E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS OF EXPERIENCE	
		a. TOTAL	b. WITH CURRENT FIRM
Victor F. Medina, Ph.D., P.E.	**Environmental Engineer**	34	1

15. FIRM NAME AND LOCATION *(City and State)*

Medina Environmental Consulting & Solutions

16. EDUCATION *(Degree and Specialization)*	17. CURRENT PROFESSIONAL REGISTRATION *(State and Discipline)*
Ph.D. & MS/Civil Engineering (Environmental) BS/Geology	▪ Professional Engineer - MS

18. OTHER PROFESSIONAL QUALIFICATIONS *(Publications, Organizations, Training, Awards, etc.)*

KEY PERSONNEL HIGHLIGHTS

- ✓ Licensed Professional Engineer
- ✓ Experience in Military, Civil Works, & Installations Environmental Challenges.
- ✓ PFAS and other military contaminants
- ✓ Former USACE-ERDC
- ✓ Recognized technical expert.

Dr. Medina is an Environmental Engineer with over 30 years of experience specializing in developing solutions to complex problems. Medina's experience includes 19 years as a Senior Research Engineer (DB-5, GS-15) at the Army Engineer Research and Development Center (ERDC) of the United States Army Corps of Engineers (USACE) where he developed novel remediation and water treatment technologies for military environmental challenges including treatment of explosives in soil and groundwater, treatment of perchlorate, treatment of PFAS, treatment of decontamination water, and wastewater treatment for contingency bases. Medina also conducted Civil Works projects, including studies to support the use of Environmentally Acceptable Lubricants of Dam and Navigation structures and treatments for Harmful Algal Blooms. Medina also supported military installations with projects to assess and improve water resiliency as part of the Army Installation Energy and Water Program, research to support a new water treatment system at Fort Irwin, and Net Zero focused projects assessing composting and waste management. In other experience, Medina was a Professor of Civil/Environmental Engineering at Washington State University, a Staff Research Scientist at the Pacific Northwest National Laboratory, and a Technical Director for Water/Wastewater at TRC Environmental Corporation, where he served as a lead technical expert for a company of ~6500 people.

19. RELEVANT PROJECTS

a.

(1) TITLE AND LOCATION *(City and State)*

Confidential Petroleum Client. Evaluation of Salt Removal Options for Groundwater, Southeast, NM

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION *(If Applicable)*
2023	N/A

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE

☒ Check if project performed with current firm

Technical Lead/Project Manager. Dr. Medina led a project team in evaluating multiple options for managing salt contaminated groundwater with the goal of minimizing concentrate waste, reducing costs, and providing positive public relations. The analysis included evaluation of potential reuse of the treated water, brine and recovered salt, as well as disposal options. **Cost:** $40K

b.

(1) TITLE AND LOCATION (City and State)

Confidential Petroleum Client. Development of Approach for Decontaminating Firefighting Equipment. Various locations in the United States

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION *(If Applicable)*
2023	N/A

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE

☒ Check if project performed with current firm

Senior Scientist. Dr Medina developed processes to decontaminate firefighting equipment for a large petrochemical company to facilitate removal of C8 AFFF foams. The process included evaluation of military based studies of firefighting decontamination, but also incorporated needs from private sector businesses, such as the need to minimize waste as much as possible, the need to conduct the process quickly to minimize the off-line time for the firefighting equipment. **Cost:** $20K

c.

(1) TITLE AND LOCATION *(City and State)*

National Defense Center for Energy & the Environmental/Army Environmental Command. Development & Testing of the EnviroPETS Treatment System, San Antonio, TX

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION *(If Applicable)*
2022-2023	N/A

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE

☒ Check if project performed with current firm

Co-Principal Investigator. Dr Medina conceived of a new mobile treatment system for PFAS contaminated water that would link two systems, the PFAS (Per-,Polyfluoroalkyl Substances) Effluent Treatment System (PETS) and the Waterneer Enviro system, with the goal of improving treatment of sludges and petroleum co-contaminants. As part of the conditions of the funding, Medina secured a modification to an existing Technology Transfer Agreement (TTA) with the Air Force Civil Engineering Center (AFCEC). The project included design of the system and two field demonstrations, one at the ERDC, Vicksburg, MS, and the second at the Tyndall Air Base, Panama City, FL. In the application at Tyndall AB, the system met proposed drinking water requirements for PFAS and other contaminants. **Cost:** $398K

d.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If Applicable)*
The 35th Civil Engineer Squadron. Misawa Air Base. Development and testing of a small, dedicated PFAS removal system for a runoff collection pond, Misawa, Japan	2021	N/A
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Principal Investigator, Dr Medina led a project to develop a small, semi-mobile treatment system for a runoff collection pond serving a firefighting training site in Misawa, Japan. The system was built in a Tri-Con shipping container to provide protection from weather and could be moved with a heavy forklift. The system was air shipped to Japan, meeting a requirement to be air transportable. The system met the goal of PFOA/PFOS < 50 ng/L. This and another similar project at MCAS Futenma (Okinawa Japan), which was conducted simultaneously, were awarded the ERDC International Projects of the Year in 2022. Both systems remain in use today.
Cost: $319K

e.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		ble)
National Defense Center for Energy & the Environmental/Army Environmental Command. A Mobile Treatment System for Small Accumulations of PFAS Contaminated Water, San Antonio, TX	2019 2021	N/A N/A
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☐ Check if project performed with current firm	

Principal Investigator. Dr. Medina led a team that developed the first mobile treatment system for small accumulations of PFAS, particularly runoff collection ponds from firefighting areas. The project required a Technology Transfer Agreement, which Dr. Medina obtained from the AFCEC. The system was constructed and tested at Hurlburt Field, FL, and at NAS Mid-South. The Hurlburt Testing met the TTA goals, including treatment of PFOA and PFOS below 70 ng/L. A follow on project was later conducted at MCAS Futenma in Okinawa, Japan. The resulting treatment system was named the PFAS Effluent Treatment System (PETS) and was awarded the Southeast Federal Laboratory Consortium Excellence in Technology Transfer. A patent application was submitted, and a Patent License Agreement has been completed with AxNano, a company focused on novel water treatment approaches. Cost: $337

f.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If Applicable)*
USACE Omaha. Environmental & Munitions Center of Excellence (EMCX). Installation Energy & Water Program. Rapid Small Scale Column Testing of Various Granular Activated Carbons for PFAS Removal. Joint Base Lewis McCord (JBLM), Olympia, WA; ERDC, Vicksburg MS.	2020	N/A
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☐ Check if project performed with current firm	

Principal Investigator. Dr. Medina led a project to compare different activated carbon products for application in drinking water systems managed by the USACE. The project included water collection from JBLM, construction of a Rapid Small Scale Column treatment device consistent with ASTM methodology, and testing. The project will improve existing water treatment systems and design new water treatment systems.
Cost: $70K

g.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If Applicable)*
Applied Research in Planning and Sustainability Center. ERDC. Multiple Army and National Guard CONUS and OCONUS Installations.	2000 to 2022	N/A
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☐ Check if project performed with current firm	

Lead for Water Resiliency Assessments/Project Lead. Dr. Medina was the lead for water resiliency for the Army Engineer Research & Development Center team for addressing Army Installation Energy & Water Program planning. This involved training new staff on the IEWP process from a water perspective, developing processes for evaluating water resiliency at military installations and working up concepts of solutions. The projects also included assessments of wastewater systems including infrastructure condition and assessments of beneficial reuse of treated wastewater. I also served as the project lead for several IEWP projects, including for White Sands Missile Range, Ft. Huachuca, Camp Smith and New York National Guard Facilities, and Washington DC National Guard Facilities. The project received the 2020 ERDC Award for Outstanding Team Effort. **Cost:** $950K

h.

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
Water Operations Technical Support (WOTS) program, Navigation System program (NAVSYS), Inland Navigation Center, and Dredging Operations Technical Support (DOTS). Assistance for Dams and Navigational Structures for Environmental Challenges. Multiple District Locations, particularly Portland District and Seattle District.	2014 to 2020	N/A
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☐ Check if project performed with current firm	

Principal Investigator. Dr. Medina conducted a series of projects to evaluate the use of Environmentally Acceptable Lubricants (EALs) for USACE dams and navigation studies. This includes learning all the processes requiring in and above water lubrication, identifying EAL products, and assessing them for suitability for use by the USACE. Medina also conducted a study to explore the causes of sulfide emissions from deep wells in a USACE dam, and later started a program to explore treatment of iron sulfide in pressure relief wells associated with dams and levees. Cost: 250K

i.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If Applicable)*
Premier Materials, Inc., USACE Aquatic Plant Control Research Program, Water Operations Technical Support, Harmful Algal Bloom and Nuisance Species Control, The Nature Conservatory. Laboratory and Small Field Studies, Army ERDC, Vicksburg, MS, and several districts.	2013-2020	N/A
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☐ Check if project performed with current firm	

Principal Investigator/Senior Scientist. Medina conceived of the concept of using cavitation to treat harmful algae and teamed with Premier Material to test their KRIA water treatment system using mesoscale studies. The studies showed decreases in cyanobacteria (Microcystis aeruginosa) and toxins. Medina also served as a senior scientist on follow on cavitation projects that also had positive results. Medina led the team that developed a field deployable treatment system, but funding cuts have not allowed for a field study to date. A related project evaluated hypolimnetic withdrawal as a means of controlling algae in reservoirs. Another project focused on the nuisance macrophytic algae, Didymo. Medina was also asked to support a concept by the Nature Conservatory to explore a concept of a special lock that would apply chlorination to prevent the migration of alien aquatic species into the Great Lakes from the Chicago Area Waterway. **Cost:** $175K

i.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If Applicable)*
The Environmental Security Technology Certification and Testing Program (ESTCP). Evaluation of leak detection and leak control technologies for DoD Application. The Army Engineer Research & Development Center, Vicksburg, MS.	2017 to 2019	N/A
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☐ Check if project performed with current firm	

Senior Scientist. Dr. Medina teamed with Scientist from NAVFAC and private industry on sister ESTCP projects. The first focused on studying several commercially available advanced acoustical leak detection products. Medina created a pipe leak test bed area consisting of four pipe materials, each with small valves with machined holes of specific diameter to simulate leaks of known parameters, in an open area at the ERDC facility. The test bed was used, and the ERDC facility was also used as a testing center as well. The study required the setup of a telemetry network, which was done meeting USACE security specifications. In the follow up project, the test bed area was used to study pressure regulating valves, which reduce the impact of relatively small leaks by changing water pressure during periods of low water use. **Cost:** $250K

k.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If Applicable)*

	Mississippi Valley Division, Mississippi River Geomorphology & Potamology Program. Water Quality Concepts.	2020 to 2022	N/A
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☐ Check if project performed with current firm	
	Principal Investigator, Dr. Medina worked with the Scientific Advisor of the MRG&P program to develop concepts for water quality studies to address concerns in the lower Mississippi River. A project was developed to focus on backwater areas of the Mississippi River system and study their potential for nutrient removal. Medina worked to develop a modeling project with the University of Mississippi to model the backwater areas, and these showed small but meaningful removal of nutrients. A concept was proposed to use engineering approaches to enhance this nutrient removal. **Cost:** $250K		
l.	(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	Army Environmental Quality & Installations. Treatment of Decontamination Effluents, ERDC, Vicksburg, MS, Fort Leanard Wood, St. Robert, MO.	PROFESSIONAL SERVICES	CONSTRUCTION *(If Applicable)*
		2014-2017	N/A
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☐ Check if project performed with current firm	
	Principal Investigator, Developed the first mobile treatment system, the Decontamination Effluent Treatment System (DETS) to treat decontamination water from CBRN (Chemical, Biological, Radiological, Nuclear) warfare events. The DETS received the 2018 USACE Innovation of the Year award and an Honorable Mention for technology transfer from the Southeast Federal Laboratory Consortium. The project also developed new production processes for graphene oxide films resulting in two patents. These films were tested for membrane filtration and as a cover for CBRN contamination on vehicles and equipment. **Cost:** $4,208K		
m.	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	Center for Advanced Sustainable Initiatives, ERDC Internally Funded Program, Energy and Resource Recovery from Wastewater Treatment. Champaign, IL	PROFESSIONAL SERVICES	CONSTRUCTION *(If Applicable)*
		2014	1983
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	Principal Investigator. Conducted a literature-based study to evaluate the potential of beneficial by-products from wastewater that could be recovered by special treatment system, particularly with the goal of application for military systems and operations. **Cost:** $20K		
m.	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	DOTS program. Evaluation of Hydraulic Fracturing (Fracking) Formations For Potential Impact on Waterways Managed by the USACE. ERDC Vicksburg, MS	PROFESSIONAL SERVICES	CONSTRUCTION *(If Applicable)*
		2013	1984
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	Principal Investigator. Dr Medina performed a literature study to determine contaminants found from fracking, assess their migration potential, and compare distance to USACE managed waterways. **Cost:** $40K		
o.	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	USEPA Technology Development, SERDP/ESTCP programs. Development of Ammonia Gas to increase pH and stimulate alkaline hydrolysis of 1,2,3-Trichloropropane and explosives, ERDC, Vicksburg, MS.	PROFESSIONAL SERVICES	CONSTRUCTION *(If Applicable)*
		2014 - 2015	N/A
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	Principal Investigator. Dr Medina and his team conducted studies on the use of ammonia gas to increase pH in soil and sediment in reaction with water. This process was then used to stimulate alkaline hydrolysis for the pesticide, 1,2,3-trichloropropane (TCP) as well as for explosives like RDX and 2,4,6-trinitrotoluene (TNT). A patent was received for the development of the process. **Cost:** $48K		
p.	(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	Army MILCON program, Development of Water Treatment Processes to meet high water recovery goals for new Fort Irwin Water Treatment Plant, Fort Irwin, Barstow, CA. Multiple USACE Districts.	PROFESSIONAL SERVICES	CONSTRUCTION *(If Applicable)*
		2011-2012	2020 - 2022
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☐ Check if project performed with current firm	

Principal Investigator. Dr. Medina supported a multi-district USACE team (Mobile District, Los Angeles District and Sacramento District) in developing requirements of a new Fort Irwin water treatment plant, with the goal of 98% water recovery. Medina's team conducted experiments to support recovery of potable water from membrane concentrate. In addition, the team participated in a Value Engineering assessment and in review of the specifications for the plant. The plant has been constructed and is operating effectively. **Cost:** $498K