Fiscal Year 2026

County of Hawaii

Professional Services for Fiscal Year 2025-2026

Research & Development Department

RD.1) Community Planning (Community and Economic Development, Community Engagement, Culture and Indigenous Data Science, Strategic Planning, Sustainability Systems)

June 30, 2025

Statement of Qualifications

0063f000009AVJNAA4

Jacobs

Jacobs
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Reinventing tomorrow.

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June 30, 2025

ATTN: Mr. Benson Medina, Director of Research & Development
Research & Development, County of Hawaii
25 Aupuni Street, Suite 1301
Hilo, Hawaii, 96720
Email: chresdev@hawaiicounty.gov

Subject: Statement of Qualifications - Professional Services for Fiscal Year 2025-2026

Dear Mr. Medina,

Jacobs Engineering Group Inc. (Jacobs) brings over 45 years of experience providing innovative solutions to Hawaii. We value our partnerships with clients across the state and look forward to applying our depth of knowledge and dedicated staff to advance your mission and goals. Jacobs is committed to providing professional, financially responsible, and dependable service for the County of Hawaii and pleased to submit our Statement of Qualifications (SOQs) for **RD.1) Community Planning (Community and Economic Development, Community Engagement, Culture and Indigenous Date Science, Strategic Planning, Sustainability Systems)**.

For additional information, we are also submitting SOQ to the Research and Development Department for the following category:

RD.2) Community Planning (Grant Writer)

Jacobs leads the global professional services sector delivering solutions for a more connected, sustainable world. We offer a full spectrum of services, including scientific, technical, professional, and construction and project management across business, industrial, commercial, government and infrastructure sectors. Jacobs provides:

- **Fully integrated local team with extensive reach-back capability into our global team.** We are a global organization of over 40,000 employees, including over 90 engineers, planners, and scientists based in Hawaii. One of our defining capabilities is to build a blended team of local and global experts to work closely and collaboratively with the County of Hawaii. We carefully select individuals with the optimum balance of local knowledge and experience in delivering similar services. The result is a vastly experienced team of planners and engineering practitioners who will apply their knowledge to deliver your critical projects efficiently.

- **Unparalleled industry leadership.** As a leading provider of planning, design, and engineering services, we provide end-to-end solutions for our clients' most complex challenges related to climate change, energy transition, connected mobility, integrated water management, and smart cities. We aim higher and are dedicated to implementing necessary process changes, finding new methods and approaches to solving problems, or redeploying proven products or services to improve the lives of people everywhere. Our network of technical and program professionals provides you with direct access to innovative strategies and project approaches for successful delivery of your projects, reducing the overall risk to the County of Hawaii and to your stakeholders. Our engineering services range from permitting, feasibility, and planning studies to design, inspection, startup, construction management, and operation and maintenance. Jacobs has full in-house capabilities in port & harbor engineering, coastal engineering, civil engineering, general engineering, environmental engineering, and community planning, including expertise that complements our public works engineering services. We offer state-of-the-art dynamic decision support tools and integrated modeling methods that facilitate balanced decisions that consider cost and benefits and truly integrate infrastructure management recommendations.
- **We understand the County of Hawaii.** Jacobs has a long history of working with the County of Hawaii which dates to when we were CH2M Hill. Our comprehensive understanding of your objectives and challenges, combined with our technical resources, enables us to respond quickly, apply existing knowledge, and develop and implement expedited solutions.
- **Immediate availability of our key staff and depth of resources** translates into responsiveness and a commitment to delivering your wide array of projects efficiently. Our team is immediately available to the County of Hawaii to deliver specialized planning and design services to meet your specific needs and goals.

I am your point of contact responsible for responding to all your requests and concerns and will make sure resources are available when needed. We have proposed staff who bring the specific expertise necessary for your requested services, and we will find additional resources to meet other needs that may arise. Please feel free to contact me at 808.943.1133 or by email at Abbey.Mayer@jacobs.com to further discuss our qualifications or opportunities to work together.

Yours sincerely,

Jacobs Engineering Group Inc.

Abbey Mayer, AICP,
Principal-In-Charge/Vice President

Jacobs

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ARCHITECT–ENGINEER QUALIFICATIONS

PART I – CONTRACT-SPECIFIC QUALIFICATIONS

A. CONTRACT INFORMATION

1. TITLE AND LOCATION (City and State)

Professional Services for Fiscal Year 2025-2026, County of Hawaii, Hawaii

2. PUBLIC NOTICE DATE	3. SOLICITATION OR PROJECT NUMBER
June 1, 2025	

B. ARCHITECT-ENGINEER POINT OF CONTACT

4. NAME AND TITLE

Abbey Mayer, AICP, Principal-In-Charge/Vice President;

5. NAME OF FIRM

Jacobs Engineering Group Inc.

6. TELEPHONE NUMBER	7. FAX NUMBER	8. E-MAIL ADDRESS
808.943.1133		Abbey.Mayer@jacobs.com

C. PROPOSED TEAM

(Complete this section for the prime contractor and all key subcontractors)

	(Check) PRIME	(Check) J-V PARTNER	(Check) SUB-CONTRACTOR	9. FIRM NAME	10. ADDRESS	11. ROLE IN THIS CONTRACT
a.	✓			**Jacobs Engineering Group Inc.*** ☒ CHECK IF BRANCH OFFICE	1003 Bishop Street, Pauahi Tower, Suite 1340, Honolulu, HI 96813	Prime Consultant

D. ORGANIZATIONAL CHART OF PROPOSED TEAM ☐ *(Attached)*

Upon selection, Jacobs will provide a project-specific organization chart.

* *In 2017, Jacobs Engineering Group Inc. (JEG) acquired CH2M, which became a wholly-owned subsidiary. Jacobs Government Services Company (JGSC) is a wholly owned subsidiary of Jacobs Engineering Group Inc. (JEG), and it is the legal contracting entity for US federal government projects located outside the continental United States (OCONUS). JEG is the corporate parent of JGSC. This SF330 proposal includes personnel resources from both JGSC and JEG, including acquired CH2M personnel resources.*

SECTION E:

RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS SERVICE CATEGORY

(Complete one Section E for each key person.)

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE	
		a. TOTAL	b. WITH CURRENT FIRM
Abbey Mayer, AICP	**Principal-In-Charge/Project Manager**	21	6

15. FIRM NAME AND LOCATION (City and State)

Jacobs, Honolulu, Hawaii

16. EDUCATION (DEGREE AND SPECIALIZATION)	17. CURRENT PROFESSIONAL REGISTRATION *(STATE AND DISCIPLINE)*
MA, English BA, Art Graduate Diploma, Accounting	American Institute of Certified Planners (AICP): #31479

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

Abbey is a senior project manager and planner with 20 years of experience leading planning organizations and projects in Hawaii. He specializes in environmental compliance; resiliency, climate change, and coastal planning; transportation planning; transit-oriented design (TOD); community-based master planning; real estate acquisitions and relocation; multi-jurisdictional permitting strategies; project financing and fiscal oversight; and government and non-government organization (NGO) management and liaisons.

Professional Organizations:

- Member, American Planning Association, Hawaii Chapter

19. RELEVANT PROJECTS

a.

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
Kalaupapa National Historical Park (NHP) Electrical System Rehabilitation, Kalawao County, Molokai, HI	2021	
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Planning, Permitting, and Compliance Lead. Abbey provided planning and permitting services for the electrical system rehabilitation project at the extremely sensitive and remote Kalaupapa National Historical Park. He provided detailed federal and state permitting and compliance plans for all proposed new facilities and rehabilitation of existing facilities. Federal permits and compliance were evaluated for National Environmental Policy Act (NEPA), Clean Water Act, Rivers and Harbors Act, National Historic Preservation Act, Endangered Species Act, Coastal Zone Management Act, and the National Pollutant Discharge Elimination System (NPDES). State and local permits and compliance were evaluated for Hawaii Environmental Protection Act (HEPA) [Ch. 343, HRS], Hawaii Conservation District Use Permits, Hawaii Historic Preservation Act, and Hawaii Endangered Species Act.

b.

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
Honolulu Rail Transit Project, Honolulu Authority for Rapid Transportation (HART), Honolulu, HI	2018	2018
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☐ Check if project performed with current firm	

Director of Planning, Permitting, and Right-of-Way (ROW). Abbey administered, managed, and coordinated the Planning, Permitting, and Right-of-Way Division for Honolulu's $8.2 billion, 20-mile, 21-station, elevated guideway, light rail transit system (Honolulu Rail), which consists of planning, environmental, transit property acquisition and relocation, agency and permits, and grant management. He oversaw the preparation of documents to comply with the National Environmental Policy Act (NEPA), other federal environmental regulatory acts, including the Endangered Species Act, the Clean Water Act, the Clean Air Acts, the National Historic Preservation Act (NHPA), and Section 4(f) of the Department of Transportation Act. Abbey led an organization of approximately 30 HART staff, along with over 50 project consultants. Abbey administered an overall project budget of approximately $390 million.

c.

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2045 Oahu Regional Transportation Plan (ORTP), Oahu Metropolitan Planning Organization (OahuMPO), Honolulu, HI	2021	
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Project Manager and Senior Planner. Abbey managed eight individual task orders under this contract. It has a total value of $700,000. Task orders include projects such as the 2045 Oahu Regional Transportation Plan Update, 2045 Transportation Revenue Forecast and Alternative Financing Models, and the Congestion Management Process (CMP) update.

d.

(1) TITLE AND LOCATION (City and State)

Strategic Planning, Environmental and Permitting Services, Hawaiian Electric Company (HECO), Honolulu, HI

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
Ongoing	

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

☒ Check if project performed with current firm

Client Account Manager and Project Manager. Abbey manages the consulting services master agreement with HECO and Hawaii Electric Light Company (HELCO) for environmental and permitting assessments for electrical systems upgrades, repair, and replacement; and negotiated and executed a new five-year master services agreement. Projects have included environmental permitting and compliance work in Hawaii.

e.

(1) TITLE AND LOCATION (City and State)

Taxiway A Reconstruction Project, Daniel K. Inouye International Airport, Hawaii Department of Transportation (HDOT), Honolulu, HI

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
Ongoing	

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

☒ Check if project performed with current firm

Senior Planner and Environmental Quality Control. Jacobs is working with the HDOT to comprehensively redesign and reconstruct Taxiway A and the runways at Daniel K. Inouye Airport (HNL). Abbey's role is to coordinate completion of all environmental compliance and permitting requirements, including National and Hawaii Environmental Protection Act, Coastal Zone Management Act, NPDES, FAA specifications, HDOT-A specifications, best management practice (BMP) guidelines, drainage permits, contaminated soil and groundwater permits, local grading and grubbing permits, and revegetation requirements.

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS SERVICE CATEGORY

(Complete one Section E for each key person.)

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE	
		a. TOTAL	b. WITH CURRENT FIRM
Kristen Nishimura, AICP	**Project Manager/Environmental Planner**	23	3

15. FIRM NAME AND LOCATION (City and State)
Jacobs, Honolulu, Hawaii

16. EDUCATION (DEGREE AND SPECIALIZATION)	17. CURRENT PROFESSIONAL REGISTRATION *(STATE AND DISCIPLINE)*
BA, Asian Studies	American Institute of Certified Planners (AICP): #025368

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

Kristen is a project manager with 23 years of experience in consulting and public planning. She has effectively spearheaded planning, design, and permitting projects for various levels of state and federal government in Hawaii, the continental US, and overseas. Kristen has a proven ability to plan and execute tasks ranging from small budget studies and quick turnaround tasks to multi-million-dollar, multi-disciplinary programs, always ensuring compliance with internal and external controls, meeting schedules and milestones, and completing projects within budget.

19. RELEVANT PROJECTS

a.

(1) TITLE AND LOCATION (City and State)
Kona Open Space Network, County of Hawaii, Department of Planning, Kona, HI

(2) YEAR COMPLETED — PROFESSIONAL SERVICES: Ongoing; CONSTRUCTION (if applicable):

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

☒ Check if project performed with current firm

Project Manager. Kristen led the team to develop the project strategy for the County's inaugural open space network pilot program in the Kona district of Hawaii Island ("Big Island"). This strategy encompasses the design of methodologies for the establishment of criteria, the selection and ranking of sites, the formulation of plans, the involvement of stakeholders, the discovery of funding sources, and the program implementation. Leading a team of experts from various disciplines, Kristen is collaborating with a citizens group to formulate the project from its initial concept to a plan ready for execution.

b.

(1) TITLE AND LOCATION (City and State)
Hilea Bridge and Ninole Bridge Interpretive Sign Development, US DOT, FHWA, CFL, Kau, Hawaii

(2) YEAR COMPLETED — PROFESSIONAL SERVICES: 2023; CONSTRUCTION (if applicable):

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

☐ Check if project performed with current firm

Senior Planner. Conducted community engagement and facilitation of input development on the interpretive sign development for the replaced bridges.

c.

(1) TITLE AND LOCATION (City and State)
Honolulu Rail Transit Project, General Engineering Consultant Support (GEC III), Honolulu Authority for Rapid Transportation (HART), Honolulu, HI

(2) YEAR COMPLETED — PROFESSIONAL SERVICES: 2023; CONSTRUCTION (if applicable):

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

☒ Check if project performed with current firm

Task Lead, Planning and Environmental Planning. Kristen successfully led a multi-disciplinary team to conduct a comprehensive environmental due diligence for Segment 3 design changes, ensuring that HART avoided the costly and time-consuming process of conducting a supplemental Environmental Impact Statement (EIS). As a result, the agency was able to save significant project costs and avoid program-wide delays, potentially affecting construction and procurement effort for the unbuilt segment. The team's effort resulted in helping HART secure project approval from both the Governor of the state and the Federal Transit Authority. This successful outcome enabled HART to reaffirm its commitment to receive $744 million in funding.

Specific tasks include providing planning and environmental services to support updating and implementing NEPA EIS, ROD, Section 106 Programmatic Agreement, Mitigation Monitoring Program, and other federal, state, and local requirements. Lead technical teams performing studies and reports, provide advisement on feasibility, cost effectiveness, and regulatory conformance of transit-associated plans, proposals, special projects, transportation services, and ongoing programs.

d.

(1) TITLE AND LOCATION (City and State)
Hilo Bayfront Roundabout EA, DOT Highways, Hilo, HI

(2) YEAR COMPLETED — PROFESSIONAL SERVICES: 2023; CONSTRUCTION (if applicable):

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

☐ Check if project performed with current firm

Lead Environmental Planner. Kristen directed the environmental planning task on joint NEPA-HEPA EA activity for a roundabout conversion of the existing intersection at Hilo Bayfront Drive at Waianuenue Avenue. She identified permitting requirements. The project involvement occurred outside of employment at Jacobs.

	(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	Continuously Operating Reference Stations (CORS)/Virtual Reference Station (VRS), DOT Highways, Eight Locations on Oahu, HI	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
		N/A	
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☒ Check if project performed with current firm	
e.	**Lead Environmental Planner.** Kristen developed siting requirements for the placement of CORS/VRS structures throughout Oahu at eight locations to streamline local and national permitting activities. She directed the preparation of the NEPA CATEX and HEPA Exemption Declaration and coordinated Sections 7 and 6E consultations. Kristen developed a project approach for applicability to similar CORS/VRS projects for Maui, Kauai, and Hawaii counties. The project involvement occurred outside of employment at Jacobs.		

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS SERVICE CATEGORY

(Complete one Section E for each key person.)

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE	
		a. TOTAL	b. WITH CURRENT FIRM
John Padre, AICP	**Project Manager/Environmental Scientist**	25	25

15. FIRM NAME AND LOCATION (City and State)

Jacobs, Honolulu, Hawaii

16. EDUCATION (DEGREE AND SPECIALIZATION)	17. CURRENT PROFESSIONAL REGISTRATION *(STATE AND DISCIPLINE)*
MBA, Executive Management and Strategic Marketing BA, Botany	American Institute of Certified Planners (AICP): #33278

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

John has 25 years of management and technical experience in the fields of environmental asset and liabilities management, geospatial and environmental data management, environmental planning, natural resources, renewable energy, sustainable materials management, multimodal transportation, transit-oriented design (TOD), and information technology. He has served as a project manager and planner for several projects in Hawaii. He is experienced in local, state, and federal permitting practices and regulatory policy with respect to hazardous waste and the environmental review process.

Professional Organizations:

- Member, American Planning Association
- Member, Conference of Minority Transportation Officials

19. RELEVANT PROJECTS

a.

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
Chevron Corporation Environmental Engineering Services, Chevron Environmental Management Corporation (EMC), Various Locations, HI	2017	
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Project Manager and Environmental Scientist. Jacobs was responsible for environmental site management, including regulatory coordination, and the development and implementation of site remedial and management/closure strategies. Work included evaluation of petroleum-impacted sites; soil and groundwater sampling and analysis; environmental oversight during UST closures; and development of both short- and long-term response actions at sites where fuel releases have occurred. The Jacobs team operated both passive and active remediation systems designed to remove LNAPL from both sedimentary and fractured rock environments. The team evaluated long-term site management strategies in coordination with Chevron to develop strategic plans that met the needs of stakeholders, including Chevron, neighboring property owners, and regulatory agencies, and resulted in lower overall life cycle costs for Chevron.

b.

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
Honolulu Rail Transit Project, On-Call Hazardous Materials Consulting, Honolulu Authority for Rapid Transportation (HART), Honolulu, HI	Ongoing	
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Project Manager and Environmental Scientist. The program is a dynamic and challenging on-call hazardous materials consulting services contract in support of construction of a 20-mile rail line. The scope of services includes broad support in the areas of hazardous materials planning (development of various plans), permitting reporting, identification (sampling, analysis, characterization, and profiling), handling (temporary stockpiling, waste inspections), transport, and disposal of contaminated media. John's role on this program has been to manage projects and provide technical expertise development and maintenance of a web-based application to manage and present environmental contamination data existing prior to and as a result of constructing the 20-mile Honolulu Rail Transit Project. He served as the interface between HART, the State of Hawaii Department of Health (HDOH), and application developers, and development of extraction and workflow tools for analytical data quality assurance and incorporation. He also served as an environmental professional to perform environmental due diligence in accordance with the All-Appropriate Inquiries (AAI) rule and standards as set forth in the ASTM for parcel acquisitions prior to construction of the 20-mile high-capacity Honolulu Rail Transit Project. Specific tasks include the accounting of AAI status of the proposed 272 acquisitions along the project, development of a prioritization strategy to perform the required AAI for required real properties in order to mitigate or minimize overall cost and schedule risks, and project manager and environmental professional for 100+ Phase I environmental site assessments.

c.

(1) TITLE AND LOCATION (City and State)

Integrated Solid Waste Management Plan (ISWMP), County of Kauai, HI

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2019	

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

☒ Check if project performed with current firm

Project Manager. Project involves updating the County of Kauai Integrated Solid Waste Management Plan being prepared in accordance with Hawaii Revised Statues 342G. Jacobs is coordinating the data gathering, assessment, strategies development for solid waste collection, source reduction, recycling and bioconversion, special wastes, household hazardous waste and electronic waste, public education, materials marketing and procurement, evaluation of long-term disposal options, energy balance, system cost analysis, and alternative technologies. The project includes an evaluation of the County's existing refuse transfer stations and the Kekaha Landfill and recommending an action plan to implement proposed solid waste elements including source reduction and operational efficiency improvements. Role involved coordinating the Jacobs' project team, interfacing with the County's leadership team, and supporting the facilitation of the advisory committee activities, including outreach to regulatory agencies, commercial waste management and recycling organizations, public interest groups, and interested community members. When complete, the plan will document existing conditions; outline issues and concerns; and develop strategies, recommendations, and implementation plans.

d.

(1) TITLE AND LOCATION (City and State)

BMP Improvements at Various Refuse Transfer Stations, County of Kauai, HI

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
Ongoing	

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

☒ Check if project performed with current firm

Environmental Planner. John coordinated and worked as an environmental professional to evaluate environmental due diligence needs in preparation for National Environmental Policy Act (NEPA) environmental documentation and supporting technical reports for the engineering design improvements of four transfer stations in the County.

e.

(1) TITLE AND LOCATION (City and State)

Hawaii Bridge Program, Federal Highway Administration (FHWA), Central Federal Lands Highway Division, Various Locations, HI

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2017	

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

☒ Check if project performed with current firm

Environmental Planner. John provided strategic HEPA and NEPA regulatory guidance and planning for the rehabilitation of 10 bridges on the islands of Hawaii, Kauai, and Oahu. Specific services include environmental impact assessments, compliance with NEPA, and transportation planning.

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS SERVICE CATEGORY

(Complete one Section E for each key person.)

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE	
		a. TOTAL	b. WITH CURRENT FIRM
Frank Hopkins	**Project Manager/Environmental Scientist**	29	26

15. FIRM NAME AND LOCATION (City and State)

Jacobs, Honolulu, Hawaii

16. EDUCATION (DEGREE AND SPECIALIZATION)	17. CURRENT PROFESSIONAL REGISTRATION *(STATE AND DISCIPLINE)*
MPH, Environmental and Occupational Health BA, Anthropology	

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

Frank is a project manager and environmental scientist with experience in environmental site characterization and remediation. He has more than 29 years of experience in managing projects in Hawaii and as a senior technical resource for petroleum product recovery, soil and groundwater sampling and remediation (including soil excavation and disposal, remediation system design, and remediation system operations and maintenance), site characterization, compliance monitoring, data analysis, construction oversight, underground storage tank (UST) removal and clean-closure sampling, short-term release response activities, and hazardous waste management. As the Jacobs Honolulu office's environmental manager, he has also been responsible for hazardous waste permitting (local, state, and federal) and regulatory compliance with RCRA and CERCLA.

Professional Organizations

- Member, Hawaii Association of Environmental Professionals (HAEP)
- Member, Project Management Institute (PMI)

19. RELEVANT PROJECTS

a.

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
On-Call Underground Storage Tank and Retail Compliance Support, Island Energy Services (IES), LLC, HI	Ongoing	
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Project Manager. Frank provides Underground Storage Tank (UST) Compliance Program and retail facility compliance support for 35 Texaco-branded retail gas facilities and assists the client with regulatory notifications and coordination. He developed Retail Facility Compliance Guides, including forms, checklists, and tools to facilitate compliance with environmental, health, and safety regulations, and provided annual retail facility compliance training for IES personnel and retailers. He also provided on-call retail facility support to support environmental release response activities, regulatory inspections, and the preparation of regulatory documentation.

b.

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
Chevron Corporation Environmental Engineering Services, Chevron Environmental Management (EMC) Corporation, Various Locations, HI	2017	
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Project Manager and Environmental Scientist. Jacobs was responsible for environmental site management, including regulatory coordination, and the development and implementation of site remedial and management/closure strategies. Work included evaluation of petroleum-impacted sites; soil and groundwater sampling and analysis; environmental oversight during UST closures; and development of both short- and long-term response actions at sites where fuel releases have occurred. The Jacobs team designed and operated both passive and active remediation systems designed to remove LNAPL from both sedimentary and fractured rock environments. The team evaluated long-term site management strategies in coordination with Chevron to develop strategic plans that met the needs of stakeholders, including Chevron, neighboring property owners, and regulatory agencies, and resulted in lower overall lifecycle costs for Chevron.

c.

(1) TITLE AND LOCATION (City and State)

Honolulu Rail Transit Project, On-Call Hazardous Materials Consulting, Honolulu Authority for Rapid Transportation (HART), Honolulu, HI

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
Ongoing	

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

☒ Check if project performed with current firm

Program Manager, Project Manager, Environmental Manager, and Environmental Scientist. The program is a dynamic and challenging on-call hazardous materials consulting services contract in support of the construction of a 20-mile rail line. The scope of services includes broad support in the areas of hazardous materials planning (development of various plans), permitting reporting, identification (sampling, analysis, characterization, and profiling), handling (temporary stockpiling, waste inspections), transport, and disposal of contaminated media. Frank managed the on-call hazardous materials contract, overseeing all environmental work conducted for HART, and managed a wide variety of projects. He also provided technical expertise in a wide variety of fields, including site characterization and remediation, hazardous materials management, permitting, regulatory compliance, and regulatory agency interactions. He supported the client by providing programmatic guidance for contractors to ensure compliance with environmental laws and regulations related to the handling and management of contaminated media during project procurement and execution.

d.

(1) TITLE AND LOCATION (City and State)

Facility/Infrastructure and Environmental Architect Engineering Services, Air Force Civil Engineering Center, Honolulu, Hawaii and the Pacific

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2017	

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

☒ Check if project performed with current firm

Project Manager and Environmental Scientist. Frank was responsible for project management, design and implementation of characterization and remediation projects, and characterization and management of hazardous waste. Project work included soil, groundwater, and soil gas characterization and remediation at chlorinated solvent, petroleum hydrocarbon, polynuclear aromatic hydrocarbon, and metal contaminated sites located in Hawaii and the Pacific. Under this program, he has led many remediation efforts, including UST closures and LNAPL recovery systems design, operation, and closure/decommissioning.

e.

(1) TITLE AND LOCATION (City and State)

Preliminary Assessment/Site Inspection and Remedial Investigation/Feasibility Studies, Various Site, Wake Island Airfield, Wake Atoll

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
Ongoing	

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

☒ Check if project performed with current firm

Project Manager. Frank is managing multiple task orders and environmental investigations to characterize contaminated sites within commercial and active flightline areas. He served as project manager, site manager, and senior technical consultant on multiple field assignments on the remote atoll. Fieldwork requires proper pre-planning, coordination, flexibility, and in-the-field decision-making. Site investigation work includes collecting soil, groundwater, surface water, sediment, and fish tissue samples for analysis to delineate areas of known or suspected contamination. Recent work in 2012 included the investigation of 33 sites with the collection of hundreds of samples (soil, groundwater, and sediment).

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS SERVICE CATEGORY

(Complete one Section E for each key person.)

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE	
		a. TOTAL	b. WITH CURRENT FIRM
Heather Rectenwald, PMP	**Project Manager/Environmental Scientist**	24	24

15. FIRM NAME AND LOCATION (City and State)

Jacobs, Honolulu, Hawaii

16. EDUCATION (DEGREE AND SPECIALIZATION)	17. CURRENT PROFESSIONAL REGISTRATION *(STATE AND DISCIPLINE)*
MS, Public Health, Biostatistics and Epidemiology BS, Biology	Project Management Professional (PMP): #2207071, Exp. 4/28/2027

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

Heather has diverse project experience in water, soil, and sediment quality and environmental impact analysis for federal, state, and commercial clients. She has a strong technical background in study design, field sample collection, emerging contaminants (e.g., perfluoroalkyl substances [PFAS]) research, as well as interpreting and reporting environmental and public health data. Her project leadership experience includes natural resource management, remedial investigation and risk assessment, and site characterization projects. Heather has also contributed to international projects in Ecuador as a volunteer for Engineers Without Borders and is now acting as Jacobs' Honolulu staff supervisor and assistant manager of projects.

Professional Organizations:

- Member, Hawaii Association of Environmental Professionals
- Member, Society of American Military Engineers (SAME)

19. RELEVANT PROJECTS

a.

(1) TITLE AND LOCATION (City and State)

Island Energy Services (IES) On-Call Support, Environmental Hazard Management Planning, Island Energy Services, HI

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2017	

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

☒ Check if project performed with current firm

Project Manager. Heather provided technical support for hazardous material management and waste management for active fuel transfer facilities on the islands of Hawaii, Maui, and Oahu. Tasks include preparation of Environmental Hazard Management Plans, waste characterization, regulatory coordination, and release reporting.

b.

(1) TITLE AND LOCATION (City and State)

Chevron Corporation Environmental Engineering Services, Chevron Environmental Management Corporation (EMC), Various Locations, HI

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2017	

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

☒ Check if project performed with current firm

Project Manager and Environmental Scientist. Heather was responsible for the management of staff, subcontractors, project control, procurement, and stakeholder interface for projects related to petroleum contaminated sites at Chevron Terminals throughout Hawaii. Tasks included waste characterization, regulatory coordination, release reporting, preparation of EHMPs, and training of staff at fuel storage terminals.

c.

(1) TITLE AND LOCATION (City and State)

Honolulu Rail Transit Project, On-Call Hazardous Materials Consulting, Honolulu Authority for Rapid Transportation (HART), Honolulu, HI

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2017	

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

☒ Check if project performed with current firm

Assistant Project Manager. Heather provided technical support for hazardous material management and waste management for the Honolulu Rail Transit Project. Tasks included waste characterization, regulatory coordination, release reporting, and the preparation of environmental hazard management plans for construction-related activities.

d.

(1) TITLE AND LOCATION (City and State)

Facility/Infrastructure and Environmental Architect Engineering Services, Air Force Civil Engineering Center, Honolulu, Hawaii and the Pacific

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2017	

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

☒ Check if project performed with current firm

Deputy Project Manager and Environmental Scientist. Heather was responsible for managing public involvement and logistical coordination to conduct post-remediation evaluations and prepare technical reports at contaminated sites in Hawaii and across the Pacific. Roles included staff management, scheduling, and cost control. She has also provided technical support during field efforts, including sampling of different media, including soil, groundwater, sediment, and waste, and design-installation of proper signage to prevent the local people from consuming contaminated fish on a remote Pacific Island.

	(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	Guam EPA Sustainable Materials Management Program, Guam EPA, Government of Guam	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
		2023	
e.	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	Task Lead. Heather is responsible for providing leadership to the team in support of activities associated with the Guam EPA Sustainable Materials Management Program, including a wide range of outreach and education activities for key stakeholders and the general public.		

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS SERVICE CATEGORY

(Complete one Section E for each key person.)

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE	
		a. TOTAL	b. WITH CURRENT FIRM
Jessica Burdick, PE, PMP	**Project Manager/Project Engineer**	27	27

15. FIRM NAME AND LOCATION (City and State)

Jacobs, Honolulu, Hawaii

16. EDUCATION (DEGREE AND SPECIALIZATION)	17. CURRENT PROFESSIONAL REGISTRATION *(STATE AND DISCIPLINE)*
MS, Civil and Environmental Engineering BS, Civil and Environmental Engineering	Professional Engineer (Civil): Hawaii #11915, Exp. 4/30/2026 Project Management Professional (PMP): #1418334

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

Located in Honolulu, Jessica has provided civil and environmental engineering, project management, and construction services for more than 140 DoD, municipal, and commercial projects in Hawaii. Her project experience includes planning document preparation; design and construction of water, wastewater, and electrical utilities; an aviation administration building; an explosives ordinance disposal (EOD) compound; a hazardous waste storage area and wash racks; and remedial action planning, design, and construction. She has managed contracts for programming, design-build, design, construction, permitting, and regulatory compliance projects.

19. RELEVANT PROJECTS

a.

(1) TITLE AND LOCATION (City and State)

Kalaupapa National Historical Park (NHP) Electrical System Rehabilitation, National Park Service (NPS), Kalawao County, Molokai, HI

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
Ongoing	

☒ Check if project performed with current firm

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

Project Manager/Civil Engineer. Jacobs provided A-E design services to rehabilitate an unsafe and failing electrical system for settlement at Kalaupapa National Historic Park (NHP). The team completed the predesign and schematic design, involving rehabilitation of the NHP's overhead distribution system, adding service to upgrade to a looped system, refurbishing or replacing existing overhead electric system poles, and evaluating replacement of a diesel-operated pump station with electrical power to the water system pump house. The team provided additional support services for the anticipated future preparation of an Environmental Assessment (EA) or Environmental Impact Statement (EIS), including completion of the Determination of Historic Eligibility of the Electrical System, an Archaeological Inventory Survey of the area of potential effect, and the preparation of the Jurisdictional Waters Report, including documentation of identified wetlands. Project cost is $576,000 (fee). Size: 1,250 acres, including 30,000 LF of overhead cabling and 7,800 LF of new underground cable.

b.

(1) TITLE AND LOCATION (City and State)

Honolulu Rail Transit Project, On-Call Hazardous Materials Consulting, Honolulu Authority for Rapid Transportation (HART), Honolulu, HI

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
Ongoing	

☒ Check if project performed with current firm

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

Task Lead. The program is a dynamic and challenging on-call hazardous materials consulting services contract in support of the construction of a 20-mile rail line. The scope of services includes broad support in the areas of hazardous materials planning (development of various plans), permitting reporting, identification (sampling, analysis, characterization, and profiling), handling (temporary stockpiling, waste inspections), transport, and disposal of contaminated media. Jessica is providing support to the environmental and planning services to ensure compliance with the state, city, and FTA for decision documents of the project. She helps review contractor-prepared NEPA and HRS Chapter 343 environmental documentation and supporting technical reports for any elements of the original 20-mile project. She also helps with environmental compliance in all areas to make sure that mitigation measures, project decision documents, permits, and all other commitments listed in the Final EIS/Record of Decision and Section 106 Programmatic Agreement are met.

c.

(1) TITLE AND LOCATION (City and State)

Facility/Infrastructure and Environmental Architect Engineering Services, Air Force Civil Engineering Center, Honolulu, HI and the Pacific

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2017	

☒ Check if project performed with current firm

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

Project Manager/Engineer. Jessica is responsible for successful planning, studies, and environmental compliance projects at remote island and overseas locations. Jessica conducted preliminary assessment/site inspections at dozens of sites. She conducted multiple remedial investigation and feasibility study (RI/FS) projects leading to site closure/decision documents. She performed all planning and permitting necessary for the Resource Conservation and Recovery Act (RCRA) investigations and corrective actions. Multiple locations include Hickam AFM, Hawaii; Johnston Atoll; and Kadena Air Base, Japan.

d.

(1) TITLE AND LOCATION (City and State)

BMP Improvements at Various Refuse Transfer Stations, County of Kauai, Hanalei, Hanapepe, Kapaa, and Lihue, Kauai, HI

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2021	

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

☒ Check if project performed with current firm

Project Manager and Civil Engineer. Jessica is responsible for managing the detailed design of improvements at four refuse transfer stations: Hanapepe, Kapaa, Lihue, and Hanapepe, Kauai. The engineering, planning, and environmental services provided include revised conceptual designs, geotechnical and environmental soil sampling, land survey, initial environmental investigation and reporting, final transfer station improvement designs and bid packages, construction permitting support, and services during construction.

e.

(1) TITLE AND LOCATION (City and State)

Groundwater Monitoring and Engineering Services at County of Maui Landfills, County of Maui, Maui and Lanai, HI

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
Ongoing	

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

☒ Check if project performed with current firm

Project Engineer/Assistant Project Manager. Jessica is responsible for managing the detailed design of improvements at four refuse transfer stations: Hanapepe, Kapaa, Lihue, and Hanapepe, Kauai. The engineering, planning, and environmental services provided include revised conceptual designs; geotechnical and environmental soil sampling; land survey; initial environmental investigation and reporting; final transfer station improvement designs and bid packages; construction permitting support; and services during construction.

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS SERVICE CATEGORY

(Complete one Section E for each key person.)

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE	
		a. TOTAL	b. WITH CURRENT FIRM
Sergio Cocchia	**Project Manager/Project Engineer**	25	24

15. FIRM NAME AND LOCATION (City and State)

Jacobs, Honolulu, Hawaii

16. EDUCATION (DEGREE AND SPECIALIZATION)	17. CURRENT PROFESSIONAL REGISTRATION *(STATE AND DISCIPLINE)*
MS, Civil and Environmental Engineering BS, Geology	Professional Geologist (Albo Geologi della Toscana, Italy) Licensed in Hawaii for the use of x-ray fluorescence (XRF) instrument

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

Sergio is a project manager, geologist, and environmental engineer in the Honolulu office. He has over 24 years of experience in managing simple to complex projects for state and local governments, private, and federal clients. He also has over 24 years of experience as a technical expert in the field of site characterization and remediation, including soil (discrete and multi-increment sampling), soil gas, groundwater, and surface water sampling, data evaluation, and remediation. With many years of experience applying traditional and more innovative technologies across the Pacific Region and Europe, he understands clients' different needs and has the capability and flexibility to manage and provide technical expertise on different, challenging projects. Sergio has extensive coordination and negotiation experience with the State of Hawaii Department of Health (HDOH) with respect to environmental site characterization and remediation.

Professional Organizations:

- Member, Hawaii Association of Environmental Professionals

19. RELEVANT PROJECTS

a.

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
Island Energy Services (IES) On-Call Support, Island Energy Services, HI	Ongoing	
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Task Manager. The project includes UST inspections at retail gas stations across the state to evaluate regulatory compliance and provide recommendations to remain in compliance with all applicable federal and state regulations. Sergio conducted field inspections using hand-held devices for rapid data-transfer and partially automated preparation of inspection reports for a large number of properties in a consistent, efficient, and repeatable manner.

b.

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
Honolulu Rail Transit Project, On-Call Hazardous Materials Consulting, Honolulu Authority for Rapid Transportation (HART), Honolulu, HI	Ongoing	
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Project Manager and Senior Geologist/Environmental Engineer. Technical work included soil characterization and remediation of many sites along the rail corridor contaminated with halogenated volatile organic compounds (VOCs), petroleum compounds, polynuclear aromatic hydrocarbons (PAHs), metals, and LNAPL. Typical characterization work included soil, groundwater, and soil gas sampling, applying traditional and innovative strategies and approaches to maximize efficiencies and optimize remediation volumes that resulted in significant cost savings. The project includes design of Phase I and Phase II Environmental Site Assessments (ESAs) for more than 100 properties along the City Center section of the HRTP. Sergio helped with coordination and development of geographic information system (GIS) tools and applications to manage the large amounts of data collected and reviewed for Phase I ESA. The application helped in automating and optimizing the report production process, which allowed us to conduct different steps of the Phase I and Phase II ESA processes in a relatively short and very efficient way. Sergio developed programmatic documents, including work plans and ESA reports, and investigation approaches that allowed him to complete work for many properties in an optimized and efficient way, resulting in significant savings in schedule and budget.

c.

(1) TITLE AND LOCATION (City and State)

BMP Improvements at Various Refuse Transfer Stations, County of Kauai, Hanalei, Hanapepe, Kapaa, and Lihue, Kauai, HI

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
Ongoing	

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

☒ Check if project performed with current firm

Project Manager and Geologist. Sergio is responsible for the team providing environmental investigation and facility design services for improvements at the four County of Kauai refuse transfer stations located at Hanalei, Hanapepe, Kapaa, and Lihue. Improvements are being implemented to improve the management of stormwater at each RTS. Environmental investigations were undertaken, along with land surveying and geotechnical investigations, in support of the planning and implementation of RTS improvements.

d.

(1) TITLE AND LOCATION (City and State)

Central Maui Landfill Groundwater Monitoring Services, County of Maui, Puunene, Hawaii

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
Ongoing	

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

☒ Check if project performed with current firm

Project Manager and Geologist. Sergio is responsible for team chartering, project planning, coordination of project teams, project control, management of change, and negotiation and communication with regulatory agencies. The work includes development of a revised Conceptual Site Model; conducting detection, verification, and assessment monitoring of groundwater; calculating upper prediction limits (UPLs); conducting groundwater modeling and tidal evaluation; preparation of periodic groundwater monitoring technical reports and letter notifications to the HDOH regarding analytical results; updating the Groundwater Monitoring Plan; assisting the County of Maui with regulatory negotiation and communication.

e.

(1) TITLE AND LOCATION (City and State)

Chevron Corporation Environmental Engineering Services, Chevron Environmental Management (EMC) Corporation, Various Locations, HI

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2017	

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

☒ Check if project performed with current firm

Project Manager and Geologist/Environmental Engineer. Sergio was responsible for preparing proposals, team chartering, project planning, procurement and management of subcontractors, coordination of field and office teams, project controls, management of change and risk, and management of project stakeholders, including regulatory agencies. He served as a geologist and technical lead who was responsible for the design and implementation of the operations and maintenance (O&M) work; soil and groundwater monitoring plans (including optimization); MNA programs; and geophysical investigations at several Chevron terminals in Hawaii. O&M work included LNAPL recovery systems' maintenance and optimization. Soil, groundwater, and MNA work included monitoring plan optimization using LNAPL studies, statistical evaluations, natural source zone depletion evaluations, and geophysical investigation evaluations.

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS SERVICE CATEGORY

(Complete one Section E for each key person.)

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE	
		a. TOTAL	b. WITH CURRENT FIRM
Milind Desai, PE	**Project Manager**	35	17

15. FIRM NAME AND LOCATION (City and State)

Jacobs, Irvine, California

16. EDUCATION (DEGREE AND SPECIALIZATION)	17. CURRENT PROFESSIONAL REGISTRATION *(STATE AND DISCIPLINE)*
MS, Civil Engineering BS, Civil Engineering	Professional Engineer (Civil): California (# 51437), Exp. 6/30/2024 Professional Engineer (Structural): California (#4868), Exp. 6/30/2024

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

Milind has 35 years of experience in the design and construction management of ports and marine facilities. His experience includes working in the design of marine, transportation, buildings, and industrial structures, situated both domestically and in Latin America. He has led design teams to provide bridge planning and design; viaduct design; railroad bridges; underground structures; retaining structures; and seismic design.

19. RELEVANT PROJECTS

a.

(1) TITLE AND LOCATION (City and State)

Fireboat Station No. 15 and 20 Improvements, Port of Long Beach, CA

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
Ongoing	Ongoing

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

☒ Check if project performed with current firm

Project Manager. Milind is providing project management oversight for the design and coastal engineering services for the replacement of Fire Boat Station 15 at Pier F and the dock upgrade at the existing Fireboat Station at Pier F and for programming, architectural, and engineering services for the new Fireboat Station No. 20 at Berth D50 and Temporary Fireboat Station No. 20 at Berth D34. The waterfront improvements include the wharf structure for the boathouse, boathouse enclosure and roof, mooring and fendering, floating docks, gangway, the foundations supporting the boat bay structure, the boat bay concrete deck, and berthing and mooring systems. The waterfront improvements include two floating docks.

b.

(1) TITLE AND LOCATION (City and State)

Trapac Automated Container Terminal Berths 142-147, Port of Los Angeles, CA

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2013	2013

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

☒ Check if project performed with current firm

Project Manager. Milind provided detailed engineering design for the construction of a high-density container terminal facility at POLA. The facility has the deployment of automated rail-mounted gantries (RMGs) and automated shuttle carriers for both the waterside and rail operations. The container yard area consists of 19 blocks of grounded containers operated by automated RMG. In addition, the facility includes an intermodal container transfer facility (ICTF) operated by two wide electric cantilevered rail-mounted gantry cranes with cantilevered booms and rotating spreaders. Design elements included storage block arrangements, automated RMG rail and foundations, pavement design, drainage, underground utilities including water and sewer, electrical power supply, and communications systems. The project required close coordination with the Port of Los Angeles (POLA), City of Los Angeles Public Works, Los Angeles Department of Water and Power (LADWP), Los Angeles Fire Department (LAFD), U.S. Coast Guard, and third-party utility firms.

c.

(1) TITLE AND LOCATION (City and State)

New Near Dock Railroad Intermodal Container Transfer Facility Terminal, Southern California International Gateway, Long Beach, CA

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2006	

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

☐ Check if project performed with current firm

Project Engineer. The project proposes to grade separate Sepulveda Boulevard and the existing San Pedro Branch Line extension bents. The project also proposes to grade separate Intermodal Container Transfer Facility (ICTF) South Lead tracks and the Pacific Coast Highway near Terminal Island Freeway.

d.

(1) TITLE AND LOCATION (City and State)

Norfolk International Terminals South Terminal Renovation, Norfolk, VA

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2002	2002

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

☐ Check if project performed with current firm

Project Engineer. The wharf is 4,000 ft long and 120 ft wide, supporting a 100-gauge crane. The wharf consists of a concrete deck supported on 36-inch prestressed concrete cylinder piles. The relieving platform is supported on 18-inch-square prestressed piles. The bulkhead consists of steel sheet piling. Construction staging was used to construct the wharf.

e.

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
Harbor Boulevard and Plaza Park Improvements, Port of Los Angeles, CA	2018	2018
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Structures Lead. Milind served as the structural lead during the design and construction of this project that transformed Sampson Way into a waterfront boulevard. The Harbor Boulevard Roadway Improvements and Plaza Park Project was a reconfiguration of a three-street intersection at Harbor Boulevard, 7th Street, and Sampson Way in San Pedro. The street realignment was in preparation for the planned San Pedro Public Market, which opened in 2020 at the current Ports O' Call Village site along the LA Waterfront. He was involved from the conceptual phase through construction, providing full design and construction support, including geotechnical investigation and design.

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS SERVICE CATEGORY

(Complete one Section E for each key person.)

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE	
		a. TOTAL	b. WITH CURRENT FIRM
Christopher Best, PE	**Ports Technology Leader and Senior Ports Leader**	29	23

15. FIRM NAME AND LOCATION (City and State)

Jacobs, Bellevue, Washington

16. EDUCATION (DEGREE AND SPECIALIZATION)	17. CURRENT PROFESSIONAL REGISTRATION *(STATE AND DISCIPLINE)*
BS, Civil Engineering	Registered Professional Engineer, Queensland #07394 Chartered Professional Engineer (CPEng), Australia APEC Engineer IntPE, Australia

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

Chris has 29 years of experience specializing in port and harbor infrastructure for projects located in Asia, North America, the Pacific, and South America. Throughout his career, he has delivered a wide range of marine infrastructure for various purposes. This extensive experience in the dynamic marine environment allows him to combine durable, flexible, and resilient infrastructure solutions that address both the current requirements and those of the changing climate.

19. RELEVANT PROJECTS

a.

(1) TITLE AND LOCATION (City and State)

Queen's Wharf Redevelopment, Queensland Government, Department of State Development, Brisbane, Australia

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2020	Ongoing

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

☒ Check if project performed with current firm

Maritime Lead. The development of Queens Wharf will reinvigorate an under-utilized part of the central business district of Brisbane and provide a boost to the Queensland construction industry. The project site is generally between the Brisbane River and George Street, and Alice and Queen Streets, and is approximately 22 acres in area. The site contains a high proportion of Brisbane's cultural and heritage buildings and has extensive frontage to the Brisbane River. The desired outcome of the project is the creation of a landmark development that places Brisbane on the world stage as an international destination. Chris has been serving as the lead maritime engineer on the project since Jacobs was commissioned for the support in 2016. This role includes reviewing provided information on the project, recommending conditions of development, providing advice and input to assist the project team with the reviews against the conditions, and providing specific advice on maritime issues as they arise.

b.

(1) TITLE AND LOCATION (City and State)

Riverwalk Remediations (x3), Brisbane City Council, Brisbane, Australia

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2019	Ongoing

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

☒ Check if project performed with current firm

Project Director (Mariners and City Reach), Project Manager (Catalina). These projects consist of rehabilitation work for existing Riverwalk sections to extend the life of the assets by 25 years. Typical solutions to repair similar concrete structures commonly include patch repairs and other corrosion protection repairs. Such work often has a limited practical life and results in significant ongoing maintenance. The projects have used fiber-reinforced plastic (FRP) solutions, which significantly increase the potential structure life and reduce the maintenance costs significantly. The FRP products are also easier for the construction team to handle, reducing the construction risks and plant requirements. As the project director (Mariners and City Reach) and project manager (Catalina), he led and assisted the team in adopting the innovative solution for the projects and worked with the client to achieve a superior outcome. He also undertook optioneering and design reviews for the Catalina project.

c.

(1) TITLE AND LOCATION (City and State)

Crude Oil and Products Terminals, Caltex Refineries, Brisbane, Australia

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2019	2019

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

☒ Check if project performed with current firm

Project/Technical Manager. Chris served as the project/technical manager for a program that included upgrading two marine facilities. This included projects from concept studies to detailed design and construction support. The scale of projects included minor maintenance and infrastructure upgrades to new structures such as berthing dolphins. Work also included new access walkways; replacement of timber decking; repairs to timber piles; replacement of mooring dolphins; raising of a gangway tower; slop tank supports; new berthing dolphins; demolition of parts of existing dolphins; and new fire monitors and supporting towers.

d.

(1) TITLE AND LOCATION (City and State)

Rio Tinto Projects, Rio Tinto Aluminum, Weipa, Australia

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2019	

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

☒ Check if project performed with current firm

Project director, Team Manager, and Technical Expert. Chris served in various roles on a number of projects for Rio Tinto at Weipa, including a large study project and the design and construction of the globally award-winning Amrun Wharf. On all of the Rio Tinto projects, he supported the team with technical guidance, from early concept studies to detailed design and construction. The Amrun expansion was a new mine area that required new ferry and barge facilities to access the remote area and a new export wharf. The remote tropical location had a number of challenges for the construction. Chris was directly involved in the technical solution to modularize the entire wharf structure that has achieved global award-winning success. The 13 wharf modules were constructed offsite and placed onsite in approximately three months, allowing the construction phase to avoid a tropical wet season and the risk of cyclones. The project was awarded the UK's Institution of Civil Engineers' Brunel Medal in 2019.

e.

(1) TITLE AND LOCATION (City and State)

New Greenfield Copper and Gold Mine Studies, Xstrata Frieda River, Frieda River, Papua New Guinea

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2014	

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

☒ Check if project performed with current firm

Maritime Area Lead and Design Manager. Over a number of years, Xstrata undertook studies into a new greenfield copper and gold mine in a remote part of Papua New Guinea. The project included consideration of the logistics chains for the import (largely mine consumables) and export of copper concentrate. Maritime elements include river and coastal port site selection, barging and transshipment, export port facilities, and general cargo, container, and fuel infrastructure. The team also evaluated and selected the structural form for wharf assets and ground improvement methods in locations with poor geotechnical conditions and high seismicity. Some of the studies and investigations managed included hydrographic surveys of over 250 miles of river and various coastal sites; navigability studies; geomorphology with a highly meandering and dynamic river; barge selection and specification; port infrastructure optioneering and definition; and discrete event simulation of the barging logistics chain. Chris developed study plans, including site and technical studies; scoped these studies to budgets; developed technical scopes; helped tender and negotiate external work; and managed and reported on the performance of packages of work. Technically, he guided and reviewed packages of work and wrote or reviewed all port and maritime-based reports. He was also responsible for identifying the best overall options for the project. He led a maritime team that included engineering and drafting resources, including specialists in areas including naval architecture, survey, geotechnical, pavements, and dredging. He also visited the site and region of the project and identified potential locations for infrastructure in a largely undeveloped area in Papua New Guinea.

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS SERVICE CATEGORY

(Complete one Section E for each key person.)

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE	
		a. TOTAL	b. WITH CURRENT FIRM
Luce Bassetti, PhD, GISP, ENV SP, WEDG	**Coastal Engineer and Community of Practice Lead**	27	19

15. FIRM NAME AND LOCATION (City and State)

Jacobs, Sacramento, California

16. EDUCATION (DEGREE AND SPECIALIZATION)	17. CURRENT PROFESSIONAL REGISTRATION *(STATE AND DISCIPLINE)*
PhD, Physical Oceanography MS, Physical Oceanography BS, Physical Oceanography	GIS Professional Certification #22250 ENVISION Certified #23212

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

Luce has 27 years of experience in the management and technical study of international maritime projects related to port and coastal engineering, including: oil and gas terminals, ports and marinas, shoreline protection, waterfront development, as well as feasibility and environmental impact assessment. Her experience includes met-ocean characterization, marina and harbor wave agitation modeling, coastal wave modeling, hurricane simulations and storm surge studies, coastal sediment transport studies, and wetland hydrodynamic studies. Luce specializes in analytical and numerical modeling of coastal and estuarine phenomena covering wind, tides, waves, storm surges, and their interactions with coastal structures, sediment transport, and shoreline morphology for coastal hazard assessment.

19. RELEVANT PROJECTS

a.

(1) TITLE AND LOCATION (City and State)

Hurricane Michael Relief, Tyndall AFB, FL

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
Ongoing	

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

☒ Check if project performed with current firm

Lead Coastal Modeler. Luce evaluated coastal flood risk and other natural hazards to identify vulnerabilities to base operations and mission readiness and informed the development of "Base of the Future" design guidelines to be used to design and construct base reconstruction after devastating impacts from Hurricane Michael in 2018. She evaluated coastal flood risk from waves, tidal, and surge and developed nature-based coastal defense strategies to mitigate these risks and protect the base operations and mission readiness from future flood risk associated with severe storms and hurricanes

b.

(1) TITLE AND LOCATION (City and State)

Charleston Beach Segment 4 Shoreline Repair, Naval Facility Engineering Command, Naval Base Kitsap, Bremerton, WA

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2020	

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

☒ Check if project performed with current firm

Lead Costal Modeler. Luce performed wave numerical modeling to evaluate the transport characteristics of the beach material for the four alternatives by modeling longshore transport to assess the potential for erosion or accretion along the beach associated with each alternative and annual maintenance needs in the form of nourishment of fish mix.

c.

(1) TITLE AND LOCATION (City and State)

Support for improving Disaster and Climate Resilience in Sustainable Tourism, Inter-American Development Bank, Belize

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2018	

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

☒ Check if project performed with current firm

Task Lead and Lead Coastal Modeler. Luce was responsible for hydrodynamic, wave, and sediment studies to support the design of coastal monitoring programs, data management infrastructure, and baseline study requirements. She identified, prioritized, and prepared specifications for demonstration risk resilient ICZM projects. Luce reviewed existing ICZM arrangements and developed recommendations for institutional strengthening and capacity building activities; and defined the loan package and developed socio-economic and environmental feasibility analyses.

e.

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
Howard Beach Flood Protection Study Queens, The Nature Conservancy, NY	2015	
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Senior Coastal Modeler. Luce was responsible for testing a combination of natural and hard infrastructure alternatives to provide engineering and cost benefit analysis to mitigate damage caused by storm events to protect coastal communities. As an integral part of this study, she developed scope of work to undertake a detailed hurricane-generated surge modeling for entire Jamaica Bay including Howard Beach. Four alternatives mitigation schemes were proposed and modeled to determine their ability to mitigate damage caused by a 1-in-10, 1-in-25, and 1-in-100-year storm. Two of these alternatives were further modeled for risk reduction capacity using sea level rise projections to determine how their protective capacities would change over the next 40 years. The flood levels and sea level rise projections were based on analyses conducted by the Federal Emergency Management Agency and the New York City Panel on Climate Change.

d.

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
East Bay Oster Habitat Restoration - Phase 1, The Nature Conservancy (TNC), Santa Rosa County, FL	2017	
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Lead Coastal Modeler. Luce was responsible for hydrodynamic, wave, sediment transport, and shoreline change studies of different alternatives for oyster reef developments in Pensacola Bay. Phase 1 of the project completed the monitoring, permitting, and design for an approximately 6.5-mile-long oyster reef habitat restoration along the east shore of East Bay in Santa Rosa County, FL. TNC has requested support from Jacobs to develop design drawings and specifications for construction and obtain the necessary permits before construction can begin. Construction is anticipated to occur two to five years after Phase 1 is completed.

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS SERVICE CATEGORY

(Complete one Section E for each key person.)

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE	
		a. TOTAL	b. WITH CURRENT FIRM
Claudio Fassardi	**Coastal Engineer**	39	16

15. FIRM NAME AND LOCATION (City and State)

Jacobs, San Diego, California

16. EDUCATION (DEGREE AND SPECIALIZATION)	17. CURRENT PROFESSIONAL REGISTRATION *(STATE AND DISCIPLINE)*
MS, Ocean Engineering Naval Architect, Marine and Mechanical Engineering	

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

Claudio is a coastal engineer with over 39 years of experience in project management, supervision, and execution of coastal engineering projects. He is specialized in planning, field investigations, analysis, and design to support the development of marine infrastructure and waterfront facilities and in the analysis and development of solutions to natural and anthropogenic impacts on the coastal environment. He has worked in a variety of areas, including site characterization; defining the basis for design; developing and analyzing alternatives; and designing a variety of facilities, including ports, marinas, and terminals, in locations as diverse as the Americas, the Middle East, and Asia. His areas of specialization include surveys and metocean measurements; physical and numerical modeling of coastal processes; design of marine and coastal protection structures; navigation; risk analysis; and sea level rise (SLR) impact assessments.

Claudio has a strong and broad technical background. He has lectured in seminars and has served on various expert groups. He was a member of FEMA's Working Group for the development of the new Guidelines for Coastal Flood Hazard Analysis and Mapping for the Pacific Coast of the United States and was the US Representative on PIANC's EnviCom Working Group 178 on Climate Change Adaptation for Maritime and Inland Port and Navigation Infrastructure. He has over 30 publications and presentations.

19. RELEVANT PROJECTS

	(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
a.	**San Francisco Waterfront Resiliency Study, Port of San Francisco, San Francisco, CA**	2020	
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	Coastal Engineering Lead. Claudio managed the development of an inventory of mitigation measures to reduce flood risk from coastal storms along approximately seven miles of waterfront property extending from Aquatic Park to the north to Heron's Head Park to the south in San Francisco. He identified structural and nature-based flood protection measures and ecological enhancements. From several perspectives, the inventories depicted, described, and analyzed levees, seawalls, bulkheads, flood walls, fixed and deployable barriers, gates, reefs, marshes, polders, beaches, ecological piles, etc.		
	(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
b.	**Pier F Fireboat Station 20, Port of Long Beach, CA**	Ongoing	
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	Coastal Engineering Lead. Claudio is responsible for the characterization of the site from a marine condition's perspective and for the layout of docking facilities for a new fireboat, as well as pilot, security, and other service boats. For the planned 50-year life of the facilities and for the determination of design elevations of piers, gangways, and decks, the team estimated the 100-year total water level, accounting for an extreme sea level rise (SLR) scenario due to climate change.		

c.

(1) TITLE AND LOCATION (City and State)

Point Loma Wastewater Treatment Plant Coastal Erosion Assessment, City of San Diego, San Diego, CA

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
Ongoing	

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

☒ Check if project performed with current firm

Coastal Engineering Lead. Claudio is responsible for the erosion assessment of an approximately 4,000-foot waterfront in current and future climate change scenarios. Consisting of cliffs, caves, and pocket beaches, the waterfront is eroded by the action of waves, varying water levels, wind, surface water runoff, and groundwater, affecting the critical plant's assets. Claudio managed and supervised a multidisciplinary team that performed collection and analysis of information; UAS (drone) surveys; site characterization (geology, metocean, and infrastructure); inspections and condition assessments (cliffs, coves, and caves; coastal protection structures, roads, sidewalks, stormwater drainage); identification of hazards; vulnerability and risk assessments; analysis of climate change scenarios; identification, analysis, and recommendation of short- and long-term mitigation measures for high-risk erosion areas and assets; cost estimation; and stakeholder outreach. The team developed a multi-year monitoring program consisting of wind, wave, and water level data collection; (UAS) drone surveys; topographic surveys; visual inspections; groundwater level monitoring; vibration monitoring due to waves, traffic, and seismic sources; geophysical investigations; and ground movement monitoring. Data collected during the multi-year monitoring program will be stored on a dedicated server, which will also provide a stakeholder-accessible dashboard for data visualization.

d.

(1) TITLE AND LOCATION (City and State)

Davenport Beach Wave Runup Study, Federal Highway Administration (FHWA) Central Lands, Davenport, CA

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2021	

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

☒ Check if project performed with current firm

Coastal Engineering Lead. Claudio was responsible for the assessment of wave runup and potential for erosion on an embankment along an approximately 800-foot-long beachfront in current and climate change scenarios. He planned, managed, and supervised a beach survey to define baseline conditions; performed wave runup modeling; and derived extreme total water levels (TWL). He analyzed climate change scenarios and defined sea level rise (SLR) projections for use in the assessment of potential embankment erosion due to wave runup. He collaborated with the FHWA in defining potential shoreline protection structure alternatives, selected the preferred alternative and provided technical assistance to the FHWA during public hearings to secure permits from the California Coastal Commission.

e.

(1) TITLE AND LOCATION (City and State)

Gateway Park Project Approval/Environmental Document (PA/ED), Bay Area Toll Authority (BATA), Caltrans (and six other agencies), Oakland, CA

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2016	

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

☒ Check if project performed with current firm

Coastal Engineering Lead. Claudio was responsible for all coastal engineering studies. He performed a sea level rise (SLR) impact assessment and analyzed shoreline treatment alternatives. For mid- and end of the century scenarios of sea level rise (SLR) due to climate change, performed hazard, vulnerability and risk analyses, adaption assessment and planning. He analyzed potential shoreline treatments, protection structures, and recreational facilities. These included natural vegetated slopes for tidal marsh habitat establishment and erosion protection, seawalls, revetments, beaches, piers, and a kayak launch. Claudio evaluated existing grade and steep, reinforced slope alternatives and identified species that could be established. He developed conceptual designs and estimated engineering and construction costs for all alternatives considered.

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS SERVICE CATEGORY

(Complete one Section E for each key person.)

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE	
		a. TOTAL	b. WITH CURRENT FIRM
Christopher Lawrence, PE	**Port Engineering and Program Management**	37	37

15. FIRM NAME AND LOCATION (City and State)

Jacobs, Philadelphia, Pennsylvania

16. EDUCATION (DEGREE AND SPECIALIZATION)	17. CURRENT PROFESSIONAL REGISTRATION *(STATE AND DISCIPLINE)*
MS, Civil Engineering BS, Civil Engineering	Professional Engineer: Pennsylvania #051939-E, Wisconsin #28160, New Jersey #24GE04228900

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

Chris has 37 years of experience in civil and environmental engineering, with emphasis on port planning, alternative development and feasibility evaluation and has extensive experience managing projects and on-call contracts for major U.S. Ports. His extensive experience is focused on the planning, project management, design, and construction management of container terminal projects around the world. Chris was directly involved in the development of the first three automated container terminals developed in the western hemisphere.

19. RELEVANT PROJECTS

a.

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
Reconstruction of the Elizabeth Marine Terminal, Maher Terminals, Elizabeth, NJ	2016	2016

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

☒ Check if project performed with current firm

Program Manager/Engineer-of-Record. This is a redevelopment project to consolidate several disparate parcels into, at 450 acres, one of the largest container terminals in the world. The project involved all elements of civil construction, including development of a topographic base map; a geotechnical investigation; pavement design to support extremely heavy, high repetition wheel loads; site regrading to facilitate container operations; extensive drainage reconfiguration and improvements; pavement design; and infrastructure support for the proposed new gate complex; design of high mast lighting; crane stow locations for existing cranes; wharf improvements to accommodate Super Post-Panamax cranes and berth deepening to 15.24 m; a fuel storage facility; new terminal substations and distribution systems; an enclosed equipment wash pad; and associated construction services.

b.

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
Paulsboro Marine Terminal, Port of Paulsboro, Paulsboro, NJ	Ongoing	Ongoing

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

☒ Check if project performed with current firm

Project Manager. Christopher was responsible for the design and construction supervision services for the development of the $300 million Paulsboro Marine Terminal, being developed as a multi-purpose breakbulk facility on the Delaware River. The PMT was the first new terminal developed on the Delaware River in over five decades, allowing resiliency measures to be incorporated into the design. He developed innovative solutions to allow permitting and authorization of the project and directed all of the design elements for dredging, wetlands mitigation, innovative stormwater treatment solutions, a pile-supported wharf structure, site development, and terminal buildings. Christopher led planning efforts associated with multiple iterations of the current port layout to secure permits as well as to accommodate remediation efforts by BP on the western portion of the site. He subsequently provided numerous variations to the initial concept to support tenant discussion, including bulk, containers, and produce. He coordinated with SJPC and Norfolk Southern for the fast-track planning, design, and implementation of the steel yard.

c.

(1) TITLE AND LOCATION (City and State)

Port Newark Container Terminal Long Term Improvement Plan, NJ

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2017	2017

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

☒ Check if project performed with current firm

Civil Engineer/Project Manager. Chris led the civil design team in the expansion of the container yard, construction of maintenance facilities, Berths 53 and 55 deepening and wharf reinforcement, including the installation of a new landside crane girder, replacement of the waterside crane girder, and the installation of a king-pile system to retain the embankment and the new girders. He conducted a field study to assess existing structural conditions for buildings, utilities, and pavement. He prepared construction drawings and specifications for general site design, foundation and pavement design, and utilities design; he adopted load combinations in UFC 4-152-01 as the basis of design. The project received a Very Good PPQ rating. Size: 2M TEUs per year. Cost: $200 million (construction).

d.

(1) TITLE AND LOCATION (City and State)

Marine Container Terminal, APM Terminals, Portsmouth, VA

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
Ongoing	

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

☒ Check if project performed with current firm

Engineer. The project includes the design of pavement for a major new container terminal. The flexible pavement was designed using a linear elastic program with asphaltic properties developed using high modulus of elasticity pavements (Super Pave) to prevent rutting. Rigid pavement design was performed using a finite element program simulating a beam on an elastic foundation and high repetitions. This analysis was used to model the fatigue of the concrete at the joints and the stresses on the concrete at both the edge stress and center stress. This analysis was used to create a section of concrete pavement and minimize long term maintenance issues due to fatigue, durability, and fouling.

e.

(1) TITLE AND LOCATION (City and State)

Moin Container Terminal Development, APM Terminals, Costa Rica

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2022	2019

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

☒ Check if project performed with current firm

Project Manager. Chris was responsible for the planning, design, and construction of a new $1 billion dedicated container terminal on the Caribbean Coast of Costa Rica in what was originally unsheltered, open water. He led the extensive field investigation campaign, hydraulic modelling for evaluation of protection structures and ship motion, and other basic design studies. He served as the Engineer-of-Record responsible for the design of all terminal components, including dredging, land reclamation, shore protection, civil works, marine structures, and all vertical structures in this highly seismic area. He collaborated with the client in iterating the master operational plan for the terminal, including analysis and layout of automation technologies and the use of wide-span cranes for management of empty containers.

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

(Complete one Section E for each key person.)

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE	
		a. TOTAL	b. WITH CURRENT FIRM
Douglas Playter, PE	**Marine/Civil Engineer, Cruise and Ferry Facilities**	39	30

15. FIRM NAME AND LOCATION (City and State)

Jacobs, Bellevue, Washington

16. EDUCATION (DEGREE AND SPECIALIZATION)	17. CURRENT PROFESSIONAL REGISTRATION *(STATE AND DISCIPLINE)*
MS, Civil Engineering BS, Civil Engineering	Professional Engineer: Washington #28609, Alaska #10667

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

Douglas has experience with marine structure design, marine structure permitting, and construction management. He has completed marine structure design and permitting at 36 ferry, port, and dock facilities in the U.S., primarily in Puget Sound. He has led and completed permitting and marine structure design at over 25 ferry terminals in the U.S. Douglas has also designed a new, environmentally friendly, energy-dissipating fender system that is now used by Washington State Ferries. Patent 5927903 to Jacobs was issued for his design. The fender design uses steel pipe piles developed as a cantilever with an energy-absorbing facing material made of recycled truck tires. This design proved to be significantly superior for the environment over the creosote timber dolphin at no additional cost.

19. RELEVANT PROJECTS

a.

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
On-Call Design and Environmental Services, Washington State Ferries, Seattle, WA	2022	
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Structural Project Manager. Jacobs is responsible for the replacement of the Seattle Ferry Terminal. This includes the existing timber pier and overhead terminal building, built on a separate steel and concrete pile system. Work also includes the replacement of one passenger overhead loading bridge and one vehicle transfer span. Work on this project will be phased to keep the facility open during construction to serve the nine million passengers that use the facility annually.

b.

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
Hawaii Superferry, Hawaii Superferry, Honolulu, HI	2007	2008
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Project Manager and Engineer. Douglas served as project engineer and managed the terminal facilities on behalf of Hawaii Superferry for the design and installation of the terminal facilities. Significant assignments included terminal design for vehicle holding, passenger loading processes, docking configurations including fendering, coordination with vessel designers, and turn-around time analysis.

c.

(1) TITLE AND LOCATION (City and State)

Port of Anchorage (POA) Intermodal Expansion Project Suitability Study, USACE Alaska District, Anchorage, AK

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2013	

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

☒ Check if project performed with current firm

Structural Engineer. Douglas completed an independent, in-depth technical analysis for the USACE to assess the Open Cell Sheet Pile (OCSP) seawall at the north end of the ongoing POA Intermodal Expansion Project. He provided geotechnical, structural, civil, coastal, corrosion, and construction engineering analysis and modeling to assess the suitability of OCSP for the wharf and berthing areas of the POA's planned intermodal expansion. The purpose of the suitability study was to identify any major deficiencies in the design and/or construction approaches and whether a change in design is warranted. Detailed analyses included seismic loadings with an emphasis on seismic design criteria; hydrological conditions, with an emphasis on sedimentation and scour processes and also ice forces on the bulkhead and moored ships; internal and external stabilities of the OCSP system; soil structure interaction of the constructed OCSP system and numerical modeling to provide estimated performance of the OCSP system; constructability of the designed OCSP bulkhead considering construction means and methods, the contractor selection process, and construction inspection procedures; and life-cycle costs of the OCSP with regard to long-term performance and construction inspection procedures.

d.

(1) TITLE AND LOCATION (City and State)

Nanaimo Cruise Terminal Design and Construction Administration, Nanaimo Port Authority, Nanaimo, British Columbia, Canada

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2010	2011

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

☒ Check if project performed with current firm

Design Manager. Douglas was responsible for the newest cruise terminal on the West Coast of Canada. Responsible for overall planning and design of this facility from concept through construction. Unique features of this facility included a 400-foot two-lane pier, a 130-foot two-lane transfer bridge, a 50-foot by 350-foot floating berth, four mooring dolphins, and three berthing dolphins. Design also included pier electrical and fire protection. This fast-track project was designed in nine months and constructed in nine months.

e.

(1) TITLE AND LOCATION (City and State)

BC Ferries Modifications, BC Ministry of Transportation and Infrastructure (BC MoT), Victoria, British Columbia, Canada

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2009	

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

☒ Check if project performed with current firm

Senior Reviewer. Douglas provided due diligence review and oversight of proposed BC Ferries vessel, terminal, and service modifications on behalf of BC MoT. He was reporting to the Director of the Marine Branch, reviewed the terminal and vessel modification projects for terminals on the Discovery Coast route, (Bella Bella, Denny Island, Klemtu, Ocean Falls, and Bella Coola). All terminals on this route required extensive modifications when the Queen of the North was lost and then replaced by square-sterned vessels.

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

(Complete one Section E for each key person.)

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE	
		a. TOTAL	b. WITH CURRENT FIRM
Donald Anderson, PhD, PE	**Geotechnical Engineer**	51	39

15. FIRM NAME AND LOCATION (City and State)

Jacobs, Bellevue, Washington

16. EDUCATION (DEGREE AND SPECIALIZATION)	17. CURRENT PROFESSIONAL REGISTRATION *(STATE AND DISCIPLINE)*
PhD, Geotechnical Engineering MS, Civil Engineering BS, Civil Engineering	Professional Engineer (Civil): Washington #27568, California #27660 Geotechnical Engineer: California #GE94

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

Don's project experience on land use and natural resource projects has involved geotechnical evaluations for landslide risk and stabilization, stability of cut and fill slopes, and infrastructure development such as evaluation of design requirements for bridge approach fills, deep foundations, spread footings, and retaining walls. This work has been conducted on projects located in Hawaii, Alaska, Washington, Oregon, Idaho, Montana, and California. The projects have included the characterization of geotechnical conditions, evaluation of geologic hazards, and determination of seismic-induced ground motions and the effects of these motions on the response of the soil and soil-structure systems located throughout Hawaii. Most of these projects have also included the preparation of details for design drawings and special provisions for contract specifications.

19. RELEVANT PROJECTS

a.

(1) TITLE AND LOCATION (City and State)

Honolulu Rail Transit Project, General Engineering Consultant Support (GEC III), Honolulu Authority for Rapid Transportation (HART), Honolulu, HI

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
Ongoing	Ongoing

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

☒ Check if project performed with current firm

General Engineering Consultant Support. Don serves as senior geotechnical engineer and consultant, providing oversight during design and construction of the Honolulu rapid transit project. This project involves the design and construction of drilled shaft foundations for new elevated guideways and stations. Don's role includes working on behalf of HART to confirm that work being done by design-build and design-bid-build teams meets requirements relative to explorations, foundation design and testing, and construction. The review has covered methods of characterization of soils and rock along an alignment, procedures used to estimate drilled shaft capacities from O-cell testing of drilled shafts, and the acceptability of contractor means and methods for construction. participated in meetings with HART, the design-build contractor, and the project team.

b.

(1) TITLE AND LOCATION (City and State)

San Francisco Seawall Resiliency Program, Port of San Francisco, San Francisco, CA

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2019	Ongoing

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

☒ Check if project performed with current firm

Senior Geotechnical Engineer/Consultant. The scope of the project includes a seismic risk assessment of the San Francisco seawall. The project involves identifying seismic risk to the existing seawall, determining appropriate mitigation measures, and assisting the Port of San Francisco to implement a mitigation program. The work included participation in the review of site characterizations and soil-structure interaction studies being used to identify current vulnerabilities to seismic loading.

c.

(1) TITLE AND LOCATION (City and State)

On-Call Design and Environmental Services, Washington State Ferries, Seattle, WA

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
Ongoing	Ongoing

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

☒ Check if project performed with current firm

Senior Geotechnical Engineer/Consultant. This project involves rehabilitation and replacement studies for Colman Dock, Bainbridge Island, Bremerton, Port Townsend, and Coupeville. Projects ranged from replacement of timber piles to seismic analyses of liquefaction, including effects of ground instability below terminal. Axial and lateral capacity of various pile types have been developed, including large-diameter bored piles, as well as driven precast concrete, concrete filled pipe, and pipe piles. Pile drivability studies were also conducted to evaluate hammer sizes.

d.

(1) TITLE AND LOCATION (City and State)

Hawaii Bridge Program, Federal Highway Administration (FHWA), Central Federal Lands Highway Division, Various Locations, HI

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2017	

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

☒ Check if project performed with current firm

Senior Geotechnical Engineer and Consultant. The scope of the project is to design seven bridges located in Hawaii. The work involved reviewing geotechnical data and recommending reports prepared by the subconsultant. Projects included Hanapepe River Bridge, Kapaa Stream Bridge, Ninole Bridge, and Bridge 7E in Kauai; as well as Halona Stream Bridge, Kawela Bridge, and Roosevelt Bridge in Oahu. The review covered appropriate foundation types, foundation capacities for axial and lateral loads, stream/riverbank stability, retaining wall pressures, seismic ground shaking level, seismic hazards, and construction recommendations. Don participated in review meetings with CFLHD engineers as well as the project team to optimize the design of each bridge.

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
Laaloa Avenue Extension Project, County of Hawaii, Kailua-Kona, HI	2015	2015
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☒ Check if project performed with current firm	

e. **Senior Geotechnical Engineer and Consultant**. The project includes the design of multiple retaining walls for an 1,800-foot-long roadway extension to Kuakini Highway and 2,800-foot-long roadway widening and improvements. Don evaluated the results of geotechnical exploration and design requirements to identify retaining wall load requirements. He coordinated with the local geotechnical consultant regarding construction approaches and developed specifications for wall construction.

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS SERVICE CATEGORY

(Complete one Section E for each key person.)

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE	
		a. TOTAL	b. WITH CURRENT FIRM
Nadesh Nadeswaran, PE, GE	Geotechnical Engineer	40	5

15. FIRM NAME AND LOCATION (City and State)

Jacobs, Irvine, California

16. EDUCATION (DEGREE AND SPECIALIZATION)	17. CURRENT PROFESSIONAL REGISTRATION *(STATE AND DISCIPLINE)*
MPhil, Soil Mechanics Graduate Studies, Geotechnical Engineering BS, Civil Engineering	Professional Engineer (Civil): California #51057 Geotechnical Engineer: California #2390

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

Nadesh has more than 40 years of experience working as a member to principal level geotechnical engineers on over 400 projects. He has been part of or managed small to mega geotechnical engineering projects. He has extensive experience in water, transportation, building, port, and low impact development (LID) projects, and have coordinated with multiple jurisdictions including, U.S. Army Corps of Engineers (USACE), Caltrans, NACFAC, Water and Power Agencies, and multiple local Departments of Public Works.

19. RELEVANT PROJECTS

a.

(1) TITLE AND LOCATION (City and State): **SR-509 New Expressway, Washington Department of Transportation (WDOT), Seattle, WA**

(2) YEAR COMPLETED — PROFESSIONAL SERVICES: Ongoing; CONSTRUCTION (if applicable):

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE — ☒ Check if project performed with current firm

Geotechnical Engineer. Nadesh serves as geotechnical engineer for analyses and report preparation for proposed walls. The new expressway will provide a critical north-south corridor alternative to I-5 through Seattle and South Kings County, Washington. The project included filling and cutting walls. The fill walls consisted of structural earth walls and the cut walls consisted of soil nail walls.

b.

(1) TITLE AND LOCATION (City and State): **Los Angeles River Path, Los Angeles Metropolitan Authority, Los Angeles County, CA**

(2) YEAR COMPLETED — PROFESSIONAL SERVICES: 2022; CONSTRUCTION (if applicable):

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE — ☒ Check if project performed with current firm

Geotechnical Quality Control Reviewer. Nadesh provided quality control review of geotechnical reports. The LA River Path project entails designing and constructing a shared-use path facility along an 8-mile stretch of the Los Angeles River, closing the longest remaining continuous gap in the Los Angeles River Bike Path. The project is being performed in phases, and the completed phases are the environmental documentation and preliminary design.

c.

(1) TITLE AND LOCATION (City and State): **Ballona Creek Watershed Multi-Benefit Stormwater Project, Los Angeles County Public Works, CA**

(2) YEAR COMPLETED — PROFESSIONAL SERVICES: 2021; CONSTRUCTION (if applicable):

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE — ☒ Check if project performed with current firm

Geotechnical Quality Control Reviewer. Nadesh provided quality control for the interpretation of geotechnical test results, analyses, and report preparation. The project consisted of performing geotechnical investigations and percolation tests to support the Ballona Creek Watershed Multi-Benefit Stormwater project to determine the cost and benefit of employing distributed green stormwater infrastructure BMPs within each of three watershed study areas to provide water quality treatment as well as other benefits in Los Angeles County. Subsurface investigation and percolation tests were performed to evaluate both shallow and deep infiltration; surface infiltration facilities such as bioretention swales; and deep infiltration using dry wells.

d.

(1) TITLE AND LOCATION (City and State): **North San Fernando Valley Bus Rapid Transit (NSFV BRT), Los Angeles Metropolitan Authority, Los Angeles County, CA**

(2) YEAR COMPLETED — PROFESSIONAL SERVICES: 2021; CONSTRUCTION (if applicable):

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE — ☒ Check if project performed with current firm

Geotechnical Quality Control Reviewer. Nadesh provided quality control review of geotechnical reports. The project consisted of evaluating three alternatives and preparing documents for environmental review for the NSFV BRT Corridor project. The evaluation focused on the potential impacts of subsurface geologic, seismic, and groundwater conditions identified along the alternative alignments.

	(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	Rail to Rail Active Transportation Corridor, Advanced Design Phase 2, Los Angeles Metropolitan Authority, Los Angeles County, CA	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
		2020	
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☐ Check if project performed with current firm	
e.	**Geotechnical Manager.** The project consisted of the design of an approximately 5-mile-long corridor with a Class I bike path and associated landscaping. On-site percolation was used in accordance with Low Impact Development (LID) guidelines. Soil samples were collected for agronomy testing; the test results were used for landscape design. Multiple infiltration tests were performed to evaluate percolation feasibility.		

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS SERVICE CATEGORY

(Complete one Section E for each key person.)

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE	
		a. TOTAL	b. WITH CURRENT FIRM
Mark Johnson, PE	**Structural Engineer**	38	35

15. FIRM NAME AND LOCATION (City and State)

Jacobs, Bellevue, Washington

16. EDUCATION (DEGREE AND SPECIALIZATION)	17. CURRENT PROFESSIONAL REGISTRATION *(STATE AND DISCIPLINE)*
MS, Civil Engineering BS, Civil Engineering	Professional Engineer: Washington #0029071, Texas #92352, Montana #16727

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

Mark is a structural engineer and project manager with 38 years of experience serving both public and private sector clients as a structural engineer with extensive experience designing bridges, highways, and marine structures. His project experience includes structural analysis and design, project management, structural alternative studies and life cycle analyses, construction document preparation, and construction inspection and administration.

19. RELEVANT PROJECTS

a.

(1) TITLE AND LOCATION (City and State)

On-Call Structural Design Services, City of Seattle, Seattle Department of Transportation (SDOT), Seattle, WA

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2022	

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

☒ Check if project performed with current firm

Project Manager. This is a current four-year on-call contract for SDOT. Mark has led several tasks, including construction engineering for a multi-span curved prestressed girder bridge that included technical review and oversight of the contractor's redesign on a compressed schedule; construction engineering for the Spokane Street Viaduct widening for independent evaluation and design of repair options for drilled shafts; peer review of the NE 45th Street Viaduct project to validate the approach to rehabilitate and replace the timber portion of the bridge; structural review of final design plans, specifications, and contract documents of the Ballard Bridge Seismic Retrofit project; and conceptual design of a lid structure across I-5 in downtown Seattle.

b.

(1) TITLE AND LOCATION (City and State)

Laaloa Avenue Extension Project, County of Hawaii, Kailua-Kona, HI

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2015	2015

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

☒ Check if project performed with current firm

Structural Task Lead. The project scope includes an upgrade of the roadway, a roadway extension, and a new intersection with the State Highway. Mark prepared construction plans, specifications, and estimates to perform the roadway design and civil engineering work elements for the upgrades to the existing Laaloa Avenue corridor, the extension of the roadway, and the new signalized intersection at Kuakini Highway. The corridor includes bicycle and pedestrian facilities as well as traffic calming features.

c.

(1) TITLE AND LOCATION (City and State)

Interstate Route H-1 (EB) Widening, Ola Lane Overpass to Likelike Highway Off-Ramp, Hawaii Department of Transportation (HDOT) Honolulu, HI

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2011	

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

☒ Check if project performed with current firm

Structural Task Lead. The project scope includes an upgrade of the roadway, a roadway extension and a new intersection with the State Highway. Mark prepared construction plans, specifications, and estimates to perform the roadway design and civil engineering work elements for the upgrades to the existing Laaloa Avenue corridor, the extension of the roadway, and the new signalized intersection at Kuakini Highway. The corridor includes bicycle and pedestrian facilities as well as traffic calming features.

d.

(1) TITLE AND LOCATION (City and State)

Seattle Ferry Terminal at Colman Dock, Washington State Ferries, WA

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2016	

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

☒ Check if project performed with current firm

Structures Task Lead. This is a ferry terminal preservation project that includes replacement of the trestle and terminal building and replacement of ferry slip structures. Mark led preliminary design of the new concrete trestle, foundations, and terminal building, as well as the development of a construction phasing approach that allows the terminal to be reconstructed while minimizing impacts to terminal operations. He led the investigation of several foundation alternatives to resist seismic demands in poor, liquefiable soils that are susceptible to lateral spreading.

e.

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
Sullivan Road Bridge Replacement, City of Spokane Valley, WA	2016	2010
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Lead Bridge Engineer. The project involved the design of the replacement of an existing 6-span, 440-foot-long concrete T-beam bridge over the Spokane River with a four-span prestressed concrete girder bridge. Mark led the evaluation of several construction phasing concepts to minimize traffic impacts during construction, including widening an adjacent bridge that was not being replaced. The project included several retaining walls and aesthetic enhancements, including overlooks on the bridge and pedestrian lighting.

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS SERVICE CATEGORY

(Complete one Section E for each key person.)

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE	
		a. TOTAL	b. WITH CURRENT FIRM
Charlie Hetland, EIT, ENV SP	**Transportation Engineer**	12	12

15. FIRM NAME AND LOCATION (City and State)

Jacobs, Los Angeles, California

16. EDUCATION (DEGREE AND SPECIALIZATION)	17. CURRENT PROFESSIONAL REGISTRATION *(STATE AND DISCIPLINE)*
BS, Civil Engineering	Engineer-in-Training (EIT): California #148512

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

Charlie has 12 years of engineering experience on various transportation projects. His knowledge includes transit design, roadway/highway design, transit safety, stage construction, and cost estimating. He was heavily involved with the alternative analysis, conceptual engineering, and environmental clearance for several projects. He has also worked on various phases of roadway/highway and transit projects and understands local cities, counties, and states' design standards and manuals.

19. RELEVANT PROJECTS

a.

(1) TITLE AND LOCATION (City and State)

On-Call Engineering Services for Marine Oil Terminal and Engineering Maintenance Standards (MOTEMS) Program, Port of Los Angeles, CA

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
Ongoing	Ongoing

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

☒ Check if project performed with current firm

Staff Engineer. Charlie is assisting with the condition assessment of the facilities and the review of regulations and compliance issues. validating the transportation portions of the conceptual design and preparing PS&E. Terminals do not meet the Marine Oil Terminal Engineering and Maintenance Standards (MOTEMS).

b.

(1) TITLE AND LOCATION (City and State)

Harbor Boulevard and Plaza Park Improvements, Port of Los Angeles, CA

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2018	2018

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

☒ Check if project performed with current firm

Staff Engineer. Charlie was responsible for the roadway design to expand and realign Sampson Way and transform it into a waterfront boulevard. The Harbor Boulevard Roadway Improvements and Plaza Park Project are a reconfiguration of a three-street intersection at Harbor Boulevard, 7th Street, and Sampson Way in San Pedro. The street realignment was made in preparation for the planned San Pedro Public Market, slated to open in 2020 at the current Ports O' Call Village site along the LA Waterfront. The new design provides a safer and more seamless interface, dividing traffic between Sampson Way and Harbor Boulevard without the 90-degree angle turns motorists previously made.

c.

(1) TITLE AND LOCATION (City and State)

SR-710 North Study, Los Angeles Metropolitan Transportation Authority, Los Angeles, CA

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2017	

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

☒ Check if project performed with current firm

Staff Engineer. Charlie wass responsible for the preliminary design of the SR-710 North BRT alternative on behalf of Metro. The team developed a BRT operational performance tool to measure run times and model future travel times for the BRT alternative. He worked on developing the preliminary geometric design of the BRT, evaluating right-of-way impacts, evaluating parking impacts, preparing a project report, and performing field survey data collection.

d.

(1) TITLE AND LOCATION (City and State)

SR-126/Commerce Center Interchange Improvement, Newhall Land, Valencia, CA

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2015	2017

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

☒ Check if project performed with current firm

Staff Engineer. Charlie assisted in the preparation of traffic control plans and traffic handling plans to be approved by the County. He developed detour routes for local buses to safely pick up passengers in the construction area.

e.

(1) TITLE AND LOCATION (City and State)

SR-101/23 Interchange Improvement, City of Thousand Oaks, Thousand Oaks, CA

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2014	2017

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

☒ Check if project performed with current firm

Staff Engineer. Charlie assisted in the preparation of traffic control plans and traffic handling plans to be approved by the County. He developed detour routes for local buses to safely pick up passengers in the construction area.

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

(Complete one Section E for each key person.)

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE	
		a. TOTAL	b. WITH CURRENT FIRM
Miya Akiba	**Planner**	18	7

15. FIRM NAME AND LOCATION (City and State)

Jacobs, Honolulu, Hawaii

16. EDUCATION (DEGREE AND SPECIALIZATION)	17. CURRENT PROFESSIONAL REGISTRATION *(STATE AND DISCIPLINE)*
BS, Global Environmental Science	

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

Miya is an environmental planner/project manager with 15 years of experience in environmental planning/permitting, site characterization, remedial investigations, feasibility studies, and long-term monitoring for a variety of projects throughout Hawaii and the Pacific region. She has prepared environmental assessments (EAs) and land use permits for multiple state and federal infrastructure projects, conducted field investigations and data analyses, prepared technical reports, and prepared proposals for environmental investigation and planning projects for state and federal clients.

19. RELEVANT PROJECTS

a.

(1) TITLE AND LOCATION (City and State): **Hawaii Statewide Transportation Plan (HSTP), Hawaii Department of Transportation (HDOT), Statewide, HI**

(2) YEAR COMPLETED — PROFESSIONAL SERVICES: 2024 | CONSTRUCTION (if applicable):

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE — ☒ Check if project performed with current firm

Transportation Planner. This $2 million project involves collaborating with HDOT to update the HSTP, which helps to guide the direction of Hawaii's transportation system for the next 25 years. The HSTP establishes the framework to plan Hawaii's transportation system and provides guidance to system level and master plans of the three primary modes of transportation (air, water, land).

b.

(1) TITLE AND LOCATION (City and State): **Honolulu Rail Transit Project, Honolulu Authority for Rapid Transportation (HART), Honolulu, HI**

(2) YEAR COMPLETED — PROFESSIONAL SERVICES: 2018 | CONSTRUCTION (if applicable): 2018

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE — ☒ Check if project performed with current firm

Environmental Planner. Jacobs is performing GEC support for the Honolulu Rail Transit Project, a 20-mile elevated rail line with 21 stations, which features modern steel-wheel-on-steel-rail technology, fully automated (driverless) rail vehicles with capacity to serve an estimated ridership of more than 115,000 weekday rider trips by year 2030. This effort includes project scheduling, coordination and reporting, cost estimating and project control, interface management, environmental and planning, travel demand forecasting, bus/rail integration, station access, and modal interface, land use planning, transit-oriented development (TOD), traffic analysis, parking study, archaeological and cultural resources, and design management services, including management of final design contracts, review of final design submittals, system-wide signage, landscape, signal, and ITS operational support.

c.

(1) TITLE AND LOCATION (City and State): **Kamehameha Highway Wastewater Pump Station Force Main System Replacement, City and County of Honolulu, Honolulu, HI**

(2) YEAR COMPLETED — PROFESSIONAL SERVICES: 2021 | CONSTRUCTION (if applicable): 2021

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE — ☒ Check if project performed with current firm

Environmental Planner. Responsible for preparation of permit applications in support of construction activities for installation of a new force main using horizontal directional drilling (HDD). Prepared permit applications for a Special Management Area Permit (SMP), Conservation District Use Permit (CDUP), USACE Nationwide Permit under Section 10 Rivers and Harbors Act, and Clean Water Act (CWA) Section 401 Water Quality Certification (WQC).

d.

(1) TITLE AND LOCATION (City and State): **Statewide Freight Plan, Hawaii Department of Transportation (HDOT), Statewide, HI**

(2) YEAR COMPLETED — PROFESSIONAL SERVICES: 2020 | CONSTRUCTION (if applicable):

(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE — ☒ Check if project performed with current firm

Environmental Planner. Assisted with research and data collection and inventory. Attended stakeholder meetings held to gather input on goals and objectives as well as freight issues and opportunities to be included in the plan. Assisted with meeting preparation, summarizing project needs identified during stakeholder meetings, classifying project needs, and drafting the plan. This $400K project involved developing an intermodal statewide plan for freight movement. The plan included the development of a vision for freight in Hawaii that meets the state's broader transportation vision and 10 national freight policy goals.

	(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
	Kihei Subarea Plan, County of Maui, Kihei, HI	2020	
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☒ Check if project performed with current firm	
e.	**Transportation Planner.** Worked with County of Maui to develop transportation solutions for the Kihei area of south Maui. The roadway system involves local/county roadways and two major arterials that run parallel to one another on either side of the subarea that serve as critical lifelines into and out of the community. The study assessed multimodal infrastructure, transit services and facilities, and safety needs and deficiencies. Evaluation criteria established with public and agency stakeholders were used to categorize and prioritize potential solutions.		

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

(Complete one Section E for each key person.)

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE	
		a. TOTAL	b. WITH CURRENT FIRM
Tessa Schuckert	**Planner**	6	<1

15. FIRM NAME AND LOCATION (City and State)

Jacobs, Honolulu, Hawaii

16. EDUCATION (DEGREE AND SPECIALIZATION)	17. CURRENT PROFESSIONAL REGISTRATION *(STATE AND DISCIPLINE)*
BA, Political Science	

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

Tessa has six years of experience in program delivery for disaster recovery operations. She is skilled in grant management, interagency coordination, long-term community recovery planning, and policy analysis. Her expertise includes client relations, needs assessments, project development, and public involvement programs. She has also managed quality assurance, compliance reviews, and stakeholder coordination among federal, state, and local counterparts. Adept in grant development and policy application, Tessa ensures effective implementation of federal grant programs to support community initiatives. Tessa's work focuses on delivering strategic, compliant, and community-focused planning solutions.

19. RELEVANT PROJECTS

a.

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
Kona Open Space Network Plan, Kona, HI	Ongoing	
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Planner. Conducted field site visits and supported project scoping for a community-driven open space network plan in Kona. Reviewed existing plans, background literature, and community priorities to inform planning context. Contributed to drafting project report sections, synthesizing local planning frameworks and site-specific insights. Providing coordination support for upcoming community engagement events, including materials development and internal planning discussions.

b.

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
Maui Wildfires Long-Term Recovery Planning, Maui, HI	2025	
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☐ Check if project performed with current firm	

Project Manager. Tessa provided tailored, directed support to County of Maui departments to identify and address unmet needs and persistent challenges, foster improved stakeholder coordination, and support development of the Lahaina Long-Term Recovery Plan. She assisted in coordination, planning, logistics, and staffing of 11 community engagement events to support the County of Maui in ensuring recovery planning and project initiatives are community-led, reflective of local needs, and sensitive to the deep cultural and historical significance of the project area. She embedded with the County Department of Public Works, assisting in the development of long-term infrastructure recovery projects and expanding inter-departmental coordination. She coordinated staffing and project assignments for technical support staff and subject matter experts to address infrastructure, economic, and health and social service challenges identified by County of Maui; developed work plans, strategies, projects, and milestones for task completion; and provided monitoring and progress reporting to ensure timely completion of deliverables.

c.

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
Hurricane Ian Long-Term Recovery Planning, Southwest FL	2024	
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	☐ Check if project performed with current firm	

Community Assistance Manager and Deputy Field Coordinator. Tessa led the comprehensive federal long-term recovery planning support for City of Arcadia, City of Sanibel, and Charlotte County, Florida following Hurricane Ian. She facilitated successful interagency coordination with federal, state and local agencies and oversaw multiple teams of subject matter experts to support communities to identify, formulate, and prioritize recovery projects, plan and execute community engagement and outreach initiatives, secure federal, state, and non-governmental resources for funding and technical assistance, develop community long-term recovery plans, and scope project implementation needs. She developed local support networks with municipalities and NGOs and coordinated the identification and application of critical infrastructure grants, resulting in over $20 million awarded to support long term community resiliency. She supported the coordination, planning, logistics, and staffing for 4 community engagement meetings, implementation of 2 public input surveys, and analysis of feedback for incorporation into long-term recovery plans.

d.

(1) TITLE AND LOCATION (City and State)

Hurricane Ian Recovery Program Development, Statewide, FL

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2023	

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

☐ Check if project performed with current firm

Program Development and Liaison. Tessa facilitated the integration of FEMA's Public Assistance program with multiple federal agency efforts to improve collaboration and coordination across the federal disaster recovery landscape after Hurricane Ian. This effort was a recognition of the limitations of the FEMA PA program and promoted the use of capital-stacking opportunities to apply resources to under-funded projects, resulting in successful identification and proactive resolution of unmet recovery needs in impacted communities across the State of Florida. She led a team to develop, implement, and standardize operating procedures, trainings, and position guidance to streamline operations and establish the role as a critical component of recovery.

e.

(1) TITLE AND LOCATION (City and State)

Flooding and Severe Storms Recovery, Statewide, NE

(2) YEAR COMPLETED

PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2021	

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

☐ Check if project performed with current firm

Program Delivery Manager. Tessa managed over 100 Public Assistance grant applications from formulation through obligation and was recognized as top 5 Program Delivery Managers for most grants assigned and obligated on the disaster. Serving local governments, non-profit organizations, and a Federally Recognized Tribe, she facilitated the development of debris removal, emergency response, and infrastructure repair grants and provided quality assurance and compliance reviews to expedite funding awards. She coordinated with Hazard Mitigation staff to develop technically feasible, cost-effective Hazard Mitigation Proposals to increase resiliency of disaster-damaged or destroyed facilities. She consistently analyzed policy to maximize Applicants' access to available funds, resulting in the region's first successful grant award under the new Disaster Recovery Reform Act (DRRA) 1206 policy to deliver funding for floodplain management and building code enforcement. Tessa also developed a disaster-wide process improvement to satisfy project documentation requirements and improve rates of grant obligation; coordinated with Bureau of Indian Affairs, State of Nebraska EMA, and FEMA Office of Chief Counsel to resolve eligibility concerns and obligate all of a Federally Recognized Tribe's grants; and coordinated with Mitigation and Environmental & Historic Preservation specialists to identify resilience measures for a repetitive damage facility that complied with NEPA CATEX requirements, reducing total project costs by $270,000 and expediting the project's environmental review and final grant approval.

SECTION F:

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

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT	20. EXAMPLE PROJECT KEY NUMBER 1	
21. TITLE AND LOCATION (City and State)	22. YEAR COMPLETED	
Facility Condition Assessment Program, Parks Facility Management Division, Nationwide	PROFESSIONAL SERVICES: 2015	CONSTRUCTION (if applicable):

23. PROJECT OWNER'S INFORMATION		
a. PROJECT OWNER	b. POINT OF CONTACT NAME	c. POINT OF CONTACT TELEPHONE NUMBER
National Parks Service (NPS)	Gayle Burgess	904.641.2774

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (Include scope, size, and cost)

KEY RELEVANCE

Cost: $5 million (fees)

Relevant Services:

- Concurrent work covering 84 million acres of NPS land
- Condition assessments for buildings and structures, monuments, fortifications, memorials, and historical locations, wharves, docks, piers, pilings, seawalls, roads, trails, water trails, interpretive sites, and signage, wells/water storage and distribution, wastewater collection and treatment facilities
- Cost estimates

Performance Highlights:

- Facility condition assessments

PROJECT DESCRIPTION

The scope of work for this project included evaluation and assessment of more than 200 of the 419 designated park units covering more than 84 million acres in every U.S. state and territory, including the District of Columbia, American Samoa, Guam, Puerto Rico, and the Virgin Islands. These areas include national parks, monuments, battlefields, military parks, historical parks, historic sites, lakeshores, seashores, recreation areas, and scenic rivers and trails. Geographically, the effort has ranged from Alaska to the Virgin Islands and from Hawaii to Florida and Maine and included work in all NPS regions.

Under the Facility Condition Assessment Program, we provided engineering, architectural, cultural resource, and subject matter expert evaluations and support. Facilities included buildings, transportation systems, utility systems, renewable energy systems, monuments, fortifications, memorials, constructed waterways, wharfs, piers, docks, interpretive kiosks, trails, pedestrian bridges, communication towers, maintained landscapes, and related NPS assets in locations and climatic conditions ranging from Death Valley to Denali.

National Park Service (NPS)

We developed Class C corrective cost estimates for all asset types, incorporating unique geographical and location requirements (seismic, wind, water, remoteness, urban, temperature, snow, volcano, and seasonal accessibility). We integrated and planned our assessments with NPS personnel at national, regional, and park levels through continuous engagement and stakeholder communications. Through this effort, we helped the NPS develop a comprehensive inventory, facility condition index, replacement value, and assessment of the deferred maintenance backlog for development into prioritized corrective projects.

As evidence of the quality and completeness of our work, NPS requested that Casey serve as an expert witness in litigation relating to tenant compliance with operations and maintenance of concession-use contracts for NPS assets. Embedding requirements for maintenance into the contracts enabled the NPS to hold concessionaires accountable at the end of their contract terms.

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT			
	(1) FIRM NAME	(2) FIRM LOCATION (City and State)	(3) ROLE
a.	Jacobs	Englewood, Colorado	Prime Contractor

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT	20. EXAMPLE PROJECT KEY NUMBER 2	
21. TITLE AND LOCATION (City and State)	22. YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
On-Call Support, Hawaii	Ongoing	

23. PROJECT OWNER'S INFORMATION

a. PROJECT OWNER	b. POINT OF CONTACT NAME	c. POINT OF CONTACT TELEPHONE NUMBER
Island Energy Services (IES)	Jamie Swan	808.527.2783

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (Include scope, size, and cost)

KEY RELEVANCE

Cost: $35,000

Relevant Services:

- Program Management
- Analysis

Performance Highlights:

- Programmatic documentation with standardized approaches developed for multiple projects/sites help minimize compliance issues and project delays
- Untrained staff at refinery and terminal sites could have resulted in non-compliance
- Providing training and standardized guidance helped refinery and retail facilities staff to better understand regulatory requirements and to stay in compliance.
- Provided multiple services over a broad spectrum of disciplines, performing or designing/overseeing work at multiple sites across the state

PROJECT DESCRIPTION

Jacobs has provided multiple services to IES (and Chevron before IES), including staff augmentation to complete Water Compliance Specialist activities in support of the IES refinery, terminals, and service stations; sitewide regulatory compliance support for the refinery and various terminals across the state.

Relevant project tasks included:

Notification of General Permit Coverage (NGPC) and individual National Pollutant Elimination System (NPDES) permit compliance and reporting, Storm Water Pollution Control Plan review, implementation, and improvements, and Spill Prevention, Control, and Countermeasure compliance.

Development of the Retail Facility Compliance Guide and training for retail facility staff to ensure that the facility managers and employees are aware of potential environmental and safety issues potentially affecting the facility, and to provide some practical guidelines for ensuring compliance with applicable federal, state, and county regulations and procedures.

UST inspections at retail gas stations across the state to evaluate regulatory compliance and provide recommendations to remain in compliance with all applicable federal and state regulations.

Jacobs UST and facility inspections allowed IES to proactively identify and correct potential issues, allowing IES to remain in compliance and minimize delays/costs related to potential non-compliances.

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

	(1) FIRM NAME	(2) FIRM LOCATION (City and State)	(3) ROLE
a.	Jacobs	Honolulu, Hawaii	Prime Contractor

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT	20. EXAMPLE PROJECT KEY NUMBER 3	
21. TITLE AND LOCATION (City and State)	22. YEAR COMPLETED	
Kalaupapa National Historical Park (NHP) Electrical System Rehabilitation, Kalawao County, Molokai, Hawaii	PROFESSIONAL SERVICES: Ongoing	CONSTRUCTION (if applicable):

23. PROJECT OWNER'S INFORMATION		
a. PROJECT OWNER	b. POINT OF CONTACT NAME	c. POINT OF CONTACT TELEPHONE NUMBER
National Park Service (NPS)	Emmeline Morris	303.969.2563

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (Include scope, size, and cost)

KEY RELEVANCE

Cost: Confidential

Relevant Services:

- Predesign and schematic design
- Value analysis
- Electrical system inventory and condition assessment
- Permit plan and assessment
- Cultural sensitivity included in design
- Determination of historic eligibility of the electrical system
- Archaeological inventory survey of the area of potential effect (APE)
- Jurisdictional waters and wetlands survey

Performance Highlights:

- Provided permit plan detailed with timelines, contact entities, and long-lead time items for schedule consideration as Kalawao County has no formal permitting process in-place
- Completed electrical system condition assessment along with Schematic Design recommendations to repair, replace, and upgrade the system to current safety and electric codes

PROJECT DESCRIPTION

Jacobs is providing planning, compliance, environmental, and engineering design services to repair and rehabilitate the NHP's failing primary and secondary electrical system infrastructure. Design services include rehabilitating the deteriorated electrical cabling, poles, transformers, switches, and other components; installing a looped system; rerouting the system, which currently bisects a heiau; and constructing a new electrical service feed to the water pump station to achieve regulatory compliance and sustainable operations for NPS staff. The base-bid cost estimate incorporated and achieved park staff preferences while keeping project cost below available construction funds.

The primary and secondary electrical distribution system repair include:

- Replacing wooden utility poles, previously found to have significantly deteriorated structural integrity
- Replacing pole-mounted transformers, pole-top hardware, and guying assemblies with identified corrosion
- Creating a loop-configured network in the central core of the settlement to enhance system reliability, fault isolation, and back-feed capability
- Re-aligning a single-phase, overhead distribution line closer to the roadside for easier access and removing poles installed in a heiau.

Kalaupapa National Historical Park (NHP)

- Installing a new, underground, primary distribution line from the settlement to the water pump house, extending along the road and into the utility corridor
- Installing a new, 150-kilovolt-amp (kVA) pad-mounted transformer; 100-kilowatt (kW) engine generator; and 400-amp, 480-vac automatic transfer switch in the water pump house, enabling pumping facilities to be powered by the electrical utility using supplemental local generation in case of a utility outage

The electrical distribution system is designed according to NPS, National Electric Safety Code, and Rural Utilities Service standards to meet Maui Electric Company (MECO) requirements should the ownership of the system be transferred in the future.

Permit Evaluation and Applicability. We developed a permitting and environmental compliance plan covering all required approvals and clearances to construct this electrical power distribution system rehabilitation project. Permit acquisition was complicated because Kalauapapa NHP is not part of Maui County; rather, it resides in its own Kalawao County. In addition, the park is not on federal land. To overcome these challenges, we completed a permitting assessment form to help plan the steps required to obtain each permit in this atypical regulatory environment.

Natural Resource Preservation. Our survey of jurisdictional waters and wetlands conducted for this project identified small wetlands near the possible construction zone, which require protection during design and construction. After consulting with the NPS, we learned that no endangered animals or plants have been identified in the project area. However, if any are observed or suspected, we may conduct a flora and fauna survey.

All historic trees on the site must be preserved during the rehabilitation.

Cultural Resource Preservation. The project moves power poles out of a heiau. The new alignment is near the former location, along the road outside of the heiau. Also, numerous lava rock walls and other features built by the park's historic residents must be protected during system improvements.

Sustainable Design Development (SDD). We included SDD principles in the project design, in accordance with Executive Order 13423 (2007), other laws and executive orders, and the NPS Sustainability Checklist for Schematic Design.

Local Conditions. The local conditions pose logistical and resourcing challenges and corrosive environments with high humidity, salt-laden air, seismic activity, and hurricane-wind velocity considerations. The project was designed with the guidance of the National Park Service design guide so the facilities would respond appropriately and maintain the minimum useful life expectancy in the tropical island environment.

Our recommendations for rehabilitating the electrical system consider the character-defining features of the historic system (to prevent over-modernizing the park) and the highly corrosive site conditions (due to the tropical environment). In addition, we incorporated MECO recommendations into the design of the upgrades and the new service connection to the water pump station.

Local Engineering Criteria. The project team clearly understood the project requirements and investigated the unique circumstances in mobilizing construction labor, supplies, and equipment to the remote, difficult-to-access site. Our QC team reviewed each discipline's design, with the cost estimate developed using historic and researched pricing specific to work on Molokai. We adhered to NPS-provided standards throughout the design.

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

	(1) FIRM NAME	(2) FIRM LOCATION (City and State)	(3) ROLE
a.	Jacobs	Irvine, California; Los Angeles, California	Prime Consultant

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT	20. EXAMPLE PROJECT KEY NUMBER 4	
21. TITLE AND LOCATION (City and State)	22. YEAR COMPLETED	
Chevron Corporation Environmental Engineering Services, Various Locations, Hawaii	PROFESSIONAL SERVICES 2017	CONSTRUCTION (if applicable)

23. PROJECT OWNER'S INFORMATION		
a. PROJECT OWNER	b. POINT OF CONTACT NAME	c. POINT OF CONTACT TELEPHONE NUMBER
Chevron Environmental Management Corporation (EMC)	Karl Bewley	714.671.3248

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (Include scope, size, and cost)

KEY RELEVANCE

Cost: $15 million

Relevant Services:

- Environmental studies
- UST closure oversight
- Buried fuel pipeline assessment and closure
- Spill response and assessment
- Tidal studies
- Remedial feasibility studies
- Design and installation of remedial systems
- Operation, maintenance, and optimization of remedial systems
- Environmental site management, including regulatory coordination, and development and implementation of site remedial and management/closure strategies
- Installation and ongoing operation of LNAPL remedial systems
- Remedial alternatives evaluations and long-term monitoring optimization
- Annual TRI reporting for bulk petroleum storage facilities
- LNAPL mobility assessment at bulk petroleum storage terminal
- Infiltration tests in support of SPCC compliance planning for bulk petroleum storage terminals
- Groundwater monitoring activities at petroleum contaminated service stations and bulk petroleum storage terminals
- Air quality compliance and permitting

Performance Highlights:

- Environmental site management, including regulatory coordination, and development and implementation of site remedial and management/closure strategies
- Installation and ongoing operation of light non-aqueous phase liquid (LNAPL) remedial systems
- Remedial alternatives evaluations and long-term monitoring optimization
- Provided oversight during underground storage tank (UST) closures
- Conducted assessment and closure of buried fuel pipelines
- Completed tidal study in petroleum-impacted tidally influenced shallow aquifer
- Conducted spill response activities for releases from subsurface pipelines
- Conducted annual toxic release inventory (TRI) reporting for bulk petroleum storage facilities
- Conducted LNAPL mobility assessment at bulk petroleum storage terminal
- Conducted infiltration tests in support of spill prevention, control, and countermeasures (SPCC) compliance planning for bulk petroleum storage terminals
- Conducted groundwater monitoring activities at petroleum contaminated service stations and bulk petroleum storage terminals
- Completed remedial endpoint analysis to identify path to site closure at bulk petroleum storage terminal

PROJECT DESCRIPTION

For the past 15 years, Jacobs has provided a broad range of environmental engineering and consulting services to Chevron Corporation for sites located on Oahu, Maui, Kauai, and Hawaii. Work included evaluation of petroleum-impacted sites, soil, and groundwater sampling and analysis, environmental oversight during UST closures, and development of short- and long-term response actions at sites where fuel releases have occurred. In addition, we provided regulatory compliance support for both air emissions (annual TRI reporting), and SPCC programs.

An integral part of these tasks was the successful implementation of Chevron's behavior-based loss prevention health and safety system. Through 15 years of successful projects, no reportable injuries or incidents have occurred.

Presented below are descriptions of representative projects performed under this contract in Hawaii.

Buried fuel pipelines evaluated near Honolulu Harbor

Design, Installation, and Operation of Active and Passive LNAPL Recovery Systems at Bulk Fuel Storage Terminals at Hilo and Honolulu, Hawaii

We designed and operated passive and active remediation systems to remove LNAPL from sedimentary and fractured rock environments. We supported Chevron with site management and planning for impacted sites, including development and implementation of remedial actions, remedial optimization, and implementation and optimization of long-term monitoring programs.

We evaluated long-term site management strategies in coordination with Chevron to develop strategic plans that met the needs of stakeholders, including Chevron, neighboring property owners, and regulatory agencies. These strategies resulted in lower overall life-cycle costs for Chevron.

UST Closures at Chevron Service Stations

Jacobs conducted environmental engineering oversight for Chevron during UST closure at the following retail service stations:

- Kaneohe Chevron, Kaneohe, Oahu, Hawaii
- Kahala Chevron, Honolulu, Oahu, Hawaii
- Kuroda Chevron, Aiea, Oahu, Hawaii
- Pukalani Chevron, Pukalani, Maui, Hawaii

UST closure excavation at Kaneohe Chevron Service Station

The UST oversight activities included coordination with Chevron subcontractors, collection of soil samples, monitoring well abandonment, development of release response procedures, technical documentation of UST closure and sampling activities, and waste management.

Pier 35 Release Response

Jacobs conducted release response activities at Honolulu Harbor Pier 35 after fuel leaked from a buried fuel pipeline. Release response activities included placement of absorbent booms in the harbor adjacent to the pipe location, evaluation of preferential underground fuel migration pathways, and design of an impermeable barrier and trench drain recovery system to mitigate fuel migration to the Honolulu Harbor. Release response activities were coordinated with Chevron, the Clean Islands Council, the US Coast Guard, the State of Hawaii Department of Health (HDOH), Hawaii Department of Transportation (HDOT) Harbors Division, and tenants of the Pier 35 area. Follow-up activities included fuel fingerprinting, and soil and groundwater sampling to assess the nature and extent of impacts caused by the fuel release.

Installation of subsurface barrier and intercept trench at Pier 35

Environmental Studies at Honolulu Harbor

Jacobs conducted environmental studies within the Iwilei District at Honolulu Harbor Piers 18 through 40. Activities included soil and groundwater sampling and analysis; evaluation of LNAPL extent within the subsurface; evaluation of potential risk factors related to chemicals in soil and groundwater; evaluation of potential sources of released fuels, including buried pipelines; removal of residual fuel from out-of-service pipelines; waste management; oversight of subcontractors; and coordination of activities with multiple agencies and stake holders including the HDOT Harbors Division, HDOH, the US EPA, and multiple corporate entities including Chevron.

We also conducted an evaluation of the effects of tidal fluctuation on shallow groundwater, LNAPL, and chemicals of potential concern within the subsurface adjacent to the Harbor. Project activities spanned more than two years and the primary objectives of the stakeholders were met for each phase of work.

Air Quality Compliance and Permitting

Jacobs has assisted Chevron for over 15 years with preparing air compliance reports for Chevron's Honolulu Terminal Marine, Honolulu Terminal Transportation, Hilo Terminal, Kahului Terminal, and Port Allen Terminal. This work included preparation of annual criteria air pollutant and toxic release emission inventories for submittal to HDOH and EPA.

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT			
	(1) FIRM NAME	(2) FIRM LOCATION (City and State)	(3) ROLE
a.	Jacobs	Honolulu, Hawaii	Prime Consultant

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT	20. EXAMPLE PROJECT KEY NUMBER 5	
21. TITLE AND LOCATION (City and State)	22. YEAR COMPLETED	
Pacific Northwest Region (PNR) IDIQs for Multi-Disciplinary Services, Idaho, Oregon, Washington, California, Texas, Montana	PROFESSIONAL SERVICES: Ongoing	CONSTRUCTION (if applicable): Ongoing

23. PROJECT OWNER'S INFORMATION

a. PROJECT OWNER	b. POINT OF CONTACT NAME	c. POINT OF CONTACT TELEPHONE NUMBER
U.S. Bureau of Reclamation	Misty Gates	208.378.5079

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (Include scope, size, and cost)

KEY RELEVANCE

Cost:

Typical TOs: $50,000 - $1 million (fees)
Construction Costs: $500,000 - $500 million

Relevant Services:

- Full A-E design, including dams, power stations, bridges, and buildings
- Utilities, inspection, and hydraulic modeling
- Environmental assessments and EISs
- Construction documents and construction cost estimates
- Surveying, geotechnical evaluations and design, and geographic information system (GIS) modeling

PROJECT DESCRIPTION

For the past 17 years, Jacobs has been providing the Bureau of Reclamation planning, engineering analyses and design, construction drawings and specifications, hydraulic modeling, environmental documentation, permitting, and construction services. TOs include:

Grand Coulee Power Office Fire Station, Washington. We provided design and construction administration services for a new fire station. Work included preparing National Historic Preservation Act (NHPA) documents, geotechnical and topographic surveying, sustainability documents, architectural design, and preparation of contract documents for construction, including associated utilities and engineering disciplines.

Boise River Feasibility Study Phase 1, Boise River System, Idaho. We provided the initial steps of a land, structure, infrastructure, and real estate assessment analysis. The team obtained spatial GIS mapping data and non-spatial information on local infrastructure and real estate near Anderson Ranch, Arrowrock, and Lucky Peak Reservoirs. This enabled an assessment of what infrastructure and real estate could be inundated or affected by dam raises and the cost of mitigating the effects. We are also a subconsultant member of the small business team recently selected by Bureau of Reclamation for Phase II of the project to complete a feasibility study and environmental impact statement (EIS).

Independent Cost Estimate for SCADA System Replacement, Phases I and II, Grand Coulee and Hungry Horse Dams, Washington, and Montana. We developed costs and evaluated the project management plan for designs, construction methods and sequencing, equipment procurement, and other relevant elements of the bid documents.

Grand Coulee Power Office, Visitor Arrival Center (VAC) Seismic and Life Safety Upgrade, Phases 1, 2, and 3, Washington. We provided inspection, evaluation, recommendations, design documents, and construction management support to rehabilitate the historically sensitive visitor's center.

Habitat Improvement Program—Screening and Passage Design at Little Creek Diversion #1, Oregon. Jacobs and team member Anderson Perry prepared design and permitting documents and provided services during construction for a new diversion structure and fish ladder near Union, OR. Our team worked with the landowner and state and federal fisheries agencies, ultimately designing a nine-pool, pool-and-weir fish ladder and collapsible flashboard diversion structure. The fish ladder accommodates fluctuation in flows and the design avoids exacerbating flooding during spring runoff.

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

	(1) FIRM NAME	(2) FIRM LOCATION (City and State)	(3) ROLE
a.	Jacobs	Boise, Idaho; Englewood, Colorado	Prime Contractor

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT	20. EXAMPLE PROJECT KEY NUMBER 6	
21. TITLE AND LOCATION (City and State)	22. YEAR COMPLETED	
Honolulu Rail Transit Project, On-Call Hazardous Materials Consulting, Honolulu, Hawaii	PROFESSIONAL SERVICES: Ongoing	CONSTRUCTION (if applicable): Ongoing

23. PROJECT OWNER'S INFORMATION		
a. PROJECT OWNER	b. POINT OF CONTACT NAME	c. POINT OF CONTACT TELEPHONE NUMBER
Honolulu Authority for Rapid Transportation (HART)	Vance Tsuda	808.768.8943

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (Include scope, size, and cost)

KEY RELEVANCE

Cost: $13.9 million

Relevant Services:

- Environmental engineering
- Environmental consulting
- Integrated GIS platform development and data management
- Phase I and Phase II ESAs
- Environmental hazard evaluation and environmental hazard management plans
- Environmental release reporting and responses
- Testing and/or screening services on potentially contaminated soil and/or groundwater
- Stockpiling, segregating, containing, and/or transporting potentially contaminated soil and/or groundwater, and store, treating, recycling, and/or disposing of as needed

Performance Highlights:

- Facilitated more effective collaboration, more informed interdepartmental decision-making, and improved cost effectiveness with the development of an environmental data management tool via an ESRI GIS platform
- Developed programmatic environmental guidance, planning, and reporting tools and templates to ensure broad and consistent implementation of processes among a variety of construction contractors
- Facilitated the approval of a voluntary oversight agreement with the State of Hawaii Department of Health (HDOH) to proactively address environmental concerns along the project corridor
- Minimized schedule delays and improved cost efficiencies associated with environmental contamination by screening, characterizing, and remediating several station locations in advance of construction
- Facilitated the successful pursuit and receipt of nearly $1 million in US EPA brownfields grants to support environmental site assessments and cleanup

PROJECT DESCRIPTION

Jacobs manages the on-call hazardous materials consulting services contract for HART and has been awarded two contracts and 22 task orders. The scope of services for these contracts included broad support in the areas of project management and administration, and hazardous materials planning (development of various plans), reporting, identification (sampling, analysis, characterization, and profiling), remediation, handling (temporary storage/stockpiling, waste inspections), transport, and disposal. Many task orders required expedited planning and implementation to complete characterization and remediation before construction activities started at sites along the rail guideway corridor. To ensure timely implementation of project work, we worked closely with the HDOH and other stakeholders during the projects to expedite review and approval of plans and reports.

Site Characterization Sampling

We also support HART with communication, coordination, and interactions with contractors working along the Rail guideway corridor, including assistance with providing guidance to the contractors to comply with a Programmatic Environmental Hazard Evaluation and Environmental Hazard Management Plan (EHE-EHMP) we developed, and which was approved by the HDOH. The process described in the Programmatic EHE EHMP required involvement at various and progressive stages, from procurement and planning to implementation and closure to make sure that hazardous materials potentially generated by contractors during construction are handled properly and do not result in violations of applicable laws and regulations.

The following are representative projects performed under these contracts, which demonstrate our experience and ability to provide various services at the project and program levels.

GIS Support

We supported HART for the design and implementation and conduct ongoing maintenance and updates of an ArcGIS online platform. The ArcGIS online platform is a simple and user-

friendly tool that includes overview information; screening of sites with potential recognized environmental conditions along the rail guideline corridor; search, review, and download of release reports and environmental data for sites with confirmed environmental conditions (including underground storage tank sites); custom map/filtering; and mobile data/photo log collection for field staff.

The ArcGIS tool not only provides systematic and accurate data management, but also allows better decision making and planning, facilitating coordination with stakeholder.

Recognizing the need to manage historic, current, and future data for project continuity and cross-organizational benefit, Jacobs and HART have used the platform to facilitate tracking of real property transactions, cultural and historic resources, permits, and environmental incident tracking along the rail corridor.

To provide greater access to HART and other city employees without the need for individual licensing or Jacobs proprietary software, the ArcGIS platform was migrated to and is currently hosted on the City and County of Honolulu's Department of Information Technology (DIT) web servers.

Hazardous Materials Reporting

We developed streamlined release reporting forms to facilitate consistent and efficient preparation of release reports. We prepared and submitted over 200 release notification reports to HDOH. We also prepared numerous other reports including environmental summaries, technical memoranda, investigation, remediation, and waste characterization reports.

Development of Programmatic Environmental Hazard Evaluation and Environmental Hazard Management Plan (EHE/EHMP)

We worked closely with HART and HDOH to prepare the existing Programmatic EHE/EHMP for HART in support of the HRTP. This programmatic document presented the environmental hazards along the rail guideway corridor and explains how to properly manage contaminated materials from existing environmental conditions in accordance with applicable laws and regulations. Through negotiation with the HDOH Hazard Evaluation and Emergency Response Office and Solid and Hazardous Waste Branch (SHWB), HART successfully defined the entire rail corridor as one area of concern which allows HART contractors to transport and temporarily store contaminated media without the need to obtain RCRA permits. Without this key definition, contaminated media would need to be managed at the point of generation and/or require permits which would have caused logistical difficulties and costly delays. The Programmatic EHMP is also a functional document that identifies strategies for identifying, reporting, and managing contaminated media during construction so that work could continue in most cases without the need for extensive stop work, reporting, and development and HDOH acceptance of remediation strategies.

Environmental Due Diligence, Phase I ESAs, and Phase II ESAs

We performed environmental due diligence for 272 properties proposed for acquisition and completed and kept up to date Phase I ESAs for 112 properties along the rail guideway corridor. The due diligence and Phase I ESAs are performed in accordance with the All-Appropriate Inquiries rule and standards set forth in ASTM 1527-13 for parcel acquisitions prior to construction of the HRTP.

Within the 5-mile city center section of the corridor, our team has been performing site reconnaissance inspections of up to 100 properties and their surroundings, approximately every 180 days. This includes thousands of publicly available environmental records with hundreds of known or suspected contaminated sites, underground and overhead utilities, and many potential recognized environmental conditions.

The project was configured as a large-scale, centralized data processing and analysis task with the goal of automating as many components as possible. Federal, state, and regulatory agency files from EDR were processed and reviewed together with environmental information readily available from both HDOH and HART environmental databases. Environmental datasets are batch-processed to determine distance, direction, and hydraulic flow relationship with each individual subject property. Data feeds into an enterprise data warehouse, evaluated through a semi-automated process, and final report production is generated directly out of the project database transforming a cumbersome report workflow into a turn-key product.

Across the project life cycle, spanning three (3) years and multiple delivery cycles, HART saw a high level of consistency and a continual reduction in cost per environmental report. Each delivery iteration brought increased efficiencies while maintaining quality throughout, resulting in the successful delivery of over 250 individual environmental reports to date. During each cycle, over 1,200 environmental records are being uploaded to our central database for regulatory status evaluation. Each site is then assigned to one or more subject properties along the corridor based on distance, direction, and ASTM screening criteria, resulting in a dataset of approximately 12,000 records that are evaluated against spatial and environmental criteria (e.g., distance, hydraulic position, nature of potential release, substance mobility, and similar) to determine the likelihood to affect a subject property for each site. Based on the environmental records evaluation and the results of site reconnaissance and interviews, each property is assigned an environmental concern level to identify those with a higher environmental concern

and recommend them for Phase II ESAs. Using data from the enterprise central warehouse, properties recommended for Phase II ESA were prioritized to identify those where Phase II ESA activities are more critical based on potential presence of contamination, magnitude of future construction work and workers exposure, accessibility, and acquisition status. Higher priority properties were grouped based on their geographic locations and a group-specific Phase II ESA and site characterization work plan was prepared for each of the five groups designing innovative investigation activities that will optimize fieldwork and create cost-efficiencies. The use of the centralized database allowed maximizing use of Phase I ESA data reducing work plan preparation-times.

Jacobs assisted HART with applying for and winning an EPA brownfields assessment grant that partially funded the Phase I and II ESA efforts.

Additional Investigation and Remedial Action at Various Locations along the HTRP, Honolulu, Oahu, Hawaii

We have performed numerous additional investigation and remedial actions for various locations along the HRTP, including petroleum-only sites, chlorinated solvents sites, and other hazardous substances sites. The objectives for these investigations and remediation projects were to investigate the nature and extent of contamination in the subsurface, identify and optimize soil remediation volumes, and complete remediation ahead of construction.

Hundreds of environmental sites processed and evaluated along the City Center rail corridor.

We adopted a dynamic approach involving progressive and iterative consultations with various stakeholders, including the HDOH, which resulted in expedited investigation and remediation, regulatory approval, and significant cost savings.

We assisted HART with applying for and winning an EPA brownfields cleanup grant, which partially funded the remediation of the proposed Iwilei Station. In addition, a few of these exemplary projects were selected to be presented at various national conferences.

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT			
	(1) FIRM NAME	(2) FIRM LOCATION (City and State)	(3) ROLE
a.	Jacobs	Honolulu, Hawaii	Prime Consultant

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT	20. EXAMPLE PROJECT KEY NUMBER 7	
21. TITLE AND LOCATION (City and State)	22. YEAR COMPLETED	
X-Ray Wharf Improvements, Naval Base, Guam	PROFESSIONAL SERVICES 2017	CONSTRUCTION (if applicable) 2017

23. PROJECT OWNER'S INFORMATION		
a. PROJECT OWNER	b. POINT OF CONTACT NAME	c. POINT OF CONTACT TELEPHONE NUMBER
Naval Facilities Engineering Systems Command (NAVFAC) Pacific	Eric Funasaki	808.472.1273

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (Include scope, size, and cost)

KEY RELEVANCE

Cost: $50 million

Relevant Services:

- Construction Sequencing
- Civil Design
- Pavement Demolition
- Architectural and Structural Design
- Services During Construction

PROJECT DESCRIPTION

The X-Ray Wharf project had both design-bid-build (DBB) and design-build (DB) components. The DBB is referred to as PART A and DB is referred to as PART B. PART B consisted of a catwalk, cathodic protection, wharf operation area pavement, buildings, bilge water treatment system, storm water system, utilities (electrical, mechanical, water, FH) and backland pavement.

PART A (DBB):

Provided design support to the Contractor on as needed basis for construction of Part A components. The scope included:

- Construction sequencing for bulkhead construction, backfill and CDSM operations
- Temporary bracing design for bulkhead sheet wall until permanent tie-rods are installed
- Check the capacity of the existing wharf to support crane operations for bulkhead construction

PART B (DB):

Provided design for the design-build portion of the project. The design scope included:

- Site civil design, including grading, fencing, new pavement, demo of existing pavement, and storm drainage system,
- Architectural and structural design of generator building
- Mechanical design including potable water, sewer, bilge-oil-waste treatment system, fire hydrant, and sewer pump improvements
- Electrical design, including generator and site lighting.
- Communication design
- Services during construction (RFIs, submittal review, as-builts preparation, and site visits)

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT			
	(1) FIRM NAME	(2) FIRM LOCATION (City and State)	(3) ROLE
a.	Jacobs	Honolulu, Hawaii; Bellevue, Washington	Prime Consultant

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT	20. EXAMPLE PROJECT KEY NUMBER 8	
21. TITLE AND LOCATION (City and State)	22. YEAR COMPLETED	
San Francisco Waterfront Resilience Program, San Francisco, California	PROFESSIONAL SERVICES: Ongoing	CONSTRUCTION (if applicable): Ongoing

23. PROJECT OWNER'S INFORMATION

a. PROJECT OWNER	b. POINT OF CONTACT NAME	c. POINT OF CONTACT TELEPHONE NUMBER
Port of San Francisco	Brad Benson	415.819.1759

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (Include scope, size, and cost)

KEY RELEVANCE

Cost: $40 million

Relevant Services:

- Community Resilience
- Environmental Planning
- Land and Site Planning
- Coastal Modeling
- Stormwater Management
- Structural Engineering
- Geotechnical Engineering
- Waterfront Engineering
- Traffic and Roadway Engineering
- Sustainable Design

Performance Highlights:

- Multi-hazard Risk Assessment completed
- Early projects identified to address highest seismic and flood risks

PROJECT DESCRIPTION

Jacobs, with key teaming partner Arcadis, is providing planning, engineering, and environmental services for the Port of San Francisco's Waterfront Resilience Program. The first phase of the Waterfront Resilience Program is a 10-year program to improve safety, reduce damage, and enhance the environment by repairing, altering, or replacing the seawall and associated infrastructure along three miles of San Francisco's historic waterfront. The initial Phase 1 budget is $425 million, and the overall budget for all phases is estimated at $10 to $30 billion for the full 7.5 miles.

The seawall has deteriorated from a century of exposure to salty bay water and pounding waves and currents. The rock dike and pile supported bulkhead walls, piers, and marginal wharves that comprise the seawall were built prior to modern seismic standards, are situated over weak and compressible Young Bay Mud, and retain un-engineered fill that is potentially liquefiable, making the seawall and waterfront highly susceptible to earthquake damage.

Existing King Tide Flooding on the San Francisco Embarcadero

Additionally, settlement of the seawall combined with rising sea levels has created an unacceptable flood risk along portions of the seawall today and threatens to cause regular flooding of the waterfront before the end of this century.

The Jacobs/Arcadis team will be managing the program from risk assessment and planning through design and construction. Services include the following:

- Program Management
- Multi-hazard assessment of seawall and associated infrastructure
- Evaluate alternatives to mitigate risk
- Assist in development and selection of preferred resiliency program approach
- Develop pilot projects to test and refine construction techniques
- Supporting United States Army Corps of Engineers' (USACE) Flood Study
- Manage contractor outreach
- Preliminary design, engineering and environmental review for initial improvement projects and delivery strategies
- Emergency project assistance
- Collaboration with Port and City planners, architects, and engineers providing services on the project
- Implementing training workshops

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

	(1) FIRM NAME	(2) FIRM LOCATION (City and State)	(3) ROLE
a.	Jacobs	San Francisco, California	Prime Consultant
b.	Arcadis	San Francisco, California	Key Partner

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT	20. EXAMPLE PROJECT KEY NUMBER 9
21. TITLE AND LOCATION (City and State)	22. YEAR COMPLETED
USACE Los Angeles District Civil/Coastal IDIQ, California	PROFESSIONAL SERVICES: Ongoing; CONSTRUCTION (if applicable):

23. PROJECT OWNER'S INFORMATION

a. PROJECT OWNER	b. POINT OF CONTACT NAME	c. POINT OF CONTACT TELEPHONE NUMBER
United States Army Corps of Engineers (USACE), LA District	Larry Smith Art Shak	213.452.3846 213.452.3675

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (Include scope, size, and cost)

KEY RELEVANCE

Cost: $1 million/year, three-year contract

Relevant Services:

- Planning and Feasibility Studies
- Shore Protection
- Habitat Protection and Enhancement
- Coastal Flood Plan Management
- Watershed Environmental Assessments
- Condition Assessments

Performance Highlights:

Provided specialized coastal engineering consulting services including:

- Habitat evaluation
- Dredge material sediment testing and reuse
- Structural condition assessments
- Risk analysis

PROJECT DESCRIPTION

Jacobs was awarded an Indefinite Delivery Indefinite Quantity (IDIQ) contract to perform Civil/Coastal engineering for civil works projects along the western shoreline of the U.S. and Mexico by the United States Army Corps of Engineers (USACE), Los Angeles District. The project encompasses 226,000 square miles in four states and protects 420 miles of Southern California shoreline from Morro Bay to the Mexican border. Established in 1898, the District has been recognized for providing engineering services for the southwest for more than 100 years. Jacobs was chosen to execute services consisting of planning and formulating reconnaissance and feasibility studies. Typical studies encompass navigation, waves, and hurricane shore protection, fish and wildlife, habitat protection and enhancement, coastal flood plan management, and a multitude of other complex coastal resources study and engineering activities. Tasks on this contract have included oversight of dredge material sediment testing and reuse; eel grass surveys and mapping in Mission Bay, sediment testing in Marina del Rey, watershed environmental assessments, California Regional Sediment Management Plan support and condition assessments of breakwaters, as described in the following:

San Pedro and Middle Breakwaters Comprehensive Condition Assessments

San Pedro Breakwater and Middle Breakwater Condition Assessments, Port of Los Angeles – Port of Long Beach, California

Jacobs prepared a comprehensive condition assessment for the 100-year-old San Pedro Breakwater, and the Middle Breakwater which are part of a 3- breakwater system protecting the Ports of Los Angeles and Long Beach. The project includes reviewing historical data and information; conducting hydro/topographic surveys; developing wave and water levels design conditions; evaluating the functionality and structural performance of the breakwaters; and performing a risk analysis, for scenarios such as existing and sea level rise with global warming, to assist in defining a strategy for future maintenance.

The assessments also include reviewing surveys, designs and reports; conducting physical field surveys consisting of hydrographic multi-beam and side scan sonar mapping, and above water elevation mapping with laser scanning technology and ortho-photo mapping; developing design conditions using current engineering practice and updated data of the oceanographic environment; evaluating the functionality and engineering effectiveness of the existing breakwater; and preparing a risk and reliability analysis for future functionality.

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

	(1) FIRM NAME	(2) FIRM LOCATION (City and State)	(3) ROLE
a.	Jacobs	Long Beach, California	Prime Consultant

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT	20. EXAMPLE PROJECT KEY NUMBER 10	
21. TITLE AND LOCATION (City and State)	22. YEAR COMPLETED	
On-Call Design and Environmental Services, Seattle, Washington	PROFESSIONAL SERVICES: Ongoing	CONSTRUCTION (if applicable):

23. PROJECT OWNER'S INFORMATION		
a. PROJECT OWNER	b. POINT OF CONTACT NAME	c. POINT OF CONTACT TELEPHONE NUMBER
Washington State Ferries	Joel Colby	206.515.3862

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (Include scope, size, and cost)

KEY RELEVANCE

Cost: $8 million

Relevant Services:

- Project and program management
- Planning
- Design

Performance Highlights:

- Work across numerous disciplines
- Provided on-call consulting work for a 20-year span

PROJECT DESCRIPTION

Jacobs has provided a range of A/E services for Washington State Ferries (WSF) for over 20 years, demonstrating a breadth and depth of resources on each task as well as knowledge of the client's priorities, goals, and constraints. During these successive contracts, our team has handled over 10 concurrent tasks and over 100 total tasks.

The following are highlights of the range of our design services for WSF on this contract:

- Project Management
- Design and Program Management
- Marine Structural Design
- Environmental testing and studies
- Construction permitting
- Mitigation plans
- Architectural/Civil/Site Design
- Surveying
- T&E species
- SEPA/NEPA Documentation
- Intermodal improvements
- Landside Planning

Notable Project Task Orders

Fauntleroy/Southworth Preservation Project, Washington. This project was a multiple terminal preservation project, in which our team provided WSF with a project manager who worked onsite with the WSF team, structural engineering, electrical engineering, and mechanical engineering support. The project consisted of replacing various marine structures including trestles, transfer spans and mooring and berthing dolphins. Extensive scheduling and coordination were required so that construction could be completed on time and under budget.

Edmonds Intermodal Support Services, Edmonds, Washington. The project involved engineering support, terminal planning, environmental NEPA services, and project management supporting the EIS for a new, relocated terminal in Edmonds. Work has included preliminary design for floating breakwater and fendering structures, new pier with an over-water terminal, fendering systems including dolphins and wingwalls. Structural challenges for this location are extreme tidal fluctuation, and deep-water structures.

Bainbridge Trestle Widening, Bainbridge Island, Washington. Project involves complete design services for widening and replacement of the Bainbridge Ferry Terminal pier.

Friday Harbor Trestle Preservation Project, Friday Harbor, Washington. Project involved planning and structural design for replacement of Friday Harbor Terminal and addition of a temporary tie-up slip. Project included new piers and fendering systems, phased construction, rock anchors, and accommodations for continued service during construction.

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT			
	(1) FIRM NAME	(2) FIRM LOCATION (City and State)	(3) ROLE
a.	Jacobs	Bellevue, Washington	Prime Consultant

SECTION G:
KEY PERSONNEL PARTICIPATION IN EXAMPLE PROJECTS

G. KEY PERSONNEL PARTICIPATION IN EXAMPLE PROJECTS

26. NAMES OF KEY PERSONNEL *(From Section E, Block 12)*	27. ROLE IN THIS CONTRACT *(From Section E, Block 13)*	28. EXAMPLE PROJECTS LISTED IN SECTION F *(Fill in "Example Projects Key" section below before completing table. Place "✓" under project key number for participation in same or similar role.)*									
		1	2	3	4	5	6	7	8	9	10
Abbey Mayer, AICP	Principal-In-Charge/Vice President			✓			✓				
Kristen Nishimura, AICP	Project Manager/Environmental Planner						✓			✓	
John Padre, AICP	Project Manager/Environmental Scientist				✓		✓				
Frank Hopkins	Project Manager/Environmental Scientist		✓		✓		✓				
Heather Rectenwald, PMP	Project Manager/Environmental Scientist		✓		✓		✓				
Jessica Burdick, PE, PMP	Project Manager/Project Engineer			✓			✓				
Sergio Cocchia	Project Manager/Project Engineer		✓		✓		✓				
Milind Desai, PE	Project Manager					✓		✓			
Christopher Best, PE	Ports Technology Leader and Senior Ports Leader							✓			
Luce Bassetti, PhD, GISP, ENV SP, WEDG	Coastal Engineer and Community of Practice Lead	✓						✓		✓	
Claudio Fassardi	Coastal Engineer								✓		
Christopher Lawrence, PE	Port Engineering and Program Management					✓		✓		✓	
Douglas Playter, PE	Marine/Civil Engineer, Cruise and Ferry Facilities										✓
Donald Anderson, PhD, PE	Geotechnical Engineer						✓		✓		✓
Nadesh Nadeswaran, PE, GE	Geotechnical Engineer	✓									✓
Mark Johnson, PE	Structural Engineer						✓				✓
Charlie Hetland, EIT, ENV SP	Transportation Engineer										
Miya Akiba	Planner			✓			✓				
Tessa Schuckert	Planner										

29. EXAMPLE PROJECTS KEY

NO.	TITLE OF EXAMPLE PROJECT (FROM SECTION F)	NO.	TITLE OF EXAMPLE PROJECT (FROM SECTION F)
1	Facility Condition Assessment Program, Parks Facility Management Division, National Parks Service (NPS), Nationwide	6	Honolulu Rail Transit Project, On-Call Hazardous Materials Consulting, Honolulu Authority for Rapid Transportation (HART), Honolulu, Hawaii
2	(IES) On-Call Support, Island Energy Services, Hawaii	7	X-Ray Wharf Improvements, Naval Facilities Engineering Systems Command (NAVFAC) Pacific, Naval Base, Guam
3	Kalaupapa National Historical Park (NHP) Electrical System Rehabilitation, National Park Service (NPS), Kalawao County, Molokai, Hawaii	8	San Francisco Waterfront Resilience Program, Port of San Francisco, San Francisco, California
4	Chevron Corporation Environmental Engineering Services, Chevron Environmental Management Corporation (EMC), Various Locations, Hawaii	9	USACE Los Angeles District Civil/Coastal IDIQ, United States Army Corps of Engineers (USACE), LA District, California
5	Pacific Northwest Region (PNR) IDIQs for Multi-Disciplinary Services, U.S. Bureau of Reclamation, Idaho, Oregon, Washington, California, Texas, Montana	10	On-Call Design and Environmental Services, Washington State Ferries, Seattle, Washington

SECTION H-I:
ADDITIONAL INFORMATION AND AUTHORIZED REPRESENTATIVE

H. ADDITIONAL INFORMATION

30. PROVIDE ANY ADDITIONAL INFORMATION REQUIRED BY THE AGENCY. ATTACH ADDITIONAL SHEETS AS NEEDED.

1 | FIRM INFORMATION

ABOUT JACOBS

Jacobs is committed to global sustainability, which is exemplified in how we operate our business, how we perform our work, how we partner with clients and other organizations, and how we continue to look at ways to make a positive environmental, societal, and economic difference for businesses, governments, and communities locally and around the world.

Jacobs is invested in making the world a better place—from addressing water scarcity and aging infrastructure to ensuring access to life-saving therapies and protecting against sophisticated cyberattacks—what we do is more than a job, it's an investment in the success of our clients, communities, and future generations. Therefore, we bring a thoughtful and collaborative approach to every one of our partnerships and help our partners make a positive impact on the world. Regardless of project size, we use best practices to provide a comprehensive and proactive approach to any project and deliver our clients' vision of success.

Jacobs Operations: Leadership on Climate Change

At Jacobs, we understand just how critical decarbonization is for the future of our planet. Jacobs published its first Climate Action Plan on Earth Day 2020. At that time, the world was just beginning to understand the global economic, environmental and social impacts of COVID-19, and the pandemic's intersection with climate change and inequality. The original plan provided the foundation for Jacobs' long-term commitments to emissions reduction and climate action, and consolidated the company's decarbonization efforts around three ambitious targets:

- 100% renewable energy for our operations by 2020 – achieved in December 2020
- Net zero carbon for our operations and business travel by 2020 – achieved in December 2020
- Carbon negative for our operations and business travel by 2030 – superseded by subsequent commitments

Our Commitment

Jacobs provides several online reports detailing our policies and plans related to sustainable business practices, including:

- **Jacobs Climate Action Plan** captures the shared passion and pride of our people as we work to preserve our planet for future generations
- **Jacobs Sustainability Strategy** (2018-2020) sets out our plans for integrating sustainability into our business
- **Jacobs Sustainability Reports** detail our progress toward our goals, going back to 2009

On Earth Day 2022, two years after the first version, **Jacobs released an updated Climate Action Plan becoming the first consultancy and one of the world's first companies with net-zero targets approved by the Science Based Targets initiative (SBTi)**. In keeping with our core value of "We Aim Higher" and the continually evolving guidance and best practices for climate response, we revised our plan and targets. In our updated **Climate Action Plan**, published in April 2022, and our **Carbon Neutrality Statement** we commit to the following:

- Ensure every Jacobs project becomes a climate response opportunity
- Achieve net-zero greenhouse gas emissions across the value chain by 2040
- Maintain carbon neutrality status and 100% low-carbon electricity for our operations and business travel

Details on our ESG-related commitments and progress can be found in our **FY23 ESG Disclosures**.

At Jacobs, we are extremely proud of the fact that we practice what we preach – and our **consultancy of clients around the world on GHG and carbon emissions reduction is informed by our own journey toward net-zero.**

Sustainable Solutions for Clients

Together with our clients, we craft solutions that affect the way people live. From accelerating the next generation of innovators to developing the world's first ultra-low emission zone, and from helping communities recover to protecting public health by monitoring water quality, we solve for better, never losing sight of our responsibility to each other. For example:

- Alongside Shell Pipeline Company, we turned more than 96,000 plastic bottles into a natural infrastructure solution helping protect Louisiana's shrinking coastline and serving as a model for balancing coastal infrastructure integrity and an evolving natural environment

- Transforming space waste into building blocks for future exploration and sustainability, our innovative solution for beneficial reuse of heat-resistant materials also eliminated $50,000 in disposal costs at Kennedy Space Center
- Employing digital twin technology and simulations, we helped one confidential, private-sector client reduce energy consumption by 33% using control-logic operational improvements
- Through safely managing one of the world's-largest remediation programs, the Central Plateau at the U.S. Department of Energy's Hanford Site, we've cleaned up more than 19.3 billion gallons of groundwater to date—supporting the overall mission of protecting the Columbia River

DIVERSITY, EQUITY, & INCLUSION

At Jacobs, we do things right, we challenge the accepted, we aim higher, and we live inclusion. In the face of these challenging times, we must focus on resilience, strength, and connection to emerge stronger, together. We, like you, are committed to diversity in employment and to increasing contracting opportunities for certified Disadvantaged, Minority-Owned, Women Owned, Emerging Small Business (D/M/W/ESB) enterprises. In addition to meeting requirements for subcontracting, we work closely with our D/M/W/ESB partners to identify appropriate, meaningful, and significant roles—with a commitment to truly deliver value on those scope assignments and promote a more inclusive workforce for future generations.

Our Cultural Competency/Diversity Training Efforts

Jacobs is committed to improving our talent management and development processes by distributing training, professional development, career advancement, and mentoring equitably across the company. A sampling of how we achieve this includes:

Jacobs Employee Networks (JENs). Our eight, active networks represent more than 23,000 employees, working to promote inclusion and equality companywide. These employee-led and organized groups are centered around offering opportunities to collaborate with others around the world and continuously develop a safe workplace where employees can be their authentic selves. A few examples include our Women's Network, Prism, Harambee, and Careers Network JENs' collaboration with human resources to appoint the first female executive vice president in the company's history; install gender-neutral bathroom facilities in offices; provide leadership development programs to accelerate advancement for black employees to mid- and senior-level leadership; and increase hiring to total 959 interns and 873 graduates globally.

Diversity in Succession Planning. We're developing all our talent to confirm we have broadly diverse candidate and succession pools and preparing our globally talent for more senior roles. Our Women's Network and Harambee JENs play a strong role in providing monthly career development presentations, regularly posting internal leadership positions, and being a constant advocate for diversity at all career levels, companywide.

Employee and Leadership Development Training. Jacobs offers more than 30 new Inclusion & Diversity eLearning courses for all employees to help advance awareness. Nearly all our employees (98%) have completed conscious inclusion training to develop the skills necessary to foster a more inclusive and diverse workplace. We also annually offer executive internships where young employees can partner with executive leaders to increase their business acumen and broaden their professional expertise across all career types.

Professional, Executive, and/or Technical Staff Comprising Women and/or Minorities

Having a culture of belonging where everyone can join in and thrive allows us to recruit and retain the best global talent and drive innovative solutions for our business, clients, and communities. That's why in a company of more than 40,000 professionals, our diversity counts are at:

60%	55%	35%	25%
Executive Team	Board	Women	Minorities

Companywide | **Jacobs' Northwest Region** (including Hawaii)

We are continuously striving to increase our diversity counts by setting a goal to achieve a 40-40-20 gender-balanced workforce around the globe (40% men, 40% women and 20% open to any gender) over the next five years.

Processes used to Recruit Women and Minorities. Jacobs actively recruits woman, minority, disabled, and veteran applicants at all levels. This is achieved by posting promotional opportunities; assisting employees in identifying promotional opportunities, tuition reimbursement, training, and educational programs to enhance promotions and opportunities for job rotation or transfer; and evaluating job requirements for promotion.

A Culture of Service

Jacobs is an Industry Liaison with the Better Business Bureau (BBB), where we partner with local agencies and firms to foster STEAM career paths in Hawaii. Jacobs has partnered with the City and County of Honolulu, University of Hawaii, Department of Education, and local firms to outreach to K-12 students.

Company Initiatives to Promote Opportunities and Encourage Community Inclusion and Outreach Efforts

Company Initiatives to Advance Community Inclusion. Over the last year, we have seen tangible examples of progress from our approach to inclusion, the most remarkable being the launch of our global Action Plan for Advancing Justice and Equality. Driven by members of our Black employee network, Harambee, in partnership with our executive leadership team and Jacobs' board of directors, the plan sets out actionable initiatives and measurable objectives to address embedded and systemic racial inequalities both within Jacobs and in comm unities across the world. Other recent diversity and inclusion achievements include:

Jacobs Equality Matching Campaign. Launched the Jacobs Equality Matching Campaign, matching up to $100,000 of employee donations to eligible causes dedicated to inclusion, equality, and justice around the world.

Incentivize and Reward Inclusive Leadership. Created the global TogetherBeyond Inclusive Leader of the Year Award to incentivize and reward inclusive leadership.

Joined the Business Coalition. This group of more than 270 leading U.S. employers—including many of our clients—support passing federal legislation providing the same basic protections to LGBTI+ people as those afforded to other protected groups under U.S. federal law.

Position on the NSBE Board of Corporate Affiliates. We have a goal to strengthen our commitment to developing and hiring the best diverse talent with organizations like the U.S. National Society of Black Engineers (NSBE), the U.S. Society of Hispanic Professional Engineers (SHPE) and Building Equality, the U.K. construction industry's leading LGBTI+ alliance. This year, we were proud to take our place on the NSBE Board of Corporate Affiliates—their top national support level—and we are proud to have one of our leaders, Freddie Fuller, currently serving as National Chair of the Community of Minority Transportation Officials (COMTO).

The Valuable 500. We joined the Valuable 500, an organization seeking to place and keep disability inclusion on business leadership agendas across the globe.

Outreach Efforts for Underserved Communities. Successful team inclusion relies on developing relationships within the consultant community. Inclusion begins when individuals build rapport, understand each other's strengths and experiences, and identify mutually beneficial opportunities to pursue. We believe the strength of Jacobs' inclusion strategy and plan is centered around continuously building these relationships, which all begins with outreach—networking to make those initial connections that eventually lead to successful project delivery.

Our Plan to Obtain Maximum Utilization of Small Businesses

As a prime consultant, our responsibility is to share work won through large contracts with smaller firms. To that end, we continue to nurture our partnerships with the small, diverse businesses who can provide the experience and resources we need to deliver our projects. Our strategy is focused on building valuable partnerships and capacity for our partner firms. We develop an inclusion plan specific to each project, balancing the project's needs with inclusion goals. Jacobs has a long history of supporting and serving as mentors for small businesses in Hawaii.

Mentoring, Technical, or Other Business Development Services We Provide to Previous or Current Small Business Subcontractors or Partners

For Jacobs, inclusion is about more than meeting percentage goals. Mentoring is simply the natural progression of our relationships with our subconsultants, which builds their expertise, broadens their network, and strengthens their business acumen. We customize our approach to the unique needs of each relationship based on the specific challenges and desired outcomes. For each task order, we collaborate with the appropriate subcontractors to develop a technical approach and establish budget and schedule controls. We assess each subcontractor's workload and availability to deliver quality work products within the schedule. We develop staffing plans for each assignment, drawing on our D/M/W/ESB team members to provide meaningful growth opportunities for future work, reflecting our understanding and commitment to client's small business goals. We create opportunities using these and other approaches:

- Mentor D/M/W/ESB staff by delegating project management duties for small projects to our partner firms. In addition, production and senior technical staff across all partner firms are available for quality control and mentoring roles
- Provide meaningful and substantial roles on all work orders or contracts to leverage and develop our partner's capabilities
- Provide opportunities for thought leadership. Our D/M/W/ESB partners bring unique perspectives, and we capitalize on this to deliver broadly informed projects, plans, and policy to our clients

PRINCIPAL PLACE OF BUSINESS AND OFFICE LOCATIONS

Jacobs first project in Hawaii started with the design of the new Kihei Sewer Treatment Plant and Kihei Sewerage system in 1971. Since then, we have been dedicated to delivering complex projects and providing world-class expertise to our Hawaii clients. We primarily serve our clients with locally-based engineers, planners, and scientists in our Honolulu office, who provide a vast range of specialized expertise in transportation, water, wastewater, and environmental engineering, in all project phases—from planning to construction. Our full-service capabilities allow us to provide holistic and comprehensive professional services that can be customized and scaled to deliver projects large or small. Our local teams are frequently supported by industry experts, who bring best practices and lessons learned from delivering projects around the world.

Jacobs' first office in Hawaii was opened in Maui, located behind the old Kahului Railroad Station. The Maui office hosted OMI's Contract No. 1 in collaboration with former Mayor Arakawa.

2 | AGE OF THE FIRM AND AVERAGE NUMBER OF EMPLOYEES

Founded in 1947, Jacobs leads the global professional services sector delivering solutions for a more connected, sustainable world. With more than 40,000 professionals worldwide, we provide a full spectrum of services including scientific, technical, professional, and construction and project management for business, industrial, commercial, government and infrastructure sectors. Over the past five years, we have had **approximately 52,793 employees on average**.

3 | EDUCATION, TRAINING, AND QUALIFICATIONS OF KEY MEMBERS

Please refer to **Section E** for the education, training, and qualifications of our key members proposed for this contract. Upon project award, we will collaborate to provide a comprehensive team with the skills and understanding of island environments necessary to successfully deliver high quality work products.

4 | CLIENT REFERENCES

Our goal is to meet or exceed the expectations of our clients, collaborating to deliver high quality work products and services that achieve our clients' goals and visions.

Recent notable Hawaii projects we are involved in include, but are not limited to:

- ✓ Honouliuli WWTP Phase 1A, 1B, 1C, and Biogas Upgrades, City and County of Honolulu
- ✓ Kamehameha Highway Wastewater Pump Station Upgrade and Wetwell Improvements Projects,
- ✓ City and County of Honolulu
- ✓ Kamehameha Highway Wastewater Pump Station Force Main Replacement and Utility Bridge Demolition, City and County of Honolulu
- ✓ Waimea WWTP Clarifier Modification, Hawaii American Water
- ✓ Mauna Lani Sewage Pump Station 1a Upgrades and Force Main 1A Replacement, Hawaii American Water
- ✓ NPDES Storm Water Technical Training, City and County of Honolulu
- ✓ Strategic Planning, Environmental, and Permitting Services, Hawaiian Electric Company
- ✓ Facility/Infrastructure and Environmental Architect Engineering Services, Air Force Center for Engineering and the Environment
- ✓ Construction Management Services for Airfield Maintenance and Repair Projects Statewide, HDOT
- ✓ Kahului Airport Apron Pavement Structural Improvements Phase II, Kahului Airport, HDOT
- ✓ Hawaii Statewide Transportation Plan, HDOT
- ✓ Oahu Regional Transportation Plan, Oahu Metropolitan Planning Organization
- ✓ Interstate H1 Eastbound (EB) Improvements Ola Lane Overpass to Likelike Highway Off-Ramp, HDOT
- ✓ Honolulu Rail Transit Project, Multiple Contracts, HART
- ✓ Moderating Oahu's Traffic Conditions, City and County of Honolulu
- ✓ Integrated Solid Waste Management Plan, County of Kauai
- ✓ Construction Management Services for Runway 8L Widening and Miscellaneous Improvements, Phase 2, Daniel K. Inouye International Airport, HDOT
- ✓ Hawaii Bridge Program, Central Federal Lands Highway Division
- ✓ Lahaina Wastewater Reclamation Facility Modifications, Stage 1A, County of Maui
- ✓ Waianae WWTP Improvements and Upgrade, City and County of Honolulu
- ✓ Honouliuli WWTP Outfall Condition Assessment, City and County of Honolulu
- ✓ Kalaupapa National Historical Park (NHP) Electrical System Rehabilitation, National Park Service
- ✓ National Environmental Policy Act (NEPA) Compliance for Construction of a Distributed Common Ground Station Pacific Hub at Joint Base Pearl Harbor-Hickam, USACE Honolulu District
- ✓ Lahaina WWRF Odor Control Project, County of Maui
- ✓ Integrated Solid Waste Management Plan, City and County of Honolulu
- ✓ Construction Management Services for Runway 8L Widening and Miscellaneous Improvements, Phase 1, Daniel K. Inouye International Airport, HDOT

We are proud of the services we have delivered to our valued Hawaii clients since 1971. For more information, we encourage contacting our current client references:

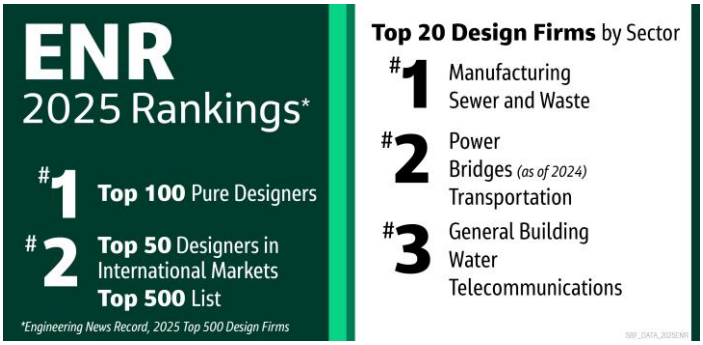
Client Name/Title/Organization	Organization	Contact Information
Ken Tatsuguchi * Head Planning Engineer	Hawaii Department of Transportation (HDOT), Highways Division	808.587.1830
Jon Nouchi * Deputy Director	City and County of Honolulu, Department of Transportation Services (DTS)	808.768.8304
Vance Tsuda* Project Director	Honolulu Authority for Rapid Transportation (HART)	808.768.6128
Kim Suzuki * Wastewater Engineering & Construction Division Assistant Chief	City and County of Honolulu, Department of Environmental Services (ENV)	808.768.8410
Benton Ho * Facilities Maintenance Section Head	Hawaii Department of Transportation (HDOT), Airports Division	808.836.6411

* Currently rendering services for

5 | PROMOTIONAL OR DESCRIPTIVE LITERATURE

The following pages highlight a selection of services we can provide. Further information on included or additional services is available upon request. This section contains details on the following services:

- Climate Change, Sustainability, and Resiliency Planning Services
- Coastal and Marine Engineering
- Ports and Harbors Engineering
- Environmental Planning and Permitting Services
- Civil Engineering Services



CLIMATE CHANGE, SUSTAINABILITY, AND PLANNING RESILIENCY

Since the late 1980s, Jacobs has been at the forefront of coastal resilience planning and management globally. Our pre-eminence in this area is seen in the variety of coastal, estuarine, and marine planning commissions that we have been involved with on behalf of local, regional, and national governments and major companies. These include integrated coastal zone management; coastal planning policy; shoreline, estuary, and beach management; coastal flood and erosion risk management plans and strategies; and the design of coastal protection projects, with recent experience throughout the world, including the United Kingdom, Europe, the Caribbean, the U.S., the Middle East, Singapore, Australia, and New Zealand. Our coastal resilience projects have won numerous awards, including most recently, the 2018 Climate Change Business Journal Project Merit Award for Resilience Planning for Economic Development in Belize and the US National Association of Environmental Professionals, President's National Environmental Excellence Award for Louisiana's 2007 Comprehensive Master Plan for a Sustainable Coast (prepared in response to Hurricane Sandy).

Planning and Permitting Services for a Renewable Energy Facility, Inter-Island locations, Hawaii
Owner: Confidential Client

Jacobs prepared the initial environmental planning and permitting work required for the development of a large-scale renewable facility within the State of Hawaii. Due diligence work included evaluation of the impacts on cultural and historic resources, visual resources, biological resources, and other aspects of the proposed project. Jacobs also identified the necessary permits for construction and operation of the project. Applicable permits included a Special Use Permit, a Conservation District Use Approval (CDUA), and a Special Management Area (SMA) permit. The project also included a variety of community relations tasks.

We are excited to partner with COH to address the effects of climate change on our island home. Issues such as coastal flooding and erosion, changes to marine ecosystem, decreasing freshwater availability.

Our global and regional resilience and coastal experts provide COH with many decades of experience in studies to define natural hazards on coasts, estuaries, and rivers globally and the development of policy and planning approaches to deliver resilience for existing and future infrastructure and communities. A detailed working knowledge of the latest climate change science enables us to provide expert guidance to COH on appropriate projections to adopt for coastal development control and the timeframes over which to consider change. Complementing our global reach is our local experience of delivering a range of environmental, watershed planning, and infrastructure design work. Our local knowledge (including technical, regulatory, relational, and cultural acumen) and our technical expertise in all aspects of work in watershed and coastal zone planning and management allow us to leverage efforts, use stakeholder relationships, and apply our knowledge and critical key factors to efficiently assist COH.

We recognize the importance of providing a robust scientific foundation upon which defensible investment and planning decisions can be made. From our experience with the planning and delivery of coastal resilience projects and programs globally, we are keenly aware of the potential political, social, and economic implications of publishing hazard and risk lines on maps, with the potential to blight existing land and development that finds itself on the wrong side of the line. This appreciation drives our focus on the technical quality of projected future hazard areas and a strong focus on engagement with affected communities to provide awareness of the developing products.

Sustainable Development Concepts: Jacobs Corporate Commitments—SDGS and PlanBeyond 2.0

We are committed to global sustainability, which is demonstrated in how we operate our business, how we perform our work for and with clients and other organizations, and how we continue to look for ways to make a positive environmental, societal, and economic difference for businesses, governments, and communities locally and globally.

What does sustainability mean to Jacobs?

Our sustainability culture at Jacobs means delivering long-term business resilience and success for COH while positively contributing toward the economy, society, and the environment.

Sustainable concepts can be applied to many of the services we provide to COH, including:

Siting	Optimize orientation, consider diurnal swings, and maximize effect on water surface and groundwater
Air Quality	Reduce air pollution, offset emission increases, and enhance wellness
Energy	Reduce consumption, explore renewable energy sources, incorporate natural systems, and reduce use of fossil fuels
Water	Reduce consumption, capture rainwater, recycle wastewater, reuse gray water, and explore renewable water systems
Solid and Hazardous Waste	Reduce waste, collect, and manage all waste, recycle materials into organic nutrients, and eliminate volatile organic compounds
Building Systems Integration	Integrate architectural, mechanical, and electrical systems; create "smart" buildings; integrate gray water with fire protection systems; and incorporate photovoltaic systems
Materials	Reduce consumption of nonrenewable resources, increase use of recycled materials, evaluate lifecycle cost analysis, and reuse buildings and materials
Transportation	Provide safe and convenient access and mobility for all users and modes of travel
Biodiversity	Protect natural community systems, enhance, and maintain ecosystems, incorporate, and maintain native species, and create green spaces and green walls

PlanBeyond 2.0 is our refreshed *sustainable business strategy*. Aligned with our purpose to create a more connected, sustainable world, it is being fully integrated into our business model and company strategy. We know we will be more successful if we make decisions guided by both profitable growth and positive impact.

1	Advance the health, wellbeing and safety of society
2	Deliver solutions for the global water and sanitation crisis
3	Foster a culture of technology and innovation important to the advancement of society
4	Create a fair and inclusive future for all
5	Develop efficient and resilient solutions that deliver net environmental and societal gain
6	Accelerate solutions that address the climate emergency

We continue to align our PlanBeyond 2.0 strategy with the United Nations Sustainable Development Goals (SDGs) to clearly demonstrate how we are contributing to the delivery of sustainable outcomes. All 17 of the SDGs are interconnected, and no progress can be achieved in isolation of any one goal. Based on a robust materiality assessment including engagement with stakeholders throughout our value chain, we have identified six core SDGs that are material to our business, where we can have the most influence and impact. With that said, we remain committed to contributing towards all 17 SDGs.

As a business, we have a tremendous opportunity to continue to influence positive change and drive progress through the solutions that we create and deliver for COH. With global revenues of more than $16 billion, operating in 400+ locations around the world and expertise spanning environmental services, architecture, engineering, construction, and technology, we have significant scope to make a positive difference.

Climate Services and Climate Action Plans

With our reputation as a thought leader and trusted advisor on climate resilient infrastructure and our extensive portfolio of projects focused on climate change assessment, mitigation, and adaptation, we are the leading full-service engineering firm on developing and implementing climate solutions. This enables us to bring an unparalleled breadth of experience to managing climate risk. Working with specialists in each industry sector, we can assess climate risks of the specific impacts and challenges faced by each sector and infrastructure or asset type.

We use state-of-the-art tools and processes to help you manage climate risks to your infrastructure and assets and build your resilience to climate change and other natural hazards. The following is an example of how we developed and have been working towards internal goals set forth in our own Climate Action Plan.

Climate Leadership Award

Jacobs is a proud winner of the Climate Leadership Award for excellence in reducing carbon pollution and addressing climate change. We redoubled our efforts to strengthen our leadership around critical sustainability challenges, launching our Plan Beyond 2.0 strategy - planning beyond today for a sustainable future for everyone.

Jacobs Operations: Leadership on Climate Change

In April 2020, we published our first Climate Action Plan, committing to 100% renewable energy for our operations in 2020 and net zero carbon for our operations and business travel by 2030. We achieved net zero carbon in line with the global standard PAS 2060:2014. Alongside achieving our 2020 targets, we developed science-based carbon-reduction targets for our direct and indirect emissions, approved by the Science-Based Targets Initiative.

In 2019, we received the Climate Leadership Award from the Climate Leadership Conference

In FY20, we saw a 33% reduction in total, calculated carbon emissions to 116,466 tCO2e, as well as a 50% reduction in our travel-related carbon emissions—compared to our updated FY19 baseline. Most of these emissions reductions directly resulted from changes in operations due to the pandemic. We also outlined how we will start to bring climate uncertainty into the mainstream as part of our enterprise level risk assessment process, in line with recommendations made by the Task Force for Climate-related Financial Disclosure (TCFD). Our first-hand knowledge and experience of developing climate change goals and the implementation strategies equip us with a practitioner-first-professional mindset.

Stormwater Quality Improvements

As a nationally recognized leader in stormwater management, our broad services include developing best management practices to improve both water quantity and quality. Our technical expertise includes technical training, feasibility studies, site planning, erosion and sediment control, hydrologic and hydraulic analysis and modeling, drainage design, construction, urban runoff, wetland impact evaluation and mitigation, water quality treatment, stormwater comprehensive planning, fisheries, and environmental site assessment issues, policy, and public involvement.

Our staff has also developed practical and detailed design manuals for drainage, erosion control, stormwater management best management practices (BMPs), flood control, and constructed wetlands. We are experienced in designing drainage structures, storm water management facilities, and erosion controls. We helped develop the third-party storm water inspection program and are currently performing construction site inspections in accordance with the City's NPDES permit and City regulations. Projects include all stages and aspects of construction for the City, such as general site specifications, Stormwater Pollution Prevention Plan (SWPPP), Erosion and Sediment Control Plans (ESCP), and other associated environmental agency permits.

Green Infrastructure

Low-impact development, green wet weather programs, green streets, or sustainable site design—Jacobs has been at the forefront of the green infrastructure planning and design movement for over 25 years. Green infrastructure is a stormwater management approach that seeks to mimic natural systems—it reduces stormwater runoff volume and pollutants using technologies that infiltrate, evapotranspire, or capture and reuse water to restore the natural hydrology. Examples include rain gardens, porous pavements, green roofs, tree trenches, and other structural and non-structural practices. Jacobs is well versed in techniques that reduce the rate and volume of runoff and improve water quality by allowing stormwater to soak into the ground, irrigate plants and trees, and filter pollutants within the soil mantle. This enables groundwater tables to recharge and local streams to regain their base flow.

Miami Beach Blue-Green Stormwater Infrastructure (BGSI) Concept Plan

We are supporting the city of Miami Beach in developing an overall Integrated Water Management Plan, with a key component focused on BGSI. Along with blue/green infrastructure, the team is developing and analyzing modeling data, looking at neighborhood prioritization for proposed improvements, as well as determining proposed elevations in road-raising efforts citywide. Relevant services include:

- Expansion Management Support
- Policy and Regulatory Support
- GSI Procedures, Tools, and Adaptive Management
- Green or Green/Gray Project Support
- Communications and Public Engagement Support

Delivering Resilience

Keeping business, cities, and whole communities safe, resilient, and adaptable to change is one of our core competencies and one we proudly offer to COH.

We have delivered resilience on more than 1,000 projects in locations around the world. We focus on anticipating the impact of natural and human-made hazards to develop and deliver resilience — from protecting coastal communities to providing critical healthcare facilities and delivering smart, connected, and secure systems.

Our resiliency experts will engage with COH across the full project life cycle of natural and built infrastructure. We will assist in early hazard definition, evaluation, strategy development, design of solutions, and full implementation, including operations and maintenance of organizational and infrastructure systems.

50+ Years of integrated resiliency solutions across markets

1,000+ Resiliency-related projects in our portfolio

200+ Clients worldwide, focused on the planning and response to the full range of climate hazards

The following are a few examples of previous projects we have completed around the world.

Thames Estuary Asset Management 2100, London, U.K.

Serving as delivery partner for the design and development of an extensive program to protect flood defense assets along the 175-km tidal River Thames, we're incorporating a series of fortifications, embankments, flood gates, pumping stations, outfalls, and major barriers to protect London.

Port of San Francisco Waterfront Resilience, California, U.S.

Providing a proactive and innovative strategy for managing vulnerabilities to address present and future natural hazards, this program will improve safety and resilience, including the design and engineering of seismic and flood risk reduction measures for this busy, iconic waterfront.

Temaiku Land and Urban Development, Tarawa, Kiribati

Jacobs assessed the feasibility of increasing the height of a 330-hectare area of land to approximately two meters above the highest measured sea level. We are also developing a conceptual land use plan that addresses resilience issues impacting the atoll, including rapid urbanization, limited water supply, ecosystem services and an increasing risk of land inundation from king tides.

Mahanagdong B Geothermal Power Plant Restoration, Leyte, Philippines

Following a devastating earthquake in the Eastern Visayas region of the Philippines in mid-2017, Jacobs' power consulting team mobilized onsite with the Energy Development Corporation to assess damage, provide detailed design, and manage the remediation project at the Mahanagdong B 60 MW geothermal power plant, which sustained severe damage.

Emergency and Disaster Response Efforts, Puerto Rico, Caribbean, U.S.

Jacobs is assisting the U.S. Department of Homeland Security's Federal Emergency Management Agency across 17 U.S. states and territories, providing post-disaster response and recovery efforts and hazard mitigation and future resiliency measures.

Connected, Secure and 10 Gig Smart Cities, Canada

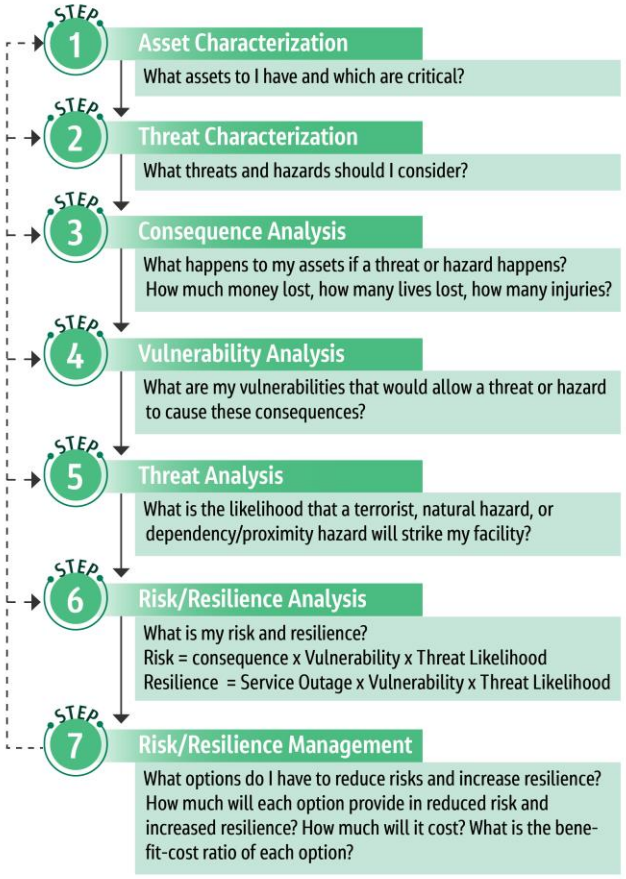
Jacobs and our partners Smart City Capital and Nokia are using innovative, outcome-based business models and cutting-edge technologies to deliver competitive, connected, safe and resourceful cities.

Hinkley Point C Nuclear Power Station, Somerset, U.K.
EDF's Hinkley Point C is expected to make a major contribution to the U.K.'s ambition to reduce carbon emissions, providing low-carbon electricity for around six million homes. Jacobs is supporting with wide-ranging professional technical and project management services and in a program delivery role.

Christchurch Hospital Outpatients Building, New Zealand
Jacobs provided architectural and building engineering services for the new 5-story, 10,500-square-meter Christchurch Hospital Outpatients building, following an earthquake and catastrophic aftershocks.

We provide comprehensive infrastructure, technology, and intelligence solutions to help governments, cities and survive, recover, adapt, and thrive when facing natural hazard, operational boundary, cybersecurity, biosecurity, and finance-related risks, including:

- **Resilience Assessments** - We define natural and human-made threats to people, places and assets from public health security and cybersecurity to natural hazards and climate variability.
- **Organizational Excellence** - Evaluation and benchmarking of organizational processes and behaviors to understand potential gaps in the understanding and management of vulnerabilities to business and community continuity.
- **Emergency Management and Disaster Response** - From preparedness and mitigation to response, recovery planning and delivery, we do it all.
- **Resilient Design** - Once we understand the system needs and vulnerabilities, we develop solutions to provide long-term resilience. These include the following:
  - **Resilient Infrastructure** - Full life-cycle planning and design of capital works both in preparation for and in response to hazards
  - **Green Solutions** - Integration of green infrastructure to improve resilience and enhance urban areas
  - **Future-Proofing Solutions** - Climate and population change analysis to inform sustainable solutions
- **Adaptation Planning** - Long-term investment planning to sustain business continuity and economic development in consideration of future uncertainties.
- **Program Finance and Delivery** - Operations and management, supply chain management, community and stakeholder engagement, finance, programming, monitoring and oversight support – aimed to helping design, finance, implement and operate resilience actions and programs.



AWWA J100 Process Steps

Long-Term Recovery Planning

Jacobs leverages its extensive pool of resources and expertise to provide tailored recovery planning solutions to address the diverse needs of impacted communities. We guide our partners through effective recovery while aligning with broader hazard mitigation, resilience, and sustainability goals. We align and coordinate our solutions with all relevant federal, state, and local visioning plans and guidance documents. Our extensive global experience includes managing complex recovery efforts, from minor incidents to localized catastrophic events and statewide major disasters.

We have recently delivered the Lahaina Long-Term Recovery Plan following the 2023 Maui Wildfires, developed long-term recovery plans for six municipalities in Florida following the 2022 Category 5 Hurricane Ian, developed the $6.4b rebuild strategy for Tyndall Air

Force Base after a Category 5 hurricane (https://tyndallifs.com/), and we are doing extensive work in California, including the Paradise recovery strategy work under the California Environmental Quality Act.

Additionally, our team has conducted cross-sector studies, surveys, and analyses to provide adaptable solutions to complex recovery and rebuilding challenges – equipping local leaders with critical insights and effectuating informed decision-making in the post-disaster context. Relevant examples of post-disaster assessments include Scenario Planning for Resilience Study, Complete Streets Study, Permitting Pathways, Solar Array Feasibility Study, Historical and Archaeological Assessment, Wastewater Facility Improvements Analysis, Landscape Restoration Study, BCA for Solid Waste Collection Automation and various Economic Analyses, among others.

Recovery Project and Program Management

Jacobs is one of only a handful of organizations with full technical capabilities and in-house resources to successfully manage and deliver complex rebuilding programs. We've managed the planning, programming, and construction of facilities across each market sector – schools, hospitals, public buildings, roads, water, wastewater, and power facilities. For national, state, and city agencies and utilities, we perform strategic planning and prioritization; asset management; design; and PM/CM to deliver capital works projects. We engage at every stage from project development to construction closeout and commissioning.

Capacity Building and Staff Augmentation

Our team provides on-site staff support to build local capacity during disaster operations, enabling recovery initiatives to be achieved on accelerated timelines to address urgent needs. Our team has embedded staff in municipal government offices – emergency management departments, public works departments, planning departments, and administrative offices – to increase access to subject matter expertise, streamline interagency and interdepartmental coordination, and provide consistent support in developing holistic recovery solutions in real time as needs are evolving.

Community Engagement

As part of recovery planning and project development, Jacobs supports community engagement efforts to assist clients in ensuring recovery is community-led, transparent, and reflective of local needs. Recovery is not a one-size-fits-all process, and each individual community we support has unique challenges, needs, and priorities. Our team supports planning, logistics, materials development and staffing of public involvement efforts, and further conducts data synthesis to utilize feedback in developing recovery plans and programs. Jacobs has supported many formats – surveys, open houses, neighborhood workshops, focus groups and town halls – and has successfully developed online networking platforms to mirror in-person events to ensure displaced and vulnerable residents are provided the opportunity to shape their community's future, even from afar.

Resilience and Vulnerability Assessment Services

Our technical experts assist a variety of client sectors in assessing vulnerability and risk, including:

- Water and Wastewater
- Information Technology
- Dams
- Bridges
- Schools
- Ports
- Airports
- Railroads
- Roads/Highways
- Maritime
- Chemical
- Nuclear
- Department of Defense

We have a globally recognized security team with extensive experience in using a variety of methodologies to conduct Vulnerability Assessments (VAs). Our approach is to identify individual client needs and objectives to determine the most effective approach to conduct an all-hazards (that is, man-made, accidental, proximity, and natural threats) VA for critical infrastructures. To best meet the needs of COH, we will tailor recommended enhancements that focus on practical, feasible, and cost-effective technologies. Our J100 methodology for risk assessment has been awarded SAFETY Act designation by the Department of Homeland Security.

Municipal Carbon Services

Our expertise in implementing systematic, creative solutions will be used to position COH to become more carbon smart and climate resilient. Our team assists agency leadership leveraging the most effective tools to evaluate and track GHG management. We also have the engineering and technical expertise to support project delivery, whether renewable energy, building energy efficiency, alternative fuels and vehicles, transportation infrastructure, industrial processes within the community, forest and wetland restoration initiatives, water supply and wastewater treatment process or source modifications, solid waste management, biogas utilization, land use planning,

or other actions. We helped set the standard for risk analysis and resiliency planning for the physical impacts of a changing climate, contributing to climate vulnerability assessment resources for the United States Environmental Protection Agency (US EPA).

Our representative climate change solutions are as follows:

GHG Management & Reporting Strategy	▪ Science-Based Target Analyses ▪ Regulatory/market assessment ▪ Enterprise energy and resource program development and deployment ▪ Carbon footprint inventories and risk disclosure – e.g., CDP
Climate Change Scenario Planning	▪ Assessment of risks to resource management and infrastructure upstream and downstream ▪ Decision and implementation support
Mitigation of GHG Impacts	▪ Reduction of fossil energy use-efficiency programs, alternative energy, and vehicles ▪ Carbon sequestration compression, and long-term storage or beneficial use ▪ Renewable energy credits (RECs) and carbon offsets
Adaptation and Resiliency Strategy	▪ Downscale modeling of variations in climate ▪ Mitigation projects (e.g., flood protection, water supply, power supply, supply chain resiliency) ▪ Design standard analyses

Beyond Carbon is *our holistic approach to net zero cities*. Embracing a more holistic, collaborative, programmatic approach to city decarbonization could help accelerate the transition to net zero, bringing diverse city stakeholders together to identify synergies and create local projects that reduce carbon emissions at the source and at all scales—individual buildings, city blocks, neighborhoods, communities, and islands-wide. This approach could also encourage other local governments and businesses to invest in the future of their local communities, delivering local carbon reduction projects that have other co-benefits and address other community and city challenges.

2030
Our target date to become carbon negative for our operations and business travel

100%
Renewable energy in 2020 for our operations

2020
When we hit net zero for our operations and business travel

6
Environmental Business Journal Awards in 2021

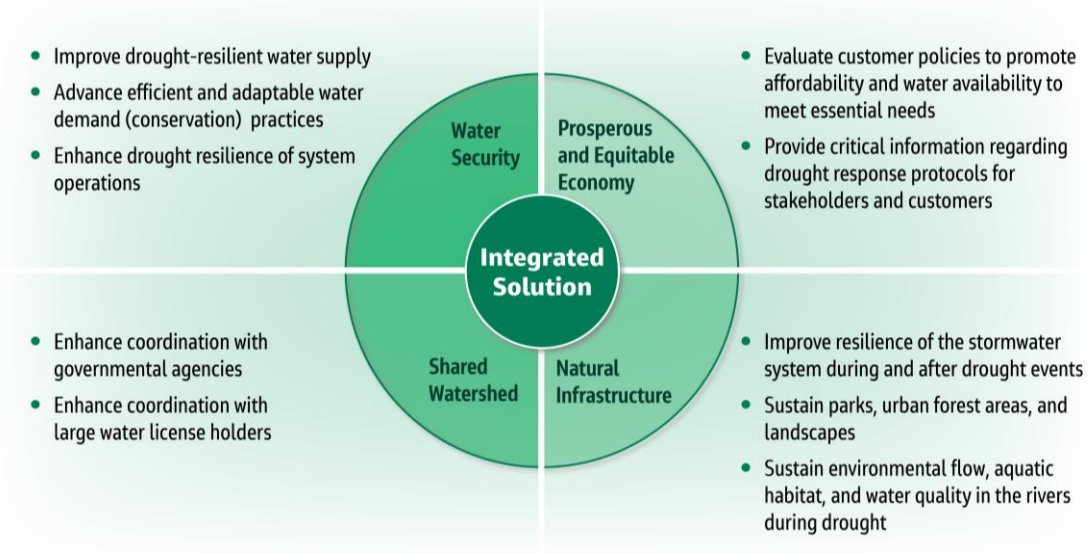
Drought and Water Resilience

Planning for and managing water issues has and will continue to become complex and challenging as demands increase and climate and precipitation cycles change. We provide a structured approach to understand and manage drought vulnerabilities and develop resiliency strategies. We employ a drought resiliency planning framework that articulates problems and hazards, assesses risk and vulnerabilities, and identifies adaptation strategies to address risks and provide resiliency in the face of change.

Data-Driven Drought Resiliency Planning Corpus Christi, Texas

The City has 60 miles of coastline directly adjacent to wastewater treatment plants, lift stations, water mains, and sewers. We developed an Integrated Master Plan that recommended and prioritized $3.1 billion of improvements to address aging assets, future regulations, SLR, and LOS needs.

- Addressed capital needs for the City's drinking water, wastewater, biosolids, reclaimed water, and stormwater infrastructure
- Addressed resiliency, sustainability, SLR, saltwater intrusion, tropical weather impacts infrastructure
- Evaluated multiple approaches for mitigating the forecasted sea level rise (up to three feet) over 20 years



10 Strategic Objectives Provide Planning Framework

Energy Resilience

In a clean energy future, our energy infrastructure must be resilient to climate shocks and stresses to deliver a reliable energy supply to communities. Increasingly frequent and intense storm events result in major power outages each year, leaving millions of homes and businesses without power and heat and resulting in food and water shortages. Major weather events such as Superstorm Sandy in 2012 and, more recently, Winter Storm Uri in Texas in 2021 showcase the need for resilient energy solutions.

We think differently about the future—about how we prepare for and respond to natural, societal, and economic risks—to mitigate the extremes that can negatively impact our way of life. We deliver energy resilience through comprehensive infrastructure, technology, intelligence, and operational solutions that help governments, cities, and private sector clients survive, recover, adapt, and thrive regardless of the chronic stresses and acute shocks they experience.

Vistra Energy Substation Additions for Grid Resilience, Vistra Energy, Ohio

Providing a proactive and innovative strategy for managing vulnerabilities to address present and future natural hazards, this program will improve safety and resilience, including the design and engineering of seismic and flood risk reduction measures for this busy, iconic waterfront.

New Jersey Army National Guard Microgrid Master Plan, Sea Girt, NJ

The National Guard Training Center at Sea Girt, a training center located on the east coast of New Jersey, was severely impacted by natural disasters, including Superstorm Sandy. The prolonged power outage had negative impacts on the mission. Jacobs completed a microgrid feasibility study to improve resiliency and provide energy security for the facility. This included performing energy security and efficiency assessments, financial analysis, recommendations to enhance electrical distribution resilience and automation, recommendations for energy storage, and smart grid control systems.

Coastal Resilience, Sea-Level Rise, and Shoreline Change Rate Planning

As a leader in the evolution of policy and strategic resilience approaches, we recognize that risk management decision-making must take account of wider coastal and watershed process setting, and the long-term implications of climate change, alongside balancing environmental, social, and economic drivers.

We have a long history of successfully developing coastal management programs in the U.S. and abroad. Early Integrated Coastal Zone Management (ICZM) programs for Doha (Qatar, 1995) and Barbados (1996) evolved strategic thinking across the full range of coastal issues, integrating coastal protection, development control, economic growth, and environmental protection. The definition of potential future coastal change and development control policies was a key outcome. Subsequent commissions in Jamaica, Romania, Georgia,

and Abu Dhabi have continued this evolution of integrated strategic approaches to coastal resilience, integrating policy, planning, engineering, and community engagement approaches to deliver long-term resilience.

In recent years, we have applied this strategic approach to deliver coastal resilience plans in the wake of major coastal disasters. We led the development of Louisiana's Comprehensive Master Plan for a Sustainable Coast (2007) after Hurricanes Katrina and Rita, which was the first time that hurricane protection and ecosystem restoration had been integrated into a single plan. Subsequently, we developed New York City's plan for resilience of its water infrastructure system following the impacts of Hurricane Sandy (2014).

Recent projects undertaken in Belize, Trinidad and Tobago have set out long-term coastal protection programs together with the design of nature-based coastal resilience solutions to demonstrate the sustainability benefits of applying these technologies where appropriate.

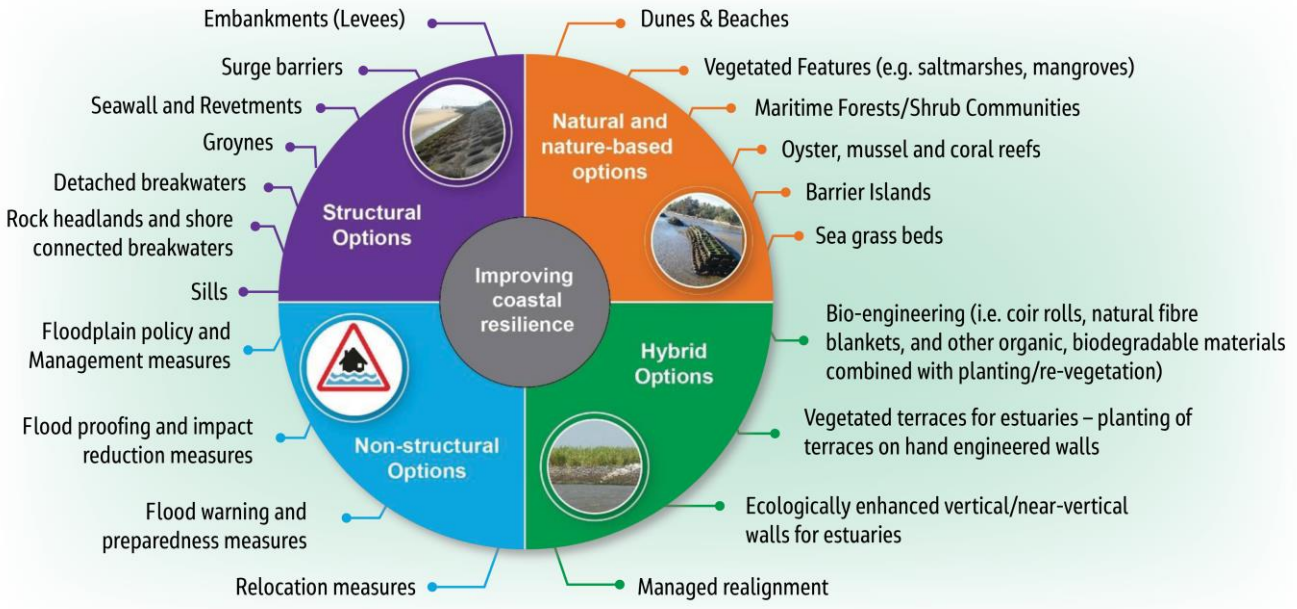
Alongside this policy and strategic coastal experience, we have been delivering an array of coastal resilience projects for major waterfront locations around the globe. Some recent and ongoing examples include:

- ✓ *San Francisco Seawall Resilience Program* - Seismic and flood resilience for the iconic Embarcadero frontage
- ✓ *Lower East Side Coastal Resiliency, New York City* - Flood protection integrated with landscaping and public spaces on densely developed Manhattan shoreline
- ✓ *Rockaways Boardwalk, New York City* - Design of a robust coastal boardwalk to provide hard protection on the NYC open coast, integrated with beach and dune replenishment
- ✓ *New Orleans Hurricane Protection System* - Peer review and design of multiple elements of the levee and pump system
- ✓ *Lincshore* - The UKs largest beach nourishment program, with around 0.5 million cubic meters of sand placed annually
- ✓ *Dawlish Rail Protection, United Kingdom* - Protection of coastal rail line and town heavily damaged in winter storms, with major slope stabilization works and coastal protection structures
- ✓ *Singapore Coastal Reservoirs Resilience* - Design of adaptation measures for nine coastal reservoirs, including gates, dams, and dikes, together with flood mitigation measures
- ✓ *SH16 Causeway Coastal Defense* - Design of key highway protection system in New Zealand
- ✓ *Brisbane Airport Coastal Protection, Australia* - Design of structures to protect new runway and major airport
- ✓ *Temaiku Land & Urban Development, Kiribati* - Major reclamation and coast protection design for low lying Pacific Island

We take pride in our ability to deliver innovative and high-quality technical solutions in the marine and coastal environment.

Taking time to understand COH's business challenges, we will systematically leverage our best people, excellent local knowledge, and leading expertise to tailor solutions to meet your needs. Our experience with coastal engineering and modelling is diverse and encompasses the following core services and expertise:

- Coastal engineering and management
- Coastal processes and numerical modelling
- Coastal structures and coastal protection
- Small craft infrastructure
- Erosion and scour protection solutions
- Waterside development planning and design
- Environmental and water quality studies
- Coastal monitoring
- Metocean data collection and analysis
- Dredging and reclamation
- Economics and risk analysis
- Condition inspections and maintenance advice
- Physical modelling specification and supervision
- Marine water quality assessment, modelling and monitoring
- Design and contract administration
- Navigation analysis
- Mooring design and analysis
- Coastal management solutions
- Breakwater and harbor basin



Improving Coastal Resilience

Watershed and Riparian Efforts

We have been at the forefront of watershed resiliency planning throughout the western U.S., supporting numerous clients in evaluating water resources and the impact of climate-induced changes in hydrology patters and the resultant risk to infrastructure, and identifying ways to mitigate that risk through riparian buffers, setback levees, increased watershed retention, sediment management, and enhancements or creation of both soft- and hard-infrastructure solutions. Some key projects include the following:

- ✓ C*entral Valley Flood Protection Plan, California Department of Water Resources* - We have developed a comprehensive new framework for system-wide flood management/ flood risk reduction in the Sacramento and San Joaquin River Basins.
- ✓ *National Center for Atmospheric Research* – We assisted with the Decadal Scale Climate Prediction: Integration of Decision-Making with Predictive Capacity for Decadal Climate Impact Study.
- ✓ *Sonoma County Water Agency, California* – We prepared a Climate Vulnerability Assessment and Adaptation Work Plan, developing a detailed work plan for assessing climate vulnerabilities and for developing an adaptation plan for water supply, sanitation, and flood control systems.

COASTAL AND MARINE ENGINEERING

Jacobs is a world leader in coastal and maritime engineering, balancing the need to provide resilient coastlines with the development of multi-functional, innovative coastal habitats, to deliver sustainable prosperous coastal environments.

Throughout its history the firm has remained at the forefront of coastal and maritime engineering, coastal management and planning, and the analysis of coastal processes. Our expansive team of coastal engineering specialists and scientists, primarily based in the UK, USA, Asia/Pacific and Middle East, has a long history of successfully delivering coastal projects around the world. They are supported by GIS analysts, economists, environmental scientists, spatial planners, surveyors, geologists and geotechnical engineers, business planning, finance and contract, and other specialists from within the wider Jacobs.

Our expertise covers all aspects of work in the coastal zone, encompassing integrated coastal management commissions, including flood and erosion hazard definition; strategic risk management; planning and design of shore protection projects; and consideration of sea level rise impacts. Additionally, Jacob's expertise extends to coastal habitat and wetland restoration, coastal resilience and adaptation, and coastal and offshore developments. Jacobs's engineering capability covers all forms of marine design. Including the full range of structural protection approaches (from barriers to seawalls and embankments), softer forms of defense such as natural solutions, and non-structural approaches such as building codes, land use planning, and flood proofing.

Examples of our award-winning experience with coastal and marine engineering include:

Coastal Resilience Master Plan, Belize

Developing a comprehensive resilience plan for Corozal District of Belize, including development of concept designs for a series of demonstration ecosystem-based stabilization measures.

Awarded: Climate Change Business Journal's 2019 "Project Merit" Climate Change Resilient Infrastructure, and UK Environment Agency "International Project Excellence" award

Kiribati Island Adaptation Plan, South Pacific

Project included land reclamation, complete with land use and urban development plan, to address the sea level rise threat to this low-lying nation. Based on extensive stakeholder engagement, the project will improve water supply and public health and reduce tidal flooding.

Awarded: Climate Change Business Journal's 2019 "Project Merit" Award for Climate Change Adaptation and Resilience

Mommouth Beach Dune and Habitat, US

Restoration of the approximately 1-mile-long dune system along the ocean following Superstorm Sandy and restoration of several marsh island.

Awarded: The World Association for Waterborne Transport Infrastructure (PIANC) "Working with Nature" Certificate of Recognition

Team 2100 Thames Estuary Asset Management 2100 Program

Thames Estuary Asset Management Program

Valued at over £300 million, the project is delivering the first 10 years of a 100-year plan. TEAM2100 is the Environment Agency's single largest flood risk management program and one of the government's top 40 infrastructure projects.

Jacobs is responsible for maintaining the estuary's 3,500 different assets and delivering best practice resilience asset management, at best value for the public's money. The effort includes design and development of an extensive flood management program including supporting studies, refurbishments, and construction of defense assets.

Awarded: Institution of Civil Engineers (ICE) London 2018 Innovation Award; The Environment Agency's 2017 Project Excellence in Innovation Award; New Civil Engineer's 2017 Tech Fest Awards (Project Team of the Year and Innovation of the Year); Big Data, USA Resilience and Climate Adaption Consultant Award of the Year 2017.

PORTS AND HARBORS ENGINEERING

Jacobs' Ports & Maritime Group provides our clients with value-added consulting, planning, and engineering services. We have developed long-term, trusted relationships with clients around the globe for work in the containerized, bulk, general cargo, oil and gas, shipyard, cruise, ferry, and urban waterfront industries, as well as for port authorities, governments, and some of the world's leading naval forces.

We have over 500 in-house ports and maritime professionals based in service centers around the world. We are committed to using our global knowledge and experience to provide our clients with local solutions. Jacobs, as the # 1 in the Ports & Maritime industry (ENR, 2019 & 2020), is the global leader in providing services for the ports, harbors, and authorities with coastal and wetland assets.

Our capabilities extend across the industry, including from:

- Master plans and concept investigations to detailed engineering
- Minor maintenance and repairs to new port and coastal assets
- Business case to operational and maintenance support
- Coastal and wetland environment modelling to impacts from operations and issues, including diverse in-house modelling capability with wave, flood, flows, afflux, sedimentation and erosion, thermal and dredge plume, fast- time vessel navigation, vessel passing, berthing, and mooring
- Visual inspections and condition audits to whole of life remediation and replacement strategies

In a dynamic and changing environment, we understand the need for coastal and harbor infrastructure to be resilient and fit for life. Hawaii coastal and marine infrastructure projects can be particularly challenging with direct impact of combinations of tropical climate, exposed coastal processes, and effects of sea level rise. We understand the environment and have extensive experience in Hawaii and throughout the tropics.

Our global structure and extensive pool of diverse personnel and capabilities allows us to work with you to resolve issues across your locations and assets.

Therefore, we offer:

- Local services and contacts to provide you with a consistent client-facing team and a high level of service
- An extensive team that has delivered your requirements for similar clients in similar locations and will bring the best of industry solutions to you
- A tailored approach that is developed with you to address task orders regardless of the size

Coastal Infrastructure

We are widely recognized as one of the premier coastal structure design firms in the world. Our expertise includes all types of coastal structures, including breakwaters, revetments, seawalls, bulkheads, groins, jetties, flood protection, and beach nourishments. We balance the need for providing traditional marine structures with the development of less-intrusive soft engineering solutions. Our approach has resulted in innovative and widely acclaimed solutions, such as the creation of artificial headlands, beach nourishment and sand/gravel recycling. These 'softer' approaches rely on manipulating natural coastal processes to provide protection from erosion and flooding.

Hunters Point South Urban Waterfront Redevelopment (New York)

Jacobs has led the restoration and revitalization of historic and abandoned or underutilized waterfront sites to create vibrant public areas including parks, boardwalks, ballparks, marinas, boat launch ramps, piers, esplanades, walking/bike paths, and entertainment/retail centers. We have worked with municipalities, private waterfront landowners, developers, and architects to reconnect waterfront sites isolated by highways, railroad tracks, and industry, transforming them from uninviting, underutilized industrial spaces into landmark attractive and welcoming waterfront recreational and relaxation spaces.

Military And Defense

We are committed to serving the waterfront and offshore engineering needs of the military community. We have successfully delivered a wide variety of maritime projects for the US military, as well as for the armed forces of allied nations around the world. Jacobs remains at the forefront of research and development efforts for new products and technologies beneficial to the armed forces, including rapid deployment systems for fuel transfer at remote shorelines, transportable mooring dolphin systems, offshore security barriers, and advanced underwater construction techniques.

NAVFAC A/E and Inspection Services for Waterfront Facilities On-Call (Global)

Facilities designed by Jacobs include homeport (cold iron) piers, ordnance load out berths, deperming facilities, maintenance shipyards and drydocks, fueling depots, specialized submarine berths and aircraft carrier moorings, and the latest-generation container-handling facilities for Navy and Army operations.

Cruise and Ferry

Our comprehensive understanding of logistics, security, customs and border protection, and passenger and baggage handling has made us a leader in the cruise and ferry industry, delivering cutting-edge facilities for private cruise and ferry lines and port authorities throughout the world. Jacobs provides services for the rehabilitation and new construction of terminals, maintenance facilities, and associated marine and upland structures, including facilities for connecting transit modes. Our design professionals and planners work closely with the cruise and ferry lines, and we understand the changing requirements as innovations continue.

ENVIRONMENTAL PLANNING AND PERMITTING SERVICES

Environmental planning and compliance services have been an integral part of Jacobs' business for almost 60 years. Jacobs is well-versed in and experienced with local, state, and federal environmental laws and regulations, including the Clean Water Act, Clean Air Act, Resource Conservation and Recovery Act, Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and Toxic Substances Control Act.

We understand the intricacies of the Hawaii Environmental Policy Act (HEPA), the National Environmental Policy Act (NEPA), the Safe Drinking Water Act, the Endangered Species Act, the National Historic Preservation Act, the Native Graves Protection and Repatriation Act, and the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA).

Our Honolulu office has over 40 years of experience in:

- Environmental planning and permitting
- Site characterization
- Remedial action planning and design
- Remedial system operations
- Environmental Data Management and Analysis Solutions
- Natural Resources Management

Our scope of environmental services includes:

ENVIRONMENTAL STUDIES/SURVEYS
NEPA/HEPA Documentation
Natural Resources Assessment
Environmental Planning Permitting
Environmental Risk Assessment
Visual Impact Analysis
Indirect/Cumulative Impact Analysis
Traffic/Transportation Analysis
Emergency Response
CEVP/VE Study Support
Inter-agency MOA/MOUs
Alternatives Analysis
GIS
Feasibility Studies
Watershed Planning
Technical Editing

MITIGATION/ JURISDICTIONAL REVIEWS
Environmental Permitting
Wetland/Stream Mitigation/Restoration
Post-Construction Mitigation
Multi-Jurisdictional Reviews

HAZARDOUS MATERIALS
Hazardous Materials Management
Phase I/II Environmental Assessments
Sediment Remediation

CONSTRUCTION MONITORING/COMPLIANCE
NPDES Compliance
Groundwater Monitoring
RCRA and MTCA Compliance
Soil, Water, and Air Sampling Analysis
Waste Management Plans
Asbestos Sampling
Contaminated Soil Disposal and Permitting
Construction Management
Environmental Compliance
Spill Prevention, Control and Countermeasures (SPCC) Plans
SWPPP/TESCO
401 Water Quality Compliance
Fish Exclusion/Salvage

AIR/NOISE
Air Quality Analysis/Permits
Air Quality Modeling
Traffic Noise Analysis
Traffic Noise Abatement
Noise Variances/Exemptions

SOCIAL, EJ, LAND USE ASSESSMENT
Socioeconomic Analysis
Land Use Planning/Analysis
Farmland Conversion
EJ/LEP Outreach/Analysis
Section 4(f)/6(f) Evaluation
Public Services/Utilities

CULTURAL RESOURCES
Section 106 Review Compliance
Section 110 Compliance
GEO 05-05 Review/Compliance
MOA
Development/Implementation
Data Recovery
Curation
Tribal/Agency Consultation
Tribal U&A Strategy

PUBLIC INVOLVEMENT
Public Involvement Planning
Public Engagement/Outreach
Strategic Communications
Business/Community Surveys
Interactive Visual Media

STORMWATER/WATER QUALITY
Stormwater Management
Surface Water Management
Floodplain Management
Hydraulics/Hydrology
Water Quality Analysis/Permits
Low Impact Development Design (LID)
Drainage Engineering and Design
River Engineering and Design
Geomorphology/Bioengineering
Watershed Planning

BIOLOGY SUPPORT
ESA/EFH Documentation
Aquatic/Terrestrial Biology
Habitat Management/Conservation Plans
Wildlife Habitat Evaluation
Wetland/Stream Assessment
Wildlife Crossing Design
Ecological Connectivity Design/Monitoring
Marine Mammal Monitoring

GREENHOUSE GAS (GHG)/ CLIMATE CHANGE
GHG Analysis
Climate Change Planning
Sustainability Analysis
Envision

FISH PASSAGE ASSESSMENTS
Fish Passage Structure Design
Instream Habitat Design
Large Woody Debris (LWD) Analysis/Design
Hydraulics/Hydrology

LANDSCAPE ARCHITECTURE
Landscape Plans
Roadside Restoration
Arboriculture
Wetland/Stream Mitigation Plan

Core Competencies

Major infrastructure project site/route selection, evaluation, environmental impact assessment, and permitting are core competencies at Jacobs. We have worldwide experience in siting, planning, environmental review, licensing, permitting, environmental compliance support during construction, mitigation, restoration, and community engagement for projects.

Our teams have completed more than 1,000 environmental assessment (EA) and permit application documents worldwide. These have ranged from simple permitting evaluations to extremely complex multijurisdictional environmental impact analyses. We have successfully executed projects for more than 25,000 megawatts of new thermal power generation; more than 2,000 megawatts of renewable energy generation; more than 20,000 miles of new pipelines; more than 1,000 miles of new electrical transmission lines; dozens of oil and gas, chemical plant, port, and mining projects; thousands of miles of roadway and rail; and hundreds of solid waste projects. Our teams routinely provide these services to projects from inception through construction, operation, mitigation/ restoration, and demolition, totaling more than $5 billion in capital value, every year.

With our emphasis on careful project management, we expertly integrate multidisciplinary resources from across our enterprise into specific project teams, combining the right local talent with resource-and industry-specific experts to implement projects successfully.

We have more than 3,000 environmental technical professionals who cover every discipline necessary to site, route, survey, analyze, permit, and mitigate new infrastructure—including air quality, biology, cultural resources, environmental justice, geology and geotechnical, hydrology, land use, noise, socioeconomics, stakeholder engagement, traffic and transportation, and visual resources. We maintain the necessary technical disciplines in-house and use subcontractors where they offer project benefits. We are especially well equipped to integrate information management into our permitting projects, having developed numerous innovative and labor-saving geographic information systems (GIS) applications for this purpose. Furthermore, senior impact assessment staff are versed in challenging regulatory and legal issues such as alternatives development, environmental justice, social cost of carbon, and cumulative impact analyses.

Our commitment to COH's success begins with active listening to truly understand your goals and embrace your needs and challenges. We anticipate obstacles and quick-win opportunities to remove environmental cost and risk from our projects.

In addition to our comprehensive environmental planning and permitting services, we also provide survey, engineering, cost estimation, and construction services for a wide variety of infrastructure types. Our offices and technical practices function together as single project teams, and we routinely tailor such teams for a particular project's needs and client requests to support execution and O&M activities.

Some of our representative projects include:

Pearl Gas-to-Liquids Project: Environmental, Social and Health Impact Assessment (ESHIA) – Qatar

Shell commissioned Jacobs to produce an independent ESHIA on the effects of the proposed GTL plant. The ESHIA assessed the potential environmental, social, and health impacts of the project in an integrated manner. It meets Qatar regulations, international lender criteria (i.e., Equator Principles/World Bank) and the internal requirements of Shell.

Tehachapi Renewable Transmission Project: Environmental Documentation, Monitoring During Construction, and Mitigation – California, USA

We supported Southern California Edison with siting, environmental and regulatory review, and implementation, as well as technical evaluation and strategy support to comply with the California Environmental Quality Act (CEQA) and NEPA.

Four Corners Uranium Program: Freeport-McMoRan and Gallagher & Kennedy – Arizona, New Mexico, Utah, Nevada, USA

We are providing remedial planning services in support of multiple abandoned uranium mines in the Four Corners region of the U.S. We designed and developed a web-based information management tool to facilitate access and expedite review of a large volume of historical operational records for these liabilities, spanning a period of more than 30 years.

Line 3 Replacement Program Alberta, Saskatchewan, and Manitoba, Canada

Jacobs prepared the Environmental and Socioeconomic Assessment (ESA) for the replacement pipeline, facilities, tanks, and decommissioning activities associated with the project which was submitted to the National Energy Board (NEB) pursuant to Sections 52 and 58 of the NEB Act, and Section 45.1 of the NEB Onshore Pipeline Regulations.

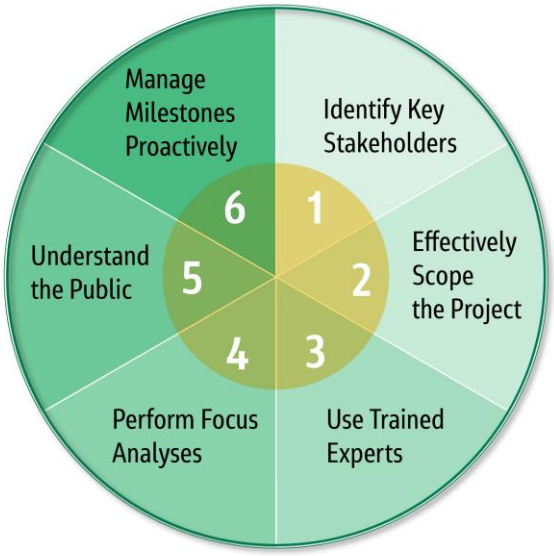
We excel at expedited, high-quality NEPA services.

Our National Environmental Policy Act (NEPA) experience extends across many federal agencies. It ranges from simple categorical exclusions and environmental assessments to complex, multiagency environmental impact statements (EISs). As part of our proven NEPA process, we will work with COH to integrate NEPA considerations in project planning, establish aggressive schedules, and identify and resolve issues early that could most affect the NEPA process. We will use an integrated process that includes critical, focused elements to achieve project success.

Our deep bench and expertise allow us to simultaneously complete complex EAs and EISs for multiple sites, under expedited schedule constraints.

For complex and highly visible NEPA projects, we have developed tools and technologies that increase the defensibility of environmental documents and assist with decision analysis. We use new technologies, including social media, to augment the public involvement processes, track public comments, and implement successful messaging of project issues.

Our team will help COH achieve streamlined cost-effective, high-quality, on-schedule NEPA compliance by bringing proven NEPA expertise, local knowledge, project management, technical tools, and full-service support.



Jacobs' integrated process addresses all the components of successful delivery for NEPA projects.

Some examples of our projects include:

National Aeronautics and Space Administration (NASA), Santa Susana Field Lab

Jacobs has supported the NEPA effort at NASA's Santa Susana Field Lab in Simi Valley, California, for nearly 10 years, including an EIS in 2014 and a Supplemental EIS in 2019. The team delivered all the required documentation without missing a deadline or exceeding the budget.

National Geospatial Agency (NGA), Next NGA West Campus

Jacobs completed a 20-month, expedited EIS for the NGA. NGA's current facilities, located southwest of downtown St. Louis, Missouri, in the historic St. Louis Arsenal, are outdated and in need of modernization. We used critical models, management techniques, close agency coordination, and cohesive management of milestones and deliverables to effectively address every aspect of the project.

Natural Resources Management

Major infrastructure project site/route selection, evaluation, environmental impact assessment and permitting are core competencies at Jacobs. We have worldwide experience in siting, planning, environmental review, licensing, permitting, environmental compliance support during planning, design, construction, mitigation, restoration, and community engagement for projects.

Specific areas of expertise offered by our natural resource practitioners include:

- Biological surveys, threatened and endangered species surveys, special-status species surveys, botanical and noxious weeds surveys, habitat surveys and conservation plans, bird nest surveys, mitigation, and restoration
- Environmental mitigation and monitoring plans
- Geographic information systems (GIS) mapping, database development, and management
- Restoration, revegetation, reclamation surveys, studies, planning, implementation, and reporting
- Federal Section 401/404, Section 10, and Section 408 permits and related state/province permits
- Species reviews - threatened and endangered species, Section 7 and Section 10 consultation support, biological assessments
- Species reviews - special status species, biological evaluations
- Stakeholder engagement and management
- Visual/aesthetic impact assessments consistent with agency-approved methodologies (e.g., USFS, FHWA, BLM), including visual simulations and viewshed/visibility analysis

With our emphasis on careful project management, we are experienced at integrating multi-disciplinary resources from across our enterprise into specific project teams —the right local talent combined with resource-and industry-specific experts to implement your project successfully. We have more than 3,000 environmental technical professionals who cover every discipline necessary to site, route, survey, analyze, permit, and mitigate new infrastructure—including air quality, biology, cultural resources, environmental justice, geology and geotechnical, hydrology, land use, noise, socioeconomics, stakeholder engagement, traffic and transportation, and visual resources specialties, among many others. We maintain the necessary technical disciplines in-house but regularly use subcontractors where they offer a project the local expertise and credibility with relevant resource agencies and project stakeholders, a factor we consider to be critical for project success.

CIVIL ENGINEERING SERVICES

We can perform general engineering, hydraulics, storm water improvement, transportation, wastewater, and solid waste collection and disposal as individual services or as integrated comprehensive planning and problem solving within the context of multiple regulatory drivers, financial limitations, and public perception. We can help you holistically address your needs and build on your systems of planning, inspection, maintenance, financing, public acceptance, and regulatory compliance.

General Engineering Services

Combining design, engineering, and O&M expertise under a single firm enables us to provide added-value operability and construction reviews, assist with operator training during startup, optimize pump station operations, and seamlessly turn over operations to the owner's staff. This experience has resulted in a suite of industry-best design and construction practices that will be applied to your projects to increase our design constructability and minimize change orders. Underpinning these practices is our corporate culture of health and safety, focused on the goal of Target Zero.

We have been delivering full-service project management and construction management (CM) services since the firm's beginning. We are consistently ranked among the industry's top CM firms by Engineering News-Record. In addition, we have received industry recognition for our successful delivery of CM services.

We follow documented and proven CM processes that incorporate knowledge of construction as well as best practice techniques we have learned in more than 70 years of project delivery. We leverage our full-service engineering, procurement, and construction expertise to deliver program management and construction management work for clients. We customize program management tool sets to reflect your needs for each project, including custom web-based management processes for cost and schedule control, document management, bidding and award, and design and constructability reviews.

Our project control system includes a project status dashboard that reports performance at every stage of the project. The system includes the following functions:

- Contract administration
- Financial tracking/cost management
- Construction scheduling
- Quality management
- Invoicing and progress payments
- Earned value analysis
- Design management
- Reporting
- Procurement
- Resource management
- Document control
- Safety management
- Change order management
- Communications

I. AUTHORIZED REPRESENTATIVE *The foregoing is a statement of facts.*	
31. SIGNATURE 	32. DATE June 30, 2025
33. NAME AND TITLE Abbey Mayer, AICP, Principal-In-Charge/Vice President;	

PART II:
GENERAL QUALIFICATIONS

ARCHITECT–ENGINEER QUALIFICATIONS

1. SOLICITATION NUMBER *(If any)*

PART II – GENERAL QUALIFICATIONS

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

2a. FIRM (OR BRANCH OFFICE) NAME	3. YEAR ESTABLISHED	4. UNIQUE ENTITY IDENTIFIER
Jacobs Engineering Group Inc.	1947	D3J3WFUKK6R9

2b. STREET	5. OWNERSHIP a. TYPE
1003 Bishop Street, Pauahi Tower, Suite 1340	Corporation

2c. CITY	2d. STATE	2e. ZIP CODE	b. SMALL BUSINESS STATUS
Honolulu	HI	96813	

6a. POINT OF CONTACT NAME AND TITLE	7. NAME OF FIRM (If block 2a is branch office)
Abbey Mayer, AICP, Principal-In-Charge/Vice President	***Jacobs Engineering Group Inc.*** MKCAUUG2K7H6

6b. TELEPHONE NUMBER	6c. E-MAIL ADDRESS
808.943.1133	Abbey.Mayer@jacobs.com

8a. FORMER FIRM NAME(S) (If any)	8b. YR. ESTABLISHED	8c. UNIQUE ENTITY IDENTIFIER

9. EMPLOYEES BY DISCIPLINE*

a. Function Code	b. Discipline	c. No. of Employees (1) FIRM	c. No. of Employees (2) BRANCH
002	Administrative	4495	6
006	Architect	1320	5
007	Biologist	210	1
012	Civil Engineer	1930	3
016	Construction Manager	1303	4
018	Cost Engineer/Estimator	456	1
021	Electrical Engineer	1484	2
024	Environmental Scientist	702	6
025	Fire Protection Engineer	106	1
029	Geographic Information System Specialist	350	4
030	Geologist	244	3
047	Planner: Urban/Regional	1030	6
048	Project Manager	3483	22
915	Project Controls	796	3
914	QA/QC Specialist	765	6
939	Technologist	588	3
060	Transportation Engineer	2214	2
062	Water Resources Engineer	924	4
	OTHER EMPLOYEES	19811	16
	Total	**42211****	**98**

10. PROFILE OF FIRM'S EXPERIENCE AND ANNUAL REVENUE FOR LAST 5 YEARS*

a. Profile Code	b. Experience	c. Revenue Index Number *(see below)*
B02	Bridges	10
C15	Construction Management	10
E11	Environmental Planning	10
E12	Environmental Remediation	10
H07	Highways; Streets; Airfield Paving; Parking Lots	10
U01	Unexploded Ordnance Remediation	2
R03	Railroad; Rapid Transit	10
S04	Sewage Collection, Treatment and Disposal	10
S13	Storm Water Handling & Facilities	10
T03	Traffic & Transportation Engineering	10
W02	Water Resources; Hydrology; Ground Water	10
S07	Solid Wastes; Incineration; Landfill	10

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

(Insert revenue index number shown at right)

a. Federal Work	10
b. Non-Federal Work	10
c. Total Work	10

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

12. AUTHORIZED REPRESENTATIVE

The foregoing is a statement of facts.

a. SIGNATURE	b. DATE
	June 30, 2025

c. NAME AND TITLE

Abbey Mayer, AICP, Principal-In-Charge/Vice President

** The information in this Part II reflects the Jacobs Engineering Group family of companies, including the proposed Offeror for subject contract.*

*** The total employee metrics were last updated in September 2024.*

Contact
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Jacobs