



ATTACHMENT I – General Qualifications

ANNUAL REQUEST FOR QUALIFICATIONS AND EXPERIENCE NO:
ADSP015-00004729

STATE PROCUREMENT OFFICE
Department of Administration
100 North 15th Avenue, Suite 201
Phoenix, Arizona 85007

(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:	AMEC Environment & Infrastructure, Inc.
b.	FIRM (OR BRANCH OFFICE) STREET:	4600 E. Washington Street, Suite 600
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	1959

(g1).	OWNERSHIP - TYPE:	Corporation
(g2).	OWNERSHIP - SMALL BUSINESS STATUS:	n/a

h.	POINT OF CONTACT NAME AND TITLE:	Brett A. Howey, PE, Vice President, Southwest Area Manager
i.	POINT OF CONTACT TELEPHONE NUMBER:	602-733-6000
j.	POINT OF CONTACT E-MAIL ADDRESS:	brett.howey@amec.com
k.	NAME OF FIRM (If block 1a is a branch office)	AMEC Environment & Infrastructure, 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 Technicians/GIS Analysts	P	348	9
Civil Engineers	P	482	3
Construction Inspectors/Managers	P	226	7
Ecologists	P	97	1
Environmental Engineers	P	335	2
Environmental Scientists	P	632	6
Foundation/Geotechnical/Soils Engineers	P	447	15
Geologists	P	403	9
Hydrologists/Hydrogeologists	P	192	4
Land Surveyors	P	59	2
Materials Engineers	P	47	7
Planner: Urban/Regional/Environmental	P	108	5
Safety/Occupational Health Engineers	P	52	2
Technicians	P	1,340	52
Transportation Engineers	P	56	9
Water Resources Engineers	P	202	4
Air Quality Specialists	P	55	2
Project Services	P	1,049	27
UXO Professionals	S	190	0
Other Professional Staff	P	1,307	1
Total		7,627	167



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

a. Approximate No. of Projects (for Branch)	b. Experience	c. Revenue Index Number (see below)
4	Conservation and Resource Management	7 (firm)
3	Construction Management	4 (branch); 9 (firm)
1	Dams, Dikes, Levees	3 (branch); 7 (firm)
1	Design-Build	1 (branch); 9 (firm)
5	Ecological & Archaeological Investigations	1 (branch); 9 (firm)
4	Energy Conservation: New Energy Sources	7 (firm)
10	Environmental Impact Studies, Assessments or Statements	1 (branch); 9 (firm)
10	Environmental Planning	1 (branch); 7 (firm)
5	Environmental Remediation	4 (branch); 9 (firm)
5	GIS Services: Development, Analysis and Data Collection	1 (branch); 9 (firm)
3	Hazardous, Toxic, Radioactive Waste Remediation	9 (firm)
15	Highways, Streets, Airfield Paving, Parking Lots	4 (branch); 9 (firm)
2	Planning (Community, Regional, Areawide and State)	1 (branch); 6 (firm)
1	Railroad, Rapid Transit	9 (firm)
1	Recreation Facilities (Parks, Marianas, etc.)	1 (branch); 7 (firm)
5	Rivers, Canals, Waterways, Flood Control	2 (branch); 9 (firm)
20	Soils & Geologic Studies; Foundations	4 (branch); 9 (firm)
15	Surveying, Platting, Mapping, Flood Plain Studies	2 (branch); 6 (firm)
30	Testing & Inspection Services	5 (branch); 9 (firm)
0	Unexploded Ordinance Remediation	9 (firm)
4	Water Resources, Hydrology, Ground Water	3 (branch); 9 (firm)

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 Dick Yano		b. ROLE IN THIS CONTRACT Transportation Engineer		c. YEARS EXPERIENCE	
				1. TOTAL 31	2. WITH CURRENT FIRM 8
d. FIRM NAME AND LOCATION <i>(City and State)</i> AMEC Environment & Infrastructure, Inc., Phoenix, AZ					
e. EDUCATION <i>(DEGREE AND SPECIALIZATION)</i> BS, Civil Engineering			f. CURRENT PROFESSIONAL REGISTRATION <i>(STATE AND DISCIPLINE)</i> Professional Engineer: AZ #39391, Civil		
g. OTHER PROFESSIONAL QUALIFICATIONS <i>(Publications, Organizations, Training, Awards, etc.)</i> Memberships: American Public Works Association, American Council of Engineering Companies					

H. RELEVANT PROJECTS

	(1) TITLE AND LOCATION <i>(City and State)</i>	(2) Year Completed	
		Professional Services	Construction <i>(if applicable)</i>
1)	Hardy Drive Street Improvements, Tempe, AZ	2013	2014
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Design of project improvements including striping changes to widen bike lanes and narrow travel and center turn lane; sidewalk widening; raised medians; ADA curb ramp and driveway upgrades; and landscape and bus stop upgrades. Design: \$180,000; Construction: \$1,900,000. Project Manager.		
2)	Southern Avenue and Country Club Drive Intersection, Mesa, AZ	2013	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 Design of intersection improvements to add through lanes, bus bays, right turn lanes, driveways, ADA upgrades, pavement reconstruction, traffic signal/street lighting, and water/sewer lines. Design: \$680,000; Construction: \$14,000,000. Project Manager.		
3)	Greenfield Road, Germann to Pecos, Gilbert, AZ	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 Design of improvements including roadway widening composed of four travel lanes, center turn lane, bike lanes, curb/gutter, sidewalk, traffic signals, water line, sanitary sewer, irrigation ditch relocations, retention basins, and utility relocations. Design: \$1,220,000; Construction: \$5,334,000. Project Manager.		
4)	Ocotillo Road at UPRR, Queen Creek, AZ	2013	2014
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Design of roadway widening to accommodate two lanes in each direction, center turn lane, and bike lanes across the railroad including waterline and ITS crossing. Design: \$165,000; Construction: \$1,100,000. Project Manager.		
5)	US 93, Hoover Dam to MP 17, Mohave County, AZ	2008	2010
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Design of 15-mile roadway widening to a four-lane divided highway including roadway and drainage design, traffic and geotechnical services, cost estimating and specifications, utility coordination and survey. Design: \$6,700,000; Construction: \$75,000,000. Project Manager.		



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

a. NAME Todd Farmer	b. ROLE IN THIS CONTRACT Civil Engineer	c. YEARS EXPERIENCE	
		1. TOTAL 15	2. WITH CURRENT FIRM 11
d. FIRM NAME AND LOCATION <i>(City and State)</i> AMEC Environment & Infrastructure, Inc., Phoenix, AZ			
e. EDUCATION <i>(DEGREE AND SPECIALIZATION)</i> BS, Civil Engineering		f. CURRENT PROFESSIONAL REGISTRATION <i>(STATE AND DISCIPLINE)</i> Professional Engineer: AZ #40,970, Civil	
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)	Randolph Road, Coolidge, AZ	2009	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 Design of project improvements including replacing the existing dirt road with a new three lane paved roadway that will serve a growing industrial area within Coolidge. Design: \$160,000; Engineer's Cost Estimate: \$2,144,500. Project Engineer.		
2)	Camp Navajo Building One Rehabilitation, Bellemont, AZ	2010	2010
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Design of site grading, drainage, roadway demolition and parking lot construction, and utility relocation design of site surrounding Building One for Camp Navajo ANG. Design: \$46,000; Construction: \$12,000,000. Project Engineer.		
3)	Greenfield Road, Germann to Pecos, Gilbert, AZ	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 Design of improvements including roadway widening composed of four travel lanes, center turn lane, bike lanes, curb/gutter, sidewalk, traffic signals, water line, sanitary sewer, irrigation ditch relocations, retention basins, and utility relocations. Design: \$1,220,000; Construction: \$5,334,000. Project Engineer.		
4)	Ocotillo Road at UPRR, Queen Creek, AZ	2013	2014
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Design of roadway widening to accommodate two lanes in each direction, center turn lane, and bike lanes across the railroad including waterline and ITS crossing. Design: \$165,000; Construction: \$1,100,000. Project Engineer.		
5)	Davis-Monthan AFB Site Improvements, Tucson, AZ	2010	2010
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Design of site grading, drainage, parking lot and pedestrian sidewalk infrastructure to enhance existing base operations efficiency. Design: \$1,200,000; Construction: \$75,000,000. Project Engineer.		



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

a. NAME Clark C. Clatanoff	b. ROLE IN THIS CONTRACT Transportation Engineer	c. YEARS EXPERIENCE	
		1. TOTAL 35	2. WITH CURRENT FIRM 5
d. FIRM NAME AND LOCATION (City and State) AMEC Environment & Infrastructure, Inc., Phoenix, AZ			
e. EDUCATION (DEGREE AND SPECIALIZATION) BS, Civil Engineering		f. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE) Professional Engineer: AZ #20206, CA #41475, NE #E5768, NM #12024, NV #9999, UT #97-339273-2202, Professional Traffic Operations Engineer #602	
g. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.) <i>Memberships:</i> Institute of Transportation Engineers (ITE), American Society of Highway Engineers (ASHE)			

H. RELEVANT PROJECTS

	(1) TITLE AND LOCATION (City and State)	(2) Year Completed	
		Professional Services	Construction (if applicable)
1)	ITS Improvements, Peoria, AZ	2012	2013
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Design of ITS communications and surveillance infrastructure at various locations throughout the City of Peoria. Design: \$134,500; Construction: \$1,015,000. Transportation Engineer.		
2)	SR 303L, Camelback Road to Glendale Avenue, Glendale, AZ	2011	2014
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Design of two (2) miles of urban freeway signing, pavement marking, FMS trunk line and lighting, as well as design of two service interchange traffic signals. Design: \$449,000; Construction: \$43,322,000. Transportation Engineer.		
3)	I-10/Kortsen Road Traffic Interchange, Casa Grande, AZ	2014	n/a
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Preparation of an alternative selection report to evaluate several alignment options of Kortsen Road. Design: \$156,000. Transportation Engineer.		
4)	Safe Routes to School, Casa Grande, AZ	2014	2015
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Design and retrofitting of ramps, sidewalk, signing and crosswalk striping, as well as path lighting analysis and design to provide ADA compliant facilities for students traveling to school at various locations. Design: \$87,500; Construction: \$264,000 (est.). Transportation Engineer.		
5)	SR 210, Sign Rehabilitation, Tucson, AZ	2013	n/a
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Design for retrofitting of roadside and overhead signing for an expressway/conventional roadway corridor. Design: \$23,200; Construction: \$98,000. Transportation Engineer.		



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a. NAME Scott Kelley		b. ROLE IN THIS CONTRACT Transportation Engineer		c. YEARS EXPERIENCE	
				1. TOTAL 11	2. WITH CURRENT FIRM 2
d. FIRM NAME AND LOCATION (City and State) AMEC Environment & Infrastructure, Inc., Phoenix, AZ					
e. EDUCATION (DEGREE AND SPECIALIZATION) BSE, Civil Engineering			f. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE) Professional Engineer: AZ #48269, CA #73357, Professional Traffic Operations Engineer #3230		
g. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.) <i>Membership:</i> Institute of Transportation Engineers (ITE)					

H. RELEVANT PROJECTS

	(1) TITLE AND LOCATION (City and State)	(2) Year Completed	
		Professional Services	Construction (if applicable)
1)	ITS Improvements, Peoria, AZ	2012	2013
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Design of ITS communications and surveillance infrastructure at various locations throughout the City of Peoria. Design: \$134,500; Construction: \$1,015,000. Transportation Engineer.		
2)	SR 303L, Camelback Road to Glendale Avenue, Glendale, AZ	2011	2014
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Design of two (2) miles of urban freeway signing, pavement marking, FMS trunk line and lighting, as well as design of two service interchange traffic signals. Design: \$449,000; Construction: \$43,322,000. Transportation Engineer.		
3)	I-10/Kortsen Road Traffic Interchange, Casa Grande, AZ	2014	n/a
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Preparation of an alternative selection report to evaluate several alignment options of Kortsen Road. Design: \$156,000. Transportation Engineer.		
4)	Cottonwood Lane and Peart Road Signal Progression, Peoria, AZ	2013	n/a
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Analyze and develop coordinated traffic signal timing plans for two corridors to improve traffic progression and reduce delays. Design: \$17,000. Transportation Engineer.		
5)	Val Vista Drive/Warner Road Traffic Signal, AZ	2013	2013
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Design modification to signal to implement protected left turn phasing, install ADA pedestrian push buttons and add concrete apron for push button access. Design: \$22,600; Construction: \$113,000. Transportation Engineer.		



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a. NAME Michael Blankenship		b. ROLE IN THIS CONTRACT Transportation Engineer		c. YEARS EXPERIENCE	
				1. TOTAL 28	2. WITH CURRENT FIRM 2
d. FIRM NAME AND LOCATION (City and State) AMEC Environment & Infrastructure, Inc., Phoenix, AZ					
e. EDUCATION (DEGREE AND SPECIALIZATION) BS, Civil Engineering MS, Civil Engineering			f. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE) Professional Engineer: AZ #45148		
g. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.) Membership: Institute of Transportation Engineers (ITE)					

H. RELEVANT PROJECTS

	(1) TITLE AND LOCATION (City and State)	(2) Year Completed	
		Professional Services	Construction (if applicable)
1)	Roadway Departure Safety Implementation Plan, Phoenix/Tucson, AZ	2013 (ongoing)	n/a
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Selecting and scoping road departure crash countermeasure projects for ADOT Phoenix and Tucson Districts. Design: \$230,934. Transportation Engineer.		
2)	Arizona Road Safety Assessment Program, Phoenix, AZ	2013	n/a
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Managed Arizona Road Safety Assessment (RSA) Program from 2006-2013, conducting 80 RSAs for cities, counties, Tribes and ADOT. Planning: \$2,000,000. Transportation Engineer.		
3)	I-10 Phoenix RSA, MP 141-149, Phoenix, AZ	2007	n/a
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Team Leader for RSA of I-10 eastbound in Phoenix. This segment of I-10 is on the state's Top 5% list of locations with severe safety needs. Planning: \$25,000. Transportation Engineer.		
4)	SR 86/IRR 15 Intersection RSA, Quijotoa, AZ	2006	n/a
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Team Leader for RSA of SR 86/IRR 15 intersection in Quijotoa. This intersection had multiple road owners including ADOT, Tohono O'odham Nation and BIA. Planning: \$25,000. Transportation Engineer.		
5)	Olive Avenue/59th Avenue Intersection RSA, Glendale, AZ	2013	n/a
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Team leader for RSA of Olive Avenue/59 th Avenue intersection in Glendale. This intersection is the highest crash location in the City of Glendale. Planning: \$25,000. Transportation Engineer.		



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a. NAME Alex Coronel		b. ROLE IN THIS CONTRACT Senior Drainage Engineer		c. YEARS EXPERIENCE	
				1. TOTAL 16	2. WITH CURRENT FIRM 13
d. FIRM NAME AND LOCATION <i>(City and State)</i> AMEC Environment & Infrastructure, Inc., Phoenix, AZ					
e. EDUCATION <i>(DEGREE AND SPECIALIZATION)</i> BS, Civil Engineering			f. CURRENT PROFESSIONAL REGISTRATION <i>(STATE AND DISCIPLINE)</i> Professional Engineer: AZ #40209 Certified Floodplain Manager, Nationwide, #02-00374		
g. OTHER PROFESSIONAL QUALIFICATIONS <i>(Publications, Organizations, Training, Awards, etc.)</i> Memberships: Association of State Floodplain Managers					

H. RELEVANT PROJECTS

	(1) TITLE AND LOCATION <i>(City and State)</i>	(2) Year Completed	
		Professional Services	Construction <i>(if applicable)</i>
1)	Hunt & Magma Flood Mitigation, San Tan Valley, AZ	2012-2013	n/a
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE Preparation of a design concept report (DCR) and final design plans to mitigate flooding at the intersection of Hunt Highway and Magma Road. Services include 1-D and 2-D (using FLO-2D) Hydrology and Hydraulics, preparation and alternatives selection of Design Concepts, Final Design, Geotechnical Engineering, Environmental and Cultural Resources Permitting, Field Survey and Legal Descriptions. The DCR was completed and approved. The production of final design plans is ongoing. \$226,000. Project Manager. <input checked="" type="checkbox"/> Check if project performed with current firm		
2)	Gilbert Landfill Surface Drainage Erosion Mitigation Design, Gilbert, AZ	2012-2013	n/a
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE Evaluation of the Gilbert Landfill site and development of alternatives to mitigate surface drainage issues relating to landfill cap erosion. AMEC completed an evaluation of existing studies at the site and established, compared and contrasted various alternatives for flood mitigation culminating in the facilitation of a Stakeholder Workshop at which a chosen mitigation alternative and final design criteria was established. AMEC also prepared and submitted a final construction package with design plans, project specifications and engineers cost estimate in June of 2013. The project is currently under construction and AMEC is providing post-design services. \$158,000. Project Manager. <input checked="" type="checkbox"/> Check if project performed with current firm		
3)	North Lake Havasu Flood Map Revisions, Lake Havasu City, AZ	2009-2013	n/a
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE Re-mapping of approximately 2.5 square miles of Zone AO floodplain in portions of Unincorporated Mohave County between the Lake Havasu City Limits and the Colorado River. Services included data collection and review of existing studies, field visits, a detailed geomorphic assessment, detailed 1-D and 2-D (using FLO-2D) hydrologic and hydraulics and remapping the floodplains within the study area. The project Technical Data Notebook (TDN) has been submitted to FEMA and project hydrology and hydraulics has been approved. The floodplain mapping is currently under FEMA review. \$312,000. Project Manager. <input checked="" type="checkbox"/> Check if project performed with current firm		
4)	Scour and Lateral Bank Migration Analysis Sierrita Gas Pipeline, Pima County, AZ	2013	n/a
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE Calculation of total predicted scour depth and lateral migration potential at over 200 dry wash crossings in the Altar Valley in support of a natural gas pipeline project. Services included an evaluation of existing studies, field reconnaissance, hydrology, hydraulics, scour and lateral erosion potential calculations, geophysics, GIS data management and reporting. \$230,000. Scour and Lateral Erosion Analysis Task Manager. <input checked="" type="checkbox"/> Check if project performed with current firm		



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Alex Coronel (continued)

	(1) TITLE AND LOCATION <i>(City and State)</i>	(2) Year Completed	
	Town of Greybull Levee Certification, Greybull, WY	Professional Services 2013 - Ongoing	Construction <i>(if applicable)</i> n/a
5)	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Levee Certification project to demonstrate compliance with the standards set forth Code of Federal Regulations Section 65.10 (44 CFR §65.10) for a 5.6-mile levee system along the west bank of the Big Horn River and south bank of Dry Creek that protects the Town of Greybull, Wyoming. Services include hydrology, hydraulics, geotechnical field investigation, materials testing and analysis, field survey (by others), an evaluation of levee closure devices, an evaluation of the levee operation and maintenance manual, preparation of mitigation alternatives, identification of potential funding sources, GIS data management and reporting. The project Draft Levee Certification Report will be submitted to the Town for review in November of 2013. \$252,000. Project Manager.		



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

a. NAME Ed Latimer, PE, CPSWQ, CPESC		b. ROLE IN THIS CONTRACT Senior Stormwater Specialist		c. YEARS EXPERIENCE	
				1. TOTAL 26	2. WITH CURRENT FIRM 13
d. FIRM NAME AND LOCATION (City and State) AMEC Environment & Infrastructure, Inc., Phoenix, AZ					
e. EDUCATION (DEGREE AND SPECIALIZATION) PhD, Irrigation Engineering MS, Agricultural Engineering BS, Agricultural Engineering			f. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE) Professional Engineer: AZ #28822 Certified Professional in Storm Water Quality #190 Certified Professional in Erosion & Sediment Control #4372		
g. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.) <i>Memberships:</i> International Erosion Control Association, American Public Works Association Numerous technical papers and publications					

H. RELEVANT PROJECTS

	(1) TITLE AND LOCATION (City and State)	(2) Year Completed	
		Professional Services	Construction (if applicable)
1)	Stormwater Permit Compliance, AZ (statewide)	ongoing	n/a
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Developed and served as Technical Lead for the development/implementation of Stormwater Pollution Prevention Plans (SWPPPs) and successful performance of numerous compliance services related to with the requirements of the AZPDES Construction General Permit (CGP) and Multi Sector General Permit (MSGP). Led and supervised the development and implementation of over 50 SWPPPs and related services. Cost: \$400,000.		
2)	Development of Employee Stormwater Training Modules, ADOT, AZ	2011	n/a
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Project Manager and Technical Lead for the development of six (6) different stormwater training modules for the training of ADOT staff throughout the state, , consisting of: 1) General Employee Stormwater Awareness, 2) Non-Stormwater Discharges, Illicit Discharges, and Illegal Dumping, 3) New Construction and Land Disturbances, New Development, and Significant Redevelopment, 4) Storm Sewer System and Highway Maintenance, 5) Good Housekeeping – Waste Disposal and Industrial Sites, and 6) Good Housekeeping – Pesticides, Herbicides, and Fertilizers. The material consisted of fully-scripted (i.e., speaker notes) Microsoft PowerPoint presentations, coded to be web-based and self-training, and included interactive test questions and automated tracking/reporting. Cost: 87,000.		
3)	Post-Construction Best Management Practices (BMPs) Water Quality Manual, ADOT, AZ	2007, 2013	n/a
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Project Manager and Technical Lead for the original development and subsequent update of a Permanent (post-construction) Stormwater BMP Quality Manual. The objective of the manual is to improve the water quality of discharges from ADOT storm drain facilities within permit-regulated municipal jurisdictions within ¼ of a mile distance of impaired or unique waters, or other projects designated as sensitive by ADOT. The project efforts involved the research and determination of potential permanent BMPs for use on ADOT construction projects. Cost: \$190,000.		



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

Ed latimer (continued)

	(1) TITLE AND LOCATION <i>(City and State)</i>	(2) Year Completed	
	Update/Revision of Drainage Design Manual of Maricopa County Volume III – Erosion Control, Flood Control District of Maricopa County, AZ	Professional Services 2006	Construction <i>(if applicable)</i> n/a
4)	(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 and Technical Lead. This document was originally developed in the early 90s to provide guidance to agencies, engineers and contractors responsible for construction projects within Maricopa County in complying with regulatory requirements in relation to stormwater discharges from regulated construction sites. The revised edition of the manual reflects, among many other things, the latest regulatory framework for both municipalities and construction sites regarding stormwater discharges, plus it outlines/explains the changes in the Construction General Permit, which now focuses on both small and large construction site activities. Cost: \$90,000.		



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a. NAME Robert Scervo		b. ROLE IN THIS CONTRACT Senior Drainage Engineer		c. YEARS EXPERIENCE	
				1. TOTAL 21	2. WITH CURRENT FIRM 1
d. FIRM NAME AND LOCATION (City and State) AMEC Environment & Infrastructure, Inc., Phoenix, AZ					
e. EDUCATION (DEGREE AND SPECIALIZATION) BS, Civil Engineering			f. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE) Professional Engineer: AZ #33457, Civil Certified Floodplain Manager #US-09-04658		
g. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.) <i>Publications and presentations:</i> "Flood Risk Assessment for the town of Wenden, La Paz County, Arizona, 4/17/2001." Robert Scervo, Arid West Conference Proceeding in New Mexico 2001					

H. RELEVANT PROJECTS

1)	(1) TITLE AND LOCATION (City and State) Rancho Bella Vista Drainage Mitigation, San Tan, Pinal County, AZ	(2) Year Completed	
		Professional Services 2012-2013	Construction (if applicable) n/a
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input type="checkbox"/> Check if project performed with current firm Design of flood control channel and infrastructure to mitigate existing flooding at Rancho Bella Vista Subdivision in Pinal County, Arizona. Design: \$130,000; Construction Estimate: \$710,000. Project Manager.		
2)	(1) TITLE AND LOCATION (City and State) Downtown Phoenix Storm Drain Improvements, City of Phoenix, Maricopa County, AZ	(2) Year Completed	
		Professional Services 2010-2013	Construction (if applicable) \$6,900,000 (Phase I)
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input type="checkbox"/> Check if project performed with current firm Analysis and design of 27 new storm drain runs in Downtown Phoenix. Included over 15,000 linear feet of new storm drain and 130 new catch basins. Design: \$800,000; Construction: \$6,900,000 (Phase I only). Drainage Task Manager.		
3)	(1) TITLE AND LOCATION (City and State) Pinal County Levee and Dike Inventory, Pinal County Public Works Department, Pinal County, AZ	(2) Year Completed	
		Professional Services 2009	Construction (if applicable) n/a
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input type="checkbox"/> Check if project performed with current firm Prioritization of over 1,000 embankment structures identified in the County's Area Drainage Master Plans for inclusion in the Arizona County Insurance Pool (ACIP). Design: \$30,000. Project Manager.		
4)	(1) TITLE AND LOCATION (City and State) Proposed Sewer Scour Analysis, Lake Havasu City, Mohave County, AZ	(2) Year Completed	
		Professional Services 2009	Construction (if applicable) n/a
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input type="checkbox"/> Check if project performed with current firm Managed/Lead scour analysis determining minimum constructed depth at 13 wash crossings within the Trotwood and Mockingbird basins in Lake Havasu City, Arizona. Design: \$80,000. Drainage Task Manager.		
5)	(1) TITLE AND LOCATION (City and State) SR 303L Area Drainage Master Plan (ADMP), Flood Control District of Maricopa County, AZ	(2) Year Completed	
		Professional Services 1999-2005	Construction (if applicable) n/a
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input type="checkbox"/> Check if project performed with current firm Area Drainage Master Study/Plan Update for a 250 square mile area located west of the Phoenix Metropolitan Area (West Valley). Design: \$1,000,000. Deputy Project Manager.		



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a. NAME Yichun Xu		b. ROLE IN THIS CONTRACT Senior Water Resources Engineer		c. YEARS EXPERIENCE	
				1. TOTAL 32	2. WITH CURRENT FIRM 10
d. FIRM NAME AND LOCATION (City and State) AMEC Environment & Infrastructure, Inc., Phoenix, AZ					
e. EDUCATION (DEGREE AND SPECIALIZATION) PhD, Engineering, Fluvial Hydraulics MS, River Hydrodynamics BS, Civil Engineering			f. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE) Professional Engineer: AZ #44746		
g. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.) <i>Memberships:</i> American Society of Civil Engineering; International Association of Hydraulic Engineering and Research; Association of State Floodplain Managers					

H. RELEVANT PROJECTS

	(1) TITLE AND LOCATION (City and State) North Lake Havasu Flood Map Revisions, Lake Havasu City, AZ	(2) Year Completed	
		Professional Services 2010 - 2011	Construction (if applicable) n/a
1)	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Re-mapping of approximately 17 miles of Zone AE and 2.5 square miles of Zone AO floodplain in portions of Unincorporated Mohave County between the Lake Havasu City Limits and the Colorado River. Services included data collection and review of existing studies, field visits, a detailed geomorphic assessment, detailed 2-D (using FLO-2D) hydrologic/hydraulics model development and H&H analyses, remapped the floodplains within the study area. The floodplain mapping has been approved by FEMA. \$312,000. Lead Project Engineer.		
	(1) TITLE AND LOCATION (City and State) North Spanish Spring Floodplain Detention Facility Project (NSSFDF), Reno, NV	(2) Year Completed	
		Professional Services 2005-2006	Construction (if applicable) n/a
2)	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE The NSSFDF is to control stormwater flow from Griffith Canyon and to attenuate flow from unincorporated Washoe County entering the City of Sparks Sphere of Influence which includes construction of artificial conveyance channels, a Sediment Retention Basin (SRB) and a medium Water Detention Basin (WDB) with a 45 ft embank height and a storage capacity of 10,000 ac-ft. Performed sediment transport analysis and sized the SRB, designed the channels, inlets and energy dissipation structures for the SRB, WDB and culvert protections, and all hydraulic, channel stability and scour analyses for the NSSFDF. \$542,000. Project Engineer.		
	(1) TITLE AND LOCATION (City and State) Hunt and Magma Flood Mitigation Design Concept Report, Pinal, AZ	(2) Year Completed	
		Professional Services 2012-2013	Construction (if applicable) n/a
3)	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Ongoing drainage issues have been observed by County Flood Control Section staff and reported by local residents at the Hunt Highway and Magma Road intersection. Overtopping of Hunt Highway causes periodic closure of the roadway and damage to private drainage facilities, overtopping of and flow along Magma Road results in periodic closures of Magma Road and impeding access to adjacent subdivisions, and causes damage to private drainage facilities and frequent Flooding within the Superstition Views subdivision. The DCR was to perform cadastral research to identify the source of and quantify the flood volumes impacting the project area, and perform a conceptual level analysis of several alternative solutions to mitigate flooding. Design: \$49,500. Project Engineer.		



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Yichun Xu (continued)

	(1) TITLE AND LOCATION <i>(City and State)</i> On-Call Plan Review Services, FCDMC	(2) Year Completed	
		Professional Services 2008-2012	Construction <i>(if applicable)</i> n/a
4)	(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 project included assisting the Regulatory Division of the FCDMC with its reviews of permit applications for Drainage Clearances and Floodplain Use Permits. Responsibilities included the review of grading/drainage plans and reports for single-family homes, multi-lot master planned communities and commercial sites, as well as CLOMR and LOMR submittals prior to their submittal to the FEMA. AMEC's input was instrumental to both obtaining an FUP and fine-tuning packages for FEMA review. Design: \$500,000		
	(1) TITLE AND LOCATION <i>(City and State)</i> Levee Certification of the Wichita Valley Center Local Flood Control Project, Wichita, KS	(2) Year Completed	
		Professional Services 2010	Construction <i>(if applicable)</i> n/a
5)	(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 Wichita levee project is for certification of approximately 97 miles of earthen levees. Hydrologic and hydraulic models were created to determine if adequate freeboard is available on the levees along these reaches. Both the USACE HEC-RAS model and a FLO-2D, 2-dimensional flood routing model, were used for the hydraulic analysis. Project Engineer responsible for FLO-2D levee breach modeling. Analysis included FLO-2D model developing, testing and performing simulations for 12 Levee Breach Scenarios for Arkansas River System, Littler Arkansas River System and Chisholm River System. The project site covers 350 square miles and includes 101 miles of levee and 117 river miles of channel. Analysis/Certification: \$2,800,000; Design: \$550,000; Maintenance Design: \$450,000. Project Engineer.		



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

a. NAME Luis Garcia-Ossorio		b. ROLE IN THIS CONTRACT Civil Designer		c. YEARS EXPERIENCE	
				1. TOTAL 11	2. WITH CURRENT FIRM 2
d. FIRM NAME AND LOCATION (City and State) AMEC Environment & Infrastructure, Inc., Phoenix, AZ					
e. EDUCATION (DEGREE AND SPECIALIZATION) MS, Civil Engineering MS, Agricultural Engineering			f. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE) Professional Engineer Civil Engineer (Spain) Professional Engineer Agricultural Engineer (Spain)		
g. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.) American Society of Civil Engineers (ASCE)					

H. RELEVANT PROJECTS

1)	(1) TITLE AND LOCATION (City and State) I-90 Tollway Improvements, Chicago, IL	(2) Year Completed	
		Professional Services 2013	Construction (if applicable) n/a
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Drainage improvements in the new 5.5 miles stretch of the I-90 Tollway. Design Engineer.			
2)	(1) TITLE AND LOCATION (City and State) Intel Fab-42 Ocotillo Campus, Chandler, AZ	(2) Year Completed	
		Professional Services 2012	Construction (if applicable) 2012
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input type="checkbox"/> Check if project performed with current firm Design of drainage and underground utilities, including post design services for the Intel Fab-42 Project. Construction: \$5.5 billion. Project Engineer.			
3)	(1) TITLE AND LOCATION (City and State) Queen Creek Road improvements from Val Vista Road to Higley Road, Gilbert, AZ	(2) Year Completed	
		Professional Services 2010	Construction (if applicable) n/a
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input type="checkbox"/> Check if project performed with current firm Drainage improvements associated with the roadway project. Design Engineer.			
4)	(1) TITLE AND LOCATION (City and State) Rancho Mirage Master Planned Community, Maricopa, AZ	(2) Year Completed	
		Professional Services 2008	Construction (if applicable) n/a
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input type="checkbox"/> Check if project performed with current firm Design Engineer for all the civil infrastructure design for the 2,000 single family home development including drainage, water/wastewater and roadway design. Design Engineer.			
5)	(1) TITLE AND LOCATION (City and State) Gantzel Road improvements from Combs Road to Ocotillo Road, Pinal County, AZ	(2) Year Completed	
		Professional Services 2006	Construction (if applicable) n/a
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input type="checkbox"/> Check if project performed with current firm Drainage improvements associated with the roadway project. Design Engineer.			



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

a. NAME Rebecca Sydnor, PE, LEED-AP		b. ROLE IN THIS CONTRACT Water Quality Specialist		c. YEARS EXPERIENCE	
				1. TOTAL 12	2. WITH CURRENT FIRM >1
d. FIRM NAME AND LOCATION <i>(City and State)</i> AMEC Environment & Infrastructure, Inc., Phoenix, AZ					
e. EDUCATION <i>(DEGREE AND SPECIALIZATION)</i> BS, Civil Engineering (with environmental concentration)			f. CURRENT PROFESSIONAL REGISTRATION <i>(STATE AND DISCIPLINE)</i> Professional Engineer (Civil): AZ #54662 LEED Accredited Professional: 2009		
g. OTHER PROFESSIONAL QUALIFICATIONS <i>(Publications, Organizations, Training, Awards, etc.)</i> Certifications and training: OSHA HAZWOPER (29 CFR 1910.120); OSHA Confined Space (29 CFR 1910.146); MSHA Open Pit Metal and Non-Metal Mines; Comprehensive NEPA; Leadership in Engineering Administration Program (LEAP)					

H. RELEVANT PROJECTS

	(1) TITLE AND LOCATION <i>(City and State)</i>	(2) Year Completed	
		Professional Services	Construction <i>(if applicable)</i>
1)	AZPDES Phase 1 MS4 Compliance Support, Scottsdale, AZ	2007-2014	n/a
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input type="checkbox"/> Check if project performed with current firm Provided regulatory support for this on-call contract to provide annual and as-needed stormwater compliance activities under the City's individual AZPDES MS4 Permit. Annual tasks include wet weather monitoring and annual reporting. On-call services included emergency response oversight, sampling, and follow-up; permit negotiation with ADEQ; and stormwater code revision. Revised several components of the SWMP, including development of a system for generating and updating an industrial facility inventory. Prepared and implemented protocols, procedures, and training for industrial and construction inspections, dry weather monitoring, illicit discharge detection and elimination, and municipal industrial MSGP compliance. Additional tasks included assistance with public involvement, review and revision of existing City Code for changes in stormwater enforcement, development of industrial and construction stormwater inspection programs, and preparation of an Enforcement Response Plan. Project Manager. Under a separate contract, revised the SWPPP for the Scottsdale Airport for compliance with the MSGP. Performed training inspections and developed inspection forms for airport personnel.		
2)	AZPDES MSGP Stormwater Management Planning, CDM Smith c/o City of Phoenix Aviation Department, Phoenix, AZ	2007-2014	n/a
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input type="checkbox"/> Check if project performed with current firm Managed subcontract to CDM Smith for this stormwater planning and compliance project at the Sky Harbor, Goodyear, and Deer Valley Airports under the AZPDES MSGP. Beginning in 2007, responsibilities included assisting in developing and delivering training curriculum for annual Stormwater Pollution Prevention Team training, conducting and organizing quarterly and annual inspections, performing and supervising visual assessments, performing and supervising de-icing inspections, and revising and updating the SWPPP for each of the three city airports – including an extensive revision of the Control Measures section. Provided emergency support and investigation services and completed MSGP-required Corrective Action reports. Assisted in the development and delivery of Inspector training. Responsibilities also included managing the team of inspectors including considerations such as security badging, inspection protocols, and tenant/business sensitivity. Project Manager.		



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Rebecca Sydnor (continued)

3)	(1) TITLE AND LOCATION <i>(City and State)</i> AZPDES Regulatory Assistance and Training, Phoenix, AZ	(2) Year Completed	
		Professional Services 2009-2010	Construction <i>(if applicable)</i> n/a
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input type="checkbox"/> Check if project performed with current firm Developed and delivered five stormwater training curriculums to City employees, including: stormwater awareness, industrial/construction/ de minimis general permits, IDDE/enforcement response/monitoring, industrial stormwater inspection, and monitoring for dry weather screening. The industrial inspection training included a classroom portion and a practice inspection at a municipal industrial facility. The dry weather screening training included classroom training as well as and hands-on training in the field where trainees were able to use field screening kits to test dry weather flows for common pollutants. Also assisted in comparing the City's old MS4 permit to ADEQ's draft Phase 1 MS4 permit and compiling a list of new permit requirements. The SWMP requirements in the new permit were compared to the existing SWMP to identify new activities and data tracking requirements.		
4)	(1) TITLE AND LOCATION <i>(City and State)</i> AZPDES MSGP and SPCC Rule Support, Tempe, AZ	(2) Year Completed	
		Professional Services 2010-2011 updates in 2012 and 2014	Construction <i>(if applicable)</i> n/a
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input type="checkbox"/> Check if project performed with current firm Brought the East Valley Bus Operations and Maintenance (EVBOM) Facility into compliance with the 2010 AZPDES MSGP. Revised the SWPPP to meet the general requirements and sector-specific requirements under Sector P – Land Transportation and Warehousing. After the EVBOM Facility made structural modifications and added a new 12,000 gallon fuel storage tank, updated the SWPPP and SPCC Plan and also developed a combined inspection form to streamline the inspection documentation process. Prepared and delivered training to meet the requirements of both the SWPPP and SPCC programs. Technical Lead.		
5)	(1) TITLE AND LOCATION <i>(City and State)</i> AZPDES Phase II MS4 Compliance Support, Surprise, AZ.	(2) Year Completed	
		Professional Services 2013-2014	Construction <i>(if applicable)</i> n/a
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input type="checkbox"/> Check if project performed with current firm Revised the City's SWMP to comply with the current AZPDES Phase II MS4 General Permit and to better reflect current City stormwater practices. The City's SWMP was outdated and included best management practices unrelated to stormwater quality. Revised the SWMP and made several recommendations for changes to the City's stormwater code and to current practices. Developed new number-based measureable goals in the SWMP that were easier to track. Provided on-going compliance support and regulatory interpretation. Project Manager.		



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a. NAME Brian McBride		b. ROLE IN THIS CONTRACT Water/Wastewater Practice Leader		c. YEARS EXPERIENCE	
				1. TOTAL 21	2. WITH CURRENT FIRM 2
d. FIRM NAME AND LOCATION (City and State) AMEC Environment & Infrastructure, Inc., Phoenix, AZ					
e. EDUCATION (DEGREE AND SPECIALIZATION) MS/BS, Civil Engineering BS, Commerce and Engineering			f. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE) Professional Engineer (Civil): AZ #33441, NV #19516 MO #2012012595, TX #102509		
g. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.) <i>Presentations:</i> "A Primary Treatment Solution Without Clarifiers", AZWater Conference, May 2010; "Odor Abatement and Cold Plasma Technology – A Revolutionary Approach", WEFTEC, October 2008; "Benefits of Continuing Institutional Education", AWPCA Conference, May 2003; "In the Interim: Buying Time for a Membrane WTP Upgrade in Central Arizona", AWPCA Conference, May 2002; "Problems and Solutions Regarding the Design of a Membrane Bioreactor WWTP in Anthem Arizona", AWPCA Conference, May 2001 <i>Memberships:</i> American Water Works Association (AWWA); Water Environment Federation (WEF); Arizona Water Pollution Control Association (AWPCA); American Membrane Technology Association (AMTA)					
H. RELEVANT PROJECTS					
1)	(1) TITLE AND LOCATION (City and State) Dietz-Crane Well Arsenic Treatment Modification Project, El Mirage, AZ		(2) Year Completed		
			Professional Services 2012	Construction (if applicable) n/a	
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input type="checkbox"/> Check if project performed with current firm Provided engineering services to design and permit a modification to the well site arsenic treatment system. Designed a piping and controls modification to the facility whereby the system could be operated in any one of three modes to maintain arsenic compliance. \$50,000. Project Manager.					
2)	(1) TITLE AND LOCATION (City and State) Boulder WRF Bypass Study, Boulder, CO		(2) Year Completed		
			Professional Services 2013	Construction (if applicable) Ongoing	
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm The objective of this study is to assist Liberty Utilities in developing a viable plan to bypass the WRF so it can be taken out of service and eventually decommissioned. The project includes developing the data required to accurately evaluate options, performing a hydraulic analysis and developing cost estimates for the options. \$2,000,000. Project Manager.					
3)	(1) TITLE AND LOCATION (City and State) Café Valley Bakery Commercial Wastewater Pretreatment System		(2) Year Completed		
			Professional Services 2013	Construction (if applicable) \$300K (est.)	
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Study, design and CA for installation of a metering/testing vault and commercial wastewater pretreatment system. System is designed to provide pH adjustment for up to 100 gpm of wastewater discharged from the bakery. \$50,000. Project Manager.					
4)	(1) TITLE AND LOCATION (City and State) Commercial Districts Odor Evaluation, City of Peoria, Peoria, AZ		(2) Year Completed		
			Professional Services 2010	Construction (if applicable) n/a	
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input type="checkbox"/> Check if project performed with current firm Project entailed developing odor control recommendations and plans of action that city personnel could implement to relieve severe odor issues within two high profile commercial districts within the City. 49,000. Project Manager.					
5)	(1) TITLE AND LOCATION (City and State) WTP Buildout Expansion, AZ American (Epcor), Anthem AZ		(2) Year Completed		
			Professional Services 2003	Construction (if applicable) 2003-2004	
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input type="checkbox"/> Check if project performed with current firm Design and CA for the expansion of a MB WTP from 3 to 7 mgd, included temporary package plant to meet water demand during construction. Design: \$300,000; Construction: \$4,000,000. Design Lead/Project Manager.					



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a. NAME Debra C. McGrew	b. ROLE IN THIS CONTRACT Senior Water/Wastewater Engineer	c. YEARS EXPERIENCE	
		1. TOTAL 31	2. WITH CURRENT FIRM 2
d. FIRM NAME AND LOCATION <i>(City and State)</i> AMEC Environment & Infrastructure, Inc., Phoenix, AZ			
e. EDUCATION <i>(DEGREE AND SPECIALIZATION)</i> BS, Engineering Science Environmental Engineering		f. CURRENT PROFESSIONAL REGISTRATION <i>(STATE AND DISCIPLINE)</i> Professional Engineer (Civil): AZ #13909, CA #66338 MO #2012012697, NV #20041	
g. OTHER PROFESSIONAL QUALIFICATIONS <i>(Publications, Organizations, Training, Awards, etc.)</i> AZ Water Association, Past-president ASCE Phoenix Branch			

H. RELEVANT PROJECTS

	(1) TITLE AND LOCATION <i>(City and State)</i>	(2) Year Completed	
		Professional Services	Construction <i>(if applicable)</i>
1)	Black Mountain Sewer Corp. Collection System Mods, Carefree AZ	2006-2013	2007, 2013
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE Several projects authorized over 7 years – beginning with odor control evaluations, modifications to sewers and lift stations, design of new lift station, evaluation of the WRF for decommissioning and removal and evaluation of collection system to accommodate removal of the WRF. Design: \$250,000; Construction: \$1,000,000. Project Manager.		
2)	Commercial Districts Odor Evaluation, City of Peoria, AZ	2010	n/a
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE Project entailed developing odor control recommendations and plans of action that city personnel could implement to relieve severe odor issues within two high profile commercial districts within the City. Project Mgr; Design ~\$49,000		
3)	Val Vista Water Main Assessment and Rehab, City of Phoenix, AZ	2004-2006	2005-2006
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE Project entailed assessing the condition of 15 miles of 72 to 108-inch diameter prestressed concrete cylinder pipe and the rehabilitation of 6300-ft of 72-in with steel cylinder slip-lining. Project Mgr; Design: \$450,000; Construction: \$6M		
4)	North Gateway Lift Station and Force Mains, City of Phoenix, AZ	2003-2004	2004-2005
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE Design and Construction Administration (CA) for 8 miles of dual 24-inch diameter force mains. Design: \$1,400,000; Construction: \$8,000,000. Design Lead.		
5)	WTP Buildout Expansion, AZ American (Epcor), Anthem, AZ	2003	2003-2004
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE Design and CA for the expansion of a MB WTP from 3 to 7 mgd, included temporary package plant to meet water demand during construction. Design: \$300,000; Construction: \$4,000,000. Design Lead/Project Manager.		



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

a. NAME Darin Miller, PE		b. ROLE IN THIS CONTRACT Senior Water/Wastewater Engineer		c. YEARS EXPERIENCE	
				1. TOTAL 14	2. WITH CURRENT FIRM 8
d. FIRM NAME AND LOCATION <i>(City and State)</i> AMEC Environment & Infrastructure, Inc., Phoenix, AZ					
e. EDUCATION <i>(DEGREE AND SPECIALIZATION)</i> BS, Civil Engineering			f. CURRENT PROFESSIONAL REGISTRATION <i>(STATE AND DISCIPLINE)</i> Professional Engineer: AZ #48990		
g. OTHER PROFESSIONAL QUALIFICATIONS <i>(Publications, Organizations, Training, Awards, etc.)</i> Memberships: ASCE, AZ Water, APWA					
H. RELEVANT PROJECTS					
1)	(1) TITLE AND LOCATION <i>(City and State)</i> Wastewater System Expansion (WWSE) Program, Lake Havasu City, AZ		(2) Year Completed		
			Professional Services 2010	Construction <i>(if applicable)</i> 2011	
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE Assist with the initial development of the 10-year construction plan to convert 25,000 septic tanks to a conventional gravity sewer system. The City's WWSE, 22,000 residential septic tanks are being decommissioned and replaced with an expanded central sewer system. The project involves the digging of trenches through roadways/front yards so more than 400 miles of pipe can be buried. The project also involves the design and building of wastewater collection, treatment and effluent-reuse/disposal facilities throughout the community of 55,000. The program also included design and installation of multiple storm water culverts and wash crossing installations. The 11-year project currently is completing its eighth year. Projects range in cost from \$4 million to \$15 million. These projects involve installing mainline sewer with manholes, lateral lines and pump stations. Approximately 3,000 homes are taken off of septic tanks and connected to sewer system each year under this program. Design: \$49,000,000; Construction: \$393,000,000. Design Lead.		<input checked="" type="checkbox"/> Check if project performed with current firm		
2)	(1) TITLE AND LOCATION <i>(City and State)</i> Preliminary Engineering Report (PER) & Wastewater System Replacement, Town of Miami, Miami, AZ		(2) Year Completed		
			Professional Services Ongoing	Construction <i>(if applicable)</i> Ongoing	
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE The Town's existing system dates back to the 1920s and is in very poor condition. AMEC was contracted to provide funding assistance, develop a PER in accordance with USDA-RUS Bulletin 1780-3, provide outreach support, and design a replacement wastewater collection system for this mining community of approximately 2,000 residents. Design includes replacement of nearly 80,000 linear feet of sewer, replacement of an existing grit separator, and replacement of pumps at the Town's lift station. This project also includes coordination with USDA's State Engineer and local Project Manager, ADEQ, Gila County, the Town of Miami, and Arizona Water Company, CableOne, Southwest Gas, Freeport McMoRan, Inc. (FMI), and various other stake holders. A WIFA design loan was secured to provide funding for design. Additional funding will be provided through various sources such as USDA and Colonia grants. It is anticipated that this project will be funded through ARRA monies. This project is ongoing. Design: \$2,800,000; Construction: \$25,000,000. Project Engineer/Designer.		<input checked="" type="checkbox"/> Check if project performed with current firm		
3)	(1) TITLE AND LOCATION <i>(City and State)</i> Tintown Preliminary Engineering Report (PER) & Wastewater System Expansion, Bisbee Border Environment Cooperation Commission (BECC), Bisbee, AZ		(2) Year Completed		
			Professional Services 2012	Construction <i>(if applicable)</i> Ongoing	
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE Project includes design of a new sewer system to serve approximately 73 residents in this early 1900's mining community within Bisbee, Arizona. The existing residents discharge their wastewater to cesspools or septic tanks. Due to rocky terrain, AMEC is considering various alternatives for final design. AMEC will be preparing a new PPER for the project. The original PER was funded by BECC and the construction will be funded through a USDA grant. The design includes preparing plans and specifications compliant with BECC, USDA, EPA, the City of Bisbee, and ADEQ. The Rural Water Association of Arizona is also providing technical assistance for the project. Design: \$159,043; Construction: \$1,100,000. Project Engineer/Designer.		<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 Timothy LeClair		b. ROLE IN THIS CONTRACT Senior Water/Wastewater Engineer		c. YEARS EXPERIENCE	
				1. TOTAL 15	2. WITH CURRENT FIRM 2
d. FIRM NAME AND LOCATION (City and State) AMEC Environment & Infrastructure, Inc., Phoenix, AZ					
e. EDUCATION (DEGREE AND SPECIALIZATION) BS, Civil Engineering			f. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE) Professional Engineer (Civil): AZ #43824		
g. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.)					
H. RELEVANT PROJECTS					
1)	(1) TITLE AND LOCATION (City and State) Café Valley Bakery Metering and Pretreatment, Phoenix, AZ			(2) Year Completed	
				Professional Services 2013	Construction (if applicable) 2013
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Design services for a new flume metering vault of the industrial flow, a sanitary sewer metering vault bypass, a temporary pH adjustment system, and permanent pH adjustment system. Design: \$50,000; Construction: \$500,000. Project Engineer.					
2)	(1) TITLE AND LOCATION (City and State) Palm Valley WRF Equalization Tank Improvements, Goodyear, AZ			(2) Year Completed	
				Professional Services 2013	Construction (if applicable) 2013
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Project included design and construction services to repair significant deterioration of the EQ Tank ceiling which also serves as the floor of the Headworks Building; wastewater facilities planning study; and the development of an online electronic O&M manual for the entire plant. Design: \$300,000; Construction: \$750,000. Project Engineer.					
3)	(1) TITLE AND LOCATION (City and State) Palm Valley WRF Expansion, Goodyear, AZ			(2) Year Completed	
				Professional Services 2011-2012	Construction (if applicable) 2012-2013
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input type="checkbox"/> Check if project performed with current firm Design, permitting and construction services for a 1 MGD capacity expansion to the Palm Valley WRF including a new Salsnes primary filter, retrofit of the two original SBR basins with new equipment and instrumentation, new tertiary filter, and a new UV disinfection train. Design: \$500,000; Construction: \$5,000,000. Project Engineer.					
4)	(1) TITLE AND LOCATION (City and State) Palo Verde Utilities Company Campus 1 WRF Performance Upgrades, Maricopa, AZ			(2) Year Completed	
				Professional Services 2009	Construction (if applicable) 2009
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input type="checkbox"/> Check if project performed with current firm Design and construction services for retrofitting the four SBR basins with new equipment and instrumentation, providing post-equalization tank solids removal, replacement of the tertiary filters with new disk filters, and an overhaul of the plant's instrumentation and control system. Design: \$300,000; Construction: \$3,000,000. Project Engineer.					
5)	(1) TITLE AND LOCATION (City and State) Merrill Ranch WRF, Florence, AZ			(2) Year Completed	
				Professional Services 2006	Construction (if applicable) n/a
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input type="checkbox"/> Check if project performed with current firm Design services for a new 1.5-MGD class A+ wastewater treatment plant including influent pumping, fine screening, flow equalization, membrane bioreactor treatment system, UV disinfection, effluent pumping, aerated sludge storage, sludge dewatering and odor control. Design: \$350,000. Project Engineer.					



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

a. NAME Gary Whitten, PE	b. ROLE IN THIS CONTRACT Senior Water/Wastewater Project Manager	c. YEARS EXPERIENCE	
		1. TOTAL 34	2. WITH CURRENT FIRM >1
d. FIRM NAME AND LOCATION (City and State) AMEC Environment & Infrastructure, Inc., Phoenix, AZ			
e. EDUCATION (DEGREE AND SPECIALIZATION) BS, Civil Engineering		f. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE) Professional Engineer (Civil): AZ #42105	
g. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.) "Implementing Treatment Facility Rehabilitation During a Water Shortage." AWWA Annual Conference & Exposition, 2005 "Managing the Resource – Water reclamation at Santa Rosa Rancheria." Tri-State Seminar on the River, 2003			

H. RELEVANT PROJECTS

1)	(1) TITLE AND LOCATION (City and State) Residuals Handling & Processing, Canyon Road WTP, Santa Fe, NM	(2) Year Completed	
		Professional Services 2007-2009	Construction (if applicable) 2009-20011
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input type="checkbox"/> Check if project performed with current firm Led the team performing design and construction services for implementation of residuals handling and processing at the Canyon Road WTP (10 mgd). Included two 65-ft diameter gravity thickeners; new residuals building with two – 600 lb/hr centrifuges, sludge batch tanks, and three pumping systems; 80,000 gal EQ tank; and lamella clarifiers for spent filter backwash treatment and recycle. The modifications and improvements in addition to resolving residuals handling shortcomings, greatly increased plant reliability and redundancy. The Canyon Road WTP is also now a zero-discharge facility. Cost: \$15 million. Project Director.		
2)	(1) TITLE AND LOCATION (City and State) Metropolitan Domestic Water Improvement District, Tucson, AZ	(2) Year Completed	
		Professional Services 1998-2003	Construction (if applicable) 1998-2003
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input type="checkbox"/> Check if project performed with current firm Led the design effort and provided construction management services for the implementation of MDWID's 5-year CIP program. The program consisted of modifications and improvements to six well sites. These services included physical logging of the wells, new deep-well pumps, the addition of gas engines and clutches to allow operation of the pumps with alternate energy source (natural gas). The improvements included sound enclosures and sand separators along with instrumentation and control features. Cost: \$10 million. Project Manager.		
3)	(1) TITLE AND LOCATION (City and State) Wastewater System Master Plan, Water Dept., City of Mesa, AZ	(2) Year Completed	
		Professional Services 2001-2002	Construction (if applicable) N/A
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input type="checkbox"/> Check if project performed with current firm Led the team performing Master Planning for the City of Mesa. The master planning effort featured the development of a computer model of the collection system utilizing a GIS database as input allowing continuous updates as new sewers are constructed and added to the system. The use of GIS databases also allows changes to the City's General Plan to be incorporated into the model to update flow projections automatically. Cost: \$450,000. Project Manager.		
4)	(1) TITLE AND LOCATION (City and State) Paseo Real WWTP, Modifications/Improvements, Santa Fe, NM	(2) Year Completed	
		Professional Services 1995-2000	Construction (if applicable) 1997-2002
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input type="checkbox"/> Check if project performed with current firm Led the engineering team in the design and construction services associated with mods/improvements to the 15 mgd plant. The work was completed in three phases and consisted of tertiary filtration and UV disinfection, digestion mods, scum collection and handling, influent pumping station, aerated grit process, and primary clarifiers. Services included the development of an electronic O&M manual, complete with video-taped training sessions, and process simulation using GPS software. Cost: \$20 million. Project Manager.		



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Gary Whitten (continued)

	(1) TITLE AND LOCATION <i>(City and State)</i>	(2) Year Completed	
		Professional Services	Construction <i>(if applicable)</i>
	Blackhawk-Central City Sanitation District, Black Hawk, CO	2002	2003-2005
5)	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input type="checkbox"/> Check if project performed with current firm Led a team in the performance of design and construction management services for the District's new 4 mgd WWTP. The facility is located on a narrow site in a canyon between State Highway 119 and North Clear Creek. The plant utilizes a single-sludge activated sludge system, to remove nitrogen and phosphorus from the effluent. The WWTP incorporates tertiary filters for TSS and UV light disinfection for stringent coliform compliance. The waste biosolids are dewatered on a 2-meter belt filter press and hauled to a bio-solid reclamation (composting) facility. A process simulation model (GPS-X) was utilized to develop design process criteria. Project Manager.		



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

a. NAME Chris Courtney		b. ROLE IN THIS CONTRACT Senior Hydrogeologist		c. YEARS EXPERIENCE	
				1. TOTAL 18	2. WITH CURRENT FIRM 6
d. FIRM NAME AND LOCATION (City and State) AMEC Environment & Infrastructure, Inc., Phoenix, AZ					
e. EDUCATION (DEGREE AND SPECIALIZATION) BS, Geosciences			f. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE) Registered Geologist: AZ #40811		
g. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.) American Counsel of Engineering Companies of Arizona - Leadership in Engineering Administration Program Graduate (2005); AMEC Project Management Certification; MSHA 16-Hour; OSHA (HAZWOPER) 40-Hour; OSHA (HAZWOPER) 24-Hour Site Supervisor; OSHA (HAZWOPER) 8-Hour Construction Management; CPR & First Aid					
H. RELEVANT PROJECTS					
1)	(1) TITLE AND LOCATION (City and State) Agua Fria National Monument Intra Basin Water Management Project, Yavapai County, AZ			(2) Year Completed	
				Professional Services 2010-2013	Construction (if applicable) 2010-2011
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Installation and monitoring of telemetry enabled stream gage and precipitation stations and well pressure transducers; quarterly groundwater level sweeps (10 wells); geochemical forensic study on groundwater and surface water, and; an evapotranspiration study. Design: \$270,000; Construction: \$150,000. Hydrogeologist.					
2)	(1) TITLE AND LOCATION (City and State) Groundwater Modeling Impact Analysis and Water Resource Sustainability Study, City of Flagstaff, AZ			(2) Year Completed	
				Professional Services 2011-2013	Construction (if applicable) n/a
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Hydrology study and groundwater model of Northern Arizona to determine impacts to stream flows and groundwater levels from additional groundwater pumping by the City of Flagstaff for the next 100 years. The study resulted in the City of Flagstaff receiving an amendment to their 100-year water supply Designation with the Arizona Department of Water Resources (ADWR). \$317,000. Hydrogeologist.					
3)	(1) TITLE AND LOCATION (City and State) Coal Combustion Residuals (CCR) Evaluation, Salt River Project (SRP) Coronado Generating Station Plant, Arizona Public Service (APS), St. Johns, AZ			(2) Year Completed	
				Professional Services 2009	Construction (if applicable) n/a
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Groundwater and vadose zone interaction modeling study of a 773-Megawatt electrical plant. Hydrology study and groundwater model to determine the 1,000-year impact from the disposal of coal combustion residuals (CCR) to groundwater. The model was used to examine the differences between expected conditions at this facility, versus the assumptions used in the CCR risk assessment from EPA's Composite Model for Leachate Migration with Transformation Products (EPACMTP). \$50,000. Hydrogeologist.					
4)	(1) TITLE AND LOCATION (City and State) Formers Williams Air Force Base (AFB) located at the Phoenix-Mesa Gateway Airport, Air Force Civil Engineer Center (AFCEC/CZRB), Mesa, AZ			(2) Year Completed	
				Professional Services 2010-Ongoing	Construction (if applicable)
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Performance Based Remediation project for groundwater/soil impacted by the former Williams AFB. In 1989, the site was placed on US EPA National Priority List. Since then the US Air Force has been cleaning up hazardous waste at the site under the CERCLA with oversight from the EPA, ADEQ and ADWR. AMEC's task order concerns a total of 12 sites, six of which have not received regulatory closure due to groundwater and/or soil contamination above acceptable EPA/ADEQ cleanup standards. Oversee/manage all activities related to quarterly, semi-annual, annual and remediation related groundwater monitoring and reporting for four of the six active sites. These sites have over 100 monitoring wells combined with varying volatile organic compounds, semi-volatile organic compounds, metals and/or pesticides above ADEQ and EPA cleanup standards. Design: \$2,000,000; Construction: \$20,000,000. Hydrogeologist.					



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Chris Courtney (continued)

	(1) TITLE AND LOCATION <i>(City and State)</i>	(2) Year Completed	
		Professional Services	Construction <i>(if applicable)</i>
	Deep Exploratory Boring Industrial Water Supply Investigation, Pinal Creek Group, Globe, AZ	2005	2005
5)	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input type="checkbox"/> Check if project performed with current firm Drilling and zonal sampling of two 1,200-foot deep exploratory borings through fractured volcanic formations to assess the water quality and potential production capacity of a deep confined fracture-flow aquifer. Testing included depth-specific zonal sampling, down-hole geophysical logging, and slug testing. Testing was conducted to assess the feasibility of drilling and constructing large diameter production wells to replace wells constructed in a shallow unconfined aquifer impacted by sulfates generated from acid heap-leaching operations at the adjacent open pit copper mine sites. Three new deep wells were subsequently drilled and completed based on this project. Design: \$50,000; Construction: \$350,000. Hydrogeologist.		



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a. NAME Manuel Tapia, Jr., PE	b. ROLE IN THIS CONTRACT Senior Resident Engineer	c. YEARS EXPERIENCE	
		1. TOTAL 23	2. WITH CURRENT FIRM >1
d. FIRM NAME AND LOCATION (City and State) AMEC Environment & Infrastructure, Inc., Phoenix, AZ			
e. EDUCATION (DEGREE AND SPECIALIZATION) BS, Civil Engineering		f. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE) Professional Engineer (Civil): AZ #41017	
g. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.) City of Nogales Arizona - Public Works Director and City Engineer Memberships: Committee Member, Arizona Transportation Partnering Excellence Award; Member, American Concrete Institute; Arizona Rock Products Association – Asphalt Paving & Technical Committee Member Bilingual, Spanish Speaking			

H. RELEVANT PROJECTS

1)	(1) TITLE AND LOCATION (City and State) Tucson Modern Streetcar Project, City of Tucson, AZ	(2) Year Completed	
		Professional Services 2012-2014	Construction (if applicable) 2014
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input type="checkbox"/> Check if project performed with current firm This high profile streetcar project for the City of Tucson consists of constructing 4 miles of new modern streetcar tracks, overhead catenary system and related modern streetcar amenities including streetcar stops connecting downtown area with the University of Arizona (UofA) campus. Responsible for daily coordination between UofA Administration Staff, Business Representatives, City Staff and Contractor concerning to daily-weekly-monthly construction activities minimizing traffic, bicyclist and vehicular impacts; continuous coordination with Private, County and City utilities representatives, avoiding future conflicts causing time delays and budget increases. Cost: \$60 million. Resident Engineer.		
2)	(1) TITLE AND LOCATION (City and State) Cushing Street Bridge Project, City of Tucson, AZ	(2) Year Completed	
		Professional Services 2011-2012	Construction (if applicable) 2012
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input type="checkbox"/> Check if project performed with current firm This project included construction of a new 40 foot roadway, 320 foot multimodal bridge over the Santa Cruz River, asphaltic concrete paving, curb, sidewalks, driveways, floodwalls, street lighting and utility relocations. Responsible for overall administration of the project, resolving plans discrepancies, ensuring quality materials were incorporated, developing change orders, coordination with City of Tucson Departments and ADOT, authorizing payment to the contractor, and keeping the businesses advised of the progress of the project. Cost: \$6.5 million. Resident Engineer.		
3)	(1) TITLE AND LOCATION (City and State) US 93 Hoover Dam MP2 to MP17 Project, ADOT Kingman District	(2) Year Completed	
		Professional Services 2009-2011	Construction (if applicable) 2011
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input type="checkbox"/> Check if project performed with current firm The project consisted of building 15 miles of a two-lane facility with earthwork, drainage structures, 7 AASHTO Girder bridges, paving and seeding. Built/maintained a project team that administered the project efficiently, effectively and in accordance with ADOT, National Park Services, Arizona Game and Fish Department, Bureau of Reclamation - Bureau Land Management and Federal Highway Administration policies and procedures. Served as a key agency liaison and solved construction, scheduling and design issues. Cost: \$71 million. Resident Engineer.		
4)	(1) TITLE AND LOCATION (City and State) 83rd Avenue and Thunderbird Road Project, ADOT Phoenix District – City of Peoria, AZ	(2) Year Completed	
		Professional Services 2007-2008	Construction (if applicable) 2008
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input type="checkbox"/> Check if project performed with current firm This project consists of reconstructing the intersection to add left turn lanes northbound and southbound and through lanes in all directions, earthwork, drainage, paving, traffic signals, pavement markings and landscaping. Cost: \$1 million. Resident Engineer.		



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Manuel Tapia, Jr. (continued)

	(1) TITLE AND LOCATION <i>(City and State)</i>	(2) Year Completed	
	US 60 (I-10 to Val Vista Dr) Design/Build Project, ADOT Phoenix District – City of Mesa and Tempe, AZ	Professional Services 2000-2002	Construction <i>(if applicable)</i> 2002
5)	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input type="checkbox"/> Check if project performed with current firm		
Performed construction administration and design/post design reviews of 10 miles of concrete masonry walls, soils nail walls and cast in place walls. Served as a key coordinator between agencies and solved construction, scheduling and design issues. This project received the <i>Marvin M. Black Recognition Award</i> . Cost: \$85 million. Segment Manager.			



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a. NAME Scott Kiah		b. ROLE IN THIS CONTRACT Resident Engineer		c. YEARS EXPERIENCE	
				1. TOTAL 20	2. WITH CURRENT FIRM 6
d. FIRM NAME AND LOCATION (City and State) AMEC Environment & Infrastructure, Inc., Phoenix, AZ					
e. EDUCATION (DEGREE AND SPECIALIZATION) BS, Civil Engineering			f. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE) Professional Engineer: AZ #43822 (Civil)		
g. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.) Training/Certifications: NCEES National & International Registry Certificate #42069 NAVFAC Construction Quality Management (CQM) for Contractors					

H. RELEVANT PROJECTS

	(1) TITLE AND LOCATION (City and State)	(2) Year Completed	
		Professional Services	Construction (if applicable)
1)	Intel Fab 42, Chandler, AZ	2011	n/a
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Provided Quality Assurance/Quality Control (QA/QC) services for Intel on the construction of their Fab 42 Chip Manufacturing Facility, which would be their most advanced, high volume semiconductor manufacturing facility in the world. QA/QC services involved coordination of up to 12 inspection staff for the entire construction operations. Additional responsibilities included staffing, managing budgets and schedules, reporting, on-site meetings, coordination with the City of Chandler, site safety, forecasting, interaction with the design engineer, conflict resolution and invoicing on a bi-weekly basis. Senior Project Manager.		
2)	White Tanks No. 4 Dam Rehabilitation Project, Flood Control District of Maricopa County (FCDMC), Phoenix, AZ	2011	n/a
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Performed QA services for the FCDMC on the construction of the White Tanks No. 4 Dam Rehabilitation Project. QA services involved setting up an on-site materials testing laboratory and managing inspection staff which performed daily sampling of material for compliance with contract specification. The project involved coordination with the National Resources Conservation Service (NRCS) and the Arizona Department of Water Resources (ADWR). Responsibilities included staffing, managing budgets and schedules, maintenance of the File Transfer Protocol Site, reporting, on-site meetings, coordination with NRCS and ADWR, site safety, forecasting, interaction with the design engineer, conflict resolution and invoicing. Senior Project Manager.		
3)	Wastewater System Expansion (WWSE) Program, Lake Havasu City, AZ	2011	n/a
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Provided construction management for the master planned, nine-year WWSE Program to convert 25,000 residential septic tanks to a conventional gravity sewer system. Duties included maintaining project budgets and schedules, extensive public relations, public presentations, daily interaction with the City staff, permitting with the Arizona governmental agencies and local utility companies, developing specifications, supervising/coordinating administrative and inspection efforts, administering weekly construction meetings, conducting weekly internal safety meetings, responding to RFIs, reviewing/approving/processing payment applications, and managing change orders and claims. Construction Manager/Senior Resident Engineer.		



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

Scott Kiah (continued)

	(1) TITLE AND LOCATION <i>(City and State)</i> University Avenue Widening, Riverside, CA	(2) Year Completed	
		Professional Services 2008	Construction <i>(if applicable)</i> n/a
4)	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input type="checkbox"/> Check if project performed with current firm This major street widening project consisted of relocating/replacing curb, gutter, sidewalk, cross gutters, spandrels and driveway approaches; removing/replacing electrical conduits for signal interconnect and street lighting; providing temporary overhead electric lines for street lighting and traffic signals; installing traffic detection loops; relocating existing and new street lights; installing new traffic signal poles/arms, a controller and electric pedestal; landscaping and irrigation; installing new water services, backflow assemblies and pressure reducers; full depth pavement removal and subgrading; and asphalt grinding and paving overlay with thermoplastic striping of roadway and legends. Responsible for inspection/oversight of the contractors work; scheduling and conducting coordination meetings; quantity reconciliation; change orders review and processing; responding to RFIs; ensuring compliance with current American with Disabilities Act (ADA) regulations and California Department of Transportation (Caltrans) standard specifications; coordinating field testing of materials; scheduling compaction testing as required by the City of Riverside's Quality Assurance Program (QAP); oversight of job safety and storm water pollution prevention plans (SWPPP); monitoring set up and maintenance of traffic control in accordance with approved traffic control plans and Manual on Uniform Traffic Control Devices (MUTCD); and approving lane closures at critical juncture in the work. Senior Project Manager.		
	(1) TITLE AND LOCATION <i>(City and State)</i> Alessandro Boulevard Improvements, Riverside, CA	(2) Year Completed	
		Professional Services 2007	Construction <i>(if applicable)</i> n/a
5)	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input type="checkbox"/> Check if project performed with current firm This fast-track project involved widened of a major thoroughfare from four to six lanes of traffic flow. Work included relocating/replacing curb, gutter, sidewalk, cross gutters, spandrels and driveway approaches; removing/narrowing an existing median to ensure three lanes of travel in both directions; constructing retaining walls; electrical improvements including underground conduit for relocating an existing overhead electric utility; installing traffic detection loops; relocating and installing existing and new street lights; constructing a wireless video detection system; installing new traffic signal poles/arms, controller and electric pedestal; landscaping and irrigation; installing new water services, backflow assemblies and pressure reducers; pavement removal and grading; and asphalt grinding and paving overlay with thermoplastic striping of roadway and legends. Responsibilities were similar to the above University Avenue Widening project with the exception that the majority of this construction was performed at night. Construction Manager.		



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a. NAME Jim Monnett		b. ROLE IN THIS CONTRACT Project Supervisor/Inspector		c. YEARS EXPERIENCE	
				1. TOTAL 51+	2. WITH CURRENT FIRM 14
d. FIRM NAME AND LOCATION <i>(City and State)</i> AMEC Environment & Infrastructure, Inc., Phoenix, AZ					
e. EDUCATION <i>(DEGREE AND SPECIALIZATION)</i> BS, Mining Technology			f. CURRENT PROFESSIONAL REGISTRATION <i>(STATE AND DISCIPLINE)</i>		
g. OTHER PROFESSIONAL QUALIFICATIONS <i>(Publications, Organizations, Training, Awards, etc.)</i> Certifications/Training: Grade I ACI - Level I & II (#921157), OSHA, ATSSA, Structural Plans reading; UDOT Materials and Radioactive License L-4; BOCA and SBCCI Reinforced Concrete Inspector; ADOT - (CET) ATTI; NICET - Level IV, Highway Materials #080036; NICET - Level IV, Concrete #080036; NICET - Level IV, Asphalt #080036; NICET - Level IV, Soils #080036; Certified Chief Engineering Supervisor #25839, 1971, ADOT; ICBO and ICC Reinforced Concrete Special Inspector #0883495-4; ICBO Pre-stressed Masonry Inspector; Weld Certifications AWS #00050354; ADOT Radiation Safety Officer #T95-0097; MSHA, First Aid, CPR, Mine Safety, Mine Pit Driving; ATSSA, Traffic Safety Supervisor 10-20-2010 #28617; ECC, Erosion Control Coordinator AGC-ADOT12-7/8-2010; STAT's (Change Order) Supplemental Agreements; ATTI (Arizona Technical Testing Institute) - Field Technician Certification; ACI Concrete Field Testing Technician – Grade I; ACI - Level I & II #921157, OSHA Certificate; ADOT - 16 Different Training Seminars; EDu Code 5 CEUs Special inspections; NDOT - Management Training; FHWA - Asphalt Superpave Design; UDOT Project Construction Management; Asphalt Institute, Superpave Design & Research; ADOT - Survey Quality & Computations; ADOT Office Engineering & Accounting; ADOT - Materials School; Alaska Mining, Gold Star Mining Corp.					

H. RELEVANT PROJECTS

	(1) TITLE AND LOCATION <i>(City and State)</i>	(2) Year Completed	
		Professional Services	Construction <i>(if applicable)</i>
1)	Office Management, Bonnyville Alberta, Canada	2012	n/a
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE Train and schedule ten University students in field and lab operations; schedule permanent employees on large projects. Coordination of Shale Oil Field operations in Northern Alberta where each oil company required up to five field testers for months. Some projects were over 200 miles from the main office. Safety in the oil fields while dealing with snow and below zero conditions required constant meetings and field review. Working with several different large oil fields on their roadways and building steam plant pads, roads as well as research use of lime additive for the dirt roadways and pad foundations. Pipelines, caissons, concrete structures, concrete buildings with large areas of muskeg requiring geotechnical materials and gang mats. Located sources of glacier till for foundations and field design. Rehabilitation on Cold Lake Airport. \$1,000,000. Senior Project Manager.		
2)	Wastewater System Expansion Project, Lake Havasu City, AZ	2010	n/a
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE Oversaw management for several new large sewer construction projects for the City, including all mainline laterals on lots, lot restoration, homeowners issues, sub base for roadway new pavement, testing and reviewing pavements for meeting City standards. He also assisted in scheduling and reviewing safety requirements in trenches, traffic flow, and administered weekly meetings onsite. \$463,000,000. Project Management and Materials Specialist.		



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Jim Monnett (continued)

	(1) TITLE AND LOCATION <i>(City and State)</i> Sewer Improvement District No. 3, Bullhead City, AZ	(2) Year Completed	
		Professional Services 2007	Construction <i>(if applicable)</i> n/a
3)	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Oversaw all operations including meetings, design and work orders, right-of-way, training and assigning 25 inspectors and working directly with the City Engineer and re-designs meeting ADEQ requirements. 32 crews worked 12 hours a day throughout the City and placed 230,000 feet of mainline and laterals with each lot connection and restoration, milling and paving, curb and gutter, concrete channels and traffic control. Responsible for safety and scheduling safety meetings. This project won the Governor's Excellence in Rural Development Award for 2007. AMEC completed this project early, within budget and with no accidents. We also received excellent input from the homeowners. \$49,000,000. Project Manager.		
	(1) TITLE AND LOCATION <i>(City and State)</i> Tonto National Forest 7 Bridge Removal and Replacement, CFL/FHWA, AZ	(2) Year Completed	
		Professional Services 2012	Construction <i>(if applicable)</i> n/a
4)	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input type="checkbox"/> Check if project performed with current firm Senior Project Supervisor; ATSSA, ECC, SWPPP, QA-QC. Also, the last 3 months of the project, manager for the CFL on all inspections and construction on the seven bridges. The bridges were 27 miles from start to end. This Supervision included proof testing the micro pile for both loading and tension to 150 Kip loading. Inspected traffic control setups morning and night, meeting with CFL each morning to review the pre-construction work for the day. Inspection of all backfill, concrete, benching, new roadway alignment and inspection of trucks before entering the forest. Final rebar inspection on all bridges and caissons. Observed and tested backfill procedures, managed all inspectors both QC and QA. Field revisions and SWPPP Placement on major slopes. \$5,000,000. Senior Project Supervisor.		
	(1) TITLE AND LOCATION <i>(City and State)</i> Banjo Bill Rock Containment, Sedona, AZ	(2) Year Completed	
		Professional Services 2008	Construction <i>(if applicable)</i> n/a
5)	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input type="checkbox"/> Check if project performed with current firm This was a research construction project for ADOT in Oak Creek Canyon consisting of two large structural micro pile and anchor retaining walls with architectural fascia for a natural appearance. Work elements included working closely with the US Forest Service and the Arizona Game and Fish Department; traffic and environmental impacts in a confined area; a short work period; and partnering. \$7,500,000. Senior Project Supervisor.		



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

a. NAME Bryan Campbell		b. ROLE IN THIS CONTRACT Survey Manager		c. YEARS EXPERIENCE	
				1. TOTAL 30	2. WITH CURRENT FIRM 8
d. FIRM NAME AND LOCATION <i>(City and State)</i> AMEC Environment & Infrastructure, Inc., Phoenix, AZ					
e. EDUCATION <i>(DEGREE AND SPECIALIZATION)</i> AS Engineering			f. CURRENT PROFESSIONAL REGISTRATION <i>(STATE AND DISCIPLINE)</i> Professional Land Surveyor: AZ #40622		
g. OTHER PROFESSIONAL QUALIFICATIONS <i>(Publications, Organizations, Training, Awards, etc.)</i> Memberships: Arizona Professional Land Surveyors Association, Certified Federal Surveyor (CFedS)					

H. RELEVANT PROJECTS

1)	(1) TITLE AND LOCATION <i>(City and State)</i> El Paso Natural Gas R/W Survey	(2) Year Completed	
		Professional Services 2013	Construction <i>(if applicable)</i>
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Performance of Right of Way Surveying for a 70 mile pipeline through the Gila River Indian Community. Collection of over 600 PLS corners, staking of 900 R/W monuments Survey: \$600,000; Project Manager.		
2)	(1) TITLE AND LOCATION <i>(City and State)</i> Southern Avenue and Country Club Drive Intersection, Mesa, AZ	(2) Year Completed	
		Professional Services 2013	Construction <i>(if applicable)</i> 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 Design of intersection improvements to add through lanes, bus bays, right turn lanes, driveways, ADA upgrades, pavement reconstruction, traffic signal/street lighting, and water/sewer lines. Design: \$680,000; Construction: \$14,000,000. Survey Manager.		
3)	(1) TITLE AND LOCATION <i>(City and State)</i> Greenfield Road, Germann to Pecos, Gilbert, AZ	(2) Year Completed	
		Professional Services 2011	Construction <i>(if applicable)</i> 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 Design of improvements including roadway widening composed of four travel lanes, center turn lane, bike lanes, curb/gutter, sidewalk, traffic signals, water line, sanitary sewer, irrigation ditch relocations, retention basins, and utility relocations. Design: \$1,220,000; Construction: \$5,334,000. Survey Manager.		
4)	(1) TITLE AND LOCATION <i>(City and State)</i> Falcon Field Airport, Mesa, AZ	(2) Year Completed	
		Professional Services 2006 - Present	Construction <i>(if applicable)</i> 2014
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Performance of multiple surveying services for the past 7+ years including topographic surveying for design, boundary surveying for the airport and over 30 lease parcels, FAA control tower survey. Surveying : \$40,000, Survey Manager		
5)	(1) TITLE AND LOCATION <i>(City and State)</i> Town of Miami Sewer Upgrade, Miami, AZ	(2) Year Completed	
		Professional Services 2010	Construction <i>(if applicable)</i> Ongoing
	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Performance of topographic and as-built surveys for the existing sewer system for use in design. Determination of parcel boundaries and creation of easement descriptions and exhibits for over 30 parcels. Surveying: \$60,000; Survey Manager.		



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a. NAME Don Thorstenson	b. ROLE IN THIS CONTRACT Information Management Lead	c. YEARS EXPERIENCE	
		1. TOTAL 18	2. WITH CURRENT FIRM 4
d. FIRM NAME AND LOCATION <i>(City and State)</i> AMEC Environment & Infrastructure, Inc., Phoenix, AZ			
e. EDUCATION <i>(DEGREE AND SPECIALIZATION)</i> MS, Structural Geology MAS, Geographic Information Systems		f. CURRENT PROFESSIONAL REGISTRATION <i>(STATE AND DISCIPLINE)</i>	
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)	Road Sign Inventory, Yuma, AZ	2014	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 FHWA funded road sign inventory including a needs assessment, database design, oversight of data collection, implementation and training. \$103,000. Information Management Lead.		
2)	Outfall Inventory, Statewide, AZ	2013	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 Conducted statewide inventory of storm water outfalls discharging from ADOT property into impaired or outstanding waters of the U.S. \$84,000. Information Management Lead.		
3)	GIS and Database Support Services, Phoenix, AZ	2013	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 Provided well location mapping, environmental database support, property acquisition document management and an interactive user interface for data accessibility. \$72,000. Information Management Lead.		
4)	Winter Storm Management, Globe, AZ	2013	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 Analyzed winter storm management practices including real-time chemical application rates to provide best practice recommendations for future winter storm management. \$417,000. Information Management Lead.		
5)	GIS Services, Apache Junction, AZ	2013	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 Developed internal GIS data for Development Services, Public Works, and Economic Development. Created internal map viewer and assisted with migration to Enterprise GIS database. \$23,000. Information Management Lead.		



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a. NAME Karl Rains		b. ROLE IN THIS CONTRACT Environmental Planner		c. YEARS EXPERIENCE	
				1. TOTAL 15	2. WITH CURRENT FIRM 10
d. FIRM NAME AND LOCATION (City and State) AMEC Environment & Infrastructure, Inc., Phoenix, AZ					
e. EDUCATION (DEGREE AND SPECIALIZATION) MS, Earth Resources Management MS, Environmental Law BA, Business Administration			f. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE)		
g. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.) <i>Memberships/Training/Certifications:</i> Arizona Association of Environmental Professionals (AZAEP); National Association of Environmental Professionals (NAEP); 40-Hr OSHA/HAZWOPER Certification; 10-Hr OSHA Construction Site Safety Training; Laboratory Safety/OSHA's Lab Standard Certification					

H. RELEVANT PROJECTS

	(1) TITLE AND LOCATION (City and State)	(2) Year Completed	
		Professional Services	Construction (if applicable)
1)	Phoenix-Mesa Gateway Airport Authority (PMGAA) Environmental Assessment (EA), Mesa, AZ	2013-Ongoing	n/a
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Lead author of NEPA-compliant documents pertaining to Hazardous Materials. The project includes preparation of NEPA-compliant documents to support an EA for the Northeast Area Development Plan, which involves development of a new passenger terminal and associated airport facilities on approximately 700 acres in Mesa, Arizona. \$75,000. Project Manager/Lead Author.		
2)	HUD-NEPA EAs and Site-Specific Environmental Reviews, City of Phoenix, Neighborhood Services Department, Phoenix, AZ	2012-Ongoing	n/a
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm On-Call Contract with the City of Phoenix, Neighborhood Services Department for the preparation of Environmental Review documents pursuant with the provisions of the Housing and Urban Development (HUD) regulations implementing NEPA. Environmental Reviews are conducted in consideration of federal laws, authorities and regulations which address noise, air quality, historic properties, floodplains, wetlands, water quality solid waste disposal, man-made hazards, farmland protection, endangered species and others. In accordance with the requirements of HUD regulations, applicants, owners, developers sponsors or any other third party partners or properties utilizing state housing funding programs must complete the Environmental Review process prior to taking physical action at the property. Since award of the contract in July 2012, Mr. Rains has overseen the completion of nearly 200 Environmental Reviews. \$75,000/year. Project Manager/Technical Lead – NEPA.		
3)	U.S. Department of Veterans Affairs – National Cemetery Administration, Environmental Services for National Cemetery Expansions (multiple locations)	2006-2012	n/a
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Responsible for on-site investigations, subcontractor and team management, agency coordination and report preparation. Conducted due diligence property acquisition services including ASTM-compliant Phase I and Phase II ESAs, Title Investigations, Appraisals and Ground Penetrating Radar (GPR) investigation, and prepared a NEPA-compliant EA, including extensive Cultural Resources investigations, wetlands delineation, protected species surveys, associated with proposed expansions of numerous National Cemeteries around the country (Baton Rouge, Ft. Smith, Ft. Mitchell, Philadelphia, Indiantown Gap, Seattle, Los Angeles, Portland, Santa Fe). \$35,000 to \$300,000 per site/project. Project Coordinator.		



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Karl Rains (continued)

	(1) TITLE AND LOCATION <i>(City and State)</i>	(2) Year Completed	
	Border Environment Cooperation Commission (BECC), Environmental Services, Reynosa, Tamaulipas, MX	Professional Services 2013-Ongoing	Construction <i>(if applicable)</i> n/a
4)	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Prepared a NEPA-compliant transboundary Environmental Information Document (EID) to address potential environmental impacts of the proposed improvements to a wastewater collection system in Reynosa, Tamaulipas. The EID presents potential impacts that are likely to occur on both the U.S. and Mexico sides of the border. Funding for this project is administered by the U.S. Environmental Protection Agency (EPA) Border Environment Infrastructure Fund (BEIF) established by the North American Development Bank (NADB); project certification is performed by the BECC/NADB Board. The EID is currently under review by EPA Region 6. \$32,000. Project Manager.		
	(1) TITLE AND LOCATION <i>(City and State)</i>	(2) Year Completed	
	Lower Magma Channel Environmental Assessment, Pinal County, AZ	Professional Services 2013-Ongoing	Construction <i>(if applicable)</i> n/a
5)	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Provided technical review of the NEPA-compliant EA for proposed improvements to the Lower Magma Channel. The project includes conducting environmental technical studies (hazardous materials, biological evaluation, cultural resources, jurisdictional delineation), documenting the affected environment within and surrounding the project area, and identifying to potential environmental impacts from the Preferred Alternative. Responsible for developing and managing public involvement activities including stakeholder informational meetings and public hearing(s). Also coordinating with the U.S. Army Corps of Engineers and ADEQ to acquire the appropriate Section 404 and 401 permits for the project. \$151,000. Technical Reviewer.		



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a. NAME Steven Swarr	b. ROLE IN THIS CONTRACT Senior Planner	c. YEARS EXPERIENCE	
		1. TOTAL 21	2. WITH CURRENT FIRM 2
d. FIRM NAME AND LOCATION <i>(City and State)</i> AMEC Environment & Infrastructure, Inc., Phoenix, AZ			
e. EDUCATION <i>(DEGREE AND SPECIALIZATION)</i> MBA MS, Environmental Policy BS, Environmental Science		f. CURRENT PROFESSIONAL REGISTRATION <i>(STATE AND DISCIPLINE)</i> Certified Environmental Professional, 2010 Professional Wetland Scientist, 2004	
g. OTHER PROFESSIONAL QUALIFICATIONS <i>(Publications, Organizations, Training, Awards, etc.)</i> Memberships: AZAEP (Treasurer, 2011 to 2012); NAEP			

H. RELEVANT PROJECTS

	(1) TITLE AND LOCATION <i>(City and State)</i>	(2) Year Completed	
		Professional Services	Construction <i>(if applicable)</i>
1)	Tucson Electric Power Roadway Improvements, Apache County, AZ	2013 to present	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 Oversee the completion of hazardous materials, biological and cultural resources studies for the final design services for improvements to the entrance road serving the Tucson Electric Power (TEP) Springerville Generating Station (SGS) located north of the Town of Springerville in Apache County, Arizona. \$23,500. Senior Environmental Planner.		
2)	Lower Magma Channel Environmental Assessment (EA), Pinal County, AZ	2013 to present	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 Oversee the development of the NEPA-compliant EA for proposed improvements to the Lower Magma Channel. The project includes conducting environmental technical studies (hazardous materials, biological evaluation, cultural resources, jurisdictional delineation), documenting the affected environment within and surrounding the project area, and identifying to potential environmental impacts from the Preferred Alternative. Also responsible for developing and managing public involvement activities including stakeholder informational meetings and public hearing(s), and coordinating with the Army Corps of Engineers and Arizona Department of Environmental Quality (ADEQ) to acquire the appropriate Section 404 and 401 permit for the project. \$151,000. Environmental Project Manager.		
3)	Hunt and Magma Drainage Design Improvements, Florence, AZ	2013-Ongoing	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 Oversee the completion of hazardous materials, biological and cultural resources studies for the proposed drainage improvements proposed by Pinal County. The environmental documentation was also used for "due diligence" for Pinal County's pending purchase of land from the Arizona State Land Department for Phases 2 and 3 of the drainage improvements. \$13,700. Senior Environmental Planner.		
4)	Arizona Department of Transportation Section 404 Manual Update, Phoenix, AZ	2012-Ongoing	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 Services include updating and revising ADOT's Section 404 manual. The revisions and update are required based on recent changes in the Army Corps of Engineers' (Corps) guidance and changes in guidance from ADOT Office of Environmental Services. The project involves updating and revising the manual, meeting with stakeholders to get their feedback during different stages of reviews, and addressing and implementing all comments and suggestions from ADOT stakeholders. The manual must be approved by the Corps and the Federal Highway Administration. \$49,300. Project Manager.		



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Steven Swarr (continued)

(1) TITLE AND LOCATION (City and State)	(2) Year Completed	
	Professional Services	Construction (if applicable)
20th Avenue Widening Categorical Exclusion, City of Stafford, AZ	2012-Ongoing	n/a
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm 5) The project includes widening 20th Avenue from two to four lanes within the city of Safford, Arizona. Responsible for reviewing the Categorical Exclusion, Cultural Resources Consultation Initiation Form, Urban Project Biological Evaluation, and Preliminary Initial Site Assessment for hazardous materials. Also prepared a Section 4(f) De minimis letter for minor impacts to the historic Highline canal. Participate in project meetings and coordination with the project designer, project proponent and ADOT reviewers. \$28,700. Project Manager.		



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a. NAME Serelle Laine	b. ROLE IN THIS CONTRACT Associate Archaeologist	c. YEARS EXPERIENCE	
		1. TOTAL 23	2. WITH CURRENT FIRM 5
d. FIRM NAME AND LOCATION (City and State) AMEC Environment & Infrastructure, Inc., Phoenix, AZ			
e. EDUCATION (DEGREE AND SPECIALIZATION) MA, Organizational Management BA, Anthropology		f. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE)	
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)	Tucson Electric Power Roadway Improvements, Apache County, AZ	2013-Ongoing	n/a
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Conducted archival research, pedestrian survey and prepared a Class III cultural resources report <i>A Cultural Resources Survey Hunt and Magma Flood Mitigation, Pinal County, Arizona</i> (Laine and Schaafsma 2013) for the final design services for improvements to the entrance road serving the Tucson Electric Power (TEP) Springerville Generating Station (SGS) located north of the Town of Springerville in Apache County. \$23,500. Archaeologist.		
2)	Lower Magma Channel Environmental Assessment, Pinal County, AZ	2013-Ongoing	n/a
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Conducted archival research, pedestrian survey, and prepared a Class III cultural resources report <i>A Cultural Resources Survey Lower Magma Channel, Pinal County, Arizona</i> (Laine and Schaafsma 2013) for proposed improvements to the Lower Magma Channel. Prepared Section 106 early consultation and project effect determination consultation for SHPO, THPOs, and tribes. Design: \$151,000. Archaeologist.		
3)	Hunt and Magma Drainage Design Improvements, Florence, AZ	2013-Ongoing	n/a
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Conducted archival research, pedestrian survey and prepared a Class III cultural resources report <i>A Cultural Resources Survey Hunt and Magma Flood Mitigation, Pinal County, Arizona</i> (Laine and Schaafsma 2013). For the proposed drainage improvements proposed by Pinal County. Prepared Section 106 early consultation and project effect determination consultation for SHPO, THPOs and tribes. Design: \$13,700. Archaeologist.		
4)	Phoenix-Mesa Gateway Airport Authority (PMGAA) Environmental Assessment, Mesa, AZ	2013-Ongoing	n/a
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Project includes preparing an EA for the Northeast Area Development Plan, which involves development of a new passenger terminal and associated airport facilities. Responsible for overseeing cultural resources, Section 106 consultation, and Section 4(f). Based on the final results of the cultural resources survey and coordination with FAA, AMEC will complete the necessary Section 4(f) analysis. Archaeologist.		



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

Serelle Laine (continued)

	(1) TITLE AND LOCATION <i>(City and State)</i>	(2) Year Completed	
	20th Avenue Widening Categorical Exclusion, City of Stafford, AZ	Professional Services 2012-Ongoing	Construction <i>(if applicable)</i> n/a
5)	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm		
	Conducted archival research, pedestrian survey and prepared a Class III cultural resources report A Cultural Resources Survey 20th Avenue, Phase 2, Golf Course Road to Relation Street, City of Safford, Graham County, Arizona (Laine 2013) for a widening project of 20th Avenue from two to four lanes within the city of Safford, Arizona. Prepared Section 106 project effect determination consultation for SHPO. \$28,700. Archaeologist.		



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

a. NAME Theresa Price		b. ROLE IN THIS CONTRACT Environmental Planner		c. YEARS EXPERIENCE	
				1. TOTAL 8	2. WITH CURRENT FIRM 7
d. FIRM NAME AND LOCATION <i>(City and State)</i> AMEC Environment & Infrastructure, Inc., Phoenix, AZ					
e. EDUCATION <i>(DEGREE AND SPECIALIZATION)</i> MS, Applied Biological Science Master Certificate, Geographical Information Systems BS, Botany & Environmental Studies			f. CURRENT PROFESSIONAL REGISTRATION <i>(STATE AND DISCIPLINE)</i>		
g. OTHER PROFESSIONAL QUALIFICATIONS <i>(Publications, Organizations, Training, Awards, etc.)</i> Memberships: Arizona Association of Environmental Professionals Training: Wetland Delineator Training; OSHA 40-Hour HAZWOPER; Desert Tortoise Survey, Monitoring and Handling Workshop; Burrowing Owl Surveyor Training; Chiricahua Leopard Frog Certification Workshop Presentation: "Flora of Mt. Ord, Mazatzal Mountains, Central Arizona." Theresa Price and Kelly Steele Southwestern Vegetation Management Association Conference, Flagstaff, Arizona. November 19, 2008					

H. RELEVANT PROJECTS

	(1) TITLE AND LOCATION <i>(City and State)</i>	(2) Year Completed	
		Professional Services	Construction <i>(if applicable)</i>
1)	Environmental Assessment (EA) and Preliminary Jurisdictional Delineation for Lower Magma Channel, Magma Flood Control District, Florence, AZ	2013-Ongoing	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 Project includes preparation of a NEPA-compliant EA for proposed improvements to the Lower Magma Channel located near Florence, Arizona. In addition to analyzing potential impacts from the construction and operation of the proposed improvements to the channel, AMEC conducted a Clean Water Act Section 404 Preliminary Jurisdictional Delineation and is coordinating with the US Army Corps of Engineers for the appropriate permitting of this project. \$150,399. Lead Biologist.		
2)	Update to the ADOT Clean Water Act Section 404/401 Manual, Phoenix, AZ	2013	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 Project includes updating the ADOT Clean Water Act Section 404/401 Manual that will guide ADOT's Environmental Services Group, Maintenance and Construction staff and consultants in the development of Clean Water Act Sections 404 and 401 compliance documents and permit applications. \$49,573. Lead Author/Environmental Scientist.		
3)	Vegetation Mapping and Habitat Management, Nellis Air Force Base and Nevada Test and Training Range, Las Vegas, NV	2013	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 Performing fieldwork and background research for vegetation composition studies for habitat mapping on the Nevada Test and Training Range. The overall purpose of this project is to initiate the process of surveying and mapping habitats through vegetation classification on selected areas and updating the Unique Habitat/Rare Plants Management program guidelines with the most current data collected/analyzed during this project. \$471,400. Field Botanist.		



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

Theresa Price (continued)

	(1) TITLE AND LOCATION <i>(City and State)</i>	(2) Year Completed	
	Ambient Monitoring System for Winter Storm Management, ADOT, Globe, AZ	Professional Services 2011-2011	Construction <i>(if applicable)</i> n/a
4)	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Conducted research study to develop application rate guidelines for the use of winter storm management chemical additives to roadways. Soil, biotic and water samples were collected over a two-year period to assess accumulation of winter storm chemicals along roadways and potential or observed impacts to natural resources associated with these accumulations. Anticipated benefit of this research project is to minimize impacts to water quality and roadside vegetation while maintaining desired roadway safety. \$200,000. Lead Biologist.		
	(1) TITLE AND LOCATION <i>(City and State)</i>	(2) Year Completed	
	Preliminary Jurisdictional Delineation and Biological Review for Centennial Wash, City of Phoenix, AZ	Professional Services 2011	Construction <i>(if applicable)</i> n/a
5)	(3) BRIEF DESCRIPTION <i>(Brief scope, size, cost, etc.)</i> AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Conducted fieldwork and prepared documentation for a Biological Review and Clean Water Act Section 404 Preliminary Jurisdictional Delineation along Centennial Wash in La Paz County, Arizona. The project area included approximately 450 acres in western Arizona. \$24,833. Lead Biologist.		



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

a. NAME Daniel Fréchette		b. ROLE IN THIS CONTRACT Associate Geotechnical Engineer		c. YEARS EXPERIENCE	
				1. TOTAL 15	2. WITH CURRENT FIRM 15
d. FIRM NAME AND LOCATION (City and State) AMEC Environment & Infrastructure, Inc., Phoenix, AZ					
e. EDUCATION (DEGREE AND SPECIALIZATION) BS, Civil Engineering PhD/MS, Civil Engineering/Geotechnical Engineering			f. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE) Professional Engineer: AZ #37284 (Civil)		
g. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.) <i>Publications:</i> Fréchette, D.N., Walsh, K.D. and Houston, W.N. "Review of Design Methods and Parameters for Laterally Loaded Groups of Drilled Shafts", Proceedings, Deep Foundation Congress, ASCE, Orlando, FL, February 2002 <i>Memberships:</i> American Society of Civil Engineers; Geo Institute; ADSC: The International Association of Foundation Drilling					

H. RELEVANT PROJECTS

	(1) TITLE AND LOCATION (City and State)	(2) Year Completed	
		Professional Services	Construction (if applicable)
1)	SR 24 – Gateway Freeway, SR 202L to Ellsworth Road, Mesa and Maricopa County, AZ	2011	n/a
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm The project consists of the roadway improvements associated with the construction of Phase I of the system traffic interchange between SR 24 and SR 202L located predominantly in Mesa and an unincorporated portion of Maricopa County. The construction includes directional ramps between SR 24 and SR 202L, as well as the segment of SR 24 from SR 202L to Ellsworth Road. \$1,066,600. Project Manager/Project Engineer.		
2)	SR 303L – Camelback to Glendale, AZ	2010	n/a
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm The project consisted of roadway improvements, new roadway construction and bridges including ramps, along the planned Estrella Freeway (SR 303L) from approximately 2,550 feet north of Camelback Road to approximately 2,550 feet north of Glendale Avenue. \$730,761. Project Engineer.		
3)	SR 303L: Happy Valley Parkway to Lake Pleasant Parkway, Peoria, AZ	2007	n/a
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm The project was comprised of roadway improvements consisting of 7.5 miles of new roadway construction and 15 bridges, including one over the Agua Fria River, along the SR 303L alignment. The roadway consists of 4 general purpose lanes, two in each direction of travel. \$1,391,091. Project Manager/Project Engineer.		
4)	I-10/SR 90 TI Soil Nail Walls, Benson, AZ	2010	n/a
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm The project included four new interchange ramps, realignment of the eastbound and westbound I-10 lanes and removal and replacement of the existing bridges over SR 90. AMEC designed temporary soil nail walls to facilitate construction and permanent soilnail walls for the bridge abutments. \$24,160. Project Manager/Project Engineer.		



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

Daniel Fr chet te (continued)

	(1) TITLE AND LOCATION <i>(City and State)</i>	(2) Year Completed	
		Professional Services	Construction <i>(if applicable)</i>
	I-17 Widening – Jomax Road to SR 74; SR 303L/I-17 Traffic Interchange Phase I, Phoenix, AZ	2007	n/a
5)	(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 project included roadway improvements along I-17 from approximately 2,000 feet south of Jomax Road to SR 74 and new bridges, elevated roadway and ramps for a future SR 303L/I-17 TI at the Lone Mountain Road alignment. Mainline I-17 in this area was elevated 25' above existing ground in the vicinity of the Lone Mountain Road alignment. Five new concrete bridge structures were designed to accommodate the future Lone Mountain Road service interchange and freeway-to-freeway system interchange with SR 303L. \$548,000. Project Manager/Project Engineer.		



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

a. NAME Tony Freiman	b. ROLE IN THIS CONTRACT Associate Geotechnical Engineer	c. YEARS EXPERIENCE	
		1. TOTAL 30	2. WITH CURRENT FIRM 30
d. FIRM NAME AND LOCATION (City and State) AMEC Environment & Infrastructure, Inc., Phoenix, AZ			
e. EDUCATION (DEGREE AND SPECIALIZATION) BS, Civil Engineering		f. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE) Professional Engineer: AZ #23982 (Civil); NV #09432 (Civil)	
g. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.) Graduate Level Courses in Geotechnical Engineering Professor J.L. Briand's Short Course on Pressuremeters & Cone Penetrometers <i>Memberships:</i> American Society of Civil Engineers; Society of Mining Engineers			

H. RELEVANT PROJECTS

	(1) TITLE AND LOCATION (City and State)	(2) Year Completed	
		Professional Services	Construction (if applicable)
1)	SR 143 – Sky Harbor Traffic Interchange, Phoenix, AZ	2010	n/a
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE The study area began at SR 143 Milepost (MP) 0.75 and ended at MP 2.5, for a total length of approximately 1.75 miles along SR 143. The project reconfigured the existing SR 143/Sky Harbor Boulevard TI to improve and provide more efficient freeway-to-freeway directional ramps and consolidate the airport access to SR 143 and Sky Harbor Boulevard. \$456,045. Project Manager/Project Engineer.		
2)	SR 89 Little Hells Canyon Dam Spillway Reconstruction, AZ	2012	n/a
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE The roadway embankment forming the Little Hell's Canyon reservoir is up to 70 feet in height and forms an impoundment volume of about 135 acre-feet. An ADWR Dam Safety inspection in May 2009 and June 2010 indicated safety repairs were necessary to prevent further erosion of the bedrock. AMEC performed a seismic refraction program to provide the design team with geotechnical engineering design criteria. \$5,740. Project Manager.		
3)	US 93, MP 104.1 to 106.0, Mohave County, AZ	2010	n/a
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE The project consisted of preparation of construction plans, specifications, special provisions and quantity and cost estimates for a two-lane roadway parallel and adjacent to (west of) the existing US 93, resulting in a four-lane divided highway (two lanes each NB and SB) with an open median. \$173,836. Project Manager/Project Engineer.		
4)	SR 24 – Gateway Freeway, SR 202L to Ellsworth Road, Mesa and Maricopa County, AZ	2011	n/a
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE The project consists of the roadway improvements associated with the construction of Phase I of the system traffic interchange between SR 24 and SR 202L located predominantly in Mesa and an unincorporated portion of Maricopa County. The construction includes directional ramps between SR 24 and SR 202L as well as the segment of SR 24 from SR 202L to Ellsworth Road. \$1,066,600. Project Engineer.		



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

Tony Freiman (continued)

	(1) TITLE AND LOCATION <i>(City and State)</i>	(2) Year Completed	
		Professional Services	Construction <i>(if applicable)</i>
	I-17 Widening – Jomax Road to SR 74; SR 303L/I-17 Traffic Interchange Phase I, Phoenix, AZ	2007	n/a
5)	(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 project included roadway improvements along I-17 from approximately 2,000 feet south of Jomax Road to SR 74 and new bridges, elevated roadway and ramps for a future SR 303L/I-17 TI at the Lone Mountain Road alignment. Mainline I-17 in this area was elevated 25' above existing ground in the vicinity of the Lone Mountain Road alignment. Five new concrete bridge structures were designed to accommodate the future Lone Mountain Road service interchange and the freeway-to-freeway system interchange with SR 303L. \$548,000. Project Engineer.		



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

a. NAME Richard Bansberg		b. ROLE IN THIS CONTRACT Associate Geologist		c. YEARS EXPERIENCE	
				1. TOTAL 33	2. WITH CURRENT FIRM 30
d. FIRM NAME AND LOCATION (City and State) AMEC Environment & Infrastructure, Inc., Phoenix, AZ					
e. EDUCATION (DEGREE AND SPECIALIZATION) BA, Earth Science			f. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE) Professional Geologist: AZ #22738		
g. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.) Memberships: Arizona Hydrological Society; National Water Well Association; National Association of Environmental Professionals					
H. RELEVANT PROJECTS					
	(1) TITLE AND LOCATION (City and State) SR 90 – San Pedro River Bridge, Whetstone TI to Junction SR 80, Cochise County, AZ			(2) Year Completed	
				Professional Services 2010	Construction (if applicable) 2013-2014
1)	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE This project involved the replacement of the SR 90 San Pedro River Bridge. Replacement of the bridge was recommended because the bridge was exhibiting extensive, large transverse and longitudinal cracking (AZTEC, 2009). The overall condition rating of the bridge deck was 4 (poor), and the sufficiency rating of the bridge was S52.50. \$111,648. Project Manager.			<input checked="" type="checkbox"/> Check if project performed with current firm	
	(1) TITLE AND LOCATION (City and State) US 60 Slope Stability Evaluations, Mile Posts 290 to 321, Gila and Navajo Counties, AZ			(2) Year Completed	
				Professional Services 2010	Construction (if applicable) 2013
2)	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE The project is located in Gila and Navajo Counties within the ADOT Globe District, in the Salt River Canyon between Globe and Show Low. Four existing cut slopes completed in rock formations had experienced rock falls and/or exhibited signs of potential instability. AMEC provided an investigation of the geological and geotechnical conditions and developed recommendations for addressing rock fall and slope instability issues. \$43,439. Project Manager.			<input checked="" type="checkbox"/> Check if project performed with current firm	
	(1) TITLE AND LOCATION (City and State) SR 77, Aravaipa Creek Bridge, Pinal County, AZ			(2) Year Completed	
				Professional Services 2011	Construction (if applicable) n/a
3)	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE This project involved replacement of the existing SR 77 Aravaipa Creek Bridge with a new structure. According to the Final Project Assessment, replacement of the bridge was recommended because the bridge deck was exhibiting medium to large cracking delamination throughout the surface. The overall condition rating of the bridge deck was 4 (poor), and the bridge had a sufficiency rating of S68.19 (structurally deficient). \$32,757. Project Manager.			<input checked="" type="checkbox"/> Check if project performed with current firm	
	(1) TITLE AND LOCATION (City and State) US 60, Silver King and Superior Streets, Pinal County, AZ			(2) Year Completed	
				Professional Services Ongoing (85% Complete)	Construction (if applicable) n/a
4)	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE ADOT is improving US 60 from Florence Junction at MP 211.7 to State Route 177 at MP 226.8 just west of the Town of Superior, a distance of approximately 15 miles. \$669,162. Project Manager.			<input checked="" type="checkbox"/> Check if project performed with current firm	
	(1) TITLE AND LOCATION (City and State) US 60, Passing Lanes, Oak Flats to Miami, Pinal County, AZ			(2) Year Completed	
				Professional Services Ongoing (75% Complete)	Construction (if applicable) n/a
5)	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE The project is located within the ADOT Globe District on US 60 between Superior and Globe in Pinal County, Arizona. The purpose of the project is to increase public safety and convenience by widening the roadway to allow for a westbound passing lane between the Towns of Superior and Globe. \$653,136. Project Manager.			<input checked="" type="checkbox"/> Check if project performed with current firm	



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a. NAME Cliff Metz		b. ROLE IN THIS CONTRACT Laboratory Supervisor		c. YEARS EXPERIENCE	
				1. TOTAL 29	2. WITH CURRENT FIRM 20
d. FIRM NAME AND LOCATION (City and State) AMEC Environment & Infrastructure, Inc., Phoenix, AZ					
e. EDUCATION (DEGREE AND SPECIALIZATION)					
f. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE)					
g. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.) Certifications/Training: NICET Level IV, Construction Materials Testing Asphalt, Exp. 08-2014; Construction Materials Testing Concrete, Exp. 08-2014; NICET Level III, Transportation Engineering Technology Highway Materials, Exp. 08-2014; Materials Testing Soils, Exp. 08-2014 ATTI Field Technician, Exp. 02-2014; ATTI Asphalt Technician, Exp. 08-2014; ATTI Soils/Aggregate Level I Technician, Exp. 10-2016; ACI Concrete Field Testing Technician, Grade I, Exp. 03-2014 Memberships/Affiliations: American Concrete Institute (Arizona Chapter); American Society of Certified Engineering Technicians; International Slurry Surfacing Association; American Society for Testing and Materials; Arizona Rock Products Association; ATTI Technical Advisory Board					
H. RELEVANT PROJECTS					
1)	(1) TITLE AND LOCATION (City and State) Materials Testing, Mesa, AZ			(2) Year Completed	
				Professional Services Ongoing	Construction (if applicable) n/a
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Provide annual quality assurance (QA) compliance testing for all of the City's arterial paving projects. Tests include gyratory compaction of asphaltic concrete, asphalt content using the ignition furnace, uncompacted voids of aggregates and film thickness analysis. Laboratory Supervisor.					
2)	(1) TITLE AND LOCATION (City and State) ADOT Referee Testing, Phoenix, AZ			(2) Year Completed	
				Professional Services Ongoing	Construction (if applicable) n/a
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Provide referee testing for ADOT under an "on-call" contract. Work consists of "blind" testing on asphaltic concrete or aggregate samples to settle disputes between ADOT and their contractor. The state is very critical in their selection of referee laboratories. Laboratory Supervisor.					
3)	(1) TITLE AND LOCATION (City and State) Annual Quality Testing of Aggregate, Numerous Suppliers, Phoenix, AZ			(2) Year Completed	
				Professional Services Ongoing	Construction (if applicable) n/a
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Provide testing services for annual quality testing of aggregate for numerous suppliers. The testing consists of certifying their aggregates annually for their concrete mixtures satisfying Maricopa County and other agencies for quality as outlined in ASTM-C33. Laboratory Supervisor.					
4)	(1) TITLE AND LOCATION (City and State) Annual Slurry Seal Mix Designs, Phoenix, AZ			(2) Year Completed	
				Professional Services Ongoing	Construction (if applicable) n/a
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Provide annual Slurry Seal Mix Designs for Arizona's Northern, Southern and Central airports along with numerous other private and governmental agencies. Laboratory Supervisor.					
5)	(1) TITLE AND LOCATION (City and State) Annual Quality Assurance Compliance Testing, Mesa, AZ			(2) Year Completed	
				Professional Services Ongoing	Construction (if applicable) n/a
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Provide annual QA compliance testing for arterial paving projects. Tests include gyratory compaction of asphaltic concrete, asphalt content using ignition furnace, uncompacted voids of aggregates and film thickness analysis. Lab Supervisor.					



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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	
US 93, MP 2 to MP 17 Feasibility Study, DCR, EA and Final Design, Mohave County, AZ		PROFESSIONAL SERVICES 2008	CONSTRUCTION <i>(If applicable)</i> 2010
23. PROJECT OWNER'S INFORMATION			
c. PROJECT OWNER Arizona Department of Transportation Michael Kondelis, PE 928-681-6020	d. DOLLAR AMOUNT OF PROJECT \$7,600,000	e. TOTAL COST OF PROJECT \$75,000,000	

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

AMEC was the prime consultant providing professional engineering and environmental services for the preparation of the Feasibility Report, Design Concept Report (DCR), Environmental Assessment (EA), and Final Design for this award-winning-mile long 4-lane divided highway segment. Final design for this fast-track project was completed within 12 months in order to coincide with the completion of CFLHD's Hoover Dam Bypass project.

The diverse technical requirements of the project demanded a group of equally diverse technical team members to ensure all the project elements were addressed. The design included complex geometric design with independent northbound and southbound profiles, scenic overlook design, and over 140 wash crossings including five bridge crossings in a rural, environmentally sensitive, mountainous setting.

One of the unique features of the project was the wildlife bridges for desert big horn sheep to cross over the highway – the first type of crossing in North America. These unique project features required extensive coordination with National Park Service, Arizona Game and Fish Department, and Bureau of Land Management related to context sensitive design features within the Lake Mead National Recreation Area.

Additional services for this project included significant roadway/ geometric design, drainage, utilities, geotechnical analysis and design, pavement analysis and design, preparation of NEPA documentation, landscape architecture/erosion control and survey/aerial mapping. Traffic services included signing inventory for both north- and southbound US 93; signing design and details – resulting in over 200 new signs; construction staging/phasing; design of the temporary construction crossover; and detailed work zone traffic control design.

The project has been recognized with several awards including:

- 2011 APWA Transportation Project of the Year
- 2011 Arizona ACEC Judges Choice
- 2012 Arizona Transportation Partnering Excellence
- 2011 FHWA Exemplary Ecosystem Initiative
- 2012 National Environmental Excellence
- Western Region 2012 America's Transportation Awards Best Use of Innovation

"I am extremely pleased with the quality of the AMEC design work on this project. Their staff was great to work with, and they were very responsive to the many variations presented during the design period. Completing a job of this size in such a compressed timeframe is remarkable."

**Michael Kondelis, PE
ADOT Project Manager**





ATTACHMENT I – General Qualifications

ANNUAL REQUEST FOR QUALIFICATIONS AND EXPERIENCE NO:
ADSP015-00004729

STATE PROCUREMENT OFFICE
Department of Administration
100 North 15th 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 (City and State)	b. YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
Lake Havasu City (LHC) – Wastewater System Expansion Program, Lake Havasu, AZ	2005	2011

23. PROJECT OWNER'S INFORMATION

c. PROJECT OWNER	d. DOLLAR AMOUNT OF PROJECT	e. TOTAL COST OF PROJECT
Lake Havasu City Greg Frosлие 928-855-2116	Engineering Costs (original; final): \$65,000,000; \$52,000,000	Construction: \$463,000,000 (orig.); \$341,000,000 (final) (AMEC delivered program 1 year ahead of schedule)

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

Lake Havasu City was one of the largest western cities serviced almost entirely by septic tanks without a public wastewater collection and treatment system. To avoid continued beach closures due to bacterial contamination, in 2001 LHC elected to construct a city-wide sewer collection system. A distinctive aspect of the program during construction was the connection of each occupied lot to the sewer system and abandoning the septic tanks. This required obtaining separate legal agreements for entry onto each property and the collection of the "capacity fee" from each property owner as they were connected.

AMEC provided program management, design and construction administration services. AMEC also provided assistance with financing considerations including revenue generation analysis and utility cash flow projections. When AMEC was appointed, the project was tens of millions over its original budget of \$463M and six months behind schedule. Within 18 months, the project was back on budget and on schedule. Typically, two to three sewer area projects were released each year through the design and construction contracts. These projects consisted of the installation of main line sewer, small diameter sewer laterals, manholes, septic tank closures and asphalt/landscape replacement.



Design: AMEC designed nearly 145 miles of mainline sewer for the Wastewater System Expansion and four of the larger pump stations in the program. The program also included 17 miles of sewer force mains, 7 miles of effluent force main, the decommissioning of approximately 22,000 septic tanks, a new wastewater treatment plant and effluent disposal system. AMEC was also involved in the overall conversion of the hydraulic model from HydroWorks to InfoWorks. This included upgrading the model to a GIS-based system and moving from a skeletonized trunk system model to a full pipe model (>3,500 nodes).

Construction Administration & Inspection (CA&I): The AMEC construction team had an inspection staff tasked with day-to-day oversight of the sewer installation. Tasks included interacting with contractors to identify potential issues and resolutions, coordinating with City staff, preparing daily field reports and record drawings, maintaining a safe work zone and ensuring that the project was constructed in accordance with the plans and specifications.

Agency Coordination: AMEC provided agency coordination with entities including local gas and cable companies, LHC Water Department, ADOT and the ADEQ. AMEC and LHC partnered with ADEQ to streamline the Engineer's Certificate of Completion process with a series of sewer line video reviews and partial acceptance forms, introducing sewer flows into the new system.

Program Management: As part of the planning stages, AMEC reviewed/revised construction sequencing, optimized system configurations and evaluated phasing for various projects for economies of scale in the sewer designs. AMEC was heavily involved with public relations and organized/participated in numerous open houses to meet with affected homeowners to address their concerns. A large portion of the activities included meeting with the oversight committee to develop improvements to the overall WWSE program such as the joint Program Management Plan, advanced pavement designs, curvilinear sewers, backwater valves and hydrogen sulfide issues.



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a. TITLE AND LOCATION (City and State) Supplemental Watershed Plan and Environmental Assessment for the Magma Flood Retarding Structure, Magma Flood Control District, Pinal County, AZ	b. YEAR COMPLETED	
	PROFESSIONAL SERVICES 2008 to 2010	CONSTRUCTION (If applicable) Ongoing

23. PROJECT OWNER'S INFORMATION

c. PROJECT OWNER Magma Flood Control District Kent Pace 480-424-3438	d. DOLLAR AMOUNT OF PROJECT \$213,000	e. TOTAL COST OF PROJECT \$11,300,000 (est.)
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f. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (include scope, size, and length of project)

AMEC prepared a Supplemental Watershed Plan/Environmental Assessment (Plan/EA) for Magma Flood Retarding Structure (FRS). The Magma FRS was nearing the end of its original 50-year project lifetime and did not meet current dam safety standards. The Plan/EA determined the feasibility of rehabilitating the Magma FRS to provide continued flood protection to downstream residences, public facilities and agricultural fields while meeting dam safety requirements for the Natural Resources Conservation Service (NRCS) and the Arizona Department of Water Resources (ADWR).

The Magma Flood Control District was seeking funding from the NRCS; therefore the Plan/EA was prepared in accordance with NRCS National Environmental Policy Act guidance. The Plan/EA identified the National Economic Development (NED) alternative and compared environmental impacts of the NED Alternative to other project alternatives.



AMEC completed all of the environmental technical reports including Cultural Resources Survey and Report, Biological Evaluation, Hazardous Materials Report and Economic Analysis. AMEC also completed the jurisdiction delineation and Section 404 Permit Application for the U.S. Army Corps of Engineers review and approval. A Section 404 Individual Permit was acquired for this project which is currently under construction.



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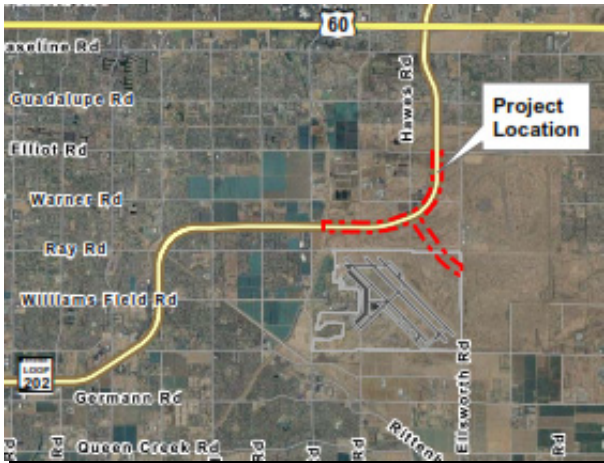
a. TITLE AND LOCATION <i>(City and State)</i> SR 24 – Gateway Freeway, SR 202L to Ellsworth Road, Maricopa County, AZ	b. YEAR COMPLETED	
	PROFESSIONAL SERVICES 2011	CONSTRUCTION <i>(If applicable)</i> Ongoing

23. PROJECT OWNER'S INFORMATION

c. PROJECT OWNER ADOT Annette Riley 602-680-9598	d. DOLLAR AMOUNT OF PROJECT \$1,066,600	e. TOTAL COST OF PROJECT n/a
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f. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (include scope, size, and length of project)

The project consists of the roadway improvements associated with the construction of Phase I of the system traffic interchange between SR 24 and SR 202L located predominantly in Mesa and an unincorporated portion of Maricopa County. The construction includes directional ramps between SR 24 and SR 202L, as well as the segment of SR 24 from SR 202L to Ellsworth Road.



The project length extends approximately 2 ¼ miles along SR 202L from west of Sossaman Road to east of Warner Road and includes approximately 1 mile of new roadway construction for SR 24 from the SR 202L to Ellsworth Road. The roadway improvements to SR 202L are primarily associated with adding merge lanes for the directional ramps. These improvements include widening the Sossaman Road bridge. The SR 24 roadway will generally consist of six general-purpose lanes, three in each direction of travel, with all traffic exiting at Ellsworth Road in an end-of-freeway condition. The SR 202L roadway profile is elevated on fill embankment and the SR 24 will also be an elevated roadway founded on embankment except at the end-of-freeway condition at Ellsworth Road.

The planned roadway improvements consist of Portland cement concrete pavement, except for the detour roads and the transitions along Ellsworth Road from new construction to existing asphalt concrete pavement. The improvements associated with SR 202L will receive a rubberized asphalt overlay.

Seven concrete bridge structures are planned at the following locations:

- Ramp W-S Flyover
- Ramp N-W Flyover
- Ramp E-S over Hawes Road
- SR 24 over Ray Road
- SR 24 over Powerline Floodway
- Ramp N-E over Warner Road
- SR 202L over Sossaman Road (bridge widening)

These bridges will be primarily founded on drilled shaft foundations.

The planned drainage for the project consists of a combination of drainage channels, box culverts, storm drains and detention/retention basins.



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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> Maricopa County/Town of Gilbert – Gilbert Landfill Surface Drainage Erosion Mitigation Design, Maricopa County/Gilbert, AZ	b. YEAR COMPLETED	
	PROFESSIONAL SERVICES 2012 to 2013	CONSTRUCTION <i>(If applicable)</i> 2014 (est.)

23. PROJECT OWNER'S INFORMATION

c. PROJECT OWNER Maricopa County Brian Kehoe 602-506-8997	d. DOLLAR AMOUNT OF PROJECT \$135,000	e. TOTAL COST OF PROJECT \$1,600,000 (est.)
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f. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (include scope, size, and length of project)

AMEC evaluated the Gilbert Landfill site and developed alternatives to mitigate surface drainage issues relating to erosion and adverse surface water quality impacts. Several studies had previously been completed by others on behalf of the County.



AMEC performed an alternatives analysis and submitted a Stakeholder Workshop Information Packet to both Maricopa County and the Town of Gilbert summarizing the results. A final construction package with design plans, project specifications and engineers cost estimate was submitted in June of 2013. AMEC's engineers cost estimate was over \$600,000 less than other designs previously considered for the site.

The project is currently under construction and AMEC is providing post-design services including bidding support, construction inspection and materials testing.



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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.)

Please refer to AMEC's Statement of Qualifications for Additional Information.

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: 

Date: December 29, 2014

Name: Brett A. Howey, PE

Title: Vice President, Southwest Area Manager

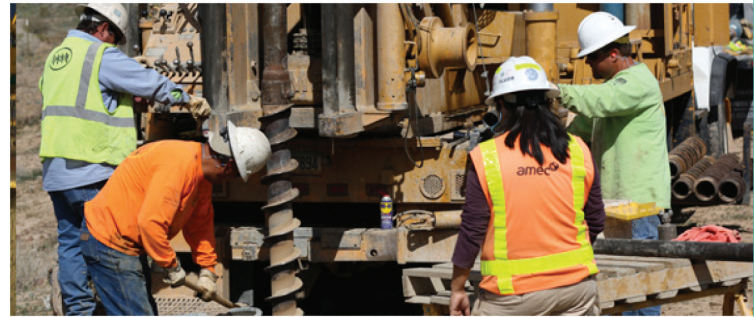


amec
foster
wheeler

Statement of Qualifications

Annual Professional Services List

Solicitation No. ADSP015-00004729



Submitted to:

**Arizona State
Procurement Office**

December 30, 2014



Firm

Headquartered in Atlanta, Georgia, AMEC Environment & Infrastructure, Inc. (AMEC) is an environmental consulting, engineering and design and construction company serving the transportation, clean energy, federal, industrial/commercial, mining, oil & gas and water sectors worldwide. AMEC has been serving Arizona clients since 1959, and currently has a staff of over 160 professionals in the Phoenix and Scottsdale area offering a wide variety of services. This statement of qualifications addresses the following disciplines we offer in Arizona.

- Transportation
- Drainage/Stormwater
- Water/Wastewater
- Water Resources
- Construction Management
- Survey
- GIS
- Environmental
- Geotechnical
- Materials Testing

Each discipline is highlighted on the following pages and includes a discussion of our project experience and staff that specialize in that discipline.

Resources

AMEC's staff has significant experience in producing well-planned and professionally designed infrastructure solutions for our clients. With more than 180 Arizona employees, AMEC represents one of the largest pools of engineering talent in the region for providing services for public infrastructure projects. Our multi-disciplined staff works in collaboration to achieve the best results for our clients. We have successfully completed projects for multiple agencies and municipalities, including Arizona Department of Transportation (ADOT), Arizona State Lands Department, Flood Control District of Maricopa County (FCDMC); Maricopa County Department of Transportation (MCDOT), Mohave County, Lake Havasu City, Bullhead City, the City of Prescott, City of Tucson, Pima County; and various other local agencies. Our depth of resources and sound financial backing ensure our ability to provide you with long-term quality engineering services.

Responsiveness

AMEC understands the importance of providing timely project information to concerned stakeholders, as well as the Customer. Face-to-face meetings are important as they allow a more direct exchange of information. We have established a reputation for responsiveness with our State clients, such as ADOT.

"I am extremely pleased with the quality of the AMEC design work on this project. Their staff was great to work with, and they were very responsive to the many variations presented during the design period. Completing a job of this size in such a compressed timeframe is remarkable."

Michael Kondelis, PE (ADOT)

AMEC provides innovative solutions to specific project challenges.



AMEC is committed to the highest standards of business practice in all our endeavors for our clients, shareholders, society and the environment.



Project Experience

Our project experience will be highlighted under each individual discipline. AMEC has experience with the planning, design and construction administration of a wide variety of infrastructure projects throughout Arizona.

Ability to Provide Quality Services

AMEC employs proven methodologies for project management and quality control to deliver award-winning projects. This section describes some of the key elements of these processes.

Methodology and Approach

Project management is one of the critical elements of successful and cost-effective project delivery. AMEC's philosophy is to provide our clients with engineering services that meet schedule and budget requirements, as well as satisfy project goals. AMEC uses a Project Team approach in the development of a sound engineering design. Our Project Managers (PMs), will serve as the primary contact; provide coordination between our team and the Customer; and guide the project schedule, budget, and quality assurance/control efforts. Key components of a project management system that produces well thought-out and designed projects include:

- Project Definition (scoping)
- Project Planning
- Schedule, Budget and Cost Control
- Quality Assurance/Quality Control Procedures

AMEC PMs have "around the clock" access to project budget and financial information through AMEC's web-based PM Portal. Earned value analysis reports are generated weekly to give the PM a view of project budget expended versus time expended to assess if the project is on budget or if corrective action is needed to align the budget with the schedule. Regular internal reviews will be completed by the project principal to assure quality delivery on schedule and within budget. The PM will review progress on a weekly basis and adjust priorities to assure that project schedule and milestones are maintained. Key staff is dedicated to their assigned tasks from beginning to end and are not assigned additional work that will impact the client's schedule.

Planning, Scheduling, and Budget

Our PM will be responsible for developing and managing the project scope, schedule and budget. AMEC's PM has at their disposal, a variety of software tools for schedule management, including Microsoft Project and Primavera. The PM will work with the Customer to identify budget goals and deadlines, and then develop a plan to complete the product on time and within budget. We will communicate project progress with the appropriate staff. AMEC will also communicate potential scope variances well in advance so that the Customer can provide input and feedback. Keeping open lines of communication between our staff and the Customer will ensure project goals and expectations are understood and met.



AMEC's success is based on:

- Understanding our client's objectives and priorities
- Extensive experience with a variety of different types of materials engineering services and support facilities
- Regulatory expertise that goes beyond understanding the basic content and requirements of jurisdictional agencies
- A reliable project management system to ensure accountability
- A commitment to an innovative and dynamic problem-solving process that provides alternatives and an effective means of making prudent decisions

Project Management

AMEC's approach to Project Management is based on "Quality and Communication." At the outset of every assignment, our PM will prepare a "Project Execution Plan" (PEP). The PEP includes details regarding client information, contract information, scope of work, controlling conditions, technical approach, quality assurance plan, delineation of work performance, project organization, schedule and budget, safety plan, and documentation requirements. This plan provides documentation of critical management issues and will clearly outline technical and administrative details. A copy of the original PEP, along with periodic updates will be provided to the Customer.

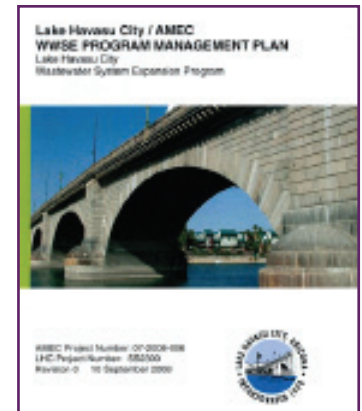
Project Meetings

AMEC's approach is to be a partner with the Customer through the entire project and as such, regular progress meetings are scheduled. Meetings typically take place following each pre-determined review cycle so as to provide a venue at which Customer concerns and input can be voiced. AMEC also takes a proactive approach to utility coordination and will schedule utility coordination meetings when prudent, typically following the 30% design submittal once horizontal line and vertical grade have been established, so any potential conflicts can be addressed before significant detail is added to the plans.

Quality Control

Quality and cost are key client concerns. Serving primarily public works clients, AMEC understands that their budgets are limited. Our focus, therefore, is to deliver quality designs of cost-effective solutions in order to make the client's budget go farther. Quality begins at the inception of a project. As described earlier, our PEP includes a quality control and quality assurance component. It describes the plan for everything from the checking of individual project deliverables to overall "Senior Review" of the project at key points. Periodic quality audits by senior management assure that the plan is being followed.

As the design progresses, completed work is assembled at intermediate submittal points to conduct a complete detailed review. A designated QA/QC Manager serves as the primary person responsible for reviewing quality of the work. The QA/QC Manager is usually not involved in day-to-day development of the work, allowing for a "fresh" set of eyes. Before any final work is released from the office, a final review is conducted. AMEC has developed standard checklists for a number of project types to assure the plans and specifications developed are complete. Through the years, our system has been refined and is at a point where we are confident our finished project is of the highest quality. The large amount of repeat business we enjoy is evidence that our quality objectives are being met.



In Our Client's Words:

"AMEC's personnel have been proactive and thorough in accomplishing design tasks."

"AMEC has been prompt and complete in response to client direction and requests".

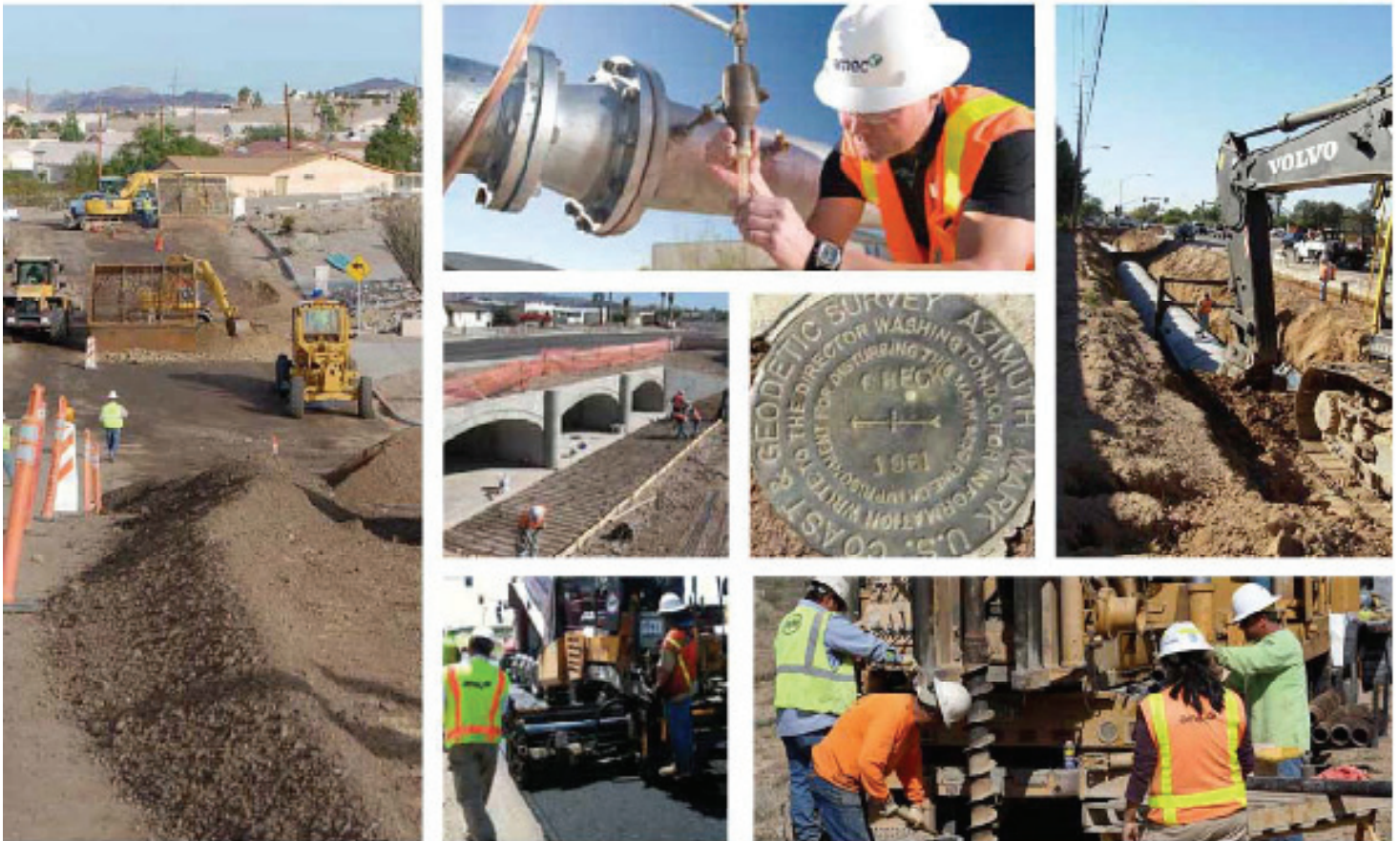
"The project has a highly compressed schedule, and AMEC has met the schedule requirements."

"Quality of documents is outstanding in completeness and presentation."

Barbara Raisanen,
Project Manager

Alma School Road/
Power Road Arterial
Reconstruction.
Mesa, AZ

Transportation/Traffic



Transportation/Traffic

AMEC is highly experienced in planning and designing transportation improvements. Planning and design for transportation and infrastructure facilities are a major focus of AMEC's business throughout the U.S. Our transportation experience includes scoping studies; alternatives development; detailed design; construction document development; plans, specifications and estimates (PS&E); and construction administration services for projects including surveying, environmental, geotechnical engineering, roadway engineering, drainage design and traffic engineering.

AMEC provides a full range of services including:

- Pedestrian, bicyclist and vehicular traffic safety evaluations
- Neighborhood mitigation evaluation and design
- Pedestrian, bike, and vehicular circulation planning
- Intersection and corridor operational analysis, including signal timing and progression
- Access control planning and design
- Work zone traffic control and construction staging
- Traffic Signal and Stop Control Warrant analysis
- Parking and planning studies
- Railroad quiet zone analysis and safety mitigation measures
- Intersection improvement design
- Pavement marking, signing, traffic signal, ATMS "Wireless" and fiber optic interconnect design
- Signing inventories
- Construction document production
- Road safety assessments (RSAs)
- Traffic crash analysis
- Transportation safety planning
- Traffic impact analysis

Relevant Projects

Hardy Drive, Broadway to University, City of Tempe, AZ

The project site is located along Hardy Drive, from Broadway Road to University Drive, a distance of approximately one mile, in Tempe, Arizona. The project consists of pedestrian and bicycle facility improvements along this collector street within a primarily single family residential area. Project improvements include striping changes to widen bike lanes and narrow travel and center turn lane; sidewalk widening; raised cycle track; raised medians; ADA curb ramp and driveway upgrades; and landscape and bus stop upgrades. AMEC scope of services included survey, streetscape planning, scoping document, public involvement, environmental studies, and PS&E documents for this Federal CMAQ funded project.

Greenfield Road, Germann to Pecos, Town of Gilbert, AZ

AMEC provided survey and design services for this one mile arterial widening project. The project included widening of two-lane roadway to a minor arterial composed of four travel lanes, center turn lane, bike lanes, curb/gutter, and sidewalk. In addition, the project included one mile of new 16-inch water line, a new section of sanitary sewer, irrigation ditch relocations, retention basins, and utility relocations including 69 kV lines. AMEC services included design management; survey/mapping; materials investigation and design; public information meetings; utility coordination; right-of-way legal descriptions; roadway design; water line design; drainage analysis and design; irrigation system design; signing, pavement markings, street lighting, and traffic signal design; and preparation of plans, specification, and estimates.

Southern Avenue and Country Club Road Intersection, City of Mesa

AMEC provided professional engineering services, including aerial survey, development of preliminary design alternatives, environmental studies and coordination, and a design concept report. AMEC worked closely with the City in developing a preferred alternative for improvements to Southern Ave which include, widening Southern Avenue to add a third through lane and eastbound right turn lane, bus bays, raised medians, and utility upgrades. Final design included intersection widening to add through lanes, bus bays, right turn lanes, driveways, ADA upgrades, pavement reconstruction, traffic signal and street lighting. The project also included upgrades to water and sewer lines.

SR 85 at Gila Bend Design, Phase I, ADOT

AMEC developed a DCR and provided professional engineering services for the \$20.5 million, reconstruction of SR 85 and Business 8 (B-8) within the Yuma District. The project is located within the jurisdictional boundaries of the Town of Gila Bend. It includes the realignment of SR 85 and B-8 to provide a 4-lane median divided roadway for each, replacement of an existing 1960s vintage trumpet interchange between SR 85 and B-8 with a "T" intersection and a new bridge over the Union Pacific Railroad. AMEC services include roadway design, detour roadway design, drainage analysis and design, traffic engineering, street lighting design and utility coordination.

SR 87, SR 287 to Hunt Highway, ADOT

AMEC developed the design of the \$7 million, 26-mile safety enhancement project within the Tucson District. The project is located on SR 87 within the jurisdictional boundaries of the Gila River Indian Community and the City of Coolidge. The SR 87 project includes 10 miles of shoulder widening, 8 miles of mill and overlay, new left turn lanes at SR 187 and Blackwater School Rd, reconstruction of the Curry Rd intersection to improve the sight distance, new guard rail, pipe extensions and new signing and pavement markings for 26 miles. AMEC services include survey and mapping, R/W survey, drainage analysis and design, roadway design, traffic engineering, geotechnical investigation, analysis and design, utility coordination and environmental studies.

Key Team Members – Transportation/Traffic

Dick Yano, PE (AZ 39391)

Dick Yano has over 31 years of experience with expertise in the transportation field. His experience has focused on managing and designing transportation projects throughout the western United States. Projects types have included transit facilities, local streets, collector and arterial roadways, freeways, and bridges in both urban and rural environments. As AMEC's Transportation Department Manager, Mr. Yano is responsible for transportation engineering services for public clients in AMEC's Phoenix, Arizona office. Services include engineering planning and design services for State, City, Town, and County clients. Management duties include business development, personnel management and project management. Business development includes involvement in professional organizations and leading the development of proposals and statements of qualifications packages in pursuit of projects. His design services and streets experience are extensive, and include:

- Hardy Drive Street Improvements, City of Tempe – PM
- Southern Avenue & Country Club Drive Intersection, City of Mesa – PM
- Greenfield Road, Germann to Pecos, Town of Gilbert – PM
- Ocotillo Road at UPRR, Town of Queen Creek – PM
- US 93, Hoover Dam to MP 17, Mohave County – PM

Todd Farmer, PE (AZ 40970)

Todd Farmer has 15 years of engineering experience including utilities, roadways, irrigation systems, and water/sewer systems. He is responsible for design, project coordination, and plan processing. He has been responsible for site planning, land planning, grading design, drainage design, street design, utility design, hydrology studies/reports, obtaining various types of certificates and permits, and storm water pollution prevention plans. His projects have required coordination for approval and permitting by various agencies including the Maricopa County Department of Transportation; Flood Control District of Maricopa County; Maricopa County Department of Environmental Services. He has also coordinated extensively with various utility companies such as Arizona Water Company; Queen Creek Water Company' Arizona Department of Water Resources; Arizona Department of Environmental Quality; Roosevelt Water Conservation and Irrigation Districts; Johnson Utilities; Gila River Indian Community irrigation; SRP electric, water, gas, irrigation; Southwest Gas; El Paso Natural Gas; APS; WAPA; Cox Communications; Qwest; Sprint; UPRR; Kinder Morgan and the US Army Corps of Engineers.

- Randolph Road, City of Coolidge – Project Engineer
- Camp Navajo Building One Rehabilitation, Bellemont – Project Engineer
- Greenfield Road, Germann to Pecos, Town of Gilbert – Project Engineer
- Ocotillo Road at UPRR, Town of Queen Creek – Project Engineer
- Davis Monthan AFB Site Improvements, Tucson – Project Engineer

Clark Clatanoff, PE, PTOE (AZ 20206, 602)

Clark Clatanoff's experience includes transportation planning (including corridor planning and preliminary design plans), traffic design, construction plan preparation and traffic studies for urban and rural expressways, interchanges, highways, and streets. His specific expertise includes roadway capacity analysis, geometric layout, roadway design, traffic studies, and report preparation. In addition to his transportation experience, he has participated in many projects involving environmental assessment and public involvement. These projects included direction of public participation programs involving information meetings, formal hearings, as well as coordination with neighborhood groups, public agencies, and utilities. His project experience includes:

- ITS Improvements, City of Peoria – PM
- SR 303L, Camelback Road to Glendale Avenue, ADOT – PM
- I-10 Korsten Road Traffic Interchange, ADOT – PM
- Safe Routes to School, City of Casa Grande / ADOT – PM
- SR 210, Sign Rehabilitation, ADOT – PM

Scott Kelley, PE, PTOE (AZ 48269, 3230)

Scott Kelley's has over 11 years of engineering experience, with a particular emphasis in the preparation of traffic design plans and transportation planning studies throughout Arizona. His specific experience includes preparation of traffic designs for large urban and rural freeway projects, as well as large municipal arterial improvement projects; freeway, roadway and intersection capacity analysis, traffic engineering studies, roadway horizontal layout, and traffic signal system analysis. In addition to his design and planning experience, he has served as an on-call agency reviewer for several agencies. Plan review included all types of traffic plans related to development, as well as temporary traffic control plans for project construction. His project experience includes:

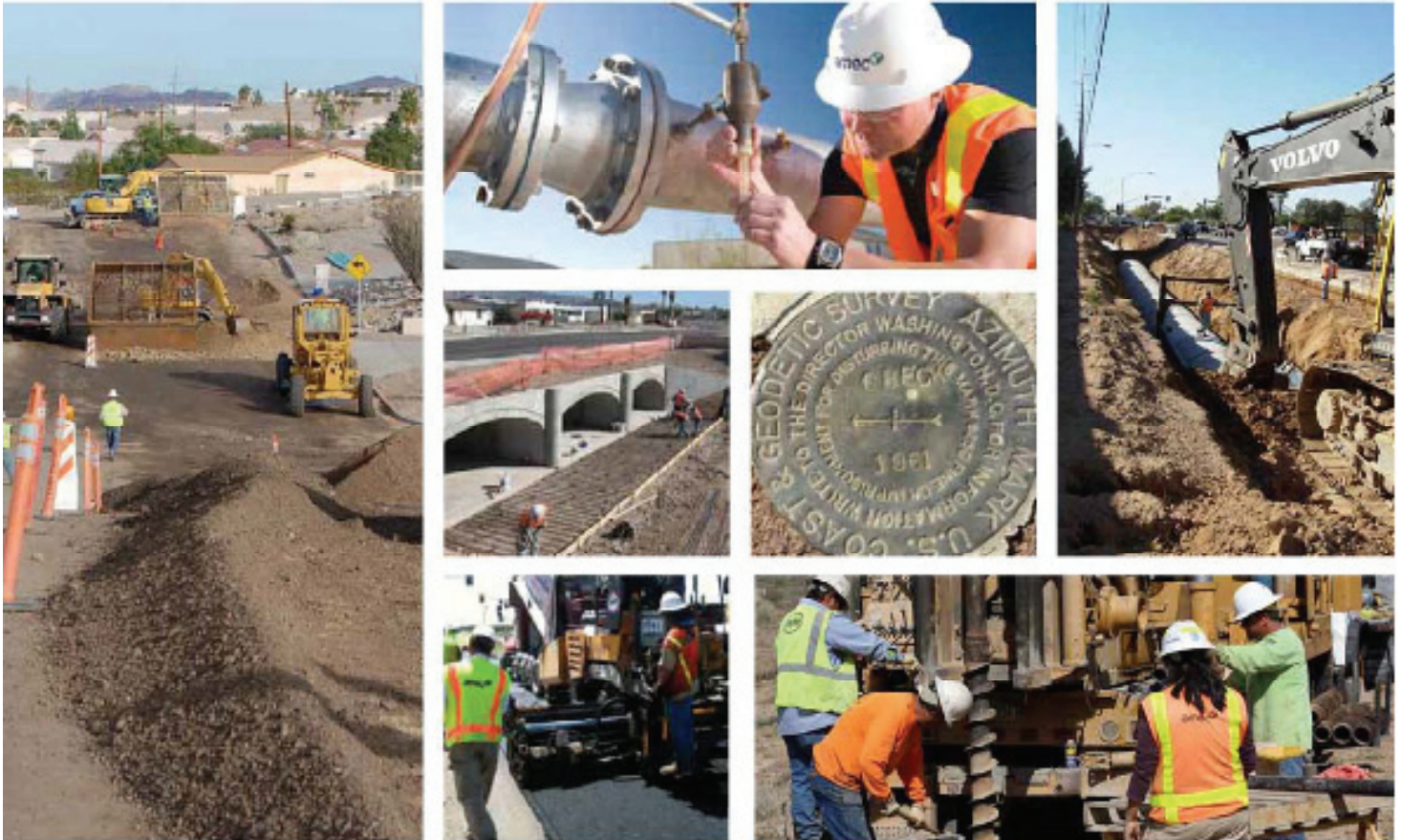
- ITS Improvements, Peoria – Task Lead
- SR 303L, Camelback Road to Glendale Avenue, ADOT – Task Lead
- I-10/Korsten Road Traffic Interchange, ADOT – Task Lead
- Cottonwood Lane and Peart Road Signal Progression – Project Engineer
- Val Vista Drive/Warner Road – Project Engineer

Michael Blankenship, PE (AZ 45148)

Michael Blankenship is a Professional Engineer with 28 years of traffic engineering expertise with an emphasis on traffic safety and human factors. His focus has been on safety for all road users, including pedestrians, bicyclists and the elderly. He has worked with over 50 agencies throughout the state including ADOT and county DOTs, as well as local and tribal governments to perform and document road safety audits (RSA). In addition, he also has experience in transportation safety planning, traffic impact analysis, signing, marking, traffic signal, and work zone traffic control design. His project experience includes:

- Roadway Departure Safety Implementation Plan Metro Region, ADOT – PM
- Arizona Road Safety Assessment Program, ADOT – Program Manager

Drainage/Stormwater



Drainage/Stormwater

Drainage

AMEC has experienced senior staff that has successfully completed flood control and floodplain projects for numerous counties, cities and for Arizona Department of Transportation (ADOT) statewide. AMEC provides stormwater management, training and permitting/compliance services throughout the state. We understand the agencies' needs, desires and time requirements; values and culture; work well with other agency staff; and provide on-time completion of projects. In addition to our Arizona experience, AMEC is providing professional drainage/floodplain and stormwater permitting and compliance services for various state/local government agencies nationwide. We are currently providing floodplain services for FEMA in regions IV, VIII and IX.

AMEC has a substantial amount of experience in flood control/floodplain management and floodplain studies including final design and preparation of construction documents (PS&E); floodplain mapping and preparation of digital flood insurance rate maps (DFIRM) for municipal agencies. Our areas of expertise include hydrology and hydraulics, the preparation of flood insurance studies (FIS) and master plans, 1D & 2D modeling, scour analysis, dam breach and inundation limits modeling, levee certification studies; and design of drainage infrastructure, storm drainage, and transportation engineering services for PS&E development.

Stormwater

AMEC also provides a wide variety of services specific to stormwater management. These services include municipal stormwater management and regulatory compliance (National Pollutant Discharge Elimination System and state-level permit programs), conservation engineering, erosion and sediment control, irrigation and drainage engineering and development and implementation of stormwater utilities. AMEC has provided services to various counties and municipalities, assisting with Arizona Pollutant Discharge Elimination System (AZPDES) Small Municipal Separate Storm Sewer Systems (MS4s) General Permit (per the National Pollutant Discharge Elimination System [NPDES] Stormwater Phase II Rule). AMEC has also provided services specific to NPDES Multi-Sector General Permit (MSGP) Compliance including Stormwater Pollution Prevention Plans (SWPPP) for regulated facilities. AMEC is experienced with assisting municipalities in complying with the various components of their Storm Water Management Plans (SWMP) through the development of ordinances, illicit discharge detection programs and training of field personnel both in a classroom setting as well as hands-on field demonstrations.

Relevant Projects

Gilbert Landfill Surface Drainage Erosion Mitigation Design, Maricopa County/Gilbert, AZ – Maricopa County/Town of Gilbert

AMEC evaluated the Gilbert Landfill site and developed alternatives to mitigate surface drainage issues relating to erosion and adverse surface water quality impacts. Several studies had previously been completed by others on behalf of the County. AMEC performed an alternatives analysis and submitted a Stakeholder Workshop Information Packet to both Maricopa County and the Town of Gilbert summarizing the results. A final construction package with design plans, project specifications and engineers cost estimate was submitted in June of 2013. AMEC's engineers cost estimate was over \$600,000 less than other designs previously considered for the site. The project is currently under construction and AMEC is providing post-design services including bidding support, construction inspection and materials testing.

Hunt and Magma Flood Mitigation Design Concept Report (DCR) and Plans, Pinal County, AZ – Pinal County Flood Control District

AMEC conducted a conceptual level alternatives analysis for flood mitigation solutions at the Hunt Highway & Magma road intersection and prepared design plans based on the preferred/selected alternative. Historically, this area has experienced ongoing drainage and flooding issues which have been observed and reported by residents of the Superstition Views and Copper Basin communities as well as County staff. The project included data collection, review and coordination with the local utilities and the Superstition Views and Copper Basin communities. AMEC used the FLO-2D integrated hydrologic and hydraulic model as the basis for determining both the hydrologic and hydraulic analysis for this project. The FLO-2D model was selected, with consent from the County, because of its ability to model shallow sheet flow conditions, dynamically model flow splits and its capability to report peak flow rates and volumes at any desired location within the watershed. AMEC documented the results of the analyses including the mitigation alternatives evaluation in a DCR. Upon the selection of a preferred alternative, AMEC is currently preparing 30% level design plans. Plan production is ongoing and expected to be completed in five months.

On-Call Floodplain Study Services – Mohave County Flood Control District (Mohave County FCD)

AMEC has provided technical floodplain review services for a variety of work assignments ranging from developing Conditional Letter of Map Revisions (CLOMRs) and Letter of Map Revisions (LOMRs), which are either the approximate or detailed study type, to GIS assistance with FEMA DFIRM preliminary map issuance to the County, to establishing a NAVD 88 survey control network for the more populated areas of the county. Recommendations were provided on how to establish BFEs for typical development scenarios in floodplain areas. A LOMR was prepared for Unnamed Wash 13. AMEC has provided presubmittal CLOMR/LOMR reviews for a number of ongoing revision requests for Flood Control. AMEC is developing flood map updates for North Lake Havasu area near the airport. AMEC provided Geo-Accurizing services to position GIS mapping layers to ensure proper alignment of map layers and geodetic survey points for over 3,000 parcels in Mohave County.

- **North Lake Havasu Flood Map Revisions.** The purpose of this project was to remap approximately 2.5 square miles of Zone AO floodplain in portions of un-incorporated Mohave County between the Lake Havasu City Limits and the Colorado River. Updated flood maps were needed since the existing delineations were several decades old. In addition, significant development had occurred since the original maps were prepared and hydrologic methods used in the County had changed. The project included data collection and review of existing studies, field visits, a detailed geomorphic assessment, detailed hydrological/hydraulic analyses utilizing methodology recently adopted by the District and remapping the floodplains within the study area. AMEC created two FLO-2D models with grid sizes of 50 feet and 25 feet, respectively. The models were used to predict inflow hydrographs and flow transfer characteristics at key watershed boundary locations. The FEMA three-stage process for assessing flood hazards on alluvial fans was followed and a detailed geomorphic assessment, resulting in detailed geologic maps of the detailed study area, was performed. The results of the detailed geomorphic assessment, the FEMA three-stage process for assessing flood hazards on alluvial fans and the detailed FLO-2D modeling results were used to re-delineate both the riverine (Zone AE) and shallow sheet flooding (Zone AO) flood hazards in the detailed study area. The project hydrology/hydraulics has been approved by FEMA. The project has the potential to remove over X-parcels from the effective floodplain.

- **Unnamed Wash 13 LOMR (Phase 1).** For the Mohave County FCD, AMEC provides technical floodplain review services for LOMRs and CLOMR, GIS assistance with FEMA DFIRM preliminary map issuance, and establishing a NAVD 88 survey control network for the more populated Mohave County areas. Two LOMRs are currently being prepared in the Mohave Valley area. The Unnamed Wash 13 study area is located south of Bullhead City and is mapped as Zone A floodplain on the effective Flood Insurance Rate Map (FIRM) panel 0400582445C dated September 16, 1988. As part of the Map IX-Mainland project, FEMA determined the Unnamed Wash 13 floodplain should be remapped as Zone AO-depth 1-foot. Topographic mapping used by the Map IX-Mainland contractor was prepared in August 2002 and inaccurately depicted existing ground conditions in the study area. Phase 1 includes preparing revised hydrology reflecting recently-adopted County criteria, flow split analysis using Flow 2D and a detailed re-delineation of Unnamed Wash 13 using HEC-RAS. The goal of the project is to remove three developing subdivisions, in their entirety, from the effective floodplain.

Permanent BMP Manual Development, Phoenix, AZ – ADOT

AMEC assisted ADOT with the development of a Permanent (post-construction) Stormwater Best Management Practice (BMP) Manual, which will assist in the completion of the goals submitted by ADOT to the Arizona Department of Environmental Quality (ADEQ) as part of a Consent Order. Under ADOT Statewide Storm Water Management Plan (SSWMP), the objective of the manual is to improve the water quality of discharges from ADOT storm drain facilities within permit-regulated municipal jurisdictions (known as Municipal Separate Storm Sewer Systems, or MS4s), within ¼ of a mile distance of impaired or unique waters, or other projects designated as sensitive by ADOT. The project efforts involved research and determination of potential permanent BMPs for use on ADOT construction projects, procedures/guidelines for determining when, where and how Permanent BMPs are incorporated into ADOT projects, and a BMP selection methodology that designers can easily follow/implement when designing ADOT highways and roadways.

Stormwater Management Services, Avondale, AZ – City of Avondale

AMEC provided assistance in fulfilling various program elements of the City's Storm Water Management Plan (SWMP). The project involved developing an ordinance for erosion and sediment control for construction sites and an ordinance for post-construction stormwater management in new development and redevelopment; and developing important components of an effective Illicit Discharge Detection Program that is specific to the needs and conditions for the City. AMEC also developed Outfall Dry Weather Screening Protocol that covered the regulatory background, allowable non-stormwater discharges vs. illicit discharges, field screening instructions, proper equipment use, maintenance and calibration, recommended SOP for identifying illicit discharges and connections, and health and safety considerations. AMEC also provided Avondale field personnel with training, consisting of both classroom setting education and a field demonstration at a City of Avondale outfall. The client was provided with a CD containing the Outfall Dry Weather Screening Protocol, inspection data sheets and Outfall Dry Weather Screening training presentation materials.

Key Team Members – Drainage/Stormwater

Alex Coronel, PE, CFM (AZ 40209, 00374)

Alex Coronel is a Design Engineer with over 16 years of experience in hydrologic and hydraulic analysis of streams. He is experienced in floodplain and floodway mapping following FEMA guidelines and specifications and is familiar with roadway drainage analysis and the civil design of roadway elements. Mr. Coronel is familiar with various hydrology and hydraulic design software applications including the USACE, HEC-1, HEC-HMS, HEC-2, HECRAS (Steady and Unsteady) and HEC Geo-RAS w/ArcView watershed and river analysis systems. He is also well-versed in the use of both AutoCAD and MicroStation for modeling of final drainage improvements including open channels, retention/detention basins culverts and energy dissipaters. His project experience includes:

- Gilbert Landfill – PM
- Hunt – Magma Flood Mitigation DCR/Design – PM
- US 93: Hoover Dam Bypass to MP 17, ADOT – Drainage Engineer
- On-Call Floodplain Study Services, Mohave County FCD
- North Lake Havasu Flood Map Revisions (LOMR) – PM
- Un-named Wash 13 LOMR – Project Engineer
- Ellsworth Road: Germann Road to Ray Road Phase I, MCDOT – Project Engineer
- On-Call Plan Review Services, FCDMC – Drainage Engineer

Robert Scrivo, PE, CFM (AZ 33457, 04658)

Robert Scrivo is a dedicated and accomplished professional engineer and project manager with over 21 years of experience in the civil engineering and consulting industry. His excellent technical, analytical and communication skills have been developed through the preparation of complex drainage studies and area drainage master plans and associated reports. He is detail-oriented, while maintaining a 'big-picture' frame of reference. Mr. Scrivo has broad technical knowledge supported by field experience and the successful completion of several projects requiring team work and outstanding coordination skills. He has an extensive background in roadway drainage, roadway design/widening, hydrology/hydraulics/flood control projects, drainage infrastructure design, FEMA floodplain studies, water/sewer design and commercial site development and design. Mr. Scrivo is also experienced in business development and networking, opportunity discovery and tracking, and proposal preparation. His project experience includes:

- Rancho Bella Vista Flood Mitigation: 100-year Flood Channel, Pinal County – Project Manager
- Downtown Storm Drain Design: 10-year design – 16,000 lf, Phoenix – Lead Engineer
- Stormwater Pollutant Model Assistance: Modified/Updated City Model, City of Mesa – Drainage Task Manager/Lead Drainage Engineer
- Levee/Dike Inventory: Inclusion in ACIP, Pinal County – PM
- Utility Scour Depth Evaluation: 13 Wash Crossings/Sanitary Sewer, Lake Havasu City – Drainage Task Manager/Lead Engineer
- Porter/Honeycutt Road Widening: Final Design/Drainage, City of Maricopa – Drainage Task Manager/Lead Drainage Engineer
- SR 303L Area Drainage Master Plan: Master Plan Update West Valley – Deputy PM/Lead Drainage Engineer

Yichun Xu, PhD, PE (AZ 44746)

Dr. Yichun Xu is a Senior Water Resources Engineer with an over 32 years of professional experience working for cities, states and governments in the United States, Germany and China. Her fields of specialization includes fluvial hydraulics, sediment transport and local scour analysis, numerical modeling of fluid dynamics and river morphodynamic process. Dr. Xu also has vast experience in design and performance of hydrologic and hydraulic analyses for storm drain, roadway drainage, flood control systems with sedimentation and detention basins, and FEMA floodplain delineation and EPA inundation mapping. She has participated in the development and application of 1-, 2- and 3-D numerical models (NCCHE2D, NCCHE3D) to simulate surface flow, sediment transport and river morphodynamic processes, such as erosion and sedimentation, bank erosion, channel migration, local scour around bridge piers and sediment trapping for river management projects. Dr. Xu's project experience includes:

- North Lake Havasu Flood Map Revisions (LOMR) – Project Engineer
- Un-named Wash 13 LOMR – Project Engineer
- On-Call Plan Review Services, FCDMC – Project Engineer
- North Spanish Springs Floodplain Detention Facility Project (NSSFDF) – Project Engineer
- WACOG-Funded Street Improvements, Air Industrial Park, Lake Havasu City – Project Engineer
- Provisionally Accredited Levee (PAL) Certification, Pass Mountain Diversion – Project Engineer
- USACE Critical Infrastructure Security Program (CISP), Dam Break Analysis – Project Engineer
- Wichita, Kansas Levee Certification Project – Project Engineer
- Scour and Lateral Bank Migration Analysis, Sierrita Gas Pipeline, Pima County, AZ – Project Engineer

Ed Latimer, PhD, PE (AZ 28822), CPSWQ (0190), CPESC (4372)

Ed Latimer serves as a Manager and Technical Director of Water Resources for AMEC in Phoenix, Arizona. He has over 26 years of experience in water resources engineering, stormwater management/permitting and project management. Dr. Latimer's areas of expertise include municipal stormwater management, development and implementation of stormwater utilities, stormwater regulatory compliance (federal- and state-level permit programs), conservation engineering, BMP technology and irrigation engineering. He has completed numerous articles and presentations in various technical subjects including stormwater permits and stormwater program funding. Dr. Latimer's project experience includes:

- AZPDES Stormwater Phase II MS4 Compliance: Develop SWMP, Yuma County – PM
- NPDES Multi-Sector General Permit (MSGP) Compliance: Permitting of regulated industrial facilities, City of Apache Junction, City of Avondale, City of Flagstaff, City of Yuma, Yuma County, Maricopa County – PM
- Permanent BMP Manual Development: Manual Preparation/Development, ADOT – PM
- Stormwater Management, Program Compliance (SWMP): City of Avondale – PM
- Erosion Control Manual: Manual Updates/Revisions, Maricopa County – PM
- Municipal Ordinance Development: Draft Ordinance Preparation, City of Apache Junction – PM
- Stormwater Program Development: Development of Funding Strategies/NPDES Phase II Compliance, City of Flagstaff – PM
- Stormwater Utility: Analysis of Municipality's Basis for Stormwater Utility, City of Avondale – PM

Luis Garcia-Ossorio

Luis García-Ossorio has 11 years of experience in civil engineering and design services working on land development, public works, DOT and renewable energy projects. He has been responsible for underground utility and storm water drainage design, drainage reports, water and wastewater reports, hydraulic modelling, master planning of water and wastewater systems, irrigation design, and grading and roadway design. He also has experience in post design/support during construction services, providing answers to contractor RFIs and reviewing and approving shop drawings and submittals. Mr. Garcia-Ossorio's project experience includes:

- I-90 Tollway Improvements, IDOT – Drainage Design Engineer
- Fab-42 Intel Expansion Project, INTEL – Project Engineer
- Queen Creek Road Improvements, Town of Gilbert – Drainage Design Engineer
- Gantzel Road Improvements, Pinal County – Design Engineer
- Rancho Mirage Master Planned Community, Shea Homes – Design Engineer

Rebecca Sydnor, PE, LEED-AP

Rebecca Sydnor has over 12 years of professional experience in the areas of civil engineering and environmental compliance. Her regulatory experience consists of National Pollutant Discharge Elimination System (NPDES)/Arizona Pollutant Discharge Elimination System (AZPDES) stormwater management, compliance and permitting services, as well as services related to Aquifer Protection Permits (APPs), the Spill Prevention, Control and Countermeasure (SPCC) Rule and NEPA Environmental Clearances. Ms. Sydnor's engineering experience consists of wastewater treatment plant retrofits, water distribution system improvements and construction management. Her project experience includes:

- AZPDES Phase 1 MS4 Compliance Support, City of Scottsdale, Scottsdale, AZ – PM
- AZPDES Phase II MS4 Compliance Support, City of Surprise, Surprise, AZ – PM
- AZPDES MSGP Stormwater Management Planning, City of Phoenix Aviation Dept., Phoenix, AZ – PM
- AZPDES Regulatory Assistance and Training, City of Phoenix, Phoenix, AZ. – Technical Lead
- AZPDES MSGP and SPCC Rule Support, City of Tempe, Tempe, AZ – Technical Lead
- AZPDES Compliance Support, ADOT – Technical Support

Water/Wastewater



Water/Wastewater

AMEC has significant experience providing water/wastewater design services. Our services include design of pump stations, gravity sewer systems, wells, booster stations, odor control, treatment, pre-treatment and chlorination facilities; development of numerous Preliminary Engineering Reports and master plans; permitting with ADEQ and other agencies; modeling; materials testing; and construction administration. Our areas of expertise include the design of recharge systems, effluent conveyance, irrigation facilities, sanitary sewer/treatment plant design, and water quality associated with non-point source pollution.

AMEC's project experience includes master planning entire water and wastewater systems, regulatory compliance, feasibility studies, preliminary and final design and construction administration and inspection for wells, pumping facilities, transmission mains, distribution systems, storage and treatment facilities.

Relevant Projects

Lake Havasu City – Wastewater System Expansion Program, Lake Havasu, AZ

Lake Havasu City (LHC) was one of the largest western cities serviced almost entirely by septic tanks without a public wastewater collection and treatment system. To avoid continued beach closures due to bacterial contamination, in 2001 LHC elected to construct a city-wide sewer collection system. A distinctive aspect of the program during construction was the connection of each occupied lot to the sewer system and abandoning the septic tanks. This required obtaining separate legal agreements for entry onto each property and the collection of the "capacity fee" from each property owner as they were connected.

From 2005-2011, AMEC provided program management, design and construction administration services. AMEC also provided assistance with financing considerations including revenue generation analysis and utility cash flow projections. When AMEC was appointed, the project was tens of millions over its original budget of \$463M and six months behind schedule. Within 18 months, the project was back on budget and on schedule. Typically, two to three sewer area projects were released each year through the design and construction contracts. These projects consisted of the installation of main line sewer, small diameter sewer laterals, manholes, septic tank closures and asphalt and landscape replacement.

Design: AMEC designed nearly 145 miles of mainline sewer for the Wastewater System Expansion and four of the larger pump stations in the program. The program also included 17 miles of sewer force mains, 7 miles of effluent force main, the decommissioning of approximately 22,000 septic tanks, a new wastewater treatment plant and effluent disposal system. AMEC was also involved in the overall conversion of the hydraulic model from HydroWorks to InfoWorks. This included upgrading the model to a GIS-based system and moving from a skeletonized trunk system model to a full pipe model (>3,500 nodes).

Construction Administration & Inspection (CA&I): The AMEC construction team had an inspection staff tasked with day-to-day oversight of the sewer installation. Tasks included interacting with contractors to identify potential issues and resolutions, coordinating with City staff, preparing daily field reports and record drawings, maintaining a safe work zone and ensuring that the project was constructed in accordance with the plans and specifications.

Agency Coordination: AMEC provided agency coordination with entities including local gas and cable companies, LHC Water Department, ADOT and the ADEQ. AMEC and LHC partnered with ADEQ to streamline the Engineer's Certificate of Completion process with a series of sewer line video reviews and partial acceptance forms, introducing sewer flows into the new system.

Program Management: As part of the planning stages, AMEC reviewed/revised construction sequencing, optimized system configurations and evaluated phasing for various projects for economies of scale in the sewer designs. AMEC was heavily involved with public relations and organized/participated in numerous open houses to meet with affected homeowners to address their questions or concerns. A large portion of the program management activities included meeting with the oversight committee to develop

improvements to the overall WWSE program such as the joint Program Management Plan, advanced pavement designs, curvilinear sewers, backwater valves and hydrogen sulfide issues.

Town of Miami – Wastewater System Upgrades, Miami, AZ

AMEC is providing design services for the Town of Miami's Wastewater System upgrades for over 70,000 LF of sewer replacement mains and the rehabilitation of approximately 10,000 LF of sewer mains. This project included the design of upgrades to the Town's influent pump station, design of the addition of a grit separator at the Town's Water Reclamation Facility (WRF) and design of a septage receiving station. AMEC also provided survey, environmental, engineering design, permitting and funding assistance.

Agency Interaction: AMEC participated in multiple public presentations to inform the Town residents and other stakeholders of the improvements that would be made as part of this project. Interacted with WIFA, USDA, ADEQ, USACE, EPA, SHPO, Gila County and the Town of Miami.

A WIFA design loan was secured to provide funding for design, as well as EPA and USDA grants to provide funding for construction.

Change Orders: Increased project scope included updating environmental documents and preliminary engineering documents prepared by others, funding assistance, grant assistance, design of a septage receiving station, additional legal descriptions for sewer line easements, design of a SCADA system for the existing WRF and lift station and design improvements to the existing WRF.

Litchfield Park Services Co. – Palm Valley WRF Engineering, Goodyear, AZ

The Palm Valley WRF is a Sequencing Batch Reactor (SBR) wastewater treatment facility located in Goodyear with a capacity of 5.1 MGD. AMEC has been retained by Litchfield Park Services Company, a subsidiary of Liberty Utilities, to provide engineering services in support of several ongoing efforts. Services include the development of an electronic operations and maintenance (O&M) manual, design and construction management (CM) services to bypass and restore the existing equalization tank, and a facility planning study to determine the configuration and costs of the future plant expansion.

Electronic O&M Manual: AMEC is developing an on-line electronic O&M manual for the facility. Services include determining configuration preferences, inputting existing data and information, developing standard operating procedures and conducting staff training.

Design, CM and Permitting: AMEC is designing modifications to the headworks processes and piping to enable structural restoration of the existing equalization tank. AMEC is also providing CM services for the restoration work. AMEC is providing coordination with Maricopa County Environmental Services Department and the Arizona Corporation Commission for this project.

Facility Planning Study: AMEC is evaluating options and developing a facility plan to increase the Palm Valley WRF capacity to 6.25 MGD or to construct a new treatment facility at the Sarival site.

Black Mountain Sewer Corp. – WRF Decommissioning Study, Carefree, AZ

The Black Mountain Sewer Corporation (BMSC), a subsidiary of Liberty Utilities, owns and operates the Boulders WRF in Carefree, AZ. The WRF is located in the midst of an affluent residential neighborhood and lacks sufficient setback, resulting in continuous noise and odor complaints over the past several years. In early 2013, the Arizona Corporation Commission determined that the location of the WRF was not in the best interest of the community and issued a consent decree dictating that Liberty Utilities must develop a plan to decommission the facility.

Study: The objective of this study is to assist Liberty Utilities in developing a viable plan to bypass the WRF so it can be taken out of service and eventually decommissioned. The project includes developing the data required to accurately evaluate options, performing a hydraulic analysis and developing cost estimates for the options. The project scope will also include the analysis for the evaluation of potential alternatives for diverting the wastewater flow from the WRF to the Town of Cave Creek sewer collection system. This includes a means of delivering reclaimed water from the Town back to the Boulders golf course.

Liberty Utilities – Coronado Well Site Water Site Improvements, Sierra Vista, AZ

This project was initiated to bring the water storage facility into compliance with ADEQ requirements based on a Notice of Opportunity to Correct (NOC). The NOC cited insufficient storage per regulatory requirements and decreed that the facility must have a total capacity of 70,000 gallons of on-site storage.

Design, Construction and Permitting: Site improvements involve design and construction engineering services for the replacement of five 5,000-gallon plastic temporary water storage tanks with two 35,000-gallon welded steel water storage tanks, controls improvements and electrical system upgrades for the well and booster pumps. The project required permitting assistance for ADEQ (Approval-to-Construct, Approval-of-Construction) and Cochise County Planning and Zoning permits.

Key Team Members – Water/Wastewater

Brian McBride, PE (AZ 33441)

Brian McBride has over 20 years of professional experience providing program and project management, start-up and commissioning assistance, detailed designs, construction services and engineering studies in the water and wastewater field. He also has experience with managing alternative delivery projects such as design-build and Construction Manager at Risk (CM at Risk). Mr. McBride's detailed design experience includes water and wastewater treatment facilities, reservoirs, pump and lift stations, recharge sites, remote valve stations, pipelines and solids handling facilities. The engineering studies he has performed include treatment facility plans, feasibility studies, facility/collection master plans, process alternative analyses, site location studies, reuse system planning, residuals impacts, influent design parameter studies, effluent disposal alternatives and biosolids handling alternatives.

Darin Miller, PE (AZ 48990)

Darin Miller has 13 years of experience in water and wastewater management, construction oversight and engineering design. He has successfully designed and managed projects ranging in size from \$30K to over \$20M and is keenly aware of schedule and budget. Highly group focused with the ability to manage multiple design teams while interacting and coordinating with local survey, construction and subconsultant personnel. Mr. Miller's experience includes hydraulic modeling, water and wastewater treatment, sanitary relief sewers, sanitary sewer collection systems, water supply and distribution systems, sewer rehabilitation, sanitary, reuse and water pump/booster station design, utility coordination, force main design, and storm water conveyance systems including culvert design and improvements.

Tim LeClair, PE (AZ 43824)

Tim LeClair is an Arizona-registered professional engineer with over 14 years of experience in the water and wastewater consulting field. His key areas of experience include studies, design, permitting and construction services for water and wastewater facilities, reclaimed water pump stations and force mains, sewer collection systems and potable water booster pump stations and storage tanks.

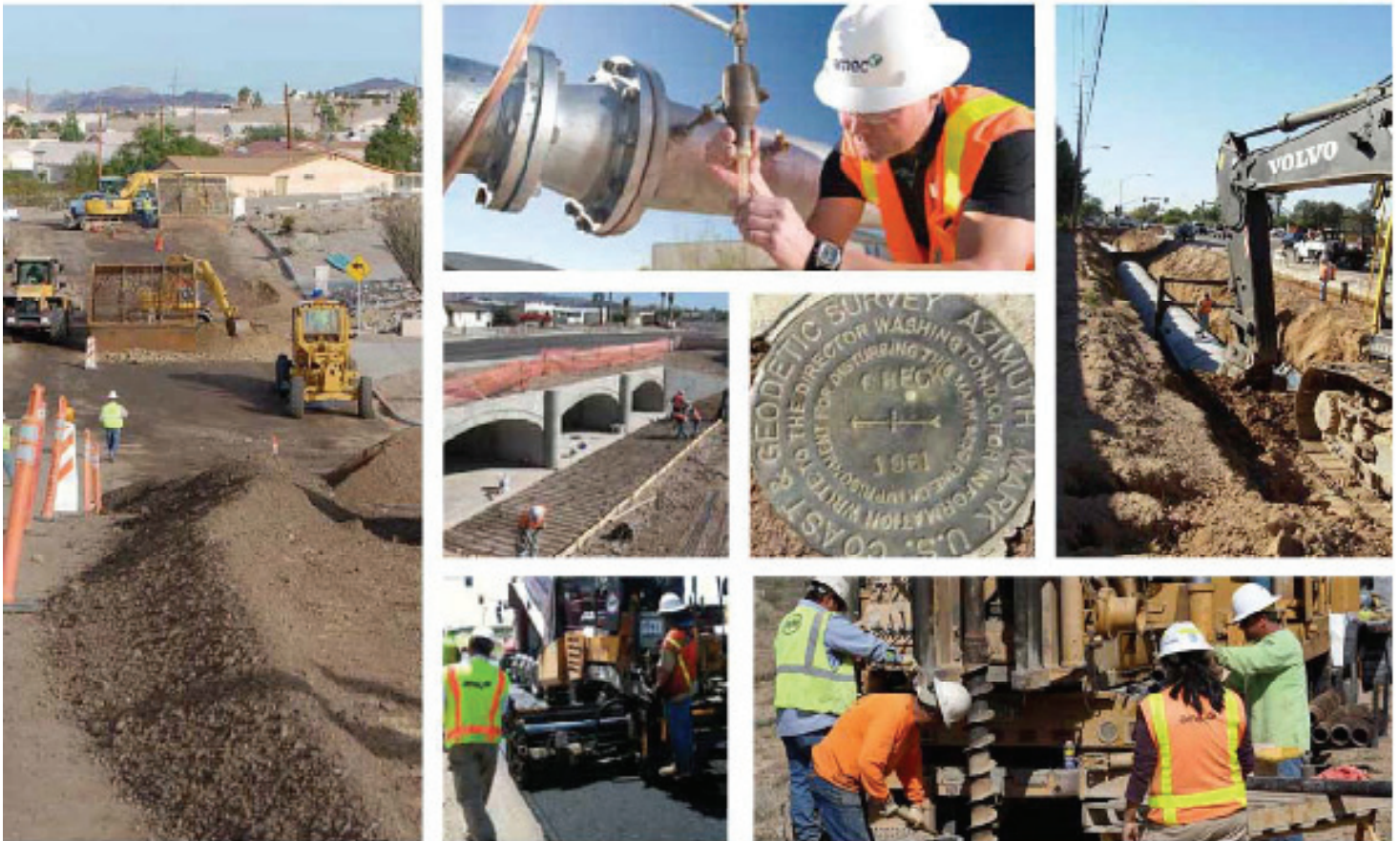
Debra McGrew, PE (AZ 13909)

Debra McGrew is a registered civil engineer with 30 years of experience in design and construction administration of water and wastewater infrastructure projects. Her key areas of experience include pumping stations, pipelines, civil/site design, water and wastewater facilities design, odour evaluations and control designs, hydraulic modeling, landfill, drainage systems and permitting and easement acquisition assistance.

Gary Whitten, PE (AZ 42105)

Gary Whitten is experienced in communicating client goals and expectations to project teams resulting in close adherence to the direction provided by Town staff. Gary has served in leadership positions, directing multi-disciplined project teams for over 33 years. He has the technical knowledge and skills to monitor project progress and follow through on details that make a difference in successful project delivery. Gary has the ability to identify problems and resolve them while maintaining project goals and quality.

Water Resources



Water Resources

AMEC has conducted hydrogeologic evaluations for municipalities, private sector clients, major utilities, mining clients and state and Federal agencies. Hydrogeologic services include production well design and construction management, aquifer testing, managing large-scale groundwater monitoring programs for environmentally impacted sites, groundwater modeling, stream flow monitoring, land subsidence monitoring, basin stratigraphy, geophysical evaluations and sustainability assessments. AMEC also builds groundwater flow models for diverse applications including groundwater resource development and optimization, constructive use of surface water and groundwater, long-term sustainability, evaluation of trans-boundary aquifer issues and wellhead protection.

Our areas of water resources expertise include:

- Groundwater exploration and quantification
- Groundwater supply sustainability assessments
- Stream flow and precipitation monitoring
- Numerical assessments including digital modeling
- Groundwater quality evaluations
- Groundwater quality optimization/mitigation studies
- Evaluation of surface water supplies
- Optimization of surface/groundwater supplies
- Demonstration of 100 year water supplies per Arizona law
- Well design/drilling construction oversight
- Well impact analyses
- Well abandonment services
- Well production/rehabilitation evaluations on existing wells
- Public supply well design/bidding services
- Well construction inspection
- Well-field management and optimization
- Recharge feasibility studies/recharge facility design
- Environmental impact analyses
- Technical support for water rights issues

The projects below highlight the diverse capabilities and innovativeness of the AMEC groundwater hydrology professionals.

Relevant Projects

City of Flagstaff – 100-Year Water Availability Groundwater Modeling Study, Flagstaff, AZ

In 2013, AMEC completed a study for the City of Flagstaff to evaluate the sustainability and reliability of Flagstaff's surface water, groundwater, and reclaimed water supplies for the next 100 years. To better understand and predict the reliability of Flagstaff's water supplies, a numerical groundwater computer model encompassing approximately 12,000 square-miles (covering roughly the northern one-third portion of the state of Arizona) was constructed by AMEC. The model was used to predict future impacts to groundwater and surface water supplies in and around the Flagstaff area. The modeling results enabled the City of Flagstaff to increase the amount of water they can legally withdrawal from the Coconino Aquifer for the next 100 years. The volume of additional water identified by the AMEC model was more than sufficient to meet the City's projected population growth for the next 100 years.

Agua Fria National Monument (AFNM) Intra Basin Water Management (IBWM) Project – Bureau of Land Management (BLM), Yavapai County, AZ

In 2013, AMEC completed a baseline watershed assessment of the 71,000-acre AFNM. Prior to this study there was no volumetric water data within the AFNM. AMEC's work included: installation and monitoring of six stream gage and precipitation stations with telemetry along the Agua Fria River and its major tributaries; installation and monitoring of pressure transducers and collection of quarterly groundwater levels from 10 wells in the AFNM; a geochemical forensic study to determine groundwater and surface connectivity, and; an evapotranspiration study to determine water loss due to plant uptake and solar effects. Results from the study indicated a strong connection between groundwater and surface water, identified areas of artificial water harvesting practices by that area drastically depleting stream flows, and identified stretches of ephemeral (seasons) and perennial (non-seasonal) streams throughout the AFNM.

The systems installed by AMEC will enable the BLM to continue collecting stream flow, precipitation, and groundwater evaluation data for many years to come. Results from the baseline assessment have already enabled the BLM to file water adjudication claims with the State of Arizona for two of the main stream tributaries to the Agua Fria River. Additional data collection will enable them to file a future adjudication claim for the Agua Fria River itself. Obtaining these claims will allow the BLM to have full control of stream flow use within the AFNM. This control will allow the BLM to preserve the AFNM habitats that rely on sustainable water supplies, thus preserving the AFNM for future generations to enjoy.

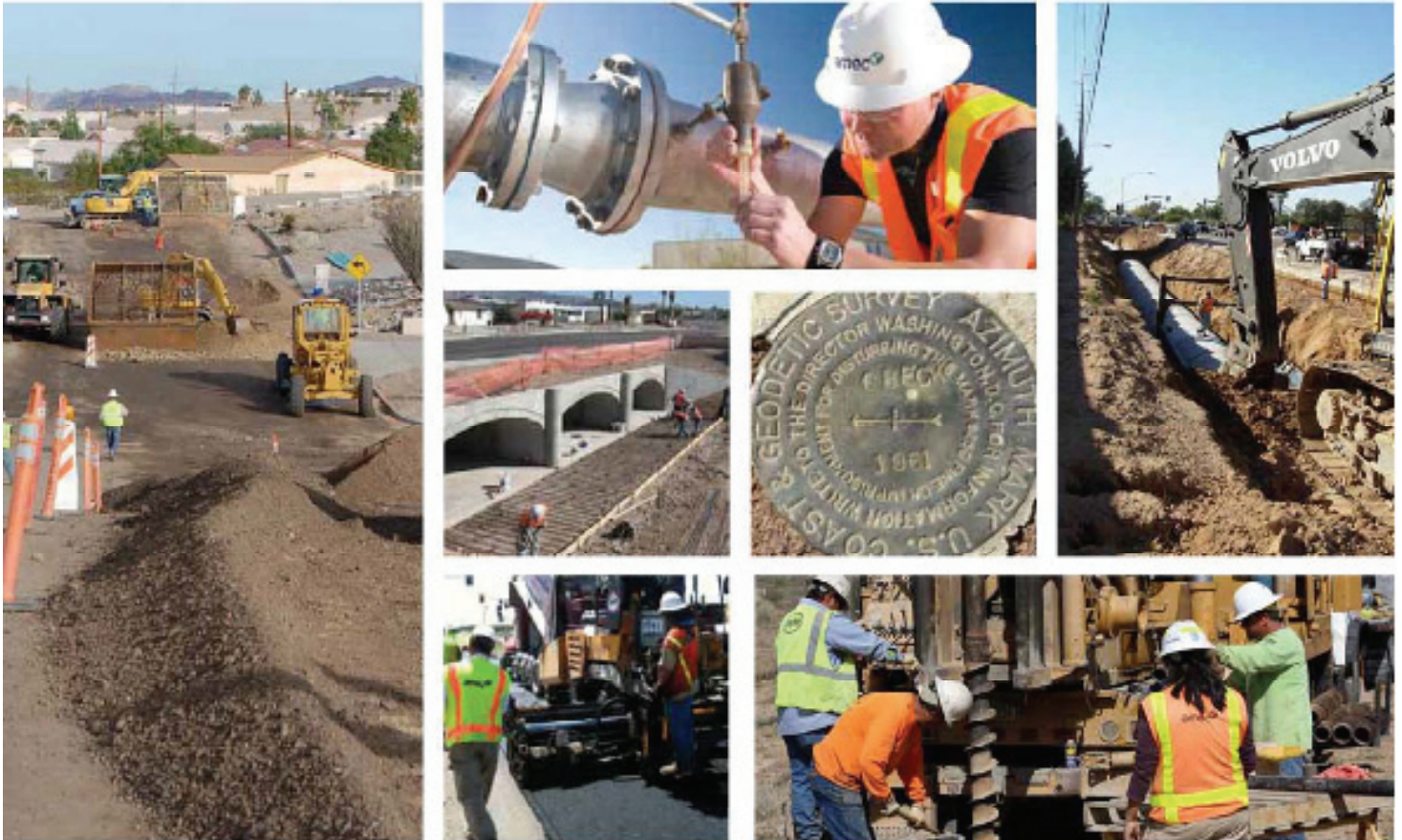
Key Team Member – Water Resources

Chris Courtney, RG (AZ 40811)

Chris Courtney has over 18 years of experience in groundwater research and supply studies, as well as environmental investigations related to water quality and water treatment. His areas of expertise include groundwater supply investigations in support of demonstrating assured and adequate water supplies, permitting assistance for obtaining Certificates of Assured Water Supplies (AWS), groundwater flow and contaminant transport modeling, production well services (well siting, design, aquifer and groundwater quality testing, construction management, etc.), managing large-scale well drilling and sampling programs, investigating well bio-fouling issues and implementing well rehabilitation programs to treat affected well systems, investigating and improving groundwater remediation systems, treatment wetland design and Operation & Maintenance (O&M), exploration geology and hydrogeology, geophysical analysis (down-hole, seismic, and electric), geochemical interpretations, and well abandonment permitting and design. Mr. Courtney also has extensive water quality research experience related to springs, wells and aquifers in Arizona. His project experience includes:

- Lake Havasu City Vadose Zone Injection Well Project, Lake Havasu City – Senior Hydrogeologist
- City of Flagstaff 100-Year Water Availability Groundwater Modeling Study, City of Flagstaff – PM
- Deep Exploratory Boring Potable Water Supply Investigation, City of Avondale – Senior Hydrogeologist and Project Lead
- Well Rehabilitation Project, USACE Rio Salado Habitat Restoration Project – PM and Senior Technical Advisor.
- Agua Fria National Monument (AFNM) Intra Basin Water Management (IBWM) Project, Bureau of Land Management (BLM) – PM and Lead Hydrogeologist
- Water Resource Evaluation, Well Siting Study, and Seeps and Springs Analysis for a 1,500-Megawatt Coal-Fired Electrical Generating Plant, URS Corporation, c/o Sithe Global Power, Desert Rock Power Plant, Navajo Nation, Four Corners Area – Project Geologist

Construction Management



Construction Management

From 1989, AMEC has proven experience in assembling and managing construction administration projects. AMEC has extensive Construction Management (CM) resources. Specifically, the firm has 1) a group dedicated to providing construction engineering and inspection, 2) a dedicated construction survey group, and 3) a materials testing group that includes a full-service, AASHTO-certified materials testing laboratory for performing field testing.

Our firm has developed an excellent reputation for providing high-quality construction administration, engineering and survey services. Representative Construction Administration and Technical Services experience is shown below.

Relevant Projects

Annual Asphalt Rubber Overlay Projects, MCDOT

AMEC provided full project management services, field inspections and all QA materials sampling and testing for this ARRA funded project. The project scope includes milling and asphalt overlay paving for 27 locations throughout Maricopa County. Services included construction administration, project supervision, construction inspection, materials control, documentation and acceptance testing, project office documentation control, quantity documentation for the work, monthly pay estimates and as-builts and project closeout. AMEC's team coordinated the project's activities with the owner, contractor, subcontractor, and suppliers with each of 13 different governmental agencies concurrently as the project progressed throughout the County. Preconstruction and Partnering kick-off meetings were planned and conducted by AMEC. Weekly coordination meetings kept all affected stakeholders engaged and informed throughout the project's progress. Public information was handled and coordinated to keep all businesses and residents of the area informed with updated media releases, personal flyers and visits to individual businesses.

SR 89A Oak Creek Canyon, Banjo Bill Rockfall Containment, ADOT

(Award-winning project)

A \$7.5M research construction project for ADOT in Oak Creek Canyon consisting of two large structural micro pile and anchor retaining walls with architectural fascia for a natural appearance. Work elements included working closely with the US Forest Service and the Arizona Game and Fish Department; traffic and environmental impacts in a confined area; a short work period; and partnering.

SR 95 – Yuma-Parker Hwy, ADOT, Quartzsite

AMEC performed construction administration services for SR 95, between MP 103.93 and MP 104.51 in the Town of Quartzsite, Arizona (La Paz County). The proposed work included reconstruction of the existing roadway of SR 95 to five lanes and replacing the existing structure over I-10. Items of work included asphaltic concrete removal, roadway excavation and embankment, aggregate base (Class 2), asphaltic concrete, drainage pipe, pavement markings, structure demolition, concrete class S, drilled shafts, seeding and other incidental work.

WWSE Project, Lake Havasu City

AMEC oversaw the management for several new large sewer construction projects for the City including all mainline laterals on lots, lot restoration, homeowners issues, sub base for roadway new pavement, testing and reviewing pavements for meeting City standards. We also assisted in scheduling and reviewing safety requirements in trenches, traffic flow, and administered weekly meetings onsite.

Fox Wash Project, City of Bullhead City

The project was developed due to major roadway improvements performed by ADOT through Bullhead City. SR 95 improvements elevated the highway, creating concentrated drainage outfalls in lieu of the prior sheet flow regime. Bullhead City entered into an intergovernmental agreement with ADOT to perform improvements to Fox Wash upstream of the highway and improvements to Havasupai and Chaparral Washes downstream of the highway.

AMEC performed the full construction administration on this flood control project. Since Fox Wash is a jurisdictional waterway, a Section 404 permit was required, and the team was required to know the details of the 404 permit and all of the environmental concerns expressed in the Environmental Impact Document. As part of our responsibilities, the design plans were value-engineered to reduce concept cost by 30%. At the City's request, AMEC further re-evaluated the levee portion of the channel to recommend alternative lining options, including options ranging from vertical concrete walls to a widened un-lined berm that would rely on its massive size for stability. The final recommendation was a hybrid of the original soil-cement levee alternative with the use of high performance turf reinforcement mats in the freeboard.

Three Projects in Coconino County, ADOT

AMEC provided CM services under one ADOT contract for the following three projects.

Hamblin Wash – The Gap. Miscellaneous structural asphaltic concrete for leveling, asphaltic concrete (asphalt rubber), asphaltic concrete friction course (asphalt rubber), guardrail, signing, shoulder build-up, pavement markings, and rumble strip.

40B Fanning Drive – Flagstaff. Widen a right-turn lane, utility relocation, removal of structures and obstructions, miscellaneous asphaltic concrete, a concrete box culvert extension, corrugated metal pipe extensions, traffic signal relocation, drainage channel excavation, riprap, sidewalk, curb and gutter, catch basins, driveways, signing, pavement markings, and electrical conduit.

SR 40B – Flagstaff Urban Boundary. Removal of structures and obstructions, asphaltic concrete milling, Portland cement concrete crack sealing, asphaltic concrete (asphalt rubber), asphaltic concrete friction course (asphalt rubber), roadway lighting and foundations, guardrail, concrete curb and gutter, concrete sidewalk, electrical conduit and conductors, signing, and pavement markings.

Key Team Member – Construction Management

Manuel Tapia, Jr., PE (AZ 41017)

Manuel Tapia is a proven and experienced project engineer in construction management, administration and oversight. His portfolio includes public and private sector transportation and infrastructure projects, spanning over 23 years. Manuel has an established and trusted working relationship with representatives of city, county, regional, state, border, international and federal agencies. His track record to lead, supervise, motivate and communicate with staff, field crews, inspectors, contractors and office personnel holds the entire team accountable and will ensure that AMEC's commitments are met – from start to finish. His project experience includes:

- US 93 Hoover Dam to Mile Post 17, ADOT
- Tucson Modern Streetcar Project, City of Tucson
- 83rd Avenue and Thunderbird Road Project, City of Peoria

Scott Kiah, PE (AZ 43822)

Scott Kiah was the Construction Manager for AMEC's WWSE in Lake Havasu City. He has held several roles over his five years working on the Program including PM, Resident Engineer and Construction Manager. His experience includes assisting with initial development of the 10-year CIP; developing CIP budgets, schedules and maps; extensive public relations; public presentations and interaction with the City and Arizona Department of Environmental Quality (ADEQ); and development of several program-related documents to facilitate construction (i.e. property access agreements, partial engineer's certificate of completion, resident notifications). He managed installation of over 50 miles of the mainline sewer, 60 miles of four-inch lateral sewer, 750 manholes, and nearly 6,000 connections, plus asphalt paving placement associated with roadway restoration. Mr. Kiah also managed construction of several program-related force main and pumping stations. His current duties include overseeing the construction inspection, administrative staff and materials testing group. On AMEC's WWSE projects, Mr. Kiah was involved in the Palm Tree, Cisco, and Tarpon Area Sewers and provided constructability reviews for the Chemehuevi Area Sewers and Sweetwater/Hagen Pump Station. His project experience includes:

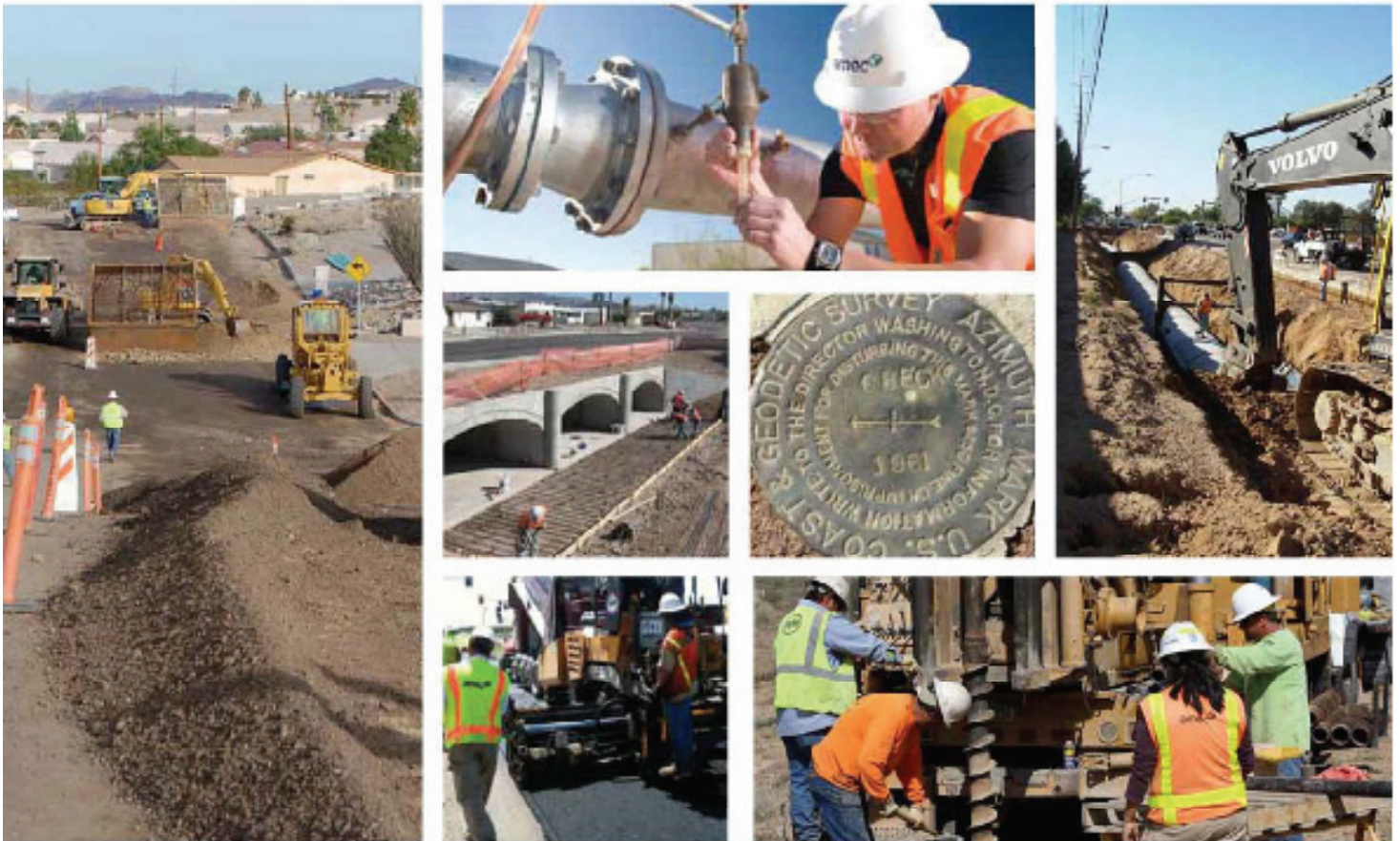
- WWSE Project, Lake Havasu City – Construction Manager
- Centralized Sewer System Installation, Lake Havasu City – Construction Manager
- Centralized Sewer System Installation, Lake Havasu City – PM
- Forcemain and Pump Station Construction, Lake Havasu City – Resident Engineer

Jim Monnett, ICC, ICBO, ACI, ATTI, ATSSA, NICET IV, ECC

Jim Monnett has over 50 years of continued experience performing construction management, quality control, project management, survey inspection, field and office engineering. He has participated in multiple ADOT projects, as well as national and international assignments including large bridges, dams, airports and structural buildings, plus in-place permeability test and supervision of hazard waste sites. He has extensive experience in construction including survey, materials engineer and project supervisor; concrete and asphalt designs and management for bridges, roadways, dams, and interchanges. He is knowledgeable of AASHTO and ASTM standards and has taught materials and survey procedures for ADOT. Mr. Monnett was the District Materials & Research Engineer for ADOT District 7 for eight years. His responsibilities have included managing field personnel, special inspections, and field as-built designs for multiple projects including new structures, bridges, modification of existing structures and roadway widening projects. Mr. Monnett has supervised and trained technicians and inspectors, performed quality control testing, provided technical overview and office management. He has performed geotechnical investigations and has been a geotechnical and laboratory director. Mr. Monnett's experience includes serving as the ADOT Materials Coordinator in Kingman for two years, as well as serving as Survey Party Chief and Chief Inspector on US 95, from I-40 to Lake Havasu City. His project experience includes:

- Banjo Bill Rock Containment, STP-A89-B(201)A, H698801C ADOT – Senior Project Supervisor
- SR 95 – Quartzsite Overpass over I-10, ADOT, Quartzsite – Structural and Bridge Inspector
- WWSE Project, Lake Havasu City - Senior Project Management and Material Specialist
- Sewer Improvement District No. 3, City of Bullhead City – Senior PM
- Estrella 2B, El Mirage Road to Lake Pleasant Road, MCDOT – Chief Inspector and Supervisor

Survey



Survey

Most engineering projects begin and end with a survey. AMEC is recognized as one of the leading survey companies in Arizona. The firm has extensive experience and a complete understanding of survey requirements, from preliminary boundary and topographic surveys to final construction staking, and as-built surveys. Since 1977, AMEC has provided surveying for major land development and public infrastructure projects. Led by Survey Manager, Bryan Campbell, RLS, CFedS, our team has the capability to provide these services to our own in-house design staff, public agencies and architects, from project inception through project completion.

AMEC's survey services include:

- Boundary surveys
- Topographic surveying & mapping
- ALTA surveys
- Legal description & exhibit preparation
- Public Land Survey System (PLSS) and Three Mile Method surveying
- NGS survey control point booking
- Land records research
- Right-of-way surveys, analysis, determinations, acquisitions & abandonment
- GIS applications & support
- Industrial retro-fit architectural and structural surveys
- Aerial photography control, supplementation & verification, airborne GPS processing
- LIDAR mapping control & quality assurance
- Urban & rural utility route surveys
- Utility location mapping
- Groundwater monitoring control
- Flood control & FEMA surveys
- Subsidence/fissure monitoring
- Deformation monitoring surveys
- Residential, commercial & industrial subdivisions
- Condominium mapping & platting
- Construction staking/layout for - highways, bridges, streets, utilities, piping, mine improvements, subdivisions, commercial sites, & buildings
- Railroad improvement surveys
- As-built surveys & drawings
- Airport, obstruction, & beacon surveys
- Municipal, County, State, & US border crossing surveys
- Military installation surveys
- Hazmat surveys
- Cemetery layout and design surveys
- Telecommunication tower surveys, rooftop, and co-locates
- Hydrographic-bathymetric surveys

Leading Edge Technology

- Trimble RTK & Static GPS systems
- Trimble Robotic Reflectorless Total Stations
- Bluetooth and remote data transfer
- Precise digital leveling
- 3D digital laser scanning

Field Surveyors

- Confidentiality statements/GSA clearances
- Certified Federal Land Surveyors
- Crews are mobile across regions
- Mine safety certified (MSHA)
- HAZWOPER certified
- Railroad safety training
- Superior OSHA safety record

Relevant Projects

EI Paso Natural Gas Right-of-Way Survey, Gila River Indian Community, EPNG/Kinder Morgan

AMEC is performing a Right-of-Way (R/W) boundary and topographic survey for approximately 70 miles of existing pipeline in Pinal and Maricopa Counties, Arizona within the GRIC boundaries. As a part of this project over 600 PLSS corners are being recovered or determined. Approximately 295 PLSS monuments will be reset when the project is completed. In addition, 900 new R/W monuments will be set. All improvements within 100 feet of the R/W are being collected and shown on an Existing Conditions map including all easements of record and road, highway, railroad, irrigation and power line R/W's. Aerial photos are being geo-referenced to the entire set of maps for the project. The gas line R/W maps will also show all ties to PLSS lines along with the R/W geometry. Separate property descriptions are being created for all Allotment owned and Tribal owned portions of the R/W.

SR 87 Coolidge to Hunt Highway, GRIC, ADOT

This project covers 26 miles of State highway and included performance of a static GPS survey for the establishment of control monuments, aerial panel placement and control and topographic surveying within the GRIC. As a part of the aerial surveying, blind panels were set and ground truth surveys were conducted for QA/QC purposes. Initial survey work was performed to support design services and included the creation of a best fit R/W alignment.

It was later determined that new R/W was needed for the project and a Task Order was issued to AMEC under our current On-Call R/W Plans Contract No. 09-34.02 to perform a R/W survey over 22 miles of State highway and 2.5 miles of GRIC R/W. The R/W project covers portions of 23 square miles. In the performance of this project 181 PLSS corner determinations were required and included the analysis, resolution and staking for 27 obliterated PLSS corners. Close communication and coordination is maintained with ADOT in the performance of this project. The various tasks for this project have been performed over an approximately two-year time period.

Loop 202 South Mountain Freeway Extension Phoenix, AZ, ADOT

AMEC performed an aerial control survey covering approximately 22 miles from the intersection of Interstate 10 and Pecos Rd to the intersection of Interstate 10 and 59th Ave along the proposed freeway route around South Mountain. AMEC set over 100 aerial control panels over a two day period as a part of Phase I for the extension of Loop 202. Field work included setting aerial targets, verification of alignment and comparison with the aerial topography to determine if aerial panel would adequately cover the project location. As a second part of this project, aerial panels were also established over a 10-mile segment of Interstate 10 from 19th Ave to 99th Ave.

Alma School Rd/Power Rd Arterial Reconstruction, City of Mesa

Topographic information for this project was collected for a one mile segment of Alma School Rd (Baseline to Southern) and a two mile segment of Power Rd (Baseline to Broadway). Surveying was performed using a combination of conventional and 3D digital scanning methods. The use of this combination of surveying methods allowed AMEC to collect the needed topographic and cultural improvement information necessary for design while minimizing the impact to access in two very high traffic areas of the Fiesta Mall and the Superstition Springs Mall main entrances and maximizing the safety of both the public and AMEC surveying personnel. Detailed scans were performed at intersections and handicap ramps for use in determining compliance with ADA standards. AMEC provided professional surveying and engineering services for this American Recovery and Reinvestment Act (ARRA) funded project.

SR 87, Mesa-Payson Hwy, New Four Peaks – DOS “S” Ranch, ADOT

AMEC performed a R/W survey, the preparation of R/W plans and initial R/W staking for approximately three miles of State Highway. The project covered portions of five square miles and included control, research, data collection, review and analysis and determination of existing R/W along the length of the project. Role: Prime consultant to ADOT.

Mohave County Height Modernization Survey, Mohave County

Under AMEC’s contract with Mohave County FCD, AMEC’s Land Surveying Department managed the performance a two-phase task for completing Height Modernization Surveys in Mohave County. Phase 1 of the project survey task covered approximately a 50-mile by 90-mile area lying south of the Grand Canyon. Phase 2 covered approximately a 36-mile by 72-mile area lying north of the Grand Canyon. The primary function of the project was to provide local communities with a network of benchmarks directly related to the latest FEMA DFIRMs. These benchmarks have their elevations published in the North American Vertical Datum 1988 (NAVD 88). Mr. Campbell managed the surveying services for this project. As Project Manager for this task, he was responsible for the planning, logistics, coordination and execution of the survey plan. In order to reduce the costs for performing this phase of the project, Mohave County FCD personnel were utilized for a large portion of the field data collection efforts. Phase 1 combined the simultaneous GPS survey occupation of 19 stations by 19 separate personnel for each session. A total of 35 survey stations were occupied over portions of a two week time period of Phase 1 to fully execute the field data collection portion of the survey. Four of the stations were occupied during all sessions each week in order to allow the surveys to be tied together in determining solutions. During the field data collection effort for Phase 2, 20 survey stations were occupied simultaneously over a three-day time period. Ensuring that all systems were collecting static GPS information at the same time was one of the largest coordination concerns in performing this work. AMEC sub-consultant, Geodetic Analysis provided processing and publishing of the final station information. The data was combined with information from several other height modernization surveys, CORS data and COBS data across California, Arizona, Nevada and Utah in the final processing. The survey stations data have since been submitted to the NGS (National Geodetic Survey) through a process called “blue booking”. The “blue booking” process places the horizontal and vertical station information into the NGS data set where the information was published and is available on the NGS website.

Key Team Members – Survey

Bryan Campbell, RLS, CFedS (AZ 40622, 1154)

Mr. Campbell has 29 years of progressive experience in the land surveying profession. He is responsible for managing the execution and supervision of all topographic surveys, aerial control and quality assurance surveys, boundary surveys, ALTA/ACSM Land Title surveys, subdivision plats, lot surveys, PLSS subdivision surveys, precision surveying services, utility surveys, construction staking surveys, legal descriptions, exhibit preparation and survey calculations performed in the AMEC Mesa Survey Department. He is proficient in the use of Trimble Geomatics Office, AutoCAD Civil 3D, Data Collection and Internet Technology. His past experience includes surveys for Engineering design, ROW determination, flood plain mapping, LiDAR, aerial mapping, numerous large retail developments, residential property developments and in-fill property developments. Mr. Campbell has successfully delivered numerous municipal, County, State and Federal agency projects. His relevant project experience includes:

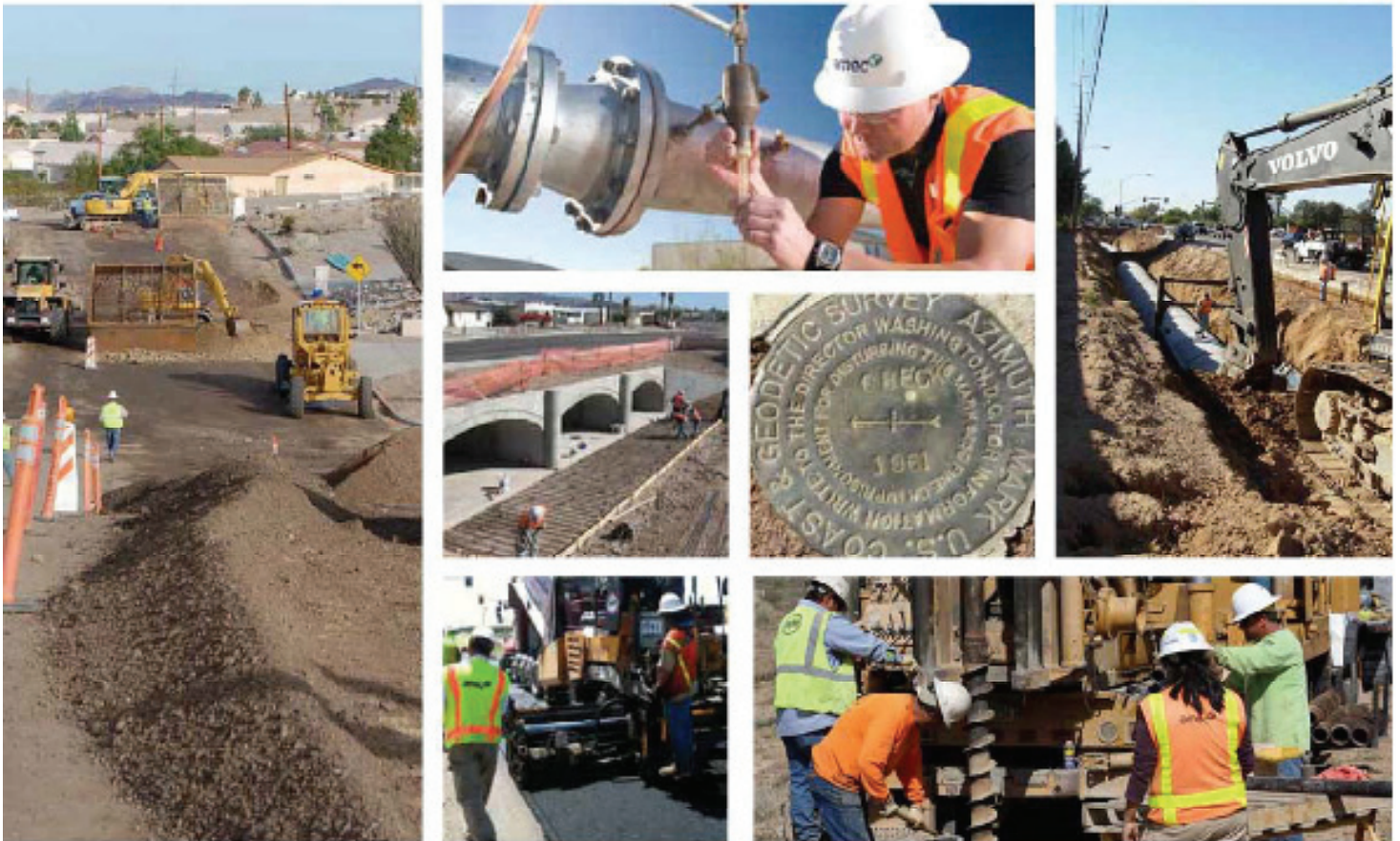
- El Paso Natural Gas Right of Way Survey, EPNG/Kinder Morgan – Survey Manager
- SR 87 Coolidge to Hunt Highway, GRIC, ADOT – Survey Manager
- Loop 202 South Mountain Freeway Extension Mapping, Phoenix, AZ, HDR Engineering, ADOT – Project Surveyor
- Alma School Rd/Power Rd Arterial Reconstruction, City of Mesa – Survey Manager
- SR 87, Mesa-Payson Hwy, New Four Peaks – DOS “S” Ranch, ADOT – Survey Manager
- Mohave County Height Modernization, Mohave County – Survey Manager
- Air Industrial Park Subdivision, Lake Havasu City – Survey Manager
- Dam Assessment Survey, Bar Boot Ranch, McNeal – Survey Manager
- Greenfield Rd Improvements Survey, Gilbert – Survey Manager
- Town of Miami Sewer Survey, Miami – Survey Manager

Brian Benedict, RLS (AZ 32222)

Mr. Benedict has 26 years of progressive experience in the land surveying profession and is proficient in the use of Trimble Geomatics Office and AutoCAD Land Development Desktop. He is responsible for the execution and supervision of topographic surveys, boundary surveys, ALTA/ACSM Land Title surveys, subdivision plats, lot surveys, PLSS subdivision surveys, legal descriptions and calculations. Mr. Benedict’s responsibilities also include supervision of CAD drafting work for ALTA/ACSM surveys, topographic surveys, boundary surveys, final plats, horizontal control plans, as-built plans and exhibit drawings. His project experience includes:

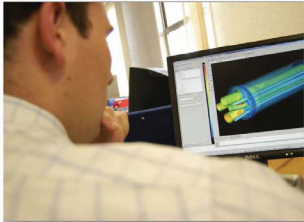
- SR 87 Coolidge to Hunt Highway, GRIC (ADOT) – Project Surveyor
- SR 87, Mesa-Payson Hwy, New Four Peaks – DOS “S” Ranch, ADOT – Project Surveyor
- WWSE Program, Lake Havasu City – Project Surveyor
- Dobson Rd/University Dr Intersection Improvements, City of Mesa – Project Surveyor
- SR 87, Jct SR 287 – Gila River, Pinal County – Project Surveyor
- Marven Properties Maricopa County – Project Surveyor
- Greenfield Rd, Germann Rd to Pecos Rd Improvements, Town of Gilbert – Project Surveyor
- On-Call Survey, Apache Junction – Survey Project Manager

GIS

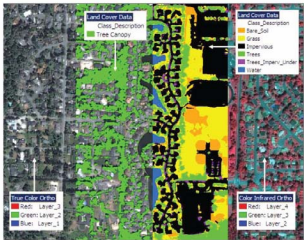


Geographic Information Systems (GIS)

AMEC's Information Management group specializes in delivering cost effective geographic decision support and operational productivity tools for all levels of government, transportation, environmental, mining, and energy clients around the world. Our expertise includes technology consulting, information management, GIS, database management, and application development which helps clients operate more effectively. Clients gain improved workflow, increased data integrity, enhanced communication, and broader access to information.



AMEC draws on subject matter experts and geographical reach to support the needs of our clients, regardless of project size and complexity. To ensure the highest level of service, our team is further bolstered by the addition of Mil Geospatial LLC. Recognized as a small business and a minority owned enterprise located in Phoenix, Arizona, they have a strong background in GIS and Asset Management. They bring a breadth of knowledge in parcel data creation and maintenance, data integrity, and quality assurance. Mil Geospatial continues to build long term client relationships by providing outstanding customer service and high-quality GIS solutions to their clients.



Together, our key team members bring over 30 years of GIS experience in working with area municipalities and large state-wide projects. We are a client oriented team offering exceptional talent and a wealth of experience required to successfully achieve project goals. AMEC also maintains partnerships with industry leaders such as Microsoft, Oracle, and Environmental Systems Research Institute (ESRI); these partnerships enhance our expertise to ensure we deliver the most effective and innovative solutions.

GIS and Information Management personnel have been involved with projects that have required needs analysis, long-term strategic plans, database implementations, application delivery, training, and systems integration. The types of organizations we have been involved with range from local governments including the City of Phoenix and the Flood Control District of Maricopa County (FCDMC), to federal government agencies including Federal Emergency Management Agency, the US Air Force, and Canada Post. Our strengths lie in our ability to draw upon a broad range of mature, practical GIS subject matter expertise when required.

Relevant Projects

GIS On-Call Services, City of Phoenix, AZ

AMEC maintains a recurring contract with the City of Phoenix – Aviation Planning & Environment Division at Sky Harbor International Airport for On-Call GIS services. AMEC performs various environmental database and mapping related activities in support of the division. A 90-page hardcopy map book is being maintained for Well Audit operations relating to remediation wells, monitoring wells, infrastructure wells, and abandoned wells. Interactive geo-referenced PDF map documents were produced with future property acquisition locations. These maps incorporate active links to all supporting documentation for a given site, including Environmental Site Assessments, photo documentation, historic title reports, Arizona Department of Water Resources (ADWR) reports and purchase status. Quarterly well data is collected and entered into an EQUIS geochemical database, from which various reports and maps are developed on an “as needed” basis. Supporting instructions and documentation are provided with all digitally delivered products to ensure ease of use for the division’s staff.

Arizona Statewide Sign Inventories

AMEC is providing technical oversight and project management services to ADOT for six concurrent sign inventory projects spanning over 1,700 miles of roadway. Following FWHA mandates, all state and local municipalities are undergoing the process of inventorying and managing their road sign assets. AMEC is overseeing the project development, third-party data collection, QA/QC process, and final data delivery, acting as a technical advocate for the local jurisdictions. Planning tasks have included various data needs assessments, database and spreadsheet design to match local data management practices, and development of numerous data collection plans. AMEC is overseeing the third-party data collection to ensure all deliverables meet the local municipality needs. The final implantation involves integration of the sign inventory into the municipal agency's existing asset management system, and or creation of a local sign management system depending on the current state of in-house sign management.

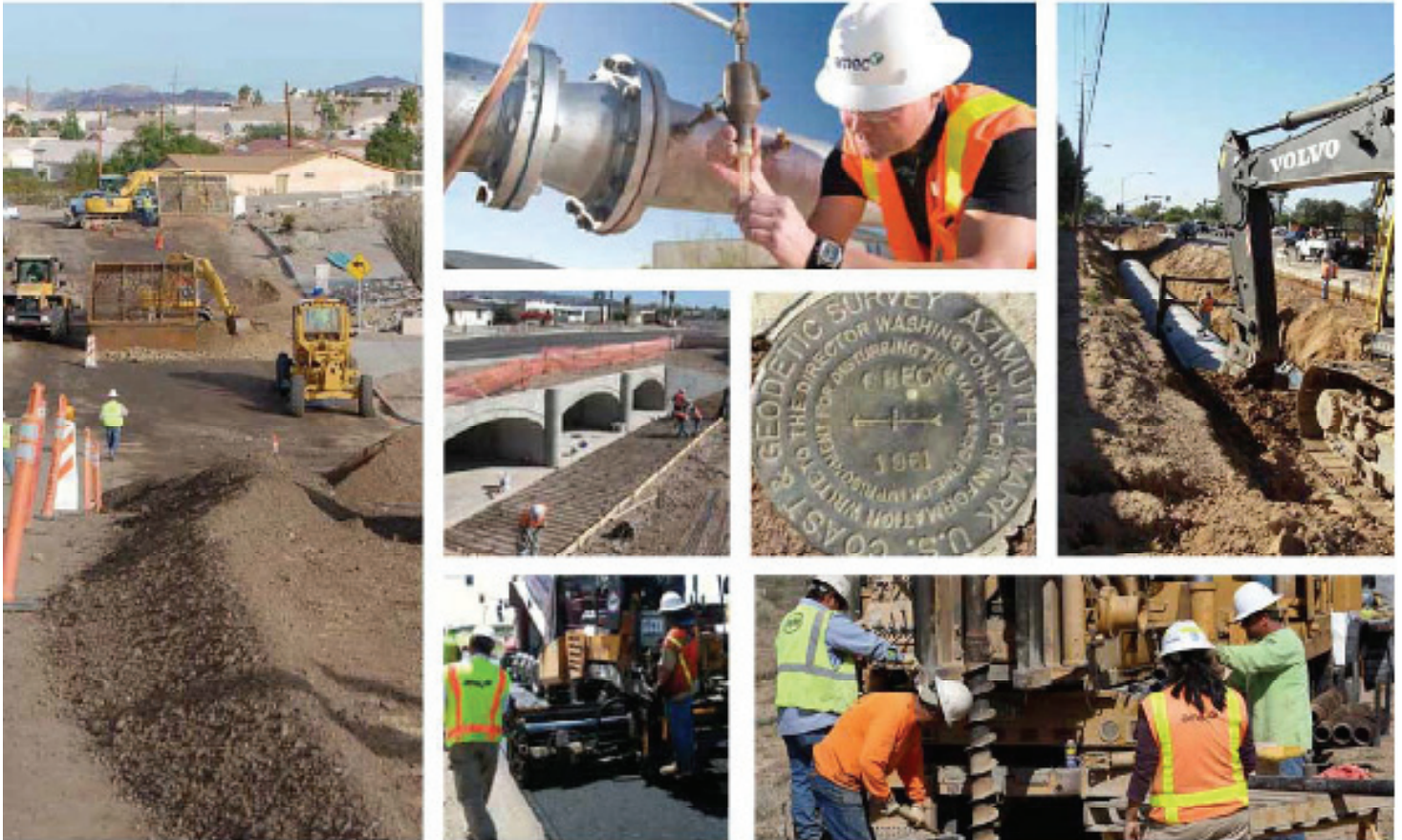
Key Team Member – GIS

Don Thorstenson

Don Thorstenson serves as the Information Management Lead for AMEC's Phoenix office. He has a strong background in map production, combined with an avid interest in information technologies and GIS. He has been involved with Information Management projects in connection with private and government agencies for 18 years. These projects have covered business sectors including public safety, municipal GIS development, geologic assessment, socioeconomic planning, prison industry, counter terrorism, and higher education. Mr. Thorstenson has production level experience in ArcGIS 10, ArcSDE, ArcGIS Server, Microsoft SQL Server Management Studio, and Microsoft Access.

Mr. Thorstenson has worked on state and local projects including an interactive well tracking system for the City of Phoenix Sky Harbor Airport, upgrading and enhancing the enterprise geodatabase system for the City of Apache Junction, a county-wide employer database for Maricopa County, enterprise geodatabase development for the Arizona Counter Terrorism Information Center, and various asset management systems associated with the Arizona Department of Transportation. Mr. Thorstenson also serves on higher education technical advisory boards within Arizona, and is a Faculty Associate at Arizona State University where he teaches Master's level GIS coursework.

Environmental



Environmental

AMEC is a full-service environmental consulting and engineering firm providing services in Arizona for more than 50 years. AMEC's environmental planning and permitting team, led by Karl Rains, includes a wide range of environmental project experience. We have a proven track record in understanding the issues associated with this work and its importance in helping to manage the County's risk associated with environmental issues. AMEC has built a solid reputation for responsiveness and technical excellence in providing environmental services for government and private industry in Arizona and throughout the United States. We are in the business of solutions – providing results through a full range of services including:

- Environmental impact assessment
- Clean Water Act permitting
- Biological survey and assessment
- Cultural resources survey
- Environmental auditing and planning
- Risk assessment
- Environmental Site Assessment (ESA) and characterization
- Asbestos and lead assessment
- Remediation
- Environmental management
- Environmental engineering
- Waste management
- Air quality

Relevant Projects

Remedial Investigation/Feasibility Study, Tuba City Dump Site, Bureau of Indian Affairs/Environmental Protection Agency, Tuba City, AZ

The Bureau of Indian Affairs is currently addressing the closure of the Tuba City Dump Site in Coconino County, Arizona, including mitigation of health and environmental risks through the Remedial Investigation and Feasibility Study (RI/FS) process under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). Under the oversight and guidance of US Environmental Protection Agency (EPA), AMEC is performing RI/FS activities to promote compliance with CERCLA and other relevant statutory and regulatory requirements. EPA is currently reviewing the draft RI/FS documents. In addition, AMEC has prepared a Baseline Ecological Risk Assessment for the project area, including coordination with the Navajo Nation and Hopi Tribe, due to the project's location on these tribal lands.

Environmental Assessment and Preliminary Jurisdictional Delineation for Lower Magma Channel, Magma Flood Control District, Florence, AZ

AMEC was contracted to provide funding assistance, outreach support, assistance with design, and preparation a NEPA-compliant Environmental Assessment for proposed improvements to the Lower Magma Channel located near Florence, Arizona. In addition to analyzing potential impacts from the construction and operation of the proposed improvements to the channel, AMEC conducted a Clean Water Act Section 404 Preliminary Jurisdictional Delineation and is coordinating with the US Army Corps of Engineers for the appropriate permitting of this project. Funding of the project is through the Natural Resources Conservation Service (NRCS).

Update to the Arizona Department of Transportation (ADOT) Clean Water Act Section 404/401 Manual, Phoenix, AZ

AMEC prepared an updated Arizona Department of Transportation (ADOT) Clean Water Act (CWA) Section 404/401 Manual that will guide ADOT's Environmental Services Group, Maintenance, and Construction staff, as well as outside consultants performing work for ADOT, in the development of CWA Sections 404 and 401 compliance documents and permit applications.

Street Transportation Dept. On-call Environmental and Safety Regulatory Assistance Services for Natural Cultural Resources/NEPA, City of Phoenix, AZ

AMEC continues to provide natural resources, cultural resources, NEPA, and water resources (stormwater) services to the City of Phoenix through this on-call contract. Through this contract AMEC has prepared Clean Water Act Section 404 Jurisdictional Determination requests, native plant surveys, biological reviews, and environmental documentation that require ADOT EPG environmental clearance. AMEC also provides bin sampling for hazardous materials and leads stormwater training for City personnel.

Environmental Services – ADOT, Reay Lane – Safford Bryce Road Intersection Realignment, Graham County, AZ

Graham County is planning to improve Reay Lane at its intersection with Safford Bryce Road. Graham County is seeking federal funding for this project; therefore, review through the ADOT's Local Government Program is necessary. AMEC prepared categorical exclusion documentation, a biological evaluation, cultural resources assessment, and a preliminary initial site assessment (PISA).

Asbestos & Lead-based Paint Surveys – ADOT, Golf Course Road Shared-Use Path, Graham County, AZ

AMEC's services included asbestos and lead-based paint surveys for the culverts and roadways along a three-mile stretch of Golf Course Road. The asbestos survey was performed in accordance with AHERA guidelines. The lead-based paint inspection was performed utilizing XRF equipment in accordance with HUD guidelines. The project was part of the ADOT's roadway widening project and AMEC's geotechnical investigations. Developed the sampling plan and coordinated safety measures for roadway work.

HUD-NEPA Environmental Assessments and Site-Specific Environmental Reviews, City of Phoenix, Neighborhood Services Department, Phoenix, AZ

AMEC currently services an On-Call Contract with the City of Phoenix, Neighborhood Services Department for the preparation of Environmental Review documents pursuant with the provisions of the Housing and Urban Development (HUD) regulations implementing NEPA. Environmental Reviews are conducted in consideration of federal laws, authorities and regulations which address noise, air quality, historic properties, floodplains, wetlands, water quality solid waste disposal, man-made hazards, farmland protection, endangered species and others. In accordance with the requirements of HUD regulations, applicants, owners, developers sponsors or any other third party partners or properties utilizing state housing funding programs must complete the Environmental Review process prior to taking physical action at the property. Since award of the contract in July 2012, AMEC has completed nearly 200 Environmental Reviews.

Section 404 Services and Native Plant Mapping, Scatter Wash, 43rd Avenue to 39th Avenue, City of Phoenix, AZ

AMEC was contracted by the City of Phoenix to delineate Section 404 jurisdictional areas within Scatter Wash and to map out native vegetation within the wash that is protected under the Arizona Native Plant Law. AMEC's efforts for this project included field delineation of the site, preparation of a Section 404 preliminary jurisdictional delineation (JD) request, native plant mapping using GPS point coordinates, and preparation of a Section 404 Nationwide Permit (NWP) Package for either a NWP#31 or NWP#33 (to be determined following the prelim JD concurrence from USACE). Coordination with the City was conducted and submittals to USACE were managed by the City.

Key Team Members – Environmental

Karl Rains

Mr. Rains leads the environmental planning, natural resources, and cultural resources team in AMEC's Phoenix, Arizona office. He has nine years of experience completing National Environmental Policy Act (NEPA)-compliant documents and investigations, as well as due diligence services primarily consisting of Phase I Environmental Site Assessments (ESAs). Mr. Rains has participated in numerous NEPA-compliant documentation projects, as both a project manager and a technical specialist for these efforts. He has facilitated public and agency involvement for many of these projects and as a project manager he has directed the efforts of diverse teams of resource specialists. Projects included a proposed coal-powered electrical generating station, a 235-mile transmission line study, and numerous National Cemetery expansions. Mr. Rains has performed over 200 Phase I ESAs and other environmental assessment activities for various governments, commercial and industrial clients. His project specific experience includes:

- HUD-NEPA Environmental Assessments and Site-Specific Environmental Reviews, City of Phoenix, Neighborhood Services Department, Phoenix, AZ; Project Manager/Technical Lead
- Phoenix-Mesa Gateway Airport Authority (PMGAA) Environmental Assessment, Mesa, AZ; Project Manager/Technical Author (Hazardous Materials)
- Lower Magma Channel Rehabilitation Project for the Magma Flood Control District, AZ; Senior Technical Reviewer
- All Aboard Florida (AAF) High-speed Rail Environmental Permitting and Civil Engineering Services, Florida East Coast Industries (FECI), FL; Technical Author (Environmental Justice, Aesthetics, Socio-economics, etc.)
- Border Environment Cooperation Commission (BECC), Environmental Services, Reynosa, Tamaulipas, Mexico; Project Manager/Technical Reviewer
- U.S. Department of Veterans Affairs, National Cemetery Administration and Office of Construction and Facilities Management, Environmental Services for National Cemetery expansions (multiple locations nation-wide); Project Coordinator/Lead Author

Steve Swarr

Mr. Swarr has over 20 years of experience managing NEPA projects in the eastern and southwestern United States. He has completed Categorical Exclusions (CE), EAs and Environmental Impact Statements (EIS) for several large, complex transportation projects. In addition to managing NEPA documentation, Steve has prepared/performed Clean Water Act (CWA) Section 404 Jurisdictional Delineation and permit applications for nationwide and individual permits, and CWA Section 404 training. He has completed the necessary technical studies and reports in accordance with the following regulations/guidance:

- Section 106 of the National Historic Preservation Act
- Section 7 of the Endangered Species Act
- Clean Water Act
- Clean Air Act
- Section 4(f)
- Environmental Justice
- Noise feasibility and abatement
- Indirect and Cumulative Effects

Serelle Laine

Ms. Laine has more than 22 years of environmental and cultural resources experience, 19 of which have been focused on transportation, enhancement, local government and planning-related multi-disciplinary projects. Her technical specialty is archaeology and historic preservation, although she also assists with the completion of NEPA-compliant documents and coordination with agencies and tribes from project scoping through project completion. Her archaeological experience includes survey, monitoring, testing, and data recovery, as well as research, data analysis, laboratory directing, and technical writing and editing. Historic preservation experience includes preparation of Section 106 consultation, including Programmatic Agreements/Memorandum of Agreements, and cultural resources and 4(f) sections of NEPA documents, culminating in cultural resources clearances for environmental documents. She has also conducted Section 106 consultation with local governments, county, state and federal agencies and all of the federally recognized tribes in Arizona. Ms. Laine meets the Secretary of the Interior's Standards and Guidelines Professional Qualifications. Her project specific cultural resources experience includes:

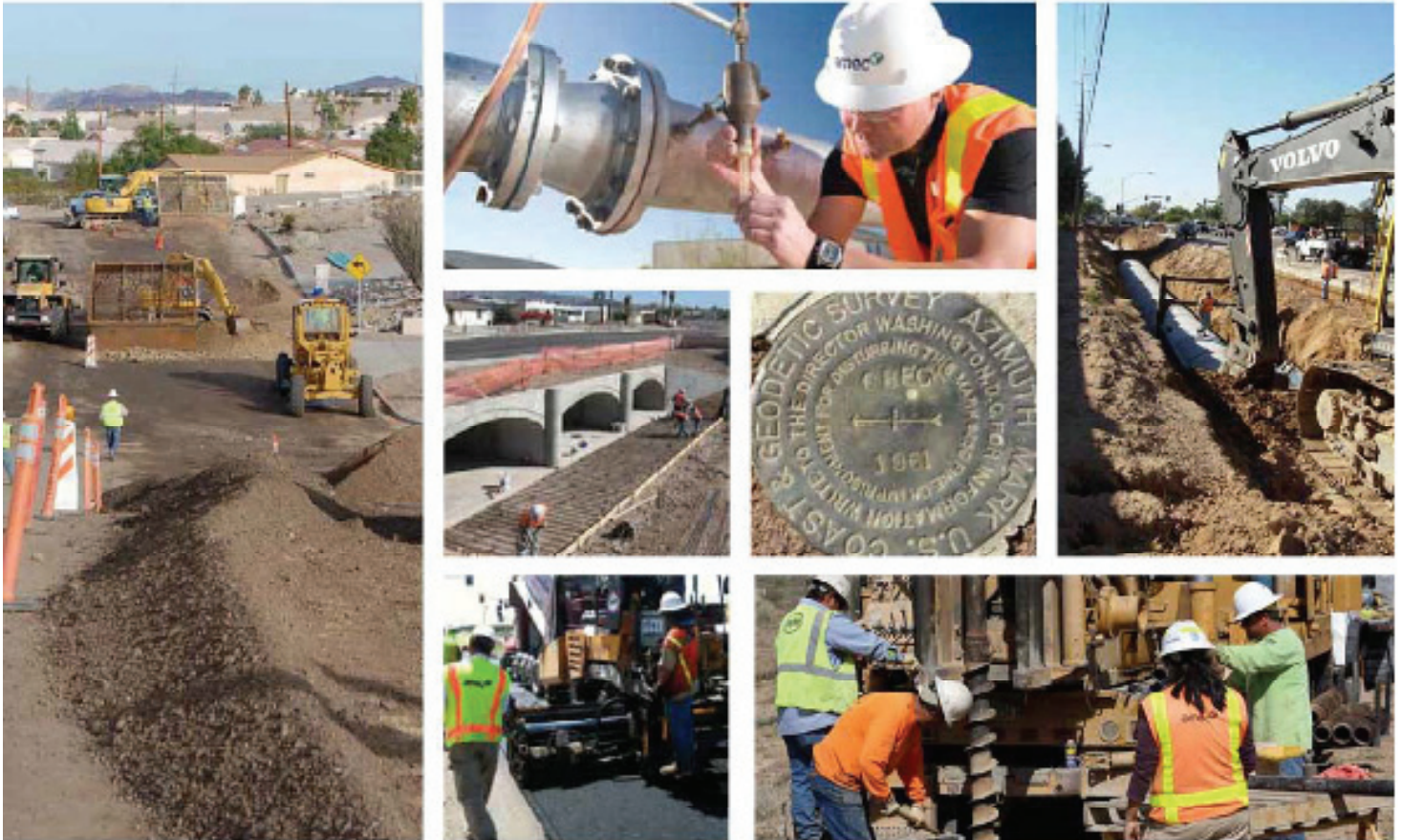
- SR 87, SR 287 to Hunt Highway, ADOT Gila River Indian Community (GRIC) and Coolidge, Pinal County, AZ
- Wastewater Collection System Improvement Project, Phase 1B, Grit Separator Construction, Miami, AZ
- Class III Cultural Resources Survey for the Lower Magma Channel Rehabilitation Project for the Magma Flood Control District, AZ
- Phoenix-Mesa Gateway Airport Authority (PMGAA) Environmental Assessment, Mesa, AZ
- Archaeological Monitoring for Williams Air Force Base Site XU403 (Parcel N Debris Area 1)
- Class III Cultural Resources Survey and Historic Building Inventory for Safford 20th Avenue, Golf Course Road to Relation Street Road Widening Project, AZ
- On-Call Statewide and Local Government Project Design, ADOT, AZ

Theresa Price

Ms. Price has seven years experience in botanical and biological surveying, National Environmental Policy Act (NEPA) documentation, Clean Water Act Section 404 Jurisdictional Delineations (JDs), vegetation sampling, and plant specimen curation and databasing. Her experience includes biological reviews, flora identification (including invasive and noxious weeds), rare and sensitive plant and wildlife surveys, preparation of integrated natural resource management plans (INRMPs), and conducting construction and mitigations compliance surveys. Theresa's Section 404 permitting experience includes preparation of nationwide and individual permit applications, as well as compensatory mitigation plans and her experience with NEPA documentation projects includes serving as both a technical specialist and lead author. Her project specific experience includes:

- Biological Review and Preliminary Jurisdictional Determination, Lower Magma Channel, Florence, AZ
- Update to the Arizona Department of Transportation (ADOT) Clean Water Act Section 404/401 Manual, Phoenix, AZ
- Vegetation Composition Studies and Habitat Mapping, Nellis Air Force Base and Nevada Test and Training Range, Las Vegas, NV
- Remedial Investigation/Feasibility Study, Tuba City Dump Site, Bureau of Indian Affairs/US Environmental Protection Agency, Tuba City, AZ
- Rare Plant Survey, Desert Tortoise Survey, and Preliminary Jurisdictional Delineation for High Desert Corridor, California Department of Transportation, San Bernardino County, CA
- Ambient Monitoring System for Winter Storm Management, ADOT, Globe, AZ
- Biological Compliance and Contractor Awareness Training for Tonto National Forest Bridges Project, Austin Bridge and Road/Federal Highway Administration (FHWA) Central Federal Lands Highway Division, Tonto National Forest, Gila County, AZ
- Preliminary Jurisdictional Delineation and Biological Review for Centennial Wash, City of Phoenix, AZ

Geotechnical



Geotechnical

Since 1959, AMEC has applied its geotechnical, environmental and materials engineering expertise to a wide array of geotechnical, hydrogeological, and environmental projects throughout the southwestern United States. With its exceptionally high retention rate of key personnel, we can provide extensive experience and technical expertise for the specialized problems characteristic of Arizona.

The AMEC professionals and support staff provide a broad range of geotechnical services to projects throughout the western United States. AMEC's Arizona offices employs 34 registered professional engineers or geologists. AMEC's unique qualifications include the ability to provide a multi-disciplinary team as required for sophisticated geotechnical and hydrogeological characterization, modeling, reporting, laboratory testing, related to soils and geology commonly associated with projects in Arizona, and more specialized related services including geophysical surveys, ground subsidence and earth fissure investigation, materials engineering, and dam safety, flood control, and levee certification.

Relevant Projects

SR 24 – Gateway Freeway, SR 202L to Ellsworth Road, Maricopa County, AZ

The project consists of the roadway improvements associated with the construction of Phase I of the system traffic interchange between SR 24 and SR 202L located predominantly in Mesa and an unincorporated portion of Maricopa County. The construction includes directional ramps between SR 24 and SR 202L as well as the segment of SR 24 from SR 202L to Ellsworth Road.

The project length extends approximately 2 ¼ miles along SR 202L from west of Sossaman Road to east of Warner Road and includes approximately 1 mile of new roadway construction for SR 24 from the SR 202L to Ellsworth Road. The roadway improvements to SR 202L are primarily associated with adding merge lanes for the directional ramps. These improvements include widening the Sossaman Road bridge. The SR 24 roadway will generally consist of six general-purpose lanes, three in each direction of travel, with all traffic exiting at Ellsworth Road in an end-of-freeway condition. The SR 202L roadway profile is elevated on fill embankment and the SR 24 will also be an elevated roadway founded on embankment except at the end-of-freeway condition at Ellsworth Road.



The planned roadway improvements consist of Portland cement concrete pavement, except for the detour roads and the transitions along Ellsworth Road from new construction to existing asphalt concrete pavement. The improvements associated with SR 202L will receive a rubberized asphalt overlay.

Seven concrete bridge structures are planned at the following locations:

- Ramp W-S Flyover
- Ramp N-W Flyover
- Ramp E-S over Hawes Road
- SR 24 over Ray Road
- SR 24 over Powerline Floodway
- Ramp N-E over Warner Road
- SR 202L over Sossaman Road (bridge widening)

I-17 Southbound Climbing & Auxiliary Lanes, Cordes Junction, ADOT, AZ

AMEC successfully executed a geologic and geotechnical field investigation and engineering analyses for the Interstate 17 (I-17) southbound climbing and auxiliary lanes between Mileposts 280 and 286.8. The investigations involved geologic mapping and characterization of soil and rock units, drilling of 25 exploration borings using rock-coring techniques to depths of up to 140 feet, excavation of 12 backhoe test pits, completion of geophysical surface seismic refraction surveys to cost effectively characterize the geologic conditions, aerial geologic reconnaissance, and the collection and testing of representative soil and rock samples. The boring and access plan was expedited to provide ADOT and the Prescott National Forest with the information necessary to quickly obtain environmental clearance for this fast-track project. Because the project was located within rugged terrain with poor access to the top of existing cut slopes, we directed the use of a helicopter to move drilling equipment and supplies to and from boring sites at the top of the cuts to minimize disturbance to the existing area. AMEC performed the drilling program with three drill rigs and three rock coring experience field engineers in January during inclement weather conditions in order to meet the sensitive schedule demands of the project. Logistics for the helicopter-supported drilling program were coordinated with ADOT Prescott District in such a manner that temporary road closures were not required and traffic on I-17 was not impacted during the investigation. The results of the investigation, laboratory analysis and engineering analysis, including stereographic and simulated rock fall analyses, allowed us to provide recommendations for the design of cut slopes ranging from 90 to 130 foot in height, as well as for embankment fill slopes and rock fall containment ditches; the characterization of two potential borrow/waste sites; and the earthwork factors required in support of the roadway improvement designs. AMEC also completed a materials design memorandum and a pavement design report.

SR 143, Sky Harbor TI Final Design Geotechnical Investigation, ADOT, Phoenix, AZ

AMEC provided geotechnical engineering services for roadway, ASD and LRFD of foundations, and pavement design services. We advanced and logged 41 borings to depths that ranged from 2 to 150 feet. Geologic site conditions presented several technical challenges for foundation design, such as shallow groundwater, coarse-grained sand, gravel and cobble alluvium of the Salt River, and a porphyritic, brecciated Andesite bedrock. Pavement design services included widening of ramps, full-depth pavement reconstruction and mitigation of pavement distress by partial or full-slab replacement of portland cement concrete pavements. Our work required coordination with the Sky Harbor Airport and reviews by the Federal Aviation Administration (FAA). A supplemental final design engineering study was performed that concluded an extended bridge structure for the west-south ramp was more economical as compared to bridges separated by an embankment. AMEC worked with ADOT and the prime design consultant to identify opportunities to eliminate the need for drill rigs and cranes to be positioned atop existing embankments. The result was a cost-saving design modification that removed potential FAA airspace conflicts and also balanced the project earthwork, resulting in an overall project savings to ADOT.

SR 303L: Happy Valley Parkway to Lake Pleasant Parkway, Peoria, AZ

The project was comprised of roadway improvements consisting of 7.5 miles of new roadway construction and 15 bridges, including one over the Agua Fria River, along the SR 303L alignment. The roadway consists of 4 general purpose lanes, two in each direction of travel. The planned roadway was designed to ADOT Urban Freeway Standards. AMEC performed a geotechnical investigation to evaluate the subsurface conditions at the site in order to provide recommendations for slopes, pavement subgrade support, earthwork factors, overexcavation, design of the structures, and for other aspects of the project where geotechnical properties or behavior require consideration.

Foundation Investigation, SR 90 San Pedro River Bridge (Structure No. 2944), Whetstone TI to Junction SR 80, Cochise County, AZ

AMEC provided geotechnical engineering services to the ADOT Materials Group for the final design project for the SR 90 San Pedro River Bridge. The replacement bridge is a planned three-span, 320-foot-long, AASHTO Type V girder bridge that will be constructed behind the existing bridge abutments. Because of the project's sensitive location in the San Pedro River Riparian National Conservation Area and within the designated critical habitat for two endangered species, the Willow Flycatcher and Huachuca Water Umbel, we were required to plan and execute a low-impact, environmentally sensitive geotechnical investigation. Our low-impact approach included advancement of four borings to depths of 125 feet, two of which were advanced through the existing bridge deck with conductor casing lowered to the ground surface. Drilling operations were performed through the conductor casing. A catchment tub was placed around the conductor casing below the bridge deck to collect drill cuttings for off-site disposal. AMEC also provided specialized materials testing, unconfined, undrained triaxial tests, to support LRFD analysis for the bridge foundation. As a result of our creative method of executing the drilling for this project, ADOT was able to benefit by having a successful geotechnical investigation completed within a critical habitat waterway in a safe and environmentally sensitive manner

Key Team Members – Geotechnical

Daniel Fréchet, PhD, PE (AZ 37284)

Daniel Fréchet has been involved with roadway, highway and transportation projects from local roadways to urban highway and interstate highway projects. His experience includes developing geotechnical proposals, detailed geotechnical scope and cost estimating activities, permit acquisition, planning and execution of site reconnaissance, developing geotechnical exploration and laboratory testing programs, design of foundations to support bridges and other structures, slope stability analysis, review of mechanically stabilized earth (MSE) wall designs, and design of pavement sections. Dr. Fréchet's relevant experience includes:

- SR 303L: Happy Valley Parkway to Lake Pleasant Parkway, Arizona Department of Transportation, Peoria - Project Engineer
- I-17 Southbound Climbing & Auxiliary Lanes, Cordes Junction - Project Engineer
- SR 143, Sky Harbor TI Final Design Geotechnical Investigation, Phoenix - Project Engineer
- SR 89 – SR 69 Traffic Interchange Soil Nail Walls, ADOT - design of the soil nail wall, a Special Provision and plan sheets
- US 93 Hoover Dam Bypass Project, subconsultant - extensive analyses on several bridge structures
- Higley Rd Widening: Queen Creek Rd to Ocotillo Rd, subconsultant - PM/Engineer
- Jackrabbit Trail: Thomas Rd to Yuma Rd, MCDOT - widen existing roadway from 2-lane to 4-lane roadway with curb, gutter and median

Tony Freiman, PE (AZ 23982)

Tony Freiman has served as the Project Manager and/or Project Geotechnical Engineer for numerous public works, highway, bridge, and mining projects in Arizona and Nevada. He has significant experience with the geotechnical conditions expected along the various corridors and has evaluated and designed roadway foundations and bridge foundations in a wide variety of conditions, including bedrock, expansive soils, collapsible soils and unusual soluble soils. Mr. Freiman has completed pavement designs, shoring evaluations and soil nail wall designs as part of various roadway and highway projects. Many of his projects have required multiple agency interaction and review, and some have included consideration of environmental and cultural sensitive issues in the designs. His project experience includes:

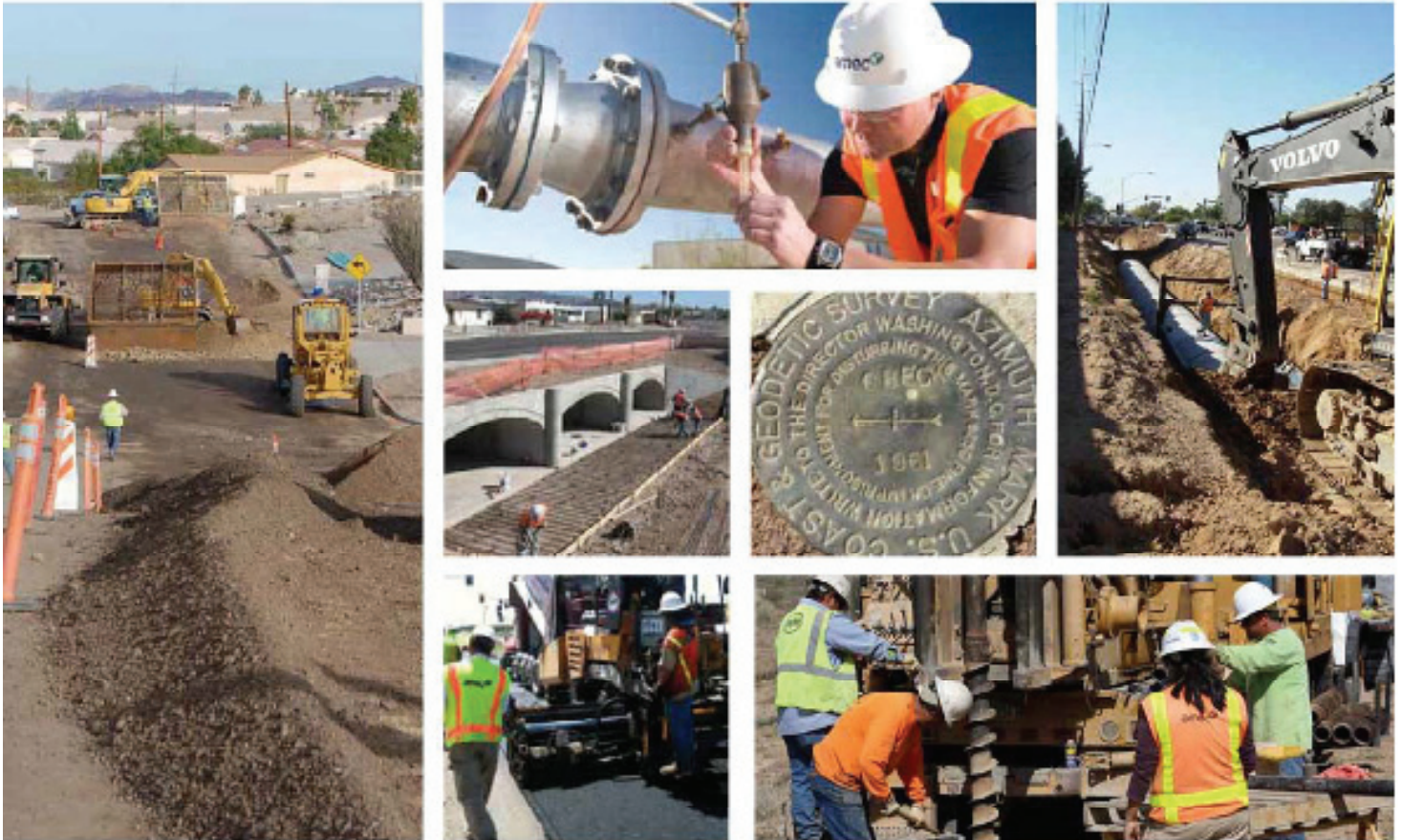
- SR 143, Sky Harbor TI Final Design Geotechnical Investigation, Phoenix – PM
- US Highway 93, McGarry's Wash Design Section – Project Geotechnical Engineer
- SR 260 - Camp Verde Section, ADOT – Project Geotechnical Engineer
- I-17/Carefree Highway Traffic Interchange, ADOT – Project Geotechnical Engineer and Pavement Designer
- I-17 – Jomax Rd to SR 74; SR 303L/I-17 TI – Phase I, ADOT – Pavement Designer
- Local Street Improvements, Colorado St, O'Neil Dr and Bisnaga St/Casa Grande Ave, City of Casa Grande – PM
- McDowell Rd Improvements, 99th Ave to Avondale Blvd, City of Avondale – PM
- Deer Valley Water Treatment Plant, 31st Ave and Dunlap Ave, City of Phoenix – PM

Richard Bansberg, PG (AZ 22738)

Richard Bansberg has extensive experience in the areas of geological engineering, hydrogeological characterization, groundwater management and environmental assessments. His geological engineering expertise includes geologic mapping, assessment of geologic hazards, soil and foundation investigations, rock slope stability studies and seismic studies. He has performed comprehensive hydrogeological studies of mine, landfill, and dam sites; and highway corridors. Mr. Bansberg has extensive experience in conducting groundwater investigations in a variety of geologic settings throughout Arizona and the southwestern United States, and has conducted numerous Phase I, II and III environmental assessments at industrial facilities and Greenfield sites in the United States, Mexico, Central and South America, and Asia. He has applied his environmental and hydrogeological knowledge and experience to numerous hydrogeological characterization and permitting studies for proposed and existing mine and landfill facilities. In particular, he has designed and implemented comprehensive groundwater monitoring programs at a number of mine and landfill facilities.

- Black Canyon Dam Rehabilitation, Arizona Game and Fish Department, Navajo County, Arizona
- Boulder City Bypass, Nevada Department of Transportation, Clark County, Nevada
- Geotechnical Assessments of Interstate 17 from Black Canyon City to Cordes Junction TI and Junction SR 179 to Interstate 40, Yavapai and Coconino Counties, Arizona
- Hoover Dam Bypass, Federal Highways Administration, Mohave County, Arizona and Clark County, Nevada
- Hoover Dam to MP 17 of US Highway 93, Arizona Department of Transportation, Mohave County, Arizona
- Slope Stability Evaluation, Federal Highway Administration, Zion National Park, Utah
- Salt River Pima-Maricopa Indian Community Landfill, Maricopa County, Arizona
- ASARCO Ray-Hayden Complex, Pinal County, Arizona

Materials Testing



Materials Testing

Canada for testing excellence and technical competence. We have a proven ability to provide unbiased, technically accurate field and laboratory testing in accordance with procedures established by ASTM, AASHTO, ACI, ATI, ICBO, AWS, ASNT and other national or local agencies to meet project specific requirements. AMEC's internal quality control, in conjunction with inspections by unbiased external agencies, provides a record for the substantiation of test results in the event of dispute.

AMEC offers a full-service materials testing laboratory, which includes ground penetrating radar (GPR) cross-hole sonic logging, gamma density logging, nuclear density, sand cone density equipment, speedy moisture testers, concrete testing equipment, and coring equipment.

Material testing technicians are trained in construction inspection and have been embedded in our Construction Management Group where they function not only as testing technicians but also as construction inspectors. This provides a higher level of service to the Client at a lower cost.

Asphalt Binder Testing

AMEC has extensive experience and capabilities for testing asphalt cement, asphalt emulsions and a variety of modified asphalt surface treatment materials. Our fully equipped laboratory is capable of testing the full range of Superpave PG binders as well as the historic AC Graded and AR Graded asphalt cements. Our technical staff is very experienced in testing and analysis of asphalt rubber products and mix designs as well. Our laboratory experts can assist with technical guidance on a variety of surface treatments such as slurry seal, micro-surfacing, chip seals and modified spray applied asphalt products.

Soils, Concrete and Asphalt Mixture Testing

AMEC's central laboratory provides comprehensive testing capabilities for soils concrete and asphalt. Our soils laboratory is equipped with a complete soil mechanics laboratory including direct shear, consolidation and triaxial compression testing. It is also equipped for R-value and CBR for pavement subgrade support. AMEC's soils laboratory has capabilities for the new Resilient Modulus testing required for advanced design and analysis (MEPDG) for pavement subgrades. Our asphalt mixture laboratory capabilities include standard Marshall, Gyratory and testing along with a wide variety of asphalt extraction techniques including ignition burn, vacuum extraction and vapor extraction to allow for Abson recovery of asphalt binders. Our asphalt lab also is equipped for testing dynamic modulus of asphalt mixtures to be used in the MEPDG advanced pavement analysis and design software recently developed by AASHTO.

Gamma-Gamma Testing and Crosshole Logging

AMEC has been performing drilled shaft integrity testing utilizing Gamma-Gamma Testing and Crosshole Sonic Logging (CSL) for over 20 years. We are a leader in the industry for the use of and evaluation of drilled shafts utilizing non-destructive technologies. AMEC and its personnel have had papers published in several industry publications in regards to the evaluation of drilled shafts utilizing Gamma-Gamma and CSL and other non-destructive technologies. We have performed Gamma-Gamma testing and CSL on drilled shafts for, commercial buildings, bridge foundations, retaining walls, airport runway foundations and railroad structures. Some of our clients have included: ADOT, City of Phoenix, Maricopa County Flood Control District.

Non-Destructive Examination (NDE) and Inspection

AMEC uses state-of-the-art equipment and highly trained and certified professionals to inspect everything from metal welds and paint thickness to spray-applied fireproofing and polyethylene pond liners. AMEC's inspection teams are fully mobilized at all times and available to perform crucial NDE code inspections on demand.

The types of inspections we perform include:

- **Radiography:** This technique provides a visual record of internal flaws, porosity, lack of fusion and penetration, and non-metallic inclusions. It typically is used to inspect welding on pipelines, storage tanks and high pressure piping in boilers, or to determine the location of electric wires and stress cables in concrete.
- **Ultrasonic Testing:** Highly portable test equipment is used to reveal imperfections such as laminations, cracks and intergranular stress corrosion.
- **Magnetic Particle/Liquid Penetrant Testing:** These methods are used to locate surface and near-surface flaws, including cracks and porosity.
- **Visual Inspection:** This is the most common inspection method used to monitor work quality and specification compliance at construction sites. AMEC has a staff of Certified Welding Inspectors meeting AWS and IBC code standards.
- **Ground-Penetrating Radar:** AMEC's Non-Destructive-Testing personnel utilize high-frequency radio waves to detect objects buried underground or embedded in concrete or asphalt.
- **Welder Testing and Certification:** AMEC can test and certify your welders, either in our test shop or at job sites. AMEC has tested and certified more than 50,000 welders.

Relevant Projects

Asphalt Forensic Investigation – Gilbert Road and Main Street, Mesa, AZ

AMEC's Pavement experts provided a forensic investigation of flushing and rutting that occurred at a recently constructed intersection in Mesa, Arizona. Investigation techniques applied a comprehensive testing program including Hamburg Rut Testing, Viscosity and PG Binder testing of recovered asphalt, Tensile Strength Ratio and Dynamic Modulus of the asphalt mixture. AMEC's report has been used by the City of Mesa to prepare revised standards for their heavily traffic intersections in the future.

McMicken Dam Fissure Hazard Zone Project, FCDMC

Working on behalf of FCDMC, AMEC charted earth-fissure risk zones at and near the dam including seismic refraction surveys, satellite-based interferometric synthetic aperture radar (InSAR), lineament analysis of low-sun-angle aerial photography, extensive trenching and trench mapping, gravity surveys, hydrograph data, and 2-D seepage and stress-strain finite-element modeling. Data revealed that the southern end of the dam was located in a high-risk fissure zone. AMEC's Team developed 23 alternative conceptual plans to modify/enhance McMicken Dam; selected a preferred plan following a comprehensive refinement process, including risk analysis; and managed the project's construction and provided materials-testing services.

Tempe Transportation Center, City of Tempe, AZ

This project consists of construction of a new transportation center for the City of Tempe. AMEC has provided qualified and experienced personnel with the technical capabilities to perform the following scope of services: special inspection of structural concrete including reinforcing steel; special inspection of structural masonry and on-site welding; sampling and testing of subgrade, backfill soils, aggregate base, concrete, mortar, masonry grout and asphaltic concrete; laboratory testing of soils and concrete, mortar, masonry, grout and asphaltic concrete.

Deer Valley Water Treatment Plant, 31st Avenue and Dunlap Avenue, City of Phoenix, AZ

Over the past five years, AMEC has provided geotechnical engineering services for the evaluation of settlement related distress of the existing water treatment plant facilities. Through cost-benefit analyses, it was determined to reconstruct the eastern half of the 150 million gallon per day treatment plant. Continuing geotechnical studies were provided by AMEC to develop design criteria for facility reconstruction. The eastern basins are currently being replaced in a \$120M project. AMEC has provided post-design geotechnical engineering services and a portion of the materials testing and construction quality assurance services.

City of Phoenix On-Call Materials Testing, City of Phoenix, AZ

AMEC provides supplemental construction materials testing for the City of Phoenix for projects throughout the city. Specific project experience includes Phoenix Sky Harbor International Airport, North Gateway Water Reclamation Plant and most recently, the new Rental Car Center where AMEC had five full-time technicians on-site.

Key Team Member – Materials Testing

Cliff Metz, SET

Cliff Metz currently serves as the Phoenix Laboratory Supervisor. His twenty-six years of experience has been almost exclusively accomplished in the materials laboratory. This has given him an excellent command of the intricacies of all standard laboratory tests related to soils, aggregates, asphalt cement, asphaltic concrete, Portland cement and Portland cement concrete. He has also acquired specialized knowledge in various types of mixture design and analysis. He has managed and/or supervised laboratory materials testing projects for numerous government agencies including Arizona Department of Transportation, CALTRANS, Maricopa County, Pima County, Department of the Army, Bureau of Indian Affairs and Federal Highway Administration.

Mr. Metz has been involved with the Arizona Department of Transportation's certification process since its inception in 1995. He is an active member of the Arizona Technical Institute's Technical Advisory Board. He is an active Supplemental Examiner for Soils & Aggregate, Asphalt, and Field certification. Mr. Metz assists SNI International, teaching courses in construction materials testing. He is an ACI Level 1 Concrete Field Testing Supplemental Examiner.

Mr. Metz' credentials satisfy the requirements for managing construction materials testing laboratories for Arizona Department of Transportation, American Association of State Highway and Transportation Officials (AASHTO) Accreditation Program Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction and the Department of the Army Geotechnical and Structures Laboratory.

Mr. Metz served as an engineering technician with the United States Marine Corps from September 1969 until June 1971, both in the United States and overseas.