



# Offer and Acceptance

State of Arizona  
State Procurement Office  
100 N. 15<sup>th</sup> Ave. Suite 201  
Phoenix, AZ 85007

SOLICITATION NO.: ADSP016-00005912 Request  
for Qualifications: 2016 Annual Professional  
Services List

PAGE  
1

Offeror: Tetra Tech, Inc.

OF  
1

## OFFER

### TO THE STATE OF ARIZONA:

The Undersigned hereby offers and agrees to furnish the material, service or construction in compliance with all terms, conditions, specifications and amendments in the Solicitation and any written exceptions in the offer. Signature also certifies Small Business status.

Tetra Tech, Inc.

Company Name  
405-B West Main Street

Address

Payson AZ 85541

City State Zip

jack.pence@tetratech.com

Contact Email Address

Signature of Person Authorized to Sign Offer

Joseph A. (Jack) Pence

Printed Name

Office Manager

Title

Phone: 928-474-4636

Fax: 928-474-4867

By signature in the Offer section above, the Offeror certifies:

1. The submission of the Offer did not involve collusion or other anticompetitive practices.
2. The Offeror shall not discriminate against any employee or applicant for employment in violation of Federal Executive Order 11246, State Executive Order 2009-9 or A.R.S. §§ 41-1461 through 1465.
3. The Offeror has not given, offered to give, nor intends to give at any time hereafter any economic opportunity, future employment, gift, loan, gratuity, special discount, trip, favor, or service to a public servant in connection with the submitted offer. Failure to provide a valid signature affirming the stipulations required by this clause shall result in rejection of the offer. Signing the offer with a false statement shall void the offer, any resulting contract and may be subject to legal remedies provided by law.
4. The Offeror certifies that the above referenced organization  IS/  IS NOT a small business with less than 100 employees or has gross revenues of \$4 million or less.

## ACCEPTANCE OF OFFER

The Offer is hereby accepted.

The Contractor is now bound to sell the materials or services listed by the attached contract and based upon the solicitation, including all terms, conditions, specifications, amendments, etc., and the Contractor's Offer as accepted by the State.

This Contract shall henceforth be referred to as Contract No. ADSP016-00005912

The effective date of the Contract is March 1, 2016

The Contractor is cautioned not to commence any billable work or to provide any material or service under this contract until Contractor receives purchase order, contract release document or written notice to proceed.

State of Arizona  
Awarded this 29 day of February 20 16

Procurement Officer



ATTACHMENT I – General Qualifications

ANNUAL REQUEST FOR QUALIFICATIONS AND EXPERIENCE NO:  
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**DEFINITIONS**

**Architect Services, Engineer Services, Land Surveying Services, Assayer Services, Geologist Services and Landscape Architect Services:** Those professional services within the scope of the practice of those services as provided in ARS § 32-101.

**Branch Office:** A geographically distinct place of business or subsidiary office of a firm that has a key role on the team.

**Discipline:** Primary technical capabilities of key personnel, as evidenced by academic degree, professional registration, certification, and/or extensive experience.

**Firm:** Defined in ARS § 32-101(B.19.).

**Key Personnel:** Individuals who will have major contract responsibilities and/or provide unusual or unique expertise.

**SPECIFIC INSTRUCTIONS:**

1. Complete this form for each branch office seeking work under this RFQ.
  - a. – e. **Firm (or Branch Office) Name and Address.** Self-explanatory.
  - f. **Year Established.** Enter the year the firm (or branch office, if appropriate) was established under the current name.
  - g. **Ownership.**
    - (g1). *Type.* Enter the type of ownership or legal structure of the firm (sole proprietor, partnership, corporation, joint venture, etc.).
    - (g2). *Small Business Status.* A firm is a small business if the firm has less than 100 employees **or** has gross revenues of \$4 million or less.
  - h.-j. **Point of Contact.** Provide this information for a representative of the firm that the Customer can contact for additional information. The representative must be empowered to speak on contractual and policy matters.
  - k. **Name of Firm.** Enter the name of the firm.
2. **Employees by Discipline.**
  - a. Select disciplines from the List of Disciplines (Function Code) listed on Page 3 of 4 Instructions. For employees that do not qualify for any of the disciplines, select Other. *Note: The intended searchable database indicated in the RFQ will be populated from the Qualifications Form I Excel attachment only.*
  - b. Each person can be counted only twice; once for his/her primary function and once for his/her secondary function. Primary and secondary functions should be indicated by including a “P” or an “S” in column b after the Description Title is given.
  - c-d. If the form is completed for a firm (including all branch offices), enter the number of employees by disciplines in column c. If the form is completed for a branch office, enter the number of employees by discipline in column d and for the firm in column c.
3. **Profile of Firm's Experience and Annual Average Revenue for Last Year.**
  - a. Enter the approximate number of projects the firm (or branch) has done attributable by Profile Code listed on Page 3 of 4 Instructions over the last year.



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- b. Enter the appropriate Profile Codes from Instructions Pages 3 of 4 that represent the type of work the firm (or branch) has done over the last year.
  - c. Using the Revenue Index Number on Page 3 of 6 Form, indicate the approximate revenue the firm has earned over the last year per Profile Code entered into the table.
4. **Resumes of Key Personnel Proposed for This Contract.** Complete this section for each key person who will participate in this contract.
- a. Self-explanatory.
  - b. Self-explanatory
  - c. Total years of relevant experience (block c1), and years of relevant experience with current firm, but not necessarily the same branch/office (block c2).
  - d. Name, City and State of the firm where the person currently works, which must correspond with one of the firms (or branch office or a firm, if appropriate) listed in Section 1.
  - e. Provide information on the highest relevant academic degree(s) received. Indicate the area(s) of specialization for each degree.
  - f. Provide information on current relevant professional registration(s) and in which State(s) they are current.
  - g. Provide information on any other professional qualifications relating to this contract, such as education, professional registration, publications, organizational memberships, certifications, training, awards, and foreign language capabilities.
  - h. Provide information on no more than five (5) projects in the last year which the person had a significant role that demonstrates the person's capability relevant to her/his proposed role in this contract. These projects do not necessarily have to be any of the projects presented in Section 5 for the project team if the person was not involved in any of those projects or the person worked on other projects that were more relevant than the team projects in Section 5. Use the check box provided to indicate if the project was performed with any office of the current firm. If any of the professional services or construction projects are not complete, leave Year Completed blank and indicate the status in Brief Description and Specific Role.
5. **Example Projects Which Best Illustrate Firms Qualification for this contract.** Select project where multiple team members worked together, if possible, that demonstrate the team's capability to perform work similar to that required for this contract. Complete one Section 5 for each project. List no more than five (5) projects.
- a. Title and Locations of project or contract. For an indefinite delivery contract, the location is the geographic scope of the contract.
  - b. Enter the year completed of the professional services (such as planning, engineering study, or design), and/or the year completed if construction. If any of the professional services or the construction projects are not complete, leave Year Completed blank and indicate the status in Brief Description of Project and Relevance to This Contract (block f).
  - c. Project Owner or user, such as a government agency or installation, an institution, a corporation or private individual.
  - d. Provide the original budget or not to exceed dollar amount for the project.
  - e. Provide the Total Cost of the Project. If any of the professional services or construction projects is not complete, indicate the percentage complete and whether this project will be on budget, over or under budget.
  - f. Brief Description: Indicate scope, size, and length of project, principle elements and special features of the project. Discuss the relevance of the example project to this contract.
6. **Additional Information.** Use this section to provide additional information you feel may be necessary to describe your firm's qualifications for this contract.
7. **Annual Average Professional Services Revenues of Firm for Last 3 Years.** Complete this block for the firm or branch office for which this form is completed. In column a, enter an approximate percentage of total work attributable to State, Federal or Municipal Work. In column b, enter an approximate percentage of total work attributable to Non-Government work. Percentages should take into consideration work completed over the last 3 years.



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8. **Authorized Representative.** An authorized representative of the firm or branch office must sign and date the completed form. Signing attests that the information provided is current and factual. Provide the name and title of the authorized representative who signed the form.

List of Disciplines (Function Codes) for Question 2

- |                           |  |                          |
|---------------------------|--|--------------------------|
| Aeronautical Engineer     | Environmental Engineer                   | Mining Engineer          |
| Agricultural Engineer     | Environmental Scientist                  | Nuclear Engineer         |
| Archeologist              | Fire Protection Engineer                 | Petroleum Engineer       |
| Architect                 | Geodetic Surveyor                        | Photogrammetrist         |
| Architectural Engineering | Geographic Information System Specialist | Project Manager          |
| Biologist                 | Geological Engineer                      | Sanitary Engineer        |
| CADD Technician           | Geologist                                | Soils Engineer           |
| Chemical Engineer         | Hydrographic Surveyor                    | Structural Engineer      |
| Civil Engineer            | Hydraulic Engineer                       | Technician/Analyst       |
| Construction Manager      | Hydrologist                              | Transportation Engineer  |
| Construction Inspector    | Industrial Engineer                      | Water Resources Engineer |
| Control Systems Engineer  | Landscape Architect                      |                          |
| Cost Engineer/Estimator   | Mechanical Engineer                      |                          |
| Ecologist                 | Metallurgical Engineer                   |                          |
| Electrical Engineer       |  |                          |

List of Experience Categories (Profile Codes for Question 3)

- |   |  |
|---|--|
| Acoustics, Noise Abatement  | Dams ( <i>Concrete; Arch</i> )                                       |
| Aerial Photography; Airborne Data and Imagery Collection and Analysis           | Dams ( <i>Earth; Rock</i> ); Dikes; Levees                           |
| Activity Centers  | Desalinization ( <i>Process and Facilities</i> )                     |
| Air Pollution Control   | Design-Build - Preparation of Requests for Proposals                 |
| Airports; Navajds; Airport Lighting; Aircraft Fueling                           | Digital Elevation and Terrain Model Development                      |
| Airports; Terminals and Hangars; Freight Handling                               | Digital Orthophotography   |
| Agricultural Development; Grain Storage; Farm Mechanization                     | Dining Halls; Clubs; Restaurants                                     |
| Animal Facilities   | Dredging Studies and Design  |
| Anti-Terrorism/Force Protection   | Design & Planning Structured Parking Facilities                      |
| Area Master Planning  | Detention Security Systems   |
| Auditoriums and Theaters  | Disability / Special Needs   |
| Automation; Controls; Instrumentation   | Ecological and Archeological Investigations                          |
| Barracks; Dormitories   | Educational Facilities; Classrooms                                   |
| Bridge Design: Bridges  | Electrical Studies and Design  |
| Cartography   | Electronics  |
| Cemeteries ( <i>Planning and Relocation</i> )                                   | Elevators; Escalators; People-Movers                                 |
| Chemical Processing and Storage   | Energy / Water Auditing Savings                                      |
| Child Care/Development Facilities   | Energy Conservation; New Energy Sources                              |
| Codes; Standards; Ordinances  | Environmental Impact Studies, Assessments or Statements              |
| Cold Storage; Refrigeration and Fast Freeze                                     | Fallout Shelters; Blast-Resistant Design                             |
| Commercial Building ( <i>Low Rise</i> ); Shopping Centers                       | Fire Protection  |
| Community Facilities  | Fisheries; Fish Ladders  |
| Communications Systems; TV; Microwave   | Forensic Engineering   |
| Computer Facilities   | Garages; Vehicles Maintenance Facilities; Parking                    |
| Conservation and Resource Management  | Gas Systems ( <i>Propane; Natural, Etc.</i> )                        |
| Construction Management   | Geodetic Surveying: Ground and Airborne                              |
| Construction Surveying  | Heating; Ventilating; Air Conditioning                               |
| Corrosion Control; Cathodic Protection Electrolysis                             | Highways; Streets; Airfield Paving; Parking Lots                     |
| Cost Estimating; Cost Engineering and Analysis; Parametric Costing; Forecasting | Historical Preservation  |
| Cryogenic Facilities  | Hospital and Medical Facilities                                      |
| Construction Materials Testing  | Hotels; Motels   |
|   | <i>Housing (Residential, Multi-Family; Apartments; Condominiums)</i> |



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Hotels; Motels  
Hydraulics and Pneumatics  
Hydrographic Surveying  
Industrial Buildings; Manufacturing Plants  
Industrial Processes; Quality Control  
Industrial Waste Treatment  
Intelligent Transportation Systems  
Infrastructure  
Irrigation; Drainage  
Judicial and Courtroom Facilities  
Laboratories; Medical Research Facilities  
Land Surveying  
Landscape Architecture  
Libraries; Museums; Galleries  
Lighting (*Interior; Display; Theater, Etc.*)  
Lighting (*Exteriors; Streets; Memorials; Athletic Fields, Etc.*)  
Labs - General  
Labs – Research – Dry  
Labs – Research – Wet  
LEED Accredited A/E  
LEED Independent 3<sup>rd</sup> Party Building Commissioning  
Mapping Location/Addressing Systems  
Materials Handling Systems; Conveyors; Sorters  
Metallurgy  
Materials Testing  
Measurement / Verification / Conservation Water Consumption Savings  
Mining and Mineralogy  
Medical Related  
Modular Systems Design; Fabricated Structures or Components  
Mold Investigation  
Museums  
Nuclear Facilities; Nuclear Shielding  
Office Buildings; Industrial Parks  
Outdoor Recreation  
Petroleum and Fuel (*Storage and Distribution*)  
Photogrammetry  
Pipelines (*Cross-Country - Liquid and Gas*)  
Phase I Environmental  
Prisons & Correctional Facilities  
Plumbing and Piping Design  
Prisons and Correctional Facilities  
Product, Machine Equipment Design Pneumatic Structures, Air-Support Buildings Power Generation, Transmission, Distribution Public Safety Facilities  
Radar; Sonar; Radio and Radar Telescopes  
Radio Frequency Systems and Shielding's  
Railroad; Rapid Transit  
Recreation Facilities (*Parks, Marinas, Etc.*)  
Refrigeration Plants/Systems  
Rehabilitation (*Buildings; Structures; Facilities*)  
Research Facilities  
Resources Recovery; Recycling  
Roof Infrared Imaging to Identify Water Leaks

Roofing  
Safety Engineering; Accident Studies; OSHA Studies  
Security Systems; Intruder and Smoke Detection  
Seismic Designs and Studies  
Sewage Collection, Treatment and Disposal  
Soils and Geologic Studies; Foundations  
Solar Energy Utilization  
Solid Wastes; Incineration; Landfill  
Special Environments; Clean Rooms, Etc.  
Structural Design; Special Structures  
Surveying; Platting; Mapping; Flood Plain Studies  
Sustainable Design  
Swimming Pools  
Storm Water Handling and Facilities  
Specifications Writing  
Toxicology  
Testing and Inspection Services  
Traffic and Transportation Engineering  
Topographic Surveying and Mapping  
Towers (*Self-Supporting and Guyed Systems*)  
Tunnels and Subways  
Traffic Studies  
Transportation  
Urban renewals; Community Development  
Utilities (*Gas and Steam*)  
Value Analysis; Life-Cycle Costing  
Warehouse and Depots  
Water Resources; Hydrology; Ground Water  
Water Supply; Treatment and Distribution  
Wind Tunnels; Research/Testing Facilities Design  
Waste Water Treatment Facility  
Water Well Rehabilitation; Water Well Work  
Zoning; Land Use Studies



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(If a firm has branch offices, complete for each specific branch office seeking work.)

1. **Annual Request for Qualifications**

a. FIRM (OR BRANCH OFFICE ) NAME:	Tetra Tech (BAS)
b. FIRM (OR BRANCH OFFICE) STREET:	3822 East University Drive, Suite 2
c. FIRM (OR BRANCH OFFICE) CITY:	Phoenix
d. FIRM (OR BRANCH OFFICE) STATE:	Arizona
e. FIRM (OR BRANCH OFFICE) ZIP CODE:	85034
f. YEAR ESTABLISHED:	1966
(g1). OWNERSHIP - TYPE:	Corporation
(g2). OWNERSHIP - SMALL BUSINESS STATUS:	N/A
h. POINT OF CONTACT NAME AND TITLE:	Keith A. Johnson, P.E.
i. POINT OF CONTACT TELEPHONE NUMBER:	602-267-0336
j. POINT OF CONTACT E-MAIL ADDRESS:	Keith.Johnson@tetratech.com
k. NAME OF FIRM (If block 1a is a branch office):	Tetra Tech, Inc.







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**Phoenix, Arizona 85007**

**4. Resumes of Key Personnel Proposed for this Contract** (Complete one Section 4 for each key person.)

a. NAME Paul Jackson	b. ROLE IN THIS CONTRACT Staff Geologist	c. YEARS EXPERIENCE	
		1. TOTAL 5	2. WITH CURRENT FIRM 5
d. LOCATION (City and State) Tetra Tech (BAS) Phoenix, Arizona			
e. EDUCATION (DEGREE AND SPECIALIZATION) B. S. Geology University of Massachusetts		f. PROFESSIONAL TRAINING - REGISTRATIONS	
g. OTHER PROFESSIONAL QUALIFICATIONS (Organizations, Awards, etc.) Qualified to perform Butt Fusion on High Density Polyethylene Pipe. Certified EPA Method 9 Visible Emissions			

**H. RELEVANT PROJECTS**

1.	(1) TITLE AND LOCATION (City and State) Landfill Gas NSPS Surface Emissions Monitoring, Phoenix, Arizona.	(2) YEAR COMPLETED	
		Professional Services 2014	Construction (if applicable) N/A
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Performed NSPS surface emissions monitoring at Skunk Creek Landfill, SR85 Landfill, and 27 <sup>th</sup> Avenue Landfill using a TVA- 1000B Flame Ionization Detector	<input type="checkbox"/> Check if project performed with current firm	
2.	(1) TITLE AND LOCATION (City and State) Landfill Gas Extraction Monitoring, Glendale, Arizona.	(2) YEAR COMPLETED	
		Professional Services 2014	Construction (if applicable) N/A
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Performed landfill gas monitoring. Tuned well-field and performed field analysis of landfill gas well composition at the Glendale Landfill.	<input type="checkbox"/> Check if project performed with current firm	
3.	(1) TITLE AND LOCATION (City and State) SR85 Groundwater Well Installation, Buckeye, Arizona	(2) YEAR COMPLETED	
		Professional Services 2014	Construction (if applicable) N/A
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Oversaw drilling and installation of two new monitoring wells. Performed construction management, and lithology analysis on well cuttings. Provided quality assurance during the construction of each well.	<input type="checkbox"/> Check if project performed with current firm	
4.	(1) TITLE AND LOCATION (City and State) Landfill Gas System Construction Management, Glendale Landfill, Glendale, Arizona.	(2) YEAR COMPLETED	
		Professional Services 2008	Construction (if applicable) N/A
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Provided engineering support during the expansion of the gas collection and control system. Provided construction management for the installation of both the vertical wells and lateral connections. Logged vertical well borings and provided quality assurance during the construction of each well.	<input type="checkbox"/> Check if project performed with current firm	
5.	(1) TITLE AND LOCATION (City and State) Landfill Gas System Construction Management, SR85 Landfill, Phoenix, Arizona.	(2) YEAR COMPLETED	
		Professional Services 2010	Construction (if applicable) N/A
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Provided engineering support during the installation of the gas collection and control system. Provided construction management for the installation of both the vertical wells and horizontal collectors. Logged vertical well borings and provided quality assurance during the construction of each well.	<input type="checkbox"/> Check if project performed with current firm	



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**4. Resumes of Key Personnel Proposed for this Contract** (Complete one Section 4 for each key person.)

a. NAME Keith A. Johnson, P.E.	b. ROLE IN THIS CONTRACT Senior Project Manager	c. YEARS EXPERIENCE	
		1. TOTAL 34	2. WITH CURRENT FIRM 18
d. LOCATION (City and State) Tetra Tech, Inc. (BAS) Phoenix, Arizona			
e. EDUCATION (DEGREE AND SPECIALIZATION) M. S. Construction, ASU, Del E. Webb School of Construction M. S. Civil Engineering, San Jose State University B. S. Geology, University of California at Berkeley		f. PROFESSIONAL TRAINING - REGISTRATIONS Professional Engineer Arizona #27880, California #36659, Solid Waste Association of North American (SWANA) Certified Landfill Manager, 199	
g. OTHER PROFESSIONAL QUALIFICATIONS (Organizations, Awards, etc.) Certified Land Fill & Livestock Project Lead Verifier (2009), California Climate Action Registry. Accredited California Air Resources Board of Greenhouse Gas Verifier. NCEES Certificate #54923.			

**H. RELEVANT PROJECTS**

1.	(1) TITLE AND LOCATION (City and State) Landfill Gas to Energy Project, Glendale Municipal Landfill, Glendale, Arizona	(2) YEAR COMPLETED	
		Professional Services 2013	Construction (if applicable) 2010
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Design/build services to build a landfill gas-to-energy project at the City of Glendale Landfill. Construction of 69 k V substation for Arizona Public Service (APS) and an electrical interconnect to the APS grid. The design of the gas processing and compression skid and a 3,312 square foot concrete building for two Jenbacher J420 GS internal combustion engines.	<input checked="" type="checkbox"/> Check if project performed with current firm	
2.	(1) TITLE AND LOCATION (City and State) Texas Brine Methane Venting System Design, Bayou Corne, Louisiana	(2) YEAR COMPLETED	
		Professional Services 2013-14	Construction (if applicable) N/A
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Design of the methane gas vent wells, piping and treatment systems. Methane gas was trapped in the upper portion of the Mississippi River Alluvial Aquifer. The vent wells consisted of steel casing installed with a sonic drill rig and perforated after installation. The vent wells were logged using geophysical methods to determine the depth of the gas bearing zone prior to perforation. The vented methane was piped to small utility flares for destruction.	<input checked="" type="checkbox"/> Check if project performed with current firm	
3.	(1) TITLE AND LOCATION (City and State) Landfill Gas to Energy Evaluation Report, Skunk Creek Landfill, Phoenix, Arizona	(2) YEAR COMPLETED	
		Professional Services 2013	Construction (if applicable) N/A
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Evaluation of the potential landfill gas to energy projects at the Skunk Creek Landfill. Report included landfill gas generation estimates, an extensive evaluation of the credits and incentives available, options for beneficial use of the gas, air permit considerations, and economic performers.	<input checked="" type="checkbox"/> Check if project performed with current firm	
4.	(1) TITLE AND LOCATION (City and State) Operation and Maintenance of Landfill Gas Management Systems, Phoenix Arizona	(2) YEAR COMPLETED	
		Professional Services 2013	Construction (if applicable) N/A
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Ongoing operation, maintenance, and monitoring of landfill gas extraction and treatment systems at the closed Skunk Creek Landfill (SCLF), the closed 27 <sup>th</sup> Avenue Landfill and flare stations at the closed 19 <sup>th</sup> Avenue Landfill. Overall objectives of the program are to minimize extraordinary expenditures by instituting and following a preventative maintenance program; ensuring that the LFGS is operated in a safe and efficient manner to avoid public complaints, permit violations, marginal or poor performance and excessive cost; and monitoring/tuning gas wells to minimize surface emissions.	<input type="checkbox"/> Check if project performed with current firm	



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**4. Resumes of Key Personnel Proposed for this Contract** (Complete one Section 4 for each key person.)

a. NAME R. Todd Livermore, P.E., CFM, LEED Green Associate	b. ROLE IN THIS CONTRACT Project Engineer	c. YEARS EXPERIENCE	
		1. TOTAL 6	2. WITH CURRENT FIRM 6
d. LOCATION (City and State) Tetra Tech, Inc. (BAS), Phoenix, Arizona			
e. EDUCATION (DEGREE AND SPECIALIZATION) B. S., Civil and Environmental Engineering, Arizona State University M.S., Civil and Environmental Engineering, Arizona State University (In Progress)		f. PROFESSIONAL TRAINING - REGISTRATIONS Professional I Engineer (Civil), Arizona # 49908 Certified Floodplain Manager # 762478, Association of State Floodplain Managers. LEED Green Associate # 10630318, U. S. Green Building Council/Green Building Certification Institute.	
g. OTHER PROFESSIONAL QUALIFICATIONS (Organizations, Awards, etc.)			

**H. RELEVANT PROJECTS**

1.	(1) TITLE AND LOCATION (City and State) Stormwater Planning, Glendale Municipal Landfill, Maricopa County, Arizona	(2) YEAR COMPLETED	
		Professional Services 2010	Construction (if applicable) N/A
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Designed extensive storm water methodology, related facilities and components, to retain on-site surface runoff for future post-closure configuration of the landfill. Prepared many other aspects of the Landfill Master Plan.	<input checked="" type="checkbox"/> Check if project performed with current firm	
2.	(1) TITLE AND LOCATION (City and State) City of Glendale Municipal Landfill, Glendale, Arizona	(2) YEAR COMPLETED	
		Professional Services 2010	Construction (if applicable) N/A
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Prepared a Significant SWFPA for submittal to ADEQ. The Significant SWFPA revised previous alert levels by performing calculations on results which included the most recent rounds of quarterly groundwater monitoring and also changed the period of groundwater monitoring events from quarterly to semi-annually.	<input checked="" type="checkbox"/> Check if project performed with current firm	
3.	(1) TITLE AND LOCATION (City and State) City of Phoenix 27 <sup>th</sup> Avenue Landfill, Phoenix Arizona	(2) YEAR COMPLETED	
		Professional Services 2010	Construction (if applicable) N/A
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Designed an additional landfill gas header and laterals for connection to the existing perimeter landfill gas header. The genesis of the additional gas header and laterals was a conflict between the existing gas laterals and modifications to the entrance road and stormwater basin facilities resulting in the necessary removal of the existing gas laterals.	<input checked="" type="checkbox"/> Check if project performed with current firm	
4.	(1) TITLE AND LOCATION (City and State) City of Eloy Landfill – Landfill Master Plan, Eloy, Arizona	(2) YEAR COMPLETED	
		Professional Services 2010	Construction (if applicable) N/A
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Design of the landfill’s future configuration including future locations of the landfill gas flare station, entrance road, scale house, soil stock-pile area, tire storage area, white goods storage area, refuse fill patterns and sequencing, excavation sequencing and quantification, stormwater detention ponds, interim stormwater controls, site facilities and transfer station; and cost estimate for capital expenditures reflecting total site development and annual development.	<input checked="" type="checkbox"/> Check if project performed with current firm	
5.	(1) TITLE AND LOCATION (City and State) Colorado River Indian Tribes Landfill Closure Plan, Parker, Arizona	(2) YEAR COMPLETED	
		Professional Services 2011	Construction (if applicable) N/A
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Closure plan included a geophysical investigation to determine the limits and depth of waste and a geotechnical investigation of potential borrow sources. On –and – off – site stormwater controls including perimeter berms, perimeter channels, downdrain chutes, and large retention basins doubling as the borrow source were designed for the closure configuration. Erosion control was designed per the stormwater velocities to prevent scouring of the control system.	<input type="checkbox"/> Check if project performed with current firm	



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5. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

(Present no more than five (5) projects. Complete one Section 5 for each project.)

a. TITLE AND LOCATION <i>(City and State)</i> SR85 Landfill, Phoenix, Arizona	b. YEAR COMPLETED	
	PROFESSIONAL SERVICES 2005-2006	CONSTRUCTION <i>(If applicable)</i> N/A

23. PROJECT OWNER'S INFORMATION

c. PROJECT OWNER City of Phoenix	d. ORIGINAL BUDGET/NTE AMOUNT OF PROJECT \$153K	e. TOTAL COST OF PROJECT \$24M
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f. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (include scope, size, and length of project)

Tetra Tech, Inc. (BAS) has been providing planning, design, and construction management services in support of the development of this new landfill facility. This included design and construction oversight for a multi-functional entrance facility featuring scale house, administrative buildings, maintenance facilities, roadways, and drainage improvements. Tetra Tech, Inc. (BAS) is also providing landfill gas master planning and design for the landfill gas extraction and treatment system for the initial refuse disposal cells at the site. The landfill gas collection system (LFGCS) master plan developed by Tetra Tech, Inc. (BAS) will provide the client with the necessary information to more effectively manage landfill gas at the site, schedule construction, and allocate funds for system construction costs. The master plan calls for installation of the LFGCS in phases, and sizing the header and flare station to accommodate mid- to long-term LFG flow rates. The master plan consists of a series of plans depicting the phased expansion of the LFGCS, including project scheduling and cost information. The plan also provides for system expandability so the LFGCS can be easily expanded and extend to accommodate future LOFG flows.



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5. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

(Present no more than five (5) projects. Complete one Section 5 for each project.)

a. TITLE AND LOCATION (City and State) Texas Brine Company, LLC, Belle Rose, Louisiana, 70341	b. YEAR COMPLETED	
	PROFESSIONAL SERVICES 2012	CONSTRUCTION (If applicable) 2014

23. PROJECT OWNER'S INFORMATION

c. PROJECT OWNER Scott Borne, Texas Brine Company, LLC.	d. ORIGINAL BUDGET/NTE AMOUNT OF PROJECT \$3.5M	e. TOTAL COST OF PROJECT \$6M
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g. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (include scope, size, and length of project)

The Louisiana Department of Natural Resources (LDNR), pursuant to the authority granted under Louisiana Revised Statute 30:1, eq seq., and more particularly Louisiana Revised Statute, 30:6.1, issued the Texas Brine Company, L.L.C. (TBC) a Declaration of Emergency. The Declaration of Emergency was related to subsidence that has occurred immediately adjacent to the TBC Oxy Geismar No.3 well site and associated salt cavern. The subsidence resulted in a release of methane gas, in concentrations and pressures that constitute a threat to adjacent/nearby properties of Bayou Corne, Louisiana. The TBC Grand Bayou facility is located in Assumption Parish in southern Louisiana. The facility is operated as a solution mining operation on the Neopoleonville Salt Dome. Tetra Tech, Inc., as TBC's consultant, developed a work plan to abate and remove the natural gas currently in the Mississippi River Alluvial Aquifer (MRAA). The source of the natural gas is attributed to the collapse of the Napoleonville Salt Dome cavern. The work plan involved the installation of natural gas vent wells in the upper MRAA, HDPE piping, and flare stations to destroy the gas. This work plan was approved by LDNR and implemented by Tetra Tech. Venting of the natural gas is ongoing.



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**5. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT**

*(Present no more than five (5) projects. Complete one Section 5 for each project.)*

a. TITLE AND LOCATION <i>(City and State)</i> Glendale Landfill, Glendale, Arizona	b. YEAR COMPLETED	
	PROFESSIONAL SERVICES Current	CONSTRUCTION <i>(If applicable)</i> N/A

**23. PROJECT OWNER'S INFORMATION**

c. PROJECT OWNER City of Glendale	d. ORIGINAL BUDGET/NTE AMOUNT OF PROJECT Various Task Order Contract	e. TOTAL COST OF PROJECT
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**h. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (include scope, size, and length of project)**

Tetra Tech, Inc. (BAS) has been providing on-call landfill engineering support to the City of Glendale since 1999. Services provided have included review and update of the landfill master plan, development of interim fill sequencing plans, and design of improvements to the gas extraction and treatment system to meet NSPS requirements, permitting and ADEQ liaison, and preparation of end-use plans for the site's existing 140-acre footprint. Tetra Tech, Inc. (BAS) was also responsible for preparation of waste volume and composition estimates, waste in-flow growth projections, and air space utilization studies that were used to evaluate the disposal life and remaining capacity of the site. In addition, Tetra Tech, Inc. (BAS) performed a waste compaction analysis based on refuse volumes and annual aerial surveys.

**5. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT**

*(Present no more than five (5) projects. Complete one Section 5 for each project.)*

a. TITLE AND LOCATION <i>(City and State)</i> Colorado River Indian Tribes (CRIT) Parker Dump and CRIT Landfill Closure Plan, Parker, Arizona	b. YEAR COMPLETED	
	PROFESSIONAL SERVICES 2012	CONSTRUCTION <i>(If applicable)</i> N/A

**23. PROJECT OWNER'S INFORMATION**

c. PROJECT OWNER Indian Health Service (IHS)	d. Dollar AMOUNT OF PROJECT \$125K	e. TOTAL COST OF PROJECT
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**i. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (include scope, size, and length of project)**

Under a contract with the Indian Health Service (IHS), Tetra Tech provided engineering services consisting of the preparation of a closure plan including cap design, construction plans and specifications for the Colorado River Indian Tribes (CRIT) Landfill (Landfill) and the Old Parker Dump (Dump) on the CRIT Reservation. The project was a concerted effort involving coordination between CRIT, IHS, United States Environmental Protection Agency (EPA), and Tetra Tech. Topographic mapping of both sides and tying each site's survey control to the IHS monuments was performed. Tetra Tech also performed geophysical surveys in order to estimate the horizontal and vertical extent of waste. In conjunction with representatives from the CRIT and IHS, final cover borrow sources were identified. Soil samples were obtained for each borrow source. After receiving the laboratory test results Tetra Tech modeled several final cover systems. Leachate generation was assessed using the Hydrologic Evaluation of Landfill Performance (HELP) model, version 3.7 and UNSAT-H Version 2.03. Construction level plans, specifications and cost estimates were prepared after the final cover system was selected. The 25-yr, 24-hr storm event was used in conjunction with the United States Army Corps of Engineers (USACE) Hydrologic Engineering Center (HEC) HEC-HMS software program to determine the timing and volume of stormwater required to be retained on-site. On-site stormwater was directed by top deck slopes to perimeter drainage channels and into an overly large retention basin. The retention basin was over-sized because its location is used as the borrow source to be used for fill grading over the waste footprint. Off-site flow for the 25-yr, 24-hr storm event was analyzed using the USACE HEC-HMS software program. It was directed around and prevented from comingling with on-site stormwater through the use of perimeter berms. The construction plans and specifications included current topography, final grading and drainage plans, cross-sections, 25-yr hydrology map, and stormwater control and fencing details.



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5. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

(Present no more than five (5) projects. Complete one Section 5 for each project.)

a. TITLE AND LOCATION (City and State)	b. YEAR COMPLETED	
Sundog Ranch Landfill Final Cap Maintenance and Repairs, Prescott, Arizona	PROFESSIONAL SERVICES 2012-2013	CONSTRUCTION (If applicable) 2014

23. PROJECT OWNER'S INFORMATION

c. PROJECT OWNER City of Prescott	d. ORIGINAL BUDGET/NTE AMOUNT OF PROJECT \$80K	e. TOTAL COST OF PROJECT (TBD)
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j. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (include scope, size, and length of project)

As a design-built project to provide maintenance and repair to the final cap as well as improved stormwater control methodology and structures, Tetra Tech BAS, Inc. (Tt-BAS) obtained current topography, reviewed the Closure Plan and performed an ADEQ file review for the City of Prescott's Sundog Ranch Landfill. Tt-BAS investigated the integrity of the existing Final Cap and evaluated existing stormwater drainage controls. Tt-BAS prepared a design construction package consisting of construction plans having received a constructability review, specifications and quality assurance plan, and an engineer's cost estimate. Bids on the Project are due in December 2013 with construction anticipated in early 2014. The Project will be overseen to completion by Tt-BAS

**6. ADDITIONAL INFORMATION**

a. PROVIDE ANY ADDITIONAL INFORMATION YOU FEEL MAY BE NECESSARY TO DESCRIBE YOUR FIRMS QUALIFICATIONS. (ATTACH ADDITIONAL SHEETS AS NEEDED.)

Tetra Tech BASEngineering & Consulting Services

Tetra Tech BAS is a solid waste, environmental, and civil infrastructure firm with more than 25 years of experience managing landfill and hazardous waste projects for municipal and commercial clients. Tetra Tech BAS supports the full waste management project life cycle, from planning to engineering, construction, and operations and maintenance. Tetra Tech BAS also provides specialized services including landfill gas management, geotechnical consulting, and public infrastructure support services.

Tetra Tech offers the public and private sectors to plan, develop, and operate infrastructure to manage the processing, transferring, recycling, and disposing of solid and hazardous waste. Increasingly, owners and operators of solid waste systems are compelled to implement practices that protect the environment, function economically, and improve sustainability over the long term. Emerging regulations governing greenhouse gas emissions are changing how communities monitor and report their waste processing and disposal practices.

From solid waste facility design and daily on-site support to award-winning end-use planning, Tetra Tech's broad and experienced team complements our corporate resources and financial strength to self-perform projects as an integrated design-build team. Tetra Tech is your partner for practical, sustainable solutions that make best use of available resources.

Our clients require skills in science, engineering, construction, operations, and regulatory compliance. Tetra Tech has the experience and the resources to provide solutions to the most complex solid waste management challenges: planning, permitting, design, and construction.

Planning and Permitting:

- Facility Permits and Regulatory Documents
- Facility Master Plans
- Regulatory Compliance
- Corrective Action Planning
- Economic Feasibility and Cost Benefit Analysis
- Liability Analysis
- Automation Design/Planning
- Risk analysis
- Stormwater Management
- Civil Infrastructure
- Material Recovery Facilities
- Transfer Stations
- Industrial Waste Containment
- Geotechnical Engineering

Landfill Gas Management:

- Air Permitting
- Landfill Gas Wells and Probes
- Extraction and Conveyance Design

- Landfill Gas Treatment
- Condensate Management
- Instrumentation and Controls
- Landfill Gas System Construction
- In Operations Support
- Engine Maintenance
- Landfill Gas to Energy

Construction:

- Excavation and Grading
- Geosynthetics Supply and Installation
- Landfill Gas Management Systems
- Gas Well Drilling
- Landfill Gas Pipelines
- Leachate Management Systems
- Source Containment/Slurry Walls
- Stormwater and Erosion Controls
- CM/CQA

Operations Support:

- Landfill Gas Management System Operation and Maintenance
- Corrective Action System Operation and Maintenance
- Groundwater and Stormwater Monitoring
- Data Evaluation and Reporting
- Closure and Post-Closure Maintenance and Monitoring
- Emergency Response
- Landfill Gas System Assessments
- Landfill Gas Engine Operations and Maintenance

Engineering and Design:

- Landfill Expansion and Optimization
- Fill Sequencing
- Liner and Cover Design
- Leachate Management
- Waste Conversion Planning
- Renewable Energy Evaluation
- Solar Energy Landfill Caps

Sustainability Planning:

- Zero Waste Planning
- Greenhouse Gas Analysis and Verification
- Facility Optimization
- Odor Control
- Sustainability Review



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7. ANNUAL AVERAGE PROFESSIONAL SERVICES REVENUES OF FIRM FOR LAST 3 YEARS

a. Percentage of Total Work Attributable to State, Federal and Municipal Government Work:	80
b. Percentage of Total Work Attributable to Non-Government Work:	20

8. AUTHORIZED REPRESENTATIVE. The foregoing is a statement of facts.

Signature: Will Johnson Date: December 15, 2015

Name: Keith Johnson Title: Senior Engineering Project Manager



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(If a firm has branch offices, complete for each specific branch office seeking work.)

1. **Annual Request for Qualifications**

a. FIRM (OR BRANCH OFFICE ) NAME:	Tetra Tech Inc. (DIV)
b. FIRM (OR BRANCH OFFICE) STREET:	4801 E. Broadway Blvd., Suite 521
c. FIRM (OR BRANCH OFFICE) CITY:	Tucson
d. FIRM (OR BRANCH OFFICE) STATE:	Arizona
e. FIRM (OR BRANCH OFFICE) ZIP CODE:	85711
f. YEAR ESTABLISHED:	1966
(g1). OWNERSHIP - TYPE:	Corporation
(g2). OWNERSHIP - SMALL BUSINESS STATUS:	N/A
h. POINT OF CONTACT NAME AND TITLE:	Doug Lantz, PhD, PE, PH
i. POINT OF CONTACT TELEPHONE NUMBER:	(520) 623-7980
j. POINT OF CONTACT E-MAIL ADDRESS:	doug.lantz@tetrattech.com
k. NAME OF FIRM (If block 1a is a branch office):	Tetra Tech, Inc.



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**2. EMPLOYEES BY DISCIPLINE**

a. Discipline Title	b. Function: Primary (P) or Secondary (S)	c. No. of Employees - Firm	d. No. of Employees - Branch
CADD Technician	P	159	1
Civil Engineer	P	465	4
Environmental Scientist	P	305	1
Hydraulic Engineer	P	151	1
Project Manager	P	1,181	1
Other	P	10,643	4
<b>Total</b>		12,904	12





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**4. Resumes of Key Personnel Proposed for this Contract** (Complete one Section 4 for each key person.)

a. NAME Jonathan Elslager, PE, CFM	b. ROLE IN THIS CONTRACT Civil Engineer	c. YEARS EXPERIENCE	
		1. TOTAL 11	2. WITH CURRENT FIRM 11
d. LOCATION (City and State) Tetra Tech (WTR) - Tucson, Arizona			
e. EDUCATION (DEGREE AND SPECIALIZATION) BS, Civil Engineering, University of Arizona, 2004		f. PROFESSIONAL TRAINING - REGISTRATIONS Professional Civil Engineer, Arizona #49108 Certified Floodplain Manager US-11-06091	
g. OTHER PROFESSIONAL QUALIFICATIONS (Organizations, Awards, etc.)			

Mr. Elslager is professional engineer in Arizona and certified floodplain manager. Mr. Elslager has over 11 years of experience in analysis and design of Water Resource and Flood Control projects including projects in a wide variety of environments across the US. Mr. Elslager's wide range of Hydrologic and Hydraulic experience includes channel, dam and levee design, rehabilitation and certification, stream restoration, scour and sediment transport studies, forensic flooding investigations, Hydrology reports, and FEMA submittals. Mr. Elslager's background is in the utilization of computer/numerical modeling techniques to determine solutions to complex engineering problems in the areas of hydrology, hydraulics, and sediment transport. Mr. Elslager's proficiency in numerous hydrology, hydraulic and sediment transport software programs combined with the added proficiency in the use of GIS and CADD software allow for the graphical integration of numerical modeling results for incorporation into various planning and design documents. Mr. Elslager also has developed final construction documents based on results of computer/numerical modeling including plans and project specifications for projects ranging in size from less than \$10,000 to over \$10 million.

**H. RELEVANT PROJECTS**

1.	(1) TITLE AND LOCATION (City and State) <b>Buckeye Flood Retarding Structure No. 1 Final Design, Maricopa County Flood Control District, Buckeye, Arizona</b>	(2) YEAR COMPLETED	
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Engineer responsible for unsteady HEC-RAS analysis, preparation of construction drawings, special provisions, quantities, and cost estimates for the Phase I and Phase 2A and 2B design. Design included a new Soil-Cement auxiliary spillway and evaluation of the option to use Soil-Cement or RCC to configure a gated closure at the inlet to dam to prevent loss of the floodpool storage in the event of a breached levee in the upstream inlet channel. Design also included the identification of areas that required temporary construction easements to complete the final re-grading of the auxiliary spillway exit channel. During the Design phase an evaluation was also completed of the proposed regional transportation corridors and potential conflict with existing utilities.	Professional Services Ongoing	Construction (if applicable)
<input checked="" type="checkbox"/> Check if project performed with current firm			
2.	(1) TITLE AND LOCATION (City and State) <b>Tucson Drainage Dam Breach Inundation Modeling, Pima County Regional Flood Control, Tucson, AZ</b>	(2) YEAR COMPLETED	
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Project Manager and Engineer responsible for unsteady HEC-RAS and FLO-2D modeling of a series of cascading dam breach scenarios for the Park Avenue Detention Basins 1, 2, and 3, and the Cherry Field Basin. The modeled area was over 3-square miles and included the city center and surrounding metropolitan area.	Professional Services 2014	Construction (if applicable)
<input checked="" type="checkbox"/> Check if project performed with current firm			
3.	(1) TITLE AND LOCATION (City and State) <b>Gravel Pit River Mechanics Study and Headcut Reclamation &amp; Mitigation Design Plans, CEMEX USA Pinal County, Arizona</b>	(2) YEAR COMPLETED	
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Engineer/Project Manager for a river mechanics study that included Hydrologic Analysis, Hydraulic Analysis, detailed Sediment Transport Analysis, Pit Scour Analysis for Sand and Gravel operations on the Queen Creek Wash in Pinal County. Analyses included the use of one-dimensional and two-dimensional hydraulic analyses and Sediment Transport Modeling effort utilizing Fluvial-12. From this analysis Disturbance Mitigation/Restoration Design plans, Quantities and Cost Estimates.	Professional Services 2014	Construction (if applicable)
<input checked="" type="checkbox"/> Check if project performed with current firm			



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**4. Resumes of Key Personnel Proposed for this Contract** *(Complete one Section 4 for each key person.)*

a. NAME Scott Estergard	b. ROLE IN THIS CONTRACT Senior Water Resources Planner	c. YEARS EXPERIENCE	
		1. TOTAL 18	2. WITH CURRENT FIRM 4
d. LOCATION <i>(City and State)</i> Tetra Tech (WTR) - Phoenix, Arizona			
e. EDUCATION <i>(DEGREE AND SPECIALIZATION)</i> MEng – Water Resources		f. PROFESSIONAL TRAINING - REGISTRATIONS	

g. OTHER PROFESSIONAL QUALIFICATIONS *(Organizations, Awards, etc.)*  
 Mr. Estergard has over 18 years of experience in water resource planning and environmental impact assessment. His expertise includes detailed knowledge of aspects of plan formulation and Federal water resource policy with focus in ecosystem restoration and flood risk management. He has led interdisciplinary study teams working with local communities and stakeholder groups to develop, evaluate, and recommend solutions to water resource problems. He has extensive knowledge of developing planning reports of varying types and complexities – Initial Appraisals, Reconnaissance Reports (905(b)), Feasibility Reports, Preliminary Restoration Plans, and Technical Decision Documents and is certified as having completed the USACE Planning Community of Practice requirements as an Expert Planner. For 14 years prior to joining Tetra Tech, Mr. Estergard was with the U.S. Army Corps of Engineers (Los Angeles and Rock Island Districts). Project experience includes watershed studies and feasibility studies addressing flood risk management, ecosystem restoration, groundwater recharge, stream bank stabilization, and navigation.

H. RELEVANT PROJECTS			
1.	(1) TITLE AND LOCATION <i>(City and State)</i> El Rio Medio Ecosystem Restoration Feasibility Study, Pima County, Arizona	(2) YEAR COMPLETED	
		Professional Services Ongoing	Construction (if applicable)
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE Tetra Tech is currently working with the U.S. Army Corps of Engineers- Los Angeles District and Pima County Regional Flood Control District on a feasibility study along the Santa Cruz River. As a senior planner Mr. Estergard has overseen a sensitivity analysis of HEC-RAS modeling, evaluated refinements to restoration alternatives to reduce flood risks, updated cost estimate and design documents, and feasibility report materials.	<input checked="" type="checkbox"/>	Check if project performed with current firm
2.	(1) TITLE AND LOCATION <i>(City and State)</i> Tres Rios del Norte Ecosystem Restoration Feasibility Study, Pima County, Arizona	(2) YEAR COMPLETED	
		Professional Services 2007-2010	Construction (if applicable)
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE Mr. Estergard was the lead planner and study manager from 2008-2010 for this \$7 million feasibility study along an 18-mile, effluent-dominated reach of the Santa Cruz River near Tucson, Arizona. Local sponsors include Pima County, the City of Tucson, and the Town of Marana. The feasibility study is investigating opportunities for ecosystem restoration, water supply, flood risk management and recreation. As lead planner during this time Mr. Estergard was responsible for plan formulation and evaluation, trade off analysis, preparation of the Draft Feasibility Report/DEIS, and overall study coordination and management. The Draft report identifies a combined ecosystem restoration and groundwater recharge plan with recreation features.	<input checked="" type="checkbox"/>	Check if project performed with current firm
3.	(1) TITLE AND LOCATION <i>(City and State)</i> Little Colorado River (LCR) Flood Risk Management Study, Planning Charette, Winslow, Arizona	(2) YEAR COMPLETED	
		Professional Services 2012	Construction (if applicable)
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE Tetra Tech assisted the Corps of Engineers in the facilitation and documentation of a planning charette, and development of post charette reports for LCR at Winslow Study. A 3-day planning charette including nearly 50 stakeholders was held in May 2012. Tetra Tech provided facilitation in brainstorming sessions including planning, design and hydraulic engineering disciplines and developed a Post Charette Report which documents the study objectives and develops a preliminary set of flood risk management alternatives for additional analysis. Measures and alternatives developed in the charette were screened based on available information and conceptual designs and preliminary estimates of cost for each of the remaining alternatives were developed. Alternatives considered included levee rehabilitation, new levees, upstream detention, channelization, and elevation of residential structures. Mr. Estergard was Project Manager and Senior Planner for the project.	<input checked="" type="checkbox"/>	Check if project performed with current firm



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	(1) TITLE AND LOCATION ( <i>City and State</i> ) ADOT Water Quality Manual, Phoenix, Arizona	(2) YEAR COMPLETED	
		Professional Services Ongoing	Construction (if applicable)
4.	(3) BRIEF DESCRIPTION ( <i>Brief scope, size, cost, etc.</i> ) AND SPECIFIC ROLE Tetra Tech is currently under contract to ADOT (Environmental Services) to develop a Water Quality Manual. The manual will combine all water quality related guidance, operation standards, and protocols into a single concise document to provide guidance to ADOT personnel. The manual will include guidance on surface and groundwater requirements, best management practices, legal requirements, and a step by step approach for complying with current policies and regulations.	<input checked="" type="checkbox"/>	Check if project performed with current firm



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a. NAME Doug Lantz, PhD, PE, PH	b. ROLE IN THIS CONTRACT Project Manager/Hydraulic Engineer	c. YEARS EXPERIENCE	
		1. TOTAL 27	2. WITH CURRENT FIRM 18
d. LOCATION ( <i>City and State</i> ) Tetra Tech (WTR) – Phoenix, Arizona			
e. EDUCATION ( <i>DEGREE AND SPECIALIZATION</i> ) PhD Watershed Management, University of Arizona, 1998; MS Watershed Management University of Arizona, 1989; BS Watershed Management, University of Arizona, 1986		f. PROFESSIONAL TRAINING - REGISTRATIONS Professional Engineer: Arizona # 28850 (Also registered in WA, OR, ID, CA, MD, NM and OK) Registered Professional Hydrologist, No. 1479, American Institute of Hydrology, 1998	
g. OTHER PROFESSIONAL QUALIFICATIONS ( <i>Organizations, Awards, etc.</i> ) Mr. Lantz has 27 years of applied project experience in the areas of hydrology, hydraulics, and civil design for flood control, dam rehabilitation. He has been involved in planning and design of NRCS dam rehabilitation in Arizona, New Mexico, Washington, Oregon, Nebraska, and Oklahoma. He is currently managing the NRCS National Design IDIQ (AG-3A75-C-12-0007), the NRCS National Planning IDIQ contract (AG-3A75-S-10-0001) and previously managed a Dam Rehabilitation Planning IDIQ for the Oklahoma State Office (53-7335-6-31), and an A-E Services IDIQ for the New Mexico State Office (53-8C30-03-873).			

**H. RELEVANT PROJECTS**

1.	(1) TITLE AND LOCATION ( <i>City and State</i> ) Buckeye Flood Retarding Structure No. 1 Buckeye, Arizona	(2) YEAR COMPLETED
		Professional Services Ongoing
	(3) BRIEF DESCRIPTION ( <i>Brief scope, size, cost, etc.</i> ) AND SPECIFIC ROLE Tetra Tech is currently under contract with the Flood Control District of Maricopa County to provide design and construction services for Buckeye FRS No. 1, a 7-mile long NRCS assisted dam that provides flood protection for the Town of Buckeye and surrounding agricultural area. Dr. Lantz is Project Manager for a multi-disciplinary team and is responsible for all aspects of the \$2.5 million on-call contract with the District.	<input checked="" type="checkbox"/> Check if project performed with current firm
2.	(1) TITLE AND LOCATION ( <i>City and State</i> ) Florence Flood Retarding Structure Florence, Arizona	(2) YEAR COMPLETED
		Professional Services 2011
	(3) BRIEF DESCRIPTION ( <i>Brief scope, size, cost, etc.</i> ) AND SPECIFIC ROLE Tetra Tech provided planning, design, and preconstruction services to the FAWFCD and the NRCS Arizona State Office for rehabilitation of the Florence FRS, a five-mile long earthen dam that provides flood protection to the Town of Florence, Arizona. Doug was the Project Manager responsible for all aspects of the project including field survey and mapping, hydrology and hydraulics, economics, construction plans, specifications and design report.	<input checked="" type="checkbox"/> Check if project performed with current firm
3.	(1) TITLE AND LOCATION ( <i>City and State</i> ) Tres Rios del Norte Ecosystem Restoration Feasibility Study Pima County, Arizona	(2) YEAR COMPLETED
		Professional Services 2013
	(3) BRIEF DESCRIPTION ( <i>Brief scope, size, cost, etc.</i> ) AND SPECIFIC ROLE The Los Angeles District is conducting feasibility level analyses for ecosystem restoration along an 18-mile, effluent-dominated reach of the Santa Cruz River near Tucson, Arizona. Local sponsors include Pima County, the City of Tucson, and the Town of Marana. The project is evaluating 10 project alternatives with up to 4,000 acres of restoration including cottonwood-willow forest, mesquite-bosque, emergent wetland, and Sonoran scrub-shrub. The project also includes flood damage reduction efforts to protect portions of Interstate 10 from erosion or slope failure in connection with a large gravel pit that could be captured by the river. Dr. Lantz was the Project Manager and Hydraulic Engineer and was responsible for (1) plan formulation to develop, describe, and evaluate alternatives, (2) GIS development and analysis of alternatives to provide inputs for hydrogeomorphic habitat modeling, (3) hydraulic analysis of restoration alternatives using HEC-RAS and GeoRAS, (4) preliminary water budgeting analyses, (5) conceptual design and cost estimating for restoration plantings, water delivery infrastructure, bank protection, grade controls, and impoundment structures for benefit-cost analysis and incremental analyses, (6) coordination with the Corps study team and the local sponsors, and (7) preparation of the feasibility report and appendices for hydraulics, economics, design, and cost estimating.	<input checked="" type="checkbox"/> Check if project performed with current firm



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**Department of Administration**  
**100 North 15<sup>th</sup> Avenue, Suite 201**  
**Phoenix, Arizona 85007**

a. NAME Adam Raczynski, PE, CFM	b. ROLE IN THIS CONTRACT Civil Engineer	c. YEARS EXPERIENCE	
		1. TOTAL 9	2. WITH CURRENT FIRM 9

d. LOCATION (*City and State*)  
Tetra Tech (WTR) – Phoenix, Arizona

e. EDUCATION ( <i>DEGREE AND SPECIALIZATION</i> ) M.S. Civil Engineering, University of Arizona, 2008 B.S. Civil Engineering, University of Arizona, 2007	f. PROFESSIONAL TRAINING - REGISTRATIONS Professional Civil Engineer: Arizona # 52933 Certified Floodplain Manager, US-06-06088
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g. OTHER PROFESSIONAL QUALIFICATIONS (*Organizations, Awards, etc.*)  
 Mr. Raczynski is professional engineering in the state of Arizona. He is also a certified floodplain manager. His principal fields of expertise are water resources; hydrologic/hydraulic analysis and design; and site development, with emphasis in water-distribution systems. Mr. Raczynski also has background and expertise in the use of computer/numerical modeling techniques solve complex engineering problems in the areas of hydrology, hydraulics, and sediment transport. Mr. Raczynski is proficient in numerous software programs including FLO-2D, HEC-RAS, HEC-HMS, HEC-1, and SITES. He also has extensive experience with field survey including both survey-grade and mapping grade global positioning systems (GPS).

**H. RELEVANT PROJECTS**

1.	(1) TITLE AND LOCATION ( <i>City and State</i> ) Buckeye Flood Retarding Structure No. 1, Final Design, Flood Control District of Maricopa County, Buckeye, Arizona	(2) YEAR COMPLETED	
		Professional Services Ongoing	Construction (if applicable)
	(3) BRIEF DESCRIPTION ( <i>Brief scope, size, cost, etc.</i> ) AND SPECIFIC ROLE Project engineer responsible for updating previously developed HEC-1 modeling to evaluate the site specific PMP at FRS No. 1. Work included a separate spreadsheet analysis of the Green & Ampt loss method for shallow soils in mountainous sections of the watershed. Additional work included unsteady flood routing (HEC-RAS), auxiliary spillway integrity analysis (SITES), civil design, and cost estimating.	<input checked="" type="checkbox"/> Check if project performed with current firm	
2.	(1) TITLE AND LOCATION ( <i>City and State</i> ) San Xavier Flood Hazard Study, Indian Health Service Tucson, Arizona	(2) YEAR COMPLETED	
		Professional Services 2014	Construction (if applicable)
	(3) BRIEF DESCRIPTION ( <i>Brief scope, size, cost, etc.</i> ) AND SPECIFIC ROLE Project Manager. The intent of the study is to identify and quantify the potential for flooding and erosion hazards along the Santa Cruz River and major washes caused by a 100-year flood and by a 500-year floods. Additional work includes quantifying the likelihood of potential damage to existing critical facilities by future floods and conceptually quantifying the design measures that are needed to mitigate such damage.	<input checked="" type="checkbox"/> Check if project performed with current firm	
3.	(1) TITLE AND LOCATION ( <i>City and State</i> ) United States Army Corps of Engineers Periodic Levee Inspection, Albuquerque, Chicago, and Huntington District	(2) YEAR COMPLETED	
		Professional Services 2009-2014	Construction (if applicable)
	(3) BRIEF DESCRIPTION ( <i>Brief scope, size, cost, etc.</i> ) AND SPECIFIC ROLE Performed field investigation, hydrologic and hydraulic investigation, and data collection/organization for the Periodic Levee Inspections in Arizona, California, Colorado, Indiana, Illinois, Kentucky, New Mexico, West Virginia for the United States Army Corps of Engineers. The inspections included design and as-built condition reviews, field investigation of existing levee conditions, and determining the level of protection provided by the levee. The investigation included the use of the Levee Inspection System (LIS) ArcGIS Extension and mapping grade GPS.	<input checked="" type="checkbox"/> Check if project performed with current firm	
4.	(1) TITLE AND LOCATION ( <i>City and State</i> ) Floodplain Analysis Rio Nuevo CLOMR/LOMR-F/LOMR Tucson, Arizona	(2) YEAR COMPLETED	
		Professional Services Ongoing	Construction (if applicable)
	(3) BRIEF DESCRIPTION ( <i>Brief scope, size, cost, etc.</i> ) AND SPECIFIC ROLE Design Engineer. Prepared a CLOMR for Rio Nuevo and letter of map revision for fill (LOMR-F) for the Gadsden Property within the Rio Nuevo site. The work included preparation of hydraulic analyses of existing conditions and the effects of the proposed fill of the University of Arizona Science Center, construction of the Cushing Street Bridge, floodwall for the River Park Inn (with adjacent properties), and fill at the Gadsden Property along the Santa Cruz River. Currently preparing a LOMR for the as-built conditions constructed Cushing Street Bridge, floodwall, and fill. The work includes the compilation of all required technical documentation for submittal to FEMA.	<input checked="" type="checkbox"/> Check if project performed with current firm	



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**Department of Administration**  
**100 North 15<sup>th</sup> Avenue, Suite 201**  
**Phoenix, Arizona 85007**

**5. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT**

*(Present no more than five (5) projects. Complete one Section 5 for each project.)*

a. TITLE AND LOCATION <i>(City and State)</i> <b>Buckeye Flood Retarding Structure No. 1 Rehabilitation Project</b> Maricopa County, Arizona	b. YEAR COMPLETED	
	PROFESSIONAL SERVICES Ongoing	CONSTRUCTION <i>(If applicable)</i> 2014

**23. PROJECT OWNER'S INFORMATION**

c. PROJECT OWNER Flood Control District of Maricopa County	d. ORIGINAL BUDGET/NTE AMOUNT OF PROJECT	e. TOTAL COST OF PROJECT
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f. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT *(include scope, size, and length of project)*

Buckeye FRS No. 1 is a 7.1-mile-long, earthen embankment dam that is classified as an unsafe/deficient, high-hazard dam by the Arizona Department of Water Resources (ADWR) due to the presence of transverse cracks and an inability to safely pass the inflow design flood. Tetra Tech is the prime consultant for a multi-disciplinary team that is providing services to the Flood Control District of Maricopa County under a \$2.8-million on-call contract (FCD 2009C005) awarded in 2009. The design and construction services for Buckeye FRS No. 1 are briefly summarized below:



**Phase 1 central filter trenching and placing filter**

Design Criteria Report, Geotechnical and H/H Appraisal Reports, site-specific PMP analysis, geotechnical investigations, and alternatives analysis for transportation issues and principal outlet modifications. Completed November 2011.

Geotechnical/geophysical investigations and analyses; preliminary hydrology and hydraulics, SITES integrity and alternatives analyses for auxiliary spillway revetment. Completed in December 2011.

Seismic reflection surveys to further evaluate geologic hazards. Completed September 2012

Geophysical investigations (seismic refraction) and analysis to evaluate the potential for geologic hazards including subsidence and earth fissuring. Completed April 2013.

Phase 1 final design, including hydrology and hydraulics, freeboard analyses, embankment and foundation design, filter design, plans, specifications, quantities takeoffs, design report and ADWR permitting for the initial 2-mile-long section of the dam. Phase 1 includes a 48-foot-deep central filter, access ramps, removal of a pipe penetration, and hydroseed and locally obtained rock mulch on embankment slopes. Completed December 2013.



**Phase 1 at completion**

Phase 1 construction services: foundation inspection, engineering during construction, as-built drawings, and construction report. Completed October 2015.

Phase 2A final design for the remaining 5-mile-long section of earthen embankment. Features include a central filter, dam raise, access ramps, removal of a pipe penetration, hydroseed, and rock mulch, and landscape restoration. Completed October 2015.

Phase 2B final design for principal spillway inlet structure replacement, auxiliary spillway grade control structure and bank protection, east end closure structure and landscape restoration. Ongoing.

Contract Value for Work Assignments to date: \$3.63 million



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**5. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT**

*(Present no more than five (5) projects. Complete one Section 5 for each project.)*

a. TITLE AND LOCATION <i>(City and State)</i> <b>Florence Flood Retarding Structure, Planning and Design</b> Florence, Arizona	b. YEAR COMPLETED	
	PROFESSIONAL SERVICES 2010	CONSTRUCTION <i>(If applicable)</i> 2010

**23. PROJECT OWNER'S INFORMATION**

c. PROJECT OWNER Florence Area Watershed Flood Control District, NRCS Arizona State Office	d. ORIGINAL BUDGET/NTE AMOUNT OF PROJECT \$527,000	e. TOTAL COST OF PROJECT \$527,000
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f. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT *(include scope, size, and length of project)*

Tetra Tech prepared planning studies, preliminary design studies, and final design for the Florence Flood Retarding Structure for the NRCS Arizona State Office and the Florence Area Watershed Flood Control District (FAWFCD).

**Planning:** The planning level work included development and analysis of alternatives to decommission or rehabilitate an existing 5-mile-long, 25-foot-high earthen dam that provides flood control to the Town of Florence, Arizona and surrounding agricultural areas. Tasks included work plan development, public involvement, site-specific PMP analyses, geotechnical analysis, hydrology, hydraulics, design, cost estimating, economics, Landrights Workmap, and preparation of the Supplemental Watershed Plan/Environmental Assessment (Plan/EA). Hydrologic analyses included the principal spillway hydrograph, stability design hydrograph, and freeboard hydrograph in accordance with TR-60. Environmental analyses included a biologic assessment, impacts of alternatives, and preparation of the Environmental Assessment (EA) in accordance with NEPA requirements. Tetra Tech prepared a public participation plan and organized/facilitated public meetings during the feasibility phase.



**Preliminary Design:** Tasks under preliminary design included field survey and photogrammetry, revised hydrologic analyses and flood routing, and coordination with the NRCS for geotechnical investigations, and geotechnical analysis. This phase also included transposition of the results from a nearby site-specific probable maximum precipitation study for use at Florence. Hydrologic modeling included SITES and WinTR-20. Hydraulic analysis included 1-dimensional unsteady routing using HEC-RAS and 2-dimensional routing using FLO-2D. Tetra Tech conducted auxiliary spillway stability and integrity analyses in accordance with NRCS criteria using the earthen spillway erosion technology in the SITES program. The recommended rehabilitation plan includes a soil-cement sill to prevent headcutting and erosion in the auxiliary spillway, and placement of riprap along the face of the dam to prevent toe erosion from auxiliary spillway flows.

**Final Design:** Tetra Tech completed the final design phase that included construction drawings (AutoCAD), material and construction specifications based NRCS national standards, Design Engineer's Report, bid schedule, cost estimates, construction performance time estimate, O&M Manual, jurisdictional delineation, and permit applications. The estimated construction cost was \$2.2 million. The design was reviewed and approved by the NRCS at the state and national level, and was also approved by the Arizona Department of Water Resources (ADWR) – Dam Safety Bureau. Tetra Tech provided preconstruction services, including review of contract documents, responses to contractor requests for information, and bidding support.

**Data Review, Hydrology & Hydraulic Revisions, Recommendations & Alternatives:** Tetra Tech has been contracted by the NRCS to collect, review and evaluate existing and pertinent data and reports, revise the hydrology and hydraulics using the latest rainfall information, identify missing or incomplete data, and recommend design alternatives to fully rehabilitate the Florence FRS. This work assignment includes conducting a Failure Modes and Effect Analysis (FMEA) workshop.

Contract Value: Planning - \$207,000; Preliminary Design – \$175,000; Final Design - \$145,000; Hydrology and Hydraulic Revisions, Recommendations & Alternatives - \$202,000



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Phoenix, Arizona 85007**

**5. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT**

*(Present no more than five (5) projects. Complete one Section 5 for each project.)*

a. TITLE AND LOCATION <i>(City and State)</i> <b>Tres Rios del Norte Restoration Study</b> Pima County, Arizona	b. YEAR COMPLETED	
	PROFESSIONAL SERVICES 2013	CONSTRUCTION <i>(If applicable)</i>

**23. PROJECT OWNER'S INFORMATION**

c. PROJECT OWNER U.S. Army Corps of Engineers LA District – Phoenix Office	d. ORIGINAL BUDGET/NTE AMOUNT OF PROJECT \$1,508, 450	e. TOTAL COST OF PROJECT
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**g. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT** (include scope, size, and length of project)

The Tres Rios del Norte Ecosystem Restoration study is a joint partnership between the U.S. Army Corps of Engineers, the City of Tucson, the Town of Marana, and the Pima County Regional Flood Control District. Because of severe ecosystem degradation, the sponsors of the study wished to restore habitat values along an 18-mile, effluent-dominated reach of the Santa Cruz River that runs through Tucson, Marana, and unincorporated Pima County. The study also addresses many water and related land resource issues, such as flood damage reduction, water supply, and recreation within the floodplain and riparian zone of this important river corridor.

The study considered 10 project alternatives with as many as 4,000 acres of ecosystem restoration that includes cottonwood-willow forest, mesquite-bosque, emergent wetland, and Sonoran riparian scrub-shrub habitat types. The alternatives were evaluated on the basis of environmental outputs and estimated costs, and a Recommended Plan with 1,360 acres of restored habitat was selected. The study includes a water supply plan that will provide features such as basins, multiple channels, and t-berms for recharge of treated effluent into the riverbed. The study also includes grade controls, levee modifications, and structural bank protection to accommodate the increased vegetation and to prevent flood and erosion damages to the proposed project. As well as a comprehensive recreation plan that includes parks, river trails, bridge crossings over rivers, tributaries and roads, and interpretive signage.

Tetra Tech, Inc. provided planning and engineering services in support of the feasibility study under contract to the Los Angeles District.

**Plan Formulation Services** Plan formulation kicked-off with a series of inter-agency workshops that included the Corps, the local sponsors, the U.S. Fish and Wildlife Service, the Arizona Department of Game and Fish, and Saguaro National Park. The workshops were held to gain local input on proposed alternatives and measures for ecosystem restoration, water supply, recreation, and flood damage reduction. Tetra Tech facilitated the workshops and the collected information was used to develop and describe restoration alternatives that were evaluated by the Engineer Research and Development Center (ERDC) on the basis habitat output (using HGM) and conceptual cost estimates. Formulation of the Recommended Plan required development of a restoration plan (NER), a recreation plan (NED), and a water supply plan (NED). The individual plans were then combined into a comprehensive Combined Plan (NER/NED) that was evaluated in terms of incremental restoration benefits, NED benefits, and by means of a trade off trade off analysis between the two.

**Hydrologic and Hydraulic Services** Tetra Tech provided expert hydrologic, hydraulic, and sediment transport consulting services to ensure that a balance is achieved between water availability, long-term domestic and municipal needs, flood issues, long term sediment transport impacts, groundwater interactions and recharge opportunities, and ecosystem water needs. The effort included hydraulic analysis of restoration alternatives using HEC-RAS and GeoRAS, water budgeting analyses, and inputs to groundwater modeling being done by the Los Angeles District.

**Conceptual Design and Cost Estimating** Tetra Tech prepared conceptual designs and cost estimates for restoration plantings, water delivery infrastructure, bank protection, levee modifications, grade controls, and impoundment structures for incremental evaluation of the 10 alternatives. Tetra Tech also prepared conceptual designs for recreation features such as underpass ramps, bridge crossings, trailheads, and interpretive signs; and water supply features such as recharge basins, in channel t-berms, multiple low flow systems, and inflatable rubber dams. The cost estimate for the Recommended Plan was prepared using MCACES and include comprehensive estimates for restoration plan (NER), recreation plan (NED), water supply plan (NED), and the Combined NER/NED plan.

**Geographical Information System (GIS)** The GIS component is a critical tool in the plan formulation and selection process. Tetra Tech developed and maintained GIS databases for each alternative using a broad series of land-use, ecosystem restoration features, and habitat area maps. The GIS database for the Recommended Plan includes existing and proposed habitat features; existing and proposed structural features including as bank protection, levee modifications, and grade controls; proposed recreation features; and proposed water supply



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features. The GIS component has also been an important tool in evaluating and mitigating floodplain impacts from proposed alternatives.

**Report Preparation** Tetra Tech completed the Alternative Formulation Briefing (AFB) Feasibility Report and technical appendices for hydraulics, design, and cost estimating and participated in the AFB Conference with the Los Angeles District, South Pacific Division (SPD), and Headquarters Tetra Tech assisted the Los Angeles District in responding to review comments from the South Pacific Division and Headquarters and is currently working towards completion of the Draft Feasibility Report and associated appendices for public and agency review. The documents will be used by the sponsors and watershed stakeholders to make decisions regarding plan selection and trade-offs.

**Coordination** Tetra Tech coordinated with an inter-disciplinary study team that included Los Angeles District personnel, local sponsors, agencies, and consultants. Tetra Tech assisted the Los Angeles District in more than 40 local sponsor coordination meetings for plan formulation, coordination, and review of products. In each of these meetings, Tetra Tech worked with the District on the agenda, provided technical information for discussion and review, and provided written notes for meeting documentation.



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**5. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT**

*(Present no more than five (5) projects. Complete one Section 5 for each project.)*

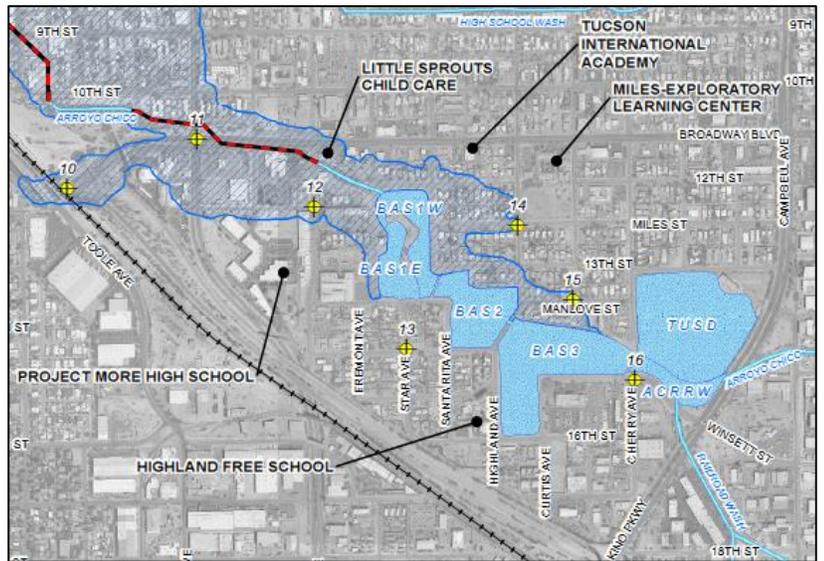
a. TITLE AND LOCATION <i>(City and State)</i> <b>Tucson Drainage Dam Breach and Inundation Mapping</b> Tucson, Arizona	b. YEAR COMPLETED	
	PROFESSIONAL SERVICES 2014	CONSTRUCTION <i>(If applicable)</i>

**23. PROJECT OWNER'S INFORMATION**

c. PROJECT OWNER Pima County Regional Flood Control District, AZ	d. ORIGINAL BUDGET/NTE AMOUNT OF PROJECT \$26,066	e. TOTAL COST OF PROJECT \$26,066
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h. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (include scope, size, and length of project)

Tetra Tech prepared dam breach analyses and inundation mapping for the Tucson Drainage Area - Park Avenue Detention Basin complex under contract to the Pima County Regional Flood Control District (PCRFCD). The complex includes three inline basins (Basin 1, Basin 2, and Basin 3) along Arroyo Chico between Park Avenue and Cherry Avenue, and one offline basin located in Tucson Unified School District's (TUSD) Cherry Field. Basins 1, 2, and 3 are defined by four embankments that are classified as high-hazard jurisdictional dams by the Arizona Department of Water Resources (ADWR). An Emergency Action Plan (EAP) for the detention basin complex is required under Arizona Administrative Code (AAC) R12-15-1221. In accordance with ADWR guidelines, inundation maps were developed for the sunny-day breach, a significant spillway event, and the inflow design flood (see note 1) with a breach.



In the sunny-day event, the four in-line embankments were breached sequentially from upstream to downstream with water surface elevations set at the crest of the emergency spillways. For the inflow design flood, the embankments were breached from upstream to downstream as each of the basins filled and reached the maximum water-surface elevation. The breach analyses were performed using the Advanced Interconnected Channel and Pond Routing (AdICPR) model for quasi-unsteady flow. Breach parameters for each of the four embankments were estimated using the National Weather Service BREACH model. The resulting dam-breach hydrographs were initially routed using 1-dimensional unsteady flow methods (HEC-RAS) but the final product was based on a 2-dimensional analysis (FLO-2D) that better represented the sheet flow and backwater effects through the urban area. Flood Inundation maps for inclusion in the EAP were developed for a 2-mile-long section of urban Tucson between the Park Avenue Detention Basin and Interstate-10. They included the inundation areas, locations of schools and day-care centers, and a table of hydraulic parameters (maximum flow depth, time to maximum flow depth, and maximum velocity) at key locations. A separate set of working maps with topographic contours and maximum water-surface elevation contours were prepared for use by the District.

*Note 1) In 2004, Tetra Tech prepared an incremental damage assessment for the Park Avenue Detention Basin and determined that the Inflow Design Flood (IDF) could be based on the USACE's Standard Project Flood (SPF) in lieu of the PMF. The incremental damage assessment was reviewed and approved by ADWR and the SPF was used as the basis of design for the detention basin complex.*



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**5. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT**

*(Present no more than five (5) projects. Complete one Section 5 for each project.)*

a. TITLE AND LOCATION <i>(City and State)</i> <b>Design of Queen Creek Channel Mitigation Measures</b> Pinal County, Arizona	b. YEAR COMPLETED	
	PROFESSIONAL SERVICES 2004-2013	CONSTRUCTION <i>(If applicable)</i> 2013

**23. PROJECT OWNER'S INFORMATION**

c. PROJECT OWNER CEMEX	d. ORIGINAL BUDGET/NTE AMOUNT OF PROJECT \$221,600	e. TOTAL COST OF PROJECT \$221,600
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f. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (include scope, size, and length of project)



In February of 2005 a high-flow runoff event of extremely long duration compromised the structural integrity of the Schnepf Road Bridge over Queen Creek, located in Pinal County, Arizona just upstream of the in-stream sand and gravel pit. Subsequent to that flow event, the bridge was considered unsafe and was condemned by Pinal County. In May 2007, Tetra Tech prepared a River Mechanics Study which included Hydrology, HEC-RAS and FLO-2D hydraulics and sediment transport modeling for the study reach of Queen Creek which documented the potential for an existing headcut to propagate from downstream of Schnepf Road upstream toward the Schnepf Road Bridge crossing. Subsequent flow events exacerbated the headcutting, creating a low-flow dominant-discharge channel which had somewhat abruptly migrated towards the Schnepf Road Bridge crossing.

As a part of a legal agreement between local sand-and-gravel operators and Pinal County, CEMEX hired Tetra Tech to design a channel improvement that would mitigate further potential for lateral channel migration or additional vertical profile changes along Queen Creek, west of Schnepf Road. In 2009, on behalf of CEMEX, Tetra Tech prepared four alternatives that would provide the necessary level of protection to safeguard the newly constructed RCBCs at Schnepf Road.

The preferred alternative, selected by all stakeholders, was the construction of a concrete-lined channel, extending downstream from Schnepf Road and terminating with an articulated concrete block revetment spillway at the upstream brink of the CEMEX legacy pit. This alternative was selected because it was felt that it would provide the most reliable design, from a cost and long-term functionality standpoint. After detailed analysis of the preferred alternative, a concrete lining was chosen as the most cost effective and efficient lining material for the channel, and because of the fluctuating water levels in the downstream pit an articulated concrete block revetment was chosen as the appropriate materials for constructing the termination structure. Completion of construction was completed in 2014. Since completed, the improvements will prevent future degradation, headcutting, and lateral bank migration along the project reach of Queen Creek.





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**Phoenix, Arizona 85007**

**6. ADDITIONAL INFORMATION**

**a. PROVIDE ANY ADDITIONAL INFORMATION YOU FEEL MAY BE NECESSARY TO DESCRIBE YOUR FIRMS QUALIFICATIONS. (ATTACH ADDITIONAL SHEETS AS NEEDED.)**

**Tetra Tech (WTR)**

The WTR group is known for their development of new techniques for risk assessment and contaminant transport, developing the cutting edge water models and IT systems used worldwide, producing innovative designs for river geomorphology, dam and levee design and flood protection, and supporting a science-based approach to water quality policy across the U.S

**Introduction to Tetra Tech**

Based in Pasadena, CA, Tetra Tech is a full-service engineering and science firm with a substantial global presence. We help our clients conceptualize and execute innovative solutions to their most difficult problems. From front-end science and planning to design, construction management and operations, Tetra Tech's global service network, facilitated by our Initiatives program that coordinates resources for specific markets and provides best-in-class experts with worldwide project experience. They deliver a high level of integrated services for the full project life-cycle in five service areas: water, natural resources, the environment, infrastructure, and energy. ENR magazine ranks Tetra Tech a national and international leader in several markets.

**Tetra Tech' Global Reach**

Tetra Tech has offices and operational infrastructure throughout the United States, Canada, and abroad. With 14,000 employees at 330 offices in more than 120 countries on six continents, Tetra Tech's technical knowledge and hands-on site work is broad and deep. Our staff is supported by a uniform administrative and management system that project teams can access immediately to ensure work is completed effectively.

Tetra Tech has expanded its geographic presence significantly in recent years through strategic acquisitions and internal growth, especially in Canada, Latin America, and Australia. We also have considerable operations in Asia, Europe, and the Middle East.

**ENR** Tetra Tech Rankings  
 Engineering News-Record

- 1** Water
- 1** Environmental Management
- 1** Environmental Science
- 1** Solid Waste
- 1** Treatment/Desalination
- 1** Wind Power
- 5** Hazardous Waste
- 7** Design Firms

**7. ANNUAL AVERAGE PROFESSIONAL SERVICES REVENUES OF FIRM FOR LAST 3 YEARS**

a. Percentage of Total Work Attributable to State, Federal and Municipal Government Work:	54
b. Percentage of Total Work Attributable to Non-Government Work:	46

**8. AUTHORIZED REPRESENTATIVE. The foregoing is a statement of facts.**

Signature: 

Date: December 16, 2015

Name: Ike Pace, PE Title: Regional Office Manager



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(If a firm has branch offices, complete for each specific branch office seeking work.)

1. **Annual Request for Qualifications**

a. FIRM (OR BRANCH OFFICE ) NAME:	Tetra Tech, Inc.
b. FIRM (OR BRANCH OFFICE) STREET:	3822 East University Drive, Suite 3
c. FIRM (OR BRANCH OFFICE) CITY:	Phoenix
d. FIRM (OR BRANCH OFFICE) STATE:	Arizona
e. FIRM (OR BRANCH OFFICE) ZIP CODE:	85034

f. YEAR ESTABLISHED:	1966
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(g1). OWNERSHIP - TYPE:	Corporation
(g2) OWNERSHIP - SMALL BUSINESS STATUS:	No

h. POINT OF CONTACT NAME AND TITLE:	Christopher L. Jacquemin, P.E. Senior Engineer
i. POINT OF CONTACT TELEPHONE NUMBER:	602-682-3300, ext. 116
j. POINT OF CONTACT E-MAIL ADDRESS:	Chris.jacquemin@tetrattech.com

k. NAME OF FIRM (If block 1a is a branch office):	Tetra Tech, Inc.
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**ATTACHMENT I – General Qualifications**  
**ANNUAL REQUEST FOR QUALIFICATIONS AND EXPERIENCE NO:**  
**ADSP016-00005912**

**STATE PROCUREMENT OFFICE**  
**Department of Administration**  
**100 North 15<sup>th</sup> Avenue, Suite 201**  
**Phoenix, Arizona 85007**

**4. Resumes of Key Personnel Proposed for this Contract (Complete one Section #4 for each key person.)**

a. NAME  Christopher L. Jacquemin, P.E.	b. ROLE IN THIS CONTRACT  Senior Engineer/Project Manager	c. YEARS EXPERIENCE	
		1. TOTAL 36	2. WITH CURRENT FIRM 2
d. LOCATION (City and State) <i>Phoenix, Arizona</i>			
e. EDUCATION (DEGREE AND SPECIALIZATION) B.S. – Civil Engineering, Arizona State University, 1979		f. PROFESSIONAL TRAINING – REGISTRATIONS Arizona Professional Engineer Civil (16984) and Environmental (33809) Board Certified Environmental Engineer – ASEES	
g. OTHER PROFESSIONAL QUALIFICATIONS (Organizations, Awards, etc.) OSHA 40 hour HAZWOPER, Frist Aid, CPR			

**H. RELEVANT PROJECTS**

1.	(1) TITLE AND LOCATION (City and State) UST Removal Program, Various Locations in Arizona	(2) YEAR COMPLETED	
		Professional Services 2015	Construction (if applicable)
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Directed and managed the removal and closure of underground storage tank systems at nine storage and equipment yards in Arizona. At each facility, soil samples were obtained to evaluate for releases from the tanks or product piping. Closure Assessment Reports were prepared and submitted to the Arizona Department of Environmental Quality.	<input type="checkbox"/> Check if project performed with current firm	
2.	(1) TITLE AND LOCATION (City and State) Teds Truck Stop, Quartzsite, Arizona	(2) YEAR COMPLETED	
		Professional Services On-going	Construction (if applicable)
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Directed and managed corrective actions at this former fuel station where multiple releases had occurred. Corrective actions included drilling and sampling confirmation soil borings; installing five off-site groundwater monitoring wells; installing eight ozone-sparge wells; constructing a remedial equipment compound; installing underground piping; connecting the new ozone-sparge wells to a trailer mounted ozone generator; arranging for new electric service and connecting the ozone generator to the new service panel; and providing operation and maintenance of the ozone system. Services included abandoning 43 existing remediation and groundwater monitoring wells. The new wells and remedial system were completed and made operational, the existing wells were abandoned, and one round of groundwater monitoring was completed in less than two months. Mr. Jacquemin also directed decommissioning and salvaging of an unused remedial system that included a soil vapor extraction (SVE) system; an ozone injection system; a groundwater pump and treat (WTP) system; and other ancillary components such as instrumentation; plumbing, electrical and control systems; air compressor; soil/water separator; tanks; granular activated carbon; drums; and waste debris. Salvageable items were segregated and transported to a surplus property yard.	<input type="checkbox"/> Check if project performed with current firm	
3.	(1) TITLE AND LOCATION (City and State) 19 <sup>th</sup> Avenue Landfill, Phoenix, Arizona	(2) YEAR COMPLETED	
		Professional Services On-going	Construction (if applicable)
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Directed and managed post closure services to comply with results of a five-year review. Reviewed existing operation and maintenance activities; reviewed the Consent Decree for landfill closure and its amendments; and prepared an up-dated Operation and Maintenance Manual for use by City personnel. Provided technical oversight of annual landfill inspections to evaluate compliance with requirements of Declaration of Environmental Use Restriction implemented as part of landfill closure. Managed rehabilitation of nine wells used to monitor groundwater conditions at and in the vicinity of the landfill. Directed an evaluation of groundwater to address an Exceedance Condition for high sulfate, thallium, and nickel concentrations and prepared Exceedance Reports for submittal to regulatory agencies.	<input type="checkbox"/> Check if project performed with current firm	



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Check if project performed with current firm

(1) TITLE AND LOCATION (*City and State*)  
Needle Vista View Point, Maricopa County, Arizona:

(2) YEAR COMPLETED

Professional Services 2015	Construction (if applicable)
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4. (3) BRIEF DESCRIPTION (*Brief scope, size, cost, etc.*) AND SPECIFIC ROLE  
Coordinated and directed the abandonment of five groundwater monitoring wells located on undeveloped US Forest Service property near a state highway. Coordinated with client and Forest Service to provide fire suppression capabilities during abandonment due to high risk for fire in natural desert environment. Managed field work to protect indigenous plant life in area near a scenic outlook off state highway. Field work was complete in one day with no incidents.

Check if project performed with current firm

(1) TITLE AND LOCATION (*City and State*)  
20<sup>th</sup> and Factor WQARF Site, Yuma, Arizona

(2) YEAR COMPLETED

Professional Services 2014	Construction (if applicable)
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5. (3) BRIEF DESCRIPTION (*Brief scope, size, cost, etc.*) AND SPECIFIC ROLE  
Managed preparation of the final documents for remedial investigation efforts at a former film manufacturing facility with chlorinated solvent and cyanide contamination. Directed the preparation of the Declaration of Environmental Use Restriction (DEUR) and the Engineering Control Plan for a final remedy concerning cyanide in near surface soils. The final remedy for near-surface soil included removal of approximately one foot of impacted soil and placement of an asphalt pavement cap. Provided principal-level review of Remedial Investigation report. Designed and managed installation of seven new soil vapor monitoring wells (SVMWs), and directed the sampling of 25 SVMWs to evaluation vapor intrusion in a residentially developed area overlying the contaminant plume.

Check if project performed with current firm



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**Phoenix, Arizona 85007**

**4. Resumes of Key Personnel Proposed for this Contract (Complete one Section 4 for each key person.)**

a. NAME Scott Parsons	b. ROLE IN THIS CONTRACT Principal Engineer	c. YEARS EXPERIENCE	
		1. TOTAL 31	2. WITH CURRENT FIRM 17
d. LOCATION (City and State) Tetra Tech , Phoenix, Arizona			
e. EDUCATION (DEGREE AND SPECIALIZATION) MBA, Business Administration, California State University, Long Beach, 1995.  B.S., Mechanical Engineering, University of New Hampshire, Durham, New Hampshire, 1982.		f. PROFESSIONAL TRAINING - REGISTRATIONS	
g. OTHER PROFESSIONAL QUALIFICATIONS (Organizations, Awards, etc.) OSHA 40 hour HAZWOPER, Frist Aid, CPR			

H. RELEVANT PROJECTS			
1.	(1) TITLE AND LOCATION (City and State) United Technologies Corporation, Puente Valley Operable Unit	(2) YEAR COMPLETED	
		Professional Services On-going	Construction (if applicable) N/A
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Remedial Design and Remedial Action for the PVOU shallow zone remedy. Responsible for the design and implementation of 1,500 gpm extraction system that includes 10 extraction wells, over 3 miles of pipeline in the public right-of-way, advanced oxidation, granular activated carbon, and ion exchange.	<input checked="" type="checkbox"/>	Check if project performed with current firm
2.	(1) TITLE AND LOCATION (City and State) Carrier Corporation, City of Industry, California	(2) YEAR COMPLETED	
		Professional Services 2013	Construction (if applicable) N/A
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Operating and maintaining an integrated groundwater extraction system and soil vapor extraction system. Implemented cost saving measures that have resulted in savings of approximately \$200,000 per year including reducing sampling frequency, eliminating onsite carbon regeneration system, reducing labor, and discontinuing operation of a UV oxidation vapor treatment system.	<input checked="" type="checkbox"/>	Check if project performed with current firm
3.	(1) TITLE AND LOCATION (City and State) Los Angeles Unified School District, Los Angeles, California	(2) YEAR COMPLETED	
		Professional Services 2008	Construction (if applicable) N/A
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Removal Action to support the construction of Central Regional Elementary School No. 16. A total of approximately 2,100 tons of soil were excavated and transported offsite for disposal as RCRA hazardous waste and non-RCRA hazardous waste. Approximately 75 post-excavation bottom confirmation samples and 200 sidewall confirmation samples were collected and analyzed for lead and arsenic to confirm that DTSC-approved remedial action objectives had been achieved. The DTSC issued a No Further Action Letter approving school construction after reviewing the Removal Action Completion Report.	<input checked="" type="checkbox"/>	Check if project performed with current firm
4.	(1) TITLE AND LOCATION (City and State) Los Angeles Unified School District, Los Angeles, California	(2) YEAR COMPLETED	
		Professional Services 2008	Construction (if applicable) N/A



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	<p>(3) BRIEF DESCRIPTION (<i>Brief scope, size, cost, etc.</i>) AND SPECIFIC ROLE Remedial Action Plan and Remedial Design Document for Central Regional Middle School No. 7. The DTSC-approved remedial action included excavation of approximately 100,000 cubic yards of VOC-impacted soil, post excavations soil-matrix and soil vapor confirmation sampling, and contingent soil vapor extraction. The RAP, which was approved by the DTSC, included a sampling and analysis plan, quality assurance project plan, health and safety plan, design drawings, engineering specifications, and an operations and maintenance plan.</p>	<p><input checked="" type="checkbox"/> Check if project performed with current firm</p>			
	<p>(1) TITLE AND LOCATION (<i>City and State</i>) ARCO Transportation Services Company, Long Beach, California</p>	<p>(2) YEAR COMPLETED</p> <table border="1"> <tr> <td data-bbox="950 525 1250 604">Professional Services 1995</td> <td data-bbox="1250 525 1494 604">Construction (if applicable) N/A</td> </tr> </table>		Professional Services 1995	Construction (if applicable) N/A
Professional Services 1995	Construction (if applicable) N/A				
5.	<p>(3) BRIEF DESCRIPTION (<i>Brief scope, size, cost, etc.</i>) AND SPECIFIC ROLE Design and construction of a remediation system for soil and groundwater impacted by more than 100,000 gallons of gasoline from a transportation pipeline release. Free product with apparent thickness of up to 25 feet was measured on the groundwater. Conducted vapor extraction pilot tests and a feasibility study to evaluate the best technologies for controlling plume migration and remediating the site. Designed and obtained permits for an integrated remediation system utilizing pneumatic pumps and vapor extraction. The free product was pumped to a 2,000 gallon above ground storage tank (AST). Extracted vapors were destroyed by a thermal oxidizer.</p>	<p><input checked="" type="checkbox"/> Check if project performed with current firm</p>			



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**4. Resumes of Key Personnel Proposed for this Contract (Complete one Section 4 for each key person.)**

a. NAME Matthew T. Miller, GIT	b. ROLE IN THIS CONTRACT Staff Geologist	c. YEARS EXPERIENCE	
		1. TOTAL 4	2. WITH CURRENT FIRM 2
d. LOCATION (City and State) Tetra Tech, Phoenix, Arizona			
e. EDUCATION (DEGREE AND SPECIALIZATION) B.S., Earth and Space Exploration; Concentration Geology, School of Earth and Space Exploration, Arizona State University, 2012		f. PROFESSIONAL TRAINING - REGISTRATIONS Geologist in Training, 2014	
g. OTHER PROFESSIONAL QUALIFICATIONS (Organizations, Awards, etc.) OSHA 40 hour HAZWOPER and Supervisor Training, MSHA, Frist Aid, CPR, Defensive Driving			

**H. RELEVANT PROJECTS**

1.	(1) TITLE AND LOCATION (City and State) UST System Closure Assessments, Various Locations, Arizona:	(2) YEAR COMPLETED	
		Professional Services 2015	Construction (if applicable) N/A
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Staff geologist responsible for coordinating, observing and documenting, collecting soil samples, and preparing reports for removal of underground storage tanks, product piping, and dispensers at nine facilities located in Flagstaff, Mesa, Phoenix, Sierra Vista, and Tucson, Arizona. Reporting included preparing initial 24-hour release response, 14-Day Status Report, and Closure Assessment Reports.	<input checked="" type="checkbox"/> Check if project performed with current firm	
2.	(1) TITLE AND LOCATION (City and State) UST Characterization, Former Fuentes Auto Repair, Douglas, Arizona	(2) YEAR COMPLETED	
		Professional Services On-going	Construction (if applicable) N/A
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Staff Geologist responsible for overseeing drilling of exploratory borings to define the limits of a release from a UST system at this former services station. Responsible for logging and describing soil lithology and for obtaining soil samples using ADEQ sampling protocols for methanol extraction. Directed installation of a groundwater monitoring well that will be used to determine impacts to groundwater. Also responsible for overseeing drilling of soil vapor probes used to obtain samples of near surface soil vapor to evaluate risks from vapor intrusion at this former fueling facility. Soil vapor samples were obtained from probes drilled to depths of five feet using one liter Summa canisters.	<input checked="" type="checkbox"/> Check if project performed with current firm	
3.	(1) TITLE AND LOCATION (City and State) Teds Truck Stop Groundwater Well Installation, Groundwater Monitoring, and Remedial Equipment Removal and Decommissioning, Quartzite, Arizona	(2) YEAR COMPLETED	
		Professional Services On-going	Construction (if applicable) N/A
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Conducted periodic groundwater monitoring that included a well network of 20 monitoring wells. Staff geologist responsible for directing and overseeing drilling and installation of new groundwater monitoring wells to monitoring contamination from leaking underground storage tanks at this former fueling facility. Responsible for observing drilling, logging soil lithology and overseeing well construction. Prepared lithological logs and well diagrams. Monitoring included measuring depth-to-water and obtaining groundwater samples from wells at this leaking underground storage tank site. Created figures presenting well locations and groundwater contours using GIS and summarized laboratory data in tabular formats. Conducted an inventory of equipment, machinery, and other assets associated with a large soil and groundwater	<input checked="" type="checkbox"/> Check if project performed with current firm	



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remedial system installed at this site to address off-site groundwater contamination. Following completion of the inventory, provided direction and oversight for the deconstruction of the remedial system and transportation to the State surplus equipment yard.

	(1) TITLE AND LOCATION ( <i>City and State</i> ) Groundwater Monitoring, Needle Vista View Point, Maricopa County, Arizona	(2) YEAR COMPLETED	
		Professional Services 2013	Construction (if applicable) N/A
4.	(3) BRIEF DESCRIPTION ( <i>Brief scope, size, cost, etc.</i> ) AND SPECIFIC ROLE Monitored depth to water in five wells to determine when groundwater was at the annual high level. Obtained groundwater samples using low-flow sampling techniques and battery operated pump due to remote location of monitoring wells. Responsible for oversight of abandonment of five groundwater monitoring wells located on undeveloped US Forest Service property near a state highway. Observed well abandonment activities, checked grout proportions, and performed final inspection of surface restoration at each well location. Special efforts were made to protect indigenous plant life during high fire risk season.	<input type="checkbox"/> Check if project performed with current firm	
	(1) TITLE AND LOCATION ( <i>City and State</i> ) Phase I Environmental Site Assessments, Various Locations, Arizona	(2) YEAR COMPLETED	
		Professional Services 2013	Construction (if applicable) N/A
5.	(3) BRIEF DESCRIPTION ( <i>Brief scope, size, cost, etc.</i> ) AND SPECIFIC ROLE Staff Geologist responsible for conducting Phase I Environmental Site Assessment (ESA) site reconnaissances, historical research, and records review for several developed properties. Responsible for documentation of field observations, photos, and reporting requirements.	<input type="checkbox"/> Check if project performed with current firm	



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**4. Resumes of Key Personnel Proposed for this Contract (Complete one Section 4 for each key person.)**

a. NAME Mekaela Miller	b. ROLE IN THIS CONTRACT Staff Engineer	c. YEARS EXPERIENCE	
		1. TOTAL 8	2. WITH CURRENT FIRM 4
d. LOCATION (City and State) Tetra Tech, Tucson, Arizona			
e. EDUCATION (DEGREE AND SPECIALIZATION) B.S. Mining Engineering, Minor: Environmental Science, University of Arizona, 2011		f. PROFESSIONAL TRAINING - REGISTRATIONS	
g. OTHER PROFESSIONAL QUALIFICATIONS (Organizations, Awards, etc.) OSHA 40 hour HAZWOPER and Supervisor Training, MSHA (Surface, metal, and non-Metal), Qualified Preparer of Stormwater Pollution Prevention Plans, Qualified Compliance Inspector of Stormwater, Frist Aid, CPR, Defensive Driving			

**H. RELEVANT PROJECTS**

1.	(1) TITLE AND LOCATION (City and State) Environmental Monitoring and Mitigation, Former Mines in Patagonia and Casa Grande, Arizona:	(2) YEAR COMPLETED	
		Professional Services On-going	Construction (if applicable) N/A
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Staff Engineer responsible for environmental monitoring of three different mine sites for the Asarco Trust. Responsibilities included bi-monthly site visits to ensure all environmental controls were functioning properly, removal of hazardous waste, stormwater monitoring, waste rock and soil sampling, SWPPP preparation and compliance. .	<input checked="" type="checkbox"/> Check if project performed with current firm	
2.	(1) TITLE AND LOCATION (City and State) Exploration Drilling and Project Feasibility, Holbrook, Arizona.	(2) YEAR COMPLETED	
		Professional Services 2014	Construction (if applicable) N/A
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Staff Engineer responsible for performing drill core logging as well as soil classification of test pits for project feasibility studies. Test pits were excavated to refusal by a backhoe as far as twelve in depth. Classification was performed as every changing soil interval..	<input checked="" type="checkbox"/> Check if project performed with current firm	
3.	(1) TITLE AND LOCATION (City and State) Safford Mine Lone Star Noise and Vibration Study, Safford, Arizona.	(2) YEAR COMPLETED	
		Professional Services 2014	Construction (if applicable) N/A
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Conducted blasting noise and vibration analysis to establish baseline conditions. Baseline conditions were used predict noise and vibration that would result from blasting associated with mining of the proposed Lone Star open pit copper mine.	<input checked="" type="checkbox"/> Check if project performed with current firm	
4.	(1) TITLE AND LOCATION (City and State) Aquifer Protection Permit Quarterly Ground Water Monitoring, Marana, Arizona.	(2) YEAR COMPLETED	
		Professional Services 2013	Construction (if applicable) N/A
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Monitored depth to water and obtained groundwater samples from monitoring well network of 23 compliance wells to support compliance with an Aquifer Protection Permit for a large operating copper mine.	<input type="checkbox"/> Check if project performed with current firm	



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5.	(1) TITLE AND LOCATION <i>(City and State)</i> Phase I Environmental Site Assessments, Various Locations, Arizona	(2) YEAR COMPLETED	
		Professional Services 2013	Construction (if applicable) N/A
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE Staff Engineer responsible for conducting Phase I Environmental Site Assessment (ESA) site reconnaissances, historical research, and records review for developed and undeveloped properties. Responsible for documentation of field observations, photos, and reporting requirements.	<input type="checkbox"/> Check if project performed with current firm	



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**5. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT**

*(Present no more than five (5) projects. Complete one Section 5 for each project.)*

a. TITLE AND LOCATION <i>(City and State)</i> Former Ted's Truck Stop, ADEQ, Quartzsite, Arizona:	b. YEAR COMPLETED	
	PROFESSIONAL SERVICES 2013-Present	CONSTRUCTION <i>(if applicable)</i> N/A

**23. PROJECT OWNER'S INFORMATION**

c. PROJECT OWNER Arizona Department of Environmental Quality (ADEQ)	d. ORIGINAL BUDGET/NTE AMOUNT OF PROJECT \$400K	e. TOTAL COST OF PROJECT \$400K
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f. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (include scope, size, and length of project)

Tetra Tech was retained to complete corrective actions at this former fuel station where multiple releases had occurred. Corrective actions included drilling and sampling three confirmation soil borings; installing five off-site groundwater monitoring wells; installing eight ozone-sparge wells; constructing a remedial equipment compound; installing underground piping; connecting the new ozone-sparge wells to a trailer mounted ozone generator; arranging for new electric service and connecting the ozone generator to the new service panel; and providing operation and maintenance of the ozone system. Services included abandoning 43 existing remediation and groundwater monitoring wells. The new wells and remedial system were completed and made operational, the existing wells were abandoned, and one round of groundwater monitoring was completed in less than two months. Services included operating and maintaining the ozone injection system to address on-site groundwater contamination, and injecting chemical oxidants into selected monitoring wells to address off-site groundwater contamination. Additional services provided on this site included decommissioning and salvaging of an unused remedial system that included a soil vapor extraction (SVE) system; an ozone injection system; a groundwater pump and treat (WTP) system; and other ancillary components such as instrumentation; plumbing, electrical and control systems; air compressor; soil/water separator; tanks; granular activated carbon; drums; and waste debris. Salvageable items were segregated and transported to a surplus property yard.



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5. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

(Present no more than five (5) projects. Complete one Section 5 for each project.)

a. TITLE AND LOCATION (City and State) Underground Storage Tank Removal Program, Various Locations, Yuma, Arizona	b. YEAR COMPLETED	
	PROFESSIONAL SERVICES 2014-2015	CONSTRUCTION (if applicable) N/A

23. PROJECT OWNER'S INFORMATION

c. PROJECT OWNER CenturyLink	d. ORIGINAL BUDGET/NTE AMOUNT OF PROJECT \$173,418	e. TOTAL COST OF PROJECT \$173,418
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f. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (include scope, size, and length of project)

Tetra Tech was contracted by CenturyLink for the removal and closure for underground storage tank systems at nine locations in Flagstaff, Mesa, Phoenix, Sierra Vista, and Tucson. Each site was developed with an underground storage tank (UST), underground piping, and dispensers. Services included removing the USTs and underground piping; disconnecting and removing the dispensers and oil cabinets, and disconnecting and salvaging card reader units and Veeder-Root leak detection control panels. Soil samples were obtained from beneath the USTs, product line connections, and dispensers and testing in accordance with ADEQ required protocols. Following removal, closure assessment reports were submitted to ADEQ. All site were closed without incident.



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5. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

(Present no more than five (5) projects. Complete one Section 5 for each project.)

a. TITLE AND LOCATION (City and State)		b. YEAR COMPLETED	
Phase I Environmental Site Assessment, Developed Property, Phoenix, Arizona		PROFESSIONAL SERVICES 2014	CONSTRUCTION (if applicable) N/A
23. PROJECT OWNER'S INFORMATION			
c. PROJECT OWNER	d. ORIGINAL BUDGET/NTE AMOUNT OF PROJECT	e. TOTAL COST OF PROJECT	
Confidential Financial Institution	\$17K	\$17K	

f. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (include scope, size, and length of project)

Tetra Tech conducted a Phase I ESA on 12 graded lots in a business park in an area which was formerly part of a sand and gravel operation and adjacent to a landfill. Planned redevelopment included over-excavation, reconfiguration of the graded lots, including over-excavation, installation of drainage receptors, and recompaction of building pads. Former developments related to the sand and gravel operation included wash water ponds, a batch plant, and small buildings. Eight USTs and a fuel island were previously located at the Site. Prior Phase I ESAs indicated there were no RECs based on ADEQ-issued case closure. During the Phase I ESA, Tetra Tech reviewed the UST files at ADEQ and UST removal documentation was found for at least some of the USTs. However, even though there was case closure by ADEQ, no records could be located documenting sampling and testing had been conducted during removal of the UST systems. In addition information was limited on the location of one of the USTs. Tetra Tech considered the lack of test results for the USTs a potential environmental concern (PEC) because it was unknown what COPC concentrations, if any, were judged acceptable to leave in place. It was not judged to be a REC because there was regulatory agency involvement during removal of the USTs. It was not considered to be a historical REC (HREC), despite the ADEQ case closure because of the lack of analytical data. Because redevelopment of the Site included re-configuring the Site and because the locations of the former USTs was approximate at best, in consultation with the client, it was decided the most cost-effective way of addressing this REC was to monitor the Site during Site grading operations. Tetra Tech prepared and implemented a Soil Management Plan (SMP) for use during redevelopment activities. Tetra Tech personnel observed the excavation and grading activities on the Site during redevelopment and monitored excavated soil for VOCs using a photoionization detector. During grading, buried waste was encountered and Tetra Tech assisted in profiling the materials. A soil sample was obtained from beneath the waste materials to evaluate the area for the presence of petroleum substances and metals. No COPCs were detected. A report summarizing our monitoring services was prepared for the property owner.



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(Present no more than five (5) projects. Complete one Section 5 for each project.)

a. TITLE AND LOCATION <i>(City and State)</i> ASRAC Contract, Multiple Sites in Arizona		b. YEAR COMPLETED	
		PROFESSIONAL SERVICES 2000-On-going	CONSTRUCTION <i>(If applicable)</i> N/A
23. PROJECT OWNER'S INFORMATION			
c. PROJECT OWNER Arizona Department of Environmental Quality	d. ORIGINAL BUDGET/NTE AMOUNT OF PROJECT \$7.1 M	e. TOTAL COST OF PROJECT \$7.1 M	

f. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (include scope, size, and length of project)

Water Quality Assurance Revolving Fund (WQARF) Sites; Early Response Actions (ERAs), Remedial Investigations (RIs), Feasibility Studies (FSs), Preliminary Remedial Action Plans (PRAPs), Records of Decision (RODs), Remedy Design and Implementation, and Community Involvement Services, Arizona.

Since 2000, Tetra Tech has been the prime contractor on the ASRAC contract for the Arizona Department of Environmental Quality (ADEQ) WQARF (i.e., State Superfund) Program. Major individual sites under contract include the 20<sup>th</sup> and Factor Site in Yuma, AZ; Park-Euclid Site in Tucson, AZ; Western Avenue Site in Goodyear, AZ; Payson PCE Site in Payson, AZ; and the Tonto and Cherry Site in Payson, AZ. Tetra Tech drilled, logged, and sampled numerous soil borings, and drilled, logged, installed, and sampled numerous groundwater and soil vapor monitoring wells.

The projects also involved conceptual site hydrogeologic model generation and evaluation in the context of typical Arizona multi-aquifer systems; developing and evaluating subsurface lithology utilizing geologic cross-sections and fence diagrams; hydrogeologic flow and fate-and-transport modeling; assessment of site groundwater quality data in terms of tri-linear diagrams of geochemistry; and interpretation of Arizona Department of Water Resources (ADWR) groundwater maps and databases. Tetra Tech developed extensive Access-compatible databases of site information (geological, contaminant chemistry, etc.), which are integrated in a GIS database for each site.

Tetra Tech planned and implemented a total of 4 early response actions (ERAs) to eliminate source areas, reduce risk by removing pathways and installing caps, prepared RI reports for four sites, prepared FS reports for three sites; prepared PRAPs and RODs for two sites, and designed/built/maintained two ERA and remedial systems. Remedial investigation activities and groundwater monitoring are currently underway at one site. Tetra Tech also supported the ADEQ at site-specific Community Action Board meetings by preparing fact sheets, newsletters, and public notices. Tetra Tech also assisted ADEQ as a consultant providing oversight on other projects.



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**5. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT**

*(Present no more than five (5) projects. Complete one Section 5 for each project.)*

a. TITLE AND LOCATION <i>(City and State)</i> Engineering Services 19 <sup>th</sup> Avenue Landfill 1701 West Lower Buckeye Road, Phoenix, Arizona	b. YEAR COMPLETED	
	PROFESSIONAL SERVICES 2009-present	CONSTRUCTION <i>(if applicable)</i> N/A

**23. PROJECT OWNER'S INFORMATION**

c. PROJECT OWNER City of Phoenix	d. ORIGINAL BUDGET/NTE AMOUNT OF PROJECT \$250K per five year period	e. TOTAL COST OF PROJECT \$200K
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f. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (include scope, size, and length of project)

Tetra Tech was retained to provide engineering support services to the City of Phoenix Solid Waste Disposal Management Division for the de-listed 19<sup>th</sup> Avenue Landfill Superfund site. Services included reviewing existing operation and maintenance activities; reviewing the Consent Decree for landfill closure and its amendments; and preparing an up-dated Operation and Maintenance Manual for use by City personnel. Provided technical oversight of annual landfill inspections to evaluate compliance with requirements of Declaration of Environmental Use Restriction implemented as part of landfill closure. Managed rehabilitation of nine wells used to monitor groundwater conditions at and in the vicinity of the landfill. Rehabilitation including removing dedicated pumps, brushing, surging, and bailing wells, and replacing and testing of dedicated pumps. Directed an evaluation of groundwater to address an Exceedance Condition for high sulfate, arsenic, thallium, and nickel concentrations and prepared Exceedance Reports for submittal to regulatory agencies. Participated in five-year reviews and worked with the City Project Manage in responding to issues raised in the review.



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6. ADDITIONAL INFORMATION

a. PROVIDE ANY ADDITIONAL INFORMATION YOU FEEL MAY BE NECESSARY TO DESCRIBE YOUR FIRMS QUALIFICATIONS. (ATTACH ADDITIONAL SHEETS AS NEEDED.)

Tetra Tech is an international provider of consulting, planning, engineering, and technical services founded in 1966. We provide environmental consulting services from more than 300 offices in the United States and internationally with more than 12,000 engineers, geologists, hydrogeologists, biologists, ecologists, environmental scientists, and support personnel.

Specializing in groundwater flow and transport modeling, Tetra Tech has provided services to some of the most complex environmental sites across the United States such as the Savannah River Site, the Lipari Landfill, the Nevada Test Site, Love Canal, and the Rocky Mountain Arsenal. Its skill set encompasses core capabilities including integrated site characterization, field investigation, risk assessment and clean-up, groundwater modeling and analysis, characterization and remediation of NAPL, brownfields redevelopment, information management, remedial design, implementation and oversight, water resources, litigation and negotiation support, telecommunications site acquisition, remedial system evaluation and optimization, mine closure, and ISO 14000 implementation.

Tetra Tech offers a full range of environmental consulting services. Our Phoenix office has a long history providing a broad range of environmental consulting services including groundwater hydrogeology; hazardous materials release characterization, field investigations, sampling, and testing; risk assessments; groundwater modeling and analysis; solid waste permitting and landfill design; information management; remedial design; water resources; air permitting; site assessments and compliance audits and permitting for APP and surface wastewater discharge permits. Tetra Tech has worked on numerous projects for ADEQ, including the 20<sup>th</sup> and Factor WQARF Site, the Payson WQARF Site, and the West Osborn Complex WQARF Site. We have provided permitting support for accelerated Aquifer Protection Permits and have conducted release characterization services on numerous underground storage tanks sites for ADEQ's Leads Program. We have a long history of working with ADEQ.

Our technical staff has experience and expertise to simulate contaminant migration using numerical computer models; evaluate risk associated with contaminant levels in groundwater, and evaluate remedial options. Our engineers, geologists, and environmental scientists have designed, pilot tested, and implemented remedial efforts that include SVE, bioventing (or aerobic biotreatment), pump-and-treat, bioremediation, air sparging, biosparging, and carbon treatment on CERCLA sites in the United States. We have prepared permits for air emissions, water discharges, and construction activities; and we have provided the operation and maintenance oversight and monitoring to document compliance with remedial system operating permits.

Tetra Tech offers a broad range of environmental consulting services from its offices in Arizona; and our local experience can be supplemented by drawing upon a nationwide pool of experienced and qualified environmental specialists. To facilitate this level of support, Tetra Tech has formed the Remediation Strategy Team, an in-house group of technical experts, who can be reached quickly via email to provide a broad range of innovative remedial solutions. Our goal is to provide local experience augmented by national recognized experts. Environmental investigations require a multi-disciplinary approach. Tetra Tech is able to provide professional services in any one of many focused disciplines that may require specialized knowledge to support environmental compliance activities. Some of these disciplines include:

- Environmental Scientists
- Wetland Scientists
- Risk Assessment Specialists
- Regulatory Specialist



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- Geochemists
- Reclamation Engineers
- Hydrogeologist
- Geologists
- Civil Engineer
- Ecologists
- Ecosystem Modelers
- GIS Designers
- Groundwater Specialists
- Geotechnical Engineers

Providing these services, Tetra Tech uses geographical information systems and computer databases to store, organize, and present a myriad of data and spatial information. Tetra Tech has scientist that understand the information, programmers to develop databases and environmental information management systems (EIMSs), and public outreach specialist that can provide eye-catching and effective outreach materials and training to employees and the public.

7. ANNUAL AVERAGE PROFESSIONAL SERVICES REVENUES OF FIRM FOR LAST 3 YEARS

a. Percentage of Total Work Attributable to State, Federal and Municipal Government Work:	60
b. Percentage of Total Work Attributable to Non-Government Work:	40

8. AUTHORIZED REPRESENTATIVE. The foregoing is a statement of facts.

Signature: 

Date: 12/18/2015

Name: Christopher L. Jacquemin, P.E.

Title: Senior Engineer



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*(If a firm has branch offices, complete for each specific branch office seeking work.)*

**1. Annual Request for Qualifications**

a. FIRM (OR BRANCH OFFICE ) NAME:	Tetra Tech, Inc. (IMR)
b. FIRM (OR BRANCH OFFICE) STREET:	405 – B West Main
c. FIRM (OR BRANCH OFFICE) CITY:	Payson
d. FIRM (OR BRANCH OFFICE) STATE:	Arizona
e. FIRM (OR BRANCH OFFICE) ZIP CODE:	85541
f. YEAR ESTABLISHED:	1966
(g1). OWNERSHIP - TYPE:	Corporation
(g2). OWNERSHIP - SMALL BUSINESS STATUS:	N/A
h. POINT OF CONTACT NAME AND TITLE:	Jack Pence, P.E.
i. POINT OF CONTACT TELEPHONE NUMBER:	928-474-4634
j. POINT OF CONTACT E-MAIL ADDRESS:	jack.pence@tetrattech.com
k. NAME OF FIRM (If block 1a is a branch office):	Tetra Tech, Inc.



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2. EMPLOYEES BY DISCIPLINE

a. Discipline Title	b. Function: Primary (P) or Secondary (S)	c. No. of Employees - Firm	d. No. of Employees - Branch
Civil Engineer	P	764	7
Construction Inspector	P	126	2
Land Surveyor	P	61	2
Other	P	13120	1
CADD Technician	P	167	5
<b>Total</b>		14500	18



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**3. PROFILE OF FIRM'S EXPERIENCE AND ANNUAL AVERAGE REVENUE FOR LAST YEAR**

a. Approximate No. of Projects	b. Experience	c. Revenue Index Number (see below)
2	Bridge Design; Bridges	1
19	Commercial Building (Low Rise) Shopping Centers	1
50	Construction Surveying	1
1	Dams (Earth; Rock); Dikes; Levees	1
2	Fisheries; Fish Ladders	1
10	Highways; Streets; Airfield Paving; Parking Lots	1
7	Housing (Residential, Multi-Family: Apartments; Condominiums)	1
6	Infrastructure	1
60	Land Surveying	1
2	Mining & Mineralogy	1
4	Recreation Facilities (Parks, Marinas, Etc.)	1
12	Sewage Collection, Treatment and Disposal	1
20	Surveying; Platting; Mapping; Flood Plain Studies	1
12	Storm Water Handling and Facilities	1
2	Testing & Inspection Services	1
25	Topographic Surveying and Mapping	1
10	Water Supply; Treatment and Distribution	1
8	Water Well Rehabilitation; Water Well Work	1

**PROFESSIONAL SERVICES REVENUE INDEX NUMBER**

- |   |   |
|---|---|
| 1. Less than \$100,000                  | 6. \$2 million to less than \$5 million   |
| 2. \$100,000 to less than \$250,000     | 7. \$5 million to less than \$10 million  |
| 3. \$250,000 to less than \$500,000     | 8. \$10 million to less than \$25 million |
| 4. \$500,000 to less than \$1 million   | 9. \$25 million to less than \$50 million |
| 5. \$1 million to less than \$2 million | 10. \$50 million or greater               |



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**4. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT** *(Complete one Section 4 for each key person)*

a. NAME Doug Brimhall, P.E.	b. ROLE IN THIS CONTRACT Project Manager	c. YEARS EXPERIENCE	
		1. TOTAL 18	2. WITH CURRENT FIRM 15
d. LOCATION <i>(City and State)</i> Show Low, Arizona			
e. EDUCATION <i>(Degree and Specialization)</i> M.S. in Civil Engineering – Brigham Young University 1997 Emphasis in Transportation B.S. in Civil Engineering – Brigham Young University 1996		f. CURRENT PROFESSIONAL REGISTRATION <i>(State and Discipline)</i> Professional Engineer (Civil) – Arizona #36630 Professional Engineer (Civil) – New Mexico #20615	
g. OTHER PROFESSIONAL QUALIFICATIONS <i>(Publications, Organizations, Training, Awards, etc.)</i>			

**H. RELEVANT PROJECTS**

	(1) TITLE AND LOCATION <i>(City and State)</i>	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION <i>(If applicable)</i>
1)	Alchেসay Flat Sewer Extension - Whiteriver, Arizona	2011-2012	2012-2015
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Mr. Brimhall was one of the Project Engineers for a sewer line project in the community of Whiteriver, Arizona. The project consisted of aerial mapping, topographical survey, construction survey, and the design of approximately 3 miles of 8" sewer main and laterals to existing residences. The existing residents were utilizing septic systems for their sewer disposal services. The project was performed in conjunction with Indian Health Service.		
2)	Hon Dah Casino RV Park Expansion – Pinetop, Arizona	2011-2012	2011-2012
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Mr. Brimhall was the Project Manager for an expansion to the Hon Dah Casino RV Park. The work associated with the 100 lot expansion included topographic survey, lot layout, water and sewer main line extensions, water and sewer laterals, power, phone, and cable service design. Construction staking, construction inspection, and contract management were also part of the project. The project included coordination with Indian Health Service, tribal utility, casino utility, Tribal Attorneys, Tribal Chairman, and Tribal Council Members for this \$150,000 design project.		
3)	NPC White Mountain Campus Parking Lot Reconstruction – Show Low, Arizona	2012	2012
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm This project consisted of design for the reconstruction of existing parking areas as well as the addition of parking areas. The work included utility relocation, subgrade work, site grading, drainage improvements, sidewalk/landscaping improvements, and an ADOT turn lane off of U.S. 60. Mr. Brimhall served as the Project Manager for the civil design, construction staking, and construction management throughout the duration of the project. Cost of engineering services was \$115,000.		
4)	Zuni Bluebird Housing Development Masterplan – Zuni, New Mexico	2011	N/A
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm The Zuni Bluebird development is an approximately 160 acre master planned development. Mr. Brimhall was the Project Manager for the master drainage, water, and sewer plans for the entire development. Detailed construction plans for the drainage, water and sewer were also prepared for Phase II and III of the development. He was also the Project Manager on a project that provided Record of Surveys for the 20 lots in the two subdivisions.		
5)	Cibecue Maintenance Building – Cibecue, Arizona	2013	2013
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm This project consisted of the site plan design for a new maintenance building for the White Mountain Apache Housing Authority. Mr. Brimhall served as project manager for this commercial building which included site grading, drainage, parking lot design, and construction staking.		



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**4. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT** *(Complete one Section 4 for each key person)*

a. NAME James C. Dowell, P.E.	b. ROLE IN THIS CONTRACT Project Manager/Project Engineer	c. YEARS EXPERIENCE	
		1. TOTAL 42	2. WITH CURRENT FIRM 3
d. FIRM NAME AND LOCATION <i>(City and State)</i> Tetra Tech, Inc. (IMR) Show Low, AZ			
e. EDUCATION <i>(Degree and Specialization)</i> BS – Environmental Engineering - Leland Stanford Junior University - 1972		f. CURRENT PROFESSIONAL REGISTRATION <i>(State and Discipline)</i> Professional Engineer – Arizona	
g. OTHER PROFESSIONAL QUALIFICATIONS <i>(Publications, Organizations, Training, Awards, etc.)</i> Past President American Council of Engineering Companies of Arizona, former member of Water Environment Federation and American Water Works Association			

H. RELEVANT PROJECTS			
	(1) TITLE AND LOCATION <i>(City and State)</i>	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION <i>(If applicable)</i>
1)	College Avenue Waterlines, Tempe, AZ	Current	
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Project Engineer for design of 6,300 linear feet of existing water lines. Work includes: Data Collection and Review of utility record drawings (water, sewer and rights-of-way), Aerial Survey and field location of all utilities, Construction Plans And Specifications, Utility Pot-holing, Maricopa County Approval to Construct, Bid Services and Community Meeting with exhibits. Project is currently in Design. Engineering Cost \$158,000 Total Project \$1,100,000		
2)	ASPC Lewis Production Well, Buckeye, AZ	2013	
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input type="checkbox"/> Check if project performed with current firm Project Manager for preparing plans, specifications and providing construction phase services for a new 1,500 gpm production well. Currently awaiting ADEQ Approval of Construction. Construction Cost - \$1,500,000		
3)	ASPC Tucson – Wastewater Treatment Plant Closure Plan, Tucson, AZ	2013	
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input type="checkbox"/> Check if project performed with current firm Project Manager for preparing Closure Plan for existing WWTP. Currently awaiting ADEQ approval of Clean Closure. Engineering - \$105,000		
4)	ASPC Safford, Ft. Grant Unit, Rehabilitate Existing Well, Ft. Grant, AZ	2012	
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input type="checkbox"/> Check if project performed with current firm Project Manager for design and providing construction related services for replacing pumping equipment in an existing 200 gpm production well. Project included providing a new electrical service. Construction Cost - \$150,000		
5)	ASPC Tucson – Wastewater Pump Station and Force Main, Tucson, AZ	2011	
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input type="checkbox"/> Check if project performed with current firm Project Manager for preparing plans and specifications and providing construction phase services for rehabilitating an existing headworks and installing new pumping equipment and 6,800 feet of 10-inch HDPE force main to divert wastewater from the existing prison to Pima County for treatment. Construction - \$285,000		



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**4. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT (Complete one Section 4 for each key person)**

a. NAME Will Flake, P.E.	b. ROLE IN THIS CONTRACT Project Engineer	c. YEARS EXPERIENCE	
		1. TOTAL 11	2. WITH CURRENT FIRM 9
d. FIRM NAME AND LOCATION (City and State) Tetra Tech, Inc. (IMR) – Show Low, Arizona			
e. EDUCATION (Degree and Specialization) B.S. in Civil Engineering – Arizona State University 2004		f. CURRENT PROFESSIONAL REGISTRATION (State and Discipline) Professional Engineer (Civil) – Arizona #42737 Grade 2 Water Distribution System Operator – Arizona #OPO31527	
g. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.)			

**H. RELEVANT PROJECTS**

	(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
1)	Show Low High School Ball Fields – Show Low, Arizona	2010	2010
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm The Show Low Unified School District contracted with Tetra Tech for engineering services for designing ball fields for the high school. Mr. Flake provided grading design for the project as well as drainage calculations along with a HEC-RAS model that was used for determining the existing and proposed 100-year flood limits.		
2)	Little Colorado Sanitary District – Greer, Arizona	On-Going	N/A
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Mr. Flake as part of the Tetra Tech team has served as the On-Call District Engineer for the Little Colorado Sanitary District and is currently serving in this capacity. The responsibilities associated with this contract include plan review for proposed system improvements from outside developers or consultants to verify compliance with District rules, regulations, and design standards.		
3)	Show Low Mountain Ranch – Navajo County, Arizona	2009-2010	2011
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Mr. Flake worked on the design of water, sewer, roadways, and drainage facilities for a residential development located in Navajo County, north of Show Low on Bourdon Ranch Road. The project consisted of a water tank and booster station, a sewer lift station and force main, as well as several detention basins and washes for the project		
4)	Town of Snowflake – Snowflake, Arizona	On-Going	On-Going
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm As Project Engineer, Mr. Flake has assisted the Town with projects such as design work for the reconstruction of 4th N and 2nd E roadway improvement projects, including all surveying, construction staking, and contract administration; design and construction of a new 250,000 gallon water tank		
5)	Mountain Gate Homes – Lakeside, Arizona	2006-2007	2007
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Mr. Flake worked on a townhouse project in Pinetop-Lakeside, Arizona. Project consisted of a 64-unit townhouse subdivision. Water, sewer, roadway designs, as well as drainage were among the required infrastructure requirements		



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**4. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT** *(Complete one Section 4 for each key person)*

a. NAME Joseph A. (Jack) Pence, P.E.	b. ROLE IN THIS CONTRACT Project Manager	c. YEARS EXPERIENCE	
		1. TOTAL 36	2. WITH CURRENT FIRM 5.5
d. FIRM NAME AND LOCATION <i>(City and State)</i> Tetra Tech Inc., (IMR) - Phoenix, AZ			
e. EDUCATION <i>(Degree and Specialization)</i> B.S., Civil Engineering, University of Kentucky 12 Hours Post Graduate Studies, University of Pittsburgh		f. CURRENT PROFESSIONAL REGISTRATION <i>(State and Discipline)</i> Professional Engineer (Civil): Arizona No. 39568 Kentucky No. 11287; Indiana No. 18394 New Mexico No. 20565; Nevada No. 22023	
g. OTHER PROFESSIONAL QUALIFICATIONS <i>(Publications, Organizations, Training, Awards, etc.)</i> MSHA and OSHA Safety and Health Training, Water Rights Surveyor-State of Nevada Division of Water Resources American Society of Civil Engineers			

**H. RELEVANT PROJECTS**

	(1) TITLE AND LOCATION <i>(City and State)</i>	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION <i>(If applicable)</i>
1)	College Avenue Water Line Replacement, Tempe, AZ	In Progress	
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Tetra Tech was awarded a contract to design the replacement of approximately 6,300 linear feet of existing water lines. Work includes: Data Collection and Review of utility record drawings (water, sewer and rights-of-way), Aerial Survey and field location of all utilities, Construction Plans And Specifications, Utility Pot-holing, Maricopa County Approval to Construct, Bid Services and Community Meeting with exhibits. Project is currently in Design. Engineering Cost \$158,000 Total Project \$1,100,000		
2)	Coeur Rochester Water System, Lovelock, NV	In Progress/2013	QA/2013
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Engineering Report, Well System Design and Permitting, WaterCad Model, Contract Documents, Quality Assurance during Construction and Commissioning. Engineering Cost - \$175,000 Total Project \$1,000,000		
3)	Barrick Bazza Mine, Carlin, NV	2013	QA
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Plans and Specifications for Deep Mine Infrastructure. Work included Earthwork, Structural Concrete, Ore Containment pad with synthetic liner, Truck Shop and Quality Assurance. Engineering cost \$150,000 Total Cost \$2,000,000		
4)	Water Treatment Plant for African Barrick Gold in North Mara, Tanzania, Africa.	2012	2012
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Responsible for final commissioning of the MF and RO systems, punchlist items, design and installation of a permanent pumping station. Engineering cost \$2,000,000 Total Project \$16,000,000		
5)	Upper Rio Grande Levee Rehabilitation Program for the International Boundary and Waterway Commission (IBWC), Rio Grande, Texas	2012	2012
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Three levee projects in West Texas and Southwestern New Mexico - Mesilla Phase One (32 miles/\$26,100,000), Mesilla Phase Two (19.6 miles/\$13,700,000) and Sunland Park (12.2 miles/\$9,200,000). Responsibilities included request for Information (RFI), submittal review, daily reports, weekly construction meetings and monthly reports. Engineering Cost \$350,000		



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**4. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT** *(Complete one Section 4 for each key person)*

a. NAME Forrest L. Switzer, PE, P.L.S.	b. ROLE IN THIS CONTRACT Project Manager	c. YEARS EXPERIENCE	
		1. TOTAL 39	2. WITH CURRENT FIRM 19
d. FIRM NAME AND LOCATION <i>(City and State)</i> Tetra Tech, (IMR) - Payson, Arizona			
e. EDUCATION <i>(Degree and Specialization)</i> California State University of Los Angeles B.S. Civil Engineering, 1972		f. CURRENT PROFESSIONAL REGISTRATION <i>(State and Discipline)</i> Professional Engineer (Civil) - Arizona #31879 California # C25089,(includes Surveying) Washington # 30679	
g. OTHER PROFESSIONAL QUALIFICATIONS <i>(Publications, Organizations, Training, Awards, etc.)</i> The Society of American Military Engineers (Life Membership) The American Society of Civil Engineers			

**H. RELEVANT PROJECTS**

	(1) TITLE AND LOCATION <i>(City and State)</i>	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION <i>(If applicable)</i>
1)	C.C. Cragin Treated Water Line Design – Lines “B”, “D”, & “E”, Payson, Arizona	2012	2013
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Project Manager – Survey, design, specifications and bid documents for a Water Infrastructure Finance Authority (WIFA) funded Aquifer Storage and Recovery Project including: Line “B” – Installation of 5,200 L.F. of 18” DIP water line. Construction Cost - \$958,848.00; Line “D” – Installation of 164 L.F. of 8” DIP and 3,395 L.F. of 8” PVC Pipe water line, including a Pressure Management Station. Construction Cost - \$253,267.00; Line “E” – Installation of 1,446 L.F. of 12” PVC water line. Construction Cost - \$194,476.00		
2)	C.C. Cragin Treated Water Line Design – Line “H”, Payson, Arizona	2013	2013
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Project Manager – Survey, design, specifications and bid documents for a WIFA funded Aquifer Storage and Recovery Project including approximately 11,000 lineal feet of 18-inch DIP Water Line and 9,620 lineal feet of 8” HDPE Water Line and two Pressure Management Stations. Construction Cost - \$1,765,446.00		
3)	Tyler Surface-Water Line, Payson, Arizona	2013	2013
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Project Manager – Design, specifications and bid documents Installation of approximately 8,700 lineal feet of 8” High Density Polyethylene Water Line (HDPE) and appurtenances. Construction Cost - \$284,085.00		
4)	C.C. Cragin Treated Water Line – Lines “B”, “D”, “E”, & “H” Construction Management, Payson, Arizona	2012	2013
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Project Manager for the construction management services to coordinate for and confirm to the Town of Payson that construction performed by the Contractor conforms to the approved Construction Drawings and Specifications. Coordinated Federal Davis-Bacon interviews, certified, payrolls. Lines “B”, “D”, & “E” – Fee \$242,943.00; Line “H” – Fee \$155,410.00		
5)	Grand Canyon South Rim & Desert View for Xanterra (Grand Canyon National Park Lodges, Grand Canyon, Arizona	2013	2013
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Grand Hotel – Project Manager – New drainage and repaving of parking lots. 720 L.F. Storm Drain, 10,850 SY R&R Asphalt, Trench Drain and Conc. – Construction Cost - \$356,300.00; Trailer Village – Project Manager - Grading and repaving plans for South Rim Grand Canyon RV parking area. 18,050 SY R&R Asphalt – Construction Cost - \$660,000.00		



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**5. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT**

*(Present no more than five (5) projects. Complete one Section 5 for each project.)*

a. TITLE AND LOCATION <i>(City and State)</i>  College Avenue Water Line Replacement, City of Tempe, Arizona	b. YEAR COMPLETED	
	PROFESSIONAL SERVICES 2013	CONSTRUCTION <i>(If applicable)</i> N/A

**23. PROJECT OWNER'S INFORMATION**

c. PROJECT OWNER City of Tempe	d. DOLLAR AMOUNT OF PROJECT \$158K	e. TOTAL COST OF PROJECT \$1.1M
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f. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (include scope, size, and length of project)

The City of Tempe has experience numerous pipeline breaks in the College Avenue neighborhood. Tetra Tech was awarded a contract to design the replacement of approximately 6,300 linear feet of existing water lines. Work includes:

- Data collection and review of utility record drawings (water, sewer and rights-of-way),
- Aerial Survey and field location of all utilities,
- Construction plans and specifications,
- Utility pot-holing,
- Maricopa County approval to construct,
- Bid services,
- And community meetings with exhibits.



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**5. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT**

*(Present no more than five (5) projects. Complete one Section 5 for each project.)*

a. TITLE AND LOCATION <i>(City and State)</i>	b. YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION <i>(If applicable)</i>
C.C. Cragin Treated Water Line Project, Town of Payson, Arizona	2012	present

**23. PROJECT OWNER'S INFORMATION**

c. PROJECT OWNER	d. DOLLAR AMOUNT OF PROJECT	e. TOTAL COST OF PROJECT
Town of Payson	\$500K	\$3.2M

f. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (include scope, size, and length of project)

The C.C. Cragin project includes three main projects by Tetra Tech. The first two projects involved analysis of recharge capabilities of the Town of Payson's wells and improvement of those wells. Tetra Tech served as the Town Agent during those projects in providing the design then bidding and paying contractors for the performance of well testing and improvements. These projects were funded through WIFA loans to the town and Tetra Tech provided oversight of Davis-Bacon, certified payroll, and payment applications.

A separate part of the C.C. Cragin project includes a master plan of the water delivery system. Tetra Tech is responsible for design work on the treated water system both inside the town and delivery to the town. Tetra Tech provided a detailed model of the existing water system based on well source. C.C. Cragin was then designed to feed the existing distribution and storage infrastructure allowing aquifer recharge.

Tetra Tech design a combination of new transmission mains, pressure reduction stations, and new connection points allowing well recharge of the existing aquifer. The new delivery system includes 27,875 L.F. of 18" D.I.P., 2,184 L.F. 12" P.V.C. and 3,395 L.F. of 8" P.V.C. Tetra Tech authored the specifications, managed the bidding and provided the construction inspection of these elements.



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**5. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT**

*(Present no more than five (5) projects. Complete one Section 5 for each project.)*

a. TITLE AND LOCATION <i>(City and State)</i>  Hon-Dah RV Park Expansion, Pinetop, Arizona	b. YEAR COMPLETED	
	PROFESSIONAL SERVICES 2009-2013	CONSTRUCTION <i>(If applicable)</i> 2010-2013

**23. PROJECT OWNER'S INFORMATION**

c. PROJECT OWNER  White Mountain Apache Tribe	d. DOLLAR AMOUNT OF PROJECT  \$150K	e. TOTAL COST OF PROJECT  \$1.4M
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f. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (include scope, size, and length of project)

This project was a multiple phase expansion to the Hon Dah Casino RV Park. The work associated with the 100 lot expansion included topographic survey, lot layout, water and sewer main line extensions, water and sewer laterals, power, phone, and cable service design. Tetra Tech provided construction staking, construction inspection, and contract management. The project included coordination with Indian Health Service, tribal utility, casino utility, Tribal Attorneys, Tribal Chairman, and Tribal Council Members.



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**5. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT**

*(Present no more than five (5) projects. Complete one Section 5 for each project.)*

a. TITLE AND LOCATION <i>(City and State)</i>	b. YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION <i>(If applicable)</i>
Pineridge Roadway Reconstruction, Pinetop, Arizona	2010-2011	2011

**23. PROJECT OWNER'S INFORMATION**

c. PROJECT OWNER	d. DOLLAR AMOUNT OF PROJECT	e. TOTAL COST OF PROJECT
Pineridge Community Association	\$80K	\$500K

f. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (include scope, size, and length of project)

Tetra Tech provided the design of approximately 1 mile of residential roadway for this roadway reconstruction project. The reconstruction consisted of milling the existing asphalt, recomposing the subgrade, placing the base material, and paving. Tetra Tech provided a full range of services on the project from inception to completion. Services included topographic survey, plan and specification preparation, bid administration, construction inspection, construction staking, contractor payment, and project closeout.



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**5. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT**

*(Present no more than five (5) projects. Complete one Section 5 for each project.)*

a. TITLE AND LOCATION <i>(City and State)</i>	b. YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION <i>(If applicable)</i>
White Mountain Campus Parking Lot Reconstruction, Show Low, Arizona	2012	2012

**23. PROJECT OWNER'S INFORMATION**

c. PROJECT OWNER	d. DOLLAR AMOUNT OF PROJECT	e. TOTAL COST OF PROJECT
Northland Pioneer College	\$115K	\$2.M

f. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (include scope, size, and length of project)

This project consisted of design for the reconstruction of existing parking areas as well as the addition of new parking areas. The project resulted in going from approximately 300 parking spaces to approximately 600 parking spaces at Northland Pioneer College's White Mountain Campus. The work included utility relocation, subgrade work, site grading, drainage improvements, sidewalk/landscaping improvements, and an ADOT turn lane off of U.S. 60. Construction plans were prepared to be constructed in three separate phases in order to allow for parking access at the site to be available at all times. ADA requirements were critical in the design process to allow access to all of the existing buildings throughout the campus. Tetra Tech's role in the project was to provide the civil design, construction staking, and construction management throughout the duration of the project. This project was designed in approximately two months and constructed in approximately six months.



6. ADDITIONAL INFORMATION

a. PROVIDE ANY ADDITIONAL INFORMATION YOU FEEL MAY BE NECESSARY TO DESCRIBE YOUR FIRMS QUALIFICATIONS. (ATTACH ADDITIONAL SHEETS AS NEEDED.)

Tetra Tech IMR

Tetra Tech Inter-Mountain Region (IMR) is a full-service engineering group. IMR provides complete infrastructure services and design for Water, Wastewater, Electrical/SCADA, Construction Management and General Civil Engineering. Tetra Tech IMR serves municipal, utility, and commercial clients. Listed below is detailed information:

Water Tetra Tech is dedicated to providing solutions to the challenges faced by those who manage water around the world. With client input, we can address the entire water cycle – from precipitation to evaporation – ensuring the protection of valuable water sources and the reliability and quality of delivered water. The goal is to help find better ways to deliver the safest water possible and to practice sustainable design.

- Storage
- Transmission and Distribution
- Wells
- Pumping
- Treatment
- Source Protection / Development Infrastructure
- Master Planning
- Watershed Management and Source Protection
- Membrane Treatment
- Reservoirs and Storage

Tetra Tech maintains up-to-date knowledge of drinking water regulations and assists clients in evaluating facilities for regulatory compliance.

Tetra Tech's water treatment plant expertise spans feasibility and design through plant startup and ongoing operation and maintenance. Tetra Tech understands process control strategies, chemical feeding and handling, pumping, and all treatment processes and equipment selection for surface water and groundwater treatment. Tetra Tech has designed processes to resolve groundwater issues with: iron and manganese, radioactivity, organics, inorganics, corrosivity, and hardness; and surface water problems involving: varying turbidity, corrosivity, taste and odor, color, and colloidal particles. Engineers and consultants are well-versed in computer simulation modeling of water systems and have designed both gravity-flow and pumped-flow installations, as well as pump intake systems for both lake and river applications.

Membrane Technology: Our experience with the planning and design of membrane technologies for advanced water treatment includes micro- and ultrafiltration systems, such as nanofiltration and reverse osmosis. Our expertise involves pilot testing programs, evaluation studies, preliminary design, final design, permitting, system integration, and start-up activities. We have also developed close working relationships with numerous manufacturers and specialists familiar with the rapidly changing state-of-the-art water treatment technologies. Thus, we offer highly skilled engineers and technical specialists with extensive knowledge in the design of diverse treatment systems and components that will ensure a water quality that meets or exceeds State/Federal standards.

Arsenic Removal: Tetra Tech has extensive experience implementing treatment technologies for arsenic removal. Our staff is experienced in removing arsenic from water for drinking water purposes and wastewater discharge needs. Tetra Tech has designed arsenic removal systems with the following treatment technologies:

- Granular ferric hydroxide (GFH) adsorption
- Ion exchange
- Coagulation/filtration/sedimentation
- Reverse osmosis

Wastewater Systems: Tetra Tech offers comprehensive services in wastewater collection, treatment, reuse, disposal, and solids handling, treatment, and disposal. One specialized focus of practice includes upgrade, expansion, and retrofit of existing facilities.

The Tetra Tech team has learned that it takes special knowledge and careful attention to work in and around existing facilities, and its experience demonstrates the importance of properly integrating all facility components, old and new.

Tetra Tech's approach to the design of wastewater facilities involves maximizing the use of clients' existing facilities where feasible. Tetra Tech utilizes two important approaches to facility design. First, evaluate the existing facilities in a comprehensive manner, but with specific detail utilizing process and microbiology experts. For clients, Tetra Tech often finds excess capacity available in some processes and specific limitations in others. This allows clients to increase plant capacities with limited



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expenditures. Second, Tetra Tech utilizes sustainability and life cycle analysis approaches to determine what is best for a specific situation, resulting in custom solutions unique to the client.

Tetra Tech treatment expertise includes advanced wastewater processes, effluent reuse and biosolids processing, as well as laboratory-, pilot-, and full-scale process development and testing for difficult-to-treat wastes. Treatment plant designs have entailed:

- Single basin nitrogen removal process developed by Tetra Tech
- Conventional and extended-air activated sludge plants
- Oxidation/anoxic ditches with effluent filtration
- Aerated lagoons
- All biosolids processing: thickening, dewatering, digestion, composting, land application and reuse
- Odor control facilities for liquid and solid processing
- Trickle filter, rotating biological contactor, and microfiltration plants
- Associated piping, pumping, and lift stations
- Reuse and reclaimed water piping, pumping and other facilities

Tetra Tech has designed plant upgrades and expansions to resolve problems involving: inadequate capacity, corrosion, operating failures, discharge permit violations, and excessive odor.

For collection systems, Tetra Tech provides hydraulic analysis, design, and construction engineering services that range from simple gravity sewer-line extensions to force mains with pump station complexes. These systems are designed for varying site conditions: high groundwater, shallow bedrock, very cold climates, corrosive soils, and stream and highway crossings.

Engineering & Consulting Services

Electrical Engineering / SCADA: Tetra Tech electrical engineers are well versed in power distribution, standby power generation, instrumentation and controls, communication and alarm systems, and interior and exterior lighting for public and private facilities.

Our services entail energy analysis and management via in-plant energy auditing and value engineering for energy efficiency. Our staff also provides as-needed field I & C services for a number of water and wastewater plants. Tetra Tech offers Process Control Auditing, providing information on existing control limitations and solutions to improve the plant process.

Tetra Tech offers extensive SCADA, DCS, PLC, redundant

and backup control, and telemetry system design and programming services, coupled with a sound understanding of water and wastewater process control. We have implemented control logic for processes, such as plant influent monitoring and control, automated chemical-feed control, analytic data acquisition and laboratory monitoring, blower and aeration control, and level control. Our engineers have implemented strategies from very simple manual loops to highly complex multivariable control.

- Standby Power
- Communication & Alarm Systems
- Interior & Exterior Lighting
- Redundant and backup controls
- Telemetry System Design & Programming.

General Civil Engineering: Tetra Tech personnel work for developers, local and state government agencies to help facilitate negotiations. We work directly with municipalities to establish standards for review of developer-designed projects. Tetra Tech provides ongoing consulting and design to municipalities and special districts on ownership and maintenance, capital improvement programs, budgeting, and system evaluations for replacement reserves. Projects range from simple plant and plan reviews to complex treatment plant upgrades. Our engineers also direct diverse site development projects for education facilities, residential subdivisions, municipal and industrial plants, resorts, and commercial developments involving:

- Permitting & Entitlement
- Residential
- Commercial
- Industrial
- Gravel Mining
- Agricultural
- Master Planning
- Mixed Use
- Base Realignment and Closure (BRAC)
- Site Design
- Public Sector Planning
- Comprehensive Planning
- Development Review
- Develop Land Use
- Regulations, Roadways & Site Layouts — easement acquisitions, grading, parking lots, geometric and pavement design, intersections, lighting.

Construction Management: Tetra Tech's experience with construction management runs the gamut of projects from those constructed by the client's own forces, to projects involving coordinating multiple contractors selected by competitive bids, to projects requiring a specialized level of staffing expertise in project coordination, planning, and scheduling of the various construction activities. Tetra Tech provides varying levels of engineering services during construction. Equipped with innovative management



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practices, field operations, and technology tools, project execution is streamlined through startup-driven scheduling, constructability expertise, and jobsite management presence. Tetra Tech has successfully conquered the challenges of construction in shallow bedrock and high groundwater tables at altitudes from sea level to more than 10,000 feet.

- Cost Estimates
- Inspections
- Claim Identification, Documentation, and Opinions
- Specification Writing, Evaluation, and Review
- Expert Testimony
- Subcontract and/or Direct-hire Construction
- Construction Support Services
- Quality Management Services

- Construction Technology
- Constructability Expertise
- Expediting and Field Procurement
- Resident Engineering Representation
- Pre-commissioning Testing

Engineering services during construction involve office engineering and field engineering by personnel who understand the intricacies of the construction process and who have the experience to solve complex construction problems. The level of services Tetra Tech provides depends on many factors that include project size and complexity, the selected contractor's experience level and reputation, and budget considerations.

7. ANNUAL AVERAGE PROFESSIONAL SERVICES REVENUES OF FIRM FOR LAST 3 YEARS

a.	Percentage of Total Work Attributable to State, Federal and Municipal Government Work:	75
b.	Percentage of Total Work Attributable to Non-Government Work:	25

8. AUTHORIZED REPRESENTATIVE. The foregoing is a statement of facts.

Signature: Jack Pence  
Name: Jack Pence, P.E.

Date: December 21, 2015  
Title: Office Manager