



RFQ 18-4334

# New COG Well #26 and Raw Water Transmission Main

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

ORIGINAL





RFQ 18-4334

# New COG Well #26 and Raw Water Transmission Main

## **Felix Construction Company**

1326 W. Industrial Dr., Coolidge, AZ 85128

davidg@felixconstruction.com

www.felixconstruction.com

Phone: 480-464-0011 • Fax: 489-464-0078

Principals: Joel Felix, Kevin Felix, David Giannetto, Matt Phillips

**FELIX**  
CONSTRUCTION COMPANY  
in association with  
**Hazen**

April 26, 2018

City of Goodyear, City Hall Front Desk  
Attn: Victoria Jackson, CPPB  
190 N. Litchfield Road  
P.O. Box 5100  
Goodyear, AZ 85338

**Re: RFQ 18-4334: New COG Well #26 and Raw Water Transmission Main**

Dear Ms. Jackson and Members of the Review Panel:

The City has embarked on an ambitious 10-year capital improvement program that is front loaded with projects in order to shore up your existing water portfolio. In addition to surface water treatment and potable water interconnects, the CIP includes additional wells to make use of available groundwater in the West Salt River Basin. Although the City would like to operate Well #1 as long as is viable, drilling a replacement well (Well #26) is important to provide needed redundancy and capacity. Felix Construction Company (Felix), and our Design Engineer Hazen and Sawyer (Hazen), understand the importance of efficiently and expeditiously designing and constructing the new well and associated pipeline. As is discussed in our SOQ, we also recognize that this *will* require increased capacity of the Bullard Water Campus.

**With this understanding, we have built a familiar and trusted Design-Build Team to support you.**

<b>Firm</b>	<b>Contact Person</b>	<b>Principal Office/ Local Office</b>	<b>Employees</b>	<b>Years in Business</b>	<b>Areas of Specialty</b>
Felix Construction Company (Felix)	David Giannetto, all key personnel identified will be available from preconstruction services through final contract completion.	1326 W. Industrial Drive, Coolidge, AZ 85128 11140 N. 136th Ave, Surprise, AZ 85379	185	31	Water/Wastewater Facilities Construction
Hazen and Sawyer (Hazen)	Curt Courter, PE, all key personnel identified will be available from design through final contract completion.	498 Seventh Avenue, 11th Floor, New York, NY 10018 1400 E. Southern Avenue, Suite 340, Tempe, AZ, 85282	1,053	67	Wells, Conveyance and Groundwater Treatment
Leonard Rice Engineers (LRE)	Lauren Handley, RG, will serve as LRE's main point of contact for this project. She is available in her role for the expected duration of the work.	1221 Auraria Parkway, Denver, CO 80204 11811 North Tatum Boulevard, Suite P115, Phoenix, AZ 85028	40	47	Hydrogeological Services

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## SB 1231

### **SB 1231: public buildings; construction; indemnity**

(Click for bill language and additional information)

**Sponsor:** Sen. Reagan

**Overview:** SB 1231 establishes that the regulation and use of indemnity agreements in construction and design professional services contracts are a matter of statewide concern.

**League Position: NEUTRAL** - With the amendments adopted on SB 1231, the legislation's negative impacts on municipal contracting policies are largely mitigated.

**Summary:** SB 1231 prohibits professional services contracts connected to public buildings or improvements from requiring a contractor from defending, indemnifying, insuring, or holding harmless the contracting agent from liability, except in cases of negligence, recklessness or wrongful conduct.

### **UPDATES**

**02/06/13:** SB 1231 unanimously passed the Senate Committee on Commerce, Energy & Military with a technical amendment.

**02/14/13:** SB 1231 passed out of Senate COW. The bill was additionally amended with a Rules and floor amendment, both of which contained technical and conforming changes. The bill now proceeds to Third Read.

**02/18/13:** SB 1231 passed Third Read unanimously. It has been assigned to the House Government Committee.

**03/11/13:** SB 1231 was held in the House Government Committee.

**03/19/13:** SB 1231 passed amended out of the House Government Committee with a vote of 7 ayes, 1 nay and 1 not voting. The bill now proceeds to House Rules Committee.

**06/13/13:** SB 1231 passed the Legislature with amendments that addressed stakeholder concerns. The bills now proceeds to the Governor for action.

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Lauren Handley, RG, of LRE was instrumental in the most recent well siting study and the proposed development of Well #26. Felix is a trusted construction partner of the City and was the prime contractor on the program team that developed the Bullard Water Campus and the associated wells: Well #19 (Centerra), Well #20 (N)/Well 20, and Well #22 (Safeway). Additionally, a number of Hazen's staff were key members of the Bullard team and together we bring a complete history and understanding of the system; from the challenges with local groundwater through pumping, conveyance and why the treatment facility uses an unconventional RO design. It is because of this history and our strong relationships with City staff that our team is very excited about the possibility of partnering with you to update the highly successful Bullard Water Campus project.

Our proposed team provides the City with:

- **Trusted Construction Partners** – Felix is one of the City's preferred water infrastructure constructors who has successfully delivered numerous projects with your project team.
- **Experienced Well Constructors** – Felix offers expertise gained from constructing over 100 successful well projects in the Valley.
- **Experienced Well Designers** – Hazen has been or is the well equipping designer for over 30 well sites in the last two years, many within or adjacent to mature neighborhoods.
- **Arizona's Foremost RO Process Specialists** – Hazen provides the exact individuals that were responsible for initially developing the long successful RO system at Bullard and for recent RO performance evaluations at Bullard.
- **Knowledgeable and Experienced Hydrogeologists** – LRE combines Ms. Handley's detailed knowledge of the hydrogeological conditions in Goodyear with Gary Gin's utility professional prospective, unique among locally experienced hydrogeological engineers.

Felix and Hazen have worked closely with the City to successfully deliver numerous recent projects. We offer you a familiar and proven local team that you can trust. We welcome the opportunity to work with you to create a more resilient water system that will serve you and your customers for many years to come. Should you have any questions about our qualifications, please do not hesitate to contact me at (602) 625-4811 or davidg@felixconstruction.com.

Sincerely,

FELIX CONSTRUCTION COMPANY



David Giannetto

Principal

Felix Construction Company

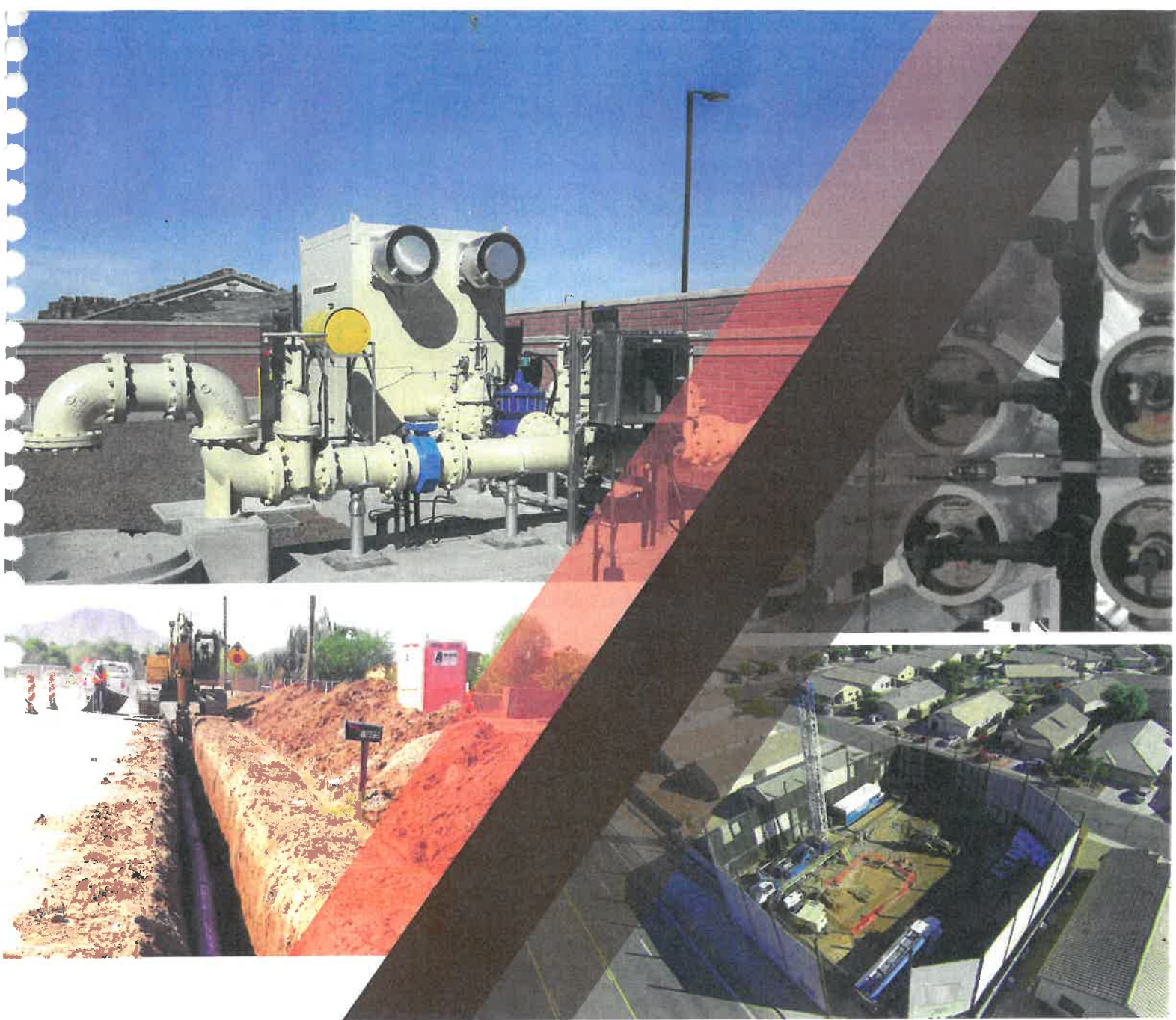
*Reasonable diligence has been exercised in the preparation of this SOQ and all contents are true, accurate and complete, to the best of my knowledge.*

*No exceptions are taken to the contents of the RFQ-Owners Representative Agreement, except:*

- Art. 11.2 – Please confirm consistency with SB 1231

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# 1 Project Understanding and Approach



## Section No. 1

# Project Understanding and Approach

The City has embarked on an ambitious 10-year capital improvement program to shore up your existing water portfolio, including additional wells to make use of available groundwater in the West Salt River Basin. Although the City would like to operate Well #1 as long as is viable, drilling a replacement well (Well #26) is important to provide needed redundancy and capacity. Our team, which includes many key members of the program team that developed the successful Bullard Water Campus and associated wells, understands the importance of efficiently and expeditiously designing and constructing the new well, pipeline and RO expansion.

## Addressing Major Issues

The Felix-Hazen-LRE Design-Build Team will work seamlessly to ensure Well #26 integrates into the City's water supply to provide increased flexibility and redundancy. With our team's thorough understanding of the hydrogeology in the area, extensive experience in well design and construction, and our technical understanding of the Bullard Water Campus, we will have reduced spin-up time and increased efficiency to meet the milestones identified in the RFQ.

We understand COG is undertaking this project to invest in a water-secure future for the growing service area population. The Bullard site currently provides treatment of Wells #19 and #22 (Centerra and Safeway), and blending in the reservoir for Wells #20, #11 and #1. With challenges in water quality and capacity, we recognize this project will optimize water production and quality from the new well source, accelerate the design schedule, and optimize capital and life cycle costs.

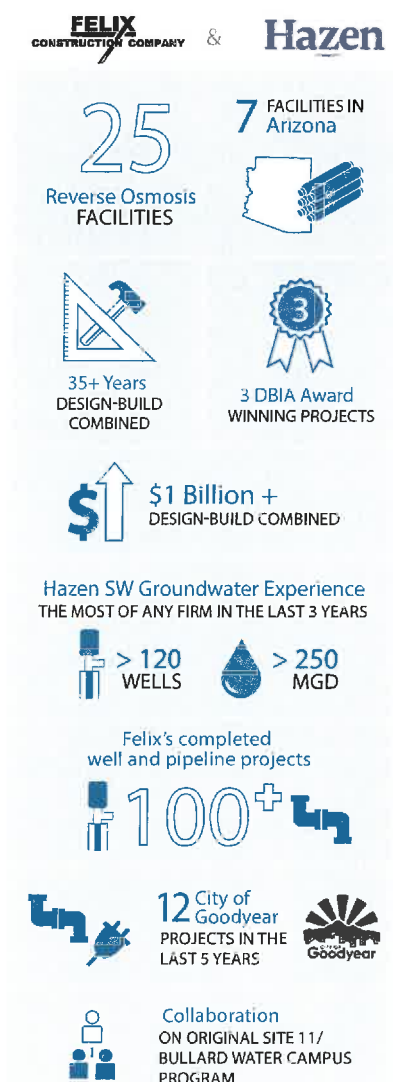
The remainder of this section describes in detail our approach to addressing the technical and administration aspects of this project. **Figure 1-3** at the end of this section provides additional details.

## Well Siting, Testing and Development

Our team proposes a multi-stage approach to ensure Well #26 is designed to provide the quantity of water supply needed, at the best quality to the Bullard Water Campus. The starting point is a review and validation of the site location. Starting with our understanding gained through Lauren Handley's work on the preliminary well siting study, we will take the following approach to site the well.

## Groundwater Quality Assessment for RO Optimization

This assessment would be an advanced step from the existing City of Goodyear (COG) Well Siting Study, where LRE will evaluate site-specific inorganic and organic constituents. The objective of this assessment is to document the following:



- Identify historical and current groundwater trends in the surrounding area of Well #26 (e.g., rising nitrates concentrations)
- Create a list of analytes (both organic and inorganic) that will need to be sampled during the pilot borehole drilling phase.
- Identify groundwater constituents that may impact the RO treatment process, both current and future.

### Drilling Technical Specifications

A set of well thought-out drilling technical specifications can provide numerous benefits to a well project from the pre-bid phase through final construction, and can even impact the longevity and operation of the well. LRE hydrogeologists will use their extensive local well installation and operation expertise to develop a preliminary well design that optimizes aquifer productivity, uses materials known to enhance longevity (e.g. stainless steel louvered screen), and allows for easier (cheaper) maintenance.

### Permitting

Well #26 will be permitted as a new non-exempt well with the Arizona Department of Water Resources (ADWR). Our team understands the City has conducted a preliminary well spacing/well impact analysis to

investigate the withdrawal quantity available for this new well. However, given that the new well is less than one mile from both PGA-North and PGA-South Superfund Subunit C plumes, our team will work directly with the City, Responsible Parties, and the regulatory agencies, as necessary, to obtain all required documentation and support for the new well permit from the ADWR.

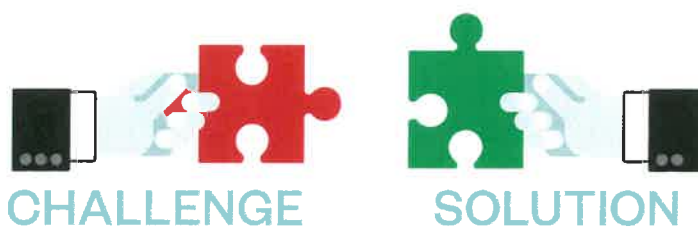
### Pilot-Hole Characterization

Borehole characterization during the drilling phase is important for any well installation project. Our team has reviewed previous COG well designs in the vicinity of Well #26, the local geology, productivity from aquifers, water quality at depth, and we also understand the critical issues related to the nearby Superfund Sites.

**Our goal is to optimize productivity, supply the best water quality, and minimize the potential for pumping sand to the Bullard Water Campus.**

### Well Design, Installation, Development, and Testing

We will work with the City to prescribe the appropriate and preferred well materials to extend the life and efficiency of the well and, in the process, provide the City the most value.



The City has already begun the preliminary well impact analysis to permit a well with up to 1,500 GPM within one-mile of the Superfund plumes



Work with the City Water Resources Department and EPA to satisfy ADEQ requirements for Notice of Intent (NOI) to Drill a New Well approval.

Maricopa County Environmental Services Department (MCESD) New Source Approval with "water supply in a flood zone" and "near contamination source".



Early collaboration with the County to identify potential inspection deficiencies and resolve all County concerns in the design phase.

Shallow saturated geologic units in the area of Well #26 tend to have very high transmissivity and very poor water quality (i.e. high nitrates and TDS, potential for impact from nearby VOC plumes). The deeper units tend to have slightly better water quality with very low to only moderate productivity.



Complete and detailed pilot-hole testing to identify zones of productivity and calculate water quality contributions. Design the well to balance water quality and productivity to ensure minimal treatment or optimized RO treatment.

We understand the criticality of minimizing life-cycle costs. For example, we will help the City understand if the added benefits of innovative materials, such as glass bead filter pack material, improve life cycle costs for Well #26.

## Site Design

A few key challenges with construction of the well site include:

### Construction in Floodplain

The proposed site is in the floodplain of the Bullard Wash, with a 100 year base flood elevation of 970. Based on preliminary review of topographic information in the area, the proposed site is at elevation 969. This will require us to raise the site and/or elevate process equipment above the floodplain for protection. While the site will be higher, the design team will be conscious to minimize visibility of any equipment above the fence line of the site. The additional fill for the site will be balanced to the greatest extent possible for permitting purposes.

### Proximity to Neighbors

The preliminary site for the well is in close proximity to the Centerra neighborhood. During design our team will coordinate with COG to hold public meetings or provide a public information hotline during construction to mitigate concerns. The design will incorporate low profile lights and sound attenuation structures. We will also optimize the footprint during design and locate the facility with the community in mind.

### On-site Utilities

We will evaluate the optimal routing for the new transmission main from the well site. We anticipate a 16-inch transmission main will be required from the site. Due to concerns with sanding at Well #20, we recommend routing a separate header to Bullard to optimize RO performance. During preliminary design we will discuss future improvements at Well #20 and impacts to the system.

Flush to waste disposal has several options – including on-site retention, sewer discharge and using Bullard

wash. Discharging to the wash is not advised due to additional coordination to acquire an AZDES permit. Space for on-site retention has been accounted for in the layout, however we believe the best option is discharge to sewer. The cleaner water will help flush sewers and the additional volume to the WWTP can be recharged. Hazen has extensive experience modeling sewer capacity and level of service.

### Mechanical Features

In addition to wellhead features noted in Goodyear's Standard Detail G-3364 and 3365, we believe the design will benefit from additional features as noted on **Figure 1-3** at the end of this section.

## Bullard Water Campus RO Capacity

Bullard is currently supplied by two wells, #22 and #19, that provide a combined flow of 3.5 mgd. Well #20 is also piped to the facility but can be and is currently routed around the facility to blend with RO product water in the Site 11 reservoir due to high sand production, which would otherwise require increased back flushing of the strainers. The existing RO system has a design capacity of 3 mgd (six 0.5-mgd trains operating at 80% recovery and 1 stand-by 0.5-mgd train, as required by permit). The design assumes an internal bypass flow of 30% of the RO permeate to add calcium, hardness, and alkalinity to the RO product water, before being stabilized with a reasonable amount of sodium hydroxide. However, with only Wells #22 and #19 supplying Bullard there is less feed water than the firm RO capacity plus the bypass flow.

As described in Section 2, our team includes Arizona's leading RO experts and has considerable knowledge of the existing Bullard Water Campus (Bullard) and associated wells going back to the original project development. This combination has allowed us to already evaluate capacity of the Bullard Water Campus and potential expansion options.

The process flow schematic in **Figure 1-3** shows system flows, as well as TDS and nitrate concentrations from the wells. For this analysis we assumed that Well #26 will have average water quality and will be routed to Bullard as indicated in the RFQ.



We understand that there is a possibility that well water quality may be better than the average of the existing wells, but our analysis indicates that it is not likely that TDS and nitrate will be low enough to allow for bypassing RO during high demand. The bar chart in **Figure 1-3** shows TDS and nitrate concentrations in the product water for three expansion options:

- A** Populate the 8th train with a 0.5-mgd RO unit (3.5-mgd RO Product Water)
- B** Populate the 8th train with a 1-mgd RO unit (4-mgd RO Product Water)
- C** Expand RO to treat all flow from Wells #19, #22 and #26 (4.5-mgd Product Water)

As the bar chart indicates in **Figure 1-3**, if the City chooses to or needs to operate the four largest wells (Process Point **2**) then simply populating the 8th train with even a 1-mgd RO unit **B** will not be enough to meet the TDS limit of 750 mg/L. Alternatively, expanding the RO to 4.5-mgd to treat all flow from Wells #19, #22 and #26 will allow the City to run those wells with any or all of Wells #20, #1 and #11 and still meet the TDS and nitrate limits, but TDS will exceed the 500 mg/L goal when Wells #19, #22 and #26 are run with any other well.

Once selected, we would review the assumptions in the above analysis with the City and quickly update the analysis to align with your overall goals for potable water production from the Bullard system. After that, our team will further review the hydraulic capacity of pre-filtration, the existing bypass, and the concentrate disposal piping, and determine necessary modifications to all of the chemical feed systems with the goal of optimizing all systems. For example, there is a potential that the pre-filtration can be optimized to reduce head loss and/or filter change outs.

## Approach to Providing Services

Our D-B development approach will include a holistic design to identify opportunities to gain efficiencies in project delivery while incorporating input from the COG.

Our approach will focus on the tasks shown in **Figure 1-1** to meet the 12-month project schedule outlined in the RFQ.

## Project Management

Effective management is the foundation of a successful project. We have developed a streamlined technical and administrative project management process that keeps projects on time and on budget. The PM approach is discussed further in the next section.

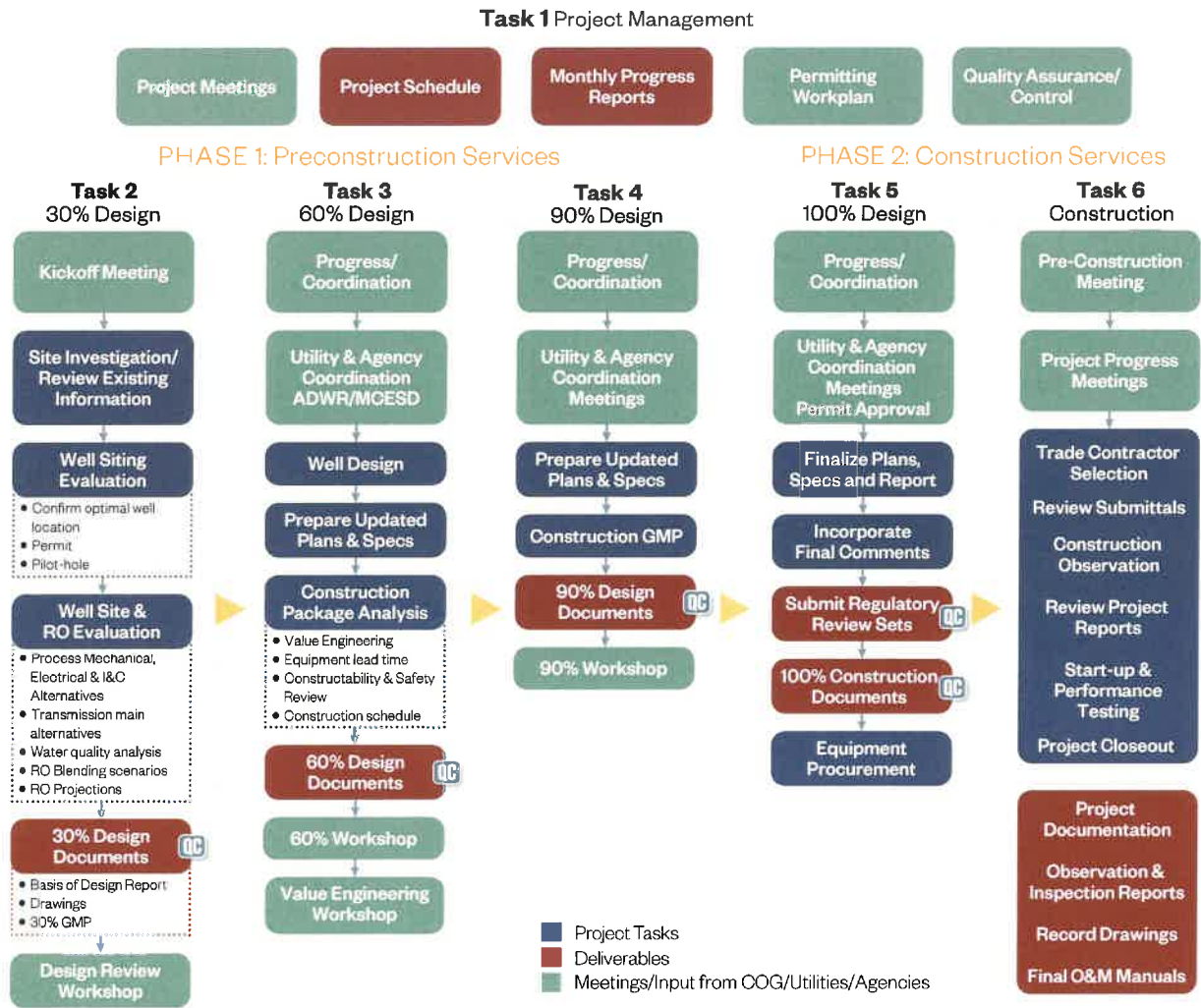
## Pre-Construction

During the design phase our team will collaboratively implement the project to take full advantage of the progressive design-build delivery process. There are several key factors combined with our experience working with COG that will enhance pre-construction services:

- 30% design will focus on work necessary to design, select and specify any long lead equipment. Design activities will be informed by important field investigations, particularly test borings at the new well site to determine potential production and water quality.
- As design progresses into 60% design, our DB team will be focused on identifying long lead items, constructability reviews and value engineering; in preparation of the cost model for GMP1. Well development work (site analysis, groundwater quality assessment, pilot hole) is anticipated to take 2-3 months; design work will be conducted concurrently with the well design and will take 4 months, including final evaluation of RO options.
- Throughout the process regular design workshops will be held with project stakeholders to seek operations input and get buy-in on design, thus minimizing rework.

During the Construction services phase, our DB team will provide support in navigating regulatory approval and securing permits in a timely manner. We will also actively negotiate purchase orders and subcontracts for long lead equipment and actively manage construction, start-up, commissioning and closeout.

Figure 1-1: Our thorough approach to help you meet your project objectives.



## Project Management Approach and Team Organization

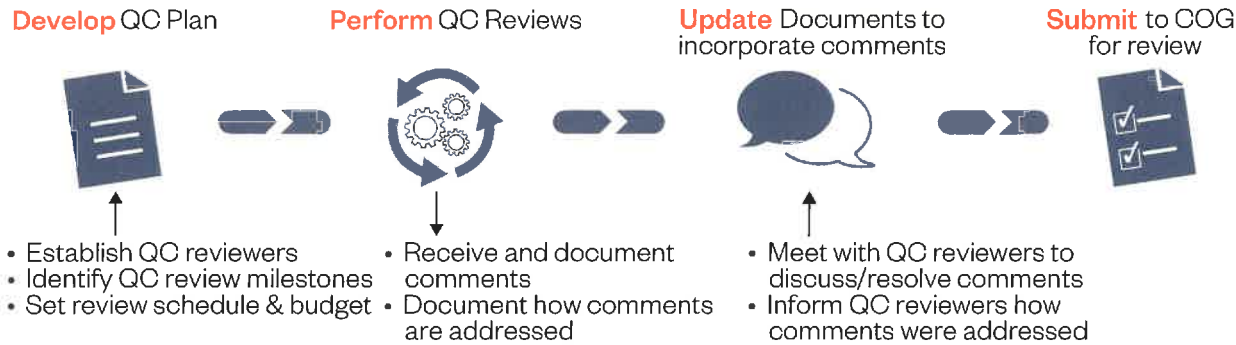
Effective integration of the design and construction skill sets is the essence of DB project management. **Design-Build Project Manager, Zach Foster, Design Manager, Lisa Melton, and Resident Project Representative, Steve Stayer** are responsible for delivery of the project and will provide continuous collaboration between the team and COG.

Our Team will utilize Microsoft Project for Scheduling and Procore for project management similar to how we are managing the expansion at 157th. Our capabilities are fortified by expert staff with experience in all facets of design, construction, startup, commissioning and operations of water facilities.

**Quality is our number one priority.** We are providing individuals with the right expertise, experience and availability to support the COG. As the design manager, Lisa will ensure implementation of the QC review plan. **Our Quality program along with our Operability Review checklist ensures the right people review the design at the right time.** Figure 1-2 represents the technical accuracy and completeness the various major tasks will be funneled through the QA/QC process prior to being presented to COG.

**Planning, Scheduling and Estimating.** Our team is experienced in all major project management and scheduling platforms and will utilize your preferred platform for COG.

**Figure 1-2: Our QC process will include reviews by experts from outside of our core team.**



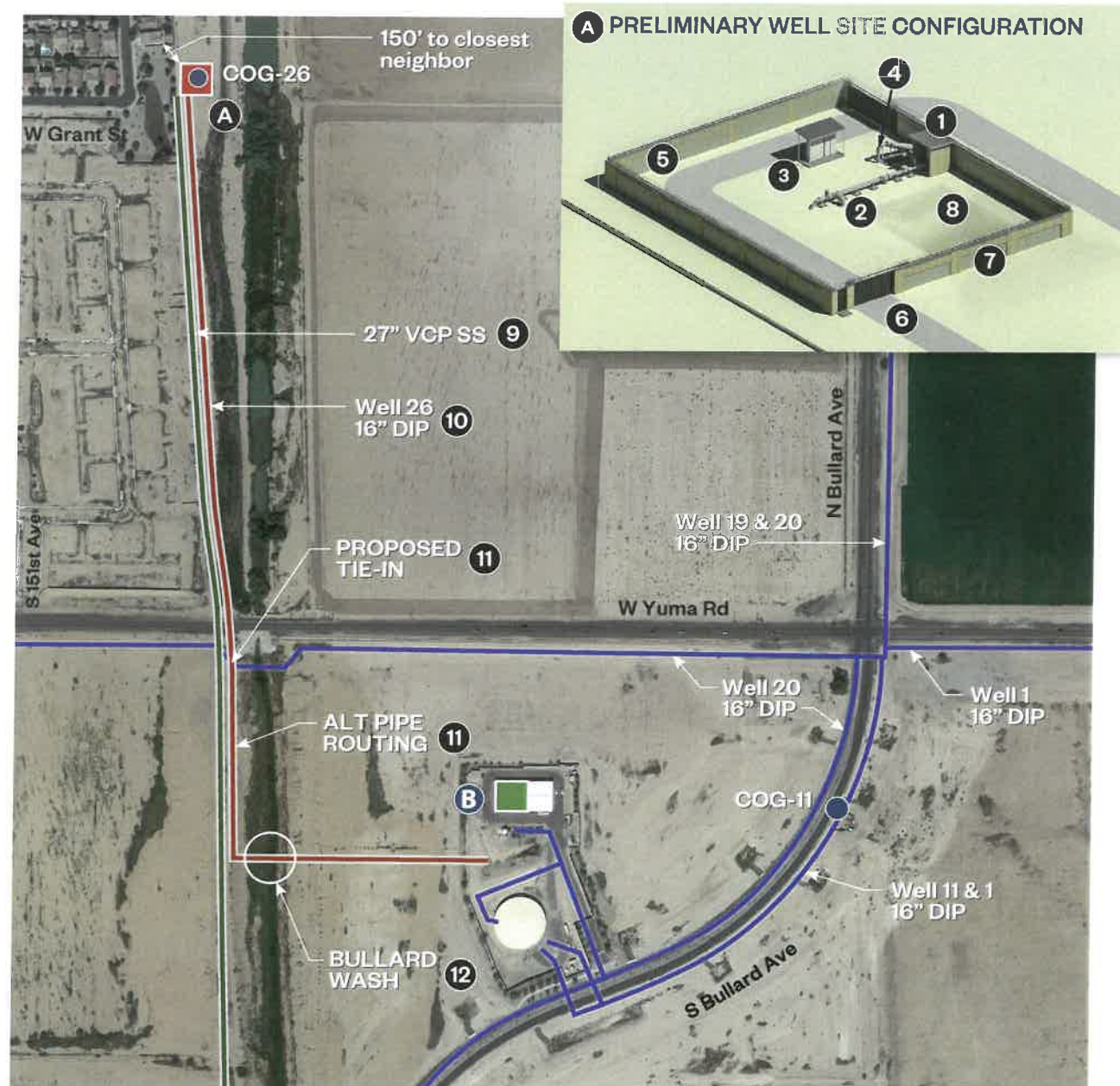
**Drastically reduce cost with real-time dispute resolution.** Steve Stayer understands that when potential disputes arise, prompt change order processing and consideration/ approvals drive down costs. The advances in technology and more widespread knowledge of forensic scheduling allow quick and accurate analysis of potential disputes. Dispute Review Boards and expert neutrals provide an impartial and potentially quick resolution to the disputes that cannot be resolved at the management level. Better documentation and regular schedule updates make it easier to analyze delay-related disputes quickly so they too can be amicably resolved.

**Safety is a critical consideration.** Our DB team recognizes that the need to maintain a safe work environment, for people and the environment, is paramount. Safety is integrated into our process starting with prevention-by-design, where Constructability and O&M team provide a thorough review of project documents with attention on logistical aspects of construction. During construction, Felix will implement our safety program for the safety of on-site personnel and prevention of environmental hazards on the job site.

Throughout the project, our mission is to ensure that the COG receives the excellent quality service and value it deserves from all participants in every aspect of the Goodyear Water Treatment Facility. Our organization chart in the next section depicts our locally-based team of Arizona professionals.



**Figure 1-3: Our experienced team has already evaluated risks and options to address them.**

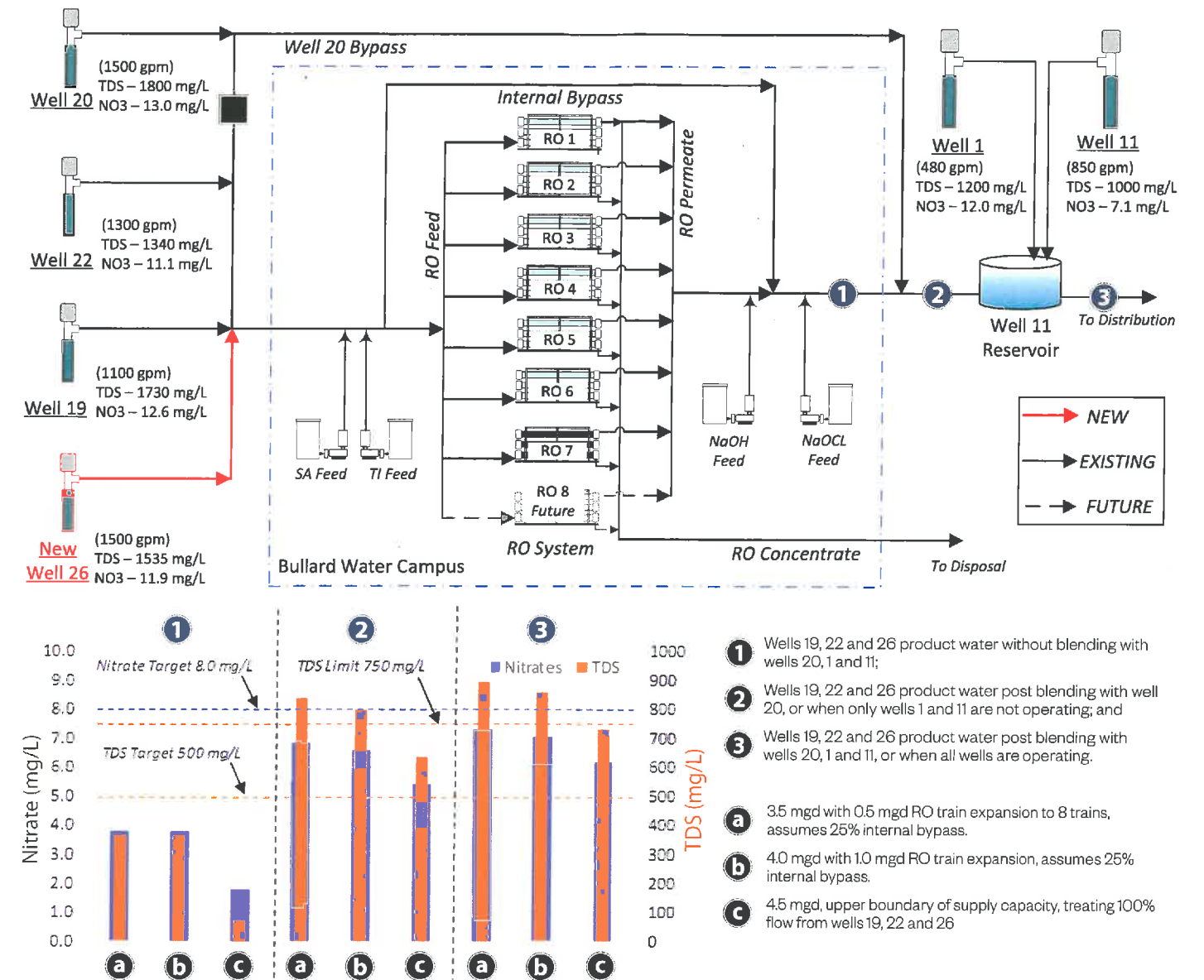


## DESIGN CONSIDERATIONS

- 1 Neighborhood Impacts:** Sound attenuation measures will be incorporated at the well site, including sound enclosure around the well.
- 2 Mechanical Recommendations**
  - a. Propose ARV and Combination ARV on the discharge header to prevent air binding.
  - b. Provide well pump with a solenoid priming system to lubricate the packing gland prior to the pump energizing.
  - c. Use a non-reverse ratchet motor to prevent backspin at shutdown.
  - d. **Surge Protection:** a pump control valve is recommend on the flush and mainline to mitigate surge.
  - e. A VFD for operational flexibility and to mitigate sanding by slowly ramping up the pump/reducing perforation velocities.
- 3 Generator:** The generator will be located on the east side of the well site, north of the wellhead. The generator will be connected to the wellhead via a transfer switch and quick connect for an emergency portable generator. Sufficient access will be maintained around the equipment for locating the generator.
- 4 Sand Separator:** Preliminary well design will target the best water quality and quantity to Bullard. The need for a sand separator will be evaluated.
- 5 Site Lighting:** Lighting for the facility will be located on the inside of the perimeter walls to meet night sky ordinance and limit impact on neighboring properties.
- 6 Site Access:** A gravel driveway will be provided up to the site. Two points of ingress/egress are provided to accommodate access and maintenance. The second gate can be setup for egress only. The site will be elevated to the base flood elevation of 970

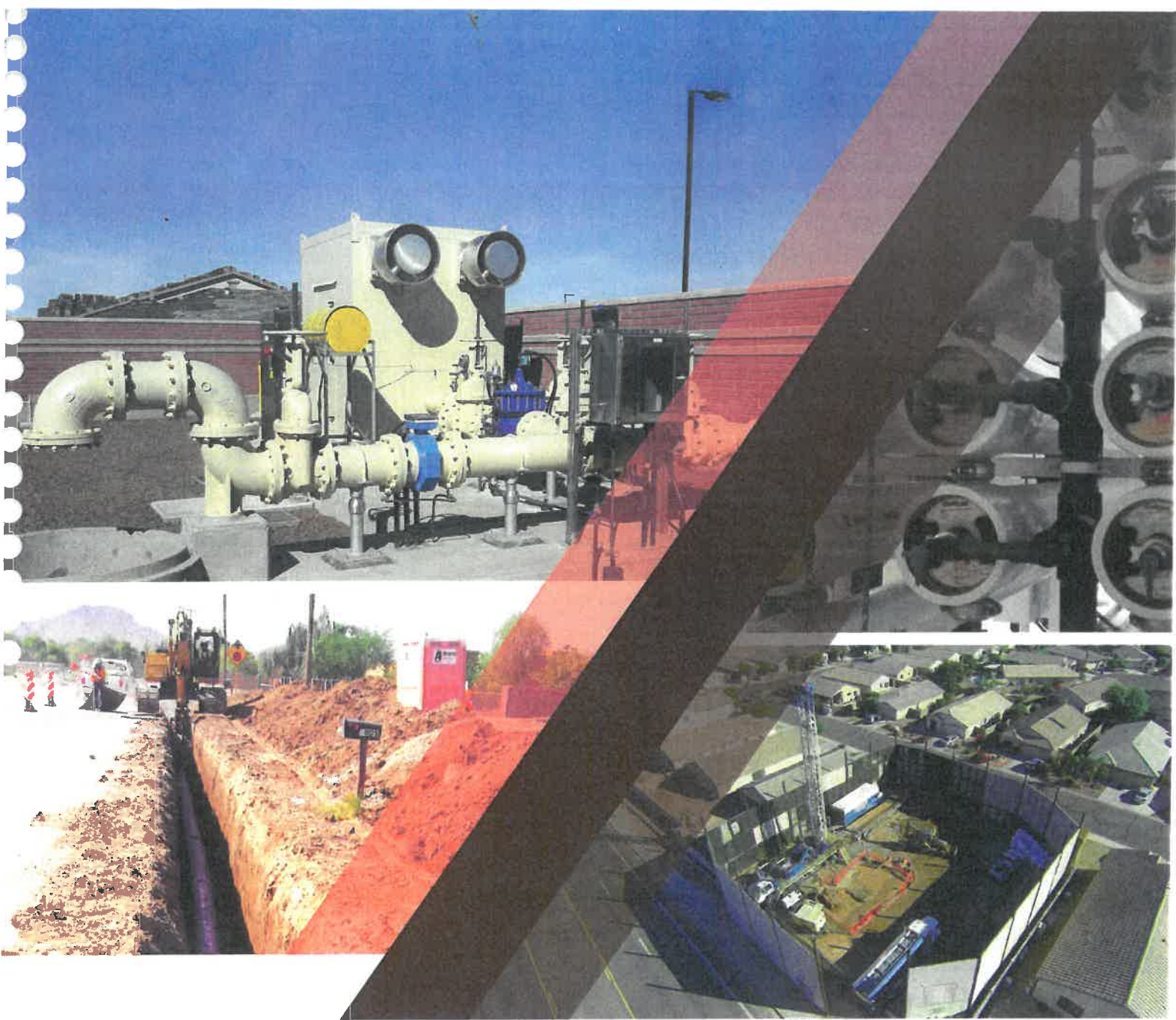
- ## B BULLARD WATER CAMPUS – PROCESS FLOW DIAGRAM & RO PROJECTIONS

*During high demand, there is currently not enough product water to meet TDS targets. Even if Well #26 has better than average water quality, more RO capacity is needed for blending during high demand.*



- feet msl. Driveways and access roads will maintain a grade of 1-2%.
- 7 Perimeter Wall:** Perimeter wall will be block with an aesthetic that matches the COG standards. The preliminary site layout (including on-site retention) is 90 x 100 feet, which fits easily in the COG's property. The size will be optimized during design.
- 8 On Site Retention:** On-site retention is provided for 10 minutes of flush to waste activity and stormwater retention. If the COG opts to utilize the sanitary sewer for flush to waste the footprint of the site will be reduced and optimized accordingly.
- 9 Flush to Waste:** Discharge to the sanitary sewer is recommended to provide periodic flush water for the system. The sanitary sewer collection system model will be evaluated to determine reserve capacity in the system.
- 10 Transmission Main:** A 16-inch transmission main is proposed for the new well.
- 11** The RFQ noted connecting to the Well #20 raw water pipeline. Well #20 was previously an agricultural well and is susceptible to sanding but is also the largest producer to Bullard. Currently the transmission pipeline has a velocity of 2.4 fps and with both Wells #20 & #26, the velocity would exceed 5 fps. We will evaluate the impacts of diminished water quality and increased headloss which may result in a dedicated pipeline to Bullard from Well #26 (3,200 ft).
- 12 Bullard Wash Crossing:** A Trenchless crossing will be coordinated with the Maricopa Flood Control District/Army Corps of Engineers.





## 2 Experience of Key Personnel

## Section No. 2

# Experience of Key Personnel

The Felix-Hazen-LRE Design-Build Team is an integrated partnership focused on the delivery of complex water treatment and conveyance infrastructure. We bring all of the tangible and intangible elements needed to ensure the complete success of the New COG Well #26 and Raw Water Transmission Main Project.

**Our Team provides COG with a familiar proven team with the right availability, experience and expertise to complete the Well #26 project.**



### PROJECT PRINCIPALS

*Design-Builder*

David Giannetto<sup>1\*</sup>

*Design Engineer*

Curtis Courter, PE

Associate VP, AZ Operations Manager<sup>2</sup>

### PROJECT MANAGER

Tim Burkeen

### DESIGN-BUILDER PROJECT MANAGER

Zach Foster<sup>1</sup>

1-Felix Construction

2-Hazen and Sawyer

3-Leonard Rice Engineers

\*-Original Bullard Team

### [ PHASE 1 SERVICES ]

*Design Manager*

Lisa Melton, PE<sup>2</sup>

*Well Equipping and Pipeline*

Bhaskar Kolluri, PE<sup>2</sup>

Elisabeth Lynn, EIT<sup>2</sup>

*RO Evaluation/Expansion*

Brad Reisinger, PE<sup>2</sup>

Daniela Panfil, EIT, ENV SP<sup>2</sup>

*Design Disciplines*

Greg Fron, PE – I&C<sup>2</sup> \*

Wyatt Dressler, PE – Structural<sup>2</sup>

*Hydrogeology*

Lauren Handley<sup>3</sup>

Gary Gin<sup>3</sup>

*Value Engineering/*

*Constructability*

David Giannetto<sup>1</sup>

Zach Foster<sup>1</sup>

*Estimating/GMP*

*Development*

Kory Burden<sup>1</sup>

*Scheduling*

Zach Foster<sup>1</sup>

*Technical Advisors, QA/QC*

Kent O'Brien, PG, OEG<sup>2</sup>

Eric Dole, PE<sup>2</sup>

Gwen Flora, CCM<sup>2</sup> \*

Kevin Alexander<sup>2</sup> \*

Robert Boysen<sup>2</sup> \*

### [ PHASE 2 SERVICES ]

*Field Superintendent*

Steve Stayer<sup>1\*</sup>

*Mechanical*

*Superintendent*

Ryan Richardson<sup>1</sup>

*Electrical Manager and*

*Estimator*

Dana Watts<sup>1\*</sup>

*Electrical*

*Superintendent*

Tom Payne<sup>1</sup>

*Final Design*

Lisa Melton, PE<sup>2</sup>

Bhaskar Kolluri, PE<sup>2</sup>

Brad Reisinger, PE<sup>2</sup>

Greg Fron, PE<sup>2</sup>

Wyatt Dressler, PE<sup>2</sup>

*Startup and Commissioning*

Eric Dole, PE<sup>2</sup>

*Engineering Services*

*During Construction*

Lisa Melton, PE<sup>2</sup>

Daniela Panfil, EIT, ENV SP<sup>2</sup>

Elisabeth Lynn, EIT<sup>2</sup>

*Construction Oversight*

Gwen Flora, CCM<sup>2</sup>

Jeremy Daniels<sup>2</sup> \*

Short biographies for our key staff are included below. Unless otherwise noted, information on comparable projects for each individual is included with our Firm Experience in Section 3. Resumes for all proposed staff are included in the Appendix. Our experience is also demonstrated in the reference projects presented in Section 3.





**Zach Foster**  
Design-Builder Project  
Manager, Value  
Engineering/  
Constructability,  
Scheduling

- 20 years of experience,  
7 years with Felix

Mr. Foster has worked in the water and wastewater construction industry since 1998. He possesses both the construction theory provided by formal education and the real-world skills provided by “hands-on” construction work. He has managed numerous water production, distribution, and treatment facilities for Goodyear and other municipalities and private owners across the state.

#### Comparable Projects (See Section 3)

**4**

**Project Manager**

**5**

**Project Manager**



**Lisa Melton**  
Design Manager, Site/Civil,  
Final Design, Engineering  
Services During  
Construction

- 10 years of experience,  
8 years with Hazen
- Professional Engineer –  
AZ (#61320)

Ms. Melton has 10 years of experience, 8 with Hazen and is an experienced design manager with similar recent experience leading comparable projects for the Town of Gilbert, the City of Florence, the City of Globe and the Coachella Valley Water District. This includes well and booster pump station site evaluations and designs, hydraulic evaluations, and RO groundwater treatment. Lisa works closely with all of Hazen’s proposed technical staff on a day-to-day basis to deliver complex design projects on time and within budget.

#### Comparable Projects (See Section 3)

**8**

**Design-Build  
Design Lead**

**10**

**Design Lead**

**9**

**Site/Civil**



**Steve Stayer**  
Field Superintendent

- 46 years of experience,  
20 years with Felix

Mr. Stayer has decades of progressively responsible experience in the construction industry starting in 1972. He excels in supervision and management of construction of wastewater, water treatment, underground utilities, site development, mechanical plants and major street development, from “hands-on” field work to operations management.

#### Comparable Projects (See Section 3)

**1**

**Superintendent**

**5**

**Superintendent**

**2**

**Superintendent**

**11**

**Superintendent**

**3**

**Superintendent**

**12**

**Superintendent**

**4**

**Superintendent**



**Brad Reisinger**  
RO Evaluation/Expansion,  
Design

- 12 years of experience, 3 years with Hazen
- Professional Engineer – AZ (#65338), CA

Mr. Reisinger has 12 years of experience with membrane treatment systems. His experience includes preparation of detailed plans and specifications, developing P&I drawings, plant layout design, bench and pilot testing, pilot system operations, construction services and full scale facility start-up, concentrate management, and process monitoring & optimization. He has been the design engineer on numerous groundwater RO facilities including the new City of Scottsdale TGTF, a 2-mgd RO facility, and supported membrane applications such as municipal drinking water, waste water, and water reclamation and has direct experience with hollow fiber nano/microfiltration, flat plate MBR, reverse osmosis, and electrodialysis reversal.

**Comparable Projects (See Section 3)**

**9**

**SBA Design Lead**

**14**

**Process Engineer**

**10**

**RO Process**

**15**

**RO Process Lead**



**Ryan Richardson**  
Mechanical  
Superintendent

- 23 years of experience, 3 years with Felix

Mr. Richardson has over 20 years of experience in the field of Civil Construction. With over 18 years in Water and Wastewater construction alone, he excels in the supervision and implementation of water and wastewater treatment facilities and conveyance systems.

**Comparable Projects (See Section 3)**

**2**

**Pipeline Superintendent**

**5**

**Mechanical  
Superintendent**



**Kevin Alexander**  
Technical Advisor, QA/QC

- 23 years of experience, 5 years with Hazen
- Professional Engineer – AZ (#33411), CA, ID, OK, TX, WA

Mr. Alexander has more than 23 years designing membrane treatment plants in Arizona and around the world. He has helped the City of Goodyear since 2002, including the emergency ion exchange procurement to meet summer demands at Well No. 1; temporary RO system design for Site 11 and the design of the Bullard Water Campus. His institutional knowledge of the Bullard Well Development and RO Design will be invaluable on this project. Mr. Alexander has a passion for desalination and has worked on more than 300 mgd of RO system capacity throughout his career. He also has extensive experience with alternative project delivery.

**Comparable Projects (See Section 3)**

**1**

**Process Project  
Manager**

**9**

**Project Principal**

**6**

**Design-Build  
Design Manager**

**10**

**Project Director**

**7**

**Design-Build  
Design Manager**

**15**

**Technical Advisor,  
QA/QC**



**Dana Watts**  
Electrical Manager and  
Estimator

- 38 years of experience,  
17 years with Felix

Mr. Watts has experience in industrial construction, with a focus on water and wastewater treatment projects since 1980. He has held positions as a Journeyman Electrician, Educator, Construction Superintendent, Estimator and Construction Project Manager.

#### Comparable Projects (See Section 3)

**1** Electrical/I&C  
Project Manager

**2** Electrical/I&C  
Project Manager

**12** Electrical/I&C  
Project Manager

**13** Electrical/I&C  
Project Manager



**Bhaskar Kolluri**  
Well Equipping and  
Pipeline, Design

- 15 years of experience,  
<1 year with Hazen
- Professional Engineer –  
AZ (#43217)

Mr. Kolluri has over 12 years of consulting experience and served for 3 years as the Design CIP Program Manager for a private West Valley water utility, overseeing all of their water and wastewater capital improvements for their multi-state utility portfolio. Bhaskar has extensive experience managing pumping and pipeline projects in the Valley, including over 30 pumping projects and 35 miles of pipeline.

#### Comparable Projects (See Section 3)

**14** Project Manager/  
Lead Designer

**16** KINGMAN WELL #10  
EQUIPPING

**Description:** Well equipping design, including a 300 HP line-shaft pump, 20' x 40' operations building to primarily house electrical gear, perimeter fencing and actuated vehicle entrance gates, 2,000 lf of 12-inch DI pipeline, new electrical service, building and site lighting, Diesel generator and ATS, and radio telemetry to connect to the City's SCADA system.

**Role:** Design Engineer

**Team Members:** Bhaskar Kolluri, Project Manager/Lead Designer; Elisabeth Lynn, Project Engineer

**Owner:** City of Kingman, Burly Hambriok, bhambriok@cityofkingman.gov; Rob Owen, rowen@cityofkingman.com

**Construction Contractor:** N/A

**Budget and Cost:** Original: \$171,290 | Final: \$171,290

**Construction/Design Dates:** 2/2018 – 8/2018

**13**

#### PHOENIX WELL PROGRAM - PRODUCTION WELL TREATMENT

**Description:** Hazen was responsible for the detailed design arsenic treatment and chlorination facilities (two new and retrofit of one existing) for new wells to be drilled at an existing reservoir site and at an existing booster pump station site, and for a re-drilled well at an existing well site. Hazen's effort includes coordination with the prime consultant, the OMAR contractor, the Program Manager, and the client.

**Role:** Subconsultant

**Team Members:** Curt Courter, Project Director; Bhaskar Kolluri, Project Manager; Brad Reisinger, Lead Designer; Daniela Panfil, Project Engineer

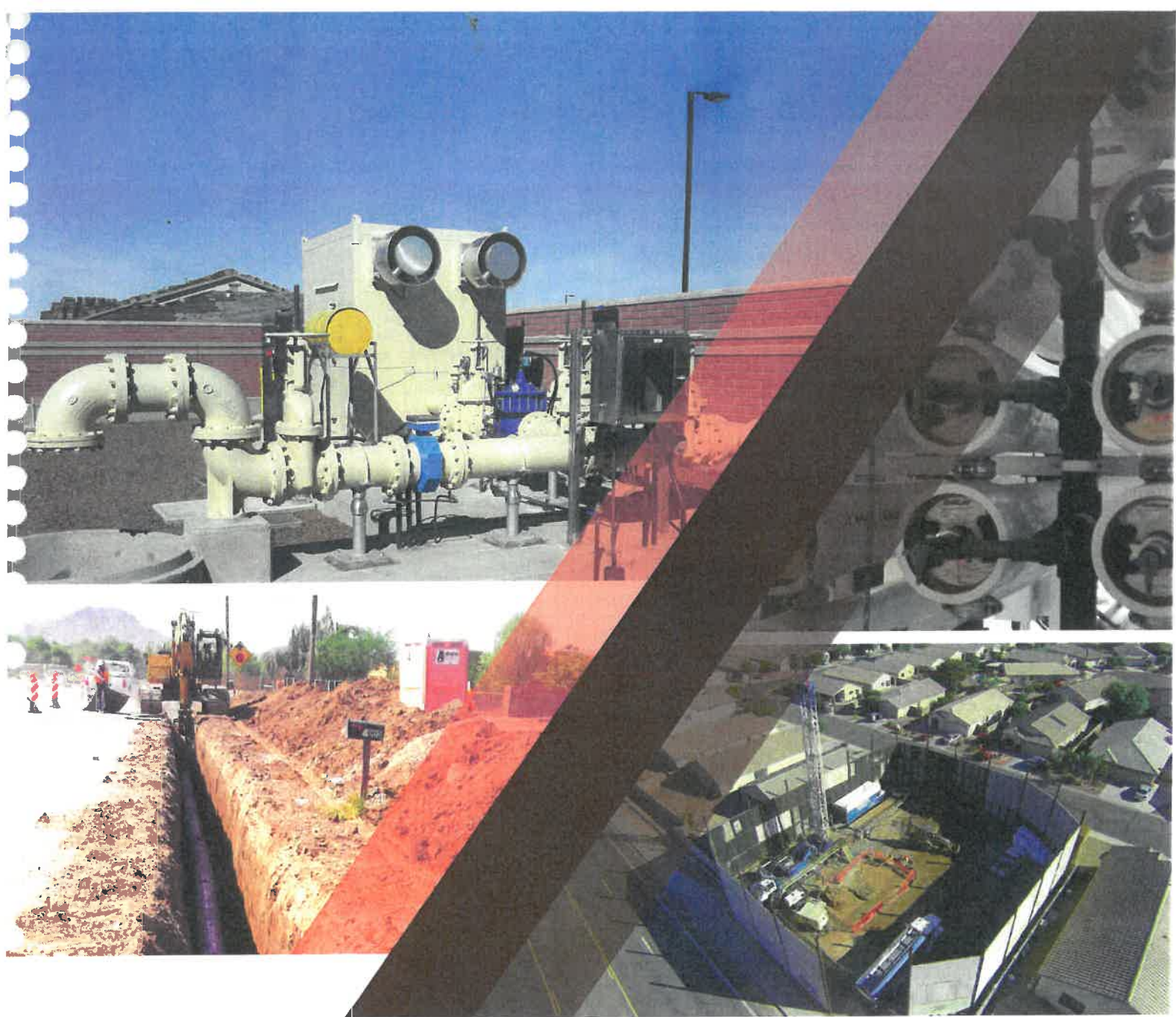
**Owner:** City of Phoenix, Aaron Laroque, Aaron.d.laroque@phoenix.gov; Darlene Helm, Darlene.helm@phoenix.gov

**Construction Contractor:** MGC Contractors, Larry Ayers, (602) 513-6461, larrya@mgocontractors.com

**Budget and Cost:** Original: \$445,000 | Final: TBD

**Construction/Design Dates:** 01/2018 – 12/2018 (est.)





- 3 Experience of the Prime Firm, Design Firm and Key Team Members
- 4 Subcontractor Selection Plan



## Section No. 3

# Experience of the Prime Firm, Design Firm and Key Team Members

In the preceding pages, we have highlighted extensive similar experience our proposed Team has providing similar design-build services, including a combined eight key members of the original Site 11/Bullard Water Campus development team. In addition, Felix and Hazen have extensive experience in Goodyear and throughout Arizona and the nation successfully delivering design-build water projects. Except for Goodyear Wells and Bullard Water Campus Improvements all of the projects below have been performed by the Felix project team within the last five years.

## Experience of the Prime Firm (Felix)



### Goodyear Wells and Bullard Water Campus Improvements, Goodyear, AZ

**Description:** Design-Build project as part of a City Infrastructure Improvement Program funded through the sale of public municipal bonds. The Felix/BCC team upgraded existing potable wells, constructed new potable wells, upgraded the existing Bullard RO facility and eventually expanded Bullard to accommodate the increasing development in the area. Felix self-performed a majority of the concrete and mechanical work and self-performed all the electrical on the projects.

**Role:** Design-Build GC

**Team Members:** David Giannetto, Project Manager; Steve Stayer, Superintendent; Dana Watts, Electrical/I&C Project Manager; Gwen Flora, D-B Program Manager; Kevin Alexander, Process Project Manager; Buddy Boysen, Process Engineer; Greg Fron, Electrical/I&C; Jeremy Daniels, Mechanical Superintendent

**Owner:** City of Goodyear, Rubin Veloz, Operations Supervisor, (623) 693-0170; Todd Carpenter, Operations Superintendent, (623) 693-2585

**Engineer/Designer:** Brown and Caldwell, Gwen Flora, Former Project Manager, Brown and Caldwell, (480) 436-7959

**Budget and Cost:** Original: \$5.4M | Final: \$6.49M (Goodyear added addition well and equipping to scope)

**Construction/Design Dates:** 03/2006 – 12/2007



### Sundance-Central WTP Pipeline, City of Buckeye, AZ

**Description:** This D-B project included installation of 5.5 miles of 12-inch C900 effluent line from the Central WWTP to the Sundance WRF. The water table at the Central WWTP is so shallow that the City could not inject the effluent back into the ground and gain the recharge credits. This project allows the City to inject their effluent water into the aquifer at the Sundance WRF in order to benefit from ground water recharge credits.

**Role:** Design-Build GC

**Team Members:** David Giannetto, D-B Manager; Steve Stayer, Superintendent; Ryan Richardson, Pipeline Superintendent; Dana Watts, Electrical/I&C Project Manager

**Owner:** Chris Williams, Construction Manager, City of Buckeye, (623) 349-6225; Doug Nooden, Project Manager, City of Buckeye, (623) 349-6212

**Engineer/Designer:** Dibble Engineering, Ezra Page, PE, (602) 957-1155

**Budget and Cost:** Original: \$5.8M | Final: \$6.3M (owner-initiated design and construction change orders)

**Construction/Design Dates:** 09/014 – 11/2017

### Miami Wells 27 and 28 ARF, Miami, AZ

3



#### Description:

Re-equipped 2 production wells to comply with the MCL for arsenic and provide additional booster pumping and storage. Scope items included vessels, media, piping, valves, pumps, storage tanks, concrete pads, meters, E/I&C equipment, chemical equipment, chemicals, start-up, training and commissioning.

**Role:** Design-Build GC

**Team Members:** David Giannetto, D-B Manager; Steve Stayer, Superintendent; Dana Watts, Electrical/I&C Project Manager

**Owner:** Arizona Water Company: Richard Hacker, Project Manager, (602) 240-6830; Fred Schneider, Vice President Engineering, (602) 240-6860

**Engineer/Designer:** GHD, Frederick Tack, (480) 216-7200

**Budget and Cost:** Original: \$4.2M | Final: \$4.3M (owner-initiated change orders)

**Construction/Design Dates:** 06/2017 – 04/2018

### Well 1.3B, Sun City West, AZ

4



#### Description:

Fast Track D-B contract for re-equipping 1,200-GPM Well 1.3B. The Felix D-B Team completed both design and construction on this well in under 150 days, achieving Approval of Construction from the Maricopa County Environmental Services Department.

**Role:** Design-Build GC

**Team Members:** David Giannetto, D-B Manager; Zach Foster, Project Manager; Steve Stayer, Superintendent; Dana Watts, Electrical/I&C Project Manager

**Owner:** EPCOR Water: Kevin Conway, Project Manager, EPCOR Water, (623) 587-5204; Eric French, Engineering Manager, EPCOR Water, (623) 445-2450

**Engineer/Designer:** GHD, Bill Roberts, (602) 216-7208

**Budget and Cost:** Original: \$935,065 | Final: \$935,065

**Construction/Design Dates:** 01/2016 – 06/2016

### Goodyear Water/Wastewater JOC, Goodyear, AZ

5



#### Description:

35+ water and wastewater alternative delivery projects executed by the City of Goodyear via "piggyback" to the City or Peoria's W/WW JOC contract with Felix.

**Role:** Prime Job Order Contractor

**Team Members:** David Giannetto, JOC Manager; Zach Foster, Project Manager; Steve Stayer, Superintendent; Dana Watts Electrical/I&C Project Manager; Ryan Richardson, Mechanical Superintendent

**Owner:** Barb Chappell, Water Quality Manager, City of Goodyear, (623) 333-4428; Todd Carpenter, Operations Superintendent, (623) 693-2585

**Engineer/Designer:** Various, Dibble Engineering, Keith Faucet, (602) 957-1155

**Budget and Cost:** Original: \$6.5M | Final: TBD

**Construction/Design Dates:** 02/2013 – Ongoing

### Nanofiltration Plant Design-Build, Signal Hill, CA

6



#### Description:

Design and construction of a production well, pipelines and a 1.75-mgd groundwater three-pass 98% recovery nanofiltration plant. Scope also included production well pump, product water pump Station, storage tank, pipelines to distribution, on-site stormwater retention basins and operations building.

**Role:** Lead Designer

**Team Members:** Kevin Alexander, Design-Build Design Manager; Curt Courter, QA/QC

**Owner:** City of Signal Hill, Desi Alvarez, Project Manager, (310) 739-1625, mcm\_management@verizon.net; Cecil Looney (562) 989-7253, clooney@cityofsignalhill.org

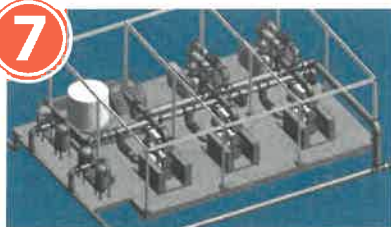
**Construction Contractor:** Filanc, Norbert Schulz, (760) 708-8541, nschulz@filanc.com

**Budget and Cost:** Original: \$6.6M | Final: \$6.9M

**Construction/Design Dates:** : 01/2016 – 06/2016

### Advanced Oxidation Plant Design-Build Monterey Park, CA

7



#### Description:

Design and construction of a centralized UV/peroxide advanced oxidation groundwater treatment plant to replace several aging and ineffective wellhead treatment facilities treating VOCs and 1,4-dioxane.

**Role:** Lead Designer

**Team Members:** Kevin Alexander, Design-Build Design Manager

**Owner:** City of Monterey Park, Frank Heldman, Water Utility Manager, (626) 307-1295, FHeldman@MontereyPark.ca.gov; Jerry Mesa, (626) 307-1295, jmesa@montereypark.ca.gov

**Construction Contractor:** Filanc, Norbert Schulz, (760) 708-8541, nschulz@filanc.com

**Budget and Cost:** Original: \$8.3M | Final: \$8.3M

**Construction/Design Dates:** 06/2017 – 07/2018

### Chromium 6 Water Treatment Facilities, Coachella Valley Water District, Palm Desert, CA

9



**Description:** Study, detailed design, permitting, CMAR contractor procurement and coordination. Detailed design included development of 1,800 drawings in 9 months. Included upgrades at 30 well sites, design of 23 on-site groundwater treatment facilities; design of 3 greenfield treatment facilities; 10 miles of raw and finished water mains.

**Role:** Prime Consultant

**Team Members:** Kevin Alexander, Project Principal; Robert Boysen, Brine Management; Curt Courter, Pipelines Task Lead; Lisa Melton, Site/Civil; Brad Reisinger, SBA Design Lead

**Owner:** CVWD, Steve Bigley, Director of Environmental Services, 760-398-2661, sbigley@cvwd.org; Mark Johnson, (ret.) (760) 777-2698, mark@flogh2.com

**Construction Contractor:** PCL Construction, Brian Taylor, (602) 541-3193, bltaylor@pcl.com

**Budget and Cost:** Original: \$14M | Final: \$14M

**Construction/Design Dates:** 03/2015 – 01/2017

### Water System Improvements Project, City of Globe, AZ

8



#### Description:

Master planning and modeling, of storage requirements and piping, pumping and PRV station needs to improve system performance. Included field pressure logging, well and booster pump efficiency testing, and design and construction of 8 PRV stations and associated improvements.

**Role:** Lead Designer

**Team Members:** Curt Courter, Project Manager; Lisa Melton, Design-Build Design Lead; Eric Dole, QA/QC

**Owner:** City of Globe, AZ, Paul Hendricks, Program Manager, (623) 204-4901, phendricks@cox.net; Brent Billingsley, Former Globe City Manager, (520) 868-7558, bbillingsley@florence.gov

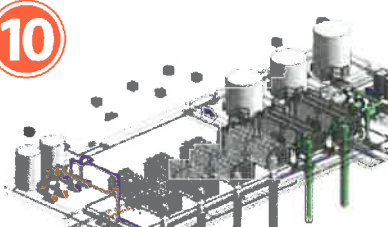
**Construction Contractor:** Mortenson, Chase Farnsworth, chase.farnsworth@mortenson.com

**Budget and Cost:** Original: \$654K | Final: \$654K

**Construction/Design Dates:** 07/2015 – 02/2016

### Newland, City of Goodyear, AZ

10



#### Description:

Hazen was recommended to the developer by COG staff to evaluate treatment and brine disposal alternatives for high TDS groundwater in southern Goodyear. This work began in 2013 and included several treatment studies culminating in the development of the basis of design and 30% drawings for a new high recovery (93%) 4-mgd RO groundwater treatment facility, expandable to 20 mgd. The preliminary design was completed following COG standards.

**Role:** Lead Designer

**Team Members:** Curt Courter, Project Manager; Kevin Alexander, Project Director/Technical Advisor; Lisa Melton, Design Lead; Robert Boysen, QC; Brad Reisinger, RO Process

**Owner:** Newland, Pete Teiche, Project Manager, (602) 468-0800; Bill Olsen, (602) 468-0800, wolson@newlandco.com

**Construction Contractor:** N/A

**Budget and Cost:** Original: \$215,000 | Final: \$215,000

**Design Dates:** 12/2013 – 07/2017



The table below highlights some additional recent relevant experience of our team.

	Project/Relevance	Firm	Project Relevance
11	Clarkdale Twin 5's Water Line Replacement	Felix	• Installation of 7,200 linear feet of 12" C900 pipe and 2,200 linear feet of 8" C900 pipe
12	Chandler Lindsay Rd Well	Felix	• Drilled and developed a new diagnostic well and production well, installed well pumps, discharge piping and valves, electrical and instrumentation, RTU, SCADA, and other site improvements.
13	City of Phoenix Well Program	Felix	• CMAR Contractor for five ASR wells.
		Hazen	• Design and CMAR coordination for three well site treatment facilities as a subconsultant. Overall project includes drilling and equipping three new wells and associated pipelines.
		LRE	• Technical Advisor for seven new ASR wells and three new production wells to advise on technical and management related issues throughout design, permitting, siting, construction, testing, and operational phases of the program.
14	Kingman Distribution Main Replacements	Hazen	• Design of replacement water mains in five separate areas of the City. Replacement water mains include: 1) 3,810 lf of 8"-12" ductile iron, 2) 2,430 lf of 8" C-900, 3) 2,446 lf of 8"-12" C-900, 4) 1,168 lf of 9" C-900, and 5) 5,085 lf of 6"-8" C-900.
15	Scottsdale TGTF RO Facility	Hazen	• Design of a 3-mgd (permeate) groundwater reverse osmosis treatment system to remove TDS and nitrates
16	Kingman Well 10 Equipping	Hazen	• Well equipping design, including new electrical, instrumentation and controls, perimeter security fencing and gate access, radio telemetry and connection to the City's SCADA. Also includes design of 2,000 lf of 12-inch ductile iron transmission main.

## Section No. 4

# Subcontractor Selection Plan

*Felix will select major subcontractors based on qualifications alone, a combination of qualifications and price, but not on price alone. This is according to ARS §34-603 and ARS §41-2578.*

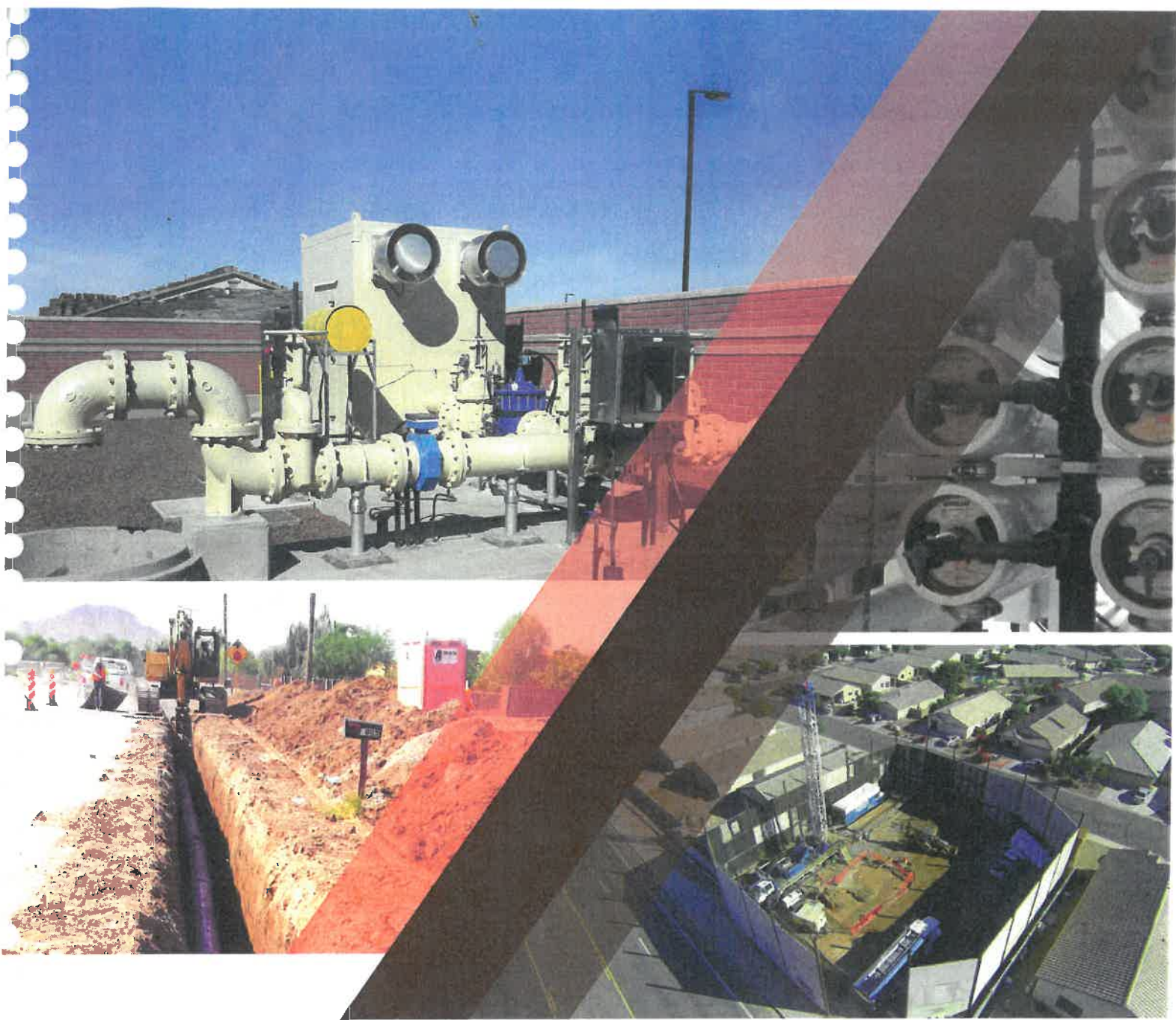
Felix requires that all subcontractors first go through our pre-qualification process. This process evaluates the financial stability, bonding capacity, safety record (ORIR and violations), and takes into consideration the experience of work on similar projects as well as our past work experience with the subcontractor.

Typically, we select subcontractors based on a combination of qualifications and price. We will select on qualifications alone if 1) Design Assistance is needed during the preconstruction phase, 2) proprietary services or products are required, or 3) an accelerated project schedule is necessary.

Felix will submit a Construction Management Plan to the City for review during the GMP preparation phase. In this plan we will identify our suppliers, subcontractors, and work that Felix will be self-performing.

Outside of the scopes specifically identified for qualification selection, bids will be solicited from pre-approved subcontractors and suppliers. In many cases Felix is suited to self-perform the work. Unless otherwise identified, any self-performed work by Felix will be competitively priced and compared to other bids from qualified subcontractors. Some items of self-performed work may include above-ground and underground piping/mechanical, concrete, and electrical.





## Appendix A Licenses

Appendix A

Licenses

*Felix Construction Company and all its subcontractors posses all licenses to perform work in the State of Arizona.*

Current Licenses

Felix Construction Company

- UL Panel Shop Certifications
  - UL 508A - Industrial Control Panels E253143
  - UL 698A - Industrial Control Panel in Hazardous Locations E467222

Hazen

- 24 Arizona Professional Engineers (Civil, Mechanical, Electrical, Structural, Sanitary)
- 2 Engineers-in-Training
- 1 Certified Construction Manager
- 1 California Professional Geologist
- 3 Inspectors (multiple certifications)

Leonard Rice Engineers

- 2 Registered Geologists

Arizona Licenses

Felix Construction Company

- Arizona General Engineering Contractor License A: No. 70935
- Arizona Commercial Contractor License B-1: No. 3020
- Arizona Electrical Contractor License C-11: No. 172036

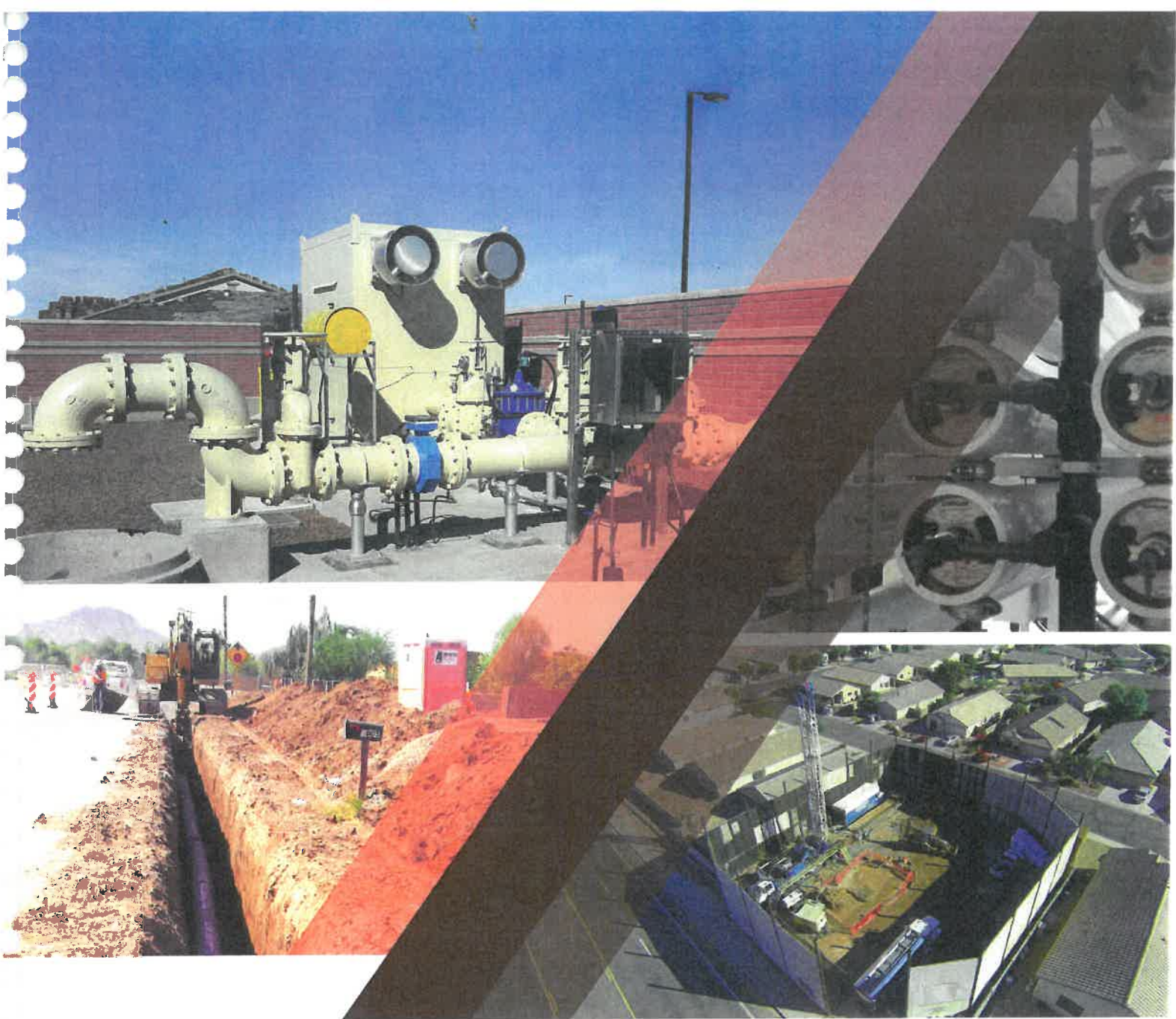
Hazen

- New York State Design Professional Corporation, registered with the State of Arizona Board of Technical Registration (16948)
- Arizona Corporation Commission (FO8671655)

Leonard Rice Engineers

- Registered with the State of Arizona Board of Technical Registration (10582-O)





## Appendix B Resumes

# Kory Burden

## Estimator

Mr. Burden has experience in construction project management, field supervision and estimating since 1996. He possesses both the construction theory provided by formal education and the real-world skills provided by “hands-on” construction work. He is able to manage all project aspects from the competitive bid stage through final completion. He also has extensive experience with Alternative Delivery Projects.

### Employment Experience

2012 – Present, Felix Construction Company,  
Estimator/Project Manager

2004 – 2012, Archer Western,  
Estimator/Project Manager

1996 – 2004, Walsh Construction Company,  
Estimator/Project Manager

### Education/Training/Certifications

1996 – AAS Architecture, BS Advanced  
Technical Studies, Southern Illinois University

1992 – AAS General Engineering, Morrison  
Institute of Technology

### Relevant Project Experience

#### **7A-GS2 3MG Concrete Reservoir and BPS**

##### ***Role: Estimator***

Kory served as the Estimator for the construction of a partially buried 3 MG concrete reservoir in northern Phoenix, AZ. His scope included construction of a 3 million gallon concrete reservoir, valve vault with large diameter piping, chlorine building with electrical gear and double contained gas chlorination system, five 18 in. and two 24 in. pump cans (25 ft. deep), recirculation pump station, 1,200 linear ft. of 8 ft. decorative cast-in-place site perimeter wall, installation of instrumentation and controls, and programming for the facility.

#### **Sun City Festival Ranch Water Plant & Wells 1, 2, and 3**

##### ***Role: Estimator***

Kory served as the Project Manager on this CMAR project for the construction of this new potable water booster station, a 2.25 million gallon above ground steel reservoir, chlorine disinfection, surge tank, electrical building and site improvements in Buckeye, AZ.

#### **Cottonwood Riverfront WRF**

##### ***Role: Estimator***

Kory was the Estimator on this CMAR project. His bid scope included a 0.3 MGD WRF. The scope includes an influent PS, screening, secondary treatment w/ clarifiers, tertiary filters, chlorine disinfection, reclaimed water PS, odor control, photovoltaic, and a conference/ visitor center.





# Kory Burden *Estimator*



Industry Experience: 22

Years with Felix: 6

## Relevant Design-Build Project Experience

Anthem Bioreactor 2 Air System Mods, EPCOR, \$300,000, Estimator

CCWC Reservoir #2 BPS, EPCOR, \$2,607,544, Estimator

Anthem Bioreactor 1 Air System Modifications, EPCOR, \$420,000, Estimator

**Miami Wells 27 & 28 ARF, Arizona Water Company, \$4,273,152, Estimator**

111th & Olive SLS Replacement, EPCOR, \$677,792, Estimator

**Casa Grande Well 32 Nitrate Treatment, AZ Water Company, \$189,273, Estimator**

Tucson Silverbell WQARF P&T, City of Tucson, \$2,500,000, Estimator

**SCW Well 1.3 Replacement, EPCOR, \$935,065, Estimator**

89A Booster Pump System, Town of Clarkdale, \$231,264, Estimator

SPA1 WRF 2nd Centrifuge, City of Surprise, \$1,900,000, Estimator

**Valley Farms Arsenic Treatment, AZ Water Company, \$1,185,495, Estimator**

**Buckeye Central WWTP to Sundance WRF Effluent Line DB, City of Buckeye, \$6,364,032, Estimator**

SPA2 Bridge Crane, City of Surprise, \$300,000, Estimator

# Zach Foster

## Construction Project Manager

Mr. Foster has worked in the water and wastewater construction industry since 1998. He possesses both the construction theory provided by formal education and the real-world skills provided by “hands-on” construction work. He has managed numerous water production, distribution, and treatment facilities for various municipalities and private owners across the state.

### Employment Experience

2013 – Present, Felix Construction Company, PM

2009 – 2013, Skanska, PM

2007 – 2009, Felix Construction Company, PM

1998 – 2007, Garney Construction, PM

### Education/Training/Certifications

2009 – OSHA 10hr Certification

1999 – Bachelor of Science Degree in Construction Management, Colorado State University, Fort Collins, CO.

### Relevant Project Experience

#### **7A-GS2 3MG Concrete Reservoir and BPS**

##### ***Role: Project Manager***

Zach served as the Project Manager for the construction of a partially buried 3 MG concrete reservoir in northern Phoenix, AZ. His scope included construction of a 3 million gallon concrete reservoir, valve vault with large diameter piping, chlorine building with electrical gear and double contained gas chlorination system, five 18 in. and two 24 in. pump cans (25 ft. deep), recirculation pump station, 1,200 linear ft. of 8 ft. decorative cast-in-place site perimeter wall, installation of instrumentation and controls, and programming for the facility.

#### **Westcor Reservoir, BPS and Offsite Well**

##### ***Role: Project Manager***

Zach served as the Project Manager for the construction of this new potable water booster station, a 2.25 million gallon above ground steel reservoir, chlorine disinfection, surge tank, electrical building and site improvements in Surprise, AZ.

#### **Rancho Gabriela Water Booster Station and Arsenic Removal Facility**

##### ***Role: Project Manager***

Zach served as the Project Manager for the expansion of this potable water booster pump station and a new arsenic treatment facility in Surprise, AZ. His scope included twelve 2,500 gallon pressurized filter media vessels with motor operated valves, four dual pump chemical injection skids, four 3,000 gallon chemical storage tanks, large diameter tie-ins to the existing and future reservoirs, 24" DIP water transmission lines, 16" DIP water distribution lines, a complete backwash system including pumps two 50,000 gallon settling tanks with solids storage and de-water bins, supporting electrical systems including integration to the plants existing Security and SCADA systems, and a building to house the new electrical systems.



# Zach Foster *Construction Project Manager*



Industry Experience: 20

Years with Felix: 7

## Relevant Design-Build Project Experience

Anthem Bioreactor 2 Air System Mods, EPCOR, \$300,000, PM

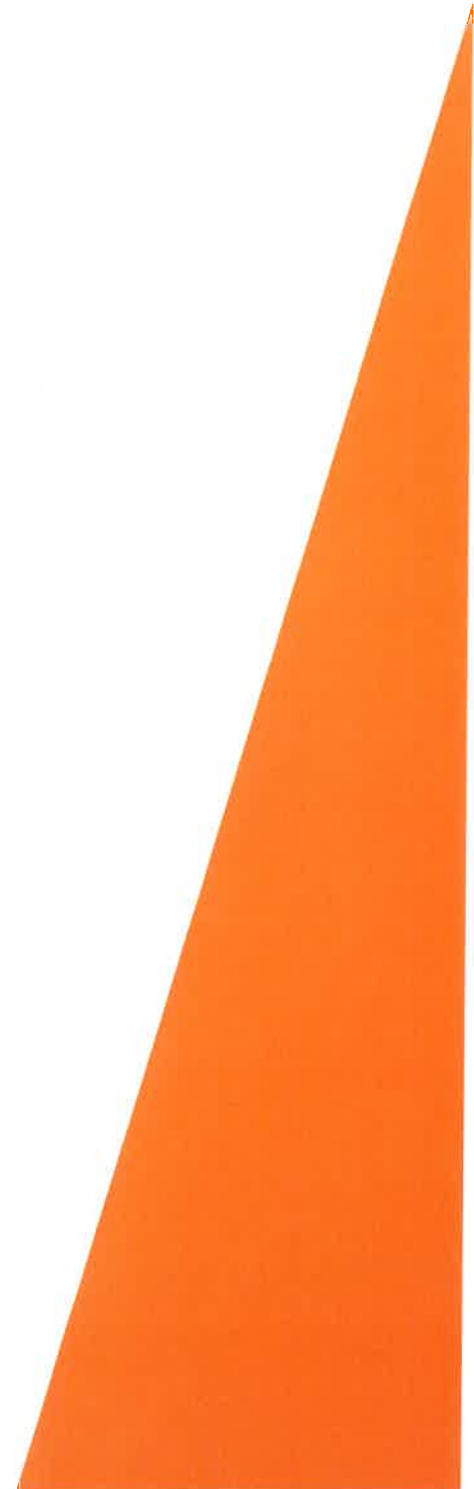
Anthem Bioreactor 1 Air System Modifications, EPCOR, \$420,000, PM

111th & Olive SLS Replacement, EPCOR, \$677,792, PM

**SCW Well 1.3 Replacement, EPCOR, \$935,065, PM**

SPA1 WRF 2nd Centrifuge, City of Surprise, \$1,900,000, PM

SPA2 Bridge Crane, City of Surprise, \$300,000, PM





# David Giannetto

## Design-Build Manager

Mr. Giannetto has worked in the construction industry since 1997, including four years of engineering services in water and wastewater construction. He has direct experience in the project management of water booster stations, wastewater treatment plants, well equipping, and heavy construction. He possesses both the construction theory provided by formal education and the real world skills provided by hands-on construction and engineering work. He manages projects from the competitive bid stage through final completion.

### Employment Experience

2002 – Present, Felix Construction Company,  
PM/ Contracting Group Manager

1999 – 2002, Stanley Consultants Inc.,  
Resident Engineer

1997 – 1999, Perini Building Company, Project  
Engineer

### Education/Training/Certifications

2015 – Construction Professional of the Year,  
Arizona Water Association

2014 – Certified Construction Manager at Risk  
Professional, Alliance for Construction  
Excellence

2013 – Certified JOC Professional, Alliance for  
Construction Excellence

2001 – OSHA 10hr Certification

1999 – BS in Construction, Del E. Webb School  
of Construction, Arizona State University,  
Tempe, AZ

1992 – Associates of Arts in Architecture, Palm  
Beach Community College, Palm Beach, FL

### Relevant Project Experience

#### **Kingman Downtown Wastewater Treatment Plant**

##### ***Role: Project Manager***

David served as the PM on this CMAR project for the City of Kingman that involved demolition of a lagoon-style plant and construction of a new headworks, MBR plant, UV disinfection, and odor control structure, and Photovoltaic system on the same location as the old lagoon plant..

#### **Glendale 67th Ave and Beardsley SLS Rehabilitation**

##### ***Role: Project Manager***

David was the PM for the complete mechanical and electrical upgrade and rehabilitation of an existing 20 year old regional sewage lift station (67th Ave. & SR 101) in Glendale AZ.

#### **Tierra Del Rio Water Plant #14 and SLS**

##### ***Role: Project Manager***

David was the PM for the construction of a Water Plant and SLS for the City of Peoria. His project scope involved construction of a water plant (2 MG concrete reservoir, booster station, on-site generation disinfection, E/I&C, control building), two well sites, a PRV station, and a sanitary sewer lift station



Industry Experience: 21

Years with Felix: 16

## Relevant Design-Build Project Experience

Anthem Bioreactor 2 Air System Mods, EPCOR, \$300,000, D-B Manager

CCWC Reservoir #2 BPS, EPCOR, \$2,607,544, Principal

Anthem Bioreactor 1 Air System Modifications, EPCOR, \$420,000, D-B Manager

Miami Wells 27 & 28 ARF, Arizona Water Company, \$4,273,152, Principal

111th & Olive SLS Replacement, EPCOR, \$677,792, D-B Manager

**Tucson Silverbell WQARF P&T, City of Tucson, \$2,500,000, Principal**

**SCW Well 1.3 Replacement, EPCOR, \$935,065, D-B Manager**

89A Booster Pump System, Town of Clarkdale, \$231,264, D-B Manager

SPA1 WRF 2nd Centrifuge, City of Surprise, \$1,900,000, D-B Manager

**Buckeye Central WWTP to Sundance WRF Effluent Line DB, City of Buckeye, \$6,364,032, D-B Manager**

SPA2 Bridge Crane, City of Surprise, \$300,000, D-B Manager/PM

Surprise Security Improvements, City of Surprise, \$1,200,000, D-B Manager

**Peoria Stone St. Well Rehabilitation, City of Peoria, \$221,638, D-B Manager**

**Goodyear Wells and Bullard Water Campus Improvements, City of Goodyear, \$6,415,306, PM**

# Tom Payne

## E/I&C Superintendent

Mr. Payne has decades of electrical experience in industrial electrical construction. He possesses the real world skill provided by "hands-on" electrical construction work since 1979.

### Employment Experience

2002 – Present, Felix Construction Company, E/I&C Field Superintendent  
2000 – 2002, Applied Control Systems, Electrical Superintendent  
1994 – 2000, Code Electric, Electrical Foreman  
1988 – 1994, Carter Electric, Electrical Foreman  
1979 – 1988, Multiple Employers, Electrical Journeymen/Foreman

### Education/Training/Certifications

2014 – OSHA 10-hour Training  
2009 – OSHA 10-hour Training  
2008 – VFD Training  
1998 – OSHA 30-hour Training

### Relevant Project Experience

#### **Rancho Gabriela Water Booster Station and Arsenic Removal Facility**

##### ***Role: E/I&C Superintendent***

Zach served as the Project Manager for the expansion of this potable water booster pump station and a new arsenic treatment facility in Surprise, AZ. His scope included twelve 2,500 gallon pressurized filter media vessels with motor operated valves, four dual pump chemical injection skids, four 3,000 gallon chemical storage tanks, large diameter tie-ins to the existing and future reservoirs, 24" DIP water transmission lines, 16" DIP water distribution lines, a complete backwash system including pumps two 50,000 gallon settling tanks with solids storage and de-water bins, supporting electrical systems including integration to the plants existing Security and SCADA systems, and a building to house the new electrical systems.

#### **Westcor Reservoir, BPS and Offsite Well**

##### ***Role: E/I&C Superintendent***

Tom served as the E/I&C Superintendent on this CMAR project for the construction of this new potable water booster station, a 2.25 million gallon above ground steel reservoir, chlorine disinfection, surge tank, electrical building and site improvements in Surprise, AZ.

#### **Northwest WRF Improvements**

##### ***Role: E/I&C Superintendent***

Tom was the E/I&C Superintendent on this CMAR project for EPCOR in Surprise, AZ. His scope included Rehabilitation of key plant systems including upgraded blowers, diffusers, reconstruction of the bio-reactor splitter structure, new odor control systems and a complete plant MCC replacement.





Industry Experience: 39

Years with Felix: 16

## Relevant Design-Build Project Experience

Anthem Bioreactor 2 Air System Mods, EPCOR, \$300,000, E/I&C Superintendent

CCWC Reservoir #2 BPS, EPCOR, \$2,607,544, E/I&C Superintendent

Anthem Bioreactor 1 Air System Modifications, EPCOR, \$420,000, E/I&C Superintendent

**Miami Wells 27 & 28 ARF, Arizona Water Company, \$4,068,359, E/I&C Superintendent**

111th & Olive SLS Replacement, EPCOR, \$677,792, E/I&C Superintendent

**Casa Grande Well 32 Nitrate Treatment, Arizona Water Company, \$189,273, E/I&C Superintendent**

Tucson Silverbell WQARF P&T, City of Tucson, \$2,500,000, E/I&C Superintendent

SCW Well 1.3 Replacement, EPCOR, \$935,065, E/I&C Superintendent

89A Booster Pump System, Town of Clarkdale, \$231,264, E/I&C Superintendent

SPA1 WRF 2nd Centrifuge, City of Surprise, \$1,900,000, E/I&C Superintendent

**Valley Farms Arsenic Treatment, Arizona Water Company, \$1,185,495, E/I&C Superintendent**

SPA2 Bridge Crane, City of Surprise, \$300,000, E/I&C Superintendent

Surprise Security Improvements, City of Surprise, \$1,200,000, E/I&C Superintendent

**GRIC - Blackwater Well, GRIC, \$612,851, E/I&C Superintendent**

**GRIC - Well #3, GRIC, \$511,526, E/I&C Superintendent**

**Peoria Stone St. Well Rehabilitation, City of Peoria, \$221,638, E/I&C Superintendent**

**Goodyear Wells and Bullard Water Campus Improvements, City of Goodyear, \$6,415,306, E/I&C Superintendent**

# Ryan Richardson

## *Mechanical Superintendent*

Mr. Richardson has over 20 years of experience in the field of Civil Construction. With over 18 years in Water and Wastewater construction alone, he excels in the supervision and implementation of water and wastewater treatment facilities and conveyance systems.

### Employment Experience

2015- Present, Felix Construction,  
Superintendent  
2008- 2015, Currier Construction,  
Superintendent  
2006- 2008, Fusion Engineering,  
Superintendent  
2001- 2006, Garney Construction,  
Mechanical Foreman  
1995- 2000, MKB Constructors (Seattle,  
WA) Mechanical Foreman

### Education/Training/Certifications

2014 – OSHA 30-hour Competent Person  
Certificate  
2010 – OSHA 30-hour Certification  
2009 – OSHA 10-hour Certification

### Relevant Project Experience

#### **Wickenburg Ranch WWTP and Water Campus**

##### ***Role: Superintendent***

Ryan served as the Superintendent for the construction of a 1.2 MGD WWTP for the City of Wickenburg. Scope involved start to finish construction of WWTP. Ryan also was the Superintendent for the Wickenburg Ranch Water Campus and (2) separate Well Sites for the City of Wickenburg. His Scope involved a 1-Million Gallon Steel Reservoir, Booster Station, Chlorine Disinfection building, Standby generator, and equipping of (2) 900 gpm Well Sites.

#### **42<sup>nd</sup> Pl. Reservoir Replacement**

##### ***Role: Assistant and Mechanical Superintendent***

Ryan served as the Assistant and Mechanical Superintendent on this CMAR project for the City of Phoenix. His scope involved demolition of a 20-Million Gallon Concrete Reservoir and construction of (2) new 7-Million Gallon Cast in Place concrete reservoirs with Aeration system, Valve vault for (6) 60" MOV's, new Vertical Turbine pump(s) booster station, 800 Lf. of 60" Steel Pipe, 2000 Lf. of 48" Steel Pipe, and removal of a Chlorine Gas disinfection system and install of a Chlorine solution tank and (12) Chlorine Metering Pumps and associated piping throughout project.

#### **Cap 1 Pump Station Upgrades**

##### ***Role: Superintendent***

Ryan was the Superintendent on this project for the City of Scottsdale. His scope included replacement of all Vertical Turbine pumps and motors, natural gas backup motors, VFD's, standby generators, and complete MCC replacement. As well as Micro-piling and Pressure Grouting under the buildings sinking foundation.



# Ryan Richardson *Mechanical Superintendent*



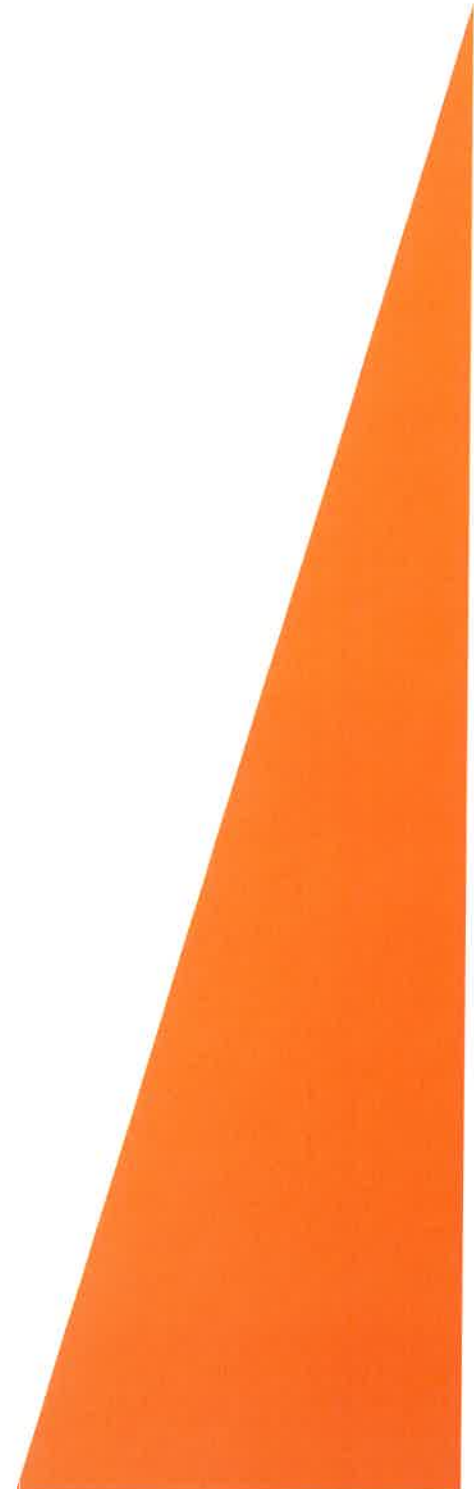
Industry Experience: 23

Years with Felix: 3

## Relevant Design-Build Project Experience

**Buckeye Central WWTP to Sundance WRF Effluent Line DB, City of Buckeye, \$6,364,032,  
Mechanical Superintendent**

Douglas WWTP Expansion, City of Douglas, 12,000,000. Mechanical Superintendent





# Steve Stayer

## General Superintendent

Mr. Stayer has decades of progressively responsible experience in the construction industry starting in 1972. He excels in supervision and management of construction of wastewater, water treatment, underground utilities, site development, mechanical plants and major street development, from "hands-on" field work to operations management.

### Employment Experience

1998 - Present, Felix Construction Company,  
VP/ General Superintendent

1996 - 1998, Currier Construction, Inc.,  
Superintendent

1992 - 1996, C.S. & W. Contractors, Inc.,  
Operations Manager

1991 - 1992, MGC Contractors Inc.,  
Superintendent

1986 - 1991, C.S. & W. Contractors, Inc.,  
Superintendent

1985 - 1986, Tiffany Construction, Inc.,  
Equipment Manager

1982 - 1985, C.S. & W. Contractors, Inc.,  
Superintendent

1981 - 1982, Felix Construction (Erie, PA),  
Superintendent

1976 - 1981, Zamais Construction,  
Superintendent

1972 - 1976, Ed Stayer & Sons, Foreman /  
Journeyman Operator

### Education/Training/Certifications

2016 – OSHA 30-hour Competent Person  
Certificate

2010 – OSHA 10-hour Certification

1970 – Liberal Arts Degree, State University of  
New York at Buffalo

### Relevant Project Experience

#### **7A-GS2 3MG Concrete Reservoir and BPS**

##### ***Role: General Superintendent***

Steve served as the General Superintendent for the construction of a partially buried 3 MG concrete reservoir in northern Phoenix, AZ. His scope included construction of a 3 million gallon concrete reservoir, valve vault with large diameter piping, chlorine building with electrical gear and double contained gas chlorination system, five 18 in. and two 24 in. pump cans (25 ft. deep), recirculation pump station, 1,200 linear ft. of 8 ft. decorative cast-in-place site perimeter wall, installation of instrumentation and controls, and programming for the facility.

#### **Kingman Downtown Wastewater Treatment Plant**

##### ***Role: General Superintendent***

Steve served as the General Superintendent on this CMAR project for the City of Kingman that involved demolition of a lagoon-style plant and construction of a new headworks, MBR plant, UV disinfection, and odor control structure, and Photovoltaic system on the same location as the old lagoon plant.

#### **Northwest WRF Improvements**

##### ***Role: General Superintendent***

Steve was the General Superintendent on this CMAR project for EPCOR in Surprise, AZ. His scope included Rehabilitation of key plant systems including upgraded blowers, diffusers, reconstruction of the bio-reactor splitter structure, new odor control systems and a complete plant MCC replacement.



# Steve Stayer *General Superintendent*



Industry Experience: 46

Years with Felix: 20

## Relevant Design Build Project Experience

Anthem Bioreactor 2 Air System Mods, EPCOR, \$300,000, General Superintendent

CCWC Reservoir #2 BPS, EPCOR, \$2,607,544, General Superintendent

Anthem Bioreactor 1 Air System Modifications, EPCOR, \$420,000, General Superintendent

**Miami Wells 27 & 28 ARF, Arizona Water Company, \$4,273,152, General Superintendent**

111th & Olive SLS Replacement, EPCOR, \$677,792, General Superintendent

**Casa Grande Well 32 Nitrate Treatment, AZ Water Company, \$189,273, General Superintendent**

Tucson Silverbell WQARF P&T, City of Tucson, \$2,500,000, General Superintendent

SCW Well 1.3 Replacement, EPCOR, \$935,065, General Superintendent

89A Booster Pump System, Town of Clarkdale, \$231,264, General Superintendent

SPA1 WRF 2nd Centrifuge, City of Surprise, \$1,900,000, General Superintendent

**Valley Farms Arsenic Treatment, AZ Water Company, \$1,185,495, General Superintendent**

**Buckeye Central WWTP to Sundance WRF Effluent Line DB, City of Buckeye, \$6,364,032, General Superintendent**

SPA2 Bridge Crane, City of Surprise, \$300,000, General Superintendent

Surprise Security Improvements, City of Surprise, \$1,200,000, General Superintendent

**GRIC - Blackwater Well, GRIC, \$612,851, General Superintendent**

**GRIC - Well #3, GRIC, \$511,526, General Superintendent**

**Peoria Stone St. Well Rehabilitation, City of Peoria, \$221,638, General Superintendent**

**Goodyear Wells and Bullard Water Campus Improvements, City of Goodyear, \$6,415,306, General Superintendent**

# Dana Watts

## *E/I&C Project Manager*

Mr. Watts has experience in industrial construction, with a focus on water and wastewater treatment projects since 1980. He has held positions as a Journeyman Electrician, Educator, Construction Superintendent, Estimator and Construction Project Manager.

### Employment Experience

2001 – Present, Felix Construction Company, E/I&C Group Manager/Project Manager

2000 – 2001, Applied Control Systems, Senior PM (Electrical Division)

1986 – 2000, Code Electric Corporation, Senior PM, Field Superintendent & Foreman

1986 – 1994, Maricopa Community Colleges, Teacher/Instructor - Electrical Tech. Dept.

1980 – 1986, Multiple Electrical Contractors, Electrician

### Education/Training/Certifications

2008 – VFD Training

2004 – License holder for UL-508A License with Felix Construction

2002 – Present, ISA Member

2001 – License holder for L-11 License with Felix Construction

1987 – Associate of Applied Science in Electrical Technology, Maricopa Comm. College

1983 – Electrical Technology, Rio Salado Community College

### Relevant Project Experience

#### **7A-GS2 3MG Concrete Reservoir and BPS**

##### ***Role: E/I&C Project Manager***

Dana served as the E/I&C Project Manager for the construction of a partially buried 3 MG concrete reservoir in northern Phoenix, AZ. His scope included construction of a 3 million gallon concrete reservoir, valve vault with large diameter piping, chlorine building with electrical gear and double contained gas chlorination system, five 18 in. and two 24 in. pump cans (25 ft. deep), recirculation pump station, 1,200 linear ft. of 8 ft. decorative cast-in-place site perimeter wall, installation of instrumentation and controls, and programming for the facility.

#### **Westcor Reservoir, BPS and Offsite Well**

##### ***Role: E/I&C Project Manager***

Dana served as the E/I&C Project Manager on this CMAR project for the construction of this new potable water booster station, a 2.25 million gallon above ground steel reservoir, chlorine disinfection, surge tank, electrical building and site improvements in Surprise, AZ..

#### **Northwest WRF Improvements**

##### ***Role: E/I&C Project Manager***

Dana was the E/I&C PM on this CMAR project for EPCOR in Surprise, AZ. His scope included Rehabilitation of key plant systems including upgraded blowers, diffusers, reconstruction of the bio-reactor splitter structure, new odor control systems and a complete plant MCC replacement.





# Dana Watts *E/I&C Project Manager*



Industry Experience: 38

Years with Felix: 17

## Relevant Project Experience

Anthem Bioreactor 2 Air System Mods, EPCOR, \$300,000, E/I&C Manager

CCWC Reservoir #2 BPS, EPCOR, \$2,607,544, E/I&C Manager

Anthem Bioreactor 1 Air System Modifications, EPCOR, \$420,000, E/I&C Manager

**Miami Wells 27 & 28 ARF, Arizona Water Company, \$4,068,359, E/I&C Manager**

111th & Olive SLS Replacement, EPCOR, \$677,792, E/I&C Manager

**Casa Grande Well 32 Nitrate Treatment, Arizona Water Company, \$189,273, E/I&C Manager**

Tucson Silverbell WQARF P&T, City of Tucson, \$2,500,000, E/I&C Manager

**SCW Well 1.3 Replacement, EPCOR, \$935,065, E/I&C Manager**

89A Booster Pump System, Town of Clarkdale, \$231,264, E/I&C Manager

SPA1 WRF 2nd Centrifuge, City of Surprise, \$1,900,000, E/I&C Manager

**Valley Farms Arsenic Treatment, Arizona Water Company, \$1,185,495, E/I&C Manager**

SPA2 Bridge Crane, City of Surprise, \$300,000, E/I&C Manager

Surprise Security Improvements, City of Surprise, \$1,200,000, E/I&C Manager

**GRIC - Blackwater Well, GRIC, \$612,851, E/I&C Manager**

**GRIC - Well #3, GRIC, \$511,526, E/I&C Manager**

**Peoria Stone St. Well Rehabilitation, City of Peoria, \$221,638, E/I&C Manager**

**Goodyear Wells and Bullard Water Campus Improvements, City of Goodyear, \$6,415,306, E/I&C Manager**



## Kevin Alexander, PE

Technical Advisor, QA/QC

*Kevin Alexander, PE, is Vice President and Senior Project Manager for Hazen. He has extensive experience in the planning, design, and construction of groundwater treatment systems.*

### Education

B.S. Civil Engineering,  
Missouri University of  
Science and Technology  
(Previously University of  
Missouri at Rolla)

### Certification/License

Professional Engineer: AZ  
(33411), CA, ID, OK, TX, WA

### Areas of Expertise

- Project Management
- Project Delivery
- Groundwater
- Reverse Osmosis
- Drinking Water
- Concentrate Treatment

### Experience

- 23 total years
- 5 year with Hazen

### Professional Activities

AWWA, AZWA, AMTA

CA-NV AWWA,

CA Water Reuse  
Association

WaterReuse Association  
WEF

### Technical Publications

Author of more than 30  
technical presentations and  
publications.

Mr. Alexander is a hands-on Technical Specialist and Advisor with a background built on more than 23 years of membrane treatment plant designs in Arizona and around the world. He has helped the City of Goodyear since 2002 starting with emergency Ion Exchange procurement to meet summer demands at Well No.1. He assisted with the Temporary RO system design for Site 11 and the design that of the Bullard Water Campus. He also developed the City of Goodyear RO Standards. He has a passion for desalination and has worked on more than 300 mgd of RO system capacity throughout his career. He has extensive experience with alternative project delivery, serving as the Owner's Representative and as the Design Manager. He has worked extensively with Filanc on both Design-Bid-Build and as Design Manger on Design-Build Projects.

### Well #9 Water Treatment Plant, Signal Hill, CA, Design Manager

As part of the Filanc DB Team, Mr. Alexander designed and started a 10-mgd UV Advanced Oxidation Plant and Granular Activated Carbon treatment system for removal of VOCs from the groundwater.

### Southern Solutions Water Supply Project, Newland, Goodyear, Arizona, Design Manager

As part of the Filanc DB Team, Mr. Alexander designed and started up a 2-mgd NF and GAC treatment plant for color and benzene removal.

### Coachella Valley Water District – Water Supply Treatment for Hexavalent Chromium, Coachella Valley Water District, Palm Desert, CA, Technical Advisor

Mr. Alexander provided assistance with reviewing project deliverables for 37 wellhead treatment projects using Strong Base and Weak Base Anion Exchange processes and a central ion exchange regeneration facility with concentrate and salt recovery systems.

### Newland Communities - Southern Solution Water Treatment Evaluation and Design, Goodyear, Arizona, Project Manager

Mr. Alexander served as the lead the feasibility study and 30% design of a 4-mgd wellhead treatment system for treating TDS, nitrate, arsenic, and fluoride from a local groundwater with reverse osmosis.

**Indio Water Authority – Hexavalent Chromium Treatment Plant Procurement and Design, Indio, California, Project Manager**

Mr. Alexander led equipment and operations contract negotiation and reviewed the design for three, 4-mgd treatment plants to remove Hexavalent Chromium. Project delivered in less than 6 months.

**City of Santa Barbara – Design-Build-Operate (DBO) Services For Reactivation and Operation of the Charles Meyer Desalination Plant, Santa Barbara, California, Design Manager**

As part of Acciona/Filanc DBO Team, Mr. Alexander led the design of open-ocean intake and 8.9-mgd seawater desalination plant. Project was not awarded to team.

**Santa Clara Valley Water District, Silicon Valley Water Purification Center, Santa Clara, California, Design Manager/QC**

Mr. Alexander designed RO system for the 10,000 ac-ft/yr advanced water recycling center.

**City of Phoenix, Western Canal WTP Pilot Study, Phoenix, Arizona, Project Manager/Membrane Processes**

Mr. Alexander designed, installed, and operated a high recovery MF, RO, Interstage Lime, and Concentrate RO pilot system on Western Canal water and local groundwater. Pilot proved >95% recovery.

**West Basin Municipal Water District, Edward C. Little Water Recycling Plant, Phase 4 Expansion, El Segundo, California, Design Manager**

Mr. Alexander was responsible for 30% design-build plans and specifications for expansion of the MF with submerged technology and RO system at ECLWRF.

**City of Scottsdale, CAP Water Plant Expansion, Scottsdale, Arizona, Project Manager**

Mr. Alexander planned, designed and started a 20-mgd(expandable to 50-mgd) Dissolved Air Flotation and MF system for treating Central Arizona Project (CAP) Water. Design was part of a CM at-risk project delivery.

**City Of Scottsdale, Water Campus Phase 1 and 2, Scottsdale, Arizona, Project Engineer and Project Manager for multiple projects**

Planned, designed and started four phases of a 24-mgd water reclamation plant followed by a 20-mgd MF and RO system for groundwater recharge and for supplying local golf courses low salt water.

**City of Goodyear, Bullard Water Campus, Goodyear, Arizona, Project Manager**

As part of a design build team, Mr. Alexander designed and started an 8-mgd (expandable to 10-mgd) brackish groundwater RO system, developed RO building drawings, and provided review and oversight of the overall design.

**City of Goodyear, Large Diameter(18 inch) Temporary RO, Goodyear, Arizona, Project Manager**

Mr. Alexander negotiated the procurement and designed the first municipal installation of a 0.5-mgd, 18-inch-diameter Koch MegaMagnum™ RO System at the Site 11 Temporary RO System.

**City of Goodyear, On-Call Operations and Membrane Support Services, Goodyear, Arizona, Project Manager**

Mr. Alexander provided operations support services to assist the City with operation of their Bullard Water Campus and Site 12 RO systems.

**City of Goodyear, Site 11 Wellhead Treatment System, Goodyear, Arizona, Project Manager**

Prepared procurement and design for the 7 wellhead RO units for Site 12 and Well 11 Temporary Improvements. Emergency projected allowed for using pricing from City of El Paso, TX wellhead project.





#### **Education**

BS, Chemical Engineering,  
University of Wyoming,  
2003

#### **Certification/License**

Professional Engineer: AZ  
(#48467), TX (#119621), WY  
(#12225)

Offshore Operations and  
Safety

Transportation Worker  
Identification Credentials  
(TWIC)

Basic Offshore Safety  
Induction and Emergency  
Training

PETRONAS Offshore  
Safety Passport

#### **Areas of Expertise**

- Membranes and  
Advanced Water  
Treatment Technologies

#### **Experience**

- 19 total years
- 3 year with Hazen

#### **Professional Activities**

South Central Membrane  
Association (SCMA) Board  
Member

SCMA 2016 Educator of the  
Year Award

## **Robert Boysen, PE**

**Technical Advisor, QA/QC**

*Robert Boysen, PE, is Hazen's Southwest Region Membrane and Reuse Practice Lead. He is a membrane treatment expert with over 17 years experience. Much of that experience has been focused on process development, mechanical design and procurement of reverse osmosis and membrane filtration equipment.*

#### **Bullard Water Campus Membrane Assessment, Goodyear, AZ**

The Bullard Water Campus is a brackish water RO system designed to produce 5.6-mgd of blended finished water. Well 12B is a 1-mgd well site RO system. Both facilities were delivered through a design-build project. During the design phase of the project, Mr. Boysen designed the chemical feed systems and provided general design support for the RO and support systems. He also developed the plant control narrative for the support systems. During construction, Mr. Boysen was involved in commissioning and start-up of the MM3 and had general construction and inspection duties.

#### **Well 12B Stabilization Study, Goodyear, AZ**

Mr. Boysen performed a post-treatment chemical stabilization evaluation to eliminate potable water blending in the storage tank. This approach would free up additional potable water that could be redirected to northern portions of the City.

#### **Reverse Osmosis Operational Support, Goodyear, AZ**

Mr. Boysen served as Project Engineer, responsible for operational support to monitor the operational data from Bullard and Well 12B to evaluate the performance of the City's brackish water RO systems. Work included providing operator training seminars, recommending operational changes, and scheduled maintenance activities such as CIP and system evaluations such as O&M cost estimates and equipment resale valuations.

#### **Antiscalant and Membrane Procurement, Goodyear, AZ**

Mr. Boysen served as Project Engineer, responsible for specifications and bid review for replacement of RO membrane elements and antiscalant chemical supply contracts for Bullard Water Campus and Well 12B.

**Southern Solutions Water Supply Project, Newland, Goodyear, AZ**

Mr. Boysen served as Project Engineer for design of two separate 1-mgd brackish water RO treatment facilities for a housing development located south of Goodyear. Although the project was not implemented, the detailed designs were completed and may be implemented at a future date. During this project, Mr. Boysen was directly responsible for the detailed design and specification of RO support systems including pre- and post-treatment chemical addition and pretreatment media and cartridge filtration.

**Brownsville PUB/SRWA, SRWA Manganese Removal Study, Brownsville, TX**

Mr. Boysen served as Project Manager for bench testing and conceptual design of manganese removal facilities for an existing 6-mgd coagulation/membrane filtration, RO, and degasification brackish water desalination facility. Project recommended sodium permanganate treatment over another alternative oxidant process with chlorine dioxide and an alternative process using manganese media (green sand, oxide coated or pyrolusite) filtration.

**Brighton Water Treatment Plant Improvements, Seminole Tribe of Florida, Brighton, FL**

Mr. Boysen serves as Technical Advisor for design and modification of an existing brackish water RO facility to allow the facility to switch to a more brackish water source. Project involves assessment and reconfiguration of existing RO and degasification equipment and reconfiguration of the brine disposal system to switch from a blending and spray field disposal approach to deep well injection. Project is ongoing.

**Brighton Water Treatment Plant RO Pilot Test, Seminole Tribe of Florida, Brighton, FL**

Mr. Boysen served as Project Engineer for a pilot test to demonstrate RO treatment of brackish Upper Floridian Aquifer groundwater. The treatment process evaluated used reverse osmosis upstream of degasification. Key responsibilities included membrane evaluation and selection, pilot protocol development, review of pilot data and pilot system operation, and final pilot report preparation.

**Water and Wastewater Chemical Procurement, El Paso Water Utility, El Paso Texas**

Mr. Boysen serves as Technical Lead for development of RO antiscalant procurement specifications for the 15-mgd Kay Bailey Hutchison Desalination Plant and the Lower Valley RO systems. Project is ongoing.

**RO Optimization Strategy, Concentrate Minimization Strategy and Valve Specification, Beverly Hills, CA**

Mr. Boysen served as Technical Advisor for review of technical recommendations to optimize the performance of the Potable Water Treatment Plant RO system based on changes in water quality. Areas of optimization included RO Train modifications for reduced flow, concentrate minimization strategies, and assessment of the downstream stripping tower.

**WTP NPDES Waste Stream Management Study, Northern Area Water Authority, Tipp, OH**

Mr. Boysen served as Technical Specialist for the development of a pilot testing protocol to evaluate concentrate discharge system scaling for a brackish groundwater RO facility.



## Curtis Courter, PE

### Design Engineer

*Curt has spent his entire 20-year career with Hazen successfully managing assignments from a few thousand dollars to projects as large as nearly \$14 million in design fees.*

#### Education

MBA, Business Administration  
University of Michigan-Dearborn

MS, Civil Engineering, Wayne  
State University

BS, Civil Engineering, Wayne State  
University

#### Certification/License

Professional Engineer: AZ  
(#57864); MI, NY

#### Areas of Expertise

- Project Management
- Conveyance Systems
- Water / Wastewater Process Design
- Construction Engineering and Administration
- Facilities Planning

#### Experience

- 19 total years
- all with Hazen

#### Professional Activities

Arizona Water Association -  
Energy & Sustainability Committee

American Water Works  
Association

Water Environment Federation -  
Disinfection and Public Health  
Committee

#### Selected Publications

"In-Line Disinfection of a OSO  
First Flush Basin in Detroit." 2013.  
WEF Disinfection and Public  
Health Conference 2013,  
Indianapolis, IN, February 2013.

His water treatment experience includes projects in Goodyear and Scottsdale. He has also successfully delivered over \$300 million in design-build projects both as an Owner's Agent and as a key member of the design team. As a Project Manager of numerous water and wastewater planning, design and construction projects, Mr. Courter has provided overall project management direction, including development of detailed design documents, direction of design teams and subconsultants, coordination of task level activities, client interface and coordination, community involvement programs, quality control reviews, D/B and CMAR coordination, and construction oversight. He has a strong track record in developing and managing schedules, budgets, document control systems, as well as progress reporting.

#### Bullard Water Campus Membrane Assessment, Goodyear, AZ

The City hired Hazen to evaluate the current performance of the RO system to determine the current condition of the membranes and if any replacement is recommended. Curt managed the evaluation and development of a technical memorandum summarizing the review of the RO performance data for the seven trains, including a review of normalized operating performance data and recommendations on membrane replacement requirements and future actions.

#### Thomas Groundwater Treatment Facility, City of Scottsdale, AZ

Mr. Courter is Hazen's Project Manager. As a subconsultant, Hazen is leading the design of a 3 mgd reverse osmosis treatment system, and evaluating source and finished water blending, including performing distribution system hydraulic modeling and computation fluid dynamics modeling of reservoir mixing. The current is currently progressing through 90% design.

#### Southern Solutions Water Supply Project, Newland, Goodyear, AZ

Project Manager for evaluation and conceptual design of a 4 MGD reverse osmosis treatment facility. Tasks included design of RO skids, P&ID developments, client meetings, and overall coordination and delivery of a preliminary design report and 30% design deliverable.



"Regional Water Quality Improvements Banklick Creek Wetlands." 2013 Ohio Stormwater Conference, Sharonville, OH, May 2013.

"CT Setpoint Control for Disinfection of an 8.6 Billion Gallon Per Day Combined Sewer Overflow" Central States Water Environment Association 2012 Annual Meeting, St. Charles, IL, 2012.

"CSO Treatment" Ohio Water Environment Association Wet Weather Issues Webinar Series, August 2011.

"Wet Weather Disinfection Alternatives" Ohio Water Environment Association Buckeye Bulletin, Vol. 84:3, Issue 2 August 2011

"What if Industrial Flows Don't Make It to the Plant? SD1's Determination of Potential Water Quality Impacts from Non-Domestic Dischargers in their Combined Sewer System"

Proceedings of the Water Environment Federation Collection Systems 2010, Phoenix, AZ, 2010.

"Skimming the Surface Options for Solids and Floatables Control" Water Environment & Technology, Vol. 21, No. 5, May 2009

"Floatables Control is Surfacing Again, What Can You Do?" Proceedings of the Water Environment Federation 81st Annual Conference, Chicago, IL, 2008.

"Planning Comprehensive Water Quality Based CSO Controls for a Polluted Urban Tributary Newtown Creek, New York City, New York" Proceedings of the Water Environment Federation Collection Systems 2008, Pittsburgh, PA, 2008.

"The Challenges of Abating a Very Large Combined Sewer Overflow (CSO)" Proceedings of the Water Environment Federation Collection Systems 2006, Detroit, MI, 2006.

"Innovative Technologies of Detroit's Large CSO Control Facility" Proceedings of the Water Environment Federation 77th Annual Conference, New Orleans, LA, 2004.

### **Well #9 Water Treatment Plant, Signal Hill, CA**

QA/QC of the design of a nanofiltration water treatment plant with a treatment capacity of 2 MGD. This D/B project was completed with teaming partner Filanc Construction and included a new well pump, cartridge filter pre-treatment, two NF treatment trains, chemical feed systems, product water tank, product water pumps, non-recoverable waste system, clean in place system, and an operations/training building. The electrical design also included a 600kW diesel standby power generator.

**AWT Chloramination System Improvements, City of Scottsdale, AZ**  
Project Manager, and Hazen performed process optimization at the 20 mgd reverse osmosis (RO) treatment facility to improve chlorine and ammonia control and address RO system performance issues. Hazen evaluated alternatives and developed a procurement package for upgrades to the Chloramination system. Hazen is providing implementation assistance.

### **Chaparral WTP Stainless Steel Corrosion Remediation, City of Scottsdale, AZ**

Project Manager for this project, which includes a condition assessment of existing stainless steel piping corrosion on the MF system through inspection and identification of corrosion locations, developing a repair program and overseeing corrective measures, as well as an evaluation of the cause of corrosion and recommendation of measures to mitigate future corrosion.

### **CVWD Chromium 6 Water Treatment Facilities Project, Coachella Valley Water District, Palm Desert, CA**

Task Lead for this \$225 million CMAR project that included production of 1,800 drawings in 9 months as part of the design of 25 Ion Exchange Treatment Plants to treat water from 30 wells in the District's system, as well as a Central Resin Regeneration Facility.

### **Cr6 Treatment Design for Wells 13A, AA, and 1E, Indio Water Authority, CA**

Provided project management support and QA/QC for the fast-track design of three Strong Base Anion (SBA) Treatment Facilities for wells 1E, AA, and 13A to meet the Cr6 MCL and produce sufficient water to enable IWA to meet peak summer water demands. The project included design permitting, construction administration and startup services. Design was initiated in February 2015 and the three facilities began operation in July 2015.

### **Estrella Mountain Ranch Southern Solutions Water Supply Project, Goodyear, AZ – Newland Communities**

During Phase 1, Mr. Courter served as the Project Engineer for master planning of a new RO treatment plant, transmission pipelines, raw water wells and concentrate evaporation ponds.



## Jeremy Daniels

### Construction Oversight

*Mr. Daniels is a seasoned construction management professional with over 26 years of diversified experience in water, wastewater, recycled water, industrial, commercial and federal government sectors.*

#### Education

Associate of Applied Science,  
Electronics Engineering  
Technology - ITT Technical  
Institute, Murray, Utah

#### Areas of Expertise

- Project Management
- Project Delivery
- Construction Management
- Cost Estimating
- Scheduling
- Water/Wastewater/  
Reclamation Construction
- Quality Control
- Project Controls
- Constructability Reviews
- Start Up/Commissioning
- Site Safety Health Officer  
(SSHO)

#### Experience

- 26 total years
- 1 year with Hazen

#### Professional Activities

Member of S.A.M.E (Society of  
American Military Engineers)

CMAA (Construction  
Management Association of  
American)

Mr. Daniels' experience started as a mechanical tradesman and has evolved into project management, construction management, quality assurance, estimating, cost and schedule management, safety management and other consulting services. Mr. Daniels is familiar with traditional design-bid-build project delivery, as well as CMAR, design-build and job or contracting.

**National Institute of Health Chilled Water Pump Station, Bethesda, MD**  
Project Manager. Responsibilities include construction management, submittal/RFI review, change order management, schedule review, monthly reports, quality control inspections and management of start-up/commissioning. The project consists of a new pump station, a 4.6 million gallon pre-stressed concrete tank, architectural pre-cast panels, primary electrical yard, MCC/electrical room, civil site work and architectural retaining walls. The design build costs are estimated at \$28 million on this federal government project.

**Germann and Higley 18-inch Reclaimed water line, Town of Gilbert, AZ**  
Construction Manager for a 3 mile long 18-inch reclaimed water main.

**Carson Regional Water Recycling Treatment Plant, Carson, CA**  
Constructability Reviewer. Provided Quality Control for design specification for the Carson Regional Water Recycling Treatment Facility Microfiltration and Reverse Osmosis Upgrade and Expansion project.

#### Haskell R Street WWTP Odor Control

Cost Estimator. Prepare estimate for 60% design by calculating complete takeoff of scope of work and applying applicable labor units on project. Analyze draws and other documentation to prepare time, cost, material and labor estimates. Work collaboratively with others to discuss feasibility and projected costs for the project. The project consisted of two headwork bio scrubber towers and demoing all existing FRP ductwork and reinstalling new FRP SP 9000 FRP ductwork.

**Multiple Mechanical New and Rehabilitation Project, US Government, Ft. Sill, Lawton, OK**

Construction Manager. Responsibilities included construction management, submittal/RFI process management, change order management, development and maintained cost-loaded project schedule (P6), prepared monthly reports, facilitated progress meetings, managed the quality control/safety inspection team, as well as managed the start-up/commissioning team. The project consisted of 10 new chilled water pumps, 6 new boilers, rehabilitation of 2 cooling towers, 4-8" new water pipelines in tunnels throughout the base, upgrades to life safety systems (fire alarms/sprinklers/MAS notification) and associated electrical upgrades. The design build costs for the project was \$14 million on this federal government project.

**B-3102 HVAC Renovations, US Government, Tinker Air Force Base, Oklahoma City, OK**

Construction Manager. Responsibilities included construction management, submittal/RFI process management, change order management, developed and maintained cost-loaded project schedule (Microsoft Project), prepared monthly reports, facilitated progress meetings, managed the quality control/safety inspection team, as well as managed the start-up/commissioning team. The project took place in an active hanger, which required coordination with operations. The project consisted of installing new air handling units and all associated support systems in 4 bays, including significant structural steel platforms for the suspended units. The design build costs for the project was \$4.8 million on this federal government project.

**Potable Water Booster Pump Station, City of Scottsdale, AZ**

Mechanical Superintendent. Responsibilities included management of subcontract and self-perform crews, materials take-off, prepared 3-week look ahead schedules, facilitated progress meetings, managed quality control, as well start-up/commissioning. The costs were \$4.3 million for preconstruction and construction services on this CMAR contract for the 16 MGD potable water booster pump station located in the arts district.

**Bullard Water Campus, City of Goodyear, AZ**

Project Superintendent. Responsibilities included management of subcontract and self-perform crews, materials take-off, prepared 3-week look ahead schedules, facilitated progress meetings, managed quality control, as well start-up/commissioning. The project consisted a 5 MGD reverse osmosis facility used to treat high TDS/ Nitrate well water and blend in an existing water storage tank. This facility allowed Goodyear to significantly reduce the TDS in their water distribution system and was delivered via design-build. The design-build construction costs were \$11 million.

**Wellhead Arsenic Treatment Facilities, City of Phoenix, AZ**

Project Superintendent. Responsibilities included management of subcontract and self-perform crews, materials take-off, prepared 3-week look ahead schedules, facilitated progress meetings, managed quality control, as well start-up/commissioning. The projects installing 5 wellhead treatment systems at existing potable water wells. The construction cost was \$3 Million.

**Jomax Water Reclamation Facility, City of Peoria, AZ**

Project Superintendent. Responsibilities included management of subcontract and self-perform crews, materials take-off, prepared 3-week look ahead schedules, facilitated progress meetings, managed quality control, as well start-up/commissioning. The project consisted of expanding the capacity of the plant and associated odor control system at an operational water reclamation facility by adding additional vessels, ductwork and fans. This CMAR project included a new headworks, replaced the influent pumps, converted two SBR basins to aeration basins and added a new aeration basin, built a new clarifier, added a new tertiary filter, upgraded existing UV facilities and added a centrifuge. The construction costs were \$15 million.





## Eric Dole, PE, PSAP

Technical Advisor, QA/QC; Startup & Commissioning

*Eric Dole, PE, PSAP, has over 18 years of experience and is the West Regional Energy Efficiency Lead for Hazen.*

### Education

BS, Civil Engineering,  
Arizona State University,  
1999

### Certification/License

Professional Engineer: AZ  
(#40354); CO (#47540)

### Areas of Expertise

- Pump efficiency studies/  
wire-to-water analysis
- Well pump design
- Micro-turbine design for  
water/wastewater  
systems
- Hydraulic modeling
- Water/Wastewater  
Process Optimization
- Arsenic, chromium and  
selenium treatment  
background
- Patented two zero liquid  
waste treatment systems  
US Pat. 9,186,665 &  
8,273,156

### Experience

- 18 total years
- 3 years with Hazen

### Professional Activities

American Water Works  
Association

Water Reuse Foundation

Mr. Dole specializes in sustainable infrastructure engineering and carbon footprint reduction. He is one of five individuals certified as a Pump System Assessment Professional (PSAP) through Hydraulics Institute. He has designed more than 15 vertical turbine and submersible pump well pump systems ranging in flows from 400 gpm to 3,200 gpm.

### Wellhead Hexavalent Chrome Treatment Project, Coachella Valley Water Authority

Design Lead in charge of designing the largest municipal centralized resin regeneration facility in the world to regenerate the 27,600 cubic feet of spent resin from the 23 well sites utilizing strong base anion resin for chrome treatment. The design included several innovative water recycling concepts from how the resin was transported throughout the facility, to the design of backwash recovery systems and a unique spent brine treatment system that was more efficient at removing challenging anions in the spent brine than traditional chemical reduction with iron.

### Fast-track Hex Chrome Treatment Project, Indio Water Authority

Lead Design Engineer for the fast track hexavalent chrome (Cr6) design project for Indio Water Authority (IWA) near Palm Springs, CA. In January 2015, Hazen was retained to perform an evaluation of treatment options for these three priority wells. Mr. Dole was integral in determining the treatment sites, vetting the various Cr6 treatment systems, developing present worth costs and evaluating the well pump improvements needed to accommodate the well head treatment. Immediately after client approval of this evaluation, Mr. Dole led the design, bid, build efforts for the three well head Strong Base Anion Exchange treatment systems. The design started in March and ended in May. Construction was substantially completed in July 2015 which allowed IWA to meet the summer demands.

### On-call Engineering Services for Global Water Resources 4th and Central Well/Booster Pump Station Upgrades

Mr. Dole designed site upgrades, including a 400-gpm well pump, arsenic treatment, disinfection, and the addition of an 800-gpm firm capacity booster pump station for GWR's Valencia Water Company. Mr. Dole designed an aquifer level monitoring system in the well pump design. It consisted of a level logger installed in the annular space between the

riser pipe and the casing wall that recorded the static and pumping water level. It synchronized with the site PLC to monitor and trend the specific capacity and aquifer recovery time in an effort to monitor the w-2-w efficiency of the well pump. Mr. Dole designed a barometric loop on the discharge of the treatment plant so that water could not siphon through the media vessels during a well shut-down, which would cause air entrainment in the vessels and unbalanced flow.

#### **On-call Engineering Services for Global Water Resources Emergency Pump Design for Rancho Mirage Well**

In May 2008, GWR's Santa Cruz Water Utility had a catastrophic failure of their 2,600-gpm Rancho Mirage Well. The well is the sole clean water blending source needed to be compliant at the utility's POE. Within two days, Mr. Dole determined that the source of the well failure was improper pump design. He designed a replacement 1,500-gpm well pump within 2 days and the replacement pump was installed the following week. As of October 2008, the pump has not turned off and continues to deliver 1,550-gpm of much needed potable water operating at 80% pump efficiency.

#### **Well Site No.2 Design**

Mr. Dole designed the 250-HP vertical turbine well pump for the Lyle Anderson Development Company. This well provided redundant production capacity for the development so that building could begin. Mr. Dole was able to avoid treatment by suggesting that spinner logs and depth-specific water quality sampling be performed to determine the areas of the aquifer with the highest yields and best water quality. Results of the study saved the client significant capital and O&M costs, since treatment was avoided.

#### **On-call Engineering Services for City of Goodyear's Well 18B Arsenic Treatment**

Mr. Dole was the Project Manager for the City of Goodyear Well 18B Arsenic Treatment Facility (ATF) Project. Early in the design process he determined that the well pump modification proposed by the engineering firm was insufficient because they used the pumping water level of an adjacent well that was screened differently. This resulted in a well pump that would deliver 30% less water than anticipated due to the different aquifer hydraulics. Mr. Dole ordered a pump test of the well and used the results to model the correct pump design. The pump was replaced and the electrical service was upgraded before the construction of the ATF to avoid costly scheduling delays. He also developed a blending spreadsheet for the City that allowed ATF to be operated so the media life can be substantially prolonged by modifying treated water and bypass water flow splits.

#### **On-call Engineering Services for City of Goodyear's Well Cost Analysis Tool**

Mr. Dole developed a potable water source cost analysis tool for City of Goodyear utility managers. It used historical data to reveal the cost per thousand gallons of water versus the percentage of total production. The tool was used to determine if they are allocating their capital efficiently. The tool revealed that the City was spending too much money on treatment for lower-producing wells, and caused a shift in how the system was operated.

#### **Goodyear Wellhead Treatment Project**

In late Spring 2003, one of Goodyear's higher-producing wells was shut down due to high TCE hits. This forced the city to utilize other wells that had high nitrate, fluoride, and arsenic concentrations in times of high demand and low supply. Mr. Dole designed wellhead modifications, including re-piping and pump upgrades, to accommodate a mobile ion exchange treatment trailer and two reverse osmosis treatment trailers for three city wells. He supervised the construction of the wellhead modifications and assisted in the commissioning of the treatment units. All three systems were designed, constructed and granted Maricopa County Approval of Construction within a three month period.

**Education**

BS, Civil Engineering,  
California State University  
Northridge, 2005

**Certification/License**

Professional Engineer: AZ  
(#62962), CA (#75660), CO  
(#53516), UT (#10726685)

Cal OES Safety Assessment  
Program Evaluator Training

**Areas of Expertise**

- Concrete Hydraulic Structures for Water & Wastewater Treatment
- Masonry Building Structures
- Bridge Pipeline Crossings
- Structural and Seismic Evaluation
- Structural Modeling

**Experience**

- 13 total years
- 3 years with Hazen

**Professional Activities**

American Society of Civil  
Engineers

American Institute of Steel  
Construction

## Wyatt Dressler, PE

**Design Disciplines - Structural; Final Design**

*Wyatt Dressler, PE, is a Senior Principal Engineer with Hazen, specializing in structural and seismic design for water and wastewater treatment facilities, water storage facilities, and support systems for conveyance pipelines and mechanical equipment.*

Mr. Dressler is educated in reinforced concrete, reinforced masonry and steel design for both building and non-building applications, and has a comprehensive understanding of structural engineering principles and practices. He has experience with structural modeling as well as seismic and structural evaluation and assessment of existing structures. Additionally, Mr. Dressler has field experience with structural observations of concrete, masonry, and steel construction.

**Southern Solutions Water Supply Project, Newland Real Estate Group, Goodyear, AZ**

Mr. Dressler served as Principal Engineer and Lead Structural Engineer for evaluation and conceptual design of a 4-mgd RO treatment facility to treat groundwater for TDS, nitrates, and fluoride. Tasks include 30%-level design of foundation structure to support RO treatment building that consists of pre-engineered, pre-fabricated metal-building-type construction. The building structure will house operations for the RO treatment that include the RO skids, pipe trenches, and recessed chemical storage rooms as well as maintenance, electrical, control, and lab rooms.

**Chromium 6 Water Treatment Facilities, Coachella Valley Water District, Coachella, CA**

Mr. Dressler's responsibilities involved leading the structural design and development of plans and specifications for the WBA water treatment facilities. The treatment facilities are located in an extremely high seismic region, which involves more stringent design and detailing requirements. The water storage and pumping structures were designed for risk category IV classification per the building code in order to maintain water pressure for fire suppression. Structural tasks included design of all above-grade building structures for the treatment process, below-grade cast-in-place concrete hydraulic structures, and equipment foundations based on all applicable design loads in accordance with the governing building code and supplemental material design codes.



**Cypress Water Production Facility Upgrades and Zone 2 Connection Projects, City of Lomita, Lomita, CA**  
Mr. Dressler served as Senior Principal Engineer for structural design, drawings, and specifications. Tasks included design of a reinforced concrete containment structure supporting a steel framed canopy overhead for chemical storage of sodium hypochlorite and ammonia. Tasks also included design of a mat slab foundation to support the GAC vessels, and pipe supports anchored to existing CMU perimeter wall and concrete retaining wall around the treatment facility.

**Chromium-6 Treatment Plant, Santa Ynez River Water Conservation District, Santa Ynez, CA**  
Mr. Dressler served as Principal Engineer for the structural design of the Chromium-6 RCF Treatment Facility that will treat three well sites operated by Santa Ynez Water Conservation District. Structural tasks include design of the foundation for a pre-engineered, pre-fabricated metal building that will house the water treatment equipment and appurtenances along with a multi-purpose room, electrical room, control room, lab, and storage. Other tasks include design of a foundation for a welded steel tank for backwash, and miscellaneous equipment pads.

**Owners Agent San Fernando Basin Groundwater Remediation, City of Los Angeles Department of Water and Power, Los Angeles, CA**

Mr. Dressler led the structural design of the treatment facilities that included cast-in-place concrete building structures using special reinforced concrete shear walls with flexible roof diaphragm, mat slab foundations to support process treatment equipment, and a chemical storage/dosing facility. The chemical storage includes a cast-in-place concrete containment structure, aluminum framed and grated platform around the tanks, and structural steel framed canopy using wire mesh panels to form an enclosure.

**Elizabeth Reservoir, Booster Pump Station and Well No. 29, City of South Gate, South Gate, CA**

Mr. Dressler served as Structural Design Engineer on the design team for the Elizabeth Reservoir and Well No. 29 project for the City of South Gate. Mr. Dressler's responsibilities included design, plans, and specifications for concrete block buildings and equipment supports at each site, which include the pump station building, well head building, sodium hypochlorite building, and a generator building. Each building was designed using special reinforced load-bearing CMU walls supporting a flexible roof diaphragm. The roof diaphragm consists of fabricated steel trusses supporting metal decking with plywood sheathing and metal tile roofing. The well head building was designed with a section of removable roof and removable walls to facilitate removal of the well head for maintenance or replacement.

**Plant 224 Reservoir and Pump Station, Suburban Water Systems, Whittier, CA**

Mr. Dressler served as Lead Structural Design Engineer for the structural design, plans, specifications, and cost estimate for a 2,800-square-foot, single-story concrete block pump station building on continuous spread footings. The pump station is connected to two new cast-in-place, conventionally-reinforced, rectangular concrete reservoirs with a capacity of 2.4 MG and 4.7 MG. Other tasks included construction support services through RFI and shop drawing review, in addition to structural observations of concrete and masonry construction.

**Well 115 Drilling and Equipping, Irvine Ranch Water District, Irvine, CA**

Mr. Dressler served as Structural Design Engineer for Irvine Ranch Water District's Well 115 site. The structural tasks included design of concrete block enclosure walls with stucco exterior on continuous concrete footings, concrete slab foundation for electrical cabinets, cast-in-place concrete wellhead pedestal and pipe supports, and custom designed structural steel framed swinging gate and automated rolling gate, along with their foundations, for access into the well site enclosure.



## Gwen Flora, CCM

Technical Advisor, QA/QC; Construction Oversight

*Gwen Flora, CCM, as nearly 20 years of experience in program, project, and construction management of local, national, and international public and private programs from pre-design through post-construction phases.*

### Education

MS, Construction Management, Arizona State University, 1998

BS, Marketing/Natural Resources, Ball State University, 1993

### Certification/License

1999, Certified Construction Manager, A1451

### Areas of Expertise

- Capital Projects/Program Management and Consulting from pre-design through start-up
- Water, Wastewater and Recycled Water Project Management
- Construction Contract and Quality Management
- Project Controls – Schedule, Cost and Document Management

### Experience

- 19 total years
- <1 year with Hazen

### Professional Activities

Construction Management Associate of America (CMAA)

American Public Works Association (APWA)

Ms. Flora's expertise includes water/reclaim/wastewater distribution, collection, and treatment systems; private and public utility management; and management training and consultation. Ms. Flora's also has expertise in owner representation including project controls, federal funding requirements, change-order management, estimating, document controls, claims management, schedule management, contracts management, regulatory compliance, issue resolution, quality control/assurance, commissioning, and project turnover.

### Senior Construction Engineer, Chromium 6 Treatment Facilities for Coachella Valley Water District, Palm Desert, CA

Ms. Flora's responsibilities included final design reviews, constructability reviews, schedule reviews, cost estimating, guaranteed maximum price (GMP) evaluation, bid package reviews, and field coordination during pre-construction activities. Mrs. Flora was responsible for overseeing CEQA requirement implementation and prevailing wage compliance. The project included facilities to remove Chromium 6 from the groundwater wells throughout the Coachella Valley using Strong Base Anion (SBA) and Weak Base Anion (WBA) treatment processes. There were 20 existing potable water wells being retrofitted with SBA treatment facilities, 7 existing potable water wells being retrofitted with pipelines for centralized treatment, 2 new centralized WBA treatment facilities, and 1 centralized resin regeneration facility included in the project.

### Potable Water System Expansion and Upgrade Program, 2006 to 2008, City of Goodyear, Arizona

As the General Contractor, Ms. Flora managed five simultaneous design build projects to ensure that quality, schedule, budget, and consistency were maintained. The projects included modifications to existing wells, drilling and equipping new wells, transmission pipelines, modifications to existing reverse osmosis membrane systems, new reverse osmosis membrane systems with a new building and site development, development and implementation of a centralized automated process control system (SCADA), and associated site improvements. The program consisted of over \$20 million of planning, engineering, construction, quality control, operations services, and standards development.

**Historic Waterline Replacement, 2007, City of Goodyear, Arizona**

Ms. Flora served as the Owner's on-site representative and managed a team of inspectors and engineers during the replacement of residential potable waterlines. The construction costs for this project were approximately \$8 million. Mrs. Flora worked closely with the City's Grant Coordinator and the Contractor to apply for HUD Neighborhood Grant funding and to comply with the requirements for construction cost reimbursements through the grant.

**Potable Water Well No. 296, 2004 to 2006, City of Phoenix, Arizona**

Ms. Flora served as the Owner's on-site representative and general inspector. The project included construction of a new well site with a new main power source, equipping the well, chlorination system, hydro-pneumatic surge tank, transmission pipeline, and associated SCADA automated control system.

**New Potable Water Well Sites, 2000, City of Chandler, Arizona**

Ms. Flora performed field inspections and contract administration services on a fast-track project that included equipping five wells under three construction contracts and two construction companies. The well sites included perimeter walls/site work/landscaping, drilling and equipping wells, underground piping, chlorination systems, drywells, new electrical service, and associated SCADA automated control systems.

**Peoria Sport Complex Water Production Facility, 1999, City of Peoria, Arizona**

Ms. Flora performed field inspections and contract administration services to increase the potable water resources for the City of Peoria. The project included 450,000 linear feet of ductile iron pipe, two 1-MG water storage steel tanks, one deep well pump, three booster pumps, and associated SCADA automated control system.

**Raw Water Pump Station, 1997 to 1998, City of Scottsdale, Arizona**

Ms. Flora performed field engineering as part of the general contractor's team for a new pump station. The station feeds off of the Central Arizona Project (CAP) canal and provides water to developments in north Scottsdale. Project highlights included state-of-the-art natural gas pumps.





## Gregory Fron, PE

Design Disciplines - I&C; Final Design

*Gregory Fron, PE, has over 25 years of experience in electrical instrumentation and controls engineering and contracting projects involving industrial and water/wastewater projects.*

### Education

BS, Electrical Engineering,  
University of Arizona, 2004

### Certification/License

Registered Electrical  
Engineer: AZ (#48333), CA  
(#E20796), NV (# 22878), ID  
(#16590), TX (#117636), UT  
(#9062312-2202)

### Areas of Expertise

- Power distribution system studies (SKM Arc Flash and Breaker Coordination Studies)
- DCS/PLCs, SCADA, instrumentation, custom electrical controls, remote telemetry/terminal unit (RTU) networks

### Experience

- 25 total years
- <1 year with Hazen

### Professional Activities

International Society of  
Automation

American Water Works  
Association (Engineering &  
Construction Division  
Trustee)

Mr. Fron as a wealth of experience with specialty and general electrical, instrumentation and controls (EI&C) design, and management including power distribution system studies (SKM Arc Flash and Breaker Coordination Studies), DCS/PLCs, SCADA, instrumentation, custom electrical controls, remote telemetry/terminal unit (RTU) networks, equipment specifications, site evaluations, project estimations, bid services, construction support, project startup, and warranty service coordination.

Participating through volunteer membership, Mr. Fron serves on National American Water Works Association (AWWA) committees including Small Systems Outreach Service Committee, Water Utility Technology and Automation, Engineering and Construction Division Trustee for Water Distribution Design and Construction along with AWWA M2 manual I&C subcommittee, new Small systems manual M74 and several other manual review topics. Activities and duties are directly associated with standards, positions, and organization of informational water utility studies, materials and documentation focused on modern alternative technologies and applications as they have impacts to water and wastewater production and recovery treatment.

### City of Goodyear, AZ, Lead Electrical Engineer for the expansion of the 157th Ave WWRF

Mr. Fron was the lead electrical and instrumentation controls engineer for the design of the expansion of the regional wastewater reclamation plant and associated systems being prepared in multiple phases. The expansion includes a new influent pump station, head works upgrades, equalization, clarification, aeration, sludge digesters, chlorine contact basin, chemical storage and metering systems, Allen Bradley ControlLogix Redundant PLC-based control system with graphical user interface, and specifications.

### City of Goodyear, AZ - Lead Electrical Engineer, Portable Generator Connection System and Connection Instructions

Mr. Fron coordinated and specified portable generator connections at several remote well and booster pump sites. The project included the preparation of generator connection cabling and receptacles, providing formal generator connection instruction documents, and demonstrating the operations for inclusion in standard operating procedures.

**City of Goodyear, AZ, Lead Electrical and Field Engineer, Potable Water Production Wells**

Mr. Fron designed and placed into service three potable groundwater production wells under a design-build contract with an area contractor. Each well is equipped with a VFD pump and an RTU for remote communications with a master control panel and operators station at the City of Goodyear's Water Campus. Mr. Fron provided custom fast-track design, fabrication, and FAT testing of the master control panel to facilitate completion of the emergency enhancements phase of the development.

**City of Goodyear, AZ, Lead EI&C Engineer, 5.5 MGD Bullard Water Campus Reverse Osmosis Treatment Facility**

The Water Campus was created to treat potable water for storage and citywide distribution. The facility processes the raw ground water of five deep wells. Emergency preparation of a temporary plant and further upgrades and enhancements took place, with the final campus being erected and commissioned to process up to 5.5 mgd of potable treated water. Mr. Fron designed the temporary and final campus-area power and SCADA network architecture and fabricated the temporary master control panel to meet an aggressive schedule for compliance. He participated in the preliminary design efforts, development of process and instrumentation diagrams, and contractor coordination of the design.

**EPCOR Water, White Tanks WTRWTP Expansion Design, Surprise, AZ**

Mr. Fron was the Lead Electrical and Instrumentation Controls Engineer for the design of the expansion of an existing wastewater reclamation plant and associated systems being prepared in multiple phases. The design includes raw water pumps, equalization, CoMag system, UV system, chemical storage and metering systems; Allen Bradley ControlLogix Redundant PLC based control system with graphical user interface, and specifications.

**City of Scottsdale TGTF RO Facility Design, Scottsdale, AZ**

Mr. Fron was the Lead Electrical and Instrumentation Controls Engineer for the design of the expansion of the existing filtration system and modifications to the chemical feed systems. The design includes dual SRP services to avoid onsite diesel generators.

**Ross Valley Sanitary District (Kentfield) Pump Station 15 new Electrical Service and Power System Studies Project, Ross Valley, CA**

Mr. Fron was the Lead Electrical Engineer for the design and construction of a new 2000-Amp, 3-Phase, 480VAC service with PG&E replacing an existing 12.47KV primary metering service. The design included a new 480V service entrance section, 1500KVA transformer, trenching, cabling, connection and utility coordination along with SKM power system study.

**EPCOR Water, Loop 303 WWRF Design, Surprise, AZ**

Mr. Fron was the Lead Electrical and Instrumentation Controls Engineer for the design of a new 8-mgd wastewater reclamation plant and associated systems being prepared in multiple phases. The design includes headworks, equalization, clarification, aeration, sludge digesters, chemical storage and metering systems, Allen Bradley ControlLogix Redundant PLC based control system with graphical user interface, and specifications.



#### **Education**

MS, Environmental Engineering, University of Texas at El Paso, 2003

BS, Environmental Management, Andhra University, India, 1999

#### **Certification/License**

Professional Engineer: AZ (#43217)

#### **Areas of Expertise**

- Project Management
- Project Delivery
- Drinking Water
- Pipelines
- Pump Stations and Sewage Lift Stations
- Wastewater
- Water Reclamation
- Concentrate Treatment
- Experience Summary

#### **Experience**

- 15 total years
- <1 year with Hazen

#### **Professional Activities**

American Water Works Association

AZ Water Association

Water for People

## **Bhaskar Kolluri, PE**

### **Well Equipping and Pipeline; Final Design**

*Bhaskar Kolluri, PE, has more than 15 years of experience leading design, and construction of water and wastewater infrastructure projects. His experience includes design and construction of wells, pump stations, reservoirs, and pipeline planning and design.*

#### **Kingman Distribution Main Replacements**

Project Manager and Design Lead for design of replacement water mains in five separate areas of the City. Replacement water mains include: 1) 3,810 lf of 8"-12" ductile iron, 2) 2,430 lf of 8" C-900, 3) 2,446 lf of 8"-12" C-900, 4) 1,168 lf of 9" C-900, and 5) 5,085 lf of 6"-8" C-900.

#### **Kingman Well 10 Equipping**

Project Manager and Design Lead well equipping design, including new electrical, instrumentation and controls, perimeter security fencing and gate access, radio telemetry and connection to the City's SCADA. Also includes design of 2,000 lf of 12-inch ductile iron transmission main.

#### **Phoenix Well Program – Production Well Treatment**

Project Manager for design and CMAR coordination for three well site treatment facilities as a subconsultant. Overall project includes drilling and equipping three new wells and associated pipelines.

#### **Well 2AL - Rehabilitation, Litchfield Park, Arizona**

Mr. Kolluri served as Project Manager for design and construction for the well rehab, and was involved in review of design documents, well logs, pump sizing, and equipping. He was also involved in obtaining discharge permits.

#### **Well 6 AL and Well 19B, Litchfield Park, Arizona**

Mr. Kolluri served as Project Manager for well siting study, and was involved in land acquisition, obtaining drill permits from DWR, and researching water rights.

#### **Piney Shores Well, City Conroe, Texas**

Mr. Kolluri served as Project Manager for design and construction for the emergency well, and was involved in review of design documents, well logs, pump sizing and equipping, design of sodium hypochlorination unit, permits/easements, and approvals from local and state authorities.

**Big Eddy Well#3 – Big Eddy, Texas**

Mr. Kolluri served as Project Manager for design and construction for the well, and was involved in review of design documents and well logs, pump sizing and equipping, design of sodium hypo chlorination unit, and permits/easements and approvals from local and state authorities.

**Holy Lake Ranch – Well Investigation of HLR Water System – Texas**

Mr. Kolluri served as Project Manager for well rehab project. He identified issues with each well and rehabbed and increased capacity for three wells out of nine. He also prepared a maintenance/CIP plan for the utility.

**Hill Country Resort – Well #2 – Canyon Lake, Texas**

Mr. Kolluri served as Project Manager for design and construction for the well, and was involved in review of design documents, well logs, pump sizing and equipping, design of sodium hypo chlorination unit, and permits/easements and approvals from local and state authorities.

**Well #15 – City of Tempe, Arizona**

Mr. Kolluri served as Project Engineer for design and construction for the well, and was involved in preparing design documents, pump sizing and equipping, and design of onsite tablet chlorination unit.

**Well 20B – Nitrate Treatment, Arizona – Litchfield Park, Arizona**

Mr. Kolluri served as Project Manager for design and construction of well 20B nitrate blending project, and was involved in preparing business case, CAPEX's, and obtain internal funding for the project. He also reviewed design documents and obtained permits/easements and approvals from local and state authorities.

**Upper Zone Reliability Improvements, City of Mesa, Arizona**

Mr. Kolluri led design improvements including the new 0.7-mgd and 2-mgd Pump Stations, Gaseous Chlorination, and two 6,000-gallon surge tank systems along with backup power generators.

**Brooks/Lindsay Pump Stations Expansion, City of Mesa, Arizona**

Mr. Kolluri led design improvements including the installation four new pumps and motors along with VFDs, increasing the firm capacity from 30 mgd to 41 mgd for Brooks Pump Station and from 40 mgd to 45 mgd for Lindsay Pump Station. He also designed a new on-site chlorination unit, a new 36-inch reservoir inlet line, and solar-bee mixing system for the 10-MG reservoir and electrical improvements for both pump stations.

**Upgrade - Brown Road WTP, Desert Sage & Desert Wells Pump Stations and 36-inch Desert Sage Finished Water Main, City of Mesa, Arizona**

Mr. Kolluri was involved in preparing hydraulic analysis report for existing wet wells for both pump stations and provided recommendations for improvements of two 36-mgd Booster Pump Stations and 2,500 LF of 36-inch water main.

**Rainbow Valley – 5MG Reservoir and Pump Station, Goodyear, Arizona**

Mr. Kolluri served as Project Engineer, and was involved in design and construction administration of a 5-MG Reservoir and Booster Pump Station and its associated 12-inch to 36-inch piping.





#### **Education**

BS, Chemical Engineering,  
University of Arizona, 2009,  
Cum Laude

MS, Civil Engineering,  
University of Arizona, 2013

#### **Certification/License**

Engineer In Training: AZ  
(#011954)

#### **Areas of Expertise**

- Wastewater
- Water Reclamation and Reuse
- Pipelines and Pump Stations
- Drinking Water
- Soil Sampling
- Hydraulic Modeling
- Environmental Compliance

#### **Experience**

- 4 total years
- 1 year with Hazen

#### **Professional Activities**

American Water Works  
Association

AZ Water Association

## **Elisabeth Lynn, EIT**

### **Well Equipping and Pipeline; Engineering Services During Construction**

*Elisabeth Lynn, EIT, has four years of experience in the water/wastewater industry, having previously worked for CDM Smith in their Phoenix office.*

Ms. Lynn earned her BS in Chemical Engineering and MS in Civil Engineering from The University of Arizona and her Master's research focused on hydraulic and water quality modeling of non-potable reclaimed water in storage and distribution systems. Just prior to joining Hazen, she served as a Process Engineer for Facility Upgrades to expand the City of Avondale Arizona's WRF from 9 mgd to 12 mgd. At Hazen, Ms. Lynn will provide engineering support for the Tempe team on water, wastewater and reclaimed water projects. Her initial assignments include updating Toxicity Evaluation Identification work plans for the City of Phoenix's 23rd Avenue WWTP and 91st Avenue WWTP, the largest plant in Arizona, and design of Headworks improvements for the Town of Florence's South WWTP.

#### **Town of Gilbert, Candlewood Lift Station and Force Main, Gilbert, AZ**

Ms. Lynn serves as Project Engineer for the new lift station and bi-directional force main. The new lift station will be equipped with an in-ground biofilter for odor control. It will have the flexibility to pump sewage to two different water reclamation facilities.

#### **City of Kingman, Well No. 10 Equipping and Transmission Main, Kingman, AZ**

Ms. Lynn serves as Project Engineer, working to equip the City's existing Well No. 10 with a vertical line shaft pump and motor and ancillary equipment. The project also includes approximately 3,000 lf of pipeline to connect the Well No. 10 Site to the existing Well No. 11 Site.

#### **City of Kingman, Distribution Main Replacements, Kingman, AZ**

Ms. Lynn serves as Project Engineer for the design of replacement water mains at five locations in the City. The design consists of over 11,000 lf of 8" PVC and 4,000 lf of 12" DIP distribution mains and related appurtenances.

#### **City of Avondale, Water Reclamation Facility Upgrades Design, Avondale, AZ**

Ms. Lynn serves as Process Mechanical Design Engineer for upgrades to improve reliability and redundancy of wastewater treatment at the Charles M. Wolf Water Resource Center (WRF). The WRF was originally con-

structed as an oxidation ditch treatment facility and has been subsequently expanded to a current average day maximum month (ADMM) capacity of 9 mgd. As the result of a facility assessment, many unit process were found to be lacking redundancy or under capacity due to increased influent loadings. To return the facility to its rated capacity and to maintain operational reliability, the addition of a 100-ft diameter primary and a 90-ft diameter secondary clarifier, secondary treatment basin and process air improvements, and primary scum and return activated sludge pump station improvements are being designed.

**Albuquerque Bernalillo County Water Utility Authority, Preliminary Treatment Facility, Albuquerque, New Mexico**

Ms. Lynn served as Environmental Engineer for the bidding phase of the \$30M Preliminary Treatment Facility project at Albuquerque Bernalillo County Water Utility Authority's (ABCWUA's) Southside Water Reclamation Plant. This project replaced the existing, aging preliminary treatment facilities with new state-of-the-art facilities. Ms. Lynn assisted with reviewing general specifications, preparing submittals, compiling addenda, reviewing contractor requests for information, and change orders.

**U.S. General Services Administration, Piegan Infrastructure, Water and Wastewater Treatment Facilities, Piegan, MO**

Ms. Lynn serves as a Process Mechanical Design Engineer on the Design-Build team for the new site infrastructure to support existing and proposed employee housing at the Piegan Land Port of Entry. She is involved in the design of the packaged water treatment system and related building and buried water storage. Ms. Lynn prepared a model for the water distribution system using PIPE-FLO Professional.

**SUEZ Water Delaware, Stanton Water Treatment Plant, Wilmington, DE**

Ms. Lynn was responsible for producing the record drawings for the conversion of the existing filter surface wash system to an air scour system for Suez's Stanton Water Treatment Plant's twelve gravity filters. The Roberts' Aries air scour system was installed without removing the filter media or disturbing the existing wheeler and clay tile underdrains. Record drawings were also produced for the pilot study phase of the project.

**U.S. EPA Region 8 Libby Asbestos Superfund Site, General Property Investigations Technical Reviewer, Libby, MO**

Ms. Lynn was part of a three member management team for the investigations work group, where she was the Lead Technical Reviewer. All property investigation documentation, including site sketches, field sample data sheets, logbook notes, and photographs for the five field teams were reviewed by Ms. Lynn. In support of quality control, she trained new staff on sampling and safety protocols, conducted field team oversight via site visits, and provided feedback on documentation issues. Additional responsibilities included weekly progress reports, printing aerial maps using ArcGIS, uploads Trimble GPS data, leading daily safety toolbox, and calling attention to site-specific potential health and safety concerns.



## Lisa Melton, PE

**Design Manager; Final Design; Engineering Services During Construction**

*Lisa Melton, PE, is a Senior Principal Engineer with 10 years of experience in planning, design, and construction of water and wastewater facilities.*

### Education

MSOE, University of Dayton,  
2013

BSCE, University of Dayton,  
2004

### Certification/License

Professional Engineer: AZ  
(#61320)

### Areas of Expertise

- Wastewater Facility Design
- Water Facility Planning and Design
- Pump Station Design
- Plant Hydraulics

### Experience

- 10 total years
- 8 years with Hazen

### Professional Activities

Water Environment  
Federation

SW Ohio Water Environment  
Association (SWOWEA)

Plant Operations  
Committee Member

American Water Works  
Association

Ms. Melton has prepared master plans, drawings, and specifications with technical experience in pipeline and pump station design, site/civil design, hydraulic modeling, and project management.

### Southern Solutions Water Supply Plan, Newland, Goodyear, AZ

Study, evaluation and 20% design of 4-mgd RO facility. Evaluation included well siting study, water quality analysis, facility layout and siting, evaporation pond design, and cost estimating. Design included development of a preliminary design report and 30% design including raw water and distribution system connections.

### City of Globe Water Distribution System Improvements, Globe AZ

Ms. Melton served as Project Engineer on the design-build team of Mortensen Construction and Hazen for the design of pressure-reducing stations to reduce excessive pressure in the distribution system. Ms. Melton provided study, design, and construction phase services for water system improvements, including field investigations (flow and pressure monitoring), condition assessment of existing equipment, hydraulic modeling, and identification of system improvements to create a new pressure zone. Ms. Melton also conducted wire-to-water efficiency testing of two well pumps and three booster pumps to determine baseline efficiency, energy conservation measures (EMCs) and associated APS rebate incentives. The ECMs are predicted to save more than 600,000 kWh/yr of energy savings, result in \$70,000 in APS rebates and \$65,000 in annual power savings. Globe received a \$10,000 reimbursement check from APS upon submittal of Hazen's Energy Audit Tech memo.

### Greenfield Reclaimed Water Pump Station Expansion, Gilbert, AZ

Ms. Melton served as Project Manager on the design of the 8-mgd expansion of the Greenfield Reclaimed Water Pump Station. The project includes adding three vertical turbine pumps, VFDs, PLC improvements, and ancillary components to meet current demands and future expansion of the adjacent Greenfield WRF. The project had an accelerated design window to meet low demand periods. Tasks included field inspection, detailed design, cost estimating and engineering services during construction.

**Anthem WTP Membrane Operations Support, EPCOR Water, Phoenix, AZ**

Ms. Melton served as Project Engineer in the evaluation of the membrane air scour system and operational impacts related to replacement of existing membranes. The project included desktop evaluations, field inspections and operator interviews that resulted in recommendations that reduced planned capital expenditures and annual electrical usage. Lisa evaluated the energy savings related to the proposed blower modifications and new membrane efficiency. The improvements are predicted to save EPCOR 666,350 kWh/yr of energy savings, result in \$73,300 in APS rebates and \$40,000 in annual power savings. EPCOR is also eligible for a \$9,400 technical study incentive for submittal of Hazen's Energy Audit Tech Memo.

**South Wastewater Treatment Plant Headworks Improvements, Florence, AZ**

Ms. Melton served as Project Manager and Technical Lead for the South WWTP headworks improvement project to address screen performance, reduce odors, and improve pump station reliability. The 2.5-mgd facility serves as the main screening for Florence's southern area. Design improvements include additional mechanical screening, a new washer compactor, new influent pump station, and new odor control system. The project includes sewer flow monitoring and pump testing to confirm influent flow rate and address sewer surcharging upstream of the WWTP. Hazen will also provide engineering services during construction.

**Carson Tertiary Membrane Bioreactor Project, West Basin Municipal Water District, Carson, CA**

Ms. Melton served as Lead Civil Design Engineer for detailed design of \$20M plant expansion to improve reliability of water production at the Carson Regional Water Recycling Facility. Site expansion included a new Tertiary Membrane Bioreactor and Microfiltration system to produce high-quality nitrified product water for use at the Tesoro Refinery in Carson, California. Ms. Melton was responsible for site layout and grading, erosion and sediment control design, and site piping coordination, along with preparation of construction drawings and specifications.

**Chromium 6 Water Treatment Facilities Project, Coachella Valley Water District, CA**

Ms. Melton served as Process Lead for brine treatment systems, site piping, and solids handling system at the Central Resin Regeneration Facility (CRRF). The CRRF is a 50,000-sf facility for regeneration of strong base-anion resin used for chromium removal at 23 well sites in the Coachella Valley Water District. Process improvements include brine treatment, de-chlorination vessels, regeneration vessels, spent brine treatment, solids dewatering, and extensive recycle/reuse of internal process streams.

**Well #1 Improvements, Town of Florence, Florence, AZ**

Ms. Melton was the Project Manager for the evaluation of improvements at the Town Well #1 site to provide additional pumping for improved flow delivery. The project included a hydraulic analysis using their existing model to determine the impact on water system operations and service levels in their north distribution system. Hazen evaluated two mechanical options: booster pump station and new well equipping, along with distribution system improvements. Design criteria and recommended improvements were later incorporated by the Town to equip a recently drilled new well adjacent to Well #1.





## Kent O'Brien, PG, CEG

Technical Advisor, QA/QC

*Kent O'Brien, PG, CEG, a Senior Associate with over 34 years of experience, specializes in the planning and implementation of strategies to resolve groundwater supply problems.*

### Education

BS, Geological Science, San Diego State University

MS, Geology/Hydrogeology, San Diego State University

### Certification/License

Registered Geologist: CA (#6846)

Certified Engineering Geologist: CA (#2132);  
8-Hour HAZWOPER Annual Courses

### Areas of Expertise

- Groundwater Planning
- Groundwater Treatment
- Well Design and Construction
- Well Rehabilitation
- Groundwater OEQA Analysis
- Water Resource Management

### Experience

- 28 total years
- 2 years with Hazen

### Professional Activities

CA-NV AWWA  
- Water Well Technology Committee

Groundwater Resource Association (GRA)

Mr. O'Brien combines hands-on experience in design and construction to cost-effectively implement groundwater production systems and evaluate treatment options to improve water quality. He applies his experience with groundwater production and treatment systems in his preparation of geology, hydrogeology, and water-quality reports developed to support water supply environmental and permitting documents.

### Design and Permitting of Injection Wells, US Marine Corp, Camp Pendleton, San Diego, CA

Mr. O'Brien has completed the design of 16 injection wells and related groundwater monitoring wells for the injection of 870 acre-ft/year of tertiary treated waste water into the aquifer along the coast north of San Diego. The purpose of the project is to protect the drinking water aquifer from seawater intrusion caused by inland groundwater well pumping and to manage the salt and nutrient loading in the groundwater basin. Mr. O'Brien is also completing the Waste Discharge Requirements technical report and developing a strategy for managing salinity changes in the injection area.

### New Well Installation and Rehabilitation of Existing Well, Ukiah, CA

Mr. O'Brien is the Project Manager for this fast-track project to install a municipal well in response to drought conditions. The drought has resulted in the severe reduction in surface water supplies and a sharp increase in the use of groundwater. The new well is scheduled to be installed and brought online within a four month schedule. The project requires the simultaneous evaluation of an existing well which has been losing production capacity and has elevated bacteria. Both wells are being designed concurrently and include the installation of a multi-zone monitoring well.

### Groundwater Storage and Recovery Project EIR, City and County of San Francisco, CA

Mr. O'Brien is developing the hydrogeologic section for the project-level CEQA document related to the aquifer storage and recovery project proposed by the San Francisco Public Utilities Commission (SFPUC). The SFPUC proposes to provide surface water to Partner Agencies (the cities of San Bruno, Daly City and Cal Water) to be used in lieu of the agencies

pumping groundwater during normal and wet rainfall years. The reduction of pumping by Partner Agencies would ultimately increase groundwater storage within the South Westside Groundwater Basin. Stored groundwater would be utilized by pumping 16 new project wells during periods of insufficient surface water supplies (i.e., dry years). The Draft EIR is currently in circulation.

#### **Power Efficiency Evaluation 19 Municipal Wells, City of Redlands, CA**

Mr. O'Brien was the Lead Hydrogeologist in a City-wide evaluation of operational efficiency. The broad-reaching study evaluated the City's operations to identify cost savings. A focus of the study was the power consumption of the water supply system, half of which consists of 16 operating municipal wells with flow rates up to 2,000 gpm. Mr. O'Brien developed a program to use existing data to identify the most cost effective wells to operate and those wells which should be redeveloped or used only for backup.

#### **Well Construction Expert for City of Davis, Davis, CA**

Mr. O'Brien provided litigation support as a technical expert in well construction standards and standards of municipal well operation on behalf of the City of Davis. The City was subject to litigation related to the construction and operation of their wellfield and the spread of contamination from a hazardous waste site. The case was settled out of court in 2014 on terms beneficial to the City of Davis.

#### **Groundwater Supply Evaluation | Marine Corps Base Camp Pendleton, Carlsbad, CA**

Mr. O'Brien led an investigation of eight water supply wells which will supply water to a newly designed water treatment plant. The study evaluates the production capacity and sustainable yield of the wells. Based on the results of the well investigation and pipeline design, the existing pumps in each well will be replaced with new pumps to more effectively match the water demands of the new pipelines. The project also includes evaluating water quality with respect to constituents which could interfere with the operation of the proposed membrane filtration plant.

#### **Arsenic Treatability Testing and Treatment Process Selection, Sebastopol, CA**

Mr. O'Brien is the Lead Hydrogeologist for a proposed water treatment system on a 700-gpm municipal well. The well is a critical component of the city's water supply system and treatment is required to meet the MCL for arsenic. The well site is extremely small and the treatment vessel and backwash tank had to be custom-designed to fit into the limited space. The bench scale pilot testing was designed and conducted to verify treatment cost effectiveness and to allow for rapid system approval by the SWRCB-DoDW.

#### **Hydrogeological Analysis for EIR, Napa Syar, Napa, CA**

Mr. O'Brien is the Lead Hydrogeologist evaluating the impact of the proposed quarry expansion on the groundwater resource of the Milliken-Sarco-Tulocay (MST) groundwater basin. The project is an active quarry where additional rock removal is proposed. The hydrogeologic evaluation approach was developed by Kent to eliminate unnecessary expenditures on monitoring wells by using the elevation of the on-site water bodies and natural springs to map the existing groundwater surface. Kent led a site-wide infiltration study to evaluate the net seasonal infiltration in the quarry area and the runoff into the MST. The inter-disciplinary groundwater and surface water team evaluated the impact that additional quarry operations will have on groundwater recharge the quarry area and the effect on the water resources in the MST. This study was performed for Napa County, the lead agency for the EIR.



#### **Education**

BSE, Civil Engineering,  
Environmental  
Concentration, Minor in  
Business, Arizona State  
University, 2016, Magna  
Cum Laude

BS, Sustainability, Arizona  
State University, 2016,  
Magna Cum Laude

#### **Certification/License**

Envision Sustainability  
Professional (ENV SP):  
#17056

Engineer In Training: AZ  
(#012374)

#### **Areas of Expertise**

- Water
- Water Reuse and  
Wastewater
- Wastewater Collection
- Water Distribution
- Energy Management
- Condition Assessment
- Sustainability/Envision

#### **Experience**

- 3 total years
- 2 years with Hazen

#### **Professional Activities**

American Water Works  
Association

AZ Water Association

Engineers Without Borders

## **Daniela Panfil, EIT, ENV SP**

**RO Evaluation/Expansion; Engineering Services  
During Construction**

*Daniela Panfil, EIT, ENV SP, is an Assistant Engineer with experience in engineering project planning, design and construction phases of treatment plants, including membrane plants, pump stations, and pipelines.*

Ms. Panfil has performed both process mechanical and site-civil planning and design for treatment plants as well as water and sewer main design. She also has provided operational support and condition assessment on at various membrane facilities.

#### **Bullard Water Campus Membrane Assessment, City of Goodyear, AZ**

Ms. Panfil is a Project Engineer for the autopsy and assessment of reverse osmosis membrane performance and the evaluation and submission of paperwork for energy savings from membrane replacement and associated APS rebates at the 7-mgd Bullard Water Campus RO groundwater treatment facility.

#### **Bullard Water Campus Membrane Assessment, City of Goodyear, AZ**

Ms. Panfil served as Project Engineer for the assessment of RO membrane performance and replacement recommendation at the 7-mgd Bullard Water Campus RO groundwater treatment facility.

#### **Water Campus Clean In Place (CIP) Schematic and Training, City of Scottsdale, AZ**

Ms. Panfil served as Project Engineer and developed a detailed Clean-In-Place schematic and Standard Operating Procedure for the 20-mgd RO treatment facility at the Scottsdale Water Campus. Ms. Panfil also provided training on the procedure. The purpose of this project was to prevent any mistakes in the procedure that could damage the reverse osmosis elements as part of various on-call services with the City of Scottsdale.

#### **Southern Solutions Water Supply 30% Design, Newland, Goodyear, AZ**

Ms. Panfil served as Process Mechanical Project Engineer for the preliminary design for up to four new groundwater wells; a 4-mgd RO water treatment plant to treat nitrogen, arsenic, fluoride, and TDS; and an evaporation pond system for disposing of brine from the water treatment plant.

**RO Facility Evaluation, Confidential Client, AZ**

Ms. Panfil performed cost estimating for operations and maintenance of a proposed 2-, 4-, or 6-mgd RO treatment facility and expanded well water supply, summarizing findings in a power point.

**Thomas Groundwater Treatment Facility, City of Scottsdale, AZ**

Ms. Panfil served as Project Engineer for the design of a RO treatment for multiple wells with high TDS levels. She assisted with coordinating 60% and 90% design efforts for the RO treatment facility, including tracking task progress, compiling design comments, drafting technical specifications, and supporting other various mechanical design efforts.

**Antiscalant 30 Day Demonstration Test Assistance, City of Scottsdale, AZ**

Ms. Panfil served as Project Engineer, assisting with development of a protocol and executing jar testing, flushing, and 30-day demonstration testing of a new antiscalant for the 20-mgd RO facility at the City of Scottsdale's Water Campus.

**Antiscalant Specification Development, City of Scottsdale, Scottsdale, AZ**

Ms. Panfil served as Project Engineer for the antiscalant specification development for the 20-mgd RO facility at the City of Scottsdale's Water Campus.

**Large Diameter RO Assessment and Replacement, City of Scottsdale, AZ**

Ms. Panfil served as Project Engineer for the assessment of the 7.2-mgd Large-Diameter (16") RO performance at the City of Scottsdale's Water Campus and specification development for replacement RO membranes.

**Carson Regional Water Recycling Facility Phase II Expansion, West Basin Municipal Water District, Carson, CA**

Ms. Panfil served as Process Mechanical Engineer, performing design work of the chemical feed systems, yard piping, and other site-civil work. This project was a cornerstone of the City of Los Angeles' Recycled Water Master Plan to achieve the Mayor's 2020 recycled water goals. The \$50 million project involves advanced treatment to remove ammonia nitrogen for industrial cooling towers and also micro-filtration for feed water to reverse osmosis units for industrial boiler feed water.

**Review of Reverse Osmosis Performance, West Basin Municipal Water District, Carson, CA**

Ms. Panfil worked with the project team to calculate the current energy consumption of the Edward C. Little Water Recycling Facility, to identify where energy consumption can be reduced.

**Chaparral Water Treatment Plant Stainless Steel Corrosion Study, City of Scottsdale, AZ**

Ms. Panfil serves as Process Mechanical Project Engineer for the condition assessment and study of stainless steel pipe corrosion at the 30-mgd direct membrane filtration facility at the Chaparral Water Treatment Plant. She also provided support of repairs in the piping.





## Brad Reisinger, PE

RO Evaluation/Expansion; Final Design

*Brad Reisinger, PE, has extensive experience with mechanical systems, rotating equipment, and membrane related treatment systems.*

### Education

BS, Mechanical Engineering,  
California Polytechnic State  
University, 2005

### Certification/License

Professional Engineer: AZ  
(#65338), CA (#35771)

### Areas of Expertise

- Microfiltration/  
Ultrafiltration
- Reverse Osmosis
- Drinking Water
- Water Reclamation
- Concentrate Treatment
- Membrane Process  
Optimization
- Pilot Operation

### Experience

- 12 total years
- 3 years with Hazen

### Professional Activities

American Membrane  
Technology Association

Southwest Membrane  
Operators Association

Water Reuse

Mr. Reisinger's experience includes preparation of detailed plans and specifications, developing P&I drawings, plant layout design, bench and pilot testing, pilot system operations, construction services and full-scale facility start-up, concentrate management, and process monitoring & optimization. He has supported membrane applications such as municipal drinking water, wastewater, and water reclamation and has direct experience with hollow fiber nano/microfiltration, flat plate MBR, reverse osmosis, and electrodialysis reversal.

### Thomas Groundwater Treatment Facility, City of Scottsdale, AZ

Mr. Reisinger served as Mechanical Design Engineer for the design of a 1.5-mgd RO system capable of treating water from multiple groundwater sources with varying water qualities. The design included the layout and design of one duty train and one standby 1.5-mgd RO train, membrane selection, antiscalant dosing, acid dosing systems, and control design.

### Water Campus Advanced Water Treatment (AWT) Facility Chloramine Analyzer Replacement, City of Scottsdale, AZ

Mr. Reisinger served as Project Engineer, assisting the City with the replacement of a chloramine analyzer and improving the sodium hypochlorite and aqua-ammonia dosing systems. The existing analyzer did not provide reliable data and was suspect in not alarming operations staff that the downstream reverse osmosis system was being fed free chlorine, resulting in irreversible damage. An analysis of available replacement analyzers to monitor chloramine, ammonia, free and total chlorine residuals was conducted and presented to the City.

### Carson RWRP Expansion, West Basin Municipal Water District, Carson, CA

Mr. Reisinger served as Project Engineer, providing technical oversight for the design of a 5.88-mgd universal pressurized hollow fiber microfiltration system to operate as pretreatment for reverse osmosis for refinery boiler feed makeup water, and a 2.5-mgd tertiary membrane bioreactor to provide cooling tower make-up water. Both systems operate on Title 22 feed water. Both designs included membrane equipment procurement, equipment layout, site layout, and integration with existing systems.

**Water Campus Advanced Water Treatment (AWT) Facility Operations Support Services, City of Scottsdale, Scottsdale, AZ**

Mr. Reisinger served as Project Engineer, and assisted city personnel with RO membrane element replacement. Mr. Reisinger, along with 2 others, replaced 328, 8"x 60" RO elements in two 24:10:5 array RO trains in two 12 hour shifts.

**SROG Salinity Research on Concentrate Management Pilot Demonstration Project, City of Phoenix, Phoenix, AZ**

Mr. Reisinger served as Project Engineer, and assisted with design, operation, and implementation of a pilot program to evaluate treatment processes for high recovery and concentrate minimization. Mr. Reisinger was responsible for Pilot design, P&ID drawings, treatment process operating and testing protocols and reviews, membrane system protocols, literature review, data analysis, and reports.

**Western Canal Pilot Project, City of Phoenix, Phoenix, AZ**

Mr. Reisinger served as Project Engineer. The goals of the pilot were two-fold. The pilot treated Salt River Project canal water and/or local brackish ground water to verify the effectiveness of the process on the two source waters, and to verify the target goal of 92% to 95% overall system recovery. Mr. Reisinger developed pilot protocols for the RO and MF systems, prepared literature review focusing on membrane technology and its application to potable water treatment, analyzed bench scale data to verify membrane selection for the project, and developed P&ID drawings for a 50-gpm pilot system consisting of microfiltration as pretreatment to reverse osmosis with lime softening followed by a secondary RO on the primary RO concentrate stream for concentrate recovery. Mr. Reisinger also assisted with start-up of both the primary and secondary RO systems, and analyzed operating data to track RO performance. He developed the final report summarizing the membrane system operation.

**East Bay Municipal Utility District, Richmond Advanced Recycled Expansion (RARE) Operations Support Services, Richmond, CA**

As Project Manager, Mr. Reisinger performed monthly microfiltration (MF) and RO system performance evaluations to assist the district in trouble-shooting poor membrane performance and to optimize their operations. Performed MF module autopsy to identify problematic fouling constituents. The RARE facility is an MF/RO facility treating 3.5 mgd of secondary effluent for boiler feed. Additionally, Mr. Reisinger prepared and presented a two-day membrane basics training program for the operations staff.

**Foss Reservoir Pilot Study, FOSS Reservoir Master Conservancy District, Foss, OK**

Mr. Reisinger served as Project Engineer. This project was a proof-of-concept pilot to evaluate microfiltration (MF) as pretreatment to reverse osmosis to treat surface water from the Foss Reservoir. Mr. Reisinger developed the pilot protocol and assisted with equipment installation and start-up. Once the pilot was in operation the operating data was normalized and evaluated weekly to be used to assist the District with operations. The data was used to evaluate operating parameters, cleaning requirements, and antiscalant effectiveness. A final report was generated following the completion of operations.

**Regional Wastewater Treatment Ground Water Recharge Pilot Study, Monterey Regional Water Pollution Control Agency, Monterey, CA**

Mr. Reisinger served as Project Engineer. The "Pure Water Monterey" pilot was a proof-of-concept test that consisted of Ozone, Ultrafiltration (UF), and Reverse Osmosis (RO) to treat 17 gpm of secondary effluent for groundwater recharge. Mr. Reisinger operated two hollow fiber UF skids (1 inside-out and 1 outside-in) and one RO skid over 7 months, during which operating data was normalized weekly and used to optimized system operating conditions and determine cleaning frequencies. The membrane performance was used to establish full scale design criteria.

## PROFESSIONAL SUMMARY

Gary has 20 years of diverse experience in the water industry, including 9 years in consulting and 11 years with the City of Phoenix. Gary specializes in integrated water resource planning, groundwater policy, aquifer storage and recovery (ASR) systems, analyzing water infrastructure hydraulics, water rights, and program/regulatory management. He leverages his technical expertise and water utility experience to help clients develop and implement their capital programs. Gary is a seasoned project manager with a resume of over 60 projects, some in excess of \$150 million



## EDUCATION

M.S. Geology  
University of Nevada, Las Vegas

B.S. Geology (with Distinction)  
Sonoma State University

## PROFESSIONAL REGISTRATIONS

Licensed Geologist:  
Arizona (39254, 2003)  
Texas (4937, 2003)

## AWARDS

City of Phoenix was awarded (\$300,000) the 2015 waterSMART: Drought Resiliency Project Grant 2015; (FOA-R15AS00046) for the Deer Valley Water Treatment Plant ASR Well Program. Phoenix was the only city in Arizona to be awarded

## EXPERIENCE

### Program Management

Mr. Gin is skilled at leading and managing the implementation of large capital programs, and serving as an owner's advisor in matters of project delivery and designer/contractor procurement.

### PROGRAM MANAGEMENT TEAM, CITY OF PHOENIX, WELL INSTALLATION PROGRAM (2018-2022)

Mr. Gin is serving as Technical Advisor for Phoenix's Well Installation Program for 7 ASR wells and 3 Production wells. He advises on technical and management related issues throughout design, permitting, construction, testing, and operational phases. LRE serves the City of Phoenix to reduce risk and uncertainty and ensure that the objectives of the program are met.

### TECHNICAL ADVISOR, KALTAILS INJECTION BOREHOLE DESIGN REVIEW, KCGM/NEWMONT, WESTERN AUSTRALIA

Mr. Gin is serving Technical Advisor for KCGM/Newmont for the design and operations of their injection bore-field (10 Injection Wells). KCGM's objective is to store 2,000 gpm into 10 injection wells. The source water that is to be recharged into the Kaltails Aquifer is hyper-saline and contains slime-forming bacteria. LRE's objective is to identify engineering solutions on how to accelerate the oxidization process and eliminate the biological components in the source water so that oxides and biofouling will not occur in the injection wells. Recharge operations will commence March 2018.

### TECHNICAL ADVISOR, BUTLER WATER RECLAMATION FACILITY (WRF), AQUIFER STORAGE AND RECOVERY WELL, CITY OF PEORIA, AZ

Mr. Gin is serving as Technical Advisor for the City of Peoria's first ASR well. This ASR well recharges advanced treated reclaimed water into a potable aquifer. Peoria's objective is to store long-term storage credits to mitigate against drought and system outages. The success of this pilot project will increase the recharge capacity at the Butler WRF. Mr. Gin is reviewing design drawings and technical specifications, assisting the City in obtaining State (USF and APP) and County (New Source) permits, training City operators on how to optimize recharge performance, and

this Federal Grant.

2013 National Ground Water Association Outstanding Groundwater Supply Project of the Year: "Innovations in Aquifer Storage and Recovery (ASR) Well Technologies, City of Phoenix, Arizona".

2014 AZ Forward, 34th Annual Environmental Excellence Awards, Award of Merit for Environmental Stewardship (Central Arizona) (SRP Award), Innovations in Aquifer Storage and Recovery Well Technologies for Aquifer Restoration, City of Phoenix.

City of Phoenix, 2013 Individual Excellence Award for Creating and Managing the City's First Aquifer Storage and Recovery Well Program (<http://www.youtube.com/watch?v=FkCH4kYveXQ>).

#### **PROFESSIONAL AFFILIATIONS**

National Groundwater Association

American Water Works Association

AZ Water Association

WaterReuse Association

American Groundwater Trust

determining the operational limits for recharge and recovery of this ASR well.

#### **UPDATE GROUNDWATER MANAGEMENT PLAN, CITY OF PHOENIX, AZ**

Mr. Gin created \$158 million well-field program for the City of Phoenix in 2016. This well-field entails the construction of 11 ASR and 9 water supply wells in 10 years. These wells will be used for drought resiliency (57,000 AF/yr of increased well production & 14,500 AF/yr of increased recharge capacity) and redundancy in the various pressure zones of the distribution system. Mr. Gin also developed the criteria for siting these wells (meeting current & future demands) and had all 21 wells permitted through the Arizona Department of Water Resources (ADWR).

#### **AQUIFER STORAGE AND RECOVERY (ASR) AND WATER SUPPLY WELL PROGRAM, CITY OF PHOENIX, AZ**

Mr. Gin served as the Program Manager and Design Manager responsible for implementing all aspects of Phoenix's Groundwater Management Plan 2006-2016 (\$98 million). The program comprised 12 separate projects, including seven ASR wells (10,500 AF/yr of recharge capacity), five water supply wells (16-18 MGD), and several feasibility and exploratory borehole projects. Mr. Gin was the first hydrologist in the United States to test and utilize glass beads as a filter pack media for ASR wells. He has extensive knowledge on filter pack performance under long-term recharge and pumping cycles. Mr. Gin was instrumental in the creating the programming logic for the automated backwashing program and creating the database management reports that are utilize to report monthly and annual recharge & recovery volumes to the State and County agencies.

#### **HYDROLOGIST SERVICES AT THE CITY OF PHOENIX, AZ**

Mr. Gin served as Program Manager on the assessment and sale of the City's water farm located in McMullen Valley (importing groundwater resources- 32,000 AF/yr). He also led a major effort in creating Phoenix's large-scale numerical groundwater model (MODFLOW & Groundwater Vistas) from 2006 to 2017. This model was utilized as a planning tool and to develop resource management policies for various drought scenarios and system outages.

Additional duties included technical analysis and guidance to the City's Water Resources Management Advisor, City's Attorney's Office and Office of Environmental Programs. Mr. Gin worked on well/distribution operational issues, water resources economics, the conjunctive use of surface and groundwater supplies, water quality issues at compliance monitoring points, and resolved data management issues to meet regulatory reporting requirements. I also had direct interaction and participated with the following entities: Arizona Water Banking Authority, Arizona Municipal Water Users Association, 2010 Governor's Blue Ribbon Panel on Water Sustainability (Issue #10- Indirect Potable Reuse), Central Arizona Project, Salt River Project, Arizona Department of Water Resources, Arizona Department of Environmental Quality, and Maricopa County Environmental Health Services.



## PROFESSIONAL SUMMARY

Lauren is a Senior Hydrogeologist with more than 10 years of experience managing and overseeing water-related projects for private companies, public utilities, and municipal water providers. She is a seasoned project manager who performs technical and regulatory reporting, and is proficient with methods used for collecting and analyzing hydrogeologic data. Her expertise and passion lies in groundwater supply and recharge projects. Lauren enjoys working with clients to locate, design, permit, and optimize groundwater supply/recharge wells to increase drought resiliency and ensure water providers can sustainably pump groundwater when needed.



## EDUCATION

B.S. Geological Sciences  
Arizona State University

## PROFESSIONAL REGISTRATIONS

Registered Geologist:  
Arizona (54329)

## RELEVANT EXPERTISE

- Hydrogeologic Project Management
- Preparation of Drilling Technical Specifications
- Municipal Supply Well Drilling, Installation, Testing
- Well Siting
- New and Replacement Well Permitting
- Aquifer Recharge Permitting
- Aquifer Testing

## EXPERIENCE

### WELL SITING STUDY, CITY OF GOODYEAR, ARIZONA

Project Manager/Hydrogeologist for the study conducted to site the optimal location of several new production wells for the City of Goodyear. To identify ideal locations to place new wells, the team developed a GIS-based prioritization model to score parcels based on the City's primary site assessment criteria. The hydrogeologic team compiled and analyzed site-specific data from wells and boreholes, processed the model results, and performed detailed evaluations of the highest-scoring parcels. The groundwater flow model and site-specific data was used to evaluate hydrogeologic properties. Several locations were recommended as ideal future sites, including the location for new Well 26.

### MUNICIPAL WELL INSTALLATION (WELL #303), CITY OF PHOENIX, ARIZONA

Project Manager for the installation, design, testing, and permitting of a new ASR well for the City of Phoenix. The City is working to increase its drought resiliency by adding infrastructure and permits that allow for an increase in aquifer recharge of surface water supplies. In times of surface water shortages, the ASR wells will then be used to pump the stored water supply from the aquifer. Project management tasks include oversight and coordination of all field staff and contractors, borehole and well testing data analysis, well design, client communications, public relations, preliminary site design, coordination of land and vegetation surveys for site development, water quality sampling planning and data analysis, and project schedule and budget tracking.

### SUPERFUND TECHNICAL OVERSIGHT, CITY OF GOODYEAR, ARIZONA

Project Manager for the technical oversight of the Superfund and WQARF remediation activities within the City of Goodyear. The project tasks included hydrologic data review, interfacing with the responsible parties and regulators for all three sites, and providing technical advisory service to the Water Resources staff, focused on the protection of Wells 1 and 3.

- Construction and Drilling Oversight
- Groundwater Sampling
- Compliance Sampling and Reporting
- Hydrogeologic Data Analysis
- Data management
- Preparation of Technical Reports

#### **GROUNDWATER MODELING AND PERMITTING, CITY OF GOODYEAR, ARIZONA**

Project Manager for the development of a groundwater flow model, used to simulate recharge of the City of Goodyear's reclaimed water using vadose zone injection wells. Modeling was then used to prepare a comprehensive hydrogeologic report to support permitting of the vadose zone injection wells. An APP with ADEQ and an Underground Storage Facility and Water Storage Permit with the Arizona Department of Water Resources (ADWR) were successfully obtained for the City of Goodyear. In addition, the groundwater model was used to reevaluate the City's Assured Water Supply Designation with ADWR.

#### **S.A.T. SITE RECHARGE FACILITY PERMITTING, CITY OF GOODYEAR, ARIZONA**

Project Manager for the development of a groundwater flow model, used to simulate recharge of the City of Goodyear's reclaimed water using the SAT Site infiltration basins. Modeling was then used to prepare a comprehensive hydrogeologic report to support permitting of basins. An APP was obtained from ADEQ and an Underground Storage Facility and Water Storage Permit was obtained through the ADWR for the City of Goodyear.

#### **WELL PROGRAM PHASE I, CITY OF PHOENIX, ARIZONA**

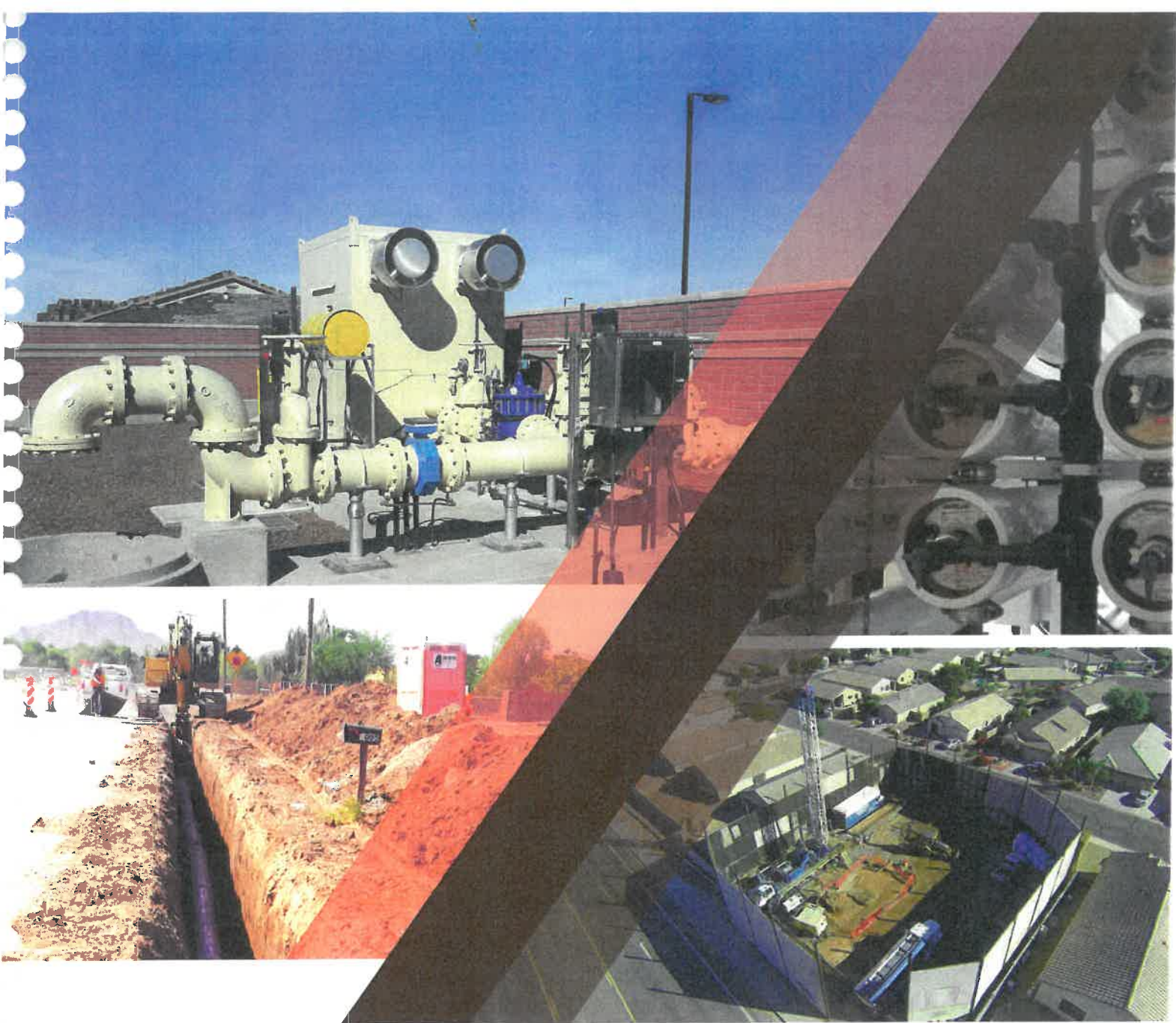
Hydrogeologist for the design, installation, and testing of three new ASR wells for the City of Phoenix. These wells are being installed to add to the City's water resources portfolio and increase drought resiliency. Primary hydrogeologic tasks include the development of drilling technical specifications, oversight of field staff and contractors for the drilling, installation, and testing of the wells; well design; and data analysis and reporting.

#### **MUNICIPAL WELL INSTALLATIONS (WELL #300 and 301), CITY OF PHOENIX, ARIZONA**

Field Supervisor/Hydrogeologist for a production well installation. Activities included mud-rotary drilling; preparation of lithologic logs; zonal groundwater sampling; borehole geophysical logging oversight and interpretation; production well installation and development; and aquifer testing and analysis. Additional activities included contractor and field crew oversight, aquifer testing data analysis, and preparation of the well completion report.

#### **MUNICIPAL WELL INSTALLATION (WELL #12), CITY OF MESA, ARIZONA**

Hydrogeologist for a production well installation. Activities included mud-rotary drilling; preparation of lithologic logs; zonal groundwater sampling; borehole geophysical logging oversight and interpretation; production well installation and development; and aquifer testing and analysis. Additional activities included contractor and field crew oversight, aquifer testing data analysis, and preparation of the final well completion report.



## Appendix C Forms and Addenda





## City of Goodyear

### Offer and Acceptance

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

#### DESCRIPTION OF SERVICES: New COG Well #26 and Raw Water Transmission Main

#### 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.

A-070935,  
B-01-083020,

Arizona Transaction (Sales) Number:  
City of Goodyear Business Registration No.:  
Felix Construction Company

Arizona Contractor License Number: C-11-172036  
Privilege Tax License Number:

Sign: 

Signature of Person Authorized to Sign Offer

Contractor's Company Name

David Giannetto

1326 W. Industrial Drive

Printed Name

Address

Coolidge AZ 85128

Principal

4/24/2018

City State Zip Code

Title

Date

480-464-0011

davidg@felixconstruction.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:

Darcie McCracken, City Clerk

City Seal

Official File


Eff. Date: \_\_\_\_\_

Jacque Behrens, Procurement Manager Date

Approved as to form:

Roric Massey, City Attorney



	<b>City of Goodyear</b>	Office of Procurement 190 N. Litchfield Road P.O. Box 5100 Goodyear, AZ 85338 Phone: 623-882-7845
	<b>Attachment A</b>	

**NON-COLLUSION AFFIDAVIT  
NEW COG WELL #26 AND RAW WATER TRANSMISSION MAIN**

State of Arizona County of Maricopa

David Giannetto  
 affiant, the  
Principal  
 of \_\_\_\_\_  
 (TITLE)  
Felix Construction Company  
 (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.

[Signature]  
PRINCIPAL  
 (TITLE)

Subscribed and sworn to before me this  
24<sup>th</sup> Day of APRIL, 2018


[Signature]  
 SIGNATURE OF NOTARY PUBLIC  
 IN AND FOR THE

COUNTY OF MARICOPA

STATE OF ARIZONA

My Commission Expires 07/04/2021



	<b>Solicitation Amendment No. 1</b>	Office of Procurement 190 N. Litchfield Road P.O. Box 5100 Goodyear, AZ 85338 Phone: 623-882-7845
	<b>Solicitation No. 18-4334</b> <b>Solicitation Due Date:</b> April 26, 2018 <b>Time:</b> 3:00 pm	

**NEW COG Well 26 and Raw Water Transmission Main**

Solicitation Amendment 1 is hereby issued as a result of questions received regarding the above mentioned solicitation.

**CLARIFICATION**

A mandatory pre-submittal conference and site visit is scheduled for Tuesday, April 17, 2018, 10:00 a.m.-noon, at Goodyear City Hall. Please refer to page 1 of the RFQ for details.

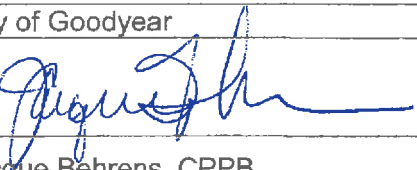
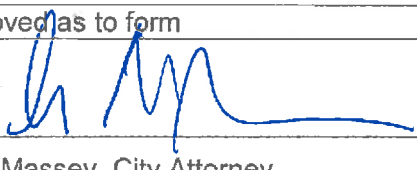
**QUESTION**

Q1: "Is it possible to receive a copy of the planholders list for the "New COG Well #26 and Raw Water Transmission Main" project? Any information you can provide is appreciated."

A1: The city has included as part of this solicitation amendment a listing of businesses that have downloaded the solicitation, refer to Attachment A.


***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: 
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: 4/24/2018

	<b>Solicitation Amendment No. 1</b>	Office of Procurement 190 N. Litchfield Road P.O. Box 5100 Goodyear, AZ 85338 Phone: 623-882-7845
	<b>Solicitation No. 18-4334</b> <b>Solicitation Due Date: April 26, 2018</b> <b>Time: 3:00 pm</b>	

### ATTACHMENT A

**Company Name:**

Arcadis U.S., Inc.  
 Archer Western  
 Arizona Builder's Exchange  
 AZBEX  
 Beeman Drilling Services  
 Bid Ocean  
 BidJudge  
 Bidnet  
 Brooks Bros Utility Contractors, LLC  
 Burgess & Niple, Inc.  
 Capitol Fence Builders  
 Carollo Engineers, Inc.  
 Central Arizona Civil Construction Company  
 CIP Information Service  
 Civiltec Engineering, Inc.  
 Clear Creek Associates  
 ConstructConnect  
 Construction Journal  
 Dana Kepner Company  
 DutchMasters Elect. Inc.  
 Empire Pump Corporation  
 Entellus, Inc  
 Enviroidnet  
 EPS Group Inc.  
 Felix Construction Company  
 Filanc  
 Foster Elect/ Az Pumps  
 Garney Companies, Inc.  
 Garver  
 GHD  
 Graybar Electric  
 Greeley and Hansen  
 Haydon Building Corp  
 Hazen and Sawyer  
 HDR Engineering  
 Hunter Contracting Company  
 IES southwest  
 IMS  
 Industrial Electrical Solutions Inc




## **Solicitation Amendment No. 1**

**Solicitation No. 18-4334**  
**Solicitation Due Date:** April 26, 2018  
**Time:** 3:00 pm

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

Kinkaid Civil Construction LLC  
Layne Christensen  
Layne Christensen  
Leonard Rice Engineers, Inc.  
Nelcon Inc.  
Ninyo & Moore Geotechnical and Environmental Sciences Consultants  
North America Procurement Council, Inc.  
PCL Construction  
Pipestone Equipment  
Prime Vendor  
Redpoint Contracting  
Sellers and Sons, Inc.  
Shirley's Plan Service  
Signature Automation, LLC  
Southwest Groundwater Consultants  
Standard Construction Company, Inc  
Sunrise Engineering, Inc.  
Tap Masterr Inc  
Water Works Engineers  
Weber Water Resources  
WestLand Resources, Inc.  
Wilson Engineers  
Zim Industries, Inc



	<b>Solicitation Amendment No. 2</b>	Office of Procurement 190 N. Litchfield Road P.O. Box 5100 Goodyear, AZ 85338 Phone: 623-882-7845
	<b>Solicitation No. 18-4334</b> <b>Solicitation Due Date:</b> April 26, 2018 <b>Time:</b> 3:00 pm	

### NEW COG Well 26 and Raw Water Transmission Main

Solicitation Amendment 2 is hereby issued as a result of questions received regarding the above mentioned solicitation.

#### CLARIFICATION

The Owner's total project budget is currently estimated at \$6,352,300.

The requested bonding capacity certification letter must identify coverage at a minimum of \$10 million for the GMP Construction Agreement.

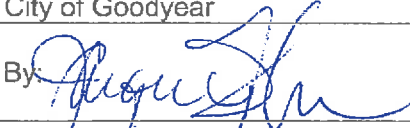

#### QUESTION

Q1: "With all the requirements for the cover letter outlined on pages 8-9 for design-build team, would it be possible to increase the page maximum from one to two?"

A1: Yes


***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: 
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: 4/24/2018



535 E. McKellips Rd  
Suite 129  
Mesa, AZ 85203-2566

April 25, 2018

Phone: 480-968-0100  
Fax: 480-968-4043  
1-800-641-2663  
[www.cbondinc.com](http://www.cbondinc.com)

**Re: Felix Construction Company**

To Whom It May Concern:

It is my understanding that you are considering using **Felix Construction Company** as a potential contractor. Please be advised that we have done business with this excellent construction firm for many years and, during that time, we have found them to be both an excellent contractor as well as a firm exhibiting a high degree of integrity in their dealings.

The bonding company has never really set a limit on this fine firm, but for purposes of qualification, **Felix Construction Company** enjoys a single bond limit of \$25,000,000 with an aggregate of \$60,000,000. This should in no way be presumed the maximum their surety, Travelers Casualty and Surety Company of America, (an A+ rated company by *A. M. Best*) would authorize, but it has satisfied their past bond needs.

We see no reason we would not be in a position to issue performance and payment bonds for your project after a review of the contract documents, acceptable evidence of financing, a written request from **Felix Construction Company**, and any underwriting requirements that may be needed at the time of the request.

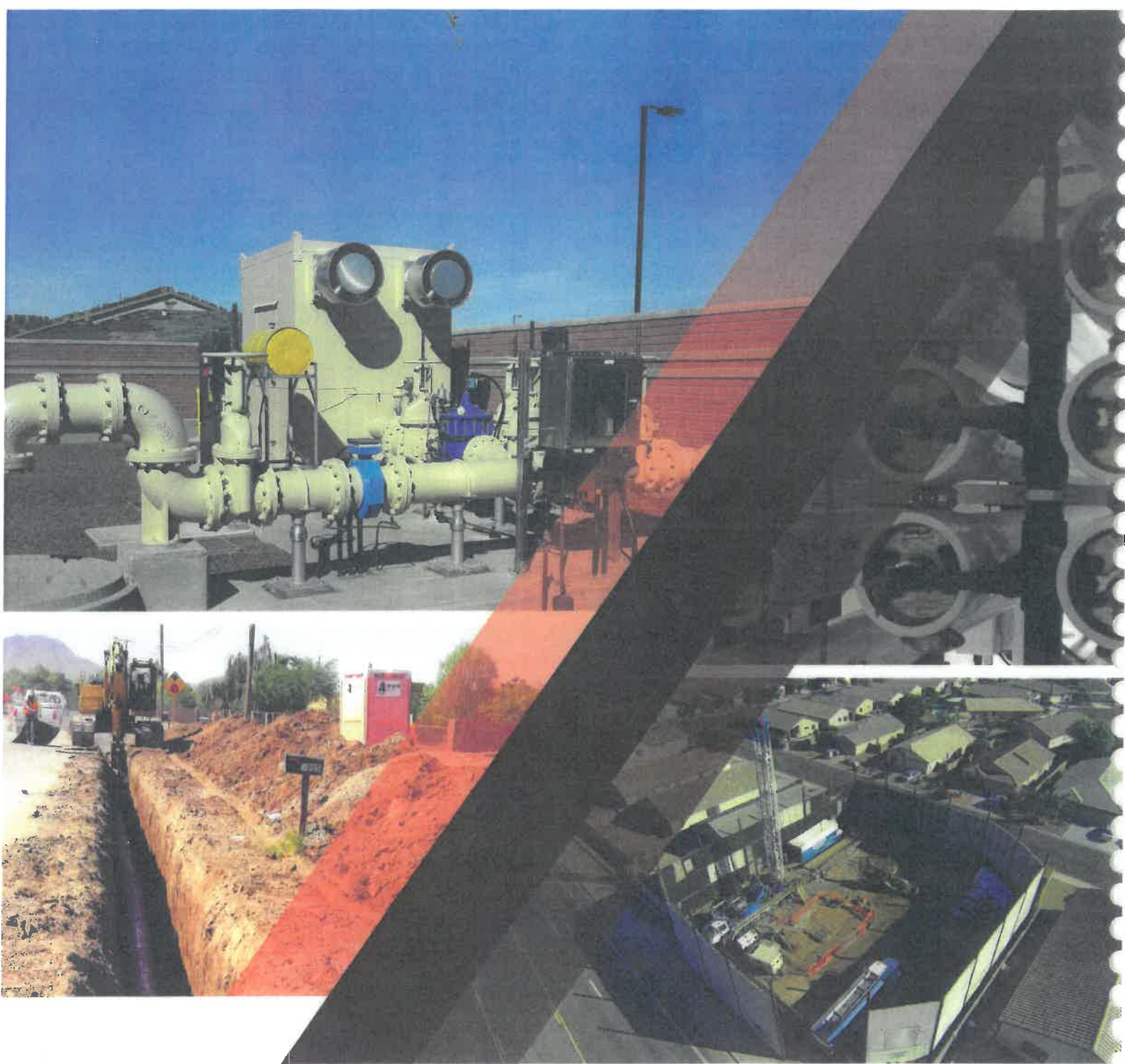
**Felix Construction Company** is a valued client of CBI Bonding, Inc. and Travelers Casualty and Surety Company of America.

Should you have any questions or require further information on this client, please do not hesitate to call on me.

Regards,

A handwritten signature in black ink, appearing to read 'Barry R. Farr', with a stylized flourish at the end.

Barry R. Farr, Attorney-in-Fact for  
**Travelers Casualty and Surety Company of America**



**FELIX**  
CONSTRUCTION COMPANY

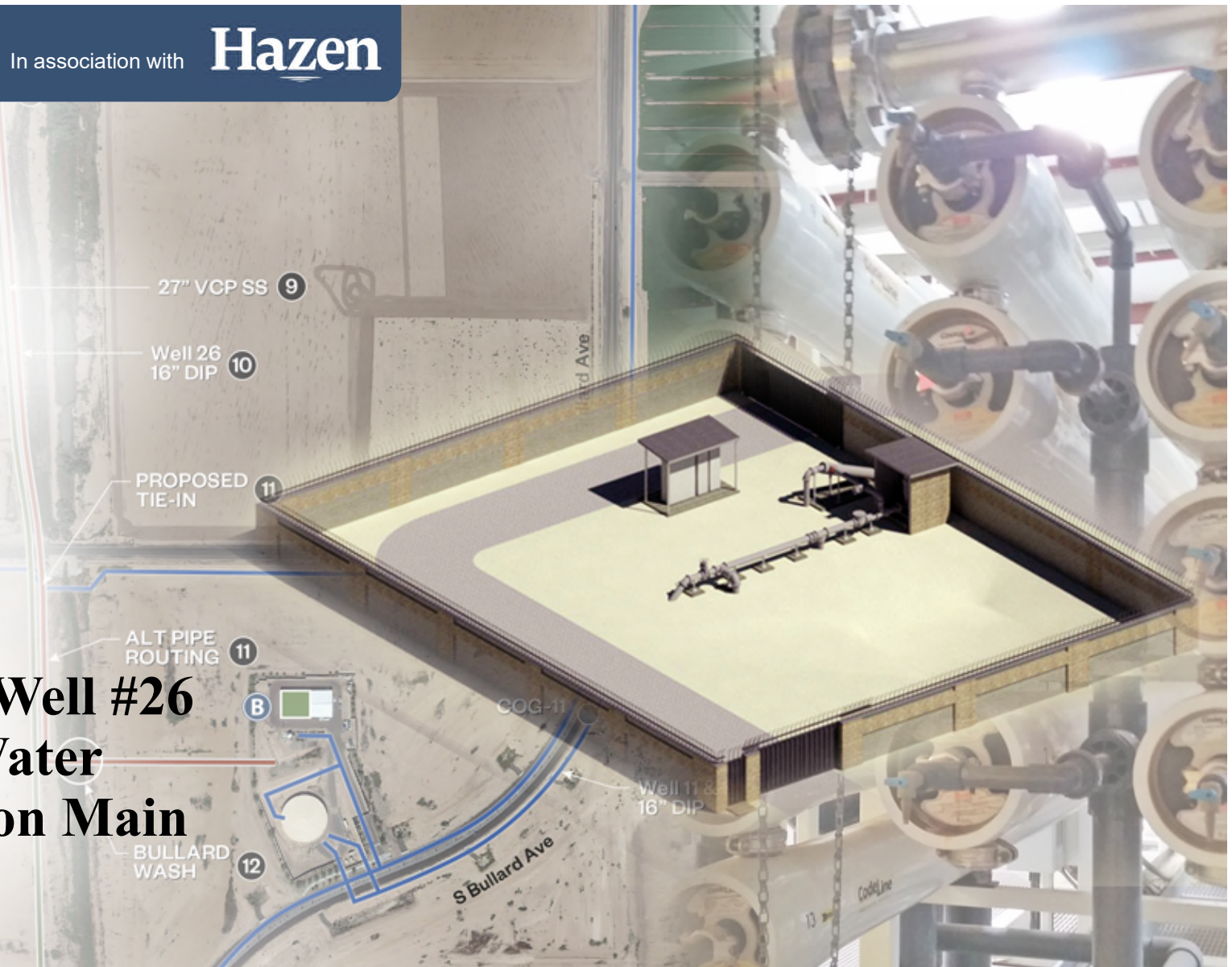
1326 W. Industrial Dr., Coolidge, AZ 85128





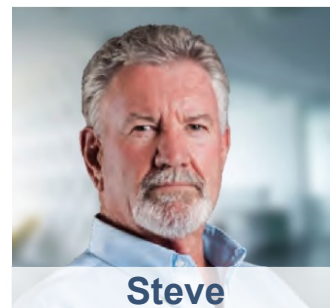
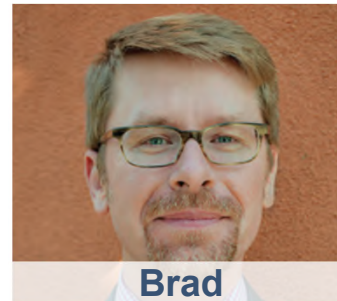
# New COG Well #26 and Raw Water Transmission Main

June 7, 2018





## Your Team



## Experienced Team

✓ Trusted Construction Partners ✓ Experienced Well Designers ✓ RO Process Experts

## Felix-Hazen have built a **familiar** and **trusted** Design-Build Team to support Goodyear!

Project  
Understanding



Challenges and  
Solutions



Approach



Experience  
with DB



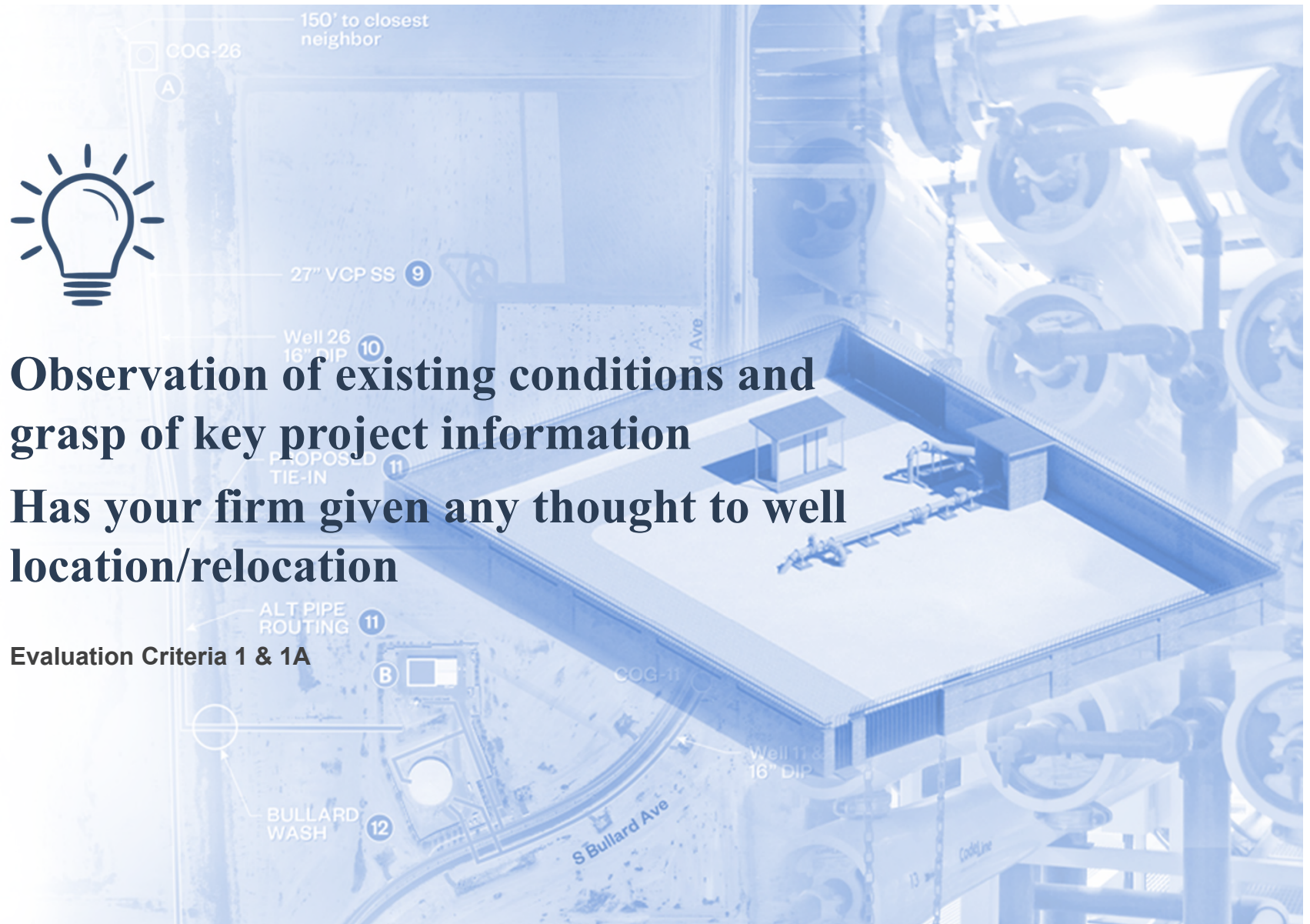
Why  
Felix-Hazen





**Observation of existing conditions and  
grasp of key project information**  
**Has your firm given any thought to well  
location/relocation**

**Evaluation Criteria 1 & 1A**







## Existing Conditions & Key Factors

- Water Quality
- Productivity
- Permitting
- Proximity & Noise Abatement
- Operability
- RO Expansion



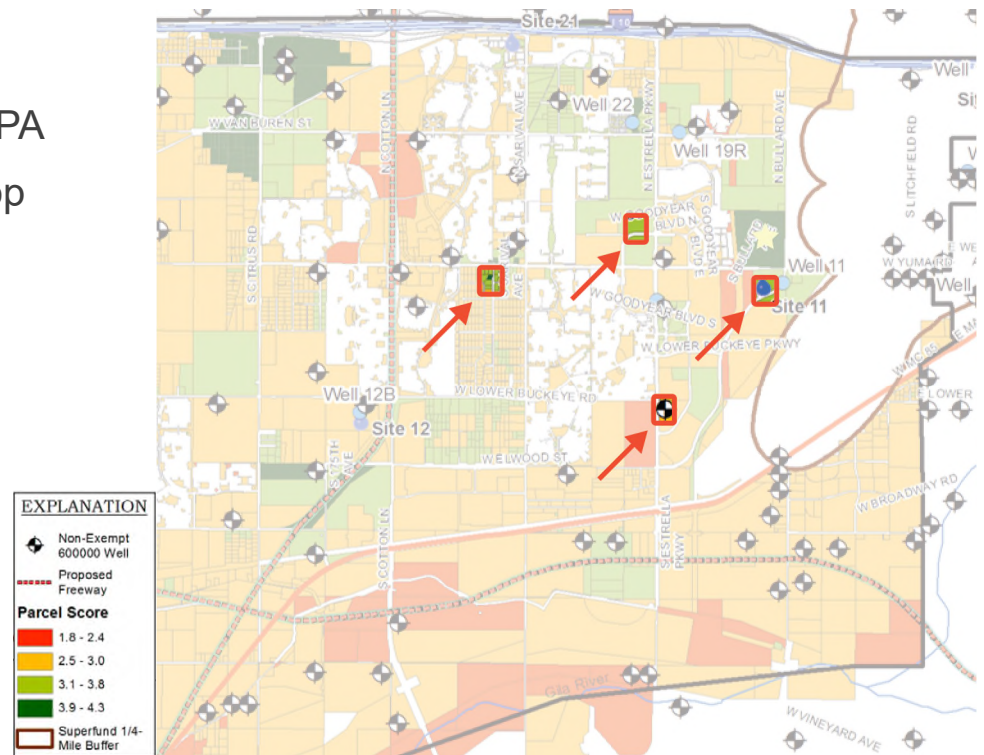




## Well Location

Has your firm given any thought to the well location/relocation?

- Well Siting Study
  - Assessed over 1000 parcels in the CPA
  - **Bullard Wash** area was one of the top scoring parcels out of:
    - Vanderbilt Farms
    - North SAT Site
    - Woods Well
    - Bullard Water Campus



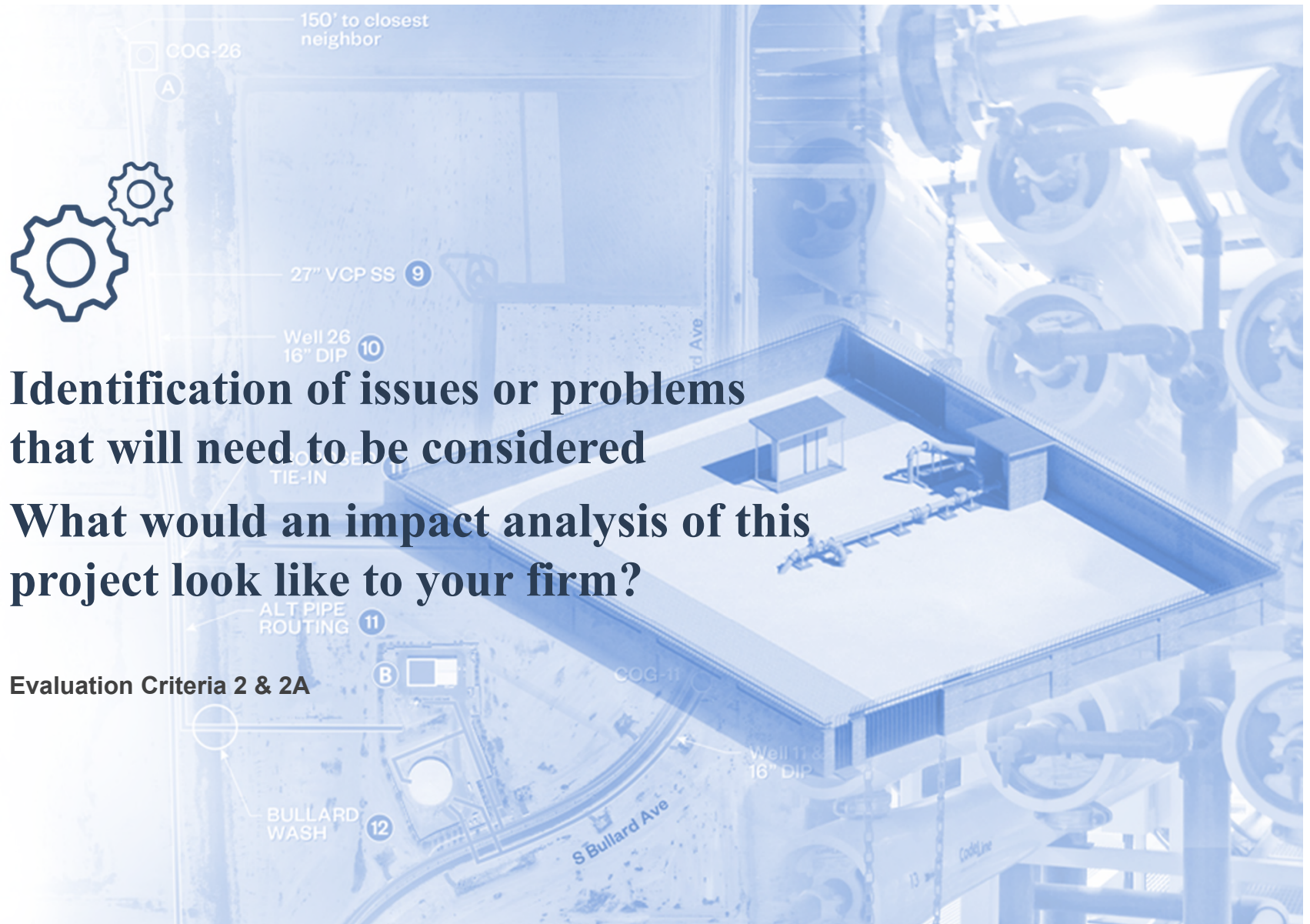
Well Siting: Parcel Scoring Map



**Identification of issues or problems  
that will need to be considered**

**What would an impact analysis of this  
project look like to your firm?**

**Evaluation Criteria 2 & 2A**





## Challenges and Impact Analysis



1

Neighbor Considerations

2

Permitting – Wells, Bullard Wash

3

Water Quality

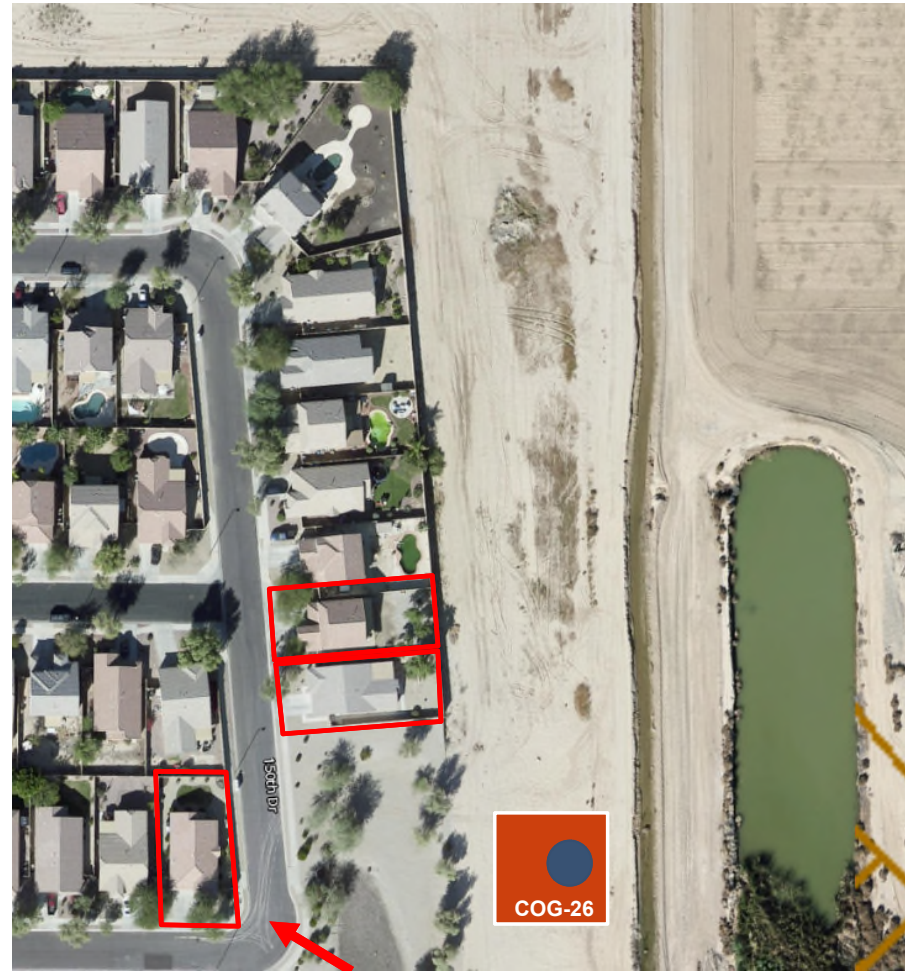
4

Transmission Pipeline



## Neighbors

- 627 S. 150<sup>th</sup> Drive
- 609 S. 150<sup>th</sup> Drive
- 15058 W. Grant St
- Kid Play Area











## Permitting

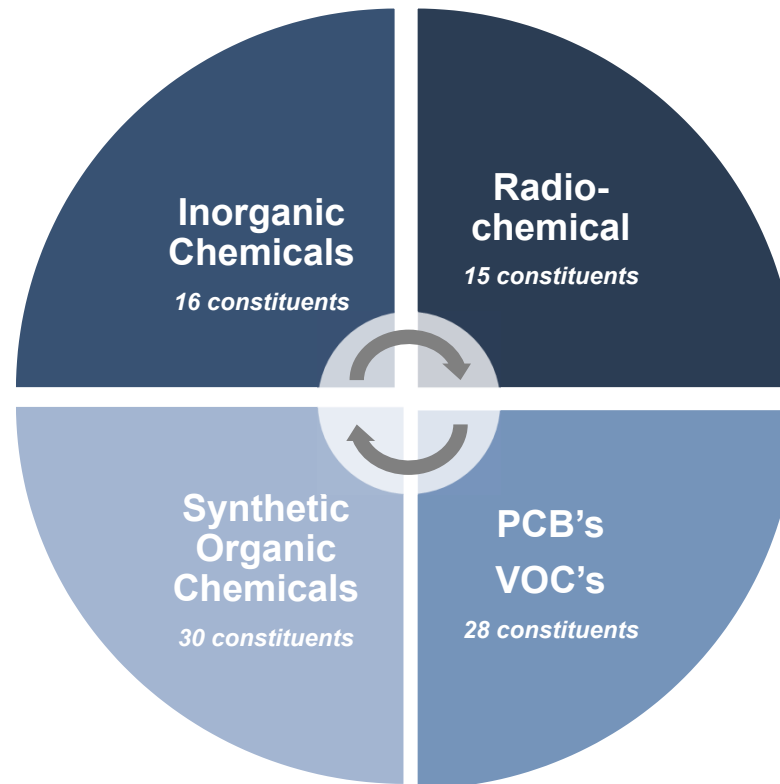
- Well Development
  - MCESD (New Source)
  - ADWR





## Water Quality

- Nitrate, TDS, Organics, Metals
- Avoiding surprises
  - VOCs
  - Biological
  - Emerging Contaminants



*Well Analysis Requirements*



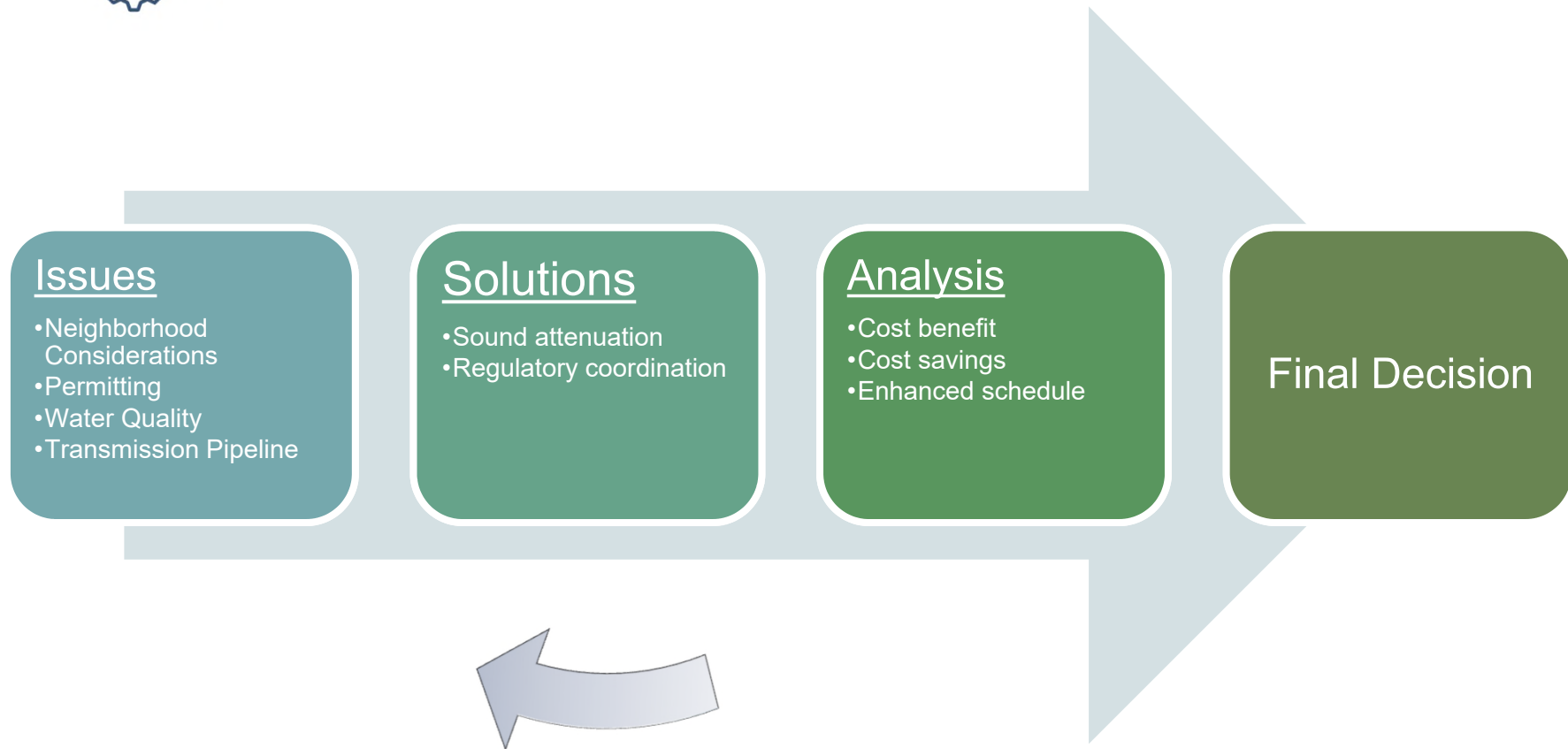
# Raw Water Transmission Pipeline







## Impact Analysis





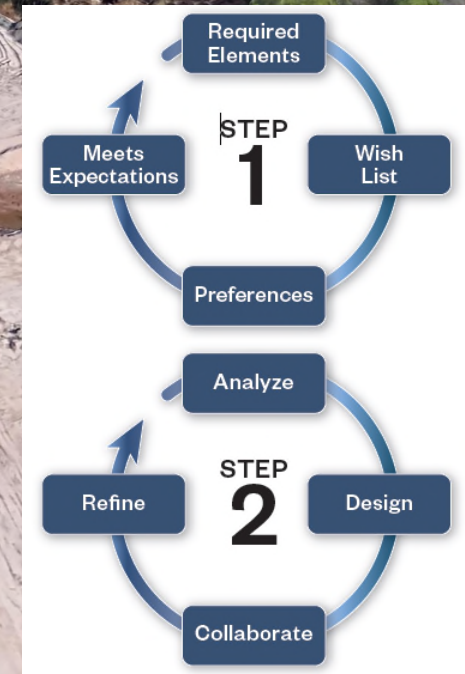
## Approach to design, construction and operations including innovative ideas?

Evaluation Criteria 3

Well & Transmission Considerations



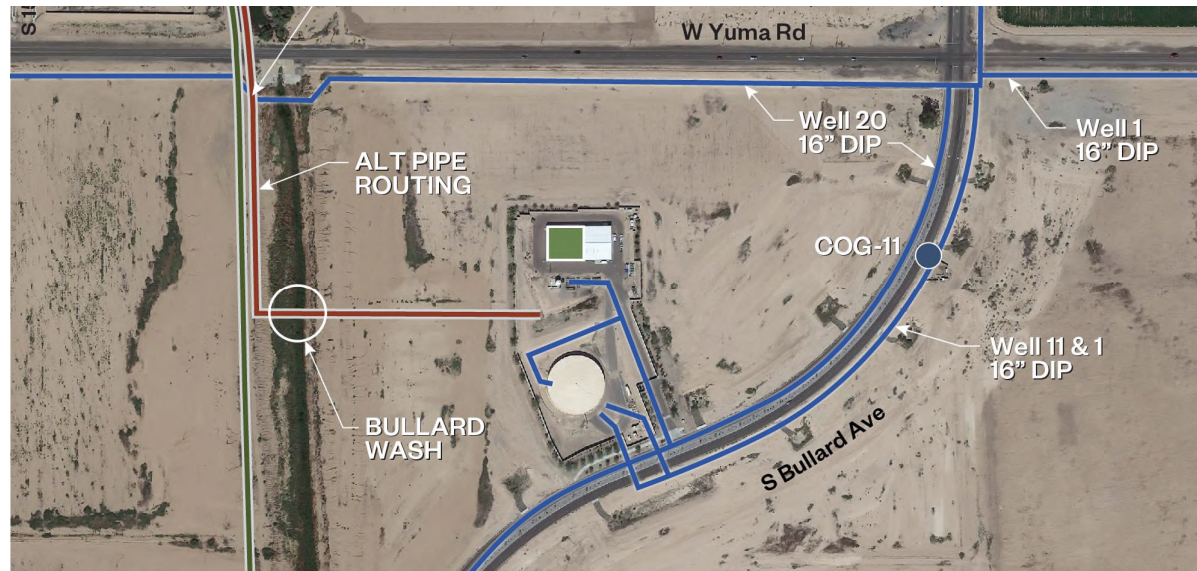








*Alternative  
Transmission Main  
Routing*



*Potential to reuse  
abandoned 16"*

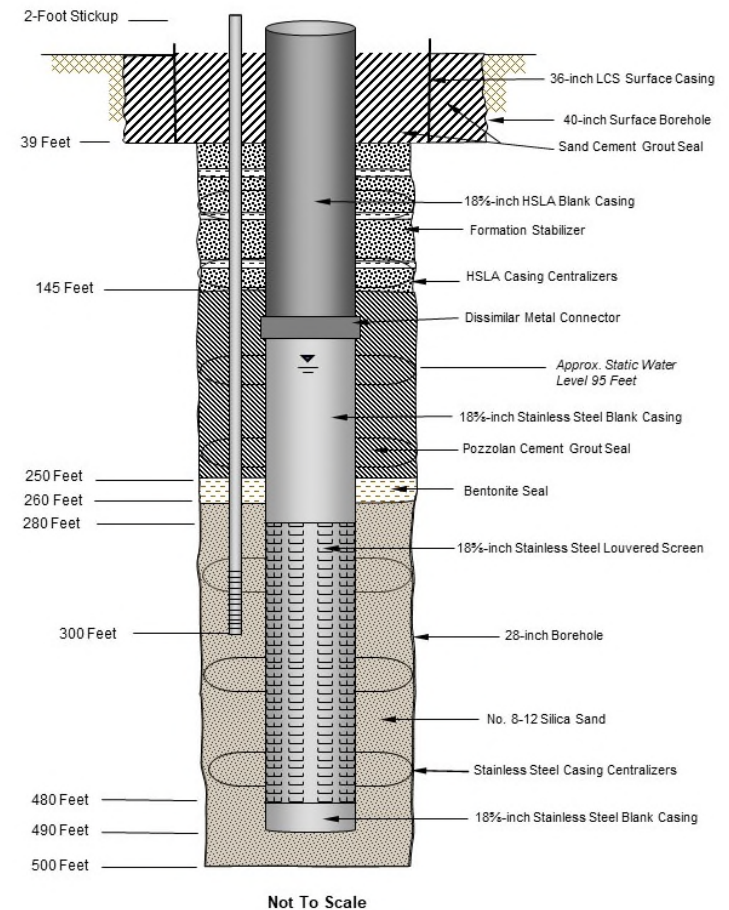






## Well Design Optimization

- Minimize sand
- Optimize productivity
- Balance water quality with treatment costs
- Use City-preferred materials



**PRELIMINARY DESIGN**  
**City of Goodyear Well No. 26**  
ADWR Reg. #55-228645



**Hazen**





## Approach to design, construction and operations including innovative ideas?

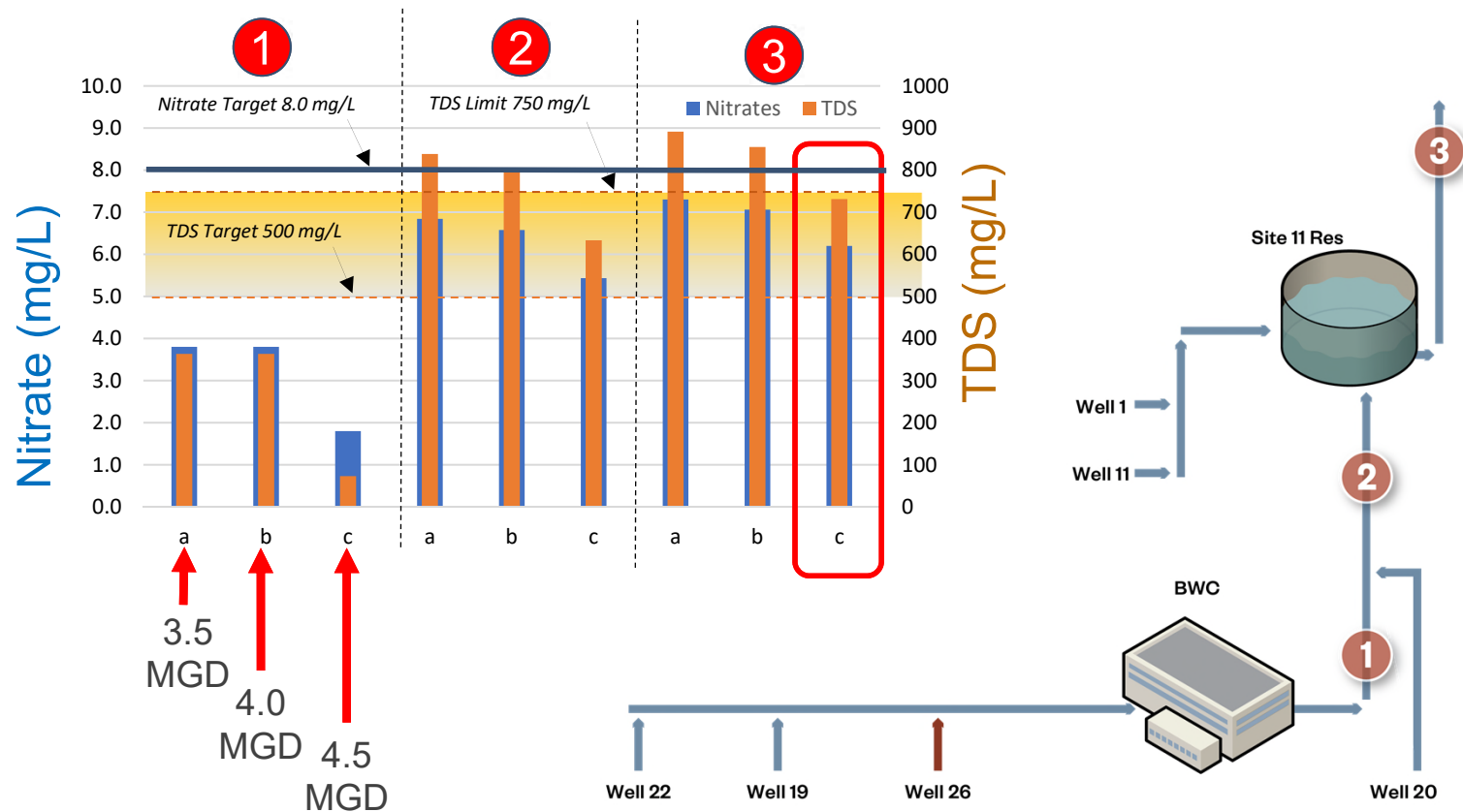
Evaluation Criteria 3

RO Considerations





## Options for increasing RO Capacity at Bullard Water Campus





## Options for increasing RO Capacity at Bullard Water Campus

**Constraints:** No building modifications & use as much existing infrastructure as possible

**Goals:** 4.5 MGD RO Product

---

### 1. Really Easy

Install new membrane elements with more area

- 440 ft<sup>2</sup>
- 500 ft<sup>2</sup> (\*)  
Existing re 400 ft<sup>2</sup>

*and/or*

Push Flux and Recovery



### 2. Easy

Add 2 more pressure vessels to each existing RO Train





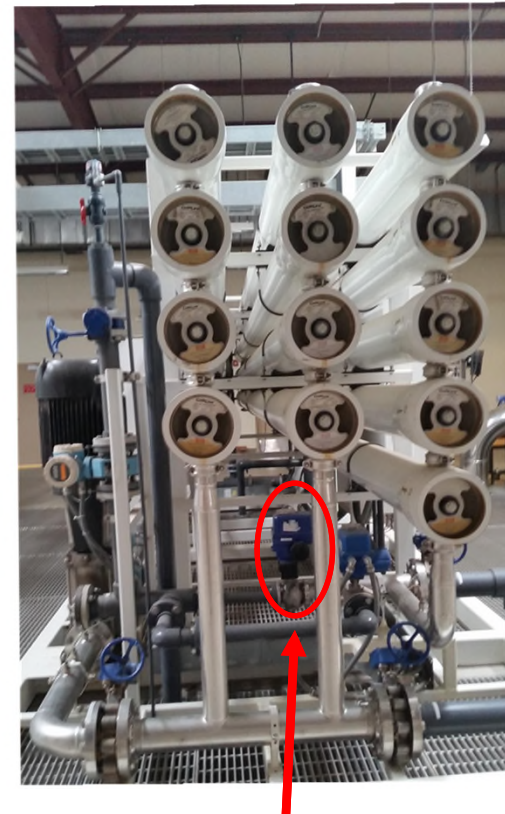
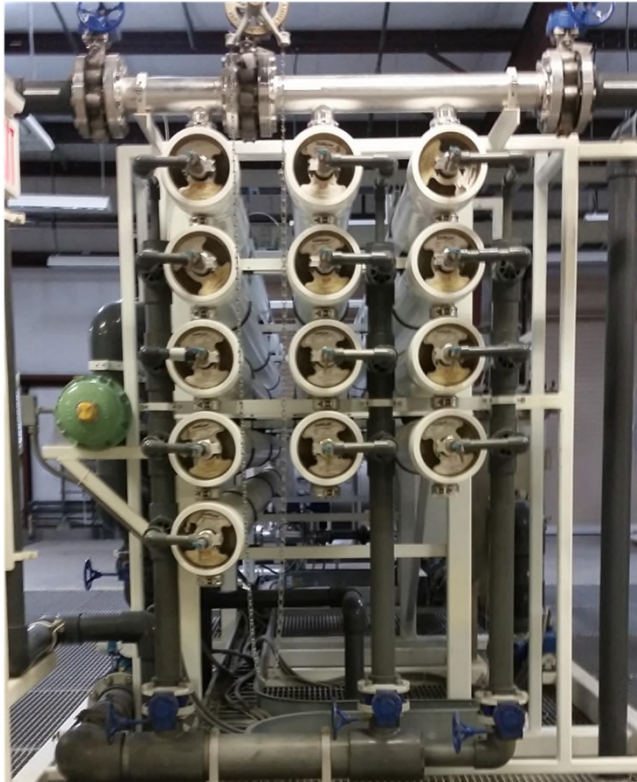
## RO Capacity Summary

		Design	Increase Area		Recovery / Flux		Train Array	
Membrane Area	ft <sup>2</sup>	400	440	500	400	440	400	440
Train Array	-	8:5	8:5	8:5	8:5	8:5	10:5	10:5
Recovery	%	83	83	83	85	85	82%	81%
Flux	gfd	13.8	14.0	14.0	15.0	15.1	14.1	14.0
Train Capacity	mgd	0.50	0.56	0.64	0.55	0.60	0.59	0.65
Plant Capacity (7 Trains)	-	3.5	3.9	4.5	3.8	4.2	4.1	4.5
Plant Capacity (8 Trains)	-	4.0	4.5	5.1	4.4	4.8	4.7	5.2

All options assume 1 new RO train similar to the existing



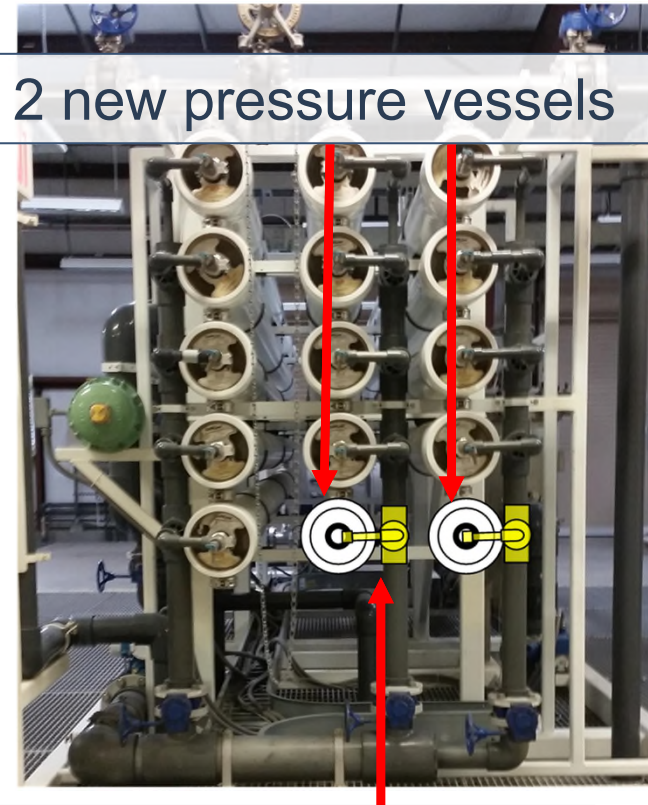
## Existing RO Train



Rotate valve actuator

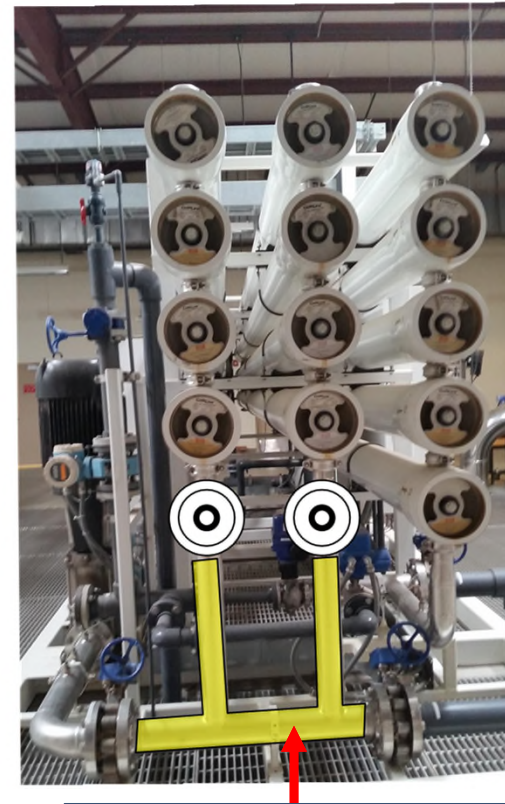


## RO Train Array Modifications



2 new pressure vessels

Modified permeate header



Modified feed header





## RO Train Modifications

### Decommissioned site 12 RO trains







## Approach to design, construction and operations including innovative ideas?

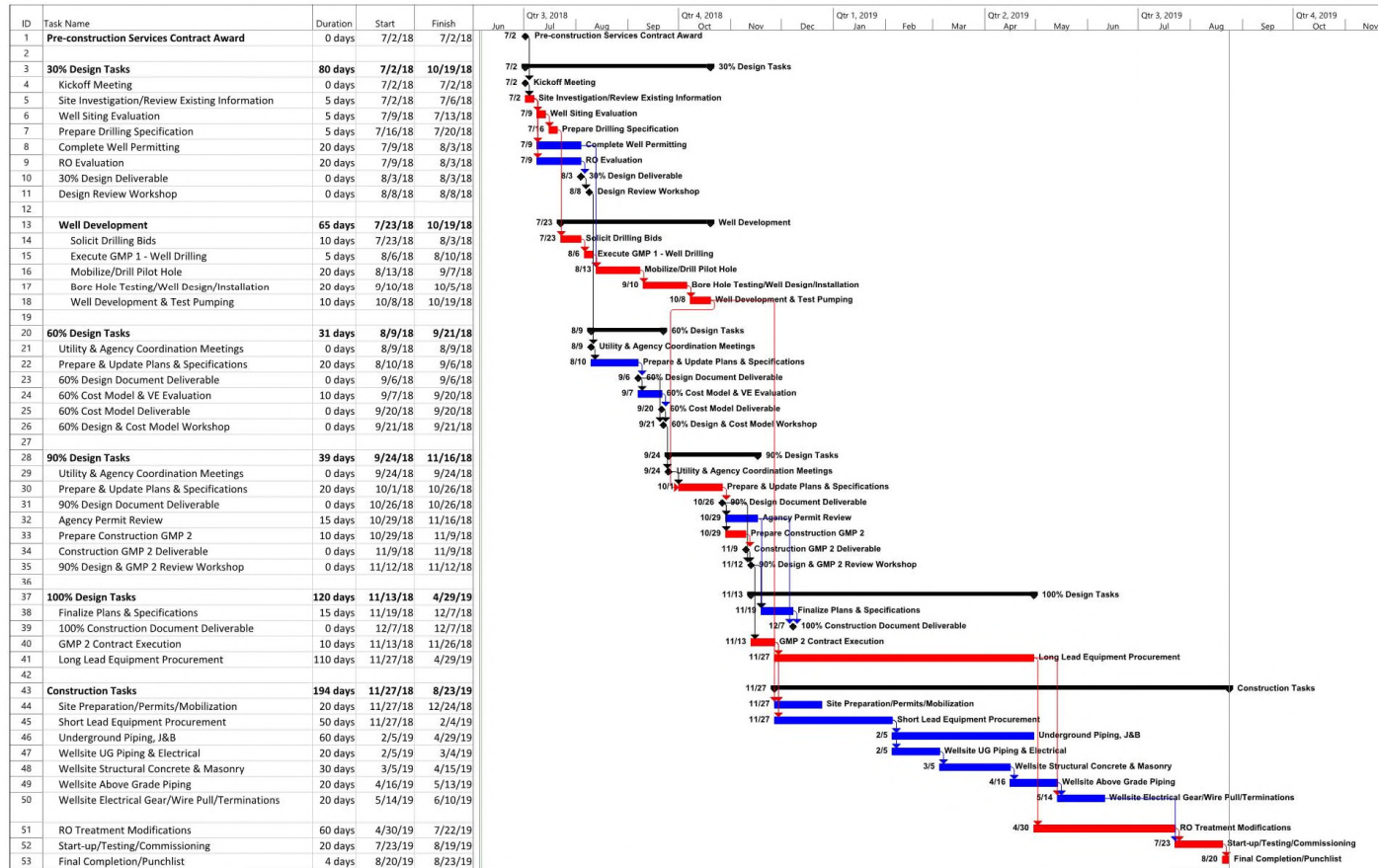
Evaluation Criteria 3

Schedule & Construction



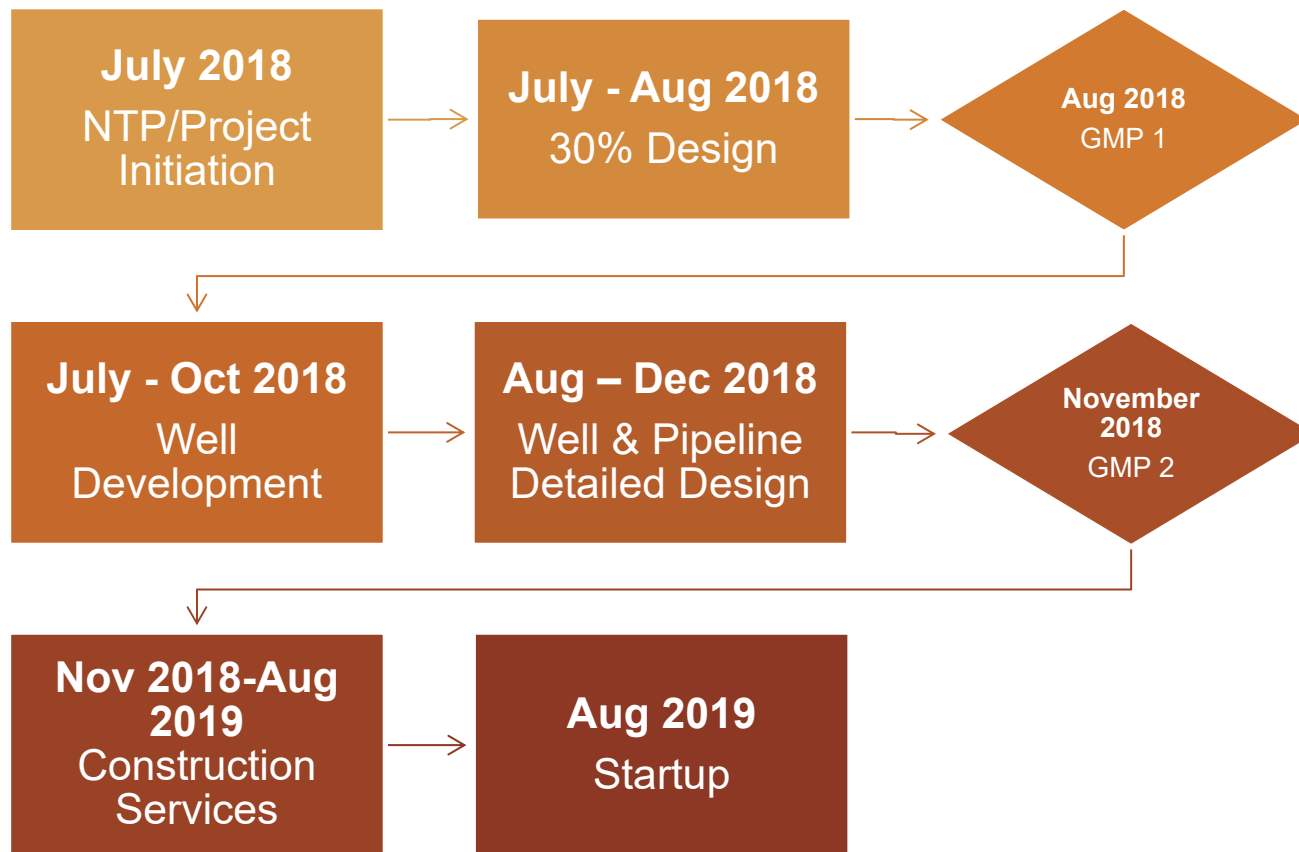


# Proposed Schedule





## Overview Proposed Schedule







## Construction Considerations

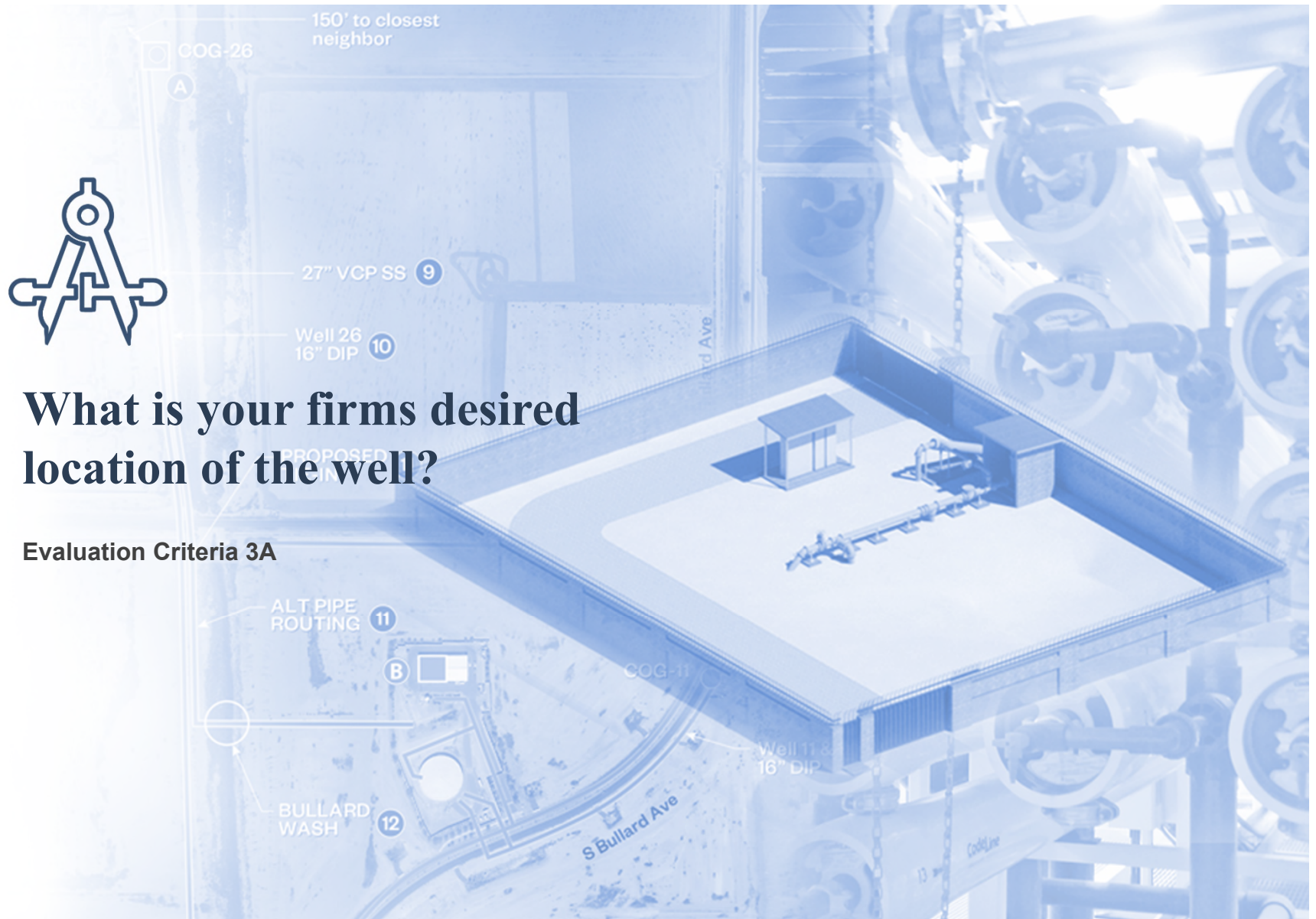






**What is your firms desired location of the well?**

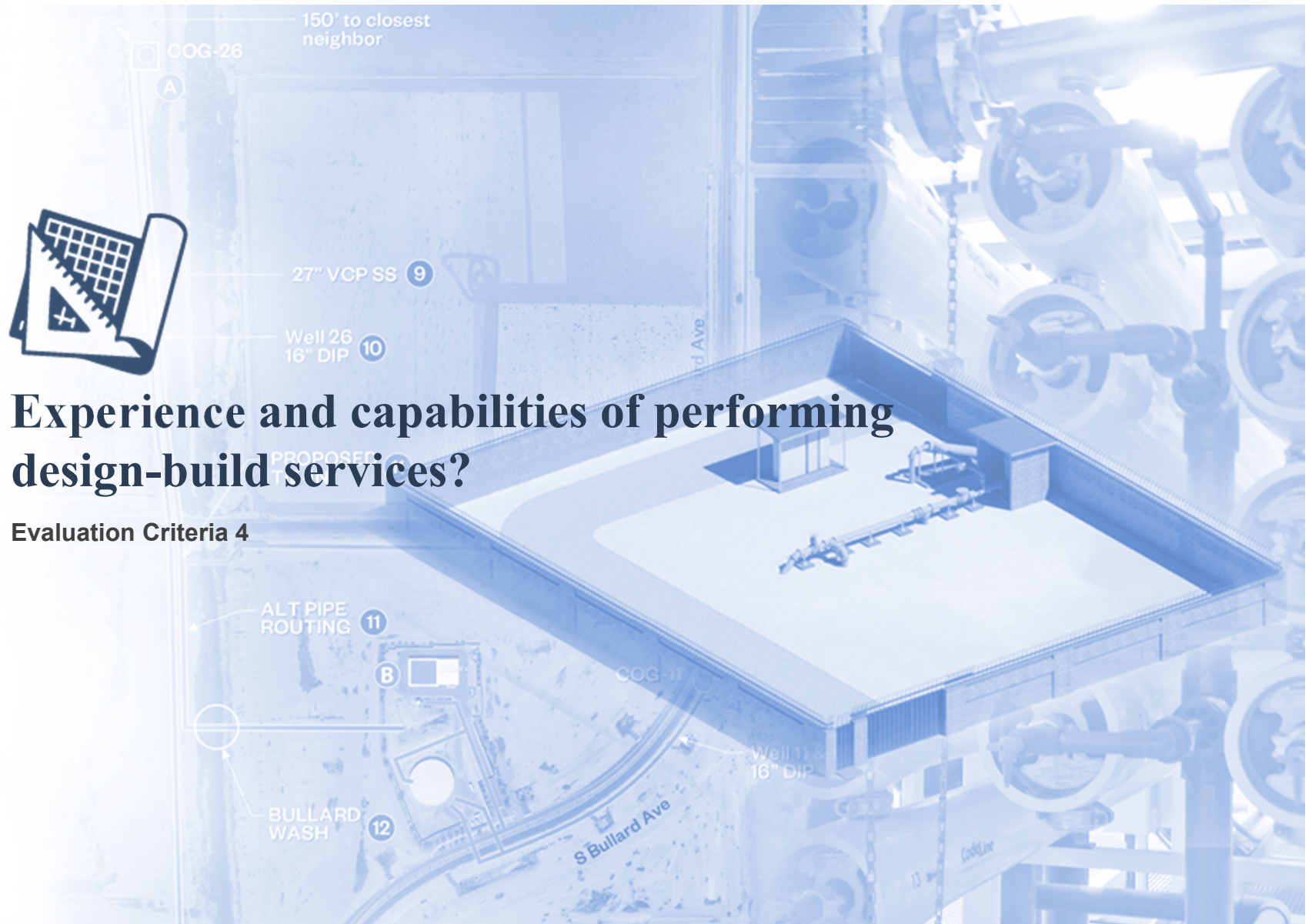
**Evaluation Criteria 3A**





# Experience and capabilities of performing design-build services?

## Evaluation Criteria 4







## Team Experience



& Hazen

25

Reverse Osmosis  
FACILITIES

7 FACILITIES IN  
Arizona



35+ Years  
DESIGN-BUILD  
COMBINED



3 DBIA Award  
WINNING PROJECTS



\$1 Billion +  
DESIGN-BUILD COMBINED

Hazen SW Groundwater Experience  
THE MOST OF ANY FIRM IN THE LAST 3 YEARS



> 120  
WELLS



> 250  
MGD

Felix's completed  
well and pipeline projects



100+



12 City of  
Goodyear  
PROJECTS IN THE  
LAST 5 YEARS



Collaboration  
ON ORIGINAL SITE 11/  
BULLARD WATER CAMPUS PROGRAM

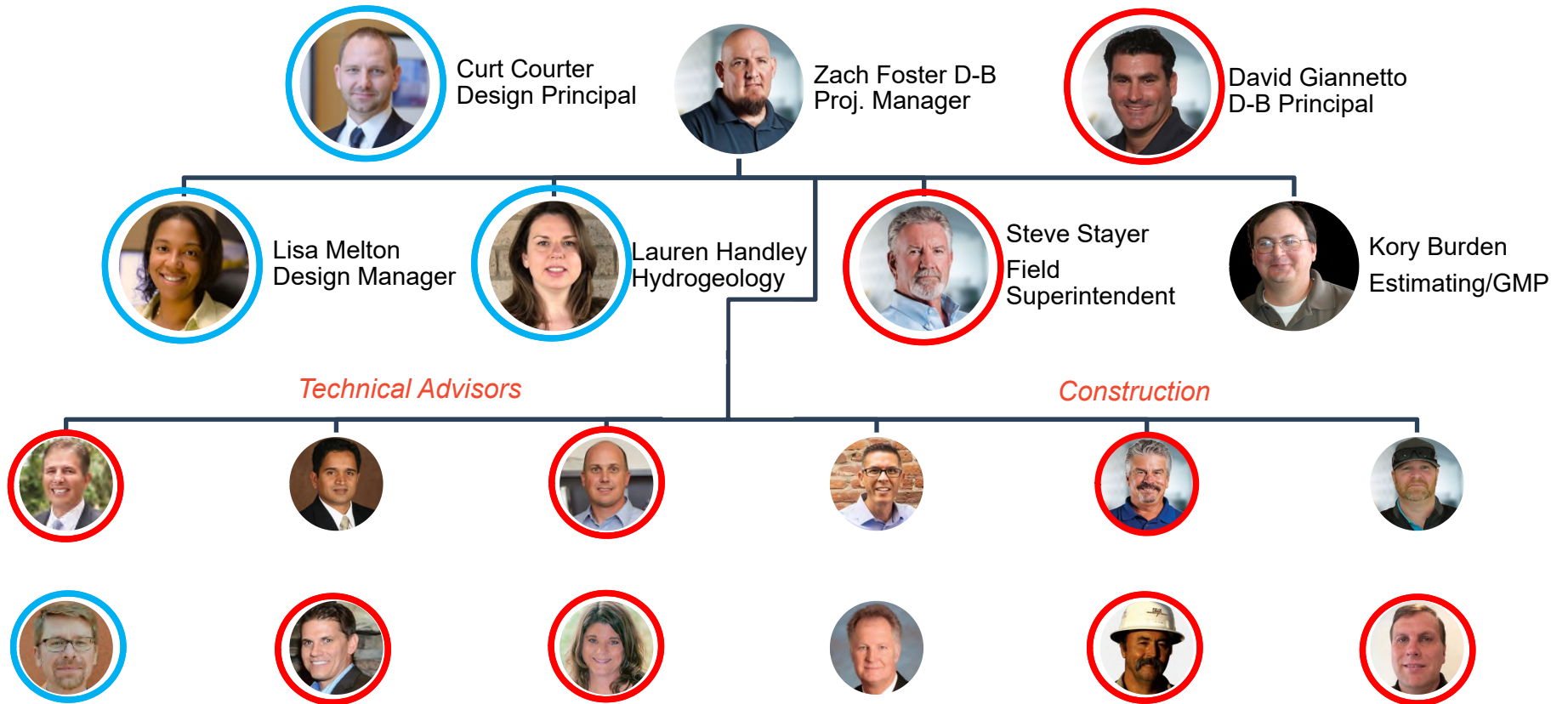


Hazen





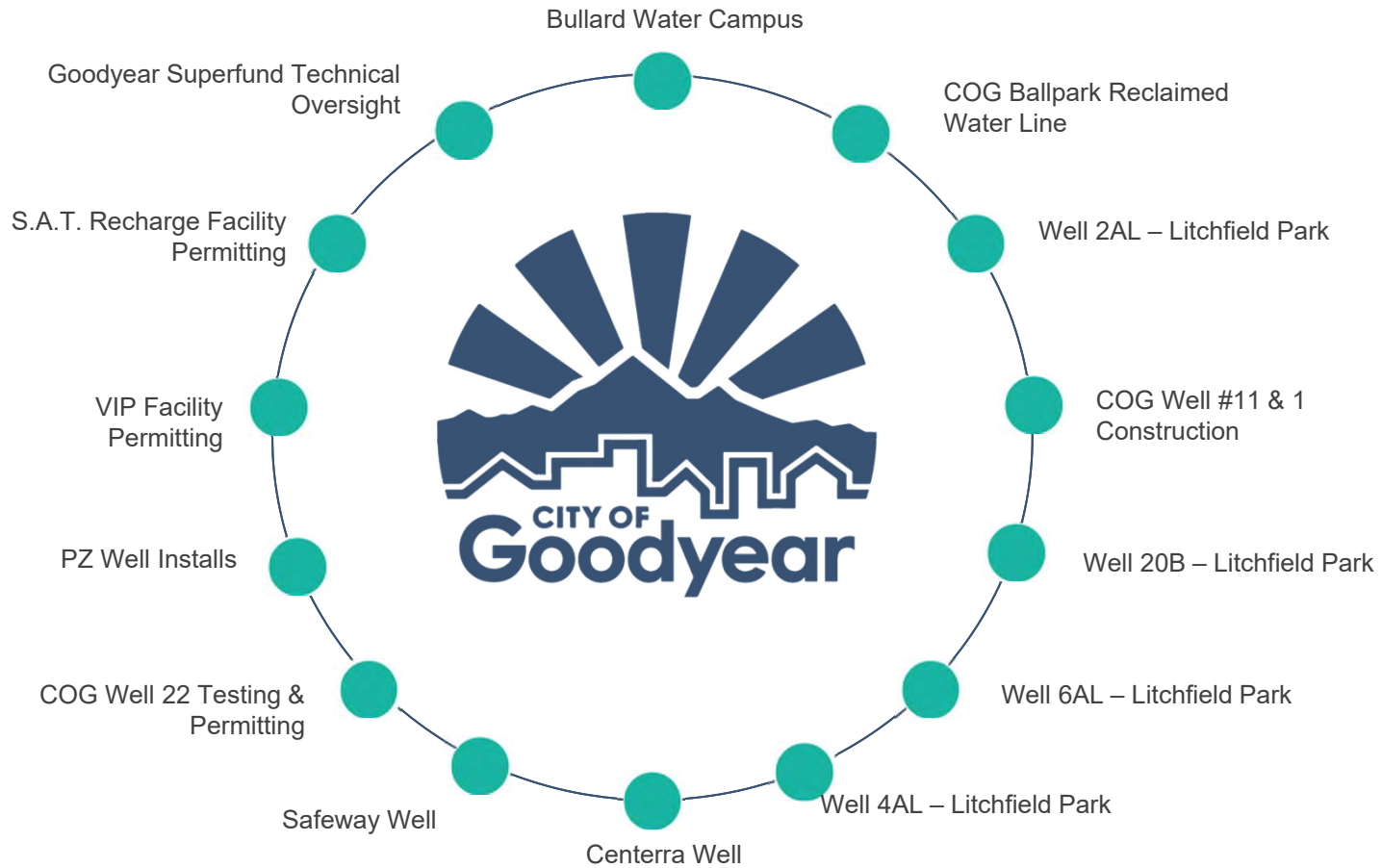
## Felix-Hazen Team







## Team Experience





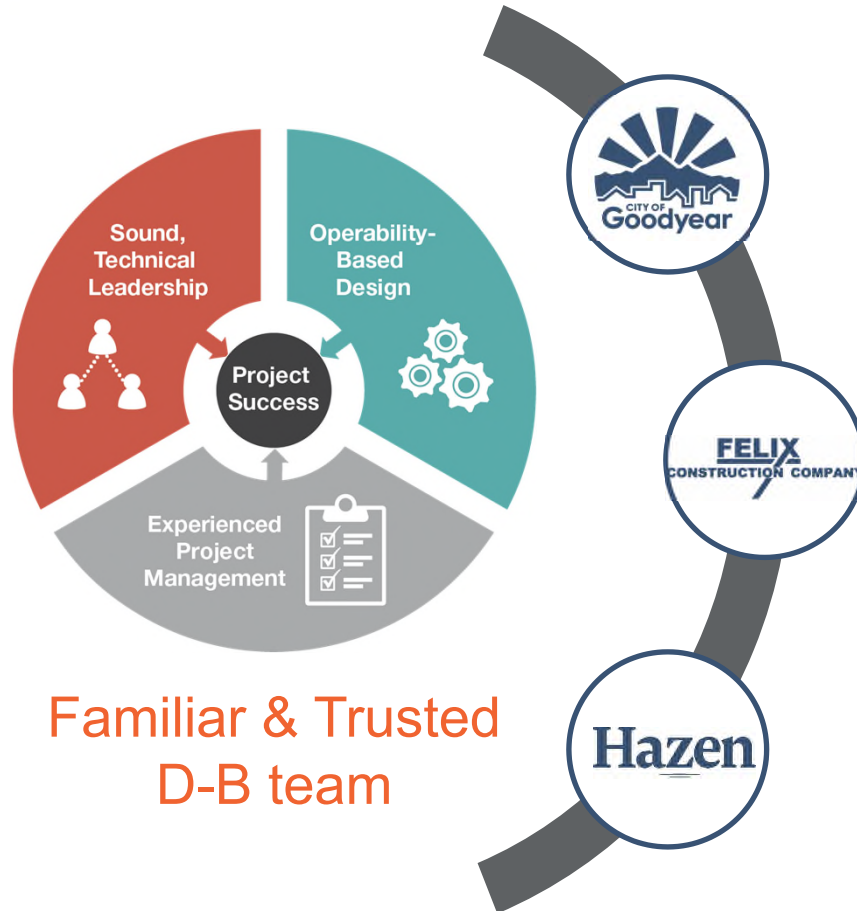
## Define why our firm should be engaged?

### Evaluation Criteria 5





## Why Felix-Hazen!



- ✓ Successful delivery of JOC & Site 11 projects
- ✓ Over 100 well projects completed in the Valley
- ✓ Foremost RO Process Specialist
- ✓ Detailed hydrogeology knowledge
- ✓ Continuous engagement with Goodyear





## Discussion

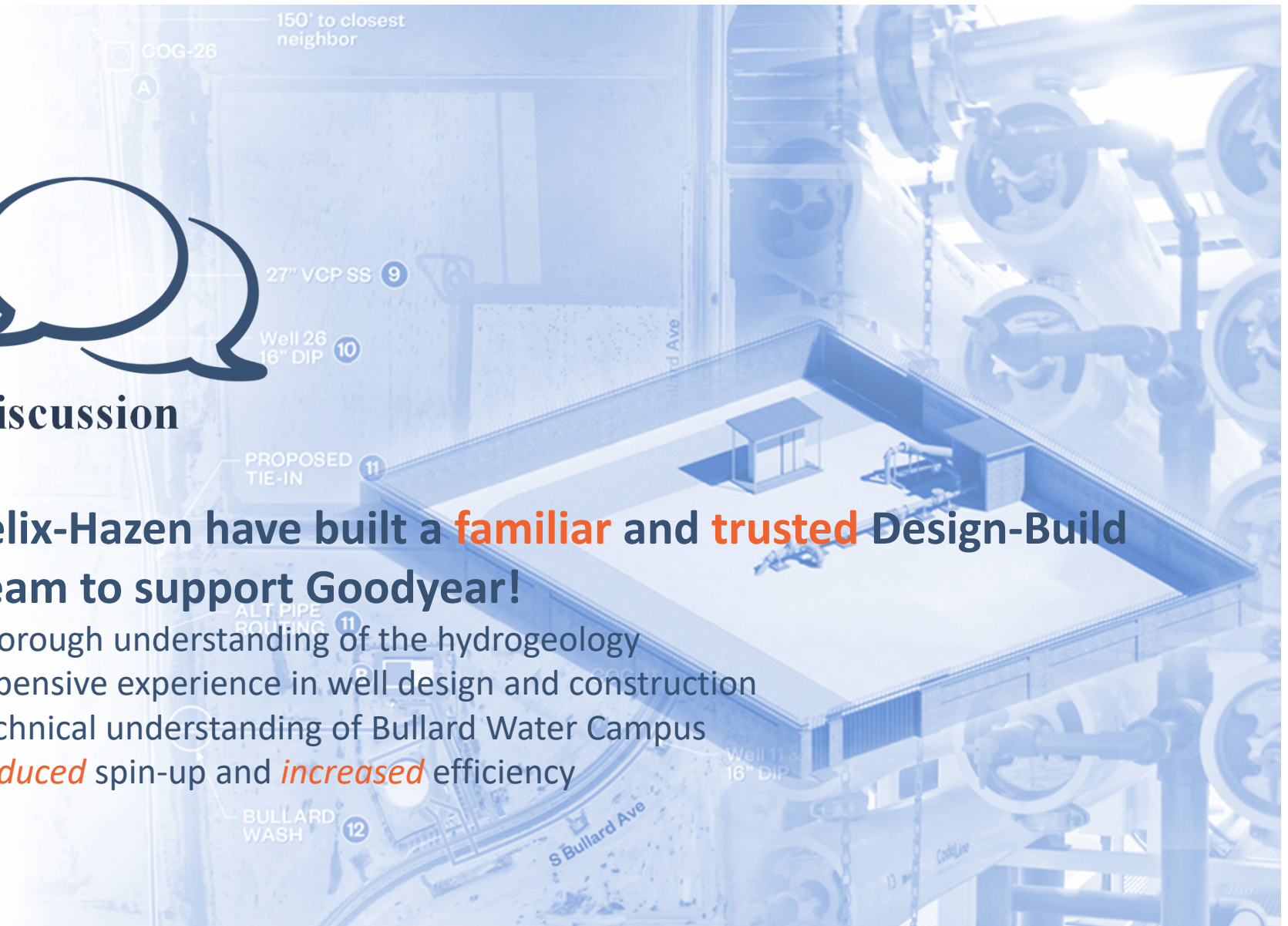
**Felix-Hazen have built a *familiar* and *trusted* Design-Build Team to support Goodyear!**

Thorough understanding of the hydrogeology

Expensive experience in well design and construction

Technical understanding of Bullard Water Campus

*Reduced* spin-up and *increased* efficiency











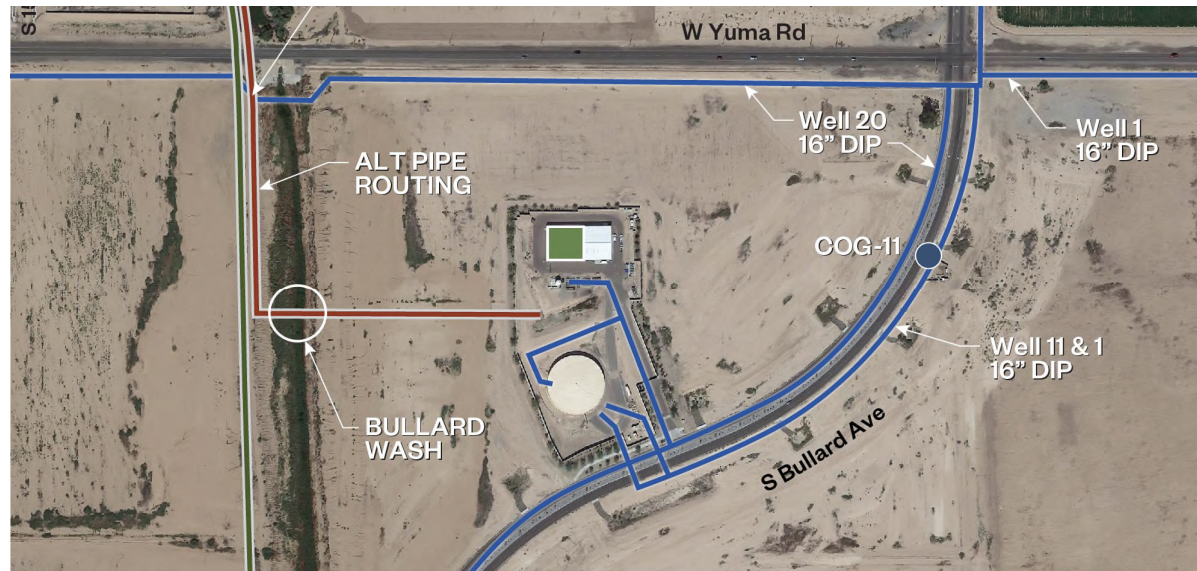








*Alternative Transmission  
Main Routing*



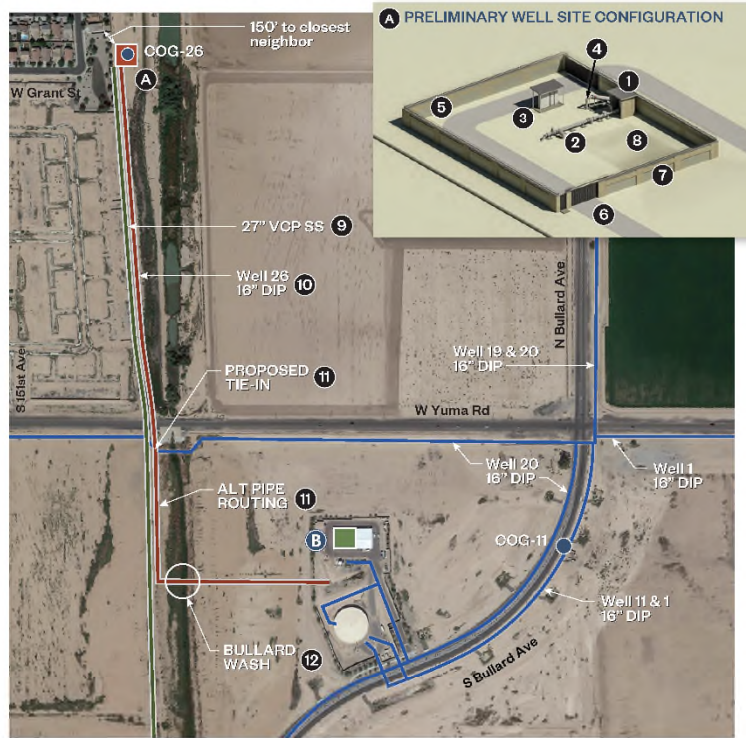
*Potential to reuse of  
abandoned 16"*







Figure 1-3: Our experienced team has already evaluated risks and options to address them.



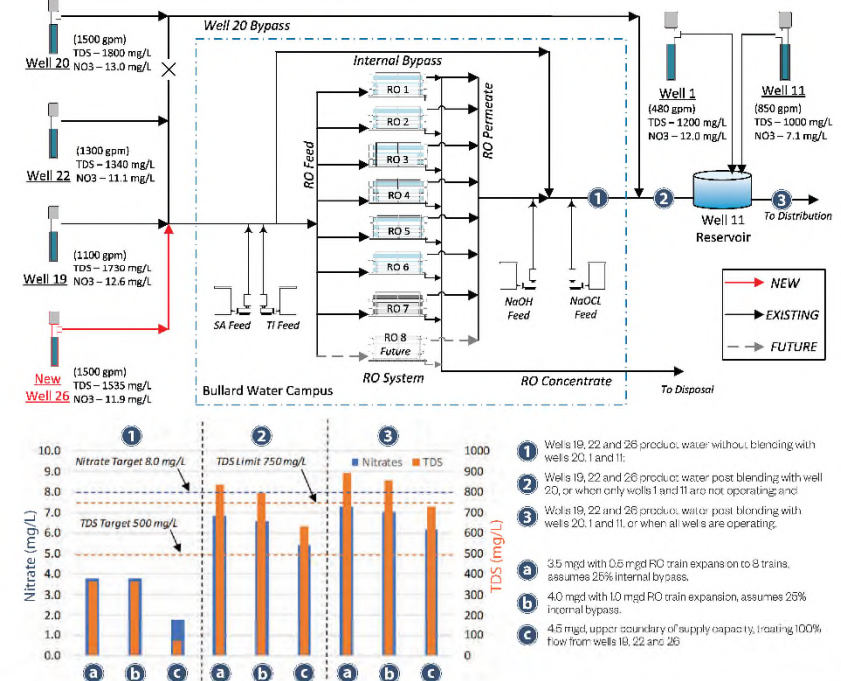
## DESIGN CONSIDERATIONS

- 1 Neighborhood Impacts:** Sound attenuation measures will be incorporated at the well site, including sound enclosure around the well.
- 2 Mechanical Recommendations**
  - a. Propose ARV and Combination ARV on the discharge header to prevent air binding.
  - b. Provide well pump with a solenoid priming system to lubricate the packing gland prior to the pump energizing.
  - c. Use a non-reverse ratchet motor to prevent backspin at shut-down.
  - d. Surge Protection: a pump control valve is recommended on the flush and mainline to mitigate surge.
  - e. A VFD for operational flexibility and to mitigate sanding by slowing ramping up the pumps/reducing perforation velocities

- 3 Backup Power:** Electrical equipment will be provided with a transfer switch and quick connect for an emergency portable generator. Sufficient access will be maintained around the equipment for locating the generator.
- 4 Sand Separator:** Preliminary well design will target the best water quality and quantity to Bullard. The need for a sand separator will be evaluated.
- 5 Site Lighting:** Lighting for the facility will be located on the inside of the perimeter walls to meet night sky ordinance and limit impact on neighboring properties.
- 6 Site Access:** A gravel driveway will be provided up to the site. Two points of ingress/egress are provided to accommodate access and maintenance. The second gate can be setup for egress only. The site will be elevated to the base flood elevation of 970

## B BULLARD WATER CAMPUS – PROCESS FLOW DIAGRAM & RO PROJECTIONS

During high demand, there is currently not enough product water to meet TDS targets. Even if Well #26 has better than average water quality, more RO capacity is needed for blending during high demand.



- 7 Perimeter Wall:** Perimeter wall will be block with an aesthetic that matches the COG standards. The preliminary site layout (including on-site retention) is 90 x 100 feet, which fits easily in the COG's property. The size will be optimized during design.
- 8 On Site Retention:** On-site retention is provided for 10 minutes of flush to waste activity and stormwater retention. If the COG opts to utilize the sanitary sewer for flush to waste the footprint of the site will be reduced and optimized accordingly.
- 9 Flush to Waste:** Discharge to the sanitary sewer is recommended to provide periodic flush water for the system. The sanitary sewer collection system model will be evaluated to determine reserve capacity in the system.
- 10 Transmission Main:** A 16-inch transmission main is proposed for the new well.
- 11** The RFQ noted connecting to the Well #20 raw water pipeline. Well #20 was previously an agricultural well and is susceptible to sanding but is also the largest producer to Bullard. Currently the transmission pipeline has a velocity of 2.4 fps and with both Wells #20 & #26, the velocity would exceed 5 fps. We will evaluate the impacts of diminished water quality and increased headloss which may result in a dedicated pipeline to Bullard from Well #26 (3,200 ft).
- 12 Bullard Wash Crossing:** A Trenchless crossing will be coordinated with the Maricopa Flood Control District/Army Corps of Engineers.





## PROJECT PRINCIPALS

*Design-Builder*

David Giannetto<sup>1</sup> \*

*Design Engineer*

Curtis Courter, PE

Associate VP, AZ Operations Manager<sup>2</sup>

## PROJECT MANAGER

Tim Burkeen

## DESIGN-BUILDER PROJECT MANAGER

Zach Foster<sup>1</sup>

1-Felix Construction

2-Hazen and Sawyer

3-Leonard Rice Engineers

\*-Original Bullard Team

### [ PHASE 1 SERVICES ]

*Design Manager*

Lisa Melton, PE<sup>2</sup>

*Well Equipping and Pipeline*

Bhaskar Kolluri, PE<sup>2</sup>

Elisabeth Lynn, EIT<sup>2</sup>

*RO Evaluation/Expansion*

Brad Reisinger, PE<sup>2</sup>

Daniela Panfil, EIT, ENV SP<sup>2</sup>

*Design Disciplines*

Greg Fron, PE – I&C<sup>2</sup> \*

Wyatt Dressler, PE – Structural<sup>2</sup>

*Hydrogeology*

Lauren Handley<sup>3</sup>

Gary Gin<sup>3</sup>

*Value Engineering/*

*Constructability*

David Giannetto<sup>1</sup>

Zach Foster<sup>1</sup>

*Estimating/GMP*

*Development*

Kory Burden<sup>1</sup>

*Scheduling*

Zach Foster<sup>1</sup>

*Technical Advisors, QA/QC*

Kent O'Brien, PG, CEG<sup>2</sup>

Eric Dole, PE<sup>2</sup>

Gwen Flora, CCM<sup>2</sup> \*

Kevin Alexander<sup>2</sup> \*

Robert Boysen<sup>2</sup> \*

### [ PHASE 2 SERVICES ]

*Field Superintendent*

Steve Stayer<sup>1</sup> \*

*Mechanical*

*Superintendent*

Ryan Richardson<sup>1</sup>

*Electrical Manager and*

*Estimator*

Dana Watts<sup>1</sup> \*

*Electrical*

*Superintendent*

Tom Payne<sup>1</sup>

*Final Design*

Lisa Melton, PE<sup>2</sup>

Bhaskar Kolluri, PE<sup>2</sup>

Brad Reisinger, PE<sup>2</sup>

Greg Fron, PE<sup>2</sup>

Wyatt Dressler, PE<sup>2</sup>

*Startup and Commissioning*

Eric Dole, PE<sup>2</sup>

*Engineering Services*

*During Construction*

Lisa Melton, PE<sup>2</sup>

Daniela Panfil, EIT, ENV SP<sup>2</sup>

Elisabeth Lynn, EIT<sup>2</sup>

*Construction Oversight*

Gwen Flora, CCM<sup>2</sup>

Jeremy Daniels<sup>2</sup> \*



# THE CLEAR CHOICE UNIQUE KNOWLEDGE, TRUSTED EXPERIENCE



**David Giannetto**  
DB Project Principal



**Zach Foster**  
Project Manager



**Lisa Melton, PE**  
Design Manager



**Steve Stayer**  
Superintendent



**Brad Reisinger**  
RO Design



**Lauren Handley**  
Hydrogeologist



**Dana Watts**  
Electrical Manager & Estimating



## PROJECT MANAGER

Tim Burkeen

## DESIGN-BUILDER PROJECT MANAGER

Zach Foster<sup>1</sup>

## PROJECT PRINCIPALS

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**David Giannetto<sup>1</sup> \***

*Design Engineer*  
Curtis Courter, PE  
Associate VP, AZ Operations Manager<sup>2</sup>

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Well Equipping & Pipelines

**FELIX**  
CONSTRUCTION COMPANY

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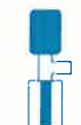


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**Collaboration**  
ON ORIGINAL SITE 11/  
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**FELIX**  
CONSTRUCTION COMPANY

In association with

**Hazen**



THE CLEAR CHOICE

PROJECT APPROACH AND DESIGN CONCEPT

