations (City of Phoenix).
- He's participated in numerous pilot investigations, small to large municipal water systems over the past 20 years.

Desalination Experience | Comparable Projects (see section 3):

- Coyote Creek Water System Planning Study and Final Design, Catron County NM - QA/QC.
- Wells 12 & 23 Desalination Treatment System Planning & Design, Rio Rancho - Lead Process Engineer

John Brereton, Ph.D, P.E. | Water Quality Specialist

Years of Experience: 20 Total - 17 with NCS | Education: Ph.D Environmental Engineering

- Dr. Brereton offers expertise in water quality master planning, water chemistry, corrosion chemistry, water resources, & water quality research.
- His experience focuses primarily on research studies for water/wastewater processes.
- He has completed several projects involving the WRF and the WaterReuse Foundation, many which involve distribution system water quality.

- Dr. Brereton is an expert in redox chemistry, equilibrium chemistry and post treatment chemical stabilization of drinking water, including related computer models.
- He is participating as a member of an AWWA workgroup which is preparing comments on distribution system monitoring for the Total Coliform Rule six-year review.

Desalination Experience | Comparable Projects (see section 3): Project Engineer for project 4.

- City of Rio Rancho Well 12 and 23 - He performed equilibrium chemistry analysis of desalinated water to determine distribution system corrosion and water quality impacts; he subsequently identified chemical stabilization techniques to correct these issues.

Erin Mulligan | Startup & Operations Support

Years of Experience: 22 Total - 2 with NCS | Education: B.S. Microbiology

- (See Resume for details)



WATEK Engineering Corporation officially commenced operation as an independent firm in January 1996 with a focus on providing expert engineering solutions for membrane facilities. Their confidence in membranes as an "absolute" barrier technology for removal of contaminants and their reliability in protection of public health have resulted in our strong commitment and passion for membrane systems.

Focusing and specializing in all types of membrane systems, now 100% of their projects are membrane facilities.

WATEK has served as NCS' membrane specialist for the past 10 years.

WATEK staff has project experience with over 60 various sizes and types of membrane systems such as Seawater and Brackish Water Reverse Osmosis (RO), Nanofiltration (NF), Ultrafiltration (UF), Microfiltration (MF), Membrane Bio-Reactors (MBR) and Electro-Dialysis Reversal (EDR) systems for drinking water, wastewater treatment, contaminant removal and wastewater reuse applications. These facility sizes range from small (a few gallons per minute) systems up to very large projects, with 130 million gallons per day (MGD) capacities.

WATEK's vast wealth of knowledge and experience in membrane and RO facility design, both nationally as well as internationally provides their clients with the assurance that the solutions provided by WATEK will meet and exceed foreseeable regulations and their client's long-term goals.

Ben B. Movahed, P.E., BCEE | Lead RO Process Engineer

Years of Experience: 32 Total - 22 with WATEK | Education: M.S. Environmental, B.S. Civil Engineering

Mr. Movahed has over 32 years of engineering experience in study, evaluation, design and construction services for water and wastewater facility projects. For the past two decades, Mr. Movahed has specialized in advanced membrane technologies and been involved in over 50 advanced treatment technology projects.

- Project technologies include Reverse Osmosis, Nanofiltration, Desalination, Electro-Dialysis Reversal (EDR), Microfiltration, Membrane Bio-Reactor (MBR), Ultrafiltration and Ion Exchange treatment.
- He was the leading author of the Ten State Standard Policies for Microfiltration-Ultrafiltration (MF/UF) and Nanofiltration-Reverse Osmosis (NF/RO).
- He has been in direct communication with EPA staff, as well as various state regulatory agencies through his activities as the chair of AMTA Government Affairs and Publication Committee.
- He has been involved in some of the world's largest membrane plants ranging up to 130 MGD in capacity.

Comparable Projects (see section 3): Membrane Design Engineer for projects 7, 8, and 9.

Zohreh Y. Movahed, Ph.D., P.E. | Process Engineer

Years of Experience: 31 Total - 2 with WATEK | Education: Ph.D. & M.S. Environmental, B.S. Civil Engineering

- (See Resume for details)

Ludvik Electric Co. was formed in Colorado in 1980. Since then, Ludvik Electric Co. has put in place over \$1.2 billion dollars of electrical installations by completing hundreds of projects throughout the Western United States, including Hawaii. In 1996, the Arizona division of Ludvik Electric was established. This branch has completed over \$332 Million in electrical and instrumentation work, with their main emphasis in the water and wastewater sector. Ludvik Electric Co. is a member of the Design-Build Institute of America (DBIA), the Association of General Contractors (AGC/C) and the Arizona Builders' Alliance (ABA). Ludvik has proudly served as the City's electrical contractor of choice for the past several years. They will be represented by Joe Miller for this project, and are exclusive to the Hunter/NCS team.



Clear Creek Associates (CCA) is an exclusive member of our teams and offers locally-based, quality-focused, and very responsive hydrogeologic services to their clients. CCA has a depth of credentials and corporate licenses, including Arizona Technical Registration in Geology, Arizona Well Driller License (#672), and Registrar of Contractor License (#151387, Type A-4).

CCA has a substantial depth of resources, with a staff of 27 in their Scottsdale office, from which their portion of the project will be managed and staffed. CCA credentials include 19 Arizona-Registered Professionals and more than 400 years of combined experience in geologic and hydrologic investigations. CCA has been a leader in water well design and installation since the firm was founded. The firm experience of CCA in the design, installation and construction inspection of public supply wells in the Salt River Valley and throughout the state is unsurpassed. Their knowledge of the local hydrogeology and demographic issues within Goodyear, along with their experience with resolution of problems as an interactive team will be invaluable to the success of this project. CCA project personnel have worked on many similar well installation projects, and they are currently in the process of replacing COG-19. Their strength is in hydrogeology and wells, and they routinely team with engineering and construction firms such as NCS/ Hunter to deliver complete design build projects.

**CLEAR
CREEK
ASSOCIATES**



**Unmatched Production Well
Design Experience**

The firm experience of CCA in the design, installation and construction inspection of public supply wells in the Salt River Valley and throughout the state is unsurpassed. Hunter, NCS and CCA have worked together on over 20 well design projects over the past 20 years.

Marvin F. Glotfelty, R.G. | Principal Hydrogeologist

Years of Experience: 30 Total - 23 with CCA | Education: M.S. & B.S. Geology

Mr. Glotfelty is a co-founder and Principal Hydrogeologist with CCA. He received his degrees in geology from Northern Arizona University, and is a Registered Professional Geologist in Arizona and California, as well as a Licensed Water Well Driller in Arizona. During his professional career spanning over three decades, he has been involved with the design, installation, rehabilitation, or abandonment of over 800 water wells in the southwestern United States, and he has served as Technical Director of the Arizona Water Well Association for over 25 years (since 1990). He has given over 100 presentations on hydrogeologic and water well topics, including lectures or webinars in 17 U.S. states as well as in five other international countries (Australia, Canada, Mexico, Bolivia, and Columbia). He has authored over 20 publications, including a Glossary of Driller's Terms published by the National Ground Water Association (2004), and editorial review of Chapter 10 of the 3rd ed. Groundwater & Wells published by Johnson Screens Co. (2007). In 1995, he received the City of Phoenix Mayor's Environmental Award for his work with rehabilitation of municipal wells to improve their water quality, and he received national prominence by being selected as the National Ground Water Association's Distinguished McElhiney Lecturer for 2012. Mr. Glotfelty is recognized as one of the premier hydrogeologists in the State, and a leading water well expert in the southwestern United States.

The most recent West Valley water well installation project experience of CCA includes: Goodyear - Well #19 Replacement and Amaranth Well #2; Peoria - Butler Drive Recharge Well, and Well W301; Buckeye - Arroyo Seco Well; and Surprise - Mountain Vista Ranch Well #2, Surprise Farms Well, Surprise Point Well #1, and Marley Park Well #2.

Delta Systems Engineering is an electrical engineering and control system integration firm with extensive experience providing design, construction services, and programming for electrical and control systems for industrial facilities. With operations in California, Arizona, and Nevada, DeltaSE has completed over 2,000 projects throughout the Southwest ranging from brief letter reports to large multi-million dollar design and SCADA system integration projects. NCS has worked with DeltaSE since 1998, when both firms were just founded. The principals have enjoyed a hands on working relationship as the firms grew together.



Delbert (Dee) Nichols III, E.I.T. | Electrical Design Engineer

Years of Experience: 16 Total - 12 with Delta | Education: B.S. Electrical Engineering Technology

- Mr. Nichols is an experienced project manager and electrical controls system designer.
- He also has more than three years of programming and development experience, as well as over four years of extensive electrical and control troubleshooting experience.
- He has a Bachelor of Science in Electrical Engineering Technology, and he is an Engineer In Training (E.I.T.).
- Mr. Nichols' expertise ranges from development of initial conceptual and/or detailed designs to installation, troubleshooting energy studies, and startup of systems.
- Mr. Nichols has been the project manager on 40 NCS design projects
- Mr. Nichols has experience generating designs and managing projects ranging from stand-alone packaging systems and water production facilities to multi-site networked video surveillance systems.
- He has completed several electrical and instrumental design projects for the Phoenix remote facilities and wells.
- Project Engineer for Site 21 Treatment System Expansion and Adaman Wells.

RITTOCH-POWELL & Associates (RPA) (Civil / Site Design) - RPA is a locally owned, multi-disciplined survey and engineering firm with over 50 dedicated professionals located in their Mesa and Phoenix offices. Their team's site civil design and surveying experts have delivered multiple municipal agency infrastructure projects utilizing a variety of alternative delivery methods including design-build and CMAR. RPA specializes in water and sewer design, survey and legal descriptions.



Steve Lewis, P.E. | Troy Ray, RLS

RPA has also designed many alternative wastewater systems such as pressure sewer and subsurface drip disposal areas. Their reputation for quality professional services is validated by their nearly four decades of successful survey, pre-design, design, and post design project completion for the Town of Gilbert and several other east valley agencies. They have established relationships with the City of Goodyear and many agencies, project stakeholders, land owners, and utility companies, and firm history has enabled them to complete a variety of assignments similar to this project.



Pathangay Architects, LLC (Building Design) - was formed by Navin Pathangay, a successful architect in Arizona who has national and international architectural experience. He has contributed to projects ranging from residential to commercial developments. He is highly skilled in design, management, and is capable of leading teams efficiently to quickly produce innovative quality design and construction documents for a



variety of project types and follow through construction administration. His multidisciplinary design firm, Pathangay Architects, is where design begins with the inception of an idea. At Inception Development, they take businesses from a napkin sketch to a complete built environment. Inception Development was created to help exclusive clients synthesize their thoughts into reality. Mr. Pathangay believes that a concept needs to translate and transpose itself into all aspects of the business.


Copper State Engineering (CSE) is an Arizona owned firm founded in 1996 that provides civil and geotechnical engineering services throughout Arizona. CSE has provided excellent and cost effective geotechnical and civil engineering Services on more than 4,000 projects within the arid environment and Southwest soil conditions.

MakPro Services specializes in community public outreach and involvement, partnering, meeting management, and project support services in Arizona and the Southwest since 1999. Teresa Makinen, Principal for MakPro Services, has experience in a wide variety of projects to include large municipal and private construction projects with an emphasis on water-related projects. She has developed public involvement and public outreach programs for such projects as water treatment and water reclamation plants, water resource master plans, pipeline projects, power plant siting, construction and improvement projects, and alignment studies. MakPro continually works with local municipalities, engineering firms, and general contractors on large construction projects, focusing on recent Goodyear projects.


3. EXPERIENCE OF PRIME FIRM

In over 30 years of providing engineering services throughout the Southwest, Hunter and NCS have developed a wealth of experience to offer our clients. Being local firms, we understand the site specific issues. The following are key examples of our water treatment, RO systems, wells, booster stations, storage tanks, and DB projects.


Project	Description
GOODYEAR PROJECTS	
1 Corgett WRF Aeration Basin Dome Replacement & Odor Control Firm/ Role: HUNTER - General Contractor Project Owner: City of Goodyear Contact: Barbara Chappell, P.E. 623-333-4428 Project Designer/Architect: Waterworks Engineering Rob Bryan 480-661-1742 Original Budget: \$1.2 M Size: 5 MGD Contracted / Final Construction Costs: \$1.2 M	<ul style="list-style-type: none"> This project included but was not limited to - demolishing existing dome over the aeration basin and clarifier and replacing it with a new flat cover supported by an external truss system. Demolition work also included removing walkway, handrails, lift fixtures, etc. located within the aeration basin and clarifier existing dome cover. All steel items (pipes, supports, center cage, etc.) under the roof were to be cleaned and re-coated as specified. Existing fabric baffles were removed and replaced with new baffles. The project also included refurbishing the existing odor control system with new pumps, instrumentation, piping and associated appurtenances. New chemical resistant coating will be applied to the existing odor control system pad as specified.   <p>Construction Dates: 4/16-3/17 Team Members / Role: C. Bennett - Assistant PM, Superintendent, & PE</p>

Project	Description
<p>2</p> <p>Site 21 Arsenic Treatment Expansion</p> <p>Firm/ Role: NCS - Prime Firm - design</p> <p>Project Owner: City of Goodyear</p> <p>Contact: Troy Tobiasson • 623-693-2661</p> <p>Project Designer/Architect: NCS Engineers</p> <p>Original Budget: \$350,000</p> <p>Size: 4 MGD</p> <p>Contracted / Final Construction Costs: \$350,000 (design) \$1.5 M (construction)</p>	<ul style="list-style-type: none"> NCS provided design and construction management services for the expansion of the existing ATF from 1,900 gpm to 3,000 gpm. The extra capacity was needed to accommodate a third well with a capacity of 1,100 gpm. The system used a GIM adsorption process with pH adjustment using carbon dioxide. The project elements included a new 14-foot custom vessel and manifold piping, control valves, liquid disinfection systems at the three well sites, modifications to the existing backwash supply piping configuration, new electrical panels and wiring, and reconfiguration of the PLC program for the site. NCS provided permitting services for all agencies. <p>Construction Dates: 6/17- ongoing</p> <p>Team Members / Role: R. Narasimhan - Principal; S. Addepally - PE; S. Barigeda - PM; L. Hanson - QA/QC</p>
WATER/ WASTEWATER TREATMENT & MEMBRANE FACILITIES	
<p>3</p> <p>Maricopa- Palo Verde 5 MGD WTP Expansion</p> <p>Firm/ Role: Hunter & NCS - DB Team</p> <p>Project Owner: Global Water</p> <p>Contact: Ron Lakefield • 480-229-3409</p> <p>Project Designer/Architect: NCS Engineers</p> <p>Original Budget: \$7 M</p> <p>Size: 5 MGD</p> <p>Contracted / Final Construction Costs: \$5 M</p> <p>Construction Dates: 1/17-ongoing</p>	<p>As Global's on call engineer, NCS has been providing design and permitting services for several critical WWTP projects with key deadlines:</p> <p>Palo Verde WWTP Expansion serving the Town of Maricopa - NCS provided preliminary design, final design and APP and Reuse permitting services for the 5 MG expansion of this facility. The innovative treatment concept uses an integrated fixed film activated sludge (IFAS) process, along with anoxic and aeration tanks, and clarifiers. The new process replaces the existing sequential batch process.</p> <p>NCS/Hunter partnered on the design and construction of the IFAS project.</p> <p>Team Members / Role: R. Narasimhan -PM; S. Addepally - PE; L. Hanson - QA/QC Hunter - construction of aeration basins and clarifiers.</p> 
<p>4</p> <p>Coyote Creek Water System Planning Study & Final Design</p> <p>Firm/ Role: NCS - Prime Firm</p> <p>Project Owner: Coyote Creek Domestic Water District</p> <p>Contact: Liz Thayer • 928-587-9022</p> <p>Project Designer/Architect: NCS Engineers</p> <p>Original Budget: \$1.8 M</p> <p>Size: 300 gpm</p>	<ul style="list-style-type: none"> NCS performed water system planning and design services, including well design, well testing, water quality testing, oxidation/filtration and reverse osmosis system treatment design. NCS coordinated planning, field testing and funding activities. The well water quality exceeds the primary maximum contaminant levels (MCLs) for gross alpha particles and combined radium, and secondary MCLs for TDS (3000 mg/L), chloride, zinc, iron and manganese are exceeded. NCS performed well testing, pilot testing and final design. The evaluation also included an assessment of desalination impacts on piping and corrosion. <p>Contracted / Final Construction Costs: \$1.2 M</p> <p>Construction Dates: ongoing</p> <p>Team Members / Role: R. Narasimhan -Principal; S. Addepally - PE; L. Hanson - QA/QC; J. Brereton Water Quality</p> 
<p>5</p> <p>Apache Junction Water District Drinking Water Program</p> <p>Firm/ Role: Hunter & NCS - DB Team</p> <p>Project Owner: Apache Junction Water District</p> <p>Contact: Frank Blanco • 480-982-6030</p> <p>Project Designer: NCS</p>	<p>The NCS/Hunter DB Team provided engineering and construction services for this critical water treatment project at Well 6. NCS designed minor modifications and improvements to an arsenic treatment facility in order to improve the treatment aspects and the overall integrity of the facility. The major improvements included Phase 1 included a filter rebuild, new rapid mixer, additional dewatering lagoon and well header modification, building/HVAC improvements, and reprogramming of the system.</p> <p>Original Budget: \$1.5 M Size: 1 MGD</p> <p>Contracted / Final Construction Costs: \$1.5 M Construction Dates: 08-09</p> <p>Team Members / Role: R. Narasimhan - PIC; S. Addepally - PE; L. Hanson - QA/QC</p>


Project	Description
<p>6 Sundance Arsenic Treatment & Water Storage Facility</p> <p>Firm/ Role: Hunter - CM@R Project Owner: Buckeye Land Development Contact: Ryan Christensen, P.E. 602-279-1234 Project Designer/Architect: RBF Consulting - design Ryan Christensen, P.E. 602-279-1234 Original Budget: \$8,432,000 Size: 6,000 gpm Contracted / Final Construction Costs: \$9,614,349 (owner added scope of a chlorine generator upgrade) Construction Dates: 7/05-1/07 Team Members / Role: G. Hornberger - Superintendent</p>	<p>Construction of this state-of-the-art 6,000 gpm arsenic treatment facility included six large above ground treatment vessels, two 200,000 gallon above ground steel backwash tanks that reclaimed 99% of backwash water, a 50,000 gallon settling tank, a 2.5 MG water storage tank, and addition of four booster pumps. Additional elements included suction and discharge piping, valves, meters, cathodic protection, electrical upgrades, and installation of PLCs and SCADA controls to fully automate the plant.</p> <p>Keeping the existing water supply facility in operation during construction and testing was one of the project's major challenges as it was the only water source for the Sundance community and surrounding residential and commercial developments. The Hunter team constructed and commissioned the treatment facility without major water supply disruption through careful planning, phasing, and coordination during both design and construction phases.</p> <p>Communication and coordination was key to successful completion of the project. Hunter worked closely with Buckeye, Meritage Homes, RBF Consulting, as a team to facilitate the design and construction process through weekly meetings discussing concerns, suggestions, and appropriate solutions. This helped accelerate the design approval and keep construction within federally imposed time frames. Excellent communication helped save time and avoided conflicts that would have added to the cost of the project.</p>
<p>7 James City County Brackish Groundwater Membrane Desalination Plant</p> <p>Firm/ Role: WATEK - RO Membrane Process Design Project Owner: James City Service Authority Contact: Bruce Capps • 757-259-4098 Project Designer/Architect: Buchart Horn, Inc. Dan Cargenl • 443-297-0092 Original Budget: \$10 M Size: 5 MG Contracted/Final Construction Costs: \$10.5 M Construction Dates: 3/03-4/05</p>	<p>James City Service Authority (JCSA) operates the largest groundwater based water supply system in Virginia. WATEK Engineering were the process engineers responsible for initial evaluation of source waters and applicable treatment technologies, final recommendations, and design of a 5 MGD brackish groundwater desalination plant. Two sources of groundwater were chosen, Lower Potomac (for RO feed) and Middle Potomac (for blend), to comply with the withdraw permits and minimize post treatment needs as well as addressing silica fouling potential. There are 4 RO skids in the facility with cartridge filters and scale inhibitor as pretreatment. The facility has received two awards from American Membrane Technology Association (AMTA) and the American Council of Engineering Companies (ACEC).</p> <p>WATEK engineers designed the RO desalination, post treatment, degasifiers, controls and chemical facilities and were also involved in facility testing, startup, membrane loading and plant commissioning. After 12 years of utilizing the same membranes, WATEK also assisted JCSA with membrane replacement in January 2017</p> <p>Team Members / Role: B. Movahed - Lead Process Engineer</p>
<p>8 Pennsylvania State University Water Treatment Plant</p> <p>Firm/ Role: WATEK - UF/ RO Membrane Process Design Project Owner: Buchart Horn, Inc. Contact: Rachel Prinkey • 814-280-7887 Project Designer/Architect: Buchart Horn, Inc. Dan Cargenl • 443-297-0092 Original Budget: \$33 M Size: 5.2 MGD Contracted/Final Construction Costs: \$35 M Construction Dates: 7/15-4/17</p>	<p>The Pennsylvania State University (PSU) owns and operates a public community water system located in State College, Pennsylvania. Heavy storms and extended rain events have resulted in increased turbidity levels and on occasion, when turbidity levels exceed acceptable limits, the affected wells must be taken off-line.</p> <p>Due to these factors, PSU initiated a project to evaluate treatment of the water supply. After careful consideration of pilot treatment results, PSU elected to pursue a vacuum low-pressure membrane filtration system with a powdered activated carbon system for enhanced organics removal and reverse osmosis membrane filtration for hardness removal.</p> <p>WATEK Engineering Corporation designed the membrane filtration portions of the 5.2 MGD facility. The integrated membrane plant consists of Microfiltration followed by Nanofiltration for softening and emerging contaminant removal.</p> <p>Team Members / Role: B. Movahed - Membrane System Design Engineer Z. Movahed - Project Engineer</p>

Project	Description
<p>9 Wells 12 & 23 Desalination Treatment System Planning & Design</p> <p>Firm/ Role: NCS - Prime Design WATEK - RO Membrane Process Design Project Owner: City of Rio Rancho Contact: Steve Gallegos - PM 505-259-2642 Project Designer/Architect: NCS Engineers Original Budget: \$1.7 M (#12) and \$9 M (#23) Size: 1200 gpm Contracted/Final Construction Costs: \$1.7 M Construction Dates: 12/10-12/11</p>	<ul style="list-style-type: none"> NCS designed two treatment systems to reduce TDS, iron and uranium levels. Each system was designed for a flow of 1200 gpm and uses an 80% water recovery rate and a two stage design. NCS designed this project in three months to meet tight ARRA funding requirements. For Well 23, NCS also designed the RO system, iron removal filters, chemical feed system and building facilities. We conducted a hydraulic analysis to determine pump and motor sizes. We conducted aquifer flow and water quality testing to determine how the well bore could be modified to improve water quality. NCS evaluated desalinated water quality for impacts on the distribution system. NCS recommended post treatment stabilization chemicals to mitigate corrosion. <p>Team Members / Role: N. Narasimhan - Principal H. Arora - Water Quality Engineer J. Brereton - Corrosion Engineer B. Movahed - Membrane System Design Engineer</p> 

WELL DRILLING & EQUIPPING

<p>10 Gilbert Well No.29 (Direct System Well)</p> <p>Firm/ Role: Hunter - CM@R Project Owner: Town of Gilbert Contact: Jeff Kramer • 480-965-1418 Project Designer/Architect: Wilson Engineers Steve Todd • 480-893-8860 Original Budget: \$1.1 M Size: 1,000 gpm Contracted/Final Construction Costs: \$1.2 M Construction Dates: 11/09-3/12 Team Members / Role: G.Hornberger - Superintendent</p>	<p>Hunter provided a complete development of a new well site. Key elements involved installation of the well pump and motor, chlorination system with fiber glass chlorination building, dry well, retention basin, and new electrical service, including a switch-gear and transformer to connect to SRP Power. Additional scope included installation of approximately 500 linear feet of sewer and 24-inch water line. Hunter completed this project, nestled in a residential neighborhood, without complaints from residents.</p> <p>DESIGN PHASE SERVICES: Constructibility reviews, value engineering, alternative system analysis, cost models, GMP, construction phasing plans, scheduling, procurement of long-lead equipment, safety and quality control plans.</p> 
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RESERVOIRS & PUMP STATIONS

<p>11 Gilbert 2 MG Reservoir & Pump Station (164th Street / Riggs Road)</p> <p>Firm/ Role: Hunter - DB Contractor Project Owner: Town of Gilbert Contact: Jack Gierak • 480-503-6176 Project Designer/Architect: Wilson Engineers Steve Todd • 480-893-8860 Original Budget: \$8.5 M Size: 2 MG Contracted/Final Construction Costs: \$8.4 M Construction Dates: 7/07-6/08</p>	<p>Design and construction of a 2 MG water storage reservoir and a booster pump station utilizing vertical turbine pumps installed in a reinforced concrete wet well structure. The structure of the pump station supports the pumps, discharge header, valving, metering, and other appurtenant equipment to provide continuous rated operation of the pump station with one pumping unit out of operation for maintenance. The reservoir utilizes a reinforced concrete design with vertical wall and hopper bottom geometry. The roof of the reservoir is a rigid roof system with galvanized purlins and stringers supporting continuous seam standing rib aluminum roofing. Scope also included drilling and equipping a new well, abandon an existing well, calcium hypochlorite disinfection system, electrical, SCADA and PLC systems.</p> <p>DESIGN PHASE SERVICES: Design camp, public meetings, design review board meetings, alternative system analysis, arsenic treatment assessment, site survey, geotech investigations, scheduling, constructibility reviews, long-lead procurement, value engineering, cost modeling, and GMP.</p> <p>Team Members / Role: G. Hornberger - Superintendent</p> 
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4. SUBCONTRACTOR SELECTION PLAN

a) Partnering - Hunter is dedicated to partnering with only the most qualified and trusted subcontractors and suppliers. Over our more than 55 years in business, Hunter has developed a Subcontractor Pre-qualification Program that allows us to screen subcontractors and suppliers before sending the project out to bid. This insures that your project will be built by subcontractors familiar with working on active water treatment facilities who are sensitive to the importance of maintaining plant operations through the project.

Through the pre-construction phase, Hunter will seek to have three quotes from pre-qualified vendors for all major scopes of work as we develop cost estimates and GMPs. As we provide the City with "open book" pricing, Goodyear will be able to thoroughly review all aspects of the GMP development and feel certain that Hunter has provided the best value for the project. Additionally, we will work closely with our suppliers and subcontractors to identify and quantify areas of cost savings for the City of Goodyear.

Hunter has the capacity, knowledge and resource availability to self-perform the following scope of work items:

- Site excavation, grading and DG placement
- Trenching, backfill and spoil removal
- Mechanical installation of piping, valves and appurtenances
- Equipment offloading and installation
- Concrete forming, placing and finishing
- Startup support and planning
- Commissioning support and planning

Even though Hunter can self perform the above mentioned scope, we are open to bidding out these scope items if it is appropriate for the project, and maintains competition and fair pricing objectives.

b) Selection Method - Hunter intends to select subcontractors and suppliers using the approved combination of qualifications and price using our model. Hunter has a large number of pre-qualified subcontractors. The pre-qualification process evaluates: State Licenses and Registrations, Insurance, Financial Stability, Bonding Capacity, Safety Performance, Recent Similar Experience, References, Available Resources, Ability to Meet Schedule.

This successful process eliminates the risk of financially unstable contractors defaulting on contractual obligations in the middle of the project. Any contractor not currently on our pre-qualified list will be required to participate in the pre-qualification process. Hunter identifies required trades with an emphasis on quality, schedule and sustainability.

Hunter will abide by the requirements set forth in A.R.S. 34-603, which allows subcontractor selection based on qualifications only or a combination of qualifications and price. For this contract, subcontractors will be evaluated based on qualifications, availability, and price, obtaining competitive quotes once the pre-qualification process is complete. Hunter's complete, comprehensive subcontractor selection plan will be submitted to the City for review and approval prior to beginning the selection process. The City is encouraged to participate in the selection process. Upon completion of the award analysis, Hunter will submit to the City the proposals, scoring, bid breakdowns and scope clarifications for each trade involved.

c) Key Subcontractors - Hunter has exclusively partnered with Ludvik Electric for electrical design and constructibility review for this project. Ludvik is Arizona's most trusted electrician specializing in the water/wastewater industry. Their unparalleled experience in the unique electrical needs of wells and water treatment facilities brings added value to the City of Goodyear. Unless otherwise directed, Hunter will seek pricing from other qualified firms during GMP development in order to provide the best possible price to the City. We have also identified qualified wells drillers with large well rigs to bid the well drilling components (Weber, Beeman, and Yellow Jacket).

d) Local Familiarity - Having recently completed the Corgett Aeration Dome and Odor Control Improvements, our team is highly qualified and familiar with the City's requirements, including traffic control, building permit requirements. The Hunter team also brings experience procuring ADEQ, Maricopa County and ADWR well permits. NCS has experience in designing water treatment and well site facilities for the City and Ritoch-Powell has designed a system to meet specific drainage criteria, with attention to detail and testing drywells to predict their drainage capabilities. We are familiar with the City's Building permit requirements and Maricopa County approval requirements. In fact we are proposing a phased County approval and permitting approach for the project, where various components will be permitted and approved as design is completed. This will expedite design phase approvals and permits. The wells will first be permitted, followed by the RO systems, and the boosters and storage tanks. This will enable timely procurement of the equipment and drilling components. We have discussed this approach with Maricopa County and obtained a preliminary acceptance of this phased approach.

Hunter/NCS is the City's best choice for this project !!

List of Professional and Arizona Contractor Licenses held by the Hunter/NCS DB Team

Firm / Key Personnel	Professional Licenses
HUNTER Contracting Co.	AZROC 070961A General Engineering - Exp. 8/31/18 AZROC 075851B-1 General Commercial - Exp. 1/31/19 AZROC 067542B General Residential - Exp. 3/31/18 AZROC 023057B-4 General Residential Engineering - Exp. 2/28/18
◦ Dig Karki, P.E.	AZ (61316)
NCS Engineers	State of AZ Firm Registration (12-024)
◦ Ramesh Narasimhan, P.E.	AZ (28112), CA (C-51059), NM (21628)
◦ Sudheera Addepally, P.E.	AZ (45686)
◦ Sriram Barigeda, P.E.	AZ (50453)
◦ Larry Hanson, P.E.	AZ (27187), NM (16377), NV (13835), WI (14735)
◦ Harish Arora, Ph.D., P.E.	MD (29884), DE (9868)
◦ John Brereton, Ph.D., P.E.	AZ (36260)
◦ Erin Mulligan	Cert. W/WW Op#OP010018 - ADEQ Grade 4 WT, WD, Grade 1 WWT
WATEK Engineering	Ben Movahed, P.E., BCEE P.E. MD (16889), VA (402037230), PA (PE077915), NC (19365), WV (12157), NJ (24GE03933700), FL (56503), DC (PE10455) and BCEE (97-20015) Zohreh Movahed, Ph.D., P.E. - MD (21947), CA (CH 6701)
Ludvik Electrical	AZROC 088575C-11 Electrical - Exp. 11/30/17 AZROC 127121A-17 Electrical & Transmission Lines - Exp. 9/30/17 AZROC 170920A General Engineering - Exp. 12/31/17
Delta Systems Engineering	R.L.S. - AZ (27233)
Clear Creek Associates (CCA)	AZ Technical Registration - Geology, AZ Well Driller License #672 Registrar of Contractor License #151387, Type A-4 Marvin Glotfelty, R.G. - AZ (22744)
Ritoch- Powell (RPA)	Steve Lewis, P.E. - AZ (34589) Civil Troy Ray, RLS - AZ (33868) Land Surveyor
Pathangay Architects, LLC	State of AZ Firm Registration (13961-0)
◦ Navin Pathangay, RA, AIA	AZ Architect (40833) Certified LEED Green Associate
Copper State Engineering (CSE)	David Deathridge, P.E. - AZ Civil (15592)

RESUMES

- Jason Robinson - *Project Manager*
- Dig Karki, P.E. - *Pre-Construction Manager*
- Gary Hornberger - *Project Superintendent*
- Chris Bennett - *Project / Field Engineer*
- Omar Cifuentes - *Project Engineer*
- Ram Narasimhan, P.E. - *Project Principal & Design Program Manager*
- Sudheera Addepally, P.E., LEED - *Design Team Leader*
- Sriram Barigeda, P.E. - *Well Site & Steel Tank Design*
- Larry Hanson, P.E. - *QA/QC Officer*
- Harish Arora, Ph.D, P.E. - *Process Engineer and Water Quality*
- John Brereton, Ph.D, P.E. - *Water Quality Specialist*
- Erin Mulligan - *Startup & Operations Support*
- Ben B. Movahed, P.E., BCEE - *Lead RO Process Engineer*
- Zohreh Y. Movahed, Ph.D., P.E. - *Process Engineer*
- Marvin F. Glotfelty, R.G. - *Principal Hydrogeologist*
- Dee Nichols III, E.I.T. - *Electrical Design Engineer*
- Steve Lewis, P.E. - *Civil Design*
- Troy Ray, RLS - *Survey*
- Navin Pathangay R.A. - *Architect*
- David Deatherage, P.E. - *Geotechnical*

JASON ROBINSON, PROJECT MANAGER



YEARS OF EXPERIENCE

20

YEARS WITH FIRM

9

EDUCATION

Business Management
Studies, University of
Phoenix

TRAINING

- Accountability Workshop
- Air Monitor
- Bluestake/Potholing
- Communications 101 & 102
- Confined Space
- CPR/First- Aid
- Dust Control Coordinator
- EEOC Supervisory Training
- Excavation and Trenching
- Fall Protection
- Laser Safety
- Lock-Out/Tag-Out
- Safety Orientation
- Supervisor Orientation
- Reasonable Suspicion & Cause
- Rigging Awareness
- Unionization

REFERENCES

City of Glendale
Mike Johnson
(623) 764-7963

Arizona Water Company
James Wilson
(602) 361-0828

Central Arizona Project
Keith Wood
(602) 510-4778

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Jason has more than 20 years experience in estimating, scheduling, cost accounting, design review, project and team management, and mechanical systems coordination. He has seven years of work experience in managing vertical construction projects, and 13 years managing water/wastewater projects as both a project engineer and manager. Jason's responsibilities during preconstruction include working with the engineer and performing detailed plan reviews while identifying risks and opportunities for value engineering. During construction he will manage multiple superintendents and subcontractors, manpower and equipment needs, temporary and permanent materials, supplies, utilities, money, technology, and methods to complete construction projects on schedule, within budget, and according to specified standards of quality and performance.

RELEVANT EXPERIENCE

Arizona Water Company - Pinal Valley Well 34: \$5.3 Million Design/Build project to re-purpose and equip an existing agriculture well to produce 1500 GPM for potable use. Design and construction of an Arsenic Removal Facility and Cooling Tower at a separate location to treat the new well water. The site work for this project is extensive with two new retention basins and a complete over-excavation and fill process to replace the unsuitable soils at the site. After this project was awarded, Hunter found \$427,000 in value engineered savings.

Liberty Utilities (Perc Water Corp) - Palm Valley Water Reclamation Facility Mechanical: \$3.2 million hard bid project consisted of expanding the reclamation facility treatment capacity to 5.8 million gallons per day (MGD). The work consists of adding a new influent screen, grit removal unit and grit washer, two new SBR basins, new blower building with new SBR blowers and electrical room, new odor control system for the new SBRs, replacing two filter feed pumps, adding one new cloth media disc filter, replacing four effluent discharge pumps, converting the existing SBR basin #3A basin to a sludge holding tank and converting SBR basin #38 into a surge tank, two new supernatant pumps for the converted sludge holding tank, structural work, shoring and earthwork.

Central Arizona Project (CAP) - Brawley and San Javier Chiller Replacement: \$2.6 million CMAR project included demolition of existing chiller and piping and replacing the existing water cooled chillers with air cooled chillers of adequate capacity and redundancy based on the existing plant loads and operation. Replacement of the Energy Management System/ Control System with an Automated Logic direct digital control (DDC) system that was connected via the CAP WAN to the DDC server located at CAWCD Headquarters. Replaced chilled water pumps, control valves, valve operators, damper operators, duct detectors, cooling coils, resistance heater and controllers, and other chilled water piping devices as determined necessary.

Arizona Water Company - Arsenic Removal Tank Inspection Projects: \$1.47 million project began as a contract to remove and store media, prepare vessels for inspection, reinstall media and put vessels back into service at five locations around the valley. After the inspections, AZ Water Co. asked Hunter to remain on site and assist them in evaluating the existing vessels to see if they were repairable. Upon inspection, it was determined that the vessels were repairable and AZ Water Co. asked Hunter to complete this work for them. By repairing the vessels, Hunter saved AZ Water Co. over \$500,000. The total cost of this contract was \$1,475,765

Motorola - North Indian Bend Wash CTP Train 4: \$255,908 hard bid project for the Installation of two granular activated carbon(GAC) filter tanks and associated piping and piping manifold, tying into an existing ground water filter system. Connect and extend new copper air line to new tanks. Tie into existing catwalk and install new catwalk extension up to new tanks. Paint tanks, piping and catwalk, testing and disinfection.

Gila River Indian Community - Blackwater Lift Station: \$274,836 hard bid project located in Sacaton, AZ, consisted of the installation of two 23 hp submersible pumps, one fiberglass wet well, one 23 hp diesel engine backup pump, one four foot diameter rebuild manhole and associated gravity sewer and force main piping. Hunter also installed new electrical, control panels and instrumentation as well as new picket fencing around the perimeter of the lift station. GRIC came specifically to Hunter, with this project, because of our ability to manage challenging circumstances and willingness to work with owners to find creative solutions.

City of Glendale - Sweetwater Lift Station Improvements: \$1,298,420 hard bid project consisted of converting the existing lift station wet well/dry well configuration to a wet well configuration and relocating and upgrading all ancillary equipment as necessary. Additionally, approximately 850 lineal feet of upstream sewer pipeline and three associated manholes plus the discharge manhole condition assessment and rehabilitation. Scope of work includes assessment as necessary for design, design and preparation of construction drawings and specifications, assistance with bidding, permitting, and construction administration services.

City of Phoenix - Zone 1 and 2A Water Infrastructure (Camelback Core Water Infrastructure Improvement): CMAR project to construct a 36-inch main waterline at 32nd Street and Earl Drive to 22nd Street and Glenrosa; 2,560 LF of 24-inch DIP Class 250 along 22nd Street from Glenrosa to Highland; 1,355 LF of 20-inch DIP Class 25 along 22nd Street from Highland Avenue to Camelback; and Zone 2A Booster Pump Station. New City of Phoenix BPS (33 MGD firm capacity), including new suction and discharge surge tanks, chlorination system, and all appurtenances.

City of Phoenix - Camelback Core Booster Pump Station: New \$9 million potable water booster pump station and three miles of transition main in central Phoenix, a joint development between the City of Phoenix and Hines Development. Scope included managing all political relationships. Management of construction, traffic, and expectations of the residents for a long period of time and over a number of miles was necessary since this project was in heavily traveled and residential area of central Phoenix. The start-up plan used became a model that the City of Phoenix uses on other water projects.

Town of Clarkdale - Wastewater Treatment Plant Improvements: Managed the dismantle and salvage of an existing Biological Treatment Plant in Surprise, AZ. The plant was taken to the Town of Clarkdale in pieces where it was reassembled and augmented to provide an upgrade to the Town's existing facility. This project included detailed preconstruction evaluations, intricate subcontractor coordination, and the development of a comprehensive work plan.

City of Chandler - Alamosa Water Production Facility: Design-build project that included engineering this new 2.0 MG circular prestressed concrete reservoir; a new 3,000 square foot building; a new booster can pump station that included vertical turbine pumps, discharge piping, valves, magnetic flows, instrumentation; and pump controls, including coordination with the City's SCADA system.

DIG KARKI - PRECONSTRUCTION MANAGER

Dig has more than 19 years of industry experience in engineering and construction. He has completed over \$150 million in projects over the span of his career in various capacities, including design, field and project engineer, superintendent, estimating, and project management. For the last three years he has focused on preconstruction. His vast and varied project summary includes:

- Hydropower Projects Design & Construction
- Wind Energy Projects
- Transportation Projects Including Railroad, Bridges And Road
- Public/Commercial/Residential Infrastructures
- Water, Wastewater, Storm Utilities Projects
- Parks and Infrastructure Projects
- Site Development

During the last three years Dig has been responsible for the preconstruction activities on 17 design build and CMAR projects valued at more than \$48 Million, consisting of: site development including infrastructure utilities, roads, parks including infrastructure, water and wastewater projects and utility improvements projects.

EXPERIENCE

City of Mesa - Greenfield Park \$2.9 million, CMAR Improvements at Greenfield Park include complete draining and expansion of an existing lake with a new lining system to increase irrigation capacity and to introduce the Arizona Game & Fish urban fishing program, create a "first flush" to reduce dirty storm water runoff from entering the lake, construction of associated support facilities such as walkways, ADA accessible fishing piers and a new restroom, new playground with sail shade structure, playground surfacing, park drainage improvements, and turf installation. Work also included tying into the RWCD irrigation system for lake supply and off-site improvements on Greenfield Road and Pueblo Avenue. Design and construction were phased to meet the aggressive schedule.

Town of Gilbert - Cooper and Guadalupe Intersection Improvements \$9.6 million, CMAR road improvement project at Cooper and Guadalupe intersection widens the intersection to provide three travel lanes and a bike lane in each direction, adds median islands to provide for safer turning movements, as well as provide necessary curb, gutter and sidewalk within the road segment. Drainage improvements for storm drain capacity were reconfigured throughout the intersection, improvements at the Union Pacific Rail Road (UPRR) track, utility relocations and improvements include work on the SRP power and irrigation systems.

Town of Gilbert - Williams Field Road & Higley Road Intersection \$11 million, CMAR project that widened Williamsfield Road and Higley Road through the intersection and half a mile each on all four legs of the intersection. Improvements included widening the existing roads to six lanes with a raised median while coordinating with outside utilities, UPRR and maintaining services to existing businesses and schools. Work included roadway paving, drainage, curb, gutter, sidewalk, streetlights, traffic signals, installation of RWCD irrigation facilities, SRP 12KV conversion, and relocation of Cox and Centurylink utilities.

YEARS OF EXPERIENCE

19

YEARS WITH FIRM

7

EDUCATION

Master of Science in
Construction, Arizona State
University

Bachelor in Civil Engineering,
Tribhuvan University-Nepal

CERTIFICATIONS

Registered Professional
Engineer AZ Lic. 61316

TRAINING

- LEED Assoc.
- Dust Control Coordinator
- Excavation & Trenching
- CPR/First-Aid & AED

REFERENCES

City of Phoenix
Michael Ziegler
602-534-0966

Valley Metro Rail, Inc.
Marty Spong
602-744-5562

W.C. Scoutten, Inc.
Julius Diogenes, P.E.
623-547-4661 x238

Hunter
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City of Tolleson - Downtown Tolleson Redevelopment, \$2.5 million, CMAR project that transformed the downtown streetscape into a vibrant and memorable place that will serve as an aesthetic and functional attraction to residents, visitors and to future economic development. Construction work included new asphalt roadway, curb and gutter, concrete parking bays, and widened sidewalk pavers. Additional scope includes storm drain main, waterline main, 12KV overhead to underground conversion, traffic signals, street lights, way finding elements, stamped asphalt, public plaza with artistic canopies, art features, speaker and wifi systems, entry monuments and medallions.

Town of Queen Creek - Ocotillo Road at UPRR Crossing \$1.4 million project to provide specified materials for and construction of the Roadway improvements along Ocotillo Road at the UPRR Crossing, which will include widening the current 2-lane roadway to a 4-lane roadway with a 14' wide raised median across Union Pacific Railroad Company right-of-way.

Town of Buckeye - East Buckeye Park and Ride \$3 million, CMAR services to build a new access road for Palm Lane, parking for approximately 274 parking spaces, consisting of 248 standard paces, 14 handicap accessible spaces, and two motorcycle spaces, one large auto/pedestrian shade structure, one bus waiting shared structure, area lighting, 400 square-foot security building with water service and restroom, related utilities, concrete plaza waiting area with benches, amenities, and landscape and irrigation. The project also features an open room viewing area for future artwork with a grain bin silo architectural feature complementing the agricultural heritage of the Town of Buckeye. Also included, is widening Jackrabbit Trail to provide a turn lane, new guard rail and related signage, striping and utility adjustments effected by the new pavement installation.

Valley Metro Rail, Inc. - Park & Ride Expansion and Shade Canopies for Park & Ride \$4 million, design-build project to expand the park and ride facilities at four locations from 3rd Avenue to 7th Avenue along the south side of Camelback road. Additionally, the design-build team was responsible for furnishing and installing shade canopies at various light rail parking facilities within the City of Phoenix.

City of Phoenix - Citywide Paving, Concrete & Storm Drain Job Order Contract \$47 million worth of job agreements under the JOC over a span of five years. Work included on- and off-site construction, including removals, vertical structures, ramadas, playground improvements, sign relocations, basketball and tennis courts, and specialty subcontractors. The following are job agreements Dig worked on as project manager: *Scatter Wash Levee Certification from 43rd Avenue to 39th Avenue, Cave Creek Embankment Levee, and Double Tree Wash Levee Certification.*

GARY HORNBERGER - PROJECT SUPERINTENDENT

Gary provides leadership, supervision, and resource management to Hunter Contracting Co. projects. Gary has extensive experience as a millwright in both maintenance and operations. With his many years of experience Gary is called upon to assist in constructibility reviews for Hunters industrial projects. A small sampling of his projects are listed below.

YEARS OF EXPERIENCE

39

YEARS WITH FIRM

19

EDUCATION

Central Arizona College

General Contractors Association

TRAINING

- OSHA 10-hour
- CPR/First Aid and AED
- Dust Control Coordinator-MCAQD
- Erosion Control Coordinator-ADOT
- Qualified Rigger
- City of Phoenix UFM4 CSA
-Firelines & Hydrants
- NCCER Millwright Craft
Instructor

REFERENCES

City of Tempe

Mark Weber
480.350.8526

Carollo Engineering
Mark Gross
602.474.4115

NOAO
John Dunlop
520.318.8284

PROJECT EXPERIENCE

City of Tempe - Johnny G. Martinez Water Treatment Plant Modifications

- **Tempe, AZ;** This was a six-year, multi-phase CMAR project that included a diverse array of construction disciplines, including installation of 10,200 feet of underground water and sewer utilities, placement of 8,000 cubic yards of structural concrete, and civil improvements (asphaltic- and resin-based paving for parking lots and drives).

City of Phoenix - 23rd Avenue Wastewater Treatment Plant Odor Control

Improvements - Phoenix, AZ; The project consisted of the installation of odor control duct towers, replacing grating and railings, FRP coatings, FRP duct and axial fans and rebuild the back gate and concrete approaches to gate.

Central Arizona Project - CAP Trashrake System - Phoenix, AZ;

\$2 million, CMAR project consisting of the demolition and removal of existing trashrake systems at two sites. Scope of work also included site preparation, receipt/off load/movement of materials, security, field erection of trashrakes, final connections, equipment start up, commissioning, training, turnover, and cleaning.

City of Tempe - Tempe Water Utilities Department Security Improvements -

Tempe, AZ; \$2 million, CMAR project that included security and communications improvements, including a CCTV system, security gates and walls, security screens, an electronic security system, security access control and alarm monitoring system, perimeter detection systems, micro-phonics perimeter detection system, gate operators, and electrical and general contracting work to install all systems.

City of Mesa - Southeast Mesa Water Reclamation Plant Expansion - Mesa,

AZ; \$23 million, hard bid expansion job to an existing water reclamation plant. Work included furnishing and installing three blowers and aeration basins, SST piping, 15,000 cubic yards of concrete for construction of aeration basins, and underground piping.

Meritage Homes - Sundance Arsenic Treatment & Water Storage Tank, CM@

Risk - Buckeye, AZ; The new arsenic treatment facility included six large above ground treatment vessels, all associated above/below ground pipe. Two 100,000 gallon above ground steel backwash tanks, and a 50,000 gallon settling tank. Complete the facility has the capability of treating 6000 GPM. Upgrades to the water production facilities included up-sizing eight existing booster pumps and the construction of a 2.5 million gallon steel reservoir.

City of Chandler - Ocotillo Wastewater Treatment Plant Lift Station and

Transmission Main - Chandler, AZ; \$4 million design-bid-build project included the construction of a 27-foot deep lift station with limited access, requiring utilization of a custom shoring system; 26,000 linear feet of 24-inch DIP transmission line paralleling Queen Creek Road; three major bored road crossings; and five miles of asphalt paving repair.

Hunter
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Pima County Wastewater Management Division - Green Valley Wastewater Treatment Plant (WWTP) - Green Valley, AZ; This project was a take over contract project when the original contractor defaulted. St. Paul Surety interviewed five contractors for the take-over and selected Hunter. The remaining work included BW filters, belt press, oxidation ditch, sludge drying beds, yard piping, emergency overflow basin, various pump stations, administration building, electrical, and instrumentation.

City of Glendale - Glendale Water Reclamation Facility - Glendale, AZ; \$6.8 million, hard bid expansion project, including the installation of all aeration basin process piping for the existing water reclamation facility.

City of Phoenix - 23rd Avenue Wastewater Treatment Plant Odor Control Improvements - Phoenix, AZ; \$2 million, hard bid project to install odor control duct towers, replace grating and railings, FRP coatings, FRP duct and axial fans, and re-build back gate and concrete approaches to gate.

CHRIS BENNETT, PROJECT ENGINEER



YEARS OF EXPERIENCE
25

YEARS WITH FIRM
1

EDUCATION
ASU Del E Webb School of
Construction - Construction
Management B.S.

Estrella Mountain College
Business Accountancy A.A.

TRAINING

- Dust Control Coordinator
- Cpr/First-Aid And AED
- Hazcom - OSHA's Revised
Standard / GHS
- New Employee Safety
- Orientation
- Ladder Safety
- Chop Saw Safety
- Compressed Gas Cylinder
Safety
- Hot Work Permits

REFERENCES
Tim Burkeen
City of Goodyear
(623) 882-7924

Rob Bryant
Waterworks Engineers
(480) 661-1742

Bryan Huey
Carollo Engineering
(602) 474-4130

Chris, a recent graduate from Arizona State University's Del E. Webb School of Construction, joined Hunter Contracting mid 2016 bringing a fresh perspective to the projects he works on. Chris's enthusiasm and attention to detail find additional value engineering ideas providing project owners with better than expected results. Chris began his career proudly serving in the US military before entering the construction industry. Chris has worked as a laborer, leadman, and foreman before and while attending college. His focus is on water/wastewater projects, while in college he interned with several local construction firms, that coupled with his military training and experience with scheduling and managing supplies and suppliers bring additional value to his projects. During his short time at Hunter he has proven to be a valuable asset to both Hunter and project owners.

RELEVANT EXPERIENCE

City of Goodyear - Corgett Water Reclamation Facility Dome Replacement: \$1.2 million hard bid project included demolishing existing dome over the aeration basin and clarifier and replacing it with a new flat cover supported by an external truss system. Demolition work also included removing walkway, handrails, lift fixtures, etc. located within the aeration basin and clarifier existing dome cover. All steel items (pipes, supports, center cage, etc.) under the roof were be cleaned and recoated, existing fabric baffles were removed and replaced with new baffles. The project also included refurbishing existing odor control system with new pumps, instrumentation, piping and associated appurtenances. New chemical resistant coating was applied to the existing odor control system pad.

Liberty Utilities (Perc Water Corp) - Palm Valley Water Reclamation Facility Mechanical: \$3.2 million hard bid project consisted of expanding the reclamation facility treatment capacity to 5.8 million gallons per day (MGD). The work consists of adding a new influent screen, grit removal unit and grit washer, two new SBR basins, new blower building with new SBR blowers and electrical room, new odor control system for the new SBRs, replacing two filter feed pumps, adding one new cloth media disc filter, replacing four effluent discharge pumps, converting the existing SBR basin #3A basin to a sludge holding tank and converting SBR basin #38 into a surge tank, two new supernatant pumps for the converted sludge holding tank, structural work, shoring and earthwork.

City of Tempe - Johnny G Martinez & South Tempe Water Treatment Plant Filter Rehabilitation: \$4.2 million CMAR project at The Johnny G. Martinez Water Treatment Plant (JGMWTP) and South Tempe Water Treatment Plant (STWTP) use several processes to treat raw water from the Tempe and Cross Cut Canals producing water safe for consumption. Hunter, as a CMAR contractor provided for maintenance activities at the JGMWTP and STWTP. The project included rehabilitation of the plant filters, under drains and back wash systems.

City of Glendale - Oasis Water Treatment Plant Improvemnts: \$1.2 million Job Order Contract for phased improvements included design, furnishing and installation of underdrains for the filters, including all items within each filter cell for collecting filtered water and uniformly distributing backwash air and water.

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OMAR CIFUENTES - PROJECT ENGINEER



YEARS OF EXPERIENCE 12

YEARS WITH FIRM 1

EDUCATION Arizona State University B.S.

TRAINING

- Dust Control Coordinator - MCAQD
- CPR/First-Aid And AED
- Osha 10-Hour Hazcom - Osha's Revised Standard / GHS
- Driver Safety - Defensive
- Hand & Power Tool Safety
- Scaffolding - Awareness

REFERENCES

FCI
Brian Lewis
(623) 772-7500

Kinney Construction
Caleb Beath
(623) 680-4200

Omar joined Hunter Contracting Co. in 2014 as a project engineer. His attention to detail and enthusiasm bring added value to each of his projects. Omar began his career in the construction industry working at his family's business. His deep roots in the construction industry are evident in his ability to analyze each project and develop strategies for performing the work in a safe and consistent manner. Omar is responsible for overseeing all project activities starting with the preconstruction services to everyday general construction services. He ensures that project-specific requirements and permits are issued and in place to keep projects on schedule. Omar attends all preconstruction, design, and review meetings for his projects. He provides project scheduling, daily production reporting, job costing, pay estimates, on-site tracking of materials, subcontractors, and on-site daily project management.

RELEVANT EXPERIENCE

City of Glendale - Sweetwater Lift Station \$1,298,419.85, Hard Bid project consisted of converting the existing lift station wet well/dry well configuration to a wet well configuration and relocating and upgrading all ancillary equipment as necessary. Additionally, approximately 850 lineal feet of upstream sewer pipeline and three (3) associated manholes plus the discharge manhole condition assessment and rehabilitation. The scope of work included design assessment, design and preparation of construction drawings and specifications, assistance with bidding, permitting, and construction administration services.

City of Mesa - South East Water Reclamation Plant Misc. Improvements \$3,189,410.00 Hard Bid project consisting of several upgrades and improvements to the existing facility's various pump stations and piping systems; added a new influent structure and SCADA workroom. Rehabilitated the clarifiers to combat corrosion, along with embankment stabilization throughout the facility.

Arizona Water Company - Henness Rd. Booster Pump Expansion, \$861,365.15 Hard Bid Provided and installed one new booster pump and necessary pipe and fittings. Design-Build a 2,000 GPM vertical line shaft turbine booster pump at the Henness water facility site in Casa Grande.

American Water Enterprises (City of Phoenix) Lake Pleasant WTP Misc. Improvements General Contractor for the rehabilitation of existing underdrains, filters, media removal and abatement, clean all media from flumes and filters, confirmed backwash pressure on filters with an accuracy of + or - 1%

Gila River Indian Community - Blackwater Lift Station: \$274,836 hard bid project located in Sacaton, AZ, consisted of the installation of two 23 hp submersible pumps, one fiberglass wet well, one 23 hp diesel engine backup pump, one four foot diameter rebuild manhole and associated gravity sewer and force main piping. Hunter also installed new electrical, control panels and instrumentation as well as new picket fencing around the perimeter of the lift station. GRIC came specifically to Hunter, with this project, because of our ability to manage challenging circumstances and willingness to work with owners to find creative solutions.

Motorola - North Indian Bend Wash CTP Train 4: \$255,908 hard bid project for the Installation of two granular activated carbon(GAC) filter tanks and associated piping and piping manifold, tying into an existing ground water filter system. Connect and extend new copper air line to new tanks. Tie into existing catwalk and install new catwalk extension up to new tanks. Paint tanks, piping and catwalk, testing and disinfection.

Liberty Utilities (Perc Water Corp) - Palm Valley Water Reclamation Facility Mechanical: \$3.2 million hard bid project consisted of expanding the reclamation facility treatment capacity to 5.8 million gallons per day (MGD). The work consists of adding a new influent screen, grit removal unit and grit washer, two new SBR basins, new blower building with new SBR blowers and electrical room, new odor control system for the new SBRs, replacing two filter feed pumps, adding one new cloth media disc filter, replacing four effluent discharge pumps, converting the existing SBR basin #3A basin to a sludge holding tank and converting SBR basin #38 into a surge tank, two new supernatant pumps for the converted sludge holding tank, structural work, shoring and earthwork.

City of Glendale - Oasis Water Treatment Plant Improvemnts: \$1.2 million Job Order Contract for phased improvements included design, furnishing and installation of underdrains for the filters, including all items within each filter cell for collecting filtered water and uniformly distributing backwash air and water.

Arizona Water Company - Arsenic Removal Tank Inspection Projects: \$1.47 million project began as a contract to remove and store media, prepare vessels for inspection, reinstall media and put vessels back into service at five locations around the valley. After the inspections, AZ Water Co. asked Hunter to remain on site and assist them in evaluating the existing vessels to see if they were repairable. Upon inspection, it was determined that the vessels were repairable and AZ Water Co. asked Hunter to complete this work for them. By repairing the vessels, Hunter saved AZ Water Co. over \$500,000. The total cost of this contract was \$1,475,765



Ramesh Narasimhan, P.E.

Professional Experience

Years of Experience: 29
Years with NCS: 20

Education

B.S. Civil Engineering
Arizona State University

M.S. Environmental Engineering
Arizona State University

MBA - University of Phoenix

Licenses & Certifications

Licensed Professional Civil
Engineer, Arizona, New Mexico,
California

Certified Operator: Arizona Grade
2 - Water Distribution, Water
Treatment, and Wastewater
Collection

Professional Associations

American Water Works
Association

American Society of Civil
Engineers

Arizona Water and Pollution
Control Association

American Membrane Technology
Association

Ramesh Narasimhan, P.E. - Relevant Experience

Mr. Narasimhan has 29 years of experience in all aspects of water/wastewater collection system analysis, treatment, civil and environmental engineering, and regulatory compliance. He established NCS in 1998. He is known for his strong background and outstanding reputation in the areas of design and planning, as well as permitting and compliance. For the City of Phoenix, he managed over 100 projects with a construction value in excess of \$50 M. He offers experience in all aspects of Surface WTP Facility Design and Operations. He is a national expert in surface water treatment and residuals handling and has served as a design engineer or project manager on more than 30 study and design projects throughout the United States.

The following is representative of Mr. Narasimhan's experience:

Local and West Valley Experience: Mr. Narasimhan has served as Principal Engineer for over 50 projects in the West Valley totaling \$50 M. These include well, water treatment plant, disinfection, wastewater treatment plant, storage and booster station projects since 2000 for the communities of Goodyear, Avondale, Litchfield Park, Tolleson, Glendale, and EPCOR Water.

Wellhead Treatment Master Plan, City of Avondale

- Mr. Narasimhan oversaw this Master Plan to mitigate drinking water quality issues, such as nitrate, chromium, TDS, and arsenic in the City's wells.
- Based on the results of the evaluation, treatment technologies were selected and a Capital Improvement Plan (CIP) was identified to mitigate these constituents.
- Several processes, depending on the well site, were identified for implementation; these included granular activated carbon (GAC), ion exchange (IX), biological denitrification and reverse osmosis (RO) along with blending.

Recoating of Northside Water Reservoirs, City of Avondale - This project involved the recoating of two 600,000 gallon steel potable water storage reservoirs. Also included were modifications including moving the location of the tank fill line; adding tank drain valve, railing, and tie-offs for safety harnesses.

Ion Exchange System Optimization, City of Avondale

- Mr. Narasimhan originally assisted with developing specifications and procurement of a 3 MGD nitrate treatment IX facility.
- Recently, he oversaw NCS treatment optimization studies at the Garden Lakes and Gateway IX facilities to meet drinking water standards, improve performance, and eliminate hazardous waste generation.

Pilot Testing of Nitrate Treatment Processes with Minimal Brine Waste, City of Avondale and Water Research Foundation

- This recent project independently evaluated emerging technologies for nitrate removal such as biological (MB-N2 system) and electrochemical denitrification (ECD) to treat nitrate, while reducing waste streams and utilizing brine recycling.
- The six-month testing program at the Coldwater Booster Station site indicated that IX brine with ECD can be reused 9 times thereby reducing waste brine volumes for off site disposal by almost 90%.
- The MB-N2 removal system achieved treated water nitrate levels below 2 mg/l without generating any waste brine.

Well 180 Upgrades and Blending Station, City of Phoenix, AZ - Mr. Narasimhan assisted the City of Phoenix in designing improvements to equip Well 180 and construct a new blending station to reduce arsenic and chromium levels. As part of this rehabilitation, Mr. Narasimhan conducted a hydraulic analysis to determine the new total.

Gateway Treatment Facilities Expansion - Mr. Narasimhan oversaw preliminary and final design services for this 1,700 gpm treatment expansion project which includes the following elements:

- IX facilities with three 10-foot diameter vessels.
- New 12 -foot diameter GAC treatment vessel.
- Supporting facilities include prefiltration, brine maker, brine waste handling, flow controls, backwash waste handling, control room, electrical systems and SCADA interface.

RO Membrane Projects - Mr. Narasimhan has served as Principal and Project Manager for several large membrane evaluation, testing and design projects. His efforts have focused on optimizing water quality and blending and maximizing water recover to minimize brine waste. These include the 1200 gpm System at Well 12 for the City of Rio Rancho where 3 large skids along with pretreatment systems were installed in a new treatment building; a 1200 gpm system for Rio Rancho well 23, where iron and manganese preoxidation was also included to prevent membrane fouling, and a smaller system for the Coyote Creek Water system in Catron County, NM where softening was used as a pretreatment step to prevent fouling.

Technical Advisor, City of Baltimore Water Treatment Program - Mr. Narasimhan serves as project principal and technical advisor for several water quality and treatment projects for the City of Baltimore. This includes review of design memoranda and testing plans for several projects relating to UV, disinfection and storage.

Residuals Handling Assessment, Los Angeles Department of Water and Power (LADWP) - Mr. Narasimhan was part of a large consultant team that performed this comprehensive predesign study, field testing evaluation, and 30% design for additional pretreatment and residuals handling facilities. The project consisted of evaluating and implementing the optimal method of enhanced coagulation facilities for turbidity, arsenic and disinfection by-product precursor removal at LADWP's 600 MGD Aqueduct Filtration Plant.

Union Hills WTP Improvements Design, Phoenix, AZ - Mr. Narasimhan participated on the technical advisory team for the upgrades to this 160 MGD facility. He was responsible for assessment, study, predesign, and design of the residuals handling system, including clarification, thickening and dewatering equipment. The residuals handling system was upgraded specifically to handle the impacts of additional solids from enhanced coagulation.

Multiple Treatment Projects for Turbidity and TOC Removal, Phoenix, AZ and Glendale, AZ WTPs - For the past several years, Mr. Narasimhan has assisted these water systems with enhanced coagulation (EC) activities for five surface WTPs (Verde, Val Vista, Deer Valley, Cholla and Squaw Peak) as part of several projects. These included the first documented bench and full scale EC studies to optimize both arsenic and TOC removal in surface WTPs. The secondary effects of enhanced coagulation were also evaluated (corrosion, impacts on filter operations, impacts on disinfection, aluminum residual, residuals dewaterability, disposal constraints, and recycle streams). Mr. Narasimhan also assisted with implementation activities including design, operating strategies for varying raw water quality conditions, and reporting and communications protocols.

Project Principal, Steel Tank Design and Improvements, City of Phoenix, AZ - Potable water tank modifications and improvements were made at 38 steel tanks in two phases. Mr. Narasimhan performed field verification activities, surge tank inspections, prepared a Consolidated Design Development Report, developed reservoir and tank maintenance guidelines, hydraulic design of the facilities, designed off-site overflow piping and erosion control improvements, developed of tank coating specifications, designed cathodic protection system, and electrical and instrumentation systems, prepared of project specifications and drawing submittal packages, coordinated agency and regulatory approvals, and designed new steel tanks for four locations. As part of this project, Mr. Narasimhan also provided design services for two welded steel water tanks for well site 235, with capacities of 0.65 and 0.3 mgd each.

Well 14 Booster Pump Station Design, City of Rio Rancho, NM - Mr. Narasimhan assisted with the completion of the design of an estimated \$1.1 million booster pump station located at Northern Boulevard and 21st Street. The project included an above ground 600 square foot prefabricated booster pump station containing two 500 gpm booster pumps with provision for a future third booster pump, a pressure reducing valve station (a pressure zone break will be located at this site), a flow meter located in a buried vault, a bulk water fill station with overhead fill piping for use by local residents living outside the City, site road, site development for a one acre site, landscaping, and improving 0.03 mile of dirt road to a paved street. Mr. Narasimhan was the Principal-in-Charge, overseeing the preparation of a preliminary engineering reports, design calculations, hydraulic modeling to evaluate potential surge issues, construction cost estimates, and obtaining plan approval from the New Mexico Environment Department.

North Forty Booster Pump Station, Clovis, NM - Mr. Narasimhan was the Principal-in-Charge for the New Mexico American Water Company (NMAWC) in replacing an outdated facility with a new, modern pump station. Mr. Narasimhan oversaw site plans for the proposed new facilities. The new pump station will consist of end suction centrifugal pumps in an above ground prepackaged steel enclosure, mounted on a concrete foundation, a chlorine gas feed enclosure, and a portable generator.



Sudheera Addepally, P.E. LEED

Professional Experience

Years of Experience: 15

Years with NCS: 13

Education

B.S. Civil Engineering -
Osmania University, India

M.S. Environmental Engineering -
Arizona State University

Licenses & Certifications

Licensed Professional
Environmental Engineer - Arizona

Leadership In Energy And
Environmental Design (Leed®)
Accredited Professional

United States Green Building
Council

Licensed Grade II Water Treatment
Operator

Professional Associations

American Water Works
Association

Arizona Water Association

Sudheera Addepally, P.E. LEED - Relevant Experience

Ms. Addepally has more than 15 years of civil engineering experience in water treatment processes, design, and construction services. Ms. Addepally has a depth of knowledge and experience in water/wastewater treatment technologies, water and sewer line design, arsenic and nitrate treatment processes and facility design, and regulatory compliance. Ms. Addepally has performed water quality monitoring, pilot testing, sample collection and quality assurance/quality control reviews and has extensive experience in water chemistry and water distribution system modeling. Her experience includes master planning, pilot testing, design, construction cost estimating and preparation of construction documents for water treatment facilities; pipelines; sanitary sewers; and wastewater treatment facilities.

Ms. Addepally has managed projects that have included budgeting, schedule, work delineation, and client interaction.

Ms. Addepally is a project engineer responsible for conducting treatability studies, developing conceptual and detailed designs for water treatment plants and developing construction drawings and specifications for water treatment plants. She is also responsible for providing construction support services by reviewing shop drawings, submittals and vendor & overall facility O&M manuals. Ms. Addepally is also involved in marketing and client proposal preparation.

Ms. Addepally has managed projects that have included budgeting, schedule, work delineation, and client interaction. The following is representative of Ms. Addepally's related project experience:

- Wellton's recently completed water treatment study and is familiar with the WTP and treatment concerns.
- She served as project engineer for several surface WTP assignments for the City of Phoenix's water treatment program.
- She serves as a Project Engineer for the Town of Superior wastewater treatment PER project.
- Ms. Addepally also prepared WTP facility master plans for cities of Glendale, Phoenix, Avondale, and Rio Rancho.

The following is a representation of Ms. Addepally's experience:

Distribution System Water Quality Enhancements and DBP Mitigation Assistance, City of Phoenix, AZ - Ms. Addepally assisted the City in meeting distribution system water quality goals with a focus on minimizing THM formation in the distribution system. The activities under the project included closely working with WTP operations staff to conduct treatment optimization tests, and optimize operational parameters such as chlorine feed points, pH control, and coagulation parameters; and bench scale tests to simulate WTP performance.

Water Quality Master Plan, City of Phoenix, Arizona - Ms. Addepally conducted studies for the evaluation of treatment capabilities, for reducing DBPs in drinking water and removal of other inorganics at the City's surface WTPs. She also conducted an evaluation of the impacts of varying coagulant doses on the solids handling facility at Val Vista WTP, AZ. Sampling and analyses under enhanced coagulation conditions was performed of the final sedimentation basin blowdown, gravity thicker effluent, centrifuge feed solids, centrate, and dewatered cake to assess any impacts that may be present.

Well 23 Equipping and Treatment, City of Rio Rancho, NM - Ms. Addepally served as a project engineer in design of water treatment facility at Well 23. The project included filtration membrane treatment, chemical feed systems, well equipping, well house building and design of water lines.

City of Goodyear Site 21 Booster Pump Station ATF Expansion - Ms. Addepally worked as the Project Manager. She prepared basis of design report, design drawings and specifications for the expansion of the existing 2.7 MGD ATF to a 4.3 MGD facility due to addition of a new well to the system. The design also included modifications to the existing arsenic treatment facility and chlorination system modifications at the two existing wells. Currently she is working as the project engineer for construction admin. to review submittals, attend construction progress meetings, etc.

City of Avondale Gateway Nitrate Treatment Facility - Ms. Addepally worked as a Project Engineer. She assisted in preparing the basis of design report for an IX treatment facility, preliminary site layout, design drawings and specifications and bid phase support.

City of Rio Rancho Well 12 RO - Ms. Addepally worked as a project engineer. She prepared preliminary engineering report to evaluate various treatment alternatives and provide recommendations for treatment to the Federal secondary TDS standard of 500 mg/L. Ms. Addepally also prepared the basis of design report including hydraulic analysis, site layout, process control description, etc. for a 1.2 MGD three stage low pressure RO system for Well 12.

Well 14 Booster Pump Station, Rio Rancho, NM - worked on the design of a new 1.5 MGD booster pump station and PRV station at Well 4. The booster pump station was constructed to prevent the well from pumping water at a high pressure of 140 psi to a higher zone, which exceeds the pressure rating of the new arsenic treatment facility constructed at Well 14. Tasks included preparing design criteria, performing hydraulic analysis of the new pump station and preparing operational control strategies.

City of Tempe Well No. 4 Improvements, Tempe, AZ - assisted the City in identifying well site improvements including well rehabilitation, site security, chlorination facility upgrades, electrical upgrades and SCADA interface. Prepared the preliminary engineering report summarizing the site improvements.

Town of Wellton System Evaluation and Disinfection By-products Treatment Evaluation Studies - Ms. Addepally prepared the Disinfection By-products (DBPs) Treatment Evaluation Report evaluating the existing treatment system and summarizing various alternatives for improving treatment to meet the Town's water quality goals, including reducing DBPs formation in the distribution system. Ms. Addepally performed bench scale tests to simulate treatment alternatives such as coagulation using ferric chloride, alum, polyaluminum chloride at ambient and reduced pH conditions and preoxidation using chlorine dioxide. Design criteria and costs were developed for various treatment trains and recommendations were provided based on comparison of cost and site-specific conditions.

Drinking Water Compliance Plans, Litchfield Park Service Company, AZ (LPSCO) - Ms. Addepally has assisted LPSCO with the development of several sampling plans to assist with drinking water compliance monitoring. These include plans for THMs, microbiological monitoring, and all entry point to the distribution system monitoring (inorganics, VOCs, SOCs, and unregulated contaminants). Sampling plans were developed and negotiated with Maricopa County to meet compliance criteria. Spreadsheet based tracking schedules were developed to facilities "user friendly" data entry and scheduling. Ms. Addepally also assisted with development and implement of a nitrate blending plan.

City of Coolidge Effluent Pipeline Study, Coolidge, AZ - Project Engineer responsible for evaluating various alternatives for discharging Class A+ treated effluent from the City of Coolidge Central Waste Water Treatment Plant. Prepared a study report summarizing four effluent pipeline discharge alternatives.

Wells 9 and 13 Arsenic Treatment Facilities, City of Rio Rancho, NM - Project Engineer responsible for the design of treatment facilities at two locations. Prepared the basis of design reports, detailed design drawings for civil and mechanical processes and specifications. Also prepared equipment pre-purchase documents for various components of the system.

Site 10 Arsenic Treatment Facility, City of Rio Rancho, NM - Project Engineer responsible for the design of a 7.9 MGD coagulation treatment facility that treats groundwater from three wells. The treatment facility consisted of three horizontal pressure vessels, each split into three cells, containing granular media for removing arsenic. Completed the detailed civil and mechanical design for the facility, coordinated with other disciplines such as structural, electrical, plumbing, and architectural and prepared cost estimates. Also prepared the equipment pre-purchase documents, drawings and specifications for the horizontal pressure vessels.



Sriram Barigeda, P.E.

Professional Experience

Years of Experience: 10
Years with NCS: 7

Education

M.S. Civil Engineering -
Texas A&M University

Licenses & Certifications

Licensed Professional
Environmental Engineer, Arizona

Sriram Barigeda, P.E. - Relevant Experience

Mr. Barigeda has over ten years experience in construction inspection, engineering water resources and steel tank design and construction. His area of expertise lies in water storage facilities, water distribution systems, and sewer collection systems design. He has experience in detention/ retention basin design, floodplain modeling and analysis.

The following is representative of Mr. Barigeda's experience:

Local Experience: Construction Project Manager for the Site 21 BPS Treatment Facilities Expansion (City of Goodyear), 1.75 MG Rancho Santa Fe Steel Water Storage Reservoir Rehab, Two- 600k gallon Northside BPS Steel Water Storage Tanks Rehab (City of Avondale), Wastewater Treatment Plant Upgrades (Town of Superior).

Site 21 BPS Treatment Facilities Expansion, City of Goodyear - This project expands the existing Arsenic Treatment Facility (ATF) capacity to meet the City's increasing water demand. As a part of the expansion, a third treatment vessel is being added to the existing ATF. NCS completed the design phase of this project in 2016. Mr. Barigeda assisted in designing new chlorine disinfection systems at Adaman Wells 1 and 2. New disinfection system included Sodium Hypochlorite storage tanks, chemical feed pumps, level sensor and transmitter instruments and misc. control panels. The construction phase of this project is started in May 2017 and expected to complete by January 2018. Mr. Barigeda is assisting as Construction Project Manager for the Site 21 BPS expansion project.

1.75 MG Rancho Santa Fe Steel Water Storage Reservoir Rehabilitation, City of Avondale - Mr. Barigeda is responsible for the water storage tank rehabilitation design. The rehabilitation included removal and replacement of 80 roof rafters (of total 120), 4 of 8 beams, new additional roof vents, new interior and exterior coatings. As a Construction Project Manager, Mr. Barigeda was responsible for coordination with the owner, contractor and sub-consultants, reviewing pay applications, responding to RFIs, approving change orders and performing inspections.

Camp Colley Water System Improvements, City of Phoenix - As a part of the Camp improvements, the existing booster pumps were removed and replaced with new booster pumps and hydropneumatic tank. Mr. Barigeda was responsible for designing the new booster pump system and hydropneumatic tank design. The new booster pump system includes two 1.5 HP pumps and a 1,400 gallon hydropneumatic tank.

Steel Tank Design and Improvements Groups B, C and D, City of Phoenix, AZ - Potable water tank modifications and improvements were made at 38 steel tanks in two phases. Mr. Barigeda assisted with hydraulic design of the facilities, design of off-site overflow piping and erosion control improvements, development of tank coating specifications, design of a cathodic protection system, electrical and instrumentation systems, preparation of project specifications and drawing submittal packages, and design of new steel tanks for four locations. He also assisted with construction phase services. As such, he has gained invaluable knowledge of the chlorination, instrumentation, and site access issues at the City's remote facilities.

I-40 Water Reservoir Rehabilitation, Mohave County, AZ - Project Engineer to conduct an assessment and rehabilitation design for an existing 1.5 million gallon (MG) welded steel water storage reservoir in the I-40 corridor. This ten-year old reservoir has never been taken out of service and will be drained and inspected during a scheduled shutdown period in the first quarter of 2012. The project includes review of record drawings, field inspection, preparation of a preliminary design memorandum, final design of rehabilitation improvements, bidding assistance, and observation during construction.

Mesquite Springs, HEC-RAS, WaterCAD, AutoCAD Civil 3D 2008 Cottonwood, AZ - Mesquite Springs is a 17-acre residential subdivision located in Cottonwood, AZ. This project developed 54 lots of three different sizes. Floodway & Flood Plain model was developed using HEC-RAS. The results were analyzed and submitted for CLOMR approval. Final flood plain delineation is accomplished using GIS. Mr. Barigeda was responsible for water distribution system and booster pump design, the sanitary sewer collection system, floodway and flood plain analysis for CLOMR, hydrology and hydraulic models, and construction and grading plans.

Mesquite Hills, HCS, HEC-RAS, HEC-HMS, AutoCAD Civil 3D 2008, WaterCAD Cottonwood, AZ - Mesquite Hills is a 425 lot subdivision on approximately 165 acres. This project was constructed in two phases. Hydrologic models for the existing and the proposed conditions were developed. The discharges determined in these models are applied to the hydraulic models to examine the rise in the WSE. This project was created in order develop an independent water distribution system. Mr. Barigeda was in charge of pump station, storm drain, sanitary sewer collection system and water distribution system design. He completed drainage, floodway and flood plain, and traffic impact analyses as well as saw to construction and grading plans.

Juniper Crest, HEC-RAS, WaterCAD, AutoCAD Civil 3D 2008, Snowflake, AZ - Juniper Crest is a residential subdivision with three phases of construction. In this project, around 330 lots were developed on approximately 127 acres. Upon completion of the project, new 38-foot wide local roads, water distribution system, waste water collection system and storm drains were constructed. Mr. Barigeda completed the drainage study as well as the cut and fill quantity estimation. He oversaw the water distribution system and wastewater collection system design, and completed construction and grading plans using AutoCAD Civil 3D.

Well 1 and Well 2 Storage Tanks Assessment and Rehabilitation, Sandoval County, NM - Well 1 and Well 2 storage tanks have 0.5 MG and 1.0 MG capacity respectively. For both tanks, Mr. Barigeda performed dry interior and exterior inspections and prepared tank condition assessment reports. Mr. Barigeda assisted in design and developing the construction plans for the proposed improvements.

Recoating of Northside Water Reservoirs, City of Avondale, AZ - Mr. Barigeda served as project engineer for the design of the recoating of two 600,000 gallon potable water storage reservoirs. Services provided included preparation of construction drawings and technical specifications, and assistance with bidding. To facilitate returning one of the two reservoirs to service by the first of May 2014 (when water demand was expected to increase), this was a fast track project. The City Council approved our professionals service agreement on November 4, 2013, construction documents were completed in early December, 2013, the project was advertised for construction bids in December, construction began in early February 2014, and conducted periodic site inspections, and coordinated the services of the NACE inspector (to inspect surface preparation and coating installation) provided by NCS Engineers.

City of Santa Fe Hospital Tank, Santa Fe, NM - Mr. Barigeda served as Project engineer to evaluate the overall condition of the 1.5 4MG Hospital Tank and develop rehabilitation alternatives to ensure a 30-year life and reduce leakage. He provided planning, field investigation, final design and construction management services.



Larry Hanson, P.E.

Professional Experience

Years of Experience: 39
Years with NCS: 15

Education

B.S. Civil Engineering
University of Wisconsin-Platteville

Graduate course Water Treatment
Arizona State University

Licenses & Certifications

Licensed Professional Civil
Engineer - Arizona, Nevada,
Wisconsin, New Mexico

Professional Associations

American Society of Civil
Engineers

National Society of Professional
Engineers

American Public Works
Association

American Water Works
Association/AZ Water Association

Water Environment Federation

Larry Hanson, P.E. - Relevant Experience

Mr. Hanson has more than 39 years of engineering design, project management, permitting, and construction administration experience on a wide range of water & wastewater projects. His project experience includes water and wastewater treatment plants, booster pump stations, water storage tanks, and lift stations.

The following is a representation of Mr. Hanson's experience:

Mr. Hanson is a Vice President with NCS with 35 years of design, project management, permitting, and construction administration experience for water projects.

- He served as project manager for a 2.1 MGD WTP for the Chinle Community (Navajo Nation).
- He has overseen work on five similar PERs.
- Mr. Hanson is an expert in building codes and standards.
- He oversees our design group and performs design QA/QC.
- Mr. Hanson was an Assistant PM for the Radium Treatment Facility, City of St. Johns.
- He served as PM for design of nine WTPs for the City of Rio Rancho using filtration, membrane and adsorption technologies.

Arrowhead Ranch Water Reclamation Facility, City of Glendale, AZ - Mr. Hanson conducted a constructability review on design of a 2-mgd plant expansion.

Chinle Water Treatment Plant and Associated Facilities, Navajo Tribal Utility Authority, Chinle, AZ - Project manager for design of 2.1 MGD water treatment plant. The plant was designed to reduce elevated levels of iron, manganese, and turbidity. Treatment units included chlorination, flocculation, sedimentation, and catalytic media filtration.

Well 23 Equipping and Treatment, City of Rio Rancho, NM - Assistant project manager and technical reviewer for design of 1.8 MGD (which is blended with a 1.7 MGD bypass stream) water treatment plant. The plant was designed to reduce elevated levels of arsenic, iron, gross alpha, TDS, and uranium. Treatment units include chlorination with catalytic media filtration, and reverse osmosis membranes. Project also included design of well equipping for 3.5 MGD well, and 2 miles of raw water and treated water pipelines (16 inch and 18 inch diameter).

Steel Tank Design and Improvements, City of Phoenix, AZ - Potable water tank modifications and improvements were made at 38 steel tanks in two phases. As assistant project manager for one of the phases, Mr. Hanson participated in field verification activities, development of reservoir and tank maintenance guidelines, hydraulic design of the facilities, design of off-site overflow piping and erosion control improvements, development of tank coating specifications, design of a cathodic protection system, electrical and instrumentation systems, preparation of project specifications and drawing submittal packages, and coordination of agency and regulatory approvals.

Well 14 Booster Pump Station, City of Rio Rancho, NM - Project Manager and technical reviewer for design of 1,000 GPM booster pump station and pressure reducing valve station. The booster pump station was designed to be delivered to the site as a skid mounted package with a prefabricated metal building.

Phase 1A Arsenic Treatment Facilities, City of Phoenix, AZ - Assistant project manager for design of arsenic treatment facilities at Wells 244/275, 261, 264, and 276. Capacity of treatment facilities varied from 1.25 MGD to 2.2 MGD. The treatment process consisted of absorptive iron media.

Replace North Forty Booster Pump Station, New Mexico American Water Company (now EPCOR) Clovis, NM - Mr. Hanson served as assistant project manager for replacing an outdated facility with a 4,000 GPM booster pump station. The new pump station consisted of end suction centrifugal pumps in an above ground prepackaged steel enclosure, mounted on a concrete foundation. The existing chlorine gas feed enclosure was reused after minor improvements were designed and implemented. The project also included an automatic transfer switch to facilitate client permanently locating a standby generator at the site.

Cluster 8 Arsenic Treatment Demonstration Facility, City of Scottsdale, AZ - Assistant project manager and technical reviewer for design of 1.8 MGD arsenic treatment facility. Project also included 0.5 MG cast in place concrete reservoir, 5.1 MGD booster pump station, and 500 square foot masonry building with two Chlortainers (to contain 150 lb chlorine cylinders) as manufactured by TGO Industries.

Radium Treatment Facility, City of St. Johns, AZ - Assistant project manager and technical reviewer for design of 1.1 MGD drinking water radium treatment facility.

Water Storage Tank at Well 235, City of Phoenix, AZ - Project manager for design and construction phase services for 0.5 MGD steel water storage tank.

Wastewater Treatment Plant, City of Avondale, AZ - Project principal for construction administration for \$12 million, 4 MGD oxidation ditch type wastewater treatment plant constructed in 1991-1992. Responsible for oversight of resident engineering and inspection team and shop drawing review, reporting project status to City.

Wellhead Treatment Master Plan, City of Avondale, AZ - Mr. Hanson served as assistant project manager and technical reviewer for a master plan to mitigate drinking water quality issues associated with several of the City's wells. The master plan evaluated Wells 14, 15, 16, 16b, 22, 25, 26, 21, 28, 8A, 24, and 17. Water quality issues included nitrate, chromium, TDS, and arsenic. Water quality lab data was reviewed, treatment technologies along with advantages and disadvantages and costs were evaluated, treatment technologies were recommended, and recommendation for treatment projects to be included in the City's CIP were provided. Treatment technologies evaluated included GAC, ion exchange, biological denitrification, reverse osmosis, and blending.

Recoating of Northside Water Reservoirs, City of Avondale, AZ - Mr. Hanson served as project manager for the design of the recoating of two 600,000 gallon potable water storage reservoirs. Services provided included preparation of construction drawings and technical specifications, and assistance with bidding. To facilitate returning one of the two reservoirs to service by the first of May 2014 (when water demand was expected to increase), this was a fast track project. The City Council approved our professionals service agreement on November 4, 2013, construction documents were completed in early December, 2013, the project was advertised for construction bids in December, construction began in early February 2014, and construction was completed on the south reservoir by late April 2014.

Arsenic Treatment Facility, Site 10 Water Complex, City of Rio Rancho, NM - Assistant project manager and technical reviewer for design of 7.9 MGD (which is blended with a 7.9 MGD bypass stream) water treatment plant. The coagulation filtration plant was designed to reduce elevated levels of arsenic.



Harish Arora, Ph.D., P.E.

Professional Experience

Years of Experience: 27
Years with NCS: 13

Education

PhD - Environmental Engineering
Michigan Technological
University

M.Eng - Environmental
Engineering
Asian Institute of Technology

B.Sc. - Civil Engineering
University of Delhi, India

Licenses & Certifications

Professional Licensed Engineer -
Delaware and Maryland

Professional Associations

American Water Works
Association

Harish Arora, Ph.D., P.E. - Relevant Experience

Dr. Harish Arora is a Vice President and Director of Water Treatment Processes for NCS Engineers where he manages the Mid Atlantic office. Dr. Arora has a BS in Civil Engineering, and a Masters and PhD in Environmental Engineering. He is a licensed professional engineer in Delaware and Maryland. Dr. Arora has more than 25 years of consulting and applied research experience with application of advanced environmental technologies in the drinking water and hazardous waste remedial industries. His specific experiences include selection and optimization of treatment processes for compliance with the SDWA regulations, advanced oxidation and disinfection processes, residuals handling and recycle streams, riverbank filtration, control of microbes, master planning, hydraulic modeling, and distribution system water quality.

He was a Client Service Manager for a multi-year contract with Army Corps of Engineers' Washington Aqueduct Division that operates two large surface water treatment plants to serve communities in Washington, D.C., and neighboring communities. Under this contract, seven task orders with scope of work ranging from investigative studies to developing design documents and construction management assistance are being conducted. Dr. Arora has authored over a dozen papers on advanced water treatment and technology and is a leader in AWWA committees on water quality. He is involved in several preliminary engineering studies for several clients in the southwest and participated in business development activities for the company.

The following is representative of Mr. Arora's experience:

City of Patterson, CA - Planning Study for new Water Supply - Dr. Arora developed treatment strategies for a surface water and a groundwater water treatment plant. The groundwater was brackish and nanofiltration was chosen for TDS control. In addition to water treatment strategies, concentrate treatment and disposal strategies, including mechanical and non mechanical technologies, were evaluated.

City of Rio Rancho, NM - Well 12 TDS and Arsenic Treatment - As a process engineer, Dr. Arora evaluated different treatment strategies for control of TDS and arsenic for a groundwater. Partial stream reverse osmosis and granular iron media for arsenic were selected for treatment of groundwater.

City of Goodyear, AZ - Fluoride Treatment Feasibility Study - For Site 21, the groundwater had arsenic, fluoride and nitrate and had treatment for arsenic using granular iron media adsorption. Fluoride level exceeded the secondary standard and strategies including activated alumina treatment along with arsenic treatment were evaluated as part of a desk top study.

DBCP Treatment at a Superfund Site - Dr. Arora served as the technical lead for control of DBCP and other organic contaminants from contaminated groundwater at the Rocky Mountain Arsenal site. The project included design of a GAC testing study, analysis of data and development of preliminary design of treatment strategy and costs.

Evaluation of Technologies for DBCP - Dr. Arora served as the technical lead for a study that compared GAC and aeration studies for the control of DBCP in groundwater at Avondale, AZ. Using literature documented studies, design of GAC and aeration processes were conducted along with costs and recommendations were developed based on technical, economical and non-cost factors.

CAP Water Experience: For the Q Mountain Water System, he serves as design engineer for the water system evaluation and \$1.6 M design project which includes 18,000 feet of water main, new storage tank, and well. He is very familiar with Colorado River water issues as he has assisted Wellton and Mohawk recently with treatment study and design projects.

Granular Activated Carbon (GAC) Studies - Dr. Arora developed and implemented strategies for GAC adsorption rapid small-scale column testing (RSSCTs) methodology for drinking water, industrial wastewater and hazardous waste remedial pilot studies in Phoenix, AZ, San Diego, CA, the South Central Connecticut Regional Water Authority, CT, and the Rocky Mountain Arsenal, CO. He developed preliminary design for conversion of rapid sand filters to GAC filter adsorbers for control of taste and odors for the Lake Gallard Water Treatment plant operated by the South Central Connecticut Regional Water Authority, CT.

City of Santa Fe, Arsenic Master Plan - As a part of this project, Dr. Arora was the lead process engineer for the pilot testing at the BWF Well 12 from 4/22/09 to 3/24/10. Pilot testing included several technologies including, four adsorption media (granular ferric hydroxide (GFH), Bayoxide E-33 Media, DOW Chemical's As500 [titanium oxide] and LayneRT media [polymeric media coated with iron particles]), coagulation/filtration with ferric chloride and an ion exchange media. Based on the pilot testing, several compliance options and preliminary siting of the treatment facility were evaluated.

Water System Planning and Treatment Assessment, City of Patterson, CA - Dr. Arora assisted with this recently completed comprehensive study where multiple groundwater and surface water alternatives were evaluated to meet the ultimate demands of a 16 MGD water treatment plant for this growing community. Key issues included TDS, microbial contaminants, turbidity, disinfection, and nitrates. He helped evaluate over 100 ground and surface water treatment processes for compliance with drinking water regulations and capital and O&M costs. The project included advanced treatment methods such as membranes and granular activated carbon. A conjunctive use alternative (50% ground water and 50% surface water) was selected to provide the City with flexibility during periods of drought. NCS developed a phased CIP for the treatment plant construction activities.

Western Canal Water Treatment Plant Master Plan, City of Phoenix - Dr. Arora assisted in developing a permitting plan for this planned 20 MGD plant. A summary of brine disposal alternatives, including evaporation ponds, deep well injection, and "State-of-the-Science" zero liquid discharge (ZLD) technologies, including thermal and non-thermal methods. This included a literature review, a summary of ZLD processes, and an assessment of energy requirements and environmental implications to characterize ZLD and volume minimization technologies. Existing research data from other City and AwwaRF projects were integrated into this assessment. A matrix of these disposal alternatives were developed to include costs, land area, permit requirements, energy requirements, long term sustainability, and staffing requirements. A preliminary process schematic was prepared for each disposal method. For each disposal method, an analysis of the technical, logistical, financial and regulatory ramifications were presented.

Glendale Treat-ability Studies, City of Glendale - Dr. Arora assisted with conducting an inventory of water system facilities, evaluation of treatment process alternatives, assistance in updating the hydraulic distribution system model, distribution system water quality modeling, preparation of cost estimates for recommended system improvements, preparation of portions of the Master Plan Report for a 10-MGD WTP, and final design of groundwater treatment (1MGD nitrate removal and 10 MGD nitrate removal) and surface water residuals handling treatment facilities (lagoons, thickeners, clarifiers).

Arsenic Mitigation for Groundwater, Rio Rancho, NM - Dr. Arora led several tasks related to technical solutions for this project. The City of Rio Rancho obtains its raw water from 21 wells and 13 are contaminated with arsenic. Dr. Arora evaluated a number of applicable technologies as part of a desktop study which involved pilot testing by seven vendors specializing in arsenic control.

Washington Suburban Sanitary Commission, Potomac Water Filtration Plant Reliability Study, Laurel, MD - Developed the phased treatment strategies for reliable operations to meet the 2030 water demands of 288 MGD and to comply with the current and future SDWA regulation using advanced technologies. Provided overall water quality and treatment related quality control supervision.

Potomac Water Filtration Plant Reliability Study, Laurel, MD - Dr. Arora developed the phased treatment strategies for reliable operations to meet the projected 2030 water demands of 288 MGD and to comply with the current and future SDWA regulation. He was responsible for the overall water quality and treatment -related quality control supervision, finalizing the treatment plans, and technical oversight during the start-up of new rehabilitated filters. The filter media depth was increased by installing low profile underdrains.

Quality Control Reviews of Documents - Dr. Arora provided the technical review of documents related to nitrate, arsenic and chromium control from groundwater. In addition, Dr. Arora reviewed contact documents for an ion exchange demonstration scale study for control of nitrate.

Litchfield Park Service Company - Contaminated groundwater plume containing trichloroethylene and other organic contaminants could potentially contaminate drinking water wells for LPSCO. As a technical lead, Dr. Arora conducted a desktop study to develop treatment recommendations based on potential contaminants and their projected levels.



John Brereton, P.E., Ph.D.

Professional Experience

Years of Experience: 20
Years with NCS: 17

Education

Ph.D Civil Engineering

Memberships & Certifications

Professional Engineer - Arizona,
Washington, and British Columbia

Member - AWWA, BCWWA

John Brereton, P.E. - Relevant Experience

Dr. Brereton has over 20 years of experience in the field of environmental engineering, focusing primarily on research studies for water and wastewater processes. He has completed several projects involving Awwa Research Foundation and the WaterReuse Foundation, many which involve distribution system water quality. He is the lead compliance engineer for SAMS Software products and is an expert in water and wastewater regulations and related software development and compliance algorithms. Dr. Brereton is an expert using water/wastewater models for system optimization.

His relevant SAMS Software experience includes development of various modules and setup for the following systems: Apache Junction, Superior, Bisbee, Sierra Vista, Casa Grande, Ajo, Stanfield, Tierra Grande White Tank, Golden Corridor Water Co., Coolidge, Coolidge Airport, Lakeside, Pinetop Lakes, Overgaard, Miami, San Manuel, Oracle, Winkelman, Sedona, Pinewood, Rimrock, Valley Vista, City of Casa Grande, City of Flagstaff, City of Peoria, City of Mesa, City of Needles, Us Bureau of Reclamation, Agua Fria, Sun City, Sun City West, North East Agua Fria, Teirra Del Rio, Tubac, Anthem, Paradise Valley, Chapparal, Mohave, Havasu, Desert Foothills, Camp Mohave, North Mohave Valley, Lake Mohave Highlands, Gateway, Rivovista Ranches, Edgewood, Clovis, Nwv, Verrado, Russel Ranch, Anthem, Paradise Valley, Chaparral, Gateway, Wishing Well, Paako, Camp Verde Sanitation District, Town of Cave Creek, City of Apache Junction, and Town of Oro Valley.

Regulatory Compliance Excellence Program (RCEP) For Water Remote Facilities, City of Phoenix, AZ - Dr. Brereton assisted the City on this program that was developed to evaluate the City's chemical facilities and identify improvements necessary to comply with chemical handling, fire code, and hazardous materials and waste regulations. Improvements were made to improve operator safety and access to controls when chemical spills are present, mitigate corrosion of piping and equipment, and upgrade electrical and instrumentation systems to meet codes, prevent corrosion and improve accessibility.

AWWA Workgroup - Dr. Brereton is participating as a member of an AWWA workgroup which is preparing comments on distribution system monitoring for the TCR six-year review.

EPCOR Water Software Implementation - Mr. Brereton served as a compliance engineer for implementing SAMSWater and SAMSWastewater at Arizona and New Mexico American Water Systems. He developed a functional specifications of the requirements and verify the architecture of SAMSWater/Wastewater against the functional specifications. He provided a direct integration of Promieum LIMS software to SAMSWater. SAMSWater has a built in capability to integrate with several LIMS software. All features were in-built into an out of the box functionality and will be implemented for the water utility. All the permits and schedules were incorporated into the software. A thorough training was provided for this tool to help familiarize the end users.

Multiple Water System Studies and Regulatory Evaluations, Litchfield Park Service Company, AZ - Mr. Brereton serviced as Senior Engineer on this project. NCS developed a compliance monitoring and tracking database for this water system with three POE's to ensure timely sampling for all regulated contaminants. NCS also developed an approved blending plan for nitrate to ensure blended concentrations are below 7 mg/L, safely below the MCL of 10 mg/L. This included automated controls and a representative monitoring program. Recently, NCS has initiated a detailed arsenic evaluation for LPSCO, in association with Valley Utilities, in a partially WIFA funded project. A total of 10 wells will be evaluated in this joint partnership project where a medium and small water system joined forces with NCS and WIFA to plan ahead for the Arsenic Rule.

Groundwater Rule 4 - Log Inactivation, City of Tolleson, AZ - Mr. Brereton served as Senior Engineer on this project. The City of Tolleson's (City) boundary is located southwest of the City of Phoenix (COP) and supplies potable water to its 6,680 customers in a six square mile area. The City has an agreement with COP for 10 years of water supply, with an option for 10 additional years. In addition, the City owns and operates two wells - Well 7B and Well 8. Water from both wells is treated with an electrodialysis reversal (EDR) treatment process. The water at both wells is chlorinated prior to its distribution. Purchased surface water from the City of Phoenix is also chlorinated. Treated water from both wells is conveyed to two separate finished water storage tanks, each with a capacity of 1 million gallons of water. Generally, the City operates Wells 7B and 8 to supply approximately 20 percent of the water demands, and generally groundwater serves the commercial and industrial customers. The majority of the residential customers are served by COP purchased water. Though the City chlorinates the groundwater, it does not monitor chlorine residuals using online monitors. Since the City disinfects water prior to its distribution and sufficient storage is available, maintaining a 4-log inactivation of viruses appears to be the best GWR compliance strategy. NCS assisted City in negotiating the groundwater compliance option with the primacy agency (Maricopa County Environmental Services Department) and assisted City in selection and installation of online chlorine monitors as per developed protocols.

Sample Collection Procedures and Location for Bacterial Compliance Monitoring, AwwaRF Project 2676 - Dr. Brereton served as an assistant project manager on this study. This study performed laboratory and field scale experiments and employed comprehensive data evaluation and statistical analysis tools to assess several variables associated with bacterial monitoring and development of sampling protocols. Dr. Brereton also assisted in identifying critical factors within the distribution system that affect bacterial monitoring results. This information was used to develop guidance on sample site selection; development of standardized approaches for developing monitoring plans, and sample collection and handling procedures. Criteria for the spatial distribution of samples within the distribution system was also developed to accurately reflect demand conditions.

Greater Vancouver Water District - Dr. Brereton had a lead role in the implementation of a pilot plant study of several drinking water quality improvements. These improvements included ozonation, dissolved air flotation, and UF membranes.

Wastewater NPDES Compliance Extension Applications, Rio Rancho, NM - Dr. Brereton prepared permit modification request documents for a NPDES compliance extension for three wastewater treatment plants in Rio Rancho, New Mexico. The three year extension is needed to avoid the costs of additional treatment for arsenic at the WWTPs to comply with the NPDES arsenic standard while source water treatment for the drinking water Arsenic Rule is implemented.

Disinfection By-Products - Dr. Brereton has conducted studies that investigated the interaction of residual chlorine in drinking water with the internal environment of distribution system pipes, specifically implications on the occurrence of disinfection by-products. He developed several techniques through this study, including an improved Simulated Distribution System test, and a customized hydraulic modeling of reaction kinetics.



Erin Mulligan

Professional Experience

Years of Experience: 22
Years with NCS: 2

Education

B.S. - Microbiology
Arizona State University

Graduate work - Agribusiness
Arizona State University East
Campus

Licenses & Certifications

Grade IV Water Distribution,
Arizona Department of
Environmental Quality

Grade IV Water Treatment,
Arizona Department of
Environmental Quality

Grade I Wastewater Treatment,
Arizona Department of
Environmental Quality

40h-Hour Hazwoper Certification

Erin Mulligan - Relevant Experience

Ms. Pysell has extensive experience in water operations and environmental regulations. Throughout her career she continually implements streamlined and efficient approaches to managing projects by utilizing available tools and resources and developing effective guidelines that personnel can understand and follow. Her experience and knowledge in both environmental compliance and drinking water utilities has given her a unique understanding of the importance of efficiently operating and maintaining critical water facilities while meeting the vast array of environmental compliance requirements.

Arsenic Treatment Facilities and Arsenic Blending - As the City of Phoenix Process Control Specialist Ms. Pysell managed over 10 Arsenic Treatment Facilities and 3 Arsenic Blending Facilities. Since the City of Phoenix was the first in the country to operate a full scale Arsenic Treatment Facility, Ms. Pysell established operations procedures and protocols to be followed by operations staff. She developed process control monitoring and sampling program to track and evaluate water quality and media performance. By closely tracking process data and making operational adjustments she was able to reduce media usage. She also developed an innovative media contract to be followed by media vendors. In conjunction with city engineering and consultants she coordinated design, construction and commissioning of new arsenic treatment facilities ensuring compliance with Maricopa County Environmental Services (MCESD).

Remote Facilities Maintenance and Operations, City of Phoenix - Ms. Pysell was the Water Facilities Supervisor for the City of Phoenix, Remote Facilities Section. Under this role she oversaw the maintenance and operations of over 200 remote drinking water sites which included steel tanks, concrete reservoirs, booster pump stations, drinking water wells, pressure reducing stations, disinfection facilities, aeration and arsenic treatment facilities. She supervised a staff of approximately fifty employees in multiple disciplines such as heavy duty mechanics, welders, electricians, operators and administration staff. She prioritized repairs and maintenance activities to prevent while balancing employee resources and operating budget.

Steel Tanks Program, City of Phoenix - Ms. Pysell, as the Water Facilities Supervisor collaborated with Steel Tank Contractors on planning, design and construction of new steel tanks, upgrades and rehabilitated steel tanks. She provided direction on City steel tank requirements during phases of design and construction. She oversaw the maintenance and cleaning of steel tanks including ensuring proper disinfection and testing before putting the tank back in service.

Facility Startup up and Shutdown for Repairs and Maintenance - During upgrades, repairs and maintenance Ms. Pysell was integral in the planning of facility shutdown and start up. She has planned and implemented facility shutdowns and startups by developing Maintenance of Plant Operations (MOPOs) for new and upgraded remote facilities such as steel tanks, wells and booster stations. She has provided direction on disinfection, testing and flushing of mains and/or remote facilities during maintenance and shutdowns. In preparation of site outages during the shutdowns she facilitated new operational plans by collaborating with multiple work groups to minimize impacts to pressure zones and water demands.

SCADA Operations - As the Water Facility Supervisor for SCADA Operations she supervised the SCADA Operations work group responsible for remotely delivering drinking water throughout a 500 square mile distribution system using booster pumps, pressure reducing valves, steel tanks, concrete reservoirs and wells.



Ben B. Movahed, P.E., BCEE

Lead RO Process Engineer

Years of Experience: 32
Years with WATEK: 22

Education: MS / Environmental Engineering, University of Maryland, USA, 1986
BS / Civil Engineering, University of Houston, USA, 1982

Registrations: Registered Professional Engineer (MD: #16889; VA: #0402037230;
PA: #PE077915; NC: #019365; WV: #012157; NJ: #24GE03933700;
FL: #56503; & DC: #PE10455)
Board Certified Environmental Engineer by the Academy of
Environmental Engineers (#97-20015)

Awards and Publications / Presentations:

Mr. Movahed has received 10 awards from various national organizations, such as American Water Works Associations, American Desalination Association, and American Membrane Technology Association. He has published and presented over 80 papers at various conferences and in national journals. He has co-authored and edited books and continues to teach membrane related short courses to Johns Hopkins graduate students as well as Engineers, Regulators and Water Management Professionals.

Professional Affiliations:

- Member of the Board of Directors, American Membrane Technology Association (AMTA), 2000 to present; Also, Program Committee, Poster Chair, and Publication Chair
- President of the American Membrane Technology Association (AMTA), 2002 to 2004
- Member of the Board of Directors, American Desalting Association (ADA), 1998 to 2000
- Chair of the Water Quality Committee, American Water Works Association (AWWA), Chesapeake Section, 1997 to 2000
- Publication Committee, International Desalination Association (IDA)
- Member of American Water Works Association (AWWA) and American Society of Civil Engineers and the Washington Society of Engineers
- Volunteer, John's Hopkins University Engineers Without Borders

Experience Summary:

Ben has over 30 years of engineering experience in study, evaluation, design and construction services for water facility projects, including conventional surface water, Iron and Manganese removal and ground water under the influence of surface waters. For the past two decades, Mr. Movahed has been involved in over 50 advanced treatment technology projects, including Desalination, Reverse Osmosis, Nanofiltration, Electro-Dialysis Reversal (EDR), Microfiltration, Membrane Bio-Reactor (MBR), Ultrafiltration and Ion Exchange treatment. He was the leading author of the Ten State Standard Policies for Microfiltration-Ultrafiltration (MF/UF) and Nanofiltration-Reverse Osmosis (NF/RO) and has been in direct communication with EPA staff, as well as various state regulatory agencies through his activities as the chair of AMTA Government Affairs and Publication Committee. Mr. Movahed has been involved in some of the world's largest membrane plants ranging up to 130 MGD in capacity.

Sample Project Experience:

Seawater Membrane Reverse Osmosis Desalination Plant (Design/Build), Dubai, UAE

Lead Process Engineer

The plant is one of the largest seawater RO plants worldwide with a capacity of 30 MGD. Mr. Movahed's role was lead engineer for plant layout, hydraulics and design of all pretreatment, RO desalination, chemical feed systems, finished water tank, pipeline, pump station and post treatment. He coordinated and directed all engineering aspects with the client, manufacturers and contractors.

Membrane Reverse Osmosis Brackish Water Treatment Plant, Williamsburg, VA

Lead Process Engineer

Conducted study, design, construction services and testing for the plant. NF, EDR and RO were evaluated during the study phase and RO was selected for final design and implementation. This 5 MGD RO facility was completed in April 2005 and has been successfully making water surpassing the water quality requirements and below the estimated power usage and chemical clean needs. Mr. Movahed was the lead process engineer for both phases of the project. The James City facility has received two national awards.

Pennsylvania State University Integrated Membrane Water Plant, State College, PA

Membrane Design Engineer and Consultant

Mr. Movahed provided design of the membrane facility for the 5.2 MGD facility to the prime consultant. The project is an integrated membrane plant consisting of a Pall Microfiltration system followed by Nanofiltration for softening and emerging contaminant removal. This facility has been in operation since April 2017.

Brackish Water RO Membrane Desalination at Eastern Correctional Institution Facility, Westover, MD

Project Manager and Lead Engineer

This project included the expansion and upgrade of the 1 MGD brackish water for the Eastern Correctional Institution the project includes pretreatment chemical feed system and building modifications. The design was based on a comprehensive study by WATEK Engineering. The facility has been successfully in operation since April 2011. Mr. Movahed reviews the plant performance data and monitors plant efficiency, water quality and performance.

RO Membrane Water Treatment Facility Expansion, Town of Jupiter Island, FL

Project Manager

The initial expansion was designed for 2 MGD, with an ultimate expansion design for 8 MGD. To meet the client's completion deadline, the project was put on a fast track Design/Build schedule. Mr. Movahed was the lead engineer and engineer of record responsible for coordinating and producing the final design for process, civil, electrical, control and structural. Mr. Movahed also supervised entire facility commissioning and testing.

People's Moss Landing Desalination Water Treatment Plant, Monterey, CA

Process Engineer

Provided conceptual design and report evaluation of three intake alternatives with comprehensive pretreatment (two stage Media Filtration and/or Ultrafiltration), partial two-pass Reverse Osmosis desalination, post treatment and 19 miles of 36" pipeline for a potential 12 MGD seawater desalination plant.



Zohreh Y. Movahed, Ph.D., P.E.

Process Engineer

Years of Experience: 31

Years with WATEK: 2

Education: Ph.D. / Environmental Engineering, University of Maryland, USA, 1989
MS / Environmental Engineering, University of Maryland, USA, 1986
BS / Chemical Engineering, University of Houston, USA, 1984

Registrations: Registered Professional Engineer (MD: #21947; CA: #CH 6701)

Awards Dr. Movahed has received numerous awards including the Prestigious Gordon Maskew Medal from the Water Environment Federation, and Excellence in Teaching Award from Johns Hopkins University

Professional Affiliations: Member, American Membrane Technology Association (AMTA)
Member, Water Reuse Association (WRA)
Joint Chesapeake Section of the American Water Works Association and Water Environment Federation Water Reuse Committee
Maryland State Water Quality Advisory Water Reuse Committee

Experience Summary:

Dr. Movahed has over 30 years of Environmental Engineering experience in Project Management, Integrated Water Resources Management, Groundwater and Surface Contamination, Source Water Protection, Safety Management, Water and Sewer Infrastructure Development, Regulatory Compliance and Water Reuse. At WATEK, Dr. Movahed provides engineering support for membrane project design and operations, incorporating end user perspective related to ease of operation, safety, reliability, maintenance and troubleshooting. Prior to WATEK, as the Washington Suburban Sanitary Commission's (WSSC) Regulatory Group Leader, she developed the Water Reuse Regulations and was responsible for approval of Centralized and Decentralized Water Reuse projects. She is also as instructor at Johns Hopkins University (JHU).

Sample Project Experience at WATEK Engineering:

Pennsylvania State University Integrated Membrane Water Plant, *Pennsylvania*

Project Engineer

Assisting the project team with design and construction of a vacuum low-pressure membrane filtration system with powdered activated carbon for enhanced organics removal and reverse osmosis membrane filtration for hardness removal. WATEK is the membrane sub-consultant for this project, which has been in operation since April 2017.

12 MGD People's Moss Landing Desalination Water Treatment Plant, *California*

Project Designer

Assisting with the conceptual design and cost estimates for a potential seawater desalination plant at Moss Landing property in Monterey, California. The project includes a comprehensive pretreatment consisting of a two stage Media Filtration and/or Ultrafiltration, plus partial two-pass Reverse Osmosis desalination, post treatment and 17 miles of 36" pipeline. WATEK is the membrane consultant and the plant alternatives are currently being studied and evaluated.



444 W. 21st Street, Suite 101.
Tempe, AZ 85282
(480) 921-0809

RESUMÉ

Joseph F. Miller **Vice President of Phoenix Operations**



EDUCATION

- Wabash Valley Vocational Center
- Enfield Community High School

QUALIFICATIONS

- Motor Controls
- RTU Installations
- Scada Installations
- DCS Control Systems
- Medium Voltage Installations
- Security and Fire Alarm Installations

CERTIFICATIONS

- Arizona Construction Law
- Labor Relations Workshop
- RMEC Course 910 Industrial Terrorism Awareness
- Handling Difficult Employees/Conflict Resolution
- OSHA 10 hr.
- NFPA 70E
- MSHA
- Train the Trainer
- First Aid / CPR
- Confined Space

EXPERIENCE

LUDVIK ELECTRIC CO.

Vice President Phoenix Operations

March 2010 - Present

Construction Manager

1996 - 2010

Thirty-Eight years in the electrical field with experience ranging from remodel, Industrial to \$36million Waste water treatment project. Projects included water treatment plants, wastewater treatment plants schools, dormitories, marine base intrusion detection systems, high voltage distribution system replacements, hospitals, and generator replacements. Overall responsibility for all field operations for the projects mentioned above. Other duties included safety officer, project manager, estimator, purchasing, and quality control.

PREVIOUS EXPERIENCE

KAMSCO Electrical Contractors, Inc. – Division of A.T.I., Phoenix, AZ
Field Operations Manager

1985 - 1996

Miller Electric
Electrician

1976 - 1985

FIRMS' PROJECT EXPERIENCE

- Ocotillo WRF Expansion, 950K, Electrical & Instrumentation, General Contractor Sletten Construction, Owner City of Chandler
- Ocotillo WRF Upgrades, 600K, Electrical & Instrumentation, General Contractor MMC, Owner City of Chandler
- Ocotillo WRF Influent Pump Station, \$2.1, Electrical & Instrumentation, General Contractor – MGC, Owner – City of Chandler
- 91st Ave WWTP UP01, \$36M, Electrical & Instrumentation, General Contractor – PCL, Owner – City of Phoenix
- 91st Ave WWTP UP05A, \$8.5M, Electrical & Instrumentation, General Contractor – PCL, Owner – City of Phoenix
- Tolleson WWTP Solids Handling Improvements, \$7.1M, Electrical & Instrumentation, General Contractor – PCL, Owner City of Tolleson
- Tolleson WWTP Ammonia Removal Improvements, \$995K, Electrical & Instrumentation, General Contractor – Archer Western, Owner City of Tolleson
- Prescott Airport WRF Expansion, \$6.9M, Electrical & Instrumentation, General Contractor – PCL, Owner – City of Prescott
- Three Phase Digestion Project, 500K, Electrical & Instrumentation, General Contractor- PCL, Owner City of Phoenix
- Bio-Solids Project, 300K, Electrical & Instrumentation, General Contractor- PCL, Owner Superstition Mountain Community Facilities
- Phoenix JOC's, 1.2M, Electrical & Instrumentation, General Contractor –PCL, Owner City of Phoenix.
- Phoenix WWTP JOC's, 200K, Electrical & Instrumentation, General Contractor – PCL, Owner City of Phoenix
- Phoenix 91st Av. Process Control Improvements, 2.5M,Electrical & Instrumentation, General Contractor Ludvik Electric Co., Owner City of Phoenix.
- Standby Power Upgrades at 23rd Av. WWTP, 6.6M,Electrical & Instrumentation, General Contractor Ludvik Electric Co., Owner City of Phoenix.
- Plant Improvements at 23rd WWTP, 1.3M, Electrical & Instrumentation, General Contractor MGC, Owner City of Phoenix
- Minor Mods at 91st Av., 500K, Electrical & Instrumentation, General Contractor Centric Jones, Owner City of Phoenix
- Dell Webb Anthem WTP & WWTP Design Build, 2M, Electrical & Instrumentation, General Contractor Martin K EBY, Owner Dell Webb
- Solids Handling at 23rd av. WWTP, 3.2M, Electrical & Instrumentation, General Contractor APC&TK, Owner City of Phoenix.
- 23rd WWTP Influent Pump Station, 1.8M, Electrical & Instrumentation, General Contractor Archer Western, Owner City of Phoenix
- Surprise WRP Expansion, 1.9M, Electrical & Instrumentation, General Contractor MGC, Owner City of Surprise.
- Festival WRP, 1M, Electrical & Instrumentation, General contractor Hunter Contracting, Owner Town of Buckeye
- Rainbow Valley WRP, 400K, Electrical & Instrumentation, General Contractor Archer Western, Owner City of Goodyear
- Scottsdale Water Campus Phase 3 Expansion, 3.1M, Electrical & Instrumentation, General Contractor MGC, Owner City of Scottsdale
- Goodyear WRP, 500K, Electrical & Instrumentation General Contractor Archer Western, Owner City of Goodyear
- Goodyear WRP Package 1, 900K, Electrical & Instrumentation General Contractor Archer Western, Owner City of Goodyear
- Goodyear WRP Package 2 & 3, 4.5M, Electrical & Instrumentation General Contractor Archer Western, Owner City of Goodyear
- UPO 5B at 91st av WWTP, 12.9M, Electrical & Instrumentation, General Contractor McCarthy, Owner City of Phoenix
- Cave Creek WRP Upgrades, 400K, Electrical & Instrumentation, General Contractor Kiewit Western, Owner City of Phoenix
- Cave Creek WRP CMAR, 2.1M, Electrical & Instrumentation, General Contractor Garney Construction, Owner Town of Cave Creek.
- Beardsley WRP Misc Improvments, 700K, Electrical & Instrumentation, General Contractor MGC, Owner City of Peoria
- Tres Rio's Pump Effluent Pump Station, 5.6M, electrical & Instrumentation, General Contractor Archer Western, Owner City of Phoenix
- Kingman Downtown WWTP, 2.2M, Electrical & Instrumentation, General Contractor Felix Construction, Owner City of Kingman
- Mesa Northwest WRP, 1.4, Electrical & Instrumentation, General Contractor Hunter Contracting, Owner City of Mesa



Marvin Glotfelty is a Registered Geologist in Arizona and California, and is also a Licensed Water Well Driller in Arizona. With this broad background in groundwater and wells, Mr. Glotfelty is recognized as one of the leading experts in water well design and construction technology in the United States. During his professional career of 30 years, Mr. Glotfelty has been involved with the design, installation, rehabilitation, or decommissioning of over 800 water wells, and has served as Technical Director of the Arizona Water Well Association since 1990. He has given over 100 lectures and workshops to professional driller organizations, hydrogeologists, water system operators and university students in 17 different U.S. states and five other countries. Mr. Glotfelty specializes in conducting studies of groundwater systems for public and private water purveyors and other entities having particular groundwater-related problems. He brings a complete understanding of the problem to be solved and a strong sense of the hydrogeological sciences that must be implemented to resolve it. His depth of knowledge in the design, assessment and rehabilitation of water wells enable him to resolve complex site-specific problems with each groundwater system being considered.

Relevant Experience

WELL SITING STUDIES

Mr. Glotfelty has been involved with well siting studies and recharge siting studies covering approximately 1,500 square miles in Arizona, including projects for private water purveyors such as Arizona-American Water Company; Foothills Golf Club; Forest Highlands Golf Club; Global Water Company; Kachina Village Utilities; and Tonto Hills Water Company. He has also conducted well or recharge siting studies for municipalities in Arizona such as the Cities of Avondale, Casa Grande, Chandler, Mesa, Peoria, Phoenix, Scottsdale, Show Low, Surprise, and Tempe.

PRODUCTION WELL DESIGN AND INSTALLATION

Mr. Glotfelty has been involved with hundreds of projects involving the design and construction management of water supply well installations for municipalities, private water companies, mining facilities, power plants, or other industrial facilities.

Public Supply Wells for Municipalities

Includes *two wells* in Avondale, AZ; *one well* in Benson, AZ; *eleven (11) wells* in Buckeye, AZ; *six wells* in Chandler, AZ; *one well* in El Mirage, AZ; *three wells* in Goodyear, AZ; *two wells* in Kingman, AZ; *six wells* in Mesa, AZ; *three wells* in Nogales, AZ; *three wells* in Peoria, AZ; *ten wells* in Phoenix, AZ (of which four were Aquifer Storage & Recovery wells); *two wells* in Prescott, AZ; *seven wells* in Scottsdale, AZ (of which two were ASR

wells); *one well* in Show Low, AZ; *thirteen (13) wells* in Surprise, AZ; *two wells* in Tempe, AZ; *two wells* in Tolleson, AZ; and *three wells* in Yuma, AZ.

Aquifer Storage & Recovery (ASR) Wells

Includes design and construction management of over 2 dozen ASR wells in the Phoenix municipal area. Four ASR wells for the City of Phoenix (ASR Well No. 299, No. 9A-300, Cave Creek ASR Well and Deer Valley ASR Well) involved pioneering technologies, such as the *reverse-syphon injection method* or use of *manufactured glass beads* for the well's filter pack. These ASR wells were the some of the first to incorporate these leading-edge technologies in the United States. During each ASR well installation, Clear Creek Associates coordinated the activities of the drilling contractor and sub-consultants. On the basis of the site-specific and depth-specific data from each pilot borehole, Clear Creek Associates developed a site-specific ASR well design and provided construction management on a 24-hour per day basis during each well installation, as well as oversight and monitoring during the development and testing of each ASR well.

The innovative attributes and pioneering technologies of the first three ASR well projects resulted in the City of Phoenix being

EDUCATION

MS Geology, Northern AZ University, 1985

BS Geology, Northern AZ University, 1979

REGISTRATIONS

Registered Geologist AZ
Registered Geologist CA
Licensed Well Driller AZ
Licensed Contractor AZ

PROFESSIONAL MEMBERSHIPS

Northern Arizona University College of Engineering and Natural Sciences Advisory Council
Northern Arizona University Geology Dept Advisory Council
Arizona Hydrological Society
Arizona Water Well Association
Mountain States Groundwater Expo
National Groundwater Association
Honorary Advisory Board of Groundwater Age Magazine

awarded the **2013 National Ground Water Association's Outstanding Groundwater Project Award** as the **top groundwater project in the nation** (Groundwater Supply category).

Non-Municipal Water Well Installations

Examples of *water supply well installations for private water companies* or other private entities include: Arizona-American Water Company (*nine wells* in the west Phoenix, AZ metropolitan area, and *two wells* at Bullhead City, AZ); Kinder Morgan (*two wells*); Litchfield Park Service Company (*one well*); Metro Water Company in north Tucson, AZ (*three wells*); Global Water Resources in Buckeye, AZ (*six wells*); and Kachina Village Utilities near Flagstaff, AZ (*two wells*).

Industrial Water Well Installations

Industrial or irrigation well design/installation projects include: Industrial Use / Dewatering Wells for the 91st Ave Wastewater Treatment Plant, Phoenix AZ (*four wells*); First Solar Alpine Power Plant near Lancaster, CA (*one well*); California Baptist University at Riverside, CA (*one well*); Foothills Golf Club in Phoenix, AZ (*two wells*); Harquahala Generating Power Plant in western AZ (*five wells*); and Forest Highlands Golf Association near Flagstaff, Arizona (*one well*).

Native American Community Water Well Installations

Mr. Glotfelty has also overseen the installation of *water supply wells on Native American lands*, such as: Window Rock High School at Fort Defiance, AZ (*one well*); Second Mesa Day School at Second Mesa, AZ (*one well*); and the Salt River Pima-Maricopa Indian Community near Mesa, AZ (*five wells*).

As Project Manager, Principal Hydrogeologist, or Principal-in-Charge for these projects, Mr. Glotfelty was responsible for the design, installation, and testing of the water supply well for the client. He coordinated contractor activities, and supervised preparation of lithologic logs, analyzed geophysical logs and sieve analyses of pilot hole cuttings, coordinated the collection and analysis of depth-specific groundwater samples, and supervised the collection and analysis of hydrologic data (falling-head tests). Based on that data, he supervised or prepared the site-specific well design for each public supply well. He also analyzed aquifer test data, and provided a recommended permanent pump setting and discharge rate for each new well.

Well Evaluation & Rehabilitation Projects

Mr. Glotfelty conducted numerous well evaluation and rehabilitation projects for municipalities, private water companies and industries, to improve the pumped water quality or overall performance, through the structural modification of the well. These projects included site-specific well analyses utilizing flow profile analysis

(spinner flowmeter logging or dye tracer profiling) under both dynamic (pumping) and static (non-pumping) conditions, along with and depth-specific groundwater sampling to determine the hydrogeologic, chemical, and biological conditions of the well.

In addition, conventional aquifer test data were collected and analyzed for each well, and a well video survey of each well was conducted to assess its structural condition. In some cases, emerging technologies such as remote eddy (CITM) geophysical logs were used and calibrated to provide a determination of the remaining well casing wall thickness in older wells.

Well evaluation/rehabilitation projects include: *four wells* for EPCOR (previously, Arizona-American Water Company) near Surprise, AZ; *four wells* for the City of Chandler, AZ; *twenty (20) wells* for the City of Cottonwood, AZ; *one well* for the Town of Gilbert, AZ; *five wells* for the City of Phoenix, AZ (**for rehabilitation of Wells No. 211, No. 214, and No. 250, Mr. Glotfelty was awarded the City of Phoenix Mayor's Environmental Award in 1995**); *eight wells* for the City of Mesa, AZ; *fourteen (14) wells* for Global Water Company in Pinal County, AZ; *one well* for the City of Scottsdale, AZ; *Two wells* for the City of Surprise, AZ; *five wells* for the City of Ontario, CA; *two wells* for San Antonio Water Company in Upland, CA; *two wells* for Adaman Water Company near Goodyear, AZ; *five wells* for the Town of Queen Creek, AZ; and *one well* for the Harquahala Power Plant in western Arizona. Mr. Glotfelty has also been involved with remote eddy (CITM) analyses to assess the remaining casing wall thicknesses. This was done at *five wells* for Arizona Public Service at various power plant locations in Arizona; and at *one well* for the City of Pomona, CA.

The tasks performed as part of these projects included: evaluation of the spinner logs or dye tracer flow profile data, as well as the depth-specific (zonal) groundwater samples under dynamic (pumping) as well as static (non-pumping) conditions; collection and analysis of aquifer test data; and review of well video surveys. In cases where other well evaluation techniques, such as remote eddy logs or gyroscopic surveys were used, Mr. Glotfelty provided oversight of the data analysis and interpretation, as well as the recommended well modification, when warranted.

When the well evaluation indicated structural modification would improve the well, the well rehabilitation design was based on these analyses. Mr. Glotfelty was responsible for the design and construction administration of the structural modification of each well. He coordinated and supervised the inner-string cementing operations, utilizing a combination of water well and oil well industry techniques.

**DELBERT (DEE) NICHOLS III,
E.I.T.**

PROJECT MANAGER



EXPERIENCE

12 YEARS WITH DELTA SYSTEMS
ENGINEERING, INC.

16 YEARS EXPERIENCE

EDUCATION

BACHELOR OF SCIENCE,
ELECTRICAL ENGINEERING
TECHNOLOGY,
NORTHERN ARIZONA
UNIVERSITY

**PROFESSIONAL
REGISTRATION**

ENGINEER IN TRAINING (E.I.T.)

**DELBERT (DEE) NICHOLS III,
E.I.T.**

PROJECT MANAGER

Dee has 16 years of experience with electrical and controls system design and project management, 12 years with DeltaSE. He also has more than four years of programming and development experience along with more than five years of extensive electrical and control troubleshooting experience. He brings vast project experience to our team, ranging from development of initial conceptual and/or detailed designs to installation, troubleshooting, energy studies, and system startup. He has experience in generating designs and managing projects ranging from stand-alone packaging systems and water production facilities to multi-site networked video surveillance systems.

RELEVANT PROJECTS

City of Scottsdale Booster Pump Stations 36-3 and 36-5 Replacement / Upgrades, Scottsdale, AZ

Mr. Nichols served as Project Manager on this project in which a total of three existing City of Scottsdale pump stations were replaced/upgraded at two separate sites (one pump station at Site 36-3 and two pump stations at Site 36-5). Both sites included design for hypochlorite chlorination systems to chlorinate the water being sent to the city's distribution system. The design included metering pumps, chlorine analyzers, and storage tank level monitoring for the hypochlorite system. Additionally, the design included new electrical services at each site, pump starter design, design of hydropneumatic system and air compressor system control panels, power, lighting and grounding design for new pump station/electrical buildings, PLC/RTU system design/upgrades, standby power system, video surveillance and security system provisions, and extensive construction sequencing to ensure minimal impact to site operations.

City of Phoenix Well 281 Retrofit, Phoenix, AZ

Mr. Nichols served as Project Manager on this project which consisted of replacing the existing 9A electrical distribution system and RTU at the City of Phoenix (COP) Well Site 281. The electrical design package included a new 480 volt, 3 phase, 4 wire electrical service from APS and associated switchboard, new starters for existing booster pumps, new solid state starter for existing Well Pump 281, new Automatic Transfer Switch, and new chlorination and de-chlorination systems.

CAP Tucson Field Office Well Disinfection System, Tucson, AZ

Mr. Nichols served as Project Manager on this project in which DeltaSE provided electrical design services for the CAWCD Tucson Field Office for a recirculation pump system. This pump system was used to keep the chlorine levels up on a storage tank being fed from a tablet chlorination system. CAWCD design and CAD standards were used.

CCA Eloy Well Site Rehabilitation, Eloy, AZ

Mr. Nichols served as Project Manager on this project in which DeltaSE provided design services to rehabilitate an existing well site for the Eloy Corrections Corporation of America facility. This project included developing an electrical design integrating a new well pump, flow meter, and gas chlorination system.

City of Phoenix Arsenic Removal Facilities for Groundwater, Phoenix, Arizona - Mr. Nichols served as Project Manager for design and construction services in support of the ongoing development and construction of facilities to remove arsenic from over 20 City of Phoenix well sites. Design services included meeting attendance, preparation of legends, site plans, load calculations, and design drawings for electrical and I&C plans, and assistance during the CM@Risk process. Construction Phase included electrical observations, reviewed submittals, attended project meetings, witnessed startup-testing, prepared punchlists, reviewed record drawings, prepared record drawings, reviewed O&M manuals, witnessed standby generator testing, assisted with construction management, and responded to RFIs. Programming and start-up services were also included.

Gilbert Booster Station 21 Arsenic Mitigation, Gilbert, Arizona -

Mr. Nichols served as Project Manager for development of the electrical, instrumentation, and control systems associated with the installation of a new Arsenic Treatment Facility at Booster Site 21. The design accommodated installation of the following major system components: Backwash Equalization tank Sump Pump (design of associated control panel was included), field instrumentation such as process flowmeters, pressure transmitters, differential pressure switches and a system bypass flow control valve. The design also accommodated the interfacing required between the Arsenic Treatment System and existing well pump starter located at remote Well 21.

City of Prescott Zone 39 Water System Improvements, Prescott, Arizona -

Mr. Nichols served as Project Manager of electrical design for two pump stations: the new Pioneer Pump Station, and the existing White Spar Pump Station Retro-fit, near Granite Creek. We conducted site visits at both pump stations to determine existing conditions in order to prepare our drawings. As an option at the Pioneer Pump Station, the team took inventory of the electrical equipment on site. We prepared a demolition plan that included details, notes, and specifications for disconnecting and removing the existing electrical equipment and enclosures at the site. As an Option at the White Spar Pump Station, the team prepared plans and specifications for a new SCADA RTU, similar to the new Pioneer Pump Station RTU.

Heber WTP 2MG-6MG Expansion Treatment, Heber, Arizona -

Mr. Nichols served as Project Manager on this project which consisted of developing the electrical design associated with the expansion of the existing Water Treatment Plant from 2MGD to 6MGD. This design accommodated the installation of the following new equipment: Flow Meter and Polymer Metering Pump at Basin #1 inlet, Raw Water Pump Station with three (3) 40Hp VFD controlled pumps, two (2) new packaged US Filter Treatment Units including design for wiring between associated field devices and control panel, Finish Water Pump Station with two (2) 40Hp VFD controlled pumps, Ultrasonic Level Transducer/Transmitter on existing 1.7MG Reservoir, High Services Booster Station with three (3) 150Hp VFD controlled pumps and relocation of existing Backwash Pumps. Design also included lighting and convenience power for new shade structures installed for Polymer Metering Pump at basin #1, Raw Water Pump Station, new Treatment Units, new and existing Finish Water Pump Stations. Capacity of existing Power Distribution and Standby Power Generation Systems was evaluated and necessary changes were made to ensure the system can support future expansion of plant capacity to 8MGD.

**REGISTRATION:**

Professional Civil Engineer
AZ #34589 / NM #22127

EDUCATION:

BS, Civil Engineering,
Northern Arizona University

PROFESSIONAL AFFILIATIONS:

NAU Industrial Advisory Board
Member, College of Civil and
Environmental Engineering,
Since 2015
American Society of Civil
Engineers, Since 1993
American Public Works
Association, Since 1999
American Council of Engineering
Companies, Since 2004

TOTAL YEARS EXPERIENCE:

22

YEARS WITH FIRM:

12

STEVE LEWIS, PE | SITE CIVIL MANAGER**PROFESSIONAL SUMMARY**

Steve has 22 years of experience in master planning, civil engineering design, municipal infrastructure, transportation, and project management. Steve tackles project concerns and develops cost effective engineering solutions. He specializes in water distribution systems, site civil design, utility design and coordination, wastewater collection systems, reclaimed waterlines, and construction administration services. Steve prepares concept plans, master plans, construction plans, and obtains necessary permits and approvals. He also participates in the bid process including bid result compilation, analysis and recommendation.

PROJECTS**Gila Bend Brine Pond Expansion & East Waterline Extension, Town of Gila Bend, AZ.**

Project Manager. RPA completed an expansion of the water treatment plant brine pond system and design for 3.5 miles of new waterline. RPA completed all work in accordance with United States Department of Agriculture – Rural Development (USDA-RD) funding requirements. The project included a complete evaluation of the water treatment and distribution system including all pump stations, water tanks, and distribution for the east portion of the Town. The brine pond expansion was designed in 2013 and constructed in 2014. RPA was rewarded with a second task to design 3.5 miles of waterline for the east side of Gila Bend. A part of the work was the preliminary design of a new booster station and evaluation of an existing booster station with expansion tank. We are currently preparing an application for USDA-RD funding to proceed with construction.

GRIC Intertie Water Infrastructure Upgrades & Booster Station, Sacaton, AZ. Project

Principal. RPA is completing design of four miles of waterline to connect GRIC District 2 with District 3. The project involves survey and design of replacement waterlines along with a water pressure booster station.

1789 West Jefferson – DES Building Pump System. Project Manager. RPA was contracted under our on-call services contract with ADOA to design a new pump station to pump stormwater from a large underground storage tank to the City storm drain. The project included modeling calculations for the tank storage and duplex pump system with electrical, controls, and alarms. The system was designed to replace a failing drywell drainage system.

Buckeye District Engineering Services RSID. Project Engineer. Infrastructure improvements including comprehensive drainage analysis of two square mile area south of I-10, existing and proposed roadways, and proposed waterlines and sanitary sewer lines. The drainage analysis includes hydrologic and hydraulic analysis and detailed design of all required drainage facilities to meet the City's offsite and roadway design requirements. The design includes an evaluation of the drainage flows over an area approximately three miles in width and length. The project requires extensive coordination with stakeholders. As part of this project, our team partnered with the development community; City of Buckeye staff; Financial Bond Counsel; utility companies; FCDMC, and ADOT.

56th Street Water/Sewer/Lift Station Abandonment, City of Phoenix, AZ. Project Manager. This project involved the complete closure and abandonment of a lift station site and all associated equipment at the City of Phoenix sewer lift station #63, one mile north of Bell Road. Additional measures associated with the abandonment of the lift station included the vertical re-alignment of a 42-inch and 16-inch water main within 56th Street, as well as the extension of a 36-inch gravity sewer across 56th Street. Provided data collection, surveying, utility coordination, pre-final and final plans, special provisions, estimates, closure reports and County Approval to Construct (ATC) documents for the removal/abandonment of the sewer lift station. Due to the complexity of this project, the team had to use innovative and "out of the box" designs to account for all of the factors affecting this project. As part of this project, provided Post Design services and was the Resident Engineer throughout construction.

Ak-Chin Community, Golf Pump House Improvements, Maricopa AZ. Arcore Group Inc. Project Manager. This project involved topographic surveying and civil engineering design for a new pump house facility. The pump house facility is for the existing reclaimed water circulation pump systems. A new pump house was designed to enclose the pump systems and electrical systems. Revised

grading and roadway design was completed to ensure the new building was protected from drainage. All work was completed for the Capital Improvements Department.

Broadway Rd. Waterline, City of Mesa, AZ. Project Manager. Preparing water and gas line plans and profiles along Broadway Road in Mesa, Arizona. Plans include design of a 24", 16" & 12" D.I.P. (Ductile Iron Pipe) waterlines, a 6" high pressure steel gas line and an intermediate 4" polyethylene gas line. RPA will also perform ground survey to establish horizontal and vertical control throughout the project limits, supplemental topographic survey, and basemapping. Coordination with Union Pacific Railroad Company and utility companies is also involved.

Edwards Tract Waterline Improvements and Construction Administration, City of Peoria AZ / Pierson Construction Co. Project Manager. Provided topographic surveying, base mapping and civil construction plans for the City of Peoria and Pierson Construction. The project consisted of the design and civil permitting for a new 8" looped distribution main for an area being serviced by poor, undersized dead end waterlines. The project included modifying the water main piping system to connect the new mains to the correct pressure zone within the City. Provided construction staking and construction management assistance for the installation of the new distribution main.

White Tanks RV Dump Station, Waddell, AZ. Maricopa County Parks & Recreation Dept. Project Manager. This project included surveying, engineering design, and construction oversight services for water, and septic lines at seven RV dump station sites. Services included providing and updated site plan, construction documents, specifications, ET bed calculations, and engineer's construction cost estimate.

City of Phoenix Lift Station #63 Removal, City of Phoenix, AZ. Project Manager / Lead Engineer. Included a 36" sewer extension and 16" and 42" waterline vertical relocation.

Waste Management Transfer Station - Flagstaff Ranch Road, Flagstaff, AZ. Project Manager. Steve provided design, permitting, and construction oversight to Waste Management Inc. for the construction of a new waste transfer station. The project included a semi-truck/trailer wash system with catwalks. The effluent system was designed to collect the wash water in order for it to be stored, pumped, and trans-ported to the Flagstaff Wastewater Treatment Plant.

Arizona State Veterans' Home – Yuma. Project Manager. RPA is completing site engineering for a new veterans skilled nursing center and temporary housing complex. We are working in conjunction with SmithGroupJJR on the schematic design. RPA is responsible for access driveways, parking, utilities, grading, drainage, and paving. RPA is designing alternative drainage and energy systems as a part of the project and will work with the City of Yuma on offsite improvements.

DES ATP Coolidge Fire Lines. Project Manager. RPA provided civil engineering services for the replacement of multiple fire lines at the Department of Economic Security (DES) Arizona Training Center Complex in Coolidge, AZ. Scope of work included data gathering and review of site records, signing and sealing plans for fire line replacement, including construction details for connecting new fire lines, construction inspection, and coordination.

Estrella Park Youth Sports Fields, City of Goodyear, AZ / Estrella Youth Sports. Project Manager. RPA was contracted by Estrella Youth Sports Foundation (EYS) to provide engineering design and services in support of the development of a new Sports Field Complex within Estrella Mountain Regional Park, located in the City of Goodyear, Arizona. This report provides the sewer, irrigation, and potable water system alternatives for the proposed improvements. The EYS organization entered into an agreement with Maricopa County Parks (County) to improve the existing Estrella Mountain Regional Park into a destination sport complex. As part of the agreement with the County, EYS is working with the County to update their master plan.

Shangri-La-Resort Wastewater Treatment Plant, Sewer Lift Station, and Force Main. New River, AZ. Project Manager. This was a design-build project that included a packaged wastewater treatment plant, odor control system, sewer lift station, sewer force main, and sub-surface drip irrigation disposal. The project involved design and constructing and a packaged wastewater treatment plant (Mar-wood) with odor control (blowers/aeration) to produce class A quality effluent. Design included modification of site gravity sewer systems in order to direct all wastewater to a single sewer lift station, a lift station with duplex pumps and scada controls, and a force main from the lift station to the WWTP. The system employs a unique disposal technology in using the class A effluent to irrigate perimeter landscaping with a subsurface geoflow drip system. Other services included boundary, aerial and topographic surveying, geotechnical evaluation, grading and drainage plans, and water system modification plans.



TROY RAY, RLS | SURVEY

PROFESSIONAL SUMMARY

Troy has 27 years of experience managing and participating in production tasks for a variety of surveying projects ranging from topographic/utility/parcel and right-of-way base mapping, final platting, results of surveys, ALTA surveys and legal descriptions to construction staking, as-built surveys, aerial mapping, and control surveys. Troy serves as field to office liaison to survey field crews and will ensure supervision of schedules, adherence to budget, accuracy of final product with quality control and client communication on project task orders. Troy has served as survey department manager and has managed over 400 survey projects.

PROJECTS

Gila Bend Brine Pond Expansion & East Waterline Extension, Town of Gila Bend, AZ.

Survey. RPA completed an expansion of the water treatment plant brine pond system and design for 3.5 miles of new waterline. RPA completed all work in accordance with United States Department of Agriculture – Rural Development (USDA-RD) funding requirements. The project included a complete evaluation of the water treatment and distribution system including all pump stations, water tanks, and distribution for the east portion of the Town. The brine pond expansion was designed in 2013 and constructed in 2014. RPA was rewarded with a second task to design 3.5 miles of waterline for the east side of Gila Bend. A part of the work was the preliminary design of a new booster station and evaluation of an existing booster station with expansion tank. We are currently preparing an application for USDA-RD funding to proceed with construction.

GRIC Intertie Water Infrastructure Upgrades & Booster Station, Sacaton, AZ. Survey.

RPA is completing design of four miles of waterline to connect GRIC District 2 with District 3. The project involves survey and design of replacement waterlines along with a water pressure booster station.

Goodyear Boulevard Improvements, Goodyear, AZ. Survey. RPA provided design and survey services for full construction documents to widening existing half street Goodyear Boulevard and Sherman Street to full street sections as part of their future City Center Campus, located at the northwest corner of Estrella Parkway and Yuma Road. Tasks included roadway drainage, channels, storage basins, irrigation line relocations, and utility relocations. The project had a compressed schedule so that construction would be completed before the beginning of the school year.

Ak-Chin Community, Southern Dunes Golf Course – Pump House Improvements,

Maricopa AZ. Arcore Group Inc. Survey Manager. This project involved topographic surveying and civil engineering design for a new pump house facility. The pump house facility is for the existing reclaimed water circulation pump systems. A new pump house was designed to enclose the pump systems and electrical systems. Revised grading and roadway design was completed to ensure the new building was protected from drainage. All work was completed for the Capital Improvements Department.

Ak-Chin Indian Community Housing Project, Maricopa AZ. Dyrone Murphy Architects PC. Survey Manager. This project is multiple phases of residential housing development for the Ak Chin Community Members. Completed topographic surveying, boundary evaluation, and civil engineering design for new houses constructed in several locations within the Community. DMA is designing the houses and RPA is designing the civil site improvements for each house. All work was completed for the Capital Improvements Department.

Joint Municipal Utilities Maintenance and Police Storage Facility. City of Chandler, AZ. Survey Manager. The City of Chandler Municipal Utilities Department (MUD) operates the Pecos Water Treatment Plant within the City of Chandler. MUD and Police Department staff requires new maintenance and storage facilities to be constructed on vacant portions of land within the Plant property. The project scope includes provided field survey, data collection, utility coordination, water service design, sanitary service design, grading & drainage, paving, geotechnical and subsurface utility exploration services.

REGISTRATION:

Registered Land Surveyor:

AZ #33868

NM #22094

OH #7918

NV #15346

ID #11338

EDUCATION:

BS, Land Surveying

Ohio State University

LEAP Class of 2004

PROFESSIONAL AFFILIATIONS:

Arizona Professional

Land Surveyors

American Council
of Engineering Companies

TOTAL YEARS EXPERIENCE:

27

YEARS WITH FIRM:

8

Buckeye Roosevelt Improvement District, City of Buckeye, AZ. Survey. This project involves infrastructure improvements including comprehensive drainage analysis of a two square-mile area located south of I-10, existing and proposed roadways, and proposed waterlines and sanitary sewer lines. The comprehensive drainage analysis includes hydrologic and hydraulic analysis and detailed design of all required drainage facilities to meet the City's offsite and roadway design requirements. The design includes a comprehensive evaluation of the drainage flows over an area approximately 3 miles in width and length. The project requires extensive coordination with stakeholders, survey and mapping, materials investigation and design, utility coordination, and preliminary design.

Arizona Department of Emergency Military Affairs (DEMA) ALTA Survey, AZ. Survey Manager. RPA was selected to provide field and office survey services related to ALTA Surveys, as well as, management and oversight of subconsultants and vendors providing ALTA survey related services, Phase I Environmental Site Assessments and appraisal (valuation) services for twenty-six parcels grouped in eight different project areas throughout the state including five in Maricopa County, and one each in Pima, Santa Cruz and Cochise Counties.

Edwards Tract Waterline and Water Main Replacement. City of Peoria, AZ. Survey Manager. This project consisted of design and civil permitting for 1,300 linear feet of 6"- 8" looped distribution main for a tract being serviced by poor, undersized dead end waterline. RPA provided survey; right-of-way; geotechnical; potholing; base mapping; civil construction plans; and CA services while the project was constructed with JOC delivery method.

Verrado Phase 3S, City of Buckeye, AZ. Survey Manager. Performed survey processes at all levels from initial process of confirming survey control, through rough grade staking, pad certifications, utility staking (sanitary sewer, water, storm drain and dry utilities), curb staking and paving.

Youngtown Waterline and Fire Hydrant Improvements, Youngtown, AZ. Survey Manager. Services included topographic survey and basemapping, as well as Results of Survey and easement production. Basemapping included many different areas where new fire hydrants were being installed, as well as Results of Survey a hotel property adjacent to Grande Avenue. This task also included producing a legal description exhibit for the proposed waterline extension.

Bagdad Community Campus Drainage Project, Bagdad, AZ. Survey Manager. The 6-acre Community Campus of FMI Bagdad has experienced flooding over recent years and there is a dire need to perform a drainage study in order to develop solutions to alleviate the flooding. The campus was built in late 1970s and no as-built grading and drainage plans were available for the project site. The buildings on the campus are clustered together into two groups (four buildings are clustered on the east side of the property and three buildings are on the west side). Detailed topographic survey was conducted over the entire site to locate improvements such as building corners, finished floor elevations and sidewalks. This survey also focused on delineating existing drainage (*flow patterns*) by conducting a detailed survey focusing on break lines, curb and existing drainage structures.

Eloy Industrial Park Floodplain Masterplan, Eloy, AZ. Survey. The project involved conceptual layout for the 3 sites to include feasibility analysis and siting analysis for utilities. The project also includes design of water and sewer mains and service lines. The drainage report will address roadway drainage, associated retention basins and reflect the fact that these improvements do not impact the special flood hazard zone base flood elevation, and will ensure any fills within the project are offset with cuts from the associated retention basins. Services included setting panels and providing supplemental survey and an aerial survey to obtain the necessary topographical features from I-10 to the Union Pacific Railroad (UPRR) to be able to model the Eloy Industrial Park special Flood Zone A and to determine the Base Flood Elevation (BFE). Detailed survey of the entire Eloy Industrial Park will be obtained through this task and will be able to be utilized for future development as well as utilized for the Special Flood Hazard Zone A Mapping required for development of a subdivision or Final Plat. The detailed survey will include the necessary area outside Eloy Industrial Park to determine the BFE as required by FEMA and Pinal County Flood Control District.

ADOT On-Call Right-of-Way Surveys, Legal Descriptions and Monumentation Services. Survey. On this on-call Statewide survey contract, projects includes providing field, right-of-way, boundary and monumentation surveys; preparation of results of survey; right-of-way plans; and legal descriptions as detailed and described in project specific task orders.

MCDOT On-Call Survey Services, Maricopa County, AZ. Surveyor. Provided construction staking in the form of field and office land surveying tasks for several county roads. A control verification survey was performed prior to construction staking. The right-of-way was staked and final centerline monuments were set as part of the final survey. This project included slope staking, setting of rough grade stakes, staking of signs, blue-tops and a minor drainage structure.

Navin Pathangay, March., RA, AIA

Director of Architecture

Email: navin@letsinc.com

Phone: 602-481-5151



Experience

- 20 years of experience in Architecture
- Professional Architectural Licensed in US
- Manages a team of 30 professionals including Engineers and Architects
- Successfully executed numerous projects for AT&T, Sprint, T-Mobile, Crown Castle, American Towers and worked closely with teams from Nokia SAC Wireless, Mastec and Black & Veatch

Education

- **Master of Architecture with Distinction Taubman College of Architecture.**
University of Michigan, Ann Arbor, Michigan.1999
- **Bachelor of Architecture in Design Cum Laude**
University of Florida, Gainesville, Florida.1996

Professional Registration

- Licensed as Professional Architect State of Arizona # 40833
- State Of Arizona Firm Registration # 13961-0
- Certified LEED Green Associate.

Navin Pathangay is a successful architect in Arizona who started Pathangay Architects LLC with national and inter-national architectural experience. He has contributed to projects ranging from residential to commercial developments, He is highly skilled in design, management, and is capable of leading teams efficiently to quickly produce innovative quality design and construction documents for a variety of project types and follow through construction administration. He currently sits on the board of directors of Asian Real Estate Association of American Greater Phoenix chapter (AREAA).

His multidisciplinary design firm, Pathangay Architects, is where design begins with the inception of an idea. *At Inception Development*, they take businesses from a napkin sketch to a complete built environment. *Inception Development* was created to help exclusive clients synthesize their thoughts into reality. Mr. Pathangay believes that a concept needs to translate and transpose itself into all aspects of the business.

Prior to starting his own company, Mr. Pathangay was the Project Architect/Manager for DWL Architects and Planners, a successful 75 year old Phoenix based Architectural and planning firm whose projects include the Mid Western University Arizona and Illinois Campus, Phoenix Sky Harbor Airport, Various projects at Arizona State University, Dental School at University of Nevada in Las Vegas. Mr. Pathangay was the youngest licensed architect at the firm at the age of 30.

Prior to joining DWL Architects, Mr. Pathangay worked at Kadhusin Associates in Ann Arbor Michigan where he was a Project Designer where he worked on low cost housing in downtown Detroit and numerous Downtown redevelopment and revitalization projects.

Previously, Mr. Pathangay worked internationally in England, Belgium and Mauritius Island on projects ranging from Office buildings, resort development, holiday apartments to water front development. He received his Bachelors of Architecture (Business Minor) from University of Florida with the highest honors with and earned a Masters of Architecture degree from University of Michigan Summa Cum Laude.

COPPER STATE ENGINEERING, INC.

C I V I L / G E O T E C H N I C A L S E R V I C E S

J. David Deatherage, P.E. **Senior Geotechnical Engineer**

Mr. Deatherage is the President and senior engineer at Copper State Engineering, Inc., (CSE). He has 32 years of geotechnical engineering experience in the southwest, and graduated with a Masters of Science degree in Civil Engineering from ASU in 1980. His experience includes work in the following areas:

- Geotechnical investigation and foundation design recommendations for commercial, industrial and private residence structures.
- Forensic review of foundation damage aggravated by collapsing and expansive soils and low density fills.
- Earth structure embankment and lined impoundment design, including static and seismic slope stability, seepage, and settlement analyses.
- Geotechnical testing, instrumentation and monitoring system development, including piezometer and inclinometer installation, monitoring and reporting.
- Construction engineering including management of earthwork, concrete and asphalt pavement construction monitoring and testing.
- Professional consultation and expert witness services for geotechnical and civil issues.

Related Experience:

Principal engineer for geotechnical investigation, testing and design at two proposed solar array facilities in Nevada and California. CSE installed more than 20 pile foundations at each site and then conducted tension pull out and lateral resistance testing of the piles. Other testing included percolation, resistivity, chemical corrosion, and thermal resistivity. Work included a seismic analysis and subsidence analysis for the Nevada site.

Senior geotechnical engineer for Balera and FireRock developments in Fountain Hills, Arizona. Services include monitoring of geotechnical aspects of roadway and utility infrastructure. Performed geotechnical investigations and managing construction testing services, including sampling and testing for compaction, roadway materials, sidewalk and curb concrete and roadway asphalt.

Civil engineering consultant for the Legend Trail Home Owner's Association in north Scottsdale. Services include review of as-constructed drainage improvement features, and periodic reassessment of repair and maintenance needs for storm water drainage systems.

Geotechnical consultant for commercial development on northeast corner of Interstate 10 and Ray Road in Chandler, Arizona. Project included providing numerous geotechnical

investigations for restaurants and a multi-story hotel. Construction testing was provided for three of the restaurants.

Project geotechnical engineer for the Town of Buckeye Wastewater Treatment Plant multi-year series of expansions. Work included drilling, sampling and testing and development of foundation recommendations in site with shallow groundwater, as well as review of soil anchor tied-back excavations and dewatering during construction.

Education

- Bachelor of Science in Civil Engineering - ASU, Tempe, Arizona, 1977.
- Master of Science in Civil Engineering - ASU, Tempe, Arizona, 1980.
- Geotechnical Aspects of Tailings Impoundments - Colorado State University, 1982.
- Seismic Design and Analysis of Small and Medium Earth and Rockfill Dams - University of Missouri, 1986.
- Designing with Geotextiles- International Geotextile Society, 1989.
- Asphalt Institute - Design Asphalt Pavements for Highways and Streets, 1992.
- Design of Waste Containment Liner and Final Closure Systems, ASCE, 1997.
- Filter and Drain Design – Bureau of Reclamation, West Regional Technical Seminar, Association of State Dam Officials, 1999.
- Roller Compacted Concrete and Soil-Cement for Dams and Erosion Control, Portland Cement Association, 2002.

Professional Registration

- Registered Professional Engineer in Arizona since 1983, registration number 15592

Professional Affiliations

- American Society of Civil Engineers (34 years)
- Society of Mining Engineers (20 years)
- American Society for Testing and Materials (7 years)

Previous and Current Employment

- 1979-1986 Sergeant Hauskins & Beckwith (SHB) Geotechnical Engineers (EIT- PE)
- 1986-1989 Dames & Moore Geotechnical and Environmental Consultants (PE)
- 1989-1991 Delta Environmental Consultants (Manager of Arizona Engineering)
- 1991-1996 Development Engineering, Inc. (Vice Pres. Of Geotechnical Services)
- 1996-2011 Copper State Engineering, Inc. (Sr. Geotechnical Engineer, Principal)

INTERVIEW PRESENTATION

SITE 12 TREATMENT EXPANSION & SITE WORK | DB 17-3977



Design-Build Team Continuity and Success
20 years working together
\$10 M in DB & CMAR projects
5 DB projects together

Contractor Led Team
Minimize / assume risk
Availability of resources
Self-performing contractor

Best Value Approach
Partnering
Cost consciousness and control
Efficient design and construction – no excess waste

Ability to Drive Schedule = Finish Project to Meet Peak Demands
Phased approach
Multiple GMPs

RO and Well Experience and Expertise = Ideal Water Quality
Optimized design
Guaranteed performance

INTEGRATED DESIGN-BUILD TEAM



JASON ROBINSON
Project Manager



GARY HORNBERGER
Superintendent



CHRIS BENNETT
Field Engineer



RAMESH NARASIMHAN, PE
Design Program Manager



BEN MOVAHED, PE, BCEE
Lead RO Process Engineer



MARVIN GLOTFELTY, RG
Principal Hydrogeologist





SITE 12 TREATMENT EXPANSION AND SITE WORK

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Hunter
CONTRACTING CO.

NCS
ARIZONA

DESIGN-BUILD TEAM QUALIFICATIONS

◆ Hunter

- 44 design-build contracts
- 31 years building water/wastewater projects
- \$8.7 million in contracts with City of Goodyear

◆ NCS

- \$20 million in design-build contracts
- \$400 million in water/wastewater projects
- \$500 K+ in engineering contracts with City of Goodyear

◆ Integrated Design-Build Team

- 5 projects / over 20 years
- \$10 million in water/wastewater projects

Hunter
CONTRACTING CO.

NCS
ARIZONA



Jason Robinson
PROJECT MANAGER

- 20 years in construction
- Partnering
- Team building
- Collaboration



Gary Hornberger
SUPERINTENDENT

- 42 years in construction
- 21 years with Hunter
- Constructability review
- Water/wastewater expert



Chris Bennett
FIELD ENGINEER

- 25 years in construction
- Agency relationships
- Information tracking
- Planning & coordination



Ram Narasimhan, PE
DESIGN PROGRAM MANAGER

- 28 years of experience
- Groundwater quality & treatment
- West Valley expertise
- Over 100 treatment plants



Ben Movahed, PE, BCEE
LEAD R.O. PROCESS ENGINEER

- 32 years of experience
- Specialized membrane & RO
- Internationally recognized expert
- 60 membrane plants worldwide



Marvin Glotfelty, RG
PRINCIPAL HYDROGEOLOGIST

- 34 years of experience
- Licensed well driller
- Over 900 well projects
- Water well design expert

QUESTION 1

Observation of Existing Conditions and Grasp of Key Project Information



FIND.CAPTURE.CLEAN.DISTRIBUTE

- 💧 Water Quality
- 💧 RO System
- 💧 Well Sites
- 💧 Development
- 💧 Well Template and Goodyear Standards
- 💧 Booster Pump Station
- 💧 SCADA Limitations
- 💧 Budget and Timeline
- 💧 Public Relations



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ENGINEERS

Q1

WATER QUALITY AND TREATMENT PROCESS

- 💧 Partial Stream Treatment
 - *Optimize brine volume*
 - *Meet treated water quality goals*
- 💧 Surface Water Blending Considerations
 - *Corrosion issues and descaling*
- 💧 Liquid and On-Site Generation Chlorination Systems
 - *Over 20 systems designed by NCS*
 - *Goodyear, Avondale, Liberty, Phoenix, Rio Rancho*

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ENGINEERS

Q1

CIVIL AND SITE CONDITIONS

- ◆ Well Pump Out Line Routing
- ◆ Water Quality Issues and Well Design Requirements
- ◆ Phased County Approval Packages and Corresponding GMPs
- ◆ Disposal of Well Drilling and Fluids

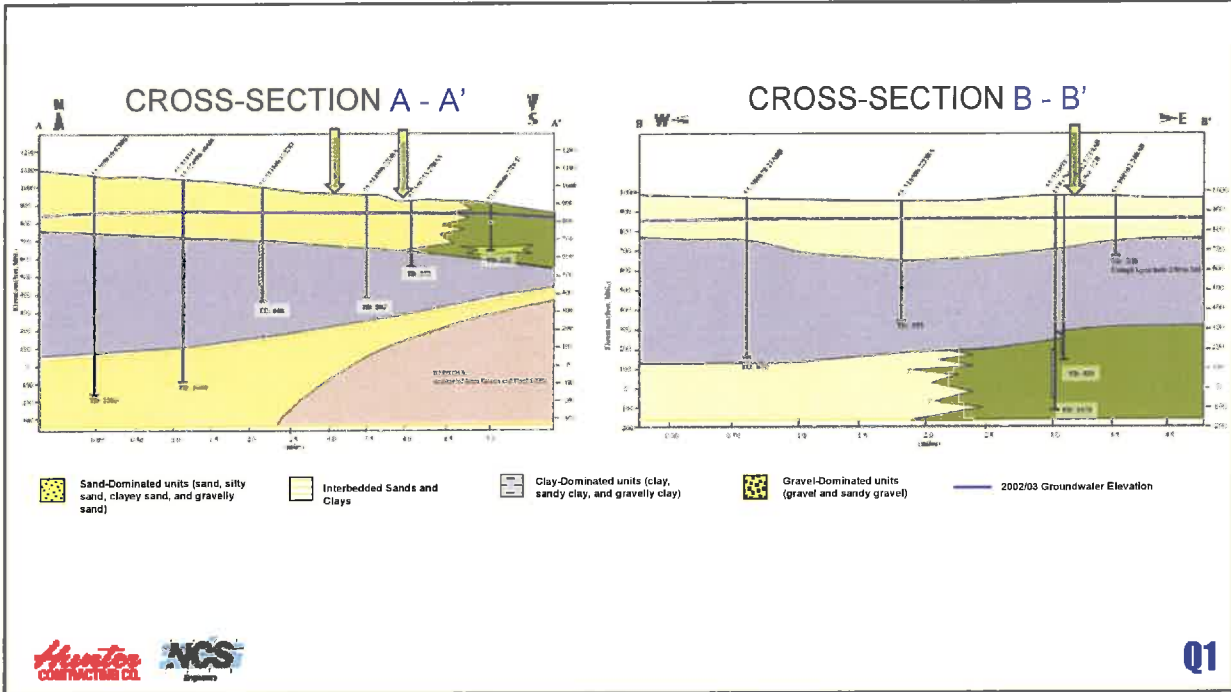
WELL SITES

Hydrogeologic Cross-Sections

Source: Clear Creek Associates, 2005

Excerpt from Well Siting Study
in the Public Record
(ADWR Imaged Records for Well 55-588625)





QUESTION 2

Identification of Issues or Problems That Will Need to be Considered

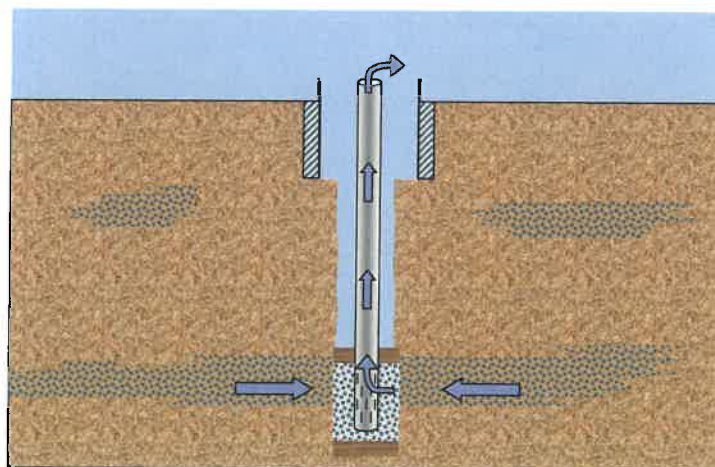
Pilot Hole
(larger rig - borehole
is reamed for well
installation)

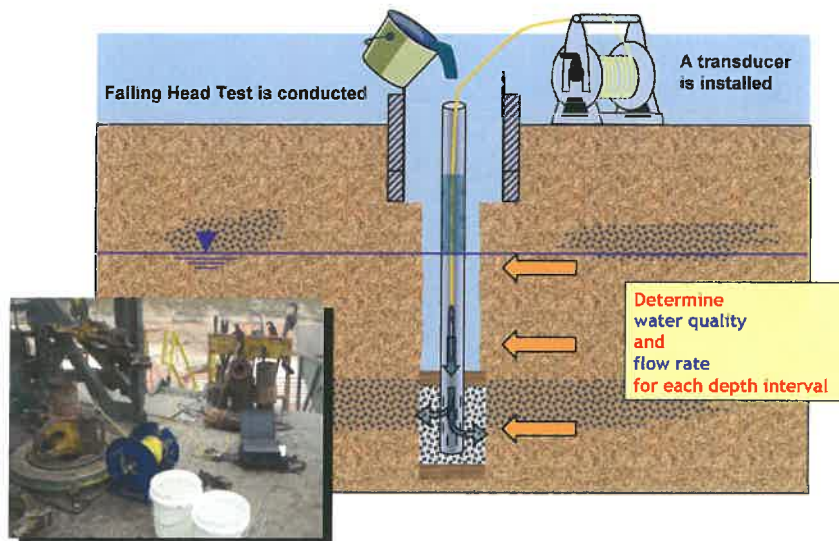
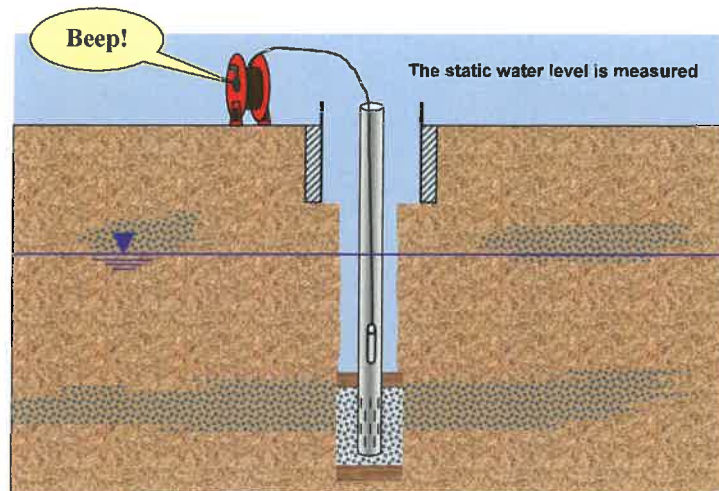


Slim Hole
(smaller rig - borehole
is abandoned after
testing)

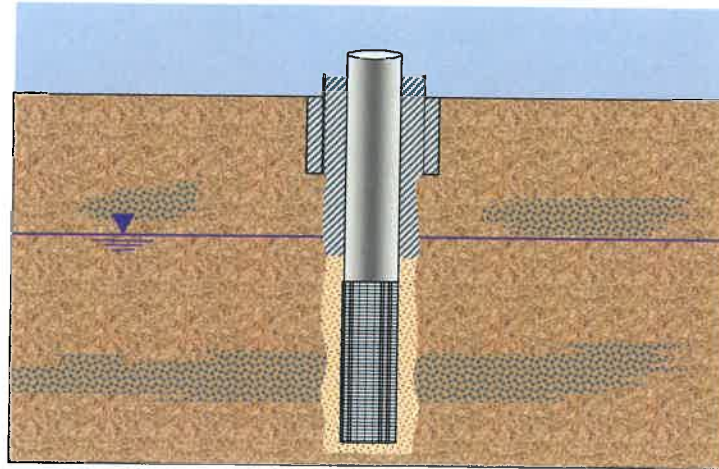


Zonal (depth-specific) Groundwater Sample Collection





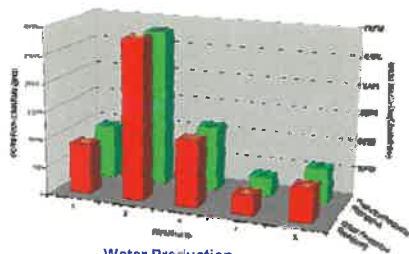
Well Design Based on Site- Specific Information



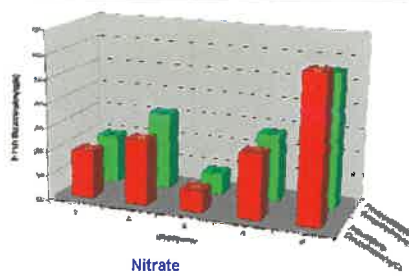
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NCS
Engineers

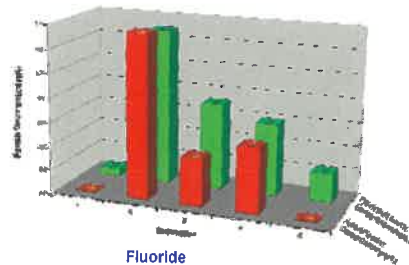
Q2



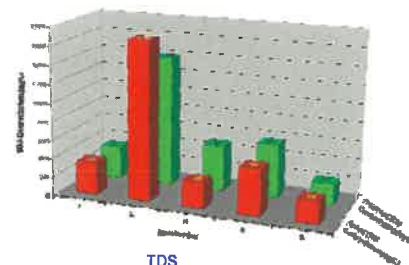
Water Production



Nitrate



Fluoride



TDS

Track Record of
Borehole Analysis
for Well Design

Predicted vs. Actual

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Q2

RO System is a Complex Membrane Process

◆ Municipal RO Requires:

- Custom designs with proper controls for long membrane life (not through away membranes like industrial)
- Material and component selection is critical (due to harsh salty environment)
- Optimum Design needs to consider many factors: Recovery, Flux rate, Blend Ratio, Pre-treatment, Post treatment
- Balancing Higher efficiencies, reduction in waste & power
Versus longer membrane life is an art comes from experience

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NCS
DESIGN

Q2

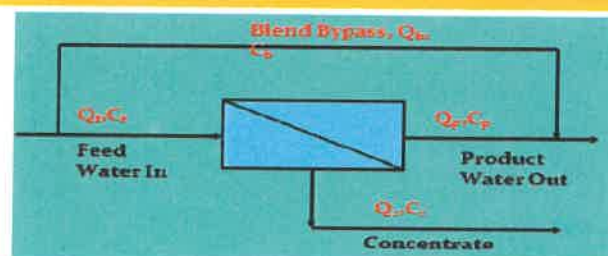


We will evaluate various Blending Options

◆ Optimum Blending will:

- Reduce foot print
- Reduce capital cost
- Lower power and chemical costs
- Result in more stable finished water

- ◆ Level of TDS, As, NO3 and "Pathogen/Virus Free well water" will dictate the maximum blend



Based on our initial computer projection models,
20-30% blend is achievable

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DESIGN

Q2

Existing RO skids need to be "Refurbished"

- To extend their life
- Could use a few more instruments for ease of operation
- Replace a few rusted valves & Components
- Currently operating at 75% Recovery (25% wastewater). We will evaluate increasing to 80-85% recovery (review WQ data, operational records, normalized charts and obtain specific scaling samples)



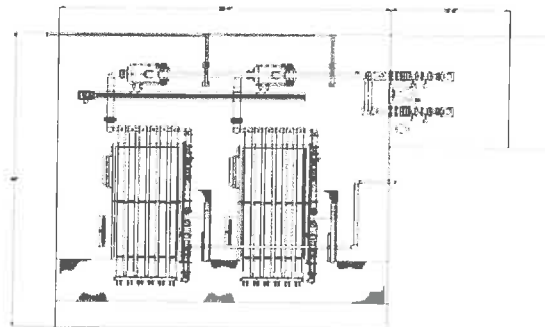
RO Layout and skid options

4 new + moving 2 Existing skids

2 larger new + 2 existing with future 3rd larger

Higher cost/more redundancy

(after current skids reach useful life)



We will go over cost differences & pros/cons at
our first workshop with the City

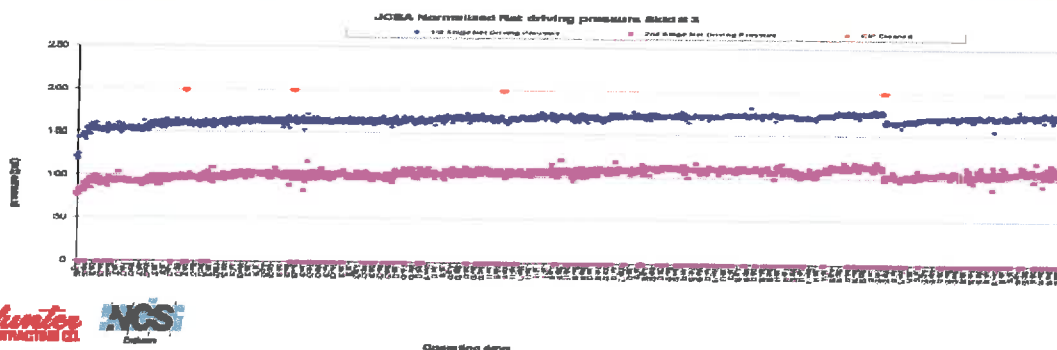
RO Services Provided by Our Design Team Exceeds the "Typical" Services

- ◆ Our Process Engineers will be extensively involved in factory/ field testing & Plant Commissioning
- ◆ Will Provide Customized Training by Process Engineers (In addition to vendors)
- ◆ Prepare customized operator friendly Data logs, charts & Operating Records
- ◆ Review plant data and recommend optimization for 5 years (at no cost to City)



Q2

RO IS COMPLEX, NOT FOR THIS TEAM



Q2

ELECTRICAL CONSIDERATIONS / SOLUTIONS

- ◆ Power Supply to Site 12 and New Wells
 - *Early Coordination with APS Power*
 - *Generator Sizing*
- ◆ System Integration
 - *City SCADA system and readiness*
 - *Investigation and research into existing fiber systems for SCADA control*
 - *Central master PLC to integrate existing and future RO skids*



Q2

CONSTRUCTION SEQUENCING

- ◆ Coordination of Tie Ins
 - *Reservoir*
 - *New wells*
 - *RO system*
 - *Booster pump station*
 - *Electrical and instrumentation change out*
- ◆ *On-Site Presence During Start Up and Commissioning / Integration*



Q2

GOOD NEIGHBOR POLICY

- ◆ Lesson Learned
- ◆ Noise and Light (Well Drilling)
- ◆ Safety
- ◆ Traffic Control



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MCS
improves

Q2

QUESTION 3

Approach to Planning and Construction Including Innovative Ideas

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OUR APPROACH

◆ Phased Design-Build Construction

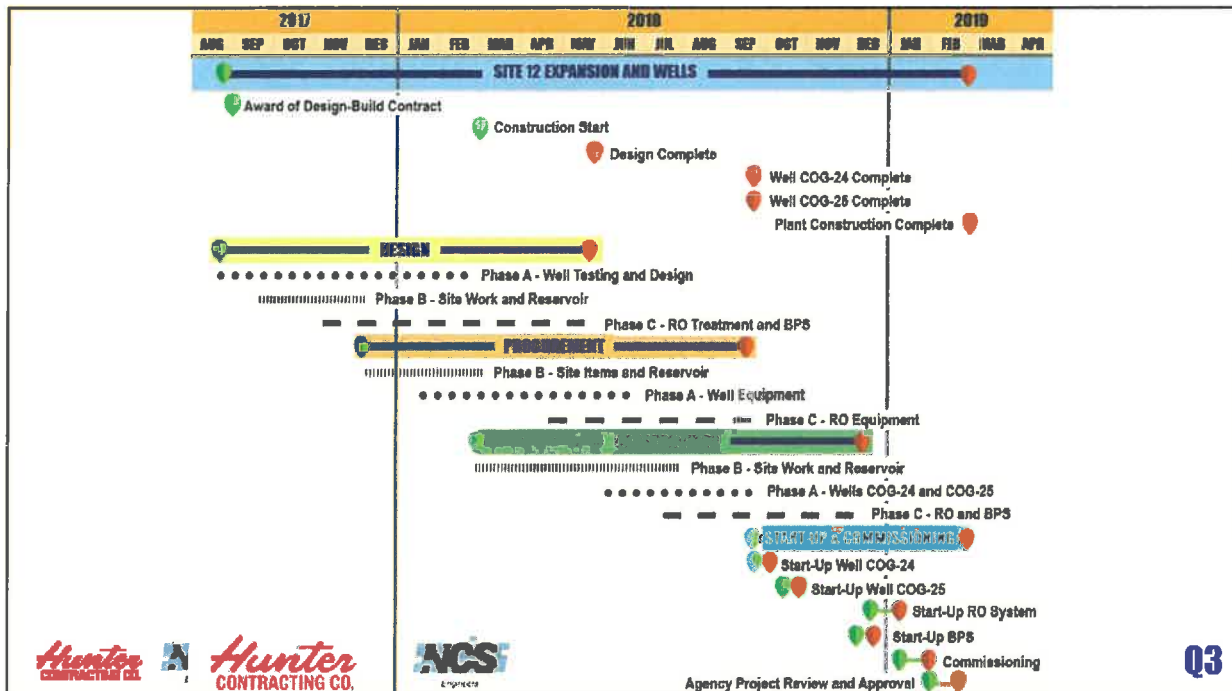
- Phase A - Hydrogeology and Well Testing
- Phase B - Site Work and Reservoir
- Phase C - RO Treatment and Site Expansion



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NCS
ENGINEERS

Q3



Q3

PARTNERING APPROACH

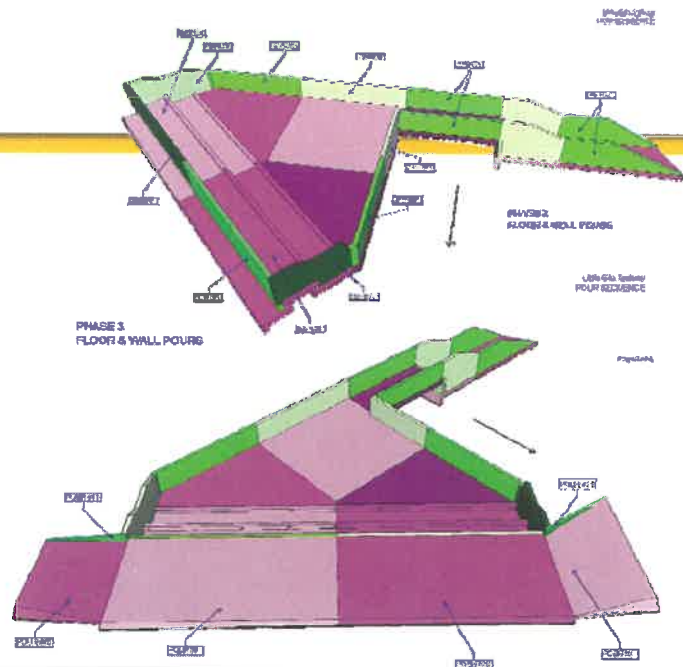
- ◆ Design Workshops
 - *Pinal Valley Well #34*
 - *Submittal review summits*
- ◆ City of Goodyear Standards
- ◆ Preferred Equipment Vendors
- ◆ Self-Performance Capability
 - *Control costs*
 - *Drive schedule*



Q3

THE HUNTER WAY

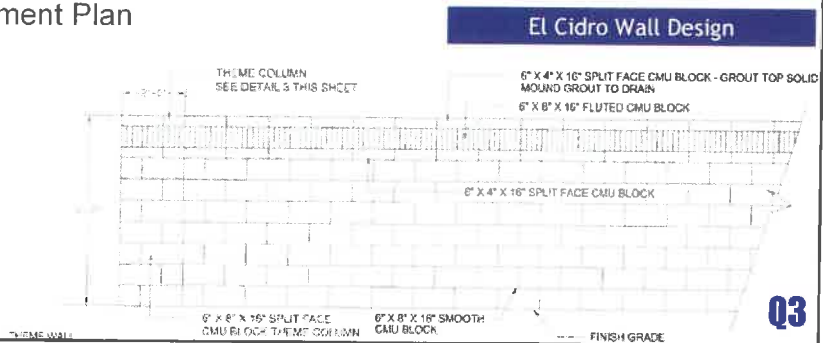
- ◆ Detailed Work Plans
- ◆ Value Engineering
- ◆ Cost modeling
- ◆ Phased GMPs
- ◆ Operational Site/MOPOs
- ◆ Public Relations Firm



Q3

INNOVATIVE IDEAS

- ◆ Refurbish Existing RO Units
- ◆ RO Treatment Optimization
- ◆ Build Around Existing Slabs and RO System
- ◆ Procurement Management Plan
- ◆ Well Testing Plan
- ◆ Temporary Power
- ◆ Modified Retention
- ◆ Resurface Wall
- ◆ Home for Dirt Export



Q3

QUESTION 4

Experience and Capabilities for Performing
Design-Builder Design and Construction Phase Services



INTEGRATED DESIGN-BUILD EXPERTISE

- ◆ Local, Cost Effective Team
 - *National / international water treatment and RO expertise*
 - *Understand hydrogeological conditions*
- ◆ Vision and Understanding of Project, Budget, Schedule
- ◆ Bid Out Major Project Elements to Obtain Best Value



Q4

HUNTER / NCS RESOURCES

- ◆ Financial/Bonding
- ◆ Manpower
- ◆ Equipment
- ◆ Prequalified Subcontractors
- ◆ Design Consultants

Firm	# of Key Personnel	% / Availability
Hunter Contracting	5	75%
NCS Engineers	7	60%
WATEK Engineering	2	40%
Ludvik Electrical	1	75%
Delta Systems Engineering	1	50%
Clear Creek Associates	1	50%
Ritoch-Powell & Associates	2	50%
Pathangay Architects	1	50%
Copper State Engineering	1	25%
Mak-Pro	1	25%
Total Availability - 22 Key Personnel		



Q4

QUESTION 5

Define Why Your Firms Should Be Engaged



WE BRING BALANCE AND VALUE

- ◆ Design-Build Team Continuity and Success
- ◆ Contractor Led Team
- ◆ Best Value Approach
- ◆ Ability to Drive Schedule
- ◆ RO and Well Experience and Expertise

Hunter is the City's Best Choice!



Q5

QUESTION & ANSWER

