The following documentation is an electronically-submitted vendor response to an advertised solicitation from the *West Virginia Purchasing Bulletin* within the Vendor Self-Service portal at ***wvOASIS.gov***. As part of the State of West Virginia's procurement process, and to maintain the transparency of the bid-opening process, this documentation submitted online is publicly posted by the West Virginia Purchasing Division at ***WVPurchasing.gov*** with any other vendor responses to this solicitation submitted to the Purchasing Division in hard copy format.


wvOASIS
Jump to: PRCUID Go
Home
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About
Welcome, Christopher W Seckman
Procurement
Budgeting
Accounts Receivable
Accounts Payable
Solicitation Response(SR) Dept: 0313 ID: ESR09192400000002135 Ver.: 1 Function: New Phase: Final
Modified by batch , 09/19/2024
Header 1
List View
General Information
Contact
Default Values
Discount
Document Information
Clarification Request
Procurement Folder: 1468037
Procurement Type: Central Master Agreement
Vendor ID: 000000232671
Legal Name: TETRA TECH INC
Alias/DBA:
Total Bid: $87,500.00
Response Date: 09/19/2024
Response Time: 13:11
Responded By User ID: KarrenTWood
First Name: Karren
Last Name: Wood
Email: Karren.Wood@tetratech.com
Phone: (412) 921-7090
SO Doc Code: CRFQ
SO Dept: 0313
SO Doc ID: DEP2500000004
Published Date: 9/4/24
Close Date: 9/19/24
Close Time: 13:30
Status: Closed
Solicitation Description: Environmental Risk Assessor
Total of Header Attachments: 1
Total of All Attachments: 1

Department of Administration
Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

State of West Virginia
Solicitation Response

Proc Folder:	1468037
Solicitation Description:	Environmental Risk Assessor
Proc Type:	Central Master Agreement

Solicitation Closes	Solicitation Response	Version
2024-09-19 13:30	SR 0313 ESR09192400000002135	1

VENDOR

000000232671
TETRA TECH INC

Solicitation Number: CRFQ 0313 DEP2500000004

Total Bid: 87500 **Response Date:** 2024-09-19 **Response Time:** 13:11:02

Comments:

FOR INFORMATION CONTACT THE BUYER
Joseph E Hager III
(304) 558-2306
joseph.e.hageriii@wv.gov

Vendor
Signature X **FEIN#** **DATE**

All offers subject to all terms and conditions contained in this solicitation

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
1	Risk or hazard assessment	700.00000	HOUR	125.000000	87500.00

Comm Code	Manufacturer	Specification	Model #
77101501			

Commodity Line Comments:

Extended Description:

Environmental Risk Assessor Open end contract for service, bid sheet represents an estimated number of hours for bidding purposes to establish a contracted set price per hour.

TETRA TECH

September 19, 2024

Mr. Joseph Hager III
West Virginia Purchasing Division
2019 Washington Street, East
Charleston, WV 25305

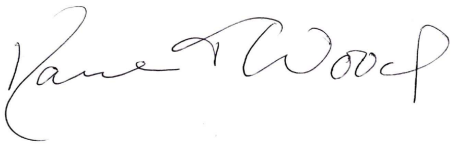
Dear Mr. Hager,

Tetra Tech, Inc. (Tetra Tech) appreciates the opportunity to submit this bid via *wv*OASIS to the Purchasing Division to provide third party review of environmental risk assessments associated with projects managed by the West Virginia Department of Environmental Protection (WVDEP). In support of this bid, please find attached the resumes of the individuals that would be providing risk assessment review services. Additionally, please find attached a copy of the Request for Quote containing Tetra Tech's contact information and three general comments on the Terms and Conditions included for general consideration.

If you have any questions regarding the bid or attached information, please feel free to contact me at (412) 921-8195.

Sincerely,

Tetra Tech, Inc.



Karren T. Wood
Senior Risk Assessor, West Virginia Licensed Remediation Specialist #475

Cc: Katherine Super (Tetra Tech)
Melissa Williams (Tetra Tech)

Attachments

Tetra Tech, Inc.
661 Andersen Drive, Suite 200, Pittsburgh, PA 15220-2745
Tel 412.921.7090 Fax 412.921.4040 www.tetratech.com

COPY OF REQUST FOR QUOTE

Department of Administration
Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

State of West Virginia
Centralized Request for Quote
Service - Prof

Proc Folder: 1468037			**Reason for Modification:**
Doc Description: Environmental Risk Assessor			
Proc Type: Central Master Agreement			
Date Issued	**Solicitation Closes**	**Solicitation No**	**Version**
2024-09-04	2024-09-19 13:30	CRFQ 0313 DEP2500000004	1

BID RECEIVING LOCATION

BID CLERK
DEPARTMENT OF ADMINISTRATION
PURCHASING DIVISION
2019 WASHINGTON ST E
CHARLESTON WV 25305
US

VENDOR

Vendor Customer Code: 000000232671

Vendor Name : Tetra Tech, Inc.

Address : 661 Andersen Drive

Street :

City : Pittsburgh

State : PA **Country :** USA **Zip :** 15220

Principal Contact : Karren Wood

Vendor Contact Phone: (412) 921-8195 **Extension:**

FOR INFORMATION CONTACT THE BUYER

Joseph E Hager III
(304) 558-2306
joseph.e.hageriii@wv.gov

Vendor Signature X **FEIN#** 954148514 **DATE** 09/19/2024

All offers subject to all terms and conditions contained in this solicitation

ADDITIONAL INFORMATION

The West Virginia Purchasing Division is soliciting bids on behalf of West Virginia Department of Environmental Protection to establish an open-end contract for an Environmental Risk Assessor to determine ecological and human health risks that may be associated with projects managed by the WVDEP per the attached specifications and terms and conditions.

INVOICE TO		SHIP TO	
ENVIRONMENTAL PROTECTION		ENVIRONMENTAL PROTECTION	
OFFICE OF ENVIRONMENTAL REMEDIATION		601 57TH ST	
601 57TH ST SE			
CHARLESTON	WV	CHARLESTON	WV
US		US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
1	Risk or hazard assessment	700.00000	HOUR		

Comm Code	Manufacturer	Specification	Model #
77101501			

Extended Description:

Environmental Risk Assessor Open end contract for service, bid sheet represents an estimated number of hours for bidding purposes to establish a contracted set price per hour.

SCHEDULE OF EVENTS

Line	Event	Event Date

INSTRUCTIONS TO VENDORS SUBMITTING BIDS

1. REVIEW DOCUMENTS THOROUGHLY: The attached documents contain a solicitation for bids. Please read these instructions and all documents attached in their entirety. These instructions provide critical information about requirements that if overlooked could lead to disqualification of a Vendor's bid. All bids must be submitted in accordance with the provisions contained in these instructions and the Solicitation. Failure to do so may result in disqualification of Vendor's bid.

2. MANDATORY TERMS: The Solicitation may contain mandatory provisions identified by the use of the words "must," "will," and "shall." Failure to comply with a mandatory term in the Solicitation will result in bid disqualification.

3. PREBID MEETING: The item identified below shall apply to this Solicitation.

☑ A pre-bid meeting will not be held prior to bid opening

☐ A **MANDATORY PRE-BID** meeting will be held at the following place and time:

All Vendors submitting a bid must attend the mandatory pre-bid meeting. Failure to attend the mandatory pre-bid meeting shall result in disqualification of the Vendor's bid. No one individual is permitted to represent more than one vendor at the pre-bid meeting. Any individual that does attempt to represent two or more vendors will be required to select one vendor to which the individual's attendance will be attributed. The vendors not selected will be deemed to have not attended the pre-bid meeting unless another individual attended on their behalf.

An attendance sheet provided at the pre-bid meeting shall serve as the official document verifying attendance. Any person attending the pre-bid meeting on behalf of a Vendor must list on the attendance sheet his or her name and the name of the Vendor he or she is representing.

Additionally, the person attending the pre-bid meeting should include the Vendor's E-Mail address, phone number, and Fax number on the attendance sheet. It is the Vendor's responsibility to locate the attendance sheet and provide the required information. Failure to complete the attendance sheet as required may result in disqualification of Vendor's bid.

All Vendors should arrive prior to the starting time for the pre-bid. Vendors who arrive after the starting time but prior to the end of the pre-bid will be permitted to sign in but are charged with knowing all matters discussed at the pre-bid.

Questions submitted at least five business days prior to a scheduled pre-bid will be discussed at the pre-bid meeting if possible. Any discussions or answers to questions at the pre-bid meeting are preliminary in nature and are non-binding. Official and binding answers to questions will be published in a written addendum to the Solicitation prior to bid opening.

4. VENDOR QUESTION DEADLINE: Vendors may submit questions relating to this Solicitation to the Purchasing Division. Questions must be submitted in writing. All questions must be submitted on or before the date listed below and to the address listed below to be considered. A written response will be published in a Solicitation addendum if a response is possible and appropriate. Non-written discussions, conversations, or questions and answers regarding this Solicitation are preliminary in nature and are nonbinding.

Submitted emails should have the solicitation number in the subject line.

Question Submission Deadline: 9/11/2024 @ 4:00 PM ET

Submit Questions to: Josh Hager
2019 Washington Street, East
Charleston, WV 25305
Fax: (304) 558-3970
Email: Joseph.E.HagerIII@wv.gov

5. VERBAL COMMUNICATION: Any verbal communication between the Vendor and any State personnel is not binding, including verbal communication at the mandatory pre-bid conference. Only information issued in writing and added to the Solicitation by an official written addendum by the Purchasing Division is binding.

6. BID SUBMISSION: All bids must be submitted on or before the date and time of the bid opening listed in section 7 below. Vendors can submit bids electronically through *wv*OASIS, in paper form delivered to the Purchasing Division at the address listed below either in person or by courier, or in facsimile form by faxing to the Purchasing Division at the number listed below. Notwithstanding the foregoing, the Purchasing Division may prohibit the submission of bids electronically through *wv*OASIS at its sole discretion. Such a prohibition will be contained and communicated in the *wv*OASIS system resulting in the Vendor's inability to submit bids through *wv*OASIS. The Purchasing Division will not accept bids, modification of bids, or addendum acknowledgment forms via email. Bids submitted in paper or facsimile form must contain a signature. Bids submitted in *wv*OASIS are deemed to be electronically signed.

Any bid received by the Purchasing Division staff is considered to be in the possession of the Purchasing Division and will not be returned for any reason.

For Request for Proposal ("RFP") Responses Only: Submission of a response to a Request for Proposal is not permitted in *wv*OASIS. In the event that Vendor is responding to a request for proposal, the Vendor shall submit one original technical and one original cost proposal prior to the bid opening date and time identified in Section 7 below, plus _____convenience copies of each to the Purchasing Division at the address shown below. Additionally, the Vendor should clearly identify and segregate the cost proposal from the technical proposal in a separately sealed envelope.

Bid Delivery Address and Fax Number:
Department of Administration, Purchasing Division
2019 Washington Street East
Charleston, WV 25305-0130
Fax: 304-558-3970

A bid submitted in paper or facsimile form should contain the information listed below on the face of the submission envelope or fax cover sheet. Otherwise, the bid may be rejected by the Purchasing Division.

VENDOR NAME:
BUYER: Josh Hager
SOLICITATION NO.: CRFQ 0313 DEP2500000004
BID OPENING DATE: See section 7
BID OPENING TIME: See section 7
FAX NUMBER: 304-558-3970

7. BID OPENING: Bids submitted in response to this Solicitation will be opened at the location identified below on the date and time listed below. Delivery of a bid after the bid opening date and time will result in bid disqualification. For purposes of this Solicitation, a bid is considered delivered when confirmation of delivery is provided by *wv*OASIS (in the case of electronic submission) or when the bid is time stamped by the official Purchasing Division time clock (in the case of hand delivery).

Bid Opening Date and Time: 9/19/2024 @ 1:30 PM ET

Bid Opening Location: Department of Administration, Purchasing Division
2019 Washington Street East
Charleston, WV 25305-0130

8. ADDENDUM ACKNOWLEDGEMENT: Changes or revisions to this Solicitation will be made by an official written addendum issued by the Purchasing Division. Vendor should acknowledge receipt of all addenda issued with this Solicitation by completing an Addendum Acknowledgment Form, a copy of which is included herewith. Failure to acknowledge addenda may result in bid disqualification. The addendum acknowledgement should be submitted with the bid to expedite document processing.

9. BID FORMATTING: Vendor should type or electronically enter the information onto its bid to prevent errors in the evaluation. Failure to type or electronically enter the information may result in bid disqualification.

10. ALTERNATE MODEL OR BRAND: Unless the box below is checked, any model, brand, or specification listed in this Solicitation establishes the acceptable level of quality only and is not intended to reflect a preference for, or in any way favor, a particular brand or vendor. Vendors may bid alternates to a listed model or brand provided that the alternate is at least equal to the model or brand and complies with the required specifications. The equality of any alternate being bid shall be determined by the State at its sole discretion. Any Vendor bidding an alternate model or brand should clearly identify the alternate items in its bid and should include manufacturer's specifications, industry literature, and/or any other relevant documentation demonstrating the equality of the alternate items. Failure to provide information for alternate items may be grounds for rejection of a Vendor's bid.

☐ This Solicitation is based upon a standardized commodity established under W. Va. Code § 5A-3-61. Vendors are expected to bid the standardized commodity identified. Failure to bid the standardized commodity will result in your firm's bid being rejected.

11. EXCEPTIONS AND CLARIFICATIONS: The Solicitation contains the specifications that shall form the basis of a contractual agreement. Vendor shall clearly mark any exceptions, clarifications, or other proposed modifications in its bid. Exceptions to, clarifications of, or modifications of a requirement or term and condition of the Solicitation may result in bid disqualification.

12. COMMUNICATION LIMITATIONS: In accordance with West Virginia Code of State Rules §148-1-6.6, communication with the State of West Virginia or any of its employees regarding this Solicitation during the solicitation, bid, evaluation or award periods, except through the Purchasing Division, is strictly prohibited without prior Purchasing Division approval. Purchasing Division approval for such communication is implied for all agency delegated and exempt purchases.

13. REGISTRATION: Prior to Contract award, the apparent successful Vendor must be properly registered with the West Virginia Purchasing Division and must have paid the $125 fee, if applicable.

14. UNIT PRICE: Unit prices shall prevail in cases of a discrepancy in the Vendor's bid.

15. PREFERENCE: Vendor Preference may be requested in purchases of motor vehicles or construction and maintenance equipment and machinery used in highway and other infrastructure projects. Any request for preference must be submitted in writing with the bid, must specifically identify the preference requested with reference to the applicable subsection of West Virginia Code § 5A-3-37, and must include with the bid any information necessary to evaluate and confirm the applicability of the requested preference. A request form to help facilitate the request can be found at: www.state.wv.us/admin/purchase/vrc/Venpref.pdf.

15A. RECIPROCAL PREFERENCE: The State of West Virginia applies a reciprocal preference to all solicitations for commodities and printing in accordance with W. Va. Code § 5A-3-37(b). In effect, non-resident vendors receiving a preference in their home states, will see that same preference granted to West Virginia resident vendors bidding against them in West Virginia. Any request for reciprocal preference must include with the bid any information necessary to evaluate and confirm the applicability of the preference. A request form to help facilitate the request can be found at: www.state.wv.us/admin/purchase/vrc/Venpref.pdf.

16. SMALL, WOMEN-OWNED, OR MINORITY-OWNED BUSINESSES: For any solicitations publicly advertised for bid, in accordance with West Virginia Code §5A-3-37 and W. Va. CSR § 148-22-9, any non-resident vendor certified as a small, women- owned, or minority-owned business under W. Va. CSR § 148-22-9 shall be provided the same preference made available to any resident vendor. Any non-resident small, women-owned, or minority-owned business must identify itself as such in writing, must submit that writing to the Purchasing Division with its bid, and must be properly certified under W. Va. CSR § 148-22-9 prior to contract award to receive the preferences made available to resident vendors. Preference for a non-resident small, women-owned, or minority owned business shall be applied in accordance with W. Va. CSR § 148-22-9.

17. WAIVER OF MINOR IRREGULARITIES: The Director reserves the right to waive minor irregularities in bids or specifications in accordance with West Virginia Code of State Rules § 148-1-4.6.

18. ELECTRONIC FILE ACCESS RESTRICTIONS: Vendor must ensure that its submission in *wv*OASIS can be accessed and viewed by the Purchasing Division staff immediately upon bid opening. The Purchasing Division will consider any file that cannot be immediately accessed and viewed at the time of the bid opening (such as, encrypted files, password protected files, or incompatible files) to be blank or incomplete as context requires and are therefore unacceptable. A vendor will not be permitted to unencrypt files, remove password protections, or resubmit documents after bid opening to make a file viewable if those documents are required with the bid. A Vendor may be required to provide document passwords or remove access restrictions to allow the Purchasing Division to print or electronically save documents provided that those documents are viewable by the Purchasing Division prior to obtaining the password or removing the access restriction.

19. NON-RESPONSIBLE: The Purchasing Division Director reserves the right to reject the bid of any vendor as Non-Responsible in accordance with W. Va. Code of State Rules § 148-1-5.3, when the Director determines that the vendor submitting the bid does not have the capability to fully perform or lacks the integrity and reliability to assure good-faith performance."

20. ACCEPTANCE/REJECTION: The State may accept or reject any bid in whole, or in part in accordance with W. Va. Code of State Rules § 148-1-4.5. and § 148-1-6.4.b."

21. YOUR SUBMISSION IS A PUBLIC DOCUMENT: Vendor's entire response to the Solicitation and the resulting Contract are public documents. As public documents, they will be disclosed to the public following the bid/proposal opening or award of the contract, as required by the competitive bidding laws of West Virginia Code §§ 5A-3-1 et seq., 5-22-1 et seq., and 5G-1-1 et seq. and the Freedom of Information Act West Virginia Code §§ 29B-1-1 et seq.

DO NOT SUBMIT MATERIAL YOU CONSIDER TO BE CONFIDENTIAL, A TRADE SECRET, OR OTHERWISE NOT SUBJECT TO PUBLIC DISCLOSURE.

Submission of any bid, proposal, or other document to the Purchasing Division constitutes your explicit consent to the subsequent public disclosure of the bid, proposal, or document. The Purchasing Division will disclose any document labeled "confidential," "proprietary," "trade secret," "private," or labeled with any other claim against public disclosure of the documents, to include any "trade secrets" as defined by West Virginia Code § 47-22-1 et seq. All submissions are subject to public disclosure without notice.

22. WITH THE BID REQUIREMENTS: In instances where these specifications require documentation or other information with the bid, and a vendor fails to provide it with the bid, the Director of the Purchasing Division reserves the right to request those items after bid opening and prior to contract award pursuant to the authority to waive minor irregularities in bids or specifications under W. Va. CSR § 148-1-4.6. This authority does not apply to instances where state law mandates receipt with the bid.

23. EMAIL NOTIFICATION OF AWARD: The Purchasing Division will attempt to provide bidders with e-mail notification of contract award when a solicitation that the bidder participated in has been awarded. For notification purposes, bidders must provide the Purchasing Division with a valid email address in the bid response. Bidders may also monitor *wv*OASIS or the Purchasing Division's website to determine when a contract has been awarded.

24. ISRAEL BOYCOTT CERTIFICATION: Vendor's act of submitting a bid in response to this solicitation shall be deemed a certification from bidder to the State that bidder is not currently engaged in, and will not for the duration of the contract, engage in a boycott of Israel. This certification is required by W. Va. Code § 5A-3-63.

GENERAL TERMS AND CONDITIONS:

1. CONTRACTUAL AGREEMENT: Issuance of an Award Document signed by the Purchasing Division Director, or his designee, and approved as to form by the Attorney General's office constitutes acceptance by the State of this Contract made by and between the State of West Virginia and the Vendor. Vendor's signature on its bid, or on the Contract if the Contract is not the result of a bid solicitation, signifies Vendor's agreement to be bound by and accept the terms and conditions contained in this Contract.

2. DEFINITIONS: As used in this Solicitation/Contract, the following terms shall have the meanings attributed to them below. Additional definitions may be found in the specifications included with this Solicitation/Contract.

2.1. "Agency" or **"Agencies"** means the agency, board, commission, or other entity of the State of West Virginia that is identified on the first page of the Solicitation or any other public entity seeking to procure goods or services under this Contract.

2.2. "Bid" or **"Proposal"** means the vendors submitted response to this solicitation.

2.3. "Contract" means the binding agreement that is entered into between the State and the Vendor to provide the goods or services requested in the Solicitation.

2.4. "Director" means the Director of the West Virginia Department of Administration, Purchasing Division.

2.5. "Purchasing Division" means the West Virginia Department of Administration, Purchasing Division.

2.6. "Award Document" means the document signed by the Agency and the Purchasing Division, and approved as to form by the Attorney General, that identifies the Vendor as the contract holder.

2.7. "Solicitation" means the official notice of an opportunity to supply the State with goods or services that is published by the Purchasing Division.

2.8. "State" means the State of West Virginia and/or any of its agencies, commissions, boards, etc. as context requires.

2.9. "Vendor" or **"Vendors"** means any entity submitting a bid in response to the Solicitation, the entity that has been selected as the lowest responsible bidder, or the entity that has been awarded the Contract as context requires.

3. CONTRACT TERM; RENEWAL; EXTENSION: The term of this Contract shall be determined in accordance with the category that has been identified as applicable to this Contract below:

☑ **Term Contract**

Initial Contract Term: The Initial Contract Term will be for a period of one (1) year _____. The Initial Contract Term becomes effective on the effective start date listed on the first page of this Contract, identified as the State of West Virginia contract cover page containing the signatures of the Purchasing Division, Attorney General, and Encumbrance clerk (or another page identified as _____), and the Initial Contract Term ends on the effective end date also shown on the first page of this Contract.

Renewal Term: This Contract may be renewed upon the mutual written consent of the Agency, and the Vendor, with approval of the Purchasing Division and the Attorney General's office (Attorney General approval is as to form only). Any request for renewal should be delivered to the Agency and then submitted to the Purchasing Division thirty (30) days prior to the expiration date of the initial contract term or appropriate renewal term. A Contract renewal shall be in accordance with the terms and conditions of the original contract. Unless otherwise specified below, renewal of this Contract is limited to three (3) successive one (1) year periods or multiple renewal periods of less than one year, provided that the multiple renewal periods do not exceed the total number of months available in all renewal years combined. Automatic renewal of this Contract is prohibited. Renewals must be approved by the Vendor, Agency, Purchasing Division and Attorney General's office (Attorney General approval is as to form only)

☐ **Alternate Renewal Term** – This contract may be renewed for _____ successive _____ year periods or shorter periods provided that they do not exceed the total number of months contained in all available renewals. Automatic renewal of this Contract is prohibited. Renewals must be approved by the Vendor, Agency, Purchasing Division and Attorney General's office (Attorney General approval is as to form only)

Delivery Order Limitations: In the event that this contract permits delivery orders, a delivery order may only be issued during the time this Contract is in effect. Any delivery order issued within one year of the expiration of this Contract shall be effective for one year from the date the delivery order is issued. No delivery order may be extended beyond one year after this Contract has expired.

☐ **Fixed Period Contract:** This Contract becomes effective upon Vendor's receipt of the notice to proceed and must be completed within _____days.

☐ **Fixed Period Contract with Renewals:** This Contract becomes effective upon Vendor's receipt of the notice to proceed and part of the Contract more fully described in the attached specifications must be completed within _____ days. Upon completion of the work covered by the preceding sentence, the vendor agrees that:

☐ the contract will continue for _____ years;

☐ the contract may be renewed for _____ successive _____ year periods or shorter periods provided that they do not exceed the total number of months contained in all available renewals. Automatic renewal of this Contract is prohibited. Renewals must be approved by the Vendor, Agency, Purchasing Division and Attorney General's Office (Attorney General approval is as to form only).

☐ **One-Time Purchase:** The term of this Contract shall run from the issuance of the Award Document until all of the goods contracted for have been delivered, but in no event will this Contract extend for more than one fiscal year.

☐ **Construction/Project Oversight:** This Contract becomes effective on the effective start date listed on the first page of this Contract, identified as the State of West Virginia contract cover page containing the signatures of the Purchasing Division, Attorney General, and Encumbrance clerk (or another page identified as _____), and continues until the project for which the vendor is providing oversight is complete.

☐ **Other:** Contract Term specified in _____

4. AUTHORITY TO PROCEED: Vendor is authorized to begin performance of this contract on the date of encumbrance listed on the front page of the Award Document unless either the box for "Fixed Period Contract" or "Fixed Period Contract with Renewals" has been checked in Section 3 above. If either "Fixed Period Contract" or "Fixed Period Contract with Renewals" has been checked, Vendor must not begin work until it receives a separate notice to proceed from the State. The notice to proceed will then be incorporated into the Contract via change order to memorialize the official date that work commenced.

5. QUANTITIES: The quantities required under this Contract shall be determined in accordance with the category that has been identified as applicable to this Contract below.

☑ **Open End Contract:** Quantities listed in this Solicitation/Award Document are approximations only, based on estimates supplied by the Agency. It is understood and agreed that the Contract shall cover the quantities actually ordered for delivery during the term of the Contract, whether more or less than the quantities shown.

☐ **Service:** The scope of the service to be provided will be more clearly defined in the specifications included herewith.

☐ **Combined Service and Goods:** The scope of the service and deliverable goods to be provided will be more clearly defined in the specifications included herewith.

☐ **One-Time Purchase:** This Contract is for the purchase of a set quantity of goods that are identified in the specifications included herewith. Once those items have been delivered, no additional goods may be procured under this Contract without an appropriate change order approved by the Vendor, Agency, Purchasing Division, and Attorney General's office.

☐ **Construction:** This Contract is for construction activity more fully defined in the specifications.

6. EMERGENCY PURCHASES: The Purchasing Division Director may authorize the Agency to purchase goods or services in the open market that Vendor would otherwise provide under this Contract if those goods or services are for immediate or expedited delivery in an emergency. Emergencies shall include, but are not limited to, delays in transportation or an unanticipated increase in the volume of work. An emergency purchase in the open market, approved by the Purchasing Division Director, shall not constitute of breach of this Contract and shall not entitle the Vendor to any form of compensation or damages. This provision does not excuse the State from fulfilling its obligations under a One-Time Purchase contract.

7. REQUIRED DOCUMENTS: All of the items checked in this section must be provided to the Purchasing Division by the Vendor as specified:

☐ **LICENSE(S) / CERTIFICATIONS / PERMITS:** In addition to anything required under the Section of the General Terms and Conditions entitled Licensing, the apparent successful Vendor shall furnish proof of the following licenses, certifications, and/or permits upon request and in a form acceptable to the State. The request may be prior to or after contract award at the State's sole discretion.

☐

☐

☐

☐

The apparent successful Vendor shall also furnish proof of any additional licenses or certifications contained in the specifications regardless of whether or not that requirement is listed above.

8. INSURANCE: The apparent successful Vendor shall furnish proof of the insurance identified by a checkmark below prior to Contract award. The insurance coverages identified below must be maintained throughout the life of this contract. Thirty (30) days prior to the expiration of the insurance policies, Vendor shall provide the Agency with proof that the insurance mandated herein has been continued. Vendor must also provide Agency with immediate notice of any changes in its insurance policies, including but not limited to, policy cancelation, policy reduction, or change in insurers. The apparent successful Vendor shall also furnish proof of any additional insurance requirements contained in the specifications prior to Contract award regardless of whether that insurance requirement is listed in this section.

Vendor must maintain:

☑ **Commercial General Liability Insurance** in at least an amount of: $1,000,000.00 per occurrence.

☐ **Automobile Liability Insurance** in at least an amount of: _____per occurrence.

☑ **Professional/Malpractice/Errors and Omission Insurance** in at least an amount of: $1,000,000.00 per occurrence. Notwithstanding the forgoing, Vendor's are not required to list the State as an additional insured for this type of policy.

☐ **Commercial Crime and Third Party Fidelity Insurance** in an amount of: _____ per occurrence.

☐ **Cyber Liability Insurance** in an amount of: _____ per occurrence.

☐ **Builders Risk Insurance** in an amount equal to 100% of the amount of the Contract.

☐ **Pollution Insurance** in an amount of: _____ per occurrence.

☐ **Aircraft Liability** in an amount of: _____ per occurrence.

☐

☐

☐

☐

9. WORKERS' COMPENSATION INSURANCE: Vendor shall comply with laws relating to workers compensation, shall maintain workers' compensation insurance when required, and shall furnish proof of workers' compensation insurance upon request.

10. VENUE: All legal actions for damages brought by Vendor against the State shall be brought in the West Virginia Claims Commission. Other causes of action must be brought in the West Virginia court authorized by statute to exercise jurisdiction over it.

11. LIQUIDATED DAMAGES: This clause shall in no way be considered exclusive and shall not limit the State or Agency's right to pursue any other available remedy. Vendor shall pay liquidated damages in the amount specified below or as described in the specifications:

☐ _____ for _____.

☐ Liquidated Damages Contained in the Specifications.

☑ Liquidated Damages Are Not Included in this Contract.

12. ACCEPTANCE: Vendor's signature on its bid, or on the certification and signature page, constitutes an offer to the State that cannot be unilaterally withdrawn, signifies that the product or service proposed by vendor meets the mandatory requirements contained in the Solicitation for that product or service, unless otherwise indicated, and signifies acceptance of the terms and conditions contained in the Solicitation unless otherwise indicated.

13. PRICING: The pricing set forth herein is firm for the life of the Contract, unless specified elsewhere within this Solicitation/Contract by the State. A Vendor's inclusion of price adjustment provisions in its bid, without an express authorization from the State in the Solicitation to do so, may result in bid disqualification. Notwithstanding the foregoing, Vendor must extend any publicly advertised sale price to the State and invoice at the lower of the contract price or the publicly advertised sale price.

14. PAYMENT IN ARREARS: Payments for goods/services will be made in arrears only upon receipt of a proper invoice, detailing the goods/services provided or receipt of the goods/services, whichever is later. Notwithstanding the foregoing, payments for software maintenance, licenses, or subscriptions may be paid annually in advance.

15. PAYMENT METHODS: Vendor must accept payment by electronic funds transfer and P-Card. (The State of West Virginia's Purchasing Card program, administered under contract by a banking institution, processes payment for goods and services through state designated credit cards.)

16. TAXES: The Vendor shall pay any applicable sales, use, personal property or any other taxes arising out of this Contract and the transactions contemplated thereby. The State of West Virginia is exempt from federal and state taxes and will not pay or reimburse such taxes.

17. ADDITIONAL FEES: Vendor is not permitted to charge additional fees or assess additional charges that were not either expressly provided for in the solicitation published by the State of West Virginia, included in the Contract, or included in the unit price or lump sum bid amount that Vendor is required by the solicitation to provide. Including such fees or charges as notes to the solicitation may result in rejection of vendor's bid. Requesting such fees or charges be paid after the contract has been awarded may result in cancellation of the contract.

18. FUNDING: This Contract shall continue for the term stated herein, contingent upon funds being appropriated by the Legislature or otherwise being made available. In the event funds are not appropriated or otherwise made available, this Contract becomes void and of no effect beginning on July 1 of the fiscal year for which funding has not been appropriated or otherwise made available. If that occurs, the State may notify the Vendor that an alternative source of funding has been obtained and thereby avoid the automatic termination. Non-appropriation or non-funding shall not be considered an event of default.

19. CANCELLATION: The Purchasing Division Director reserves the right to cancel this Contract immediately upon written notice to the vendor if the materials or workmanship supplied do not conform to the specifications contained in the Contract. The Purchasing Division Director may also cancel any purchase or Contract upon 30 days written notice to the Vendor in accordance with West Virginia Code of State Rules § 148-1-5.2.b.

~~**20. TIME:** Time is of the essence regarding all matters of time and performance in this Contract.~~

21. APPLICABLE LAW: This Contract is governed by and interpreted under West Virginia law without giving effect to its choice of law principles. Any information provided in specification manuals, or any other source, verbal or written, which contradicts or violates the West Virginia Constitution, West Virginia Code, or West Virginia Code of State Rules is void and of no effect.

22. COMPLIANCE WITH LAWS: Vendor shall comply with all applicable federal, state, and local laws, regulations and ordinances. By submitting a bid, Vendor acknowledges that it has reviewed, understands, and will comply with all applicable laws, regulations, and ordinances.

> **SUBCONTRACTOR COMPLIANCE:** Vendor shall notify all subcontractors providing commodities or services related to this Contract that as subcontractors, they too are required to comply with all applicable laws, regulations, and ordinances. Notification under this provision must occur prior to the performance of any work under the contract by the subcontractor.

23. ARBITRATION: Any references made to arbitration contained in this Contract, Vendor's bid, or in any American Institute of Architects documents pertaining to this Contract are hereby deleted, void, and of no effect.

24. MODIFICATIONS: This writing is the parties' final expression of intent. Notwithstanding anything contained in this Contract to the contrary no modification of this Contract shall be binding without mutual written consent of the Agency, and the Vendor, with approval of the Purchasing Division and the Attorney General's office (Attorney General approval is as to form only). Any change to existing contracts that adds work or changes contract cost, and were not included in the original contract, must be approved by the Purchasing Division and the Attorney General's Office (as to form) prior to the implementation of the change or commencement of work affected by the change.

25. WAIVER: The failure of either party to insist upon a strict performance of any of the terms or provision of this Contract, or to exercise any option, right, or remedy herein contained, shall not be construed as a waiver or a relinquishment for the future of such term, provision, option, right, or remedy, but the same shall continue in full force and effect. Any waiver must be expressly stated in writing and signed by the waiving party.

26. SUBSEQUENT FORMS: The terms and conditions contained in this Contract shall supersede any and all subsequent terms and conditions which may appear on any form documents submitted by Vendor to the Agency or Purchasing Division such as price lists, order forms, invoices, sales agreements, or maintenance agreements, and includes internet websites or other electronic documents. Acceptance or use of Vendor's forms does not constitute acceptance of the terms and conditions contained thereon.

27. ASSIGNMENT: Neither this Contract nor any monies due, or to become due hereunder, may be assigned by the Vendor without the express written consent of the Agency, the Purchasing Division, the Attorney General's office (as to form only), and any other government agency or office that may be required to approve such assignments.

28. WARRANTY: The Vendor expressly warrants that the goods and/or services covered by this Contract will: (a) conform to the specifications, drawings, samples, or other description furnished or specified by the Agency; (b) be merchantable and fit for the purpose intended; and (c) be free from defect in material and workmanship.

29. STATE EMPLOYEES: State employees are not permitted to utilize this Contract for personal use and the Vendor is prohibited from permitting or facilitating the same.

30. PRIVACY, SECURITY, AND CONFIDENTIALITY: The Vendor agrees that it will not disclose to anyone, directly or indirectly, any such personally identifiable information or other confidential information gained from the Agency, unless the individual who is the subject of the information consents to the disclosure in writing or the disclosure is made pursuant to the Agency's policies, procedures, and rules. Vendor further agrees to comply with the Confidentiality Policies and Information Security Accountability Requirements, set forth in www.state.wv.us/admin/purchase/privacy.

31. YOUR SUBMISSION IS A PUBLIC DOCUMENT: Vendor's entire response to the Solicitation and the resulting Contract are public documents. As public documents, they will be disclosed to the public following the bid/proposal opening or award of the contract, as required by the competitive bidding laws of West Virginia Code §§ 5A-3-1 et seq., 5-22-1 et seq., and 5G-1-1 et seq. and the Freedom of Information Act West Virginia Code §§ 29B-1-1 et seq.

DO NOT SUBMIT MATERIAL YOU CONSIDER TO BE CONFIDENTIAL, A TRADE SECRET, OR OTHERWISE NOT SUBJECT TO PUBLIC DISCLOSURE.

Submission of any bid, proposal, or other document to the Purchasing Division constitutes your explicit consent to the subsequent public disclosure of the bid, proposal, or document. The Purchasing Division will disclose any document labeled "confidential," "proprietary," "trade secret," "private," or labeled with any other claim against public disclosure of the documents, to include any "trade secrets" as defined by West Virginia Code § 47-22-1 et seq. All submissions are subject to public disclosure without notice.

32. LICENSING: In accordance with West Virginia Code of State Rules § 148-1-6.1.e, Vendor must be licensed and in good standing in accordance with any and all state and local laws and requirements by any state or local agency of West Virginia, including, but not limited to, the West Virginia Secretary of State's Office, the West Virginia Tax Department, West Virginia Insurance Commission, or any other state agency or political subdivision. Obligations related to political subdivisions may include, but are not limited to, business licensing, business and occupation taxes, inspection compliance, permitting, etc. Upon request, the Vendor must provide all necessary releases to obtain information to enable the Purchasing Division Director or the Agency to verify that the Vendor is licensed and in good standing with the above entities.

SUBCONTRACTOR COMPLIANCE: Vendor shall notify all subcontractors providing commodities or services related to this Contract that as subcontractors, they too are required to be licensed, in good standing, and up-to-date on all state and local obligations as described in this section. Obligations related to political subdivisions may include, but are not limited to, business licensing, business and occupation taxes, inspection compliance, permitting, etc. Notification under this provision must occur prior to the performance of any work under the contract by the subcontractor.

33. ANTITRUST: In submitting a bid to, signing a contract with, or accepting a Award Document from any agency of the State of West Virginia, the Vendor agrees to convey, sell, assign, or transfer to the State of West Virginia all rights, title, and interest in and to all causes of action it may now or hereafter acquire under the antitrust laws of the United States and the State of West Virginia for price fixing and/or unreasonable restraints of trade relating to the particular commodities or services purchased or acquired by the State of West Virginia. Such assignment shall be made and become effective at the time the purchasing agency tenders the initial payment to Vendor.

34. VENDOR NON-CONFLICT: Neither Vendor nor its representatives are permitted to have any interest, nor shall they acquire any interest, direct or indirect, which would compromise the performance of its services hereunder. Any such interests shall be promptly presented in detail to the Agency.

35. VENDOR RELATIONSHIP: The relationship of the Vendor to the State shall be that of an independent contractor and no principal-agent relationship or employer-employee relationship is contemplated or created by this Contract. The Vendor as an independent contractor is solely liable for the acts and omissions of its employees and agents. Vendor shall be responsible for selecting, supervising, and compensating any and all individuals employed pursuant to the terms of this Solicitation and resulting contract. Neither the Vendor, nor any employees or subcontractors of the Vendor, shall be deemed to be employees of the State for any purpose whatsoever. Vendor shall be exclusively responsible for payment of employees and contractors for all wages and salaries, taxes, withholding payments, penalties, fees, fringe benefits, professional liability insurance premiums, contributions to insurance and pension, or other deferred compensation plans, including but not limited to, Workers' Compensation and Social Security obligations, licensing fees, etc. and the filing of all necessary documents, forms, and returns pertinent to all of the foregoing.

Vendor shall hold harmless the State, and shall provide the State and Agency with a defense against any and all claims including, but not limited to, the foregoing payments, withholdings, contributions, taxes, Social Security taxes, and employer income tax returns.

36. INDEMNIFICATION: The Vendor agrees to indemnify, ~~defend,~~ and hold harmless the State and the Agency, their officers, and employees from and against: (1) Any claims or losses for services rendered by any subcontractor, person, or firm performing or supplying services, materials, or supplies in connection with the performance of the Contract; (2) Any claims or losses resulting to any person or entity injured or damaged by the Vendor, its officers, employees, or subcontractors by the publication, translation, reproduction, delivery, performance, use, or disposition of any data used under the Contract in a manner not authorized by the Contract, or by Federal or State statutes or regulations; and (3) Any failure of the Vendor, its officers, employees, or subcontractors to observe State and Federal laws including, but not limited to, labor and wage and hour laws.

37. NO DEBT CERTIFICATION: In accordance with West Virginia Code §§ 5A-3-10a and 5-22-1(i), the State is prohibited from awarding a contract to any bidder that owes a debt to the State or a political subdivision of the State. By submitting a bid, or entering into a contract with the State, Vendor is affirming that (1) for construction contracts, the Vendor is not in default on any monetary obligation owed to the state or a political subdivision of the state, and (2) for all other contracts, neither the Vendor nor any related party owe a debt as defined above, and neither the Vendor nor any related party are in employer default as defined in the statute cited above unless the debt or employer default is permitted under the statute.

38. CONFLICT OF INTEREST: Vendor, its officers or members or employees, shall not presently have or acquire an interest, direct or indirect, which would conflict with or compromise the performance of its obligations hereunder. Vendor shall periodically inquire of its officers, members and employees to ensure that a conflict of interest does not arise. Any conflict of interest discovered shall be promptly presented in detail to the Agency.

39. REPORTS: Vendor shall provide the Agency and/or the Purchasing Division with the following reports identified by a checked box below:

☐ Such reports as the Agency and/or the Purchasing Division may request. Requested reports may include, but are not limited to, quantities purchased, agencies utilizing the contract, total contract expenditures by agency, etc.

☐ Quarterly reports detailing the total quantity of purchases in units and dollars, along with a listing of purchases by agency. Quarterly reports should be delivered to the Purchasing Division via email at purchasing.division@wv.gov.

40. BACKGROUND CHECK: In accordance with W. Va. Code § 15-2D-3, the State reserves the right to prohibit a service provider's employees from accessing sensitive or critical information or to be present at the Capitol complex based upon results addressed from a criminal background check. Service providers should contact the West Virginia Division of Protective Services by phone at (304) 558-9911 for more information.

41. PREFERENCE FOR USE OF DOMESTIC STEEL PRODUCTS: Except when authorized by the Director of the Purchasing Division pursuant to W. Va. Code § 5A-3-56, no contractor may use or supply steel products for a State Contract Project other than those steel products made in the United States. A contractor who uses steel products in violation of this section may be subject to civil penalties pursuant to W. Va. Code § 5A-3-56. As used in this section:

a. "State Contract Project" means any erection or construction of, or any addition to, alteration of or other improvement to any building or structure, including, but not limited to, roads or highways, or the installation of any heating or cooling or ventilating plants or other equipment, or the supply of and materials for such projects, pursuant to a contract with the State of West Virginia for which bids were solicited on or after June 6, 2001.

b. "Steel Products" means products rolled, formed, shaped, drawn, extruded, forged, cast, fabricated or otherwise similarly processed, or processed by a combination of two or more or such operations, from steel made by the open heath, basic oxygen, electric furnace, Bessemer or other steel making process.

c. The Purchasing Division Director may, in writing, authorize the use of foreign steel products if:

    1. The cost for each contract item used does not exceed one tenth of one percent (.1%) of the total contract cost or two thousand five hundred dollars ($2,500.00), whichever is greater. For the purposes of this section, the cost is the value of the steel product as delivered to the project; or

    2. The Director of the Purchasing Division determines that specified steel materials are not produced in the United States in sufficient quantity or otherwise are not reasonably available to meet contract requirements.

42. PREFERENCE FOR USE OF DOMESTIC ALUMINUM, GLASS, AND STEEL: In Accordance with W. Va. Code § 5-19-1 et seq., and W. Va. CSR § 148-10-1 et seq., for every contract or subcontract, subject to the limitations contained herein, for the construction, reconstruction, alteration, repair, improvement or maintenance of public works or for the purchase of any item of machinery or equipment to be used at sites of public works, only domestic aluminum, glass or steel products shall be supplied unless the spending officer determines, in writing, after the receipt of offers or bids, (1) that the cost of domestic aluminum, glass or steel products is unreasonable or inconsistent with the public interest of the State of West Virginia, (2) that domestic aluminum, glass or steel products are not produced in sufficient quantities to meet the contract requirements, or (3) the available domestic aluminum, glass, or steel do not meet the contract specifications. This provision only applies to public works contracts awarded in an amount more than fifty thousand dollars ($50,000) or public works contracts that require more than ten thousand pounds of steel products.

The cost of domestic aluminum, glass, or steel products may be unreasonable if the cost is more than twenty percent (20%) of the bid or offered price for foreign made aluminum, glass, or steel products. If the domestic aluminum, glass or steel products to be supplied or produced in a "substantial labor surplus area", as defined by the United States Department of Labor, the cost of domestic aluminum, glass, or steel products may be unreasonable if the cost is more than thirty percent (30%) of the bid or offered price for foreign made aluminum, glass, or steel products. This preference shall be applied to an item of machinery or equipment, as indicated above, when the item is a single unit of equipment or machinery manufactured primarily of aluminum, glass or steel, is part of a public works contract and has the sole purpose or of being a permanent part of a single public works project. This provision does not apply to equipment or machinery purchased by a spending unit for use by that spending unit and not as part of a single public works project.

All bids and offers including domestic aluminum, glass or steel products that exceed bid or offer prices including foreign aluminum, glass or steel products after application of the preferences provided in this provision may be reduced to a price equal to or lower than the lowest bid or offer price for foreign aluminum, glass or steel products plus the applicable preference. If the reduced bid or offer prices are made in writing and supersede the prior bid or offer prices, all bids or offers, including the reduced bid or offer prices, will be reevaluated in accordance with this rule.

43. INTERESTED PARTY SUPPLEMENTAL DISCLOSURE: W. Va. Code § 6D-1-2 requires that for contracts with an actual or estimated value of at least $1 million, the Vendor must submit to the Agency a disclosure of interested parties prior to beginning work under this Contract. Additionally, the Vendor must submit a supplemental disclosure of interested parties reflecting any new or differing interested parties to the contract, which were not included in the original pre-work interested party disclosure, within 30 days following the completion or termination of the contract. A copy of that form is included with this solicitation or can be obtained from the WV Ethics Commission. This requirement does not apply to publicly traded companies listed on a national or international stock exchange. A more detailed definition of interested parties can be obtained from the form referenced above.

44. PROHIBITION AGAINST USED OR REFURBISHED: Unless expressly permitted in the solicitation published by the State, Vendor must provide new, unused commodities, and is prohibited from supplying used or refurbished commodities, in fulfilling its responsibilities under this Contract.

45. VOID CONTRACT CLAUSES: This Contract is subject to the provisions of West Virginia Code § 5A-3-62, which automatically voids certain contract clauses that violate State law.

46. ISRAEL BOYCOTT: Bidder understands and agrees that, pursuant to W. Va. Code § 5A-3-63, it is prohibited from engaging in a boycott of Israel during the term of this contract.

DESIGNATED CONTACT: Vendor appoints the individual identified in this Section as the Contract Administrator and the initial point of contact for matters relating to this Contract.

(Printed Name and Title) Jepthah M. Orsteiin, J.D., Director, Contracts and Commercial Risk Management

(Address) 661 Andersen Drive

(Phone Number) / (Fax Number) (412) 921-4037 / (412) 921-4040

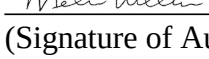
(email address) Jepthah.Orstein@tetratech.com

CERTIFICATION AND SIGNATURE: By signing below, or submitting documentation through *wv*OASIS, I certify that: I have reviewed this Solicitation/Contract in its entirety; that I understand the requirements, terms and conditions, and other information contained herein; that this bid, offer or proposal constitutes an offer to the State that cannot be unilaterally withdrawn; that the product or service proposed meets the mandatory requirements contained in the Solicitation/Contract for that product or service, unless otherwise stated herein; that the Vendor accepts the terms and conditions contained in the Solicitation, unless otherwise stated herein; that I am submitting this bid, offer or proposal for review and consideration; that this bid or offer was made without prior understanding, agreement, or connection with any entity submitting a bid or offer for the same material, supplies, equipment or services; that this bid or offer is in all respects fair and without collusion or fraud; that this Contract is accepted or entered into without any prior understanding, agreement, or connection to any other entity that could be considered a violation of law; that I am authorized by the Vendor to execute and submit this bid, offer, or proposal, or any documents related thereto on Vendor's behalf; that I am authorized to bind the vendor in a contractual relationship; and that to the best of my knowledge, the vendor has properly registered with any State agency that may require registration.

By signing below, I further certify that I understand this Contract is subject to the provisions of West Virginia Code § 5A-3-62, which automatically voids certain contract clauses that violate State law; and that pursuant to W. Va. Code 5A-3-63, the entity entering into this contract is prohibited from engaging in a boycott against Israel.

Tetra Tech, Inc.

(Company)



(Signature of Authorized Representative)

Melissa Williams, Operations Manager, 9/19/2024

(Printed Name and Title of Authorized Representative) (Date)

(412) 921-8089 / (412) 921-4040

(Phone Number) (Fax Number)

Melissa.Williams@tetratech.com

(Email Address)

ADDENDUM ACKNOWLEDGEMENT FORM
SOLICITATION NO.:

Instructions: Please acknowledge receipt of all addenda issued with this solicitation by completing this addendum acknowledgment form. Check the box next to each addendum received and sign below. Failure to acknowledge addenda may result in bid disqualification.

Acknowledgment: I hereby acknowledge receipt of the following addenda and have made the necessary revisions to my proposal, plans and/or specification, etc.

Addendum Numbers Received:
(Check the box next to each addendum received)

☐ Addendum No. 1	☐ Addendum No. 6
☐ Addendum No. 2	☐ Addendum No. 7
☐ Addendum No. 3	☐ Addendum No. 8
☐ Addendum No. 4	☐ Addendum No. 9
☐ Addendum No. 5	☐ Addendum No. 10

I understand that failure to confirm the receipt of addenda may be cause for rejection of this bid. I further understand that any verbal representation made or assumed to be made during any oral discussion held between Vendor's representatives and any state personnel is not binding. Only the information issued in writing and added to the specifications by an official addendum is binding.

Tetra Tech, Inc.
_____
Company

Melissa Mullin
_____
Authorized Signature

09/19/2024
_____
Date

NOTE: This addendum acknowledgement should be submitted with the bid to expedite document processing.

SPECIFICATIONS

1. **PURPOSE AND SCOPE:** The West Virginia Purchasing Division is soliciting bids on behalf of West Virginia Department of Environmental Protection to establish an open-end contract for an Environmental Risk Assessor to determine ecological and human health risks that may be associated with projects managed by the WVDEP.

2. **DEFINITIONS:** The terms listed below shall have the meanings assigned to them below. Additional definitions can be found in section 2 of the General Terms and Conditions.

   2.1 **"Agency"** means West Virginia Department of Environmental Protection (WVDEP).

   2.2 **"Contract Item"** or **"Contract Items"** means the list of items identified in Section 3.1 below and on the Pricing Pages.

   2.3 **"Environmental Risk Assessor"** means a person who evaluates the exposure of human and ecological receptors to contaminants in environmental media (i.e. soil, groundwater, air, sediments, and surface water) and determines the likelihood that such exposure would results in an adverse impact to the health of the receptor. Risk assessments are dependent upon mathematical constructs of interactions between living organisms and contaminants in their environment. Risk assessors must possess knowledge of toxicology, statistics, biology, and chemistry as well as the ability to apply computer models simulating contaminant behavior in environmental media and/or contamination uptake and distribution within a biological system. Risk assessors must also be able to perform complex calculations using appropriate environmental data and Agency-approved exposure parameters and to present the information in tabular form and figures according to OER's Voluntary Remediation Program Guidance Manual.

   2.4 **"LRS"** means Licensed Remediation Specialist

   2.5 **"OER"** means the Office of Environmental Remediation

   2.6 **"Pricing Pages"** means the schedule of prices, estimated order quantity, and totals contained in wvOASIS and used to evaluate the Solicitation responses.

   2.7 **"Solicitation"** means the official notice of an opportunity to supply the State with goods or services that is published by the Purchasing Division.

   2.8 **"TCAU"** means the Tanks Corrective Action Unit.

   2.9 **"VRP"** means the Voluntary Remediation Program.

2.10 "WVDEP" means the West Virginia Department of Environmental Protection

3. GENERAL REQUIREMENTS:

3.1 Contract Items and Mandatory Requirements: Vendor shall provide Agency with the Contract Items listed below on an open-end and continuing basis. Contract Items must meet or exceed the mandatory requirements as shown below.

3.1.1 Background, Qualifications, Record Retention, Confidentiality, Testimony

3.1.1.1 Background: There are several sections within the WVDEP that use Risk Assessments within their Programs. The majority of the Risk Assessment work is related to the WVDEP Division of Land Restoration, Office of Environmental Remediation (OER), which oversees the Voluntary Remediation Program (VRP), UECA-LUST Program, Brownfields Assistance Program, and CERCLA Programs. The WVEP TCAU section also utilizes Risk Assessments.

Within these programs, human health and ecological risks are assessed by use of one or more levels of evaluation in order to determine suitability of these sites for reuse and the need for applying controls to mitigate remaining site risks. Guidance for WVDEP Risk Assessments can be found in OER's Voluntary Remediation Program Guidance Manual located on OER's website: https://dep.wv.gov/dlr/oer/technicalguidanceandtemplates/Documents/VRP%20Guidance%20Manual.pdf

The primary responsibility for providing an accurate assessment of site risks resides with the Licensed Remediation Specialist (LRS), who is retained by the property owner or interested party to oversee the site evaluation.

In addition, an Agency risk assessor/toxicologist is often consulted during the early stages of a site investigation to assist in developing a preliminary conceptual site model supported by an appropriate sampling and analysis plan.

Currently, risk assessments are most often evaluated by the Agency's risk assessor/toxicologist, but the Agency may experience a temporary need for additional capacity in order to meet required review deadlines for risk assessment and related documents.

The Agency also requires a third-party contractor to review updates to the De Minimis Standards, as applicable: https://dep.wv.gov/dlr/oer/technicalguidanceandtemplates/Documents/De%20Minimis%20and%20Relevant%20Benchmarks.xlsx

3.1.1.2 **Qualifications:** Vendor or Vendor's staff if requirements are inherently limited to individuals rather than corporate entities, shall have the following minimum qualifications:

3.1.1.2.1 A doctoral degree in a relevant field of study from an accredited university and a minimum of three (3) years of relevant professional experience; ***OR***

3.1.1.2.2 A Master of Science degree in a relevant field of study from an accredited university and a minimum of five (5) years of relevant professional experience.

3.1.1.2.3 Relevant professional experience must consist of work related directly to risk assessment, risk characterization, and risk management activities.

3.1.1.2.4 At the discretion of the Vendor, an employee of the Vendor with knowledge in the applicable disciplines of toxicology, statistics, biology, and chemistry may conduct the review. The final report, however, must be prepared by, or under the direction of, an Environmental Risk Assessor.

3.1.1.2.5 Compliance with experience requirements will be determined prior to contract award

by the State through references provided by the Vendor with its bid or upon request, through knowledge or documentation of the Vendor's past projects, or some other method that the State determines to be acceptable. Vendors should submit a current resume' which includes information regarding the number of years of qualification, experience and training, and relevant professional education for each individual that will be assigned to this project. Vendor must provide any documentation requested by the State to assist in confirmation of compliance with this provision. References, documentation, or other information to confirm compliance with this experience requirement are preferred with the bid submission; but may be requested prior to award.

3.1.1.2.6 An example risk assessment report or a risk assessment review prepared by the Vendor demonstrating evidence of relevant professional experience must also be provided prior to award. Submission of the sample document(s) may be in electronic format. Redaction of confidential information regarding site/client names on the sample documents is acceptable.

The WVDEP reserves the right to request and approve credentials of any person assigned to perform work under this contract.

3.1.1.3 Record Retention: The Vendor shall maintain such records a minimum of five (5) years and make available all records to Agency personnel at the Vendor's location during normal business hours, 8:00AM to 5:00PM, upon written request by the Agency within ten (10) calendar days after receipt of the request.

3.1.1.4 Confidentiality: The Vendor shall have access to private and confidential data maintained by the Agency to the

extent required for the Vendor to carry out the duties and responsibilities defined in this contract. Documents will be sent to the Vendor through a secured server. Failure to maintain confidentiality will result in cancellation of the contract.

The Vendor agrees to maintain confidentiality and security of the data made available and shall indemnify and hold harmless the State and Agency against any and all claims brought by any party attributed to actions of breach of confidentiality by the Vendor, subcontractors, or individuals permitted access by the Vendor.

3.1.1.5 **Testimony:** Should the Agency request additional assistance from the contractor for testimony in any state or federal court or before any board of other administrative body associated with a document prepared under this agreement, such assistance shall be considered to be within the scope of work for this contract and thus billed at the same hourly rate as the rest of the items in this contract. An estimated number of times this might occur is twice a year. Meetings/testimony would likely take place in Charleston, WV; however, other locations are possible.

4. CONTRACT AWARD:

4.1 **Contract Award:** The Contract is intended to provide the Agency with a purchase price on all Contract Items. The Contract shall be awarded to the two (2) lowest bid Vendors that provide the Contract Items meeting the required specifications for the lowest overall TOTAL BID AMOUNT as shown on the commodity lines in wvoasis. Vendors must provide resumes for verification of qualifications with their bid. Selection will be based on the lowest qualified bids. However, if the Vendor has a conflict of interest on the job, the next Vendor will be selected to avoid the conflict of interest.

4.2 **Pricing Pages:** Vendor should complete the Pricing Pages by bidding on the price per hour (x) multiplied by the Estimated Quantity of Hours needed (=) equals the extended cost. Vendor should complete the Pricing Pages in their entirety as failure to do so may result in Vendor's bids being disqualified.

The Pricing Pages contain a list of the Contract Items and estimated purchase volume. The estimated purchase volume for each item represents the

approximate volume of anticipated purchases only. No future use of the Contract or any individual item is guaranteed or implied.

Vendor should type or electronically enter the information into the Pricing Pages through wvOASIS, if available, or as an electronic document. Vendors can download the electronic copy of the Pricing Pages from the wvOASIS Vendor Self-Service (VSS) website. If responding with paper bid, Vendors should download and/or print the assembled CRFQ document (with the highest version number) from wvOASIS and insert their unit price and extended cost for each item.

5. ORDERING AND PAYMENT:

5.1 Ordering: Vendor shall accept orders through wvOASIS, regular mail, facsimile, e-mail, or any other written form of communication. Vendor may, but is not required to, accept on-line orders through a secure internet ordering portal/website. If Vendor has the ability to accept on-line orders, it should include in its response a brief description of how Agencies may utilize the on-line ordering system. Vendor shall ensure that its on-line ordering system is properly secured prior to processing Agency orders on-line.

5.1.1 Work Directives: Work will be ordered by issuance of a work Directive. The Work Directive will contain the location of the project site, the specific problem, the work to be performed, and the time frame during which the work must be completed.

5.1.1.1 Provided there is no conflict of interest in review of a specific project, the Work Directive shall be awarded in the following manner:

5.1.1.1.1 The Work Directive award will go to the first lowest successful Vendor.

5.1.1.1.2 If the Vendor accepts the Work Directive, a work plan and cost proposal will be required from the Vendor as specified in the Work Directive. The Vendor will have five (5) working days to accept or refuse the project. The work plan/cost proposal will consist of a brief description of the work to be performed, the number of hours, and the total dollar amount it will cost to perform each task included in the Work Directive. This can be provided in a simple email. Vendors will not be reimbursed for providing the work plan/cost estimate.

5.1.1.1.3 If the Vendor refused the Work Directive, it will be offered to the second lowest successful Vendor and so on.

5.1.1.1.4 The Vendor's submitted work plan and cost estimate, containing the quantity estimates, shall be in accordance with the unit process provided in the response to this RFQ. If the work plan and cost estimate are approved, the WVDEP will issue a Notice to Proceed which will specify the cost of the project and the starting and ending dates. Deliverables will be submitted electronically.

5.1.1.1.5 The Vendor shall not begin work until a signed Notice to Proceed has been issued by the WVDEP.

5.2 Payment: Vendor shall accept payment in accordance with the payment procedures of the State of West Virginia.

5.2.1 Invoice: A flat rate per hour will be the total charge to the state and will cover the full cost of all work hours including labor, travel, and materials. The Vendor will be contacted to provide Risk Assessor services on an "as needed" basis only. The Vendor will invoice the WVDEP on a monthly basis. All Invoices must be accompanied by a sworn statement detailing actual hours worked.

6. DELIVERY AND RETURN:

6.1 Delivery Time: Vendor shall deliver standard orders as stated in the Work Directive. The Notice to Proceed will specify the starting and ending dates for each Work Directive. Deliverables shall be submitted electronically, unless a specific request is made.

6.2 Late Delivery: The Agency placing the order under this Contract must be notified in writing if orders will be delayed for any reason. Any delay in delivery that could cause harm to an Agency will be grounds for cancellation of the delayed order, and/or obtaining the items ordered from a third party.

Any Agency seeking to obtain items from a third party under this provision must first obtain approval of the Purchasing Division.

6.3 Delivery Payment/Risk of Loss: Standard order delivery shall be F.O.B. destination

to the Agency's location. Vendor shall include the cost of standard order delivery charges in its bid pricing/discount and is not permitted to charge the Agency separately for such delivery. The Agency will pay delivery charges on all emergency orders provided that Vendor invoices those delivery costs as a separate charge with the original freight bill attached to the invoice.

6.4 Return of Unacceptable Items: If the Agency deems the Contract Items to be unacceptable, the Contract Items shall be returned to Vendor at Vendor's expense and with no restocking charge. Vendor shall either make arrangements for the return within five (5) days of being notified that items are unacceptable or permit the Agency to arrange for the return and reimburse Agency for delivery expenses. If the original packaging cannot be utilized for the return, Vendor will supply the Agency with appropriate return packaging upon request. All returns of unacceptable items shall be F.O.B. the Agency's location. The returned product shall either be replaced, or the Agency shall receive a full credit or refund for the purchase price, at the Agency's discretion.

6.5 Return Due to Agency Error: Items ordered in error by the Agency will be returned for credit within 30 days of receipt, F.O.B. Vendor's location. Vendor shall not charge a restocking fee if returned products are in a resalable condition. Items shall be deemed to be in a resalable condition if they are unused and in the original packaging. Any restocking fee for items not in a resalable condition shall be the lower of the Vendor's customary restocking fee or 5% of the total invoiced value of the returned items.

7. VENDOR DEFAULT:

7.1 The following shall be considered a vendor default under this Contract.

7.1.1 Failure to provide Contract Items in accordance with the requirements contained herein.

7.1.2 Failure to comply with other specifications and requirements contained herein.

7.1.3 Failure to comply with any laws, rules, and ordinances applicable to the Contract Services provided under this Contract.

7.1.4 Failure to remedy deficient performance upon request.

7.2 The following remedies shall be available to Agency upon default.

7.2.1 Immediate cancellation of the Contract.

7.2.2 Immediate cancellation of one or more release orders issued under this Contract.

7.2.3 Any other remedies available in law or equity.

8. MISCELLANEOUS:

8.1 No Substitutions: Vendor shall supply only Contract Items submitted in response to the Solicitation unless a contract modification is approved in accordance with the provisions contained in this Contract.

8.2 Vendor Supply: Vendor must carry sufficient inventory of the Contract Items being offered to fulfill its obligations under this Contract. By signing its bid, Vendor certifies that it can supply the Contract Items contained in its bid response.

8.3 Reports: Vendor shall provide quarterly reports and annual summaries to the Agency showing the Agency's items purchased, quantities of items purchased, and total dollar value of the items purchased. Vendor shall also provide reports, upon request, showing the items purchased during the term of this Contract, the quantity purchased for each of those items, and the total value of purchases for each of those items. Failure to supply such reports may be grounds for cancellation of this Contract.

8.4 Contract Manager: During its performance of this Contract, Vendor must designate and maintain a primary contract manager responsible for overseeing Vendor's responsibilities under this Contract. The Contract manager must be available during normal business hours to address any customer service or other issues related to this Contract. Vendor should list its Contract manager and his or her contact information below.

Contract Manager: Karren Wood
Telephone Number: (412) 921-8195
Fax Number: _____
Email Address: Karren.Wood@tetratech.com

RESUMES

TETRA TECH

Karren Wood, LRS

Human Health Risk Assessor

EXPERIENCE SUMMARY

Ms. Wood is a senior environmental scientist with 28 years of diverse experience in the environmental consulting industry conducting small- to large-scale projects for numerous government, commercial, and industrial clients. Ms. Wood has 20 years of experience in human health risk assessment and data evaluation/management and 5 years of experience in project management for RCRA and CERCLA-driven investigations. As a senior environmental scientist, Ms. Wood has prepared screening-level and baseline human health risk assessments and developed preliminary remediation (clean-up) goals for the Department of the Navy (Atlantic Division, Naval Facilities Engineering Command and Navy Base Realignment and Closure Program), USACE, Pennsylvania Department of Environmental Protection (PADEP), West Virginia Department of Environmental Protection (WVDEP), as well as various other state agencies and industrial clients.

She has provided technical support for various investigations conducted under state and federal programs, such as Sampling and Analysis Plans (SAPs) for per- and poly-fluoroalkyl substances (PFAS), Remedial Investigations/Feasibility Studies (RI/FS), monitoring reports, Preliminary Assessments (PAs), and Site Inspections (SIs). She is skilled in the use of mathematical models, general and descriptive statistics, and interpretation of environmental data. She is trained in the use of Visual Sample Plan (VSP) software, which is a tool that supports the development of defensible sampling plans based on statistical sampling theory, and RESRAD software, which uses pathway analysis to evaluate radiation exposure and associated risks and derive cleanup criteria in a contaminated source medium. She has provided technical expertise to project managers in due diligence, environmental site assessments, background data evaluation, remediation strategy and implementation, development of human health based cleanup goals using both risk-based models and USEPA's Integrated Exposure Uptake Biokinetic and Adult Lead Models, and obtaining site closures. She was also a member of a task force to develop and implement corporate and division level quality assurance/quality control programs.

EDUCATION

MS, Environmental and Occupational Health, Radiation Health Certificate; University of Pittsburgh, 1994

BS, Mathematics; College of Charleston; 1988

AREA OF EXPERTISE

Human Health Risk Assessment

ProUCL software

Visual Sampling Plan (VSP) Software

RESRAD software

REGISTRATIONS/ AFFILIATIONS

Licensed Remediation Specialist, West Virginia, 2022, Registration Number 475

TRAINING/CERTIFICATIONS

OSHA 1910.120 40-Hour HAZWOPER Training, 1995

OSHA 1910.120 8-Hour Annual Refresher Training

OSHA 10-Hour Construction Safety Training, July 2018

First Aid/CPR Training, June 2019

OFFICE

Pittsburgh, PA

YEARS OF EXPERIENCE

28

YEARS WITH TETRA TECH

5

RELEVANT EXPERIENCE

RISK ASSESSMENT

Human Health Risk Assessor; Human Health Risk Assessment Update for Dump Road Area Site; Confidential Client (Lockheed Martin Corporation); Maryland; June 2023 to Present. Preparing update to previous human health risk assessment to evaluate industrial worker exposures to surface soil to support a risk-based closure plan. The HHRA update evaluates potential cancer risks and noncancer hazards associated with industrial-worker exposure to surface soil remaining on-site within multiple exposure areas where carcinogenic PAHs, PCBs, and metals were the predominant chemicals of concern. Completed the following tasks as part of the preparation for the risk assessment update: development of data quality objectives for the risk-based closure plan, refinement of list of chemicals of concern and preliminary remediation goals identified in previous risk assessment, established exposure area boundaries, and identified potential data gaps for the development of a soil sampling plan.

Human Health Risk Assessor; NASA; Goddard Space Flight Center, Area 400, Maryland, November 2023 to Present. Preparing human health risk assessment as part of a Phase III Environmental Site Assessment for evaluation of exposures for various receptors to multiple chemical constituents, including PFAS, in soil, groundwater, surface water, and sediment.

Human Health Risk Assessor; Hawaii Department of Health; Lahaina and Kula Wildfire Sites, Hawaii, November 2023 to Present. Calculated risk-based community Site Screening Action Levels (SSALs) for asbestos and metals of concern for the Hawaii Department of Health for ambient community air monitoring, planned in response to debris operations as a result of the Maui wildfires.

Human Health Risk Assessor; U.S. Navy, CLEAN; NSA Cutler Site 4, Maine, November 2023 to Present. Completing evaluation using USEPA's Adult Lead Model to address potential adverse health effects to construction workers from exposure to lead in soil at the remedial boundary of the North and South Helix Houses to assess whether the remedy continues to meet the remedial objective(s) identified in the Record of Decision.

Human Health Risk Assessor, Department of Energy and Environment, Poplar Point Site, Washington D.C.; September 2023 – Present. Preparing human health risk assessment as part of a Remedial Investigation for soil, groundwater, surface water, and sediment across the approximately 96-acre site including evaluation of lead exposures for industrial, recreational, and residential receptors using USEPA's Integrated Exposure Uptake Biokinetic and Adult Lead Models. The site is divided into four parcels of five- and ten-acre soil decision units consistent with the different potential types of future multi-use development anticipated for the site. Multiple receptors were evaluated across up to the four parcels. Surface soil samples were collected in the decision units via Incremental Sampling Methodology that were included in the human health risk assessment, in addition to soil data collected via discrete sampling.

Human Health Risk Assessor; U.S. Navy, CLEAN; NSA Cutler Site 10, Maine; April 2023 to Present. Prepared human health risk assessment as part of a Remedial Investigation for PFAS in soil, groundwater, and sediment for multiple exposure units.

Human Health Risk Assessor/Licensed Remediation Specialist; Novelis ALR Rolled Products Site, Confidential Client, Buckhannon, West Virginia: **December 2022 to Present.**

Serves as the West Virginia LRS and human health risk assessment consultant for the Novelis ALR Rolled Products site under the West Virginia Voluntary Remediation Program.

Human Health Risk Assessor; U.S. Navy, CLEAN; MCRD Parris Island; SC; September 2022 to Present. Preparing human health risk assessments as part of Phase II Remedial Investigations for munitions constituents in soil and groundwater for various receptors for multiple study areas (OU 11, OU 12, UXO 3, UXO 4, UXO 4A, UXO 5/6, UXO 7, UXO 8). The human health risk assessment for UXO 8 incorporated sediment data collected via both discrete and incremental sampling methodologies.

Human Health Risk Assessor; U.S. Navy, CLEAN; NAS Whiting Field Outlying Landing Field Barin, Alabama, February 2022 to Present. Prepared human health risk assessment as part of a Remedial Investigation for munitions constituents in soil and groundwater for four exposure units at UXO 3. Developing preliminary remediation goals for industrial workers and construction workers using USEPA's Adult Lead Model as part of the Feasibility Study.

Human Health Risk Assessor; U.S. Navy, CLEAN; NWIRP Calverton, New York; November 2021 to Present. Prepared human health risk assessment as part of a Remedial Investigation for PFAS in soil, groundwater, surface water, and sediment for multiple exposure units.

Human Health Risk Assessor; Confidential Client; Youngwood, Pennsylvania; June 2022. Prepared human health risk evaluation as part of a Phase II Environmental Site Assessment under the Pennsylvania Department of Environmental Protection (PADEP) Land Recycling Act (Act 2) to evaluate whether site conditions represented a potential threat to human health and the environment from exposures to volatile organics, semivolatile organics, and metals in soil.

Human Health Risk Assessor; U.S. Navy, CLEAN; NAS Dallas, Texas; September 2020 to April 2021. Prepared human health risk assessment as part of a Remedial Investigation for PFAS in soil, groundwater, surface water, and sediment for multiple exposure units covering more than 800 acres.

Human Health Risk Assessor; USEPA/RAC; Safety Light Corporation, Columbia County, Bloomsburg, Pennsylvania; February 2020 to February 2022. Prepared human health risk assessments as part of a Remedial Investigation for soil and groundwater operable units (OUs) at a mixed waste site with chemical and radioactive contamination. Evaluated lead exposures for industrial and recreational receptors using USEPA's Adult Lead Model. Performed background evaluation using two sample hypothesis tests to compare the pooled soil data for each of four subareas of the site to pooled background data. Groundwater OU included evaluation of PFAS. Calculated preliminary remediation goals (PRGs) for chemicals and radionuclides of concern.

Human Health Risk Assessor; Naval Facilities Engineering Command Southwest/CLEAN; Mountain Aerial Gunnery Range, Bradshaw Trail, Imperial and Riverside Counties, CA; April 2020 to February 2021. Prepared human health risk assessment and background statistical evaluation for metals in soils as part of the Bradshaw Trail Remedial Investigation.

Human Health Risk Assessor/Environmental Scientist; Sampling and Analysis Plan, (Field Sampling Plan and Quality Assurance Project Plan) for Per- and Polyfluoroalkyl Substances Site Inspection for Building CAD 119 – Fire Station No. 15; Naval Facilities Engineering Command MidAtlantic/CLEAN; NWS Yorktown, Cheatham Annex, Virginia, November 2021 to February 2022. Managed the preparation of

a Site Inspection Sampling and Analysis Plan for identifying potential historical sources or releases of per- and poly-fluoroalkyl substances (PFAS) in soil and groundwater.

Human Health Risk Assessor/Environmental Scientist; Sampling and Analysis Plan, (Field Sampling Plan and Quality Assurance Project Plan) for Per- and Polyfluoroalkyl Substances Site Inspection; Naval Facilities Engineering Command MidAtlantic/CLEAN; New Kent ROTHR Site, Virginia, November 2021 to February 2022. Managed the preparation of a Site Inspection Sampling and Analysis Plan for identifying potential historical sources or releases of per- and poly-fluoroalkyl substances (PFAS) in soil and groundwater.

Human Health Risk Assessor/Environmental Scientist; Sampling and Analysis Plan, (Field Sampling Plan and Quality Assurance Project Plan) for Per- and Polyfluoroalkyl Substances Site Inspection for NWS Yorktown Special Area; Naval Facilities Engineering Command MidAtlantic/CLEAN; Sugar Grove, West Virginia, November 2021 to February 2022. Managed the preparation of a Site Inspection Sampling and Analysis Plan for identifying potential historical sources or releases of per- and poly-fluoroalkyl substances (PFAS) in soil and groundwater.

Human Health Risk Assessor/Environmental Scientist; PFAS Preliminary Assessment/Site Investigation Sampling and Analysis Plan; Naval Facilities Engineering Command MidAtlantic/CLEAN; Naval Support Activity (NSA) Crane, Crane, Indiana. December 2019 to September 2020. Managed the preparation of a basewide Preliminary Assessment/Site Investigation (PA/SI) Sampling and Analysis Plan (SAP) for identifying potential historical sources or releases of PFAS.

Human Health Risk Assessor/Environmental Scientist; PFAS Preliminary Assessment/Site Investigation Sampling and Analysis Plan; Naval Facilities Engineering Command MidAtlantic/CLEAN; Naval Submarine Base (NSB) New London, Groton, Connecticut. December 2019 to August 2020. Managed the preparation of a basewide PA/SI SAP for identifying potential historical sources or releases of PFAS.

Human Health Risk Assessor/Environmental Scientist; Basewide PFAS Site Inspection; Naval Facilities Engineering Command MidAtlantic/CLEAN; Naval Submarine Base (NSB) New London, Groton, Connecticut. July 2021 to December 2023. Managed the preparation of a basewide PFAS SI for identifying potential historical sources or releases of PFAS. The SI included 18 potential release areas.

Human Health Risk Assessor/Environmental Scientist; Preliminary Assessment/Site Investigation Sampling and Analysis Plan for SWMU 5; Naval Facilities Engineering Command MidAtlantic/CLEAN; NSA Crane, Crane, Indiana. December 2019 to February 2021. Managed the preparation of a PA/SI SAP for long-term groundwater and surface water monitoring program for select volatile organic compounds and metals at Solid Waste Management Unit (SWMU) 5.

Human Health Risk Assessor; Remedial Action Plans – Block F Soil; Confidential Client (Lockheed Martin Corporation); Baltimore, Maryland; January 2020 to October 2021. Prepared updates to post-excavation residual risk analysis (RRA) after a remedial action was completed in accordance with the remedial action plan (RAP). The post-excavation RRA calculated the cancer and noncancer risks associated with industrial-worker exposure to soil remaining on-site where PCBs were the predominant chemicals of concern.

Human Health Risk Assessor; Remedial Action Plans – Block E Soil; Confidential Client (Lockheed Martin Corporation); Baltimore, Maryland; March 2020 to June 2022. Prepared post-excavation residual

risk analysis (RRA) during a remedial action was completed in accordance with the remedial action plan (RAP). During the remedial action, as confirmation sample results were reported by the laboratory and determined to meet data usability requirements, calculated residual risks in real time to determine if acceptable or if additional step out sampling was required. Upon completion of the remedial action, the post-excavation RRA calculated the cancer and noncancer risks associated with industrial-worker exposure to soil remaining on-site where PCBs and the group of polycyclic aromatic hydrocarbons, evaluated as benzo(a)pyrene equivalents, were the predominant chemicals of concern.

Human Health Risk Assessor; Site 5 Phase II Remedial Investigation; U.S. Navy, NAVFAC Southeast, Marine Corp Recruit Depot, Parris Island, South Carolina; March 2021 to Present. Developed methodology for robust statistical analysis to establish site-specific background threshold values and comparison background methods using reference sediment sample analytical results collected as part of the Phase II RI. The methodology was used to determine whether migration of contaminants from Site 5 identified in groundwater and subsurface soil impacts the sediment along the shoreline at Site 5 and to determine whether target analyte concentrations in sediment at Site 5 are greater than background as part of Step 3a of the ecological risk assessment.

Statistical Analyst; USEPA/RAC, Feasibility Study; Baghurst Drive Site, Harleysville, Pennsylvania; June 2020. Prepared metals background evaluation requested by EPA and updated PRGs based on results of background analysis.

Statistical Analyst; USEPA/RAC, Shaffer Equipment Company/Arbuckle Creek Site, Minden, West Virginia; May 2020. Calculated background concentrations using USEPA's ProUCL software Version 5.1. Methodology included evaluation of potential outliers, determination of data distributions, and selecting 95 percent upper tolerance limits based on data distributions.

Statistical Analyst; CCR Rule Groundwater Monitoring and Corrective Action; Confidential Client; Homer City Generating Station Ash Disposal Site, Indiana County, Pennsylvania; June 2020 to Present. Perform groundwater statistical evaluations for data collected as part of assessment monitoring.

Statistical Analyst; CCR Rule Groundwater Monitoring and Corrective Action; Confidential Client; Harrison Power Station, Harrison County, West Virginia; June 2020 to Present. Perform groundwater statistical evaluations for data collected as part of assessment monitoring.

Statistical Analyst; CCR Rule Groundwater Monitoring and Corrective Action; Confidential Client; Hatfield's Ferry Power Station, Greene County, Pennsylvania; June 2020 to Present. Perform groundwater statistical evaluations for data collected as part of assessment monitoring.

Statistical Analyst; CCR Rule Groundwater Monitoring and Corrective Action; Confidential Client; Pleasants Power Station, Pleasants County, West Virginia; June 2020 to Present. Perform groundwater statistical evaluations for data collected as part of assessment monitoring.

Statistical Analyst; CCR Rule Groundwater Monitoring and Corrective Action; Confidential Client; Ft. Martin Power Station, Monongalia County, West Virginia; June 2020 to Present. Perform groundwater statistical evaluations for data collected as part of assessment monitoring.

Environmental Scientist; USEPA/RAC, N. 25th Street Glass and Zinc Site, Clarksburg, West Virginia; May 2020. Prepared nature and extent of contamination evaluation and discussion for a technical memorandum to summarize the results of the Phase 1 soil and groundwater sampling activities.

Human Health Risk Assessor; Naval Facilities Engineering Command Southeast/CLEAN; UXO 2/3, Naval Air Station Joint Reserve Base, Fort Worth, Texas; November 2020 to Present. Prepared human health risk assessment for a former pistol range (UXO 2) and a former pistol range/M-60 range and rifle range (UXO 3) as part of the Remedial Investigation. Chemicals of potential concern included munitions constituents in soil and groundwater.

Human Health Risk Assessor; San Diego Unified Port District; Former South Bay Power Plant, Chula Vista, California; December 2020 to April 2021. Provided risk assessment support and metals background evaluation for the Revised Human Health and Ecological Risk Evaluation.

Human Health Risk Assessor; U.S. Navy, CLEAN, MCRD Parris Island; April 2021. Prepared methodology for development of background threshold values for reference sediment samples to be used in ecological risk assessment as part of a Phase II Remedial Investigation.

Human Health Risk Assessor; Naval Facilities Engineering Command Southeast/CLEAN; Naval Air Station Joint Reserve Base, Fort Worth, Texas; January 2020. Calculation of site-specific soil Protective Concentration Level (PCL) for lead for protection of groundwater for UXO-003 at Naval Air Station Fort Worth using Tier 2 Soil-to-Groundwater PCL equation provided by Texas Risk Reduction Program (TRRP) Guidance to support the remedial investigation.

Human Health Risk Assessor/Licensed Remediation Specialist; Park Drive Development Site, Superfund Technical Assessment and Response Team (START) program, Weirton, Brooke County, West Virginia; August 2020 to Present. Serves as the West Virginia Licensed Remediation Specialist (LRS) and human health and ecological risk assessor for the Park Drive Development site under the West Virginia Voluntary Remediation Program (VRP). Tasks include communication/correspondence with WVDEP project manager, WVDEP risk assessor, Applicant, preparation of the VRP Application and Voluntary Remediation Agreement, preparation of a Site Assessment Work Plan and Site Assessment Report.

Human Health Risk Assessor/Licensed Remediation Specialist/Task Manager; Former Elk View and Jane Lew Field Camps Site Assessments and Human Health and Ecological Risk Assessments, Confidential Client, Elkview, Kanawha County, and Jane Lew, Lewis County, West Virginia: **2018 to Present.**

- Serves as the West Virginia LRS and human health and ecological risk assessor for the Former Elkview and Jane Lew oil and gas sites under the West Virginia Voluntary Remediation Program. Tasks include identification of constituents of concern (COCs), conceptual site model development, exposure pathway elimination, and completion of a screening level ecological evaluation. Worked closely with state regulators to develop risk assessment approach and resolve comments.
- Serves as the task manager for the data management and laboratory/data validation portions of the projects at project inception. Managed technical staff to process and tabulate data. Coordinated with laboratory project manager and data validator, reviewed and processed invoices, reviewed deliverables.

Human Health Risk Assessor/Task Manager; Elk Terminal Site Assessment and Human Health and Ecological Risk Assessment; City of Parkersburg; Parkersburg, Wood County, West Virginia; 2018-2019.

- Served as West Virginia LRS and human health and ecological risk assessor for the City of Parkersburg Elk Terminal oil and gas site under the West Virginia Voluntary Remediation Program. Tasks included identification of COCs, conceptual site model development, and completion of a quantitative human health exposure and risk evaluation and screening level ecological evaluation. Worked closely with state regulators to develop risk assessment approach and resolve comments.
- Served as the task manager for the data management and laboratory/data validation portions of the projects. Managed technical staff to process and tabulate data. Coordinated with laboratory project manager and data validator, reviewed and processed invoices, reviewed deliverables.

Human Health Risk Assessor; No Further Action (NFA) Request Report, Two Former Gas Station Sites; Confidential Client; Las Vegas, Nevada; 2016. Prepared human health risk assessments for two former gasoline station sites in Las Vegas, Nevada according to Nevada Division of Environmental Protection's NAC 445A.22725(3)(c) in support of a NFA Request Report.

Human Health and Ecological Risk Assessment; Palo Alto Battlefield National Historic Park; National Park Service; Brownsville, Texas; 2015-2016. Prepared human health and ecological risk assessments under a CERCLA-driven investigation for a former cattle dip tank area within the park that was contaminated with arsenic. Developed site-specific PRGs based on a recreational exposure scenario.

RCRA Implementation, Risk Assessments; Naval Activity Puerto Rico, Department of the Navy, NAVFAC SOUTHEAST; Ceiba, Puerto Rico; 2007-2015. Responsible for providing human health risk assessment support to the BRAC PMO, Southeast, for RCRA-driven investigations at over 30 SWMUs, many with petroleum-related chemicals of concern. Responsibilities included the design and implementation of soil, sediment, surface water, and groundwater sampling programs in support of RFI and CMS investigations. Lead risk assessment responsibilities included development of the site conceptual model, the review of analytical data for usability, the selection of constituents of potential concern, evaluation of exposure pathways, incorporation of current toxicity information, characterization of the cumulative risk and identification of uncertainty inherent in the risk assessment. Contamination levels were evaluated relative to USEPA Risk Assessment Guidance for Superfund, Puerto Rico EQB and USEPA Region II regulations. Extensive communication and negotiation with Puerto Rico EQB and USEPA Region II throughout the risk assessment process at each SWMU.

Project Manager and Human Health Risk Assessor; Site 1 Landfill Remedial Investigation, Feasibility Study, and Remediation Design, Naval Weapons Station Yorktown, U.S. Navy, Atlantic Division (LANTDIV); Cheatham Annex, Virginia; 2002-2008. Provided environmental engineering services (including a remedial investigation, feasibility study, engineering evaluation, cost analysis, preparation of an action memorandum, remedial design, removal action support, human health and ecological risk assessments, regulatory agency coordination, and public and stakeholder involvement) at the Site 1 Landfill at the base to investigate, plan, remediate, and restore the one-acre landfill located along the York River. Served as lead risk assessor for the performance of the human health risk assessment.

Black Hills Army Depot Site Investigations, Risk Assessments, and Feasibility Study; USACE, Omaha District; Igloo, South Dakota; 2007-2010. Prepared human health risk assessments to evaluate the potential

remedial actions from contamination of various media (groundwater, soil, surface water, sediments) resulting from historical BHAD operations. Tasks included development of preliminary remediation goals for metals, explosive compounds, and organochlorine pesticides in soil encompassing approximately 30 square miles of Depot property (depot-wide). Successfully negotiated with Federal and State agencies to restrict the spatial extent of remediation to locations with chemical concentrations exceeding 95 percent of the UCL. The depot-wide approach greatly reduced the number of chemicals of concern that would otherwise have been identified for remediation if the evaluation was conducted on a site-by-site basis.

Groundwater Modeling and Feasibility Study for Atlas E Missile Sites; USACE, Omaha District; Nebraska, Colorado, and Wyoming; 2000-2004. Responsible for performing a quantitative human health risk assessment, data management, and QA/QC for two former Atlas "E" Missile sites, in support of a Remedial Investigation/Baseline Risk Assessment (RI/BRA) and bench scale/pilot scale treatability study. The assessments included development of the site conceptual model, the review of analytical data for usability, the selection of constituents of potential concern, evaluation of exposure pathways, incorporation of current toxicity information, characterization of the cumulative risk, and identification of uncertainty inherent in the risk assessment.

Out Lying Field (OLF) Facilities Hazardous and Toxic Real Estate Survey (HTRES); Washington County and Craven County, North Carolina; 2003. Performed human health risk screening as part of a Hazardous and Toxic Real Estate Survey for 15 parcels of land in Washington and Craven Counties, North Carolina to evaluate the possibility of use of the parcels as an OLF facility. These tracts of land cover approximately 3,955 acres. The screening included development of a site conceptual model, review of analytical data for usability, selection of constituents of potential concern, and evaluation of complete exposure pathways.

Maryland Sand, Gravel and Stone (MSG&S) Site; Clean Sites Environmental Services, Inc.; Elkton, Maryland; 2001-2015. Responsible for data management, development of program-specific Trigger Levels for screening of quarterly groundwater monitoring data, screening of data against program-specific Trigger Levels, and quantitative evaluation of potential human health risks for this National Priority List site. Trigger level methodology was developed using risk-based, innovative procedures to determine program action going forward.

Pest Management SDEIS; Texas Department of Transportation, Environmental Affairs Division; Statewide, Texas; 2007. Developed innovative quantitative risk assessment protocol for Texas DOT's Roadside Pest Management Program. As a cost savings benefit, risk calculation models were designed to allow the end user to change various input parameters to calculate risks for different chemicals should the chemicals or application techniques utilized by TxDOT change.

General Technical Assistance Contract (GTAC); PADEP; Statewide, Pennsylvania; 2001-2009.

- Franklin Glass Site, Butler, Pennsylvania: Conducted baseline human health risk assessment for this residential site, formerly the location of the Standard Plate Glass Company and the Franklin Glass Company. The contaminants of concern were carcinogenic PAHs and arsenic in soil. The PAHs were remediated through an interim action soil removal, and a risk-based clean-up goal for arsenic in soil was developed. Specifically, alternative risk-based clean-up goals were calculated using three different exposure assumptions assuming a residential scenario: 50% bioavailable arsenic fraction, central tendency exposure values, and arsenic as a noncarcinogen (50% bioavailable arsenic fraction). The arsenic concentrations at the site were found to be below the most conservative of the alternative risk-

based clean-up goals, which resulted in substantial cost savings during the remediation phase of the project.
- Bucks, Chester, and Montgomery Counties, PA: designed human health-based risk assessment for 1,4-dioxane in groundwater in residential, commercial, and mixed-use environments, modeled alternative clean-up goals for each scenario for analysis of potential treatment options.
- Currie Landfill Site: performed HRS scoring for listing on the Pennsylvania Priority List of Hazardous Sites (Hazardous Sites Cleanup Act) that aided in the identification and mitigation of PCE, TCE, 1,2-DCE, and vinyl chloride in the groundwater.

Environmental Program Activities at Marine Corps Base, Camp Lejeune; U.S. Navy, Atlantic Division (LANTDIV), Jacksonville, North Carolina; 1995-2005. Risk Assessor. Performed human health risk assessments as part of RCRA Facility Investigations for various Solid Waste Management Units (SWMUs). Risk assessment responsibilities included selecting COPCs, estimating chronic daily intakes, and evaluating contamination levels relative to the state and USEPA Region IV regulations.

Comprehensive Long Term Environmental Action Navy (Navy CLEAN) I, II, and III; Mid-Atlantic States, Caribbean, and Mediterranean; U.S. Navy, Atlantic Division (LANTDIV); 1997-2008. Risk Assessor. Derived human health-based remediation goal options (RGOs) based on nonpotable groundwater and soil sources for the feasibility studies for several sites at CD Landfill, Naval Base Norfolk, Virginia; Naval Weapons Station Yorktown, Virginia; and MCB Camp Lejeune, North Carolina. These cleanup goals were developed for both organic and inorganic constituents determined by results of baseline human health risk assessments to be contaminants of concern. The baseline human health risk assessments and development of cleanup goals were conducted following USEPA Risk Assessment Guidance for Superfund, Parts A and B.

PROJECT MANAGEMENT

Assistant Project Manager; Radiological Preliminary Assessment/Site Inspection (PA/SI); U. S. Navy/CLEAN; NSF Indian Head, NSF Dahlgren, and NSWC Carderock; March 2021 to Present. Assist in management of radiological PA/SI projects for NSF Indian Head, NSF Dahlgren, and NSWC Carderock, including preparation of separate documents for each facility including PA Work Plans, PA Reports, and SI Reports. The task also includes conducting the SI activities and preparing the following planning documents prior to the SI activities: Uniform Federal Policy Sampling and Analysis Plan, Accident Prevention Plan/Site Health and Safety Plan, Basewide Radiological Management Plan, Radiation Protection Plan, and Task Specific Plans. The PA Report will include an evaluation of the sites to determine whether they need to proceed to and SI. There are approximately 91 sites at NSF Indian Head, 81 sites at NSF Dahlgren, and 30 sites at NSWC Carderock that will be included in the PA report with a smaller list of sites anticipated to proceed to an SI.

Project Manager; Cheatham Annex (CAX), Ecological Investigation, GIS and Design; CH2M Hill - Federal Group Limited; Williamsburg, Virginia; 2001-2006.
- Managed a multi-tasked project to supply engineering services at Naval Weapons Station, Yorktown, Virginia, CAX. Project included development of multi-site ecological work, GIS Needs Assessment, and additional investigations of Installation Restoration Sites and Areas of Concern at CAX.
- Managed a multi-tasked project to supply additional field activities to support six IR sites at CAX and address the removal of sources of contamination via engineering evaluation/cost analyses (EE/CAs), action memoranda, and remedial designs.

- Managed a project to complete a background investigation at Naval Weapons Station, Yorktown, Virginia, CAX. Project includes field investigation, data collection and evaluation, and completion of a Background Investigation Report for CAX.

DUE DILIGENCE/REGULATORY COMPLIANCE

Environmental Scientist; Confidential Clients; Multiple Locations; 2015-2018. Conducted over 30 Phase I and Phase II Environmental Site Assessments in accordance with current ASTM standards for due diligence and property transaction purposes. Properties included industrial facilities, petroleum stations, retail shopping centers, commercial office buildings, and undeveloped properties. Performed historical research, reviewed and interpreted information and data from historical reports, prior subsurface investigations, and regulatory data for each respective project.

Environmental Scientist/Project Manager; Speedway Gas Station; Speedway LLC; New Alexandria, Westmoreland County, Pennsylvania; 2015-2018. Managed and prepared a NEPA Environmental Assessment (EA) in support of the construction of a gasoline retail store that proposed the installation of a sanitary sewer force main transecting land under jurisdiction of the USACE. Completed a field investigation to determine site area eligibility for listing in the National Register for Historic Places (pursuant to Section 106 of NEPA), interfaced with Pennsylvania Historical and Museum Commission and State Historic Preservation Office, researched Native American cultural sites and initiated consultation, collected and analyzed information regarding the existing environment potentially affected by the proposed action and alternatives, and participated in various meetings with client, contractors, engineers, PADEP, and USACE. The EA resulted in a Finding of No Significant Impact from the USACE.

QA/QC Officer; RCRA Corrective Action Program - General Electric; General Electric; Morgantown, West Virginia; 2003. Responsible for the preparation of a Quality Assurance Project Plan (QAPP) for 2003 Phase II RFI Facility Investigation. Tasks included developing Data Quality Objectives (DQOs), and project action limits, method detection limits, and reporting limits for laboratory analytical methods. The project involved the investigation of 21 Solid Waste Management Units (SWMU) and 4 areas of concern or spill areas to determine if any of the sites are responsible for risk to human health or the environment. Project involved negotiating with US EPA Region III regulators, meeting the environmental indicators established for the site, and designing a field approach to provide necessary data to evaluate risk and determine extent of contamination.

Task Force Committee Member; QA/QC Task Force, The Thrasher Group, Inc.; Bridgeport, West Virginia; 2018-2019. Appointed member of a task force to develop and implement corporate and division level quality assurance/quality control programs for the company.

CHRONOLOGICAL HISTORY

Senior Health Risk Assessor, Tetra Tech, Inc., 2019 – Present, Pittsburgh, PA
Environmental Risk Assessor, The Thrasher Group, Inc., 2018-2019, Canonsburg, PA
Senior Scientist, ATC Group Services LLC, 2015-2018, Pittsburgh, PA
Senior Environmental Specialist/Human Health Risk Assessor, Michael Baker International, 1995-2015, Moon Township, PA

TETRA TECH

AARON M. BERNHARDT, PMP

Project Manager/Ecological Risk Assessor

EXPERIENCE SUMMARY

Mr. Bernhardt is a Senior Ecological Risk Assessor and Project Manager with 33 years of experience. Mr. Bernhardt is a Tetra Tech subject matter expert on ecological risk assessment (ERA), with a focus on developments in the ERA of PFAS. Mr. Bernhardt is also a Tetra Tech radiological-focused project manager for preliminary assessments and site inspections, and he is managing radiological PAs and SIs at several Navy installations.

As an ecological risk assessor, over the breadth of his career, Mr. Bernhardt has managed, provided technical support, and prepared numerous ecological risk assessments in several EPA Regions for federal, state, and commercial clients, and presented the results to the regulators and at public meetings. In addition, as part of the tasks, he has interacted closely with federal and state regulators to plan investigations and to resolve comments. Mr. Bernhardt is also a Senior Risk Assessment Training Coordinator for the Emergency Response Training Program (ERTP) for the U.S. Environmental Protection Agency which is managed by Tetra Tech.

Mr. Bernhardt has served as a Field Sampling Specialist, collecting various types of samples (i.e., chemical and biological) to support ecological risk assessments, to determine the extent of contamination, or as part of monitoring programs. He has also gained experience as a Water Quality and Sediment Specialist responsible for conducting and managing many water quality related projects.

RELEVANT EXPERIENCE

Facility Coordinator/Project Manager/Senior Ecological Risk Assessor; US Navy, CLEAN; Naval Support Activity (NSA) Crane, Crane, IN; 2017 - Present. Serves as the facility coordinator for all Environmental Restoration projects managed under Tetra Tech's various contracts with the Navy. Coordinates with Tetra Tech project managers to ensure they are staying on schedule and on budget and determines whether they need additional support. Works closely with the Naval Facilities Engineering Command Mid-Atlantic project manager and the NSA Crane Environmental Restoration/Corrective Action Site project manager to update them on project status, determine project needs, and coordinate field activities. In addition, he manages several task orders covering a variety of projects

EDUCATION

MS, Chemical Hazard Assessment; University of Pittsburgh, 1990

BA, Biology; Case Western Reserve University; 1988

AREA OF EXPERTISE

Ecological Risk Assessment

Sediment/Water Quality

Radiological PA/SI

REGISTRATIONS/ AFFILIATIONS

Project Management Professional #2875100

Society of Environmental Toxicology and Chemistry

TRAINING/CERTIFICATIONS

OSHA 1910.120 40-Hour HAZWOPER Training; 1992

OSHA 1910.120 8-Hour Annual Refresher Training; Dec. 2021

ORAU MARSSIM Training Course, October 2019

OFFICE

Pittsburgh, PA

YEARS OF EXPERIENCE

33

YEARS WITH TETRA TECH

25

including RCRA Facility Investigations, Corrective Measure Studies, Corrective Measures Implementation Plans, Long-Term Monitoring Program Optimization, Statements of Basis, Interim Measures Work Plans, Monitoring Well Inventory, and other environmental projects.

Project Manager; Vapor Intrusion Studies, SWMU 16 and SWMU 37; US Navy, CLEAN; Naval Support Activity (NSA) Crane, Crane, IN; 2020 - Present. Finalized a Vapor Intrusion (VI) investigation for a building at SWMU 16, which required discussions with the regulators, including a site visit to familiarize them with the site. Based on the results of the VI investigation, a portable gas chromatograph (GC) investigation was conducted at SWMU 16, and two other buildings at SWMU 37 to identify preferential pathways for TCE entering the buildings via VI. The portable GC investigation included sealing visible ports of entry into the buildings to try and reduce VI. Will be working with the Navy to identify a long-term solutions to the VI at SWMU 16, as VI still appears to be a problem even after visible cracks and openings were sealed. In the process of preparing a sampling plan for conducting VI investigations in the two buildings at SWMU 37, with the goal of completing the first round of sampling in the summer of 2023.

Project Manager; Source Investigation, Site 8; US Navy, CLEAN; Naval Support Activity (NSA) Crane, Crane, IN; 2021 - Present. Prepared and finalized a Sampling and Analysis Plan (SAP) to conduct a source investigation study at Site 8, a former untreated wastewater pond, to identify the source of TCE to the site. Prior to preparing the PAS, a sampling approach technical memorandum was prepared and approved by the regulators which served as the basis for the SAP. The investigation is being conducted because the former pond, which was previously excavated because of TCE, is now re-contaminated, and the source of the contamination is not known. The planned investigation includes installing additional monitoring wells, conducting a pressure transducer study in the groundwater wells, collecting soil samples, conducting dye tracer studies from potential source areas to the site, and using ground penetrating radar to try and identity the outfall to the former pond. The investigation is planned for the fall of 2023.

PFAS PROJECTS

Project Manager; PFAS Preliminary Assessment/Site Inspection, Offsite Drinking Water Investigation, and other PFAS Investigations; US Navy, CLEAN; Naval Support Activity (NSA) Crane, Crane IN; 2017 - Present. Serves as the project manager for a PFAS Preliminary Assessment/Site Inspection (PA/SI) along with an off-site drinking water investigation. As a result of information gathered during the PA, the Navy proactively sampled off-site drinking water wells that were potentially impacted by releases of PFAS from sites within one-mile of the NSA Crane facility border. Tetra Tech conducted the sampling in May 2019 and prepared the final report in 2020. The SI field activities were implemented in October 2020 after the SI Sampling and analysis plan (SAP) was approved by the regulators. The final report was approved by and submitted to the regulators in 2022. A few areas evaluated in the SI exhibited PFAS concentrations in groundwater in excess of screening levels. Therefore, Tetra Tech conducted data gap SI activities in June 2022, and the SI report is currently under review. Also managed a PFAS RCRA Facility Assessment at a Former Fire Fighting Training Area (FFFTA) to determine whether there has been a release of PFAS to the environment by investigating whether PFAS is present in shallow groundwater at the site. PFAS was detected in some of the wells and the FFFTA is recommended for a PFAS RI at NSA Crane.

Senior Risk Assessor; OU 12; Naval Air Station Joint Reserve Base (NAS JRB) Willow Grove, Willow Grove, PA. Developed approach to revise PFAS ecological soil, sediment, and surface water screening levels. Supported preparation of planning documents for PFAS site investigations. Responded to regulatory comments and participated in conference calls with regulators. Currently in the process of preparing a risk assessment work

plan for conducting an ERA for PFAS in surface water, sediment, and surface soil. Conducted Screening Level ERA through Step 3a for a site with metals, CVOCs, SVOCs, and pesticides in surface soil, sediment, and surface water; most were eliminated as COPCs.

Senior Risk Assessor; PFAS Tissue Sampling Investigation and Ecological Risk Assessment; Former Naval Air Station Brunswick, Brunswick, ME. In the process of planning a site-specific PFAS ERA using fish and shellfish data that will be collected from the site. Initially prepared an ERA approach technical memorandum that was submitted to the regulators for review and approval. The memorandum described the approach that will be used to conduct the ERA once the tissue data are collected. Next, prepared a sampling approach technical memorandum to describe how the fish and shellfish (clams, mussels, and oysters) would be collected, and identified suitable reference locations as well. The regulators reviewed and approved the memorandum, which was than the basis for a Sampling and Analysis Plan that is currently under regulatory review. This will be one of the first tissue sampling investigations conducted for the Navy for PFAS in support of a risk assessment. The tissue data will be used for both human health and ecological risk assessments.

Senior Ecological Risk Assessor; PFAS Technical Memorandum; US Navy, CLEAN; 2019. Prepared a technical memorandum that presented a summary of toxicity data based on risks to ecological receptors from exposure to per- and polyfluoroalkyl substances (PFAS) in the environment. The memorandum included background concentrations along with fate and transport information and bioaccumulation data. The focus of the technical memorandum was on surface water and sediment as the exposure media of concern for ecological receptors, along with and tissue screening levels and toxicity data for birds, mammals, and aquatic organisms. Soil toxicity information for ecological receptors were also included when found concurrently with surface water and sediment toxicity information. The memorandum was presented at the August 2019 Society of Environmental Chemistry and Toxicology Environmental Risk Assessment of PFAS conference in Durham, NC.

Senior Ecological Risk Assessor; PFAS Ecological Risk Assessment for Remedial Investigation; U.S. Navy, CLEAN; NAS Dallas, TX; September 2020 - Present. Provided technical review and oversight of a screening level ecological risk assessment (SLERA) that was conducted on ecological receptors potentially exposed to PFAS in surface water, sediment, and surface soil data. The risk assessment utilized recent PFAS ecological risk assessment guidance and ecological screening levels and included the evaluation of potential risks to multiple ecological receptors. The facility was divided into different exposure areas based on the spatial location of the areas and separate risk evaluation were conducted for each area. Mammals and birds were evaluated in the SLERA using food chain models for both terrestrial and aquatic wildlife.

Senior Ecological Risk Assessor; NASA, Goddard Space Flight Center, Wallops Flight Facility, Wallops Island, VA; January 2017 - Present. Serves as ecological risk assessor and emerging contaminant specialist for the onsite and off-site investigation of PFAS contamination. Prepared a summary of currently available aquatic ecological screening levels (freshwater and marine) and bioaccumulation factors.

Ecological Risk Assessor; Technical Support Technical Support; US Navy, CLEAN; Multiple Facilities. 2018 - Present. Provides technical support for PFAS-related projects including sampling and analysis plans, Site Inspections, and Remedial Investigations. The support is focused on ensuring the most current and applicable ecological screening levels for PFAS are being utilized and reviewing the conceptual site models to ensure consistency across facilities. Part of this work involved preparing a technical memorandum for the Navy to present the recommended surface soil, surface water, and sediment screening levels that should be utilized for PFAS.

Ecological Risk Assessor; PFAS Investigation; US Navy, CLEAN; Portsmouth Naval Shipyard, Kittery, ME; 2017. Assisted in planning an investigation to evaluate PFAS detections in groundwater and past releases to the offshore area. Conducted a site visit to help better understand the potential exposure pathways to help prepare the conceptual site model. A sampling plan was developed, utilizing a data quality objective approach.

ECOLOGICAL RISK ASSESSMENT

Senior Ecological Risk Assessor; Lower Darby Creek Aquatic Environment Feasibility Study; EPA Region 3 RAC; Philadelphia and Delaware Counties, PA; 2021 to Present. Working closely with EPA Region 3 to plan aquatic investigations in Lower Darby Creek and surrounding areas to address data gaps that were identified from earlier investigations conducted by another contractor. Prepared data gap approach and data quality objectives for discussion with EPA to address the data gaps and help in developing a sampling plan. The goal is to collect the first set of data by the end of 2023.

Senior Ecological Risk Assessor; Kennedy Space Center Multiple Sites Ecological Risk Evaluations; NASA; Kennedy Space Center, FL; 2019. Prepared and supported ecological risk evaluations for various COCs, including metals and SVOCs, at several sites, including Area 2 Camera Pads, Haulover Canal, and AOSB. The evaluations helped support that no additional ecological risk evaluation was needed. The evaluation for AOSB was more extensive because it included summarizing the results of the Baseline ERA, which contained toxicity testing and benthic communities.

Senior Ecological Risk Assessor; OU-1 Proposed Plan and Interim ROD; Anniston Army Depot, AL; USACE Mobile; 2017; $434K. Provided technical support for toxicity testing that resulted in the development of a site-specific response level for TCE that may affect the federally threatened species, pygmy sculpin (*Cottus paulus)*. Toxicity testing studies conducted on surrogate fish species concluded that BioSensor® data were not usable and the Ethovison® testing results were used to develop the response level.

Senior Ecological Risk Assessor; Ecological Risk Assessments and Vapor Intrusion Study; NSA Crane, IN; NAVFAC Atlantic; Ongoing. Prepared ERAs ranging in complexity as part of RFI at multiple SWMUs. Parameters evaluated included metals, PAHs, and explosives and MC such as HMX, RDX, and TNT. Some ERAs included conducting plant, soil invertebrate, and sediment toxicity tests, bioaccumulation tests, and food-chain modeling. For some SWMUs, the testing showed that risks were acceptable and the SWMUs were recommended for NFA, and for other SWMUs, site-specific cleanup levels were developed for various ecological receptors. Risks were also re-evaluated after remedial actions to show that risks were acceptable. Provided support for a VI investigation conducted at one SWMU including attending meetings with the regulators to discuss the results and path forward. The VI investigation included 2 round of sampling and determine that indoor air TCS levels were greater than standards. Currently in the process of determining next steps.

Senior Ecological Risk Assessor; U.S. Navy, CLEAN; Naval Support Activity (NSA) Cutler, ME; 2017 - 2019. Reviewed the ecological risk portion of Feasibility Studies (FSs) and Records or Decision (RODs) for Sites 1, 2, and 4. The initial cleanup levels in the FS for all three sites were calculated using the soil to earthworm bioaccumulation data for Site 4. After reviewing the cleanup levels, it was determined that the cleanup levels for Sites 1 and 2 were calculated incorrectly by another contractor. Furthermore, because the source of PCBs at Site 4 (paint chips) was different than the source of PCBs at Sites 1 and 2 (transformer oil), the bioavailability of the PCBs in soil was expected to be different between Sites 1 and 2 and Site 4. Therefore, an earthworm bioaccumulation study was conducted to obtain a site-specific bioaccumulation factor (BAF) for Site 1. A good dose-response relationship between PCB concentrations in soil and earthworms was observed, and as expected, the BAF developed for Site 1 was higher than the BAF for Site 4. Two cleanup levels were developed for PCBs

in soil, one was a "not-to-exceed" value and one was based on the surface weighted average concentration (SWAC) across the site. The cleanup levels were more accurate using a site-specific BAF versus using the BAF from Site 4 or from the literature. Thiessen polygons were used to calculate the SWAC after eliminating soil samples with concentrations that exceeded the human health cleanup level. Based on this evaluation, only a few additional areas required excavation at Site 1, but no areas required excavation at Site 2. The entire study, including the development of the cleanup levels proceeded with very few regulatory comments or delay because close coordination was maintained with the agencies throughout the entire process.

Senior Ecological Risk Assessor; National Aeronautics and Space Administration (NASA), Goddard Space Flight Center, Wallops Flight Facility, Wallops Island, VA; 2015 - Present. Serves as ecological risk assessor for several investigations to pistol, rifle, and skeet ranges. At the pistol and rifle ranges, cleanup levels were calculated for metals in soil based on adjusting conservative screening levels and were ultimately approved by State and Federal regulators. Preliminary remediation goals (PRGs) were developed for plants and birds for lead in soil, and for birds from ingestion of lead shot. The PRG for birds from lead in soil was developed using food chain modeling while the PRG for birds ingesting lead shot was developed using an EPA probability model. The probability model considers the percentage of lead and non-lead shot particles in the surface soil that the birds may use as grit and is based on the probability that birds will ingest one lead particle. As part of the RI, sieving was used to determine the number of lead shot and non-lead particles within various size ranges and that site-specific soil data was used to determine that only areas with greater than 100 lead shot pellets/ft^2 would potentially pose a risk to birds. This was much greater than the initial PRG of 10 lead shot pellets/ft^2 which resulted in a much smaller area that requires evaluation in the Feasibility Study.

Senior Ecological Risk Assessor; US Navy, CLEAN; Naval Air Station (NAS) Key West, FL; August 2017 to 2020. Prepared a technical memorandum which described the methodology that would be used to conduct and ecological risk assessment for SWMU 2. The memorandum was approved by the regulators prior to conducting the assessment. Completed an updated Ecological Risk Assessment (ERA) evaluation for SWMU 2 to determine whether potential unacceptable risks to ecological receptors were occurring from exposure to sediment and consumption of small fish. As part of this task, a previous risk assessment was re-evaluated to reflect updates to ecological criteria utilized for evaluating potential risks to sediment invertebrates and considered relevant updates to toxicity reference values (TRVs) for evaluating potential food chain related potential risks to piscivorous birds. The evaluation concluded that 4,4'-DDT (and breakdown products) in sediment was not likely significantly impacting the benthic community in the pond and lagoon above what is occurring by these other disturbances. Also, pesticides are not migrating off site at concentrations that would potentially impact ecological receptors in the Boca Chica Marina waters. For these reasons, the Navy recommended, and the regulators approved that continued monitoring for sediment as part of the LTM program is no longer required.

Senior Ecological Risk Assessor; Ecological Risk Assessment; Ecological Risk Assessment; Gravel Pit Road Ditch; Georgia Environmental Protection Division (GA EPD), Atlanta, GA; May 2020 - September 2020. Provided technical review and oversight of a screening level ecological risk assessment on ecological receptors potentially exposed to chemicals in surface water and sediment. Interacted closely with the project team, including the risk assessor from GA EPD, throughout the process.

Project Manager/Lead Ecological Risk Assessment Specialist; US Coast Guard Office of Standards Evaluation and Development (CG-REG); 2015 - 2018. Served as project manager for a human health and ecological risk assessment project conducted to evaluate the impact of a hypothetical, reasonable "worst case" spill of shale gas extraction wastewater (SGEWW) from a commercial barge transporting the material along

navigable rivers within Pennsylvania, Ohio, and West Virginia. SGEWW, also known as "frack water," is a by-product of drilling for natural gas using unconventional hydraulic fracturing (or "fracking") technology, which involves the injection of water, sand, and chemical additives. The sand remains in the gas well but a substantial portion of the injected fluid re-surfaces after drilling and must be handled as SGEWW. The project involved extensive research of the chemicals of potential concern (COPC) in the SGEWW, the development of a conceptual spill model scenario (CSMS), fate and transport modeling to determine COPC concentrations in surface waters and sediments, and risk assessment to determine potential adverse impacts to human and ecological receptors exposed to COPC concentrations in the river environment. The assessments were completed to: 1) Support the estimation of conservative bounds for safe transport of SGEWW via barge, 2) Allow the USCG to more completely evaluate the efficacy of proposed policies and rules regarding the transport of SGEWW via barge, and 3) Allow the USCG to better communicate risks related to barge transport of SGEWW to the regulatory community and the public.

Senior Ecological Risk Assessor; Ecological Risk Assessment Support; N. 25th Street Glass and Zinc Site; EPA Region 3 RAC; Clarksburg, WV; 2018 - 2020. Provided ecological risk assessment support for an RI/FS that was conducted to characterize and mitigate contamination associated with former zinc smelter and glass-making operations. Contaminants include PAHs, PCBs, and metals. Slag waste piles associated with former operations are present at the site, which is located along a river. Transport of contaminants, groundwater discharge and surface runoff, to the water body is being investigated, along with the migration of contaminants via wind erosion and deposition to adjacent residential properties.

Senior Ecological Risk Assessor; Ecological Risk Assessment Support; Shaffer Equipment Company/Arbuckle Creek Site; EPA Region 3 RAC; Minden, WV; 2019 - 2020. Provided ecological risk assessment support related to the conceptual site model for a SAP to support a remedial investigation to characterize and mitigate contamination, primarily PCBs, associated with a former electrical transformer manufactory and maintenance company. Reviewed ecological screening criteria for soil, sediment, and surface water used to establish project screening levels in the SAP.

Senior Ecological Risk Assessor; Lower Darby Creek NPL Site; EPA Region 3 RAC; Philadelphia and Delaware Counties, PA; 2009 - 2018. Updated ecological risk assessment portion of the Remedial Investigation report based on EPA comments and developed surface soil and sediment preliminary cleanup goals (PRGs) based on risks to ecological receptors. The PRGs were developed using chemical data from soil and sediment samples along with data from co-located toxicity test samples. Site-specific bioaccumulation data were also used to develop the PRGs. The PRGs were developed in close coordination with EPA Region 3 ecological risk assessors. Also evaluated sediment pore water and groundwater data from the site to determine whether ecological receptors may be impacted.

Senior Ecological Risk Assessor; Baghurst Site Drive; EPA Region 3 RAC; November 2018 - Present. Reviewed screening-level ecological risk assessment that included an evaluation of potential ecological risks to terrestrial and aquatic receptors exposed to chemicals in surface soil, sediment, and surface water. Food chain modeling was conducted as part of the ecological risk assessment.

Senior Ecological Risk Assessor; Ecological Risk Assessment Support; Otterbein University, Westerville, Ohio; 2013 - 2019. Conducted an Ecological Risk Assessment (ERA) in accordance with Ohio EPA guidance for the site, where metals were the primary contaminants of concern. The ERA consisted of Levels I through III of the Ohio EPA ERA guidance and was conducted for several areas of concern, including off-site areas. Media evaluated included surface soil, sediment, and surface water. The approach and results were

discussed with the State ecological risk assessor, and all comments on the draft report were resolved. Attended a meeting with the state regulators to discuss the proposed remedy.

Risk Assessment Specialist; Development of Ecological Risk Assessment Guidance; State of Hawaii, Department of Health, Hazard Evaluation and Emergency Response Office; August 2014 - 2018. Development of ecological risk assessment (ERA) guidance for the state of Hawaii based on specific needs for that region. The guidance will eventually be included in the Technical Guidance Manual for the Implementation of the Hawaii State Contingency Plan once it is finalized. The risk assessment guidance was prepared in stages based on availability of funding. The Screening Level ERA and Baseline ERA guidance were submitted to the state for their review and use.

Senior Ecological Risk Assessor; Ecological Risk Assessment Support; ALCOA, Lake Charles, LA; 2010 - 2014. Assisted in preparing work plans to collect sediment samples for chemical analysis and whole-sediment toxicity tests. The results of the sediment chemistry and toxicity tests were evaluated to develop site-specific risk-based concentrations (for PAHs) for the protection of benthic invertebrates. Also, prepared a technical memorandum, which summarized PCB cleanup levels in sediment at numerous sites across the United States. The memorandum was used to help support a PCB cleanup level at the site. The data were presented to and discussed with the state regulators during meetings.

Senior Ecological Risk Assessor; Risk Assessment of Sediment Contamination; Private Client; Middle River, MD; June 2008 - 2011. Prepared the ecological risk assessment for sediment contaminated with metals, PAHs, and PCBs. The risk assessment included an evaluation of the following: sediment chemistry, acid volatile sulfides/simultaneously extracted metals results, sediment pore water chemistry, benthic macroinvertebrate-community data, and fish tissue analytical data. The results of the risk assessment were then used to develop clean-up levels that were used to develop remedial options for the site. The project is high profile in the local community; risk communication issues are significant.

Project Manager/Senior Ecological Risk Assessor; Ecological Risk Assessment and Other CERCLA Documents; US Navy, CLEAN; Naval Submarine Base New London, Groton, CT; 2007 - 2013. Conducted sediment sampling and toxicity testing to update the ecological risk assessment and further evaluate risks to sediment invertebrates. The data were used to develop site-specific cleanup goals for the site. An updated Remedial Investigation/Feasibility Study, Proposed Remedial Action Plan, and Record of Decision were prepared. Also, prior to the sediment being remediated, a Pre-Design Investigation was conducted to better refine the area that needed to be remediated. This allowed the remediation to be performed without the collection of post-removal confirmation samples. The results of the various investigations/documents were presented in technical and public meetings. There was considerable collaboration with the federal and State regulators throughout the process to obtain consensus on various issues.

Senior Ecological Risk Assessor; Ecological Risk Assessment Support; US Navy, CLEAN; Multiple Naval Facilities; 1998 - Present. Prepared several ecological risk assessments as part of RI/FS programs at DOD bases in Indiana, Maryland, Texas, and Virginia. The state and federal agencies reviewed and approved the procedures for conducting the risk assessments. Risk assessments included evaluation of surface water, sediment, and soil data. Some of the risk assessments involved the preparation of a baseline risk assessment and involved the collection of biological samples for chemical analysis and the collection of soil and sediment samples for toxicity tests. Met with the regulators to discuss the results of the risk assessments and to begin planning for the next phase of data collection. In some cases, developed site-specific cleanup levels for soil and

sediment by collecting fish tissue samples and conducting sediment and earthworm toxicity and bioaccumulation tests.

Senior Ecological Risk Assessor; Bioavailability Study and Development of Preliminary Remediation Goals; US Department of Agriculture Beltsville Agricultural Research Center, Beltsville, MD; 2007 - 2017. Conducted to determine the bioavailability of pesticides in soil to invertebrates and small mammals in areas where pesticides were stored, mixed, and/or applied to the soil. The purpose of this study was to collect additional site-specific data and refine and reduce the uncertainties in the ecological cleanup goals. As part of this study, the following investigative tasks were completed: (1) invertebrate tissue samples and co-located soil samples were collected for chemical analysis, (2) a laboratory earthworm bioaccumulation study was conducted, and (3) small mammal samples were collected for chemical analysis. The data were used to determine the bioavailability of pesticides to earthworms, field-collected invertebrates, and small mammals, to determine whether pesticides were causing an unacceptable risk to mammals and birds, and to develop preliminary remediation goals to protect the receptors at risk. Worked with the University of Maryland who is conducting a study to evaluate methods for reducing the bioavailability of the pesticides in soil.

Senior Ecological Risk Assessor; Ecological Evaluations; PPG, Jersey City, NJ; 2011. Prepared ecological evaluations (EEs) in accordance with the requirements of New Jersey Administrative Code (N.J.A.C.) 7:26E in addition to the New Jersey Department of Environmental Protection (NJDEP) Ecological Evaluation Technical Guidance. The EEs were conducted to assess actual or potential adverse ecological effects on wildlife and plants resulting from site-related contamination.

Senior Ecological Risk Assessor; Ecological Risk Assessment Support; Ryeland Road Arsenic NPL Site; EPA Region 3 RAC; Womelsdorf, PA; 2005. Prepared both screening-level and baseline ecological risk assessments (BERA) according to EPA's 8-step process/guidance. Ecological tests were performed as part of the BERA study design to evaluate earthworm, minnow, and amphipod growth and/or mortality rates, and generate site-specific bioaccumulation factors for terrestrial organisms. Developed site-specific, ecological, risk-based criteria for several metals. Created plots to determine whether relationships existed between chemical concentrations and toxicity/bioaccumulation data, used exposure equations to estimate daily doses to ecological receptors, ran various food chain models. Also developed clean-up goals to protect various receptors using the site-specific toxicity test data. Achieved significant cost savings by developing food chain models that supported not having to collect small mammals for tissue analysis.

Senior Ecological Risk Assessor/Technical Support; US Army; Iowa Army Ammunition Plant (IAAAP); Middletown IA; January 2005 - 2011. Senior ecological risk assessor responsible for developing ecological-based cleanup values to protect the Indiana bat. Reviewed an existing BERA for the site and prepared alternate soil to insect bioaccumulation factors and an alternate approach for implementing the cleanup number, both of which were accepted by the EPA and U.S. Fish and Wildlife Service (FWS). The alternate bioaccumulation factors resulted in higher cleanup values for most chemicals and the revised approach for implementing the cleanup number resulted in less soil needing to be removed to achieve acceptable risks to the Indiana bat. Conducted an evaluation of silver in fly ash/soil samples to determine whether risks to small mammals are great enough to warrant a remedial action at the site. Based on a re-evaluation using current toxicity information and a review of the very conservative exposure parameters (i.e., bioaccumulation factors and bioavailability) it was concluded that the remedial action was not warranted.

Senior Ecological Risk Assessment Reviewer; US Army; Ravenna Army Ammunition Plant (RVAAP); Ravenna, OH; September 2001 - 2008. Senior ecological risk assessor responsible for design and quality

assurance of screening-level ecological risk assessments at five sites at RVAAP: Load Lines 6/9/11, Central Burn Pits, and Cobb's Pond. EPA Region 5, Ohio EPA, U.S. Army, U.S. Army Corp of Engineers, and facility-specific risk assessment guidelines used to prepare risk assessments. Risk assessments were used to support a "no further action" recommendation in some cases.

Assistant Project Manager/Project Ecologist; Ecological Risk Assessment; US Navy, CLEAN; NTC Great Lakes, IL; 2000 - 2018. Conducted ecological risk assessments for two sites at the Base and participated in several Data Quality Objective (DQO) meetings as part of the planning process and met with the Navy and regulators to discuss the work plan. Presented the results of the ecological risk assessments to the Navy and regulators. Provided technical support on ecological risk assessment issues, as needed.

Senior Ecological Risk Assessor; Ecological Risk Assessment; US Navy, CLEAN; Naval Station, Annapolis, MD; 2001 - 2008. Conducted a baseline ecological risk assessment for a site contaminated with lead paint from radio towers. The risk assessment consisted of implementing and evaluating an earthworm toxicity and bioaccumulation test to evaluate risks to soil invertebrates and small mammals and birds that consume earthworms. The risk assessment included the development of ecological PRGs for the site.

Senior Ecological Risk Assessment Reviewer; EPA Region 1 RAC; Central Landfill, Johnston, RI; and Solvents Recovery Service of New England, Inc., Southington, CT; 1999 - 2000. Assisted EPA in reviewing ecological risk assessments that were submitted by Potentially Responsible Parties (PRPs). The risk assessments were reviewed to determine if they complied with EPA guidance and the reports were also checked to ensure that screening criteria and calculations were correct. The comments were then submitted to the EPA for distribution to the PRPs. The comments were resolved with the PRP during technical meetings/conference calls.

RADIOLOGICAL PROJECTS

Project Manager; Radiological Preliminary Assessments/Site Inspections; US Navy, CLEAN; NAS Jacksonville and NAS Pensacola, FL; 2019 - Present. Managing Radiological PA/SI projects for both NAS Jacksonville and NAS Pensacola. This is a multi-year project and is in the SI stage. The PA Work Plans have been submitted and approved by the regulators, and the PA Reports are currently undergoing internal Navy review. The PA reports for each facility were finalized in 2021, after the regulators indicated they had no comments on the draft reports. The PA Reports included an evaluation of the sites to determine whether they need to proceed to an SI. Sampling and Analysis Plans were prepared and approved by the regulators with no comments, likely because they were kept informed during the planning process and participated in a site visit where the approach for investigating each area was discussed. The radiological SI field investigations were successfully completed for 13 areas at NAS Jacksonville (6 week investigation) and 30 areas at NAS Pensacola (10 week investigation), which required daily coordination with the large field team from Tetra Tech and radiological subcontractor. UXO avoidance was also required for one site and extensive vegetation clearing was needed for both facilities. Currently in the process of preparing the SI reports. .

Project Manager; Radiological Preliminary Assessments/Site Inspection; US Navy, CLEAN; NSF Indian Head, MD, NSF Dahlgren, VA, and NSWC Carderock, MD; 2019 - Present. Managing Radiological PA/SI projects for NSF Indian Head, NSF Dahlgren, and NSWC Carderock. This is a multi-year project and is in the PA and SI stages, depending on the facility. The PA Work Plans were finalized in 2021 for NSF Indian Head and NSF Dahlgren, and the work plan for NSWC Carderock is still in regulatory review. The PA Report for NSF Dahlgren was finalized after minimal comments from the regulators, and the PA report for NSF Indian Head was

finalized after receiving no comments from the regulators. The PA Report for NSWC Carderock is being reviewed by the Navy. The PA Reports include an evaluation of the sites to determine whether they need to proceed to and SI. A radiological teaming partner is also assisting with the planning documents and will assist in the SI activities. There are approximately 90 areas at NSF Indian Head, 80 areas at NSF Dahlgren, and 30 areas at NSWC Carderock that are included in the PA reports. However, a much smaller list of sites will proceed to an SI. The following documents are currently being prepared for NSF Dahlgren: Uniform Federal Policy Sampling and Analysis Plan, Basewide Radiological Management Plan, and Task Specific Plans.

Project Manager; Radiological Preliminary Assessments/Site Inspection; US Navy, CLEAN; U.S. Naval Academy (USNA) and Naval Support Activity Annapolis (NSAA), North Severn, Annapolis, MD. 2021 – Present. Managing Radiological PA/SI projects for USNA and NSAA, North Severn. This is a multi-year project and is in the PA and SI stages, depending on the facility. Several Navy-internal technical memorandums have been prepared to determine which sites should be included in the PA report, and which sites are considered to be non-impacted for radiological contamination. The PA Report is currently being prepared and will be submitted to the Navy by mid-summer, 2023.

Project Manager; Radiological Site Inspection (SI); US Navy, CLEAN; NSA Crane, IN; 2020 - Present. Managing Radiological SI project for NSA Crane. Tetra Tech prepared the Preliminary Assessment (PA) report in May 2020 and based on the report, three areas proceeded to an SI. The Uniform Federal Policy Sampling and Analysis Plan, Basewide Radiological Management Plan, and Task Specific Plans were finalized in early 2022, and the SI field activities were conducted in April 2022. It was determined that the radiological levels at the sites were similar to background and less than screening levels so all areas were recommended for no further radiological investigations. Although radiological items could be buried at two of the sites which would not have been identified from the radiological surveys conducted as part of the SI, it was recommended the current LUCs are protective and no additional LUCs need to be placed on the sites. The regulators did not have any comments on the SI report so it was finalized.

Project Manager and Lead Ecological Risk Assessment Specialist; US Coast Guard Office of Standards Evaluation and Development (CG-REG); 2015 - 2018. Served as project manager for a human health and ecological risk assessment project being conducted to evaluate the impact of a hypothetical, reasonable "worst case" spill of shale gas extraction wastewater (SGEWW) from a commercial barge transporting the material along navigable rivers within Pennsylvania, Ohio, and West Virginia. This part of the project involved conducting an evaluation to assess potential risks to workers who may be exposed to residual radiation in tank barges that have been used to transport SGEWW. In addition, a White Paper was prepared with a detailed evaluation of potential risks to Marine Chemists and Marine Inspectors from radiological exposure to SGEWW residue in tank barges. The White Paper included a list of recommendations for obtaining more site-specific information along with potential components for developing and implementing a Radiation Protection Program.

AIR RISK ASSESSMENTS

Senior Ecological Risk Assessor; Industrial Client, Florida; September 2021 - Present. Evaluated ecological risks in support of a permit renewal for a facility that conducts open burning for the combustion treatment of waste propellants, explosives, and small items containing explosives and propellants. The Open Burning Unit is classified as a miscellaneous unit under RCRA and is subject to RCRA regulations under 40 CFR 264 Subpart X for miscellaneous units. The facility has an existing RCRA Part B Permit and is in the process of obtaining a renewal of the permit. The risk assessment was conducted per conducted per EPA Hazardous Waste Combustion guidance. Risk estimates were produced using commercially available software provided by Lakes Environmental, EcoRisk

View. The facility was issued the final Open Burn/Open detonation (OB/OD) Permit in April 2021 which allows them to support their mission requirements and ensure their explosive waste can be treated without impacting human health and the environment. The results of the ERA indicated that the open burning would not impact ecological receptors.

Senior Ecological Risk Assessor; NSF Dahlgren, VA; December 2019 - January 2020. Evaluated ecological risks in support of a permit renewal for a facility that conducts open burn and open detonation of energetic production wastes. Principal site contaminants included energetics, metals, and a variety of organic chemicals. The risk assessment was conducted per conducted per EPA Hazardous Waste Combustion guidance. Risk estimates were produced using commercially available software provided by Lakes Environmental, EcoRisk View. The facility was issued the final Open Burn/Open detonation (OB/OD) Permit in April 2021 which allows them to support their mission requirements and ensure their explosive waste can be treated without impacting human health and the environment.

Senior Ecological Risk Assessor; Support of RCRA Part B Application; Tooele Army Depot, Tooele, UT; May 2006 - 2017. Prepared ecological risk assessments in support of a RCRA Part B application for a facility that conducts open burn and open detonation of energetic production wastes and specialty items. Principal site contaminants included energetics, metals, and a variety of organic chemicals. The risk assessments were conducted per conducted per EPA Hazardous Waste Combustion guidance. Risk estimates were produced using commercially available software provided by Lakes Environmental, EcoRisk View.

Senior Ecological Risk Assessor; Support of RCRA Part B Application; National Aeronautics and Space Administration (NASA) Wallops Flight Facility (WFF), Wallops Island, VA; May 2015 - November 2017. Prepared ecological risk assessment work plan in support of a RCRA Part B permit renewal application in accordance with Virginia Department of Environmental Quality (VADEQ) - Hazardous Waste, Part B, Combustion Facility, RCRA, Permit Renewals - Requirements for Revised Risk Assessments, dated February 2014. The work plan included the methodology that would be used to complete the risk assessment, including the receptors to be evaluated, the bioaccumulation factors that were used to calculate chemical concentrations in various food items, and toxicity values that were used to characterize risks. The risk assessment was conducted per EPA Hazardous Waste Combustion guidance and risk estimates were produced using commercially available software provided by Lakes Environmental, EcoRisk View.

RISK ASSESSMENT TRAINING

Senior Training Coordinator; Tetra Tech, ERTP; Cincinnati, OH; August 2007 - Present. Course Lead Instructor for Introduction to Risk Assessment Guidance (IRAG) and Ecological Risk Assessment Guidance (ERAG) courses. Responsible for presenting the courses, overseeing ongoing revisions and updates of the courses, and assigning tasks to other instructors. Course module presentation files (i.e., PowerPoint) and instructor guides are updated, as new information and EPA risk assessment guidance becomes available. Works closely with instructors and client to ensure the successful completion of all courses. The ERAG course is taught jointly with an EPA Ecological Risk Assessor. Both courses are 2.5-day in length and are presented to various Federal, State, and local regulators to help them become familiar and better understand the risk assessment process. Performance is monitored through the periodic review of Student Evaluations, Course Wrap-up Reports, and Course Director Summaries. Problems involving the course are identified and alternatives for correcting problems are reviewed with client and implemented. Progress reports are submitted monthly.

PROJECT ECOLOGIST/SAMPLING INVESTIGATIONS

Project Manager/Project Ecologist; U.S. Navy, CLEAN; Various Facilities; 1999 to 2015.

- Conducted an investigation to better refine offshore areas that needed to be remediated with the goal of allowing the remediation to be conducted without collection of post-removal confirmation samples. The investigation was conducted in a phased approach where all the samples were collected during the same field event, but certain samples were held for chemical analysis until the results of adjacent samples were obtained and evaluated. This resulted in cost savings of several thousand dollars.
- Served as the field operations leader and project manager for a monitoring program that included collecting sediment, mussel, and lobster samples. Optimized the monitoring program and conducted more detailed investigations in two areas. Presented the results of the various investigations at technical and public meetings.
- Collected fish samples for chemical analysis from several stations (including reference locations) for use in a human health risk assessment].
- Managed two field efforts that included the collection of fish samples in large creeks. Collected fish samples using electroshockers, gill nets, hoop nets, trot lines, and hook and line for both human health and ecological risk assessments. Managed the processing of the fish samples for chemical analysis.
- Collected fish and sediment samples in a large pond for analysis of mercury. Fish were collected using electroshocking and hook and line,

Project Ecologist/Sampling Investigations; Various Federal and Industrial Clients; 1991 to 1998

- Task manager for an aquatic assessment of a creek in Indiana following the EPA Rapid Bioassessment Protocol for PPG. Conducted a habitat assessment, collected benthic macroinvertebrates for population statistics, and collected sediment samples for chemical analysis. Conducted assessment to determine if the state cleanup levels were protective of the benthic community.
- Conducted a long-term sediment and fish tissue monitoring program for a BRAC facility in Virginia to determine the effectiveness of site remediation of PCBs. Collected 40 sediment and four mummichog samples for chemical analysis on a bi-annual basis.
- Conducted a clam live box study in an estuary. Selected appropriate clam species, constructed live boxes, deployed boxes, and managed study. Used data to determine if PCBs were bioaccumulating in the clams.
- Task manager for an in-situ earthworm bioaccumulation study. Constructed earthworm containers, determined most appropriate earthwork species to use in the study, obtained worms, and managed study. Used data to support the conclusions of a baseline risk assessment.
- Task manager for an aquatic assessment of a creek following the EPA Rapid Bioassessment Protocol for the airport. Conducted a habitat assessment and collected benthic macroinvertebrates for population statistics. The work was conducted to determine if runoff from the airport was impacting the aquatic community.
- Task manager for many large field efforts that included the collection of chemical (surface water and sediment) and biological (fish, benthic macroinvertebrates and crabs) samples in both freshwater and/or saltwater streams, ponds, rivers, and bays. Collected sediment samples with corers and grab samplers. Collected the fish samples using electroshockers, haul seines, gill nets, hoop nets, minnow traps and catfish traps while the benthic macroinvertebrate samples were collected using ponar grabs and kick nets. Collected crabs using crab pots. Managed the processing of the fish and crab samples for chemical analysis and the benthic macroinvertebrate samples for sorting and taxonomic identification.
- Collected sediment and surface water samples to conduct bioassay studies to determine the toxic response to fish and invertebrates from exposure to site-related contaminants. Selected appropriate tests and test organisms to meet the site conditions and ecological endpoints.

- Conducted several investigations associated with deicing agents at airports including preparing and implementing stream sampling plans for monitoring deicing agents in streams adjacent to the airport. Other water quality incidents investigated at the airport included reported fish kills, foaming problems in the streams, and collection of air samples for chemical analysis of deicing agents in response to odor complaints.

PUBLICATIONS / PRESENTATIONS

Bernhardt, A., Rodriguez, H.N., and Bejarano, A.C. Modeling to Estimate Constituent Concentrations in Surface Water and Sediment in a River from a Barge Release of Fracking Fluid. Presented at the Society of Environmental Toxicology and Chemistry's 41st Annual Meeting, 15-19 November 2020, Virtual.

Bernhardt, A., L. Hawn, L. Mihalko, and L. Cole. 2019. Summary of Aquatic Toxicity and Bioaccumulation Data for Per- and Polyfluoroalkyl Substances. Presented at the Society of Environmental Toxicology and Chemistry's Environmental Risk Assessment of PFAS Meeting. 12-15 August 2019.

Bernhardt, A., Rodriguez, H.N., and Bejarano, A.C. Modeling to Estimate Constituent Concentrations in Surface Water and Sediment in a River from a Barge Release of Fracking Fluid. Presented at the Battelle Tenth International Conference on Remediation and Management of Contaminated Sediments, 11-14, February 2019, New Orleans, Louisiana.

Lopez, T., Bowersox, M., Diamond, J., Bernhardt, A., Kotun, R., Richards, S., and Homer, D. Applying a "One Health" Approach to the Assessment of PFAS. Presented at the Society of Environmental Toxicology and Chemistry's 39th Annual Meeting, 4-8 November 2018, Sacramento, California.

Bernhardt, A., D. Cohen, and L. Cole. 2017. "Post-Sediment Removal Risk Evaluation at Portsmouth Naval Shipyard, Kittery, Maine." Presented at the Battelle Ninth International Conference on Remediation and Management of Contaminated Sediments, 9-12 January 2017, New Orleans, Louisiana.

Bernhardt, A., L. Ganser, T. Brent. 2014. "Effect of Soil pH on Plant Toxicity Tests." Presented at the Society of Environmental Toxicology and Chemistry's 35th Annual Meeting, 9-13 November 2014, Vancouver, British Columbia.

Bernhardt, A., N., L. Ganser, D. O'Connor, V. Jurka, J. Wright, M. Hammond. 2012. "Mercury Investigation at Site 1 - Dodge Pond, East Lyme, Connecticut." Presented at the Society of Environmental Toxicology and Chemistry's 33rd Annual Meeting, 11-15 November 2012, Long Beach, California.

Bernhardt, A., Prevar, D., Smith, P., Bowersox, M., Roberts, J., Pluta, B, Davis, K., Tuttle, J., 2008. "Invertebrate and Small Mammal Bioavailability Study at the USDA Beltsville Agricultural Research Center." Presented at the Society of Environmental Toxicology and Chemistry's 29th Annual Meeting, 16 – 20 November 2008, Tampa, Florida.

Bernhardt, A., N. Teamerson, C. Corbett, B. Pluta, and K. Patnode. 2006. "Baseline Ecological Risk Assessment at an Arsenic Site." Presented at the Society of Environmental Toxicology and Chemistry's 26th Annual Meeting, 5 – 9 November 2006, Montreal, Canada.

Bernhardt, A.M., T.M. Biksey, A.C. Schultz, and B. Marion. Literature Review: Ecological and Human Health Risk Assessment. Water Environment Research. 2006. 78(10).

Bernhardt, A.M., T.M. Biksey, and A.C. Schultz. Literature Review: Ecological and Human Health Risk Assessment. Water Environment Research. 2005. 77(6).

Bernhardt, A, R. Young, D. Cohen, F. Evans, J. Speicher, and M. Raymond, 2004. "Comparison of NOAA and EPA Analytical Methods for Metals." Presented at the Society of Environmental Toxicology and Chemistry's 25st Annual Meeting, 14 - 18 November 2004, Portland, Oregon.

Young, R., and A. Bernhardt. Development of Site Specific, Ecological PRGs for PCBs and Mercury. Presented at the Society of Environmental Toxicology and Chemistry's 25th Annual Meeting, 14 - 18 November 2004, in Portland, Oregon.

Bernhardt, A.M., T.M. Biksey, and A.C. Schultz. Literature Review: Ecological and Human Health Risk Assessment. Water Environment Research. 2004. 76(6).

Bernhardt, A.M., T.M. Biksey, W.H. Phillips, A.M. Romano, and A.C. Schultz. Literature Review: Ecological and Human Health Risk Assessment. Water Environment Research. 2003. 75(5).

Bernhardt, A.M, R. Haynie, M. Martin, and N. Parker. "Development of Ecological Risk-Based Levels in Soil Contaminated with Lead Paint." Presented at the Society of Environmental Toxicology and Chemistry's 23rd Annual Meeting, 16 - 20 November 2002, in Salt Lake City, Utah.

Bernhardt, A, J.E. Hinck, D. Cohen, F. Evans, J. Speicher, and M. Raymond, 2002. "Interim Offshore Monitoring Program at Portsmouth Naval Shipyard." International Conference on Soils, Sediment and Water, 17th Annual Inter. Conference on Contaminated Soils, Sediments, and Water, Univ. of Mass. at Amherst, Oct. 22-25.

Bernhardt, A.M., and T.M. Biksey, 2000. "The Right Tool for the Job" (Ecological Risk Assessment) Water Environment and Technology. Vol. 12(3): 30-35.

Bernhardt, A, D. Cohen, F. Evans, and M. Raymond, 2000. "Using the DQO Process to Develop an Interim Offshore Monitoring Program for Portsmouth Naval Shipyard." Presented at the Society of Environmental Toxicology and Chemistry's 21st Annual Meeting, 12 - 16 November 2000, in Nashville, TN.

Biksey, T.M., and A.M. Bernhardt, 2000. "Environmental Baseline Assessment of Oil Fields in the Arabian Gulf." Presented at the Society of Environmental Toxicology and Chemistry's 21st Annual Meeting, 12 - 16 November 2000, in Nashville, TN.

Biksey, T.M., M.E. Kimes, A.M. Bernhardt, M.A. Suminski, and C. Penny. 1999. "Long-Term Aquatic Monitoring Program at a Naval BRAC Site". Presented at the Society of Environmental Toxicology and Chemistry's 20th Annual Meeting on November 14 – 18, 1999, Philadelphia, Pennsylvania.

Cohen, D, Bernhardt, A, F. Evans, and M. Raymond, 1999. "Using the DQO Process to develop the Interim Offshore Monitoring Program for Portsmouth Naval Shipyard." Presented at Navy Ecological Risk Assessment and Management Forum, August 31 –September 1, 1999, in Philadelphia, PA.

Biksey, T.M., A.M. Bernhardt, M.E. Kimes, M.A. Suminski, and C.Penny. 1996 “Assessment of Ecological Risks Prior to A Naval Base Closure.” Presented at the Society of Environmental Toxicology and Chemistry's 17th Annual Meeting on November 17-21, 1996, Washington, D.C.

CHRONOLOGICAL HISTORY

Risk Assessor; Tetra Tech, Inc.; July 1998 - Present; Pittsburgh, PA
Environmental Scientist; Baker Environmental, Inc.; March 1990 to July 1998; Pittsburgh, PA

TETRA TECH

LEIGH A. CIOFANI

Environmental Scientist III

EXPERIENCE SUMMARY

Ms. Ciofani has 17 years of professional experience. She has performed data validation and currently performs human health risk assessment work. Additionally, she provides technical editing and statistical support.

Ms. Ciofani has been involved with human health risk assessments for various EPA regions, including Regions 1, 3, 4, 5, and 6 and multiple states (including CA, FL, GA, IN, MA, MD, ME, MI, MS, OH, PA, SC, TX, and VA) that considered a variety of chemicals including polycyclic aromatic hydrocarbons (PAHs), semivolatile organic compounds (SVOCs), volatile organic compounds (VOCs), dioxins/furans, polychlorinated biphenyls (PCBs), explosives, per- and polyfluoroalkyl substances (PFAS), and metals for various environmental media.

As a data validator, Ms. Ciofani performed data validation for projects in EPA Regions 1 through 4 for several media including soil, sediment, water, air, and tissue considering relevant national guidelines and other project-specific criteria for a variety of chemicals including PAHs, SVOCs, VOCs, dioxins/furans, PCBs, explosives, metals, PFAS, and radiological parameters.

As a technical editor, Ms. Ciofani has reviewed Sampling and Analysis Plans (SAPs), long-term monitoring reports (LTMs), Preliminary Assessments (PAs), Site Investigations (SIs), and human health risk assessment documents. Statistical support activities include calculating of upper confidence limits (UCLs) using USEPA's ProUCL software and Mann-Kendall trend tests.

As an environmental scientist, Ms. Ciofani has provided technical support for various investigations conducted under state and federal programs, such as SAPs, Remedial Investigations/Feasibility Studies (RI/FS), LTM reports, SIs, and PAs.

EDUCATION

MS, Earth System Science & Policy, University of North Dakota, 2007

BS, Environmental Science, Allegheny College, 2005

AREA OF EXPERTISE

Human Health Risk Assessment

Data Validation

Technical Editing

USEPA ProUCL Software

USEPA Lead Modeling Software

OFFICE

Pittsburgh, PA

YEARS OF EXPERIENCE

17

YEARS WITH TETRA TECH

16

RELEVANT EXPERIENCE

RISK ASSESSMENT

Risk Assessor; US Navy, CLEAN; NCBC Davisville; North Kingstown, RI; December 2023 to Present. Prepare human health risk assessment technical memorandum including chemicals of potential concern selection tables and risk-ratio tables for human health risk assessment for soil and groundwater data at the Snake Pit Area.

Risk Assessor; US Navy, CLEAN; NCBC Davisville; North Kingstown, RI; December 2023 to Present. Prepare human health risk assessment RAGS Part D tables for soil and groundwater for OU10.

Risk Assessor; US Navy, CLEAN; MCRD Parris Island; SC; September 2022 to Present. Prepare human health risk assessment RAGS Part D tables and human health risk assessment text soil and groundwater for various receptors for multiple study areas (OU 11, OU 12, Site 5, UXO 3, UXO 4, UXO 4A, UXO 5 and 6, UXO 7, UXO 8).

Risk Assessor; US Navy, CLEAN; NSF Dahlgren, VA; August to September 2022; February 2024 to Present. Evaluate protectiveness of the remedy based on current human health risk assessment guidance for the technical assessment of the Five-Year Review.

Risk Assessor; US Navy, CLEAN, NWIRP Calverton, NY; April to July 2023. Prepare human health risk assessment RAGS Part D tables and human health risk assessment text soil, groundwater, surface water, and sediment for Site 16.

Risk Assessor; US Navy, CLEAN; NSF Dahlgren, VA; October 2023 to February 2024. Perform human health risk assessment with RAGS Part D tables for soil and sediment at Sites 4 and 15.

Risk Assessor; St. Marks, FL; August 2022 to Present. Evaluate human health risks in support of a permit renewal for a facility with an open burn unit. Site contaminants included energetics, metals, and a variety of organic chemicals. Assisted with interpreting results produced using commercially available software provided by Lakes Environmental, IRAP-h View.

Risk Assessor; US Navy, CLEAN; NSF Indian Head; MD; June 2023. Evaluated protectiveness of the remedy based on current human health risk assessment guidance for the technical assessment of the Five-Year Review.

Risk Assessor; US Navy, NAVFAC Southeast/CLEAN, NAS JRB Forth Worth, TX; April to June 2023. Prepared human health risk estimates in RAGS Part D table format for soil and groundwater. Prepared human health risk assessment text.

Risk Assessor; US Navy, CLEAN, NSA Cutler, ME; February to April 2023. Evaluated human health risks for receptors exposed to PFAS in soil, groundwater, surface water, and sediment and prepared human health risk assessment RAGS Part D tables and human health risk assessment text for Site 10.

Risk Assessor; US Navy, CLEAN; Naval Station Newport; Portsmouth, RI; June to August 2022. Prepared human health risk estimates in RAGS Part D table format for several media and receptors with associated report text.

Risk Assessor; US Navy, NAVFAC Mid-Atlantic/CLEAN, NAS Dallas, Dallas, TX; April 2020 to April 2021 and March to April 2022. Prepared human health risk estimates in RAGS Part D table format for several media including soil, groundwater, and surface water. Prepared human health risk assessment text.

Risk Assessor; US Navy, CLEAN, NWIRP Calverton, NY; December 2021 to March 2022 and September to October 2022. Prepare human health risk assessment RAGS Part D tables and human health risk assessment text soil, groundwater, surface water, and sediment for Site 2.

Risk Assessor; US Navy, CLEAN; NWIRP Calverton; Calverton, NY; December 2021 to March 2022. Prepare human health risk estimates in RAGS Part D table format for several media and reviewed human health risk assessment text for Site 2.

Risk Assessor; US Navy, CLEAN; Former NCBC Davisville; North Kingstown, RI; August to September 2022. Evaluated protectiveness of the remedy based on current human health risk assessment guidance for the technical assessment of the Five-Year Review.

Risk Assessor; US Navy, CLEAN; NAS Whiting Field Outlying Landing Field Barin; Foley, AL; March to September 2022. Prepare human health risk estimates in Risk Assessment Guidance for Superfund (RAGS) Part D table format and human health risk assessment report for soil at several sites and groundwater.

Risk Assessor, Technical Evaluation of Air Permit for Metal Recycler, Chicago Department of Public Health, December 2021 to March 2022. Assisted with preparing human health risk assessment to evaluate risks associated with metal recycling activities. Incorporated results from air dispersion modeling into Lakes Environmental, IRAP h-View software to calculate risks.

Risk Assessor; US Navy, CLEAN; MCRD Parris Island; SC; July 2020 to December 2021. Prepared human health risk assessment RAGS Part D tables and human health risk assessment text for various receptors.

Risk Assessor; Confidential Client, PA; February 2020 to December 2021. Prepared human health risk estimates in RAGS Part D table format for soil in several subareas and groundwater. Prepare/review human health risk assessment text. Perform background evaluation using two sample tests.

Risk Assessor; US Navy, NAVFAC Southeast/CLEAN, NAS JRB Forth Worth, TX; November 2020 to April 2021. Prepared human health risk estimates in RAGS Part D table format for soil and groundwater for two sites. Prepared human health risk assessment text.

Assistant Risk Assessor; US Navy, NAVFAC Southwest/CLEAN; Chocolate Mountain Aerial Gunnery Range, Bradshaw Trail, Imperial and Riverside Counties, CA; April 2020 to January 2021. Provided technical assistance with preparation of human health risk assessment and support documentation for soil media.

Assistant Risk Assessor; US Navy, NAVFAC Southeast/CLEAN; NALF Waldron, Corpus Christi, TX; September 2019 to June 2020. Assisted with preparation of human health risk assessment reports and associated supporting documentation for two sites.

Risk Assessor; NSF Dahlgren, VA; December 2019 to January 2020. Evaluate human health risks in support of a permit renewal for a facility that conducts open burn and open detonation of energetic production wastes. Principal site contaminants included energetics, metals, and a variety of organic chemicals. Assisted with interpreting results produced using commercially available software provided by Lakes Environmental, IRAP-h View.

Risk Assessor; Confidential Client, GA; August 2019 to September 2019. Prepared human health risk estimates in RAGS Part D table format for several media including soil, groundwater, surface water, sediment, soil vapor, and indoor air. Prepared human health risk assessment text.

Assistant Risk Assessor; US Navy, NAVFAC Southeast/CLEAN; Dixie Range, McMullen County, TX; Naval Air Station Kingsville, TX; June to July 2019. Assisted with preparation of human health risk assessment report and associated supporting documentation.

Assistant Risk Assessor; Confidential Client; MD; January 2014 to October 2019. Assist with data analysis and report writing for monitoring investigations incorporating soil vapor and indoor air results. Assist in preparation of associated graphs and other figures and to convey and interpret results.

Assistant Risk Assessor; US Navy, CLEAN; Naval Weapons Industrial Reserve Plant Bethpage; Bethpage, New York; January 2018 to February 2018. Assist with document compilation and risk assessment review as part of a five-year review report.

Assistant Risk Assessor; United States Coast Guard Office of Standards Evaluation and Development; September 2015 through June 2017. Assist with human health risk assessment tasks, perform literature research review, and report review/compilation for project evaluating the impact of a hypothetical, reasonable "worst case" spill of shale gas extraction wastewater (SGEWW) from a commercial barge transporting the material along navigable rivers within Pennsylvania, Ohio, and West Virginia.

Assistant Risk Assessor; USACE; Stockton, UT; January 2016 to February 2016. Assisted with human health risk assessment model runs incorporating air modeling results. The risk assessment was conducted per the guidelines established in the USEPA guidance document titled, Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities (USEPA, September 2005). Assisted in producing risk estimates using commercially available software provided by Lakes Environmental, Industrial Risk Assessment Program – Human Health for the U.S.EPA OSW Human Health Risk Assessment Protocol (HHRAP) (IRAP-h View).

Risk Assessor; US Navy, CLEAN; Naval Research Laboratory – Chesapeake Bay Detachment; Chesapeake Beach, MD; November 2012 to February 2016. Prepared human health risk estimates in RAGS Part D table format for several media and receptors with associated report text for four sites. Also prepared fate and transport analysis text for the sites.

Risk Assessor; US Navy, CLEAN; NWIRP Bedford; Bedford, MA; December 2015 to January 2016. Prepared human health risk estimates in RAGS Part D table format for soil at three sites and associated technical memorandum text.

Assistant Risk Assessor; Confidential Client; MD; May 2015 to January 2016. Assisted with data tables including relevant project criteria for soil data sets at several sites. Assisted with post-remedial risk analysis document preparation.

Assistant Risk Assessor; Ft. Mifflin, PA; November 2015. Assisted with calculating statistics (including 95% UCL, t-test, and Wilcoxon Signed Rank test) using ProUCL software. Prepared data comparison tables.

Assistant Risk Assessor; Former Tronox Pigment Site; Savannah, GA; June 2015 to September 2015. Prepared RAGS Part D Table 2s and 3s for several soil and sediment data sets including both discrete and incremental sampling method (ISM) samples. Exposure point concentrations for ISM samples were calculated following methodology recommended by the guidance titled, Technical and Regulatory Guidance, Incremental Sampling Methodology (ITRC, February 2012).

Risk Assessor; Confidential Client; MD; February 2015 to May 2015. Updated sample lists and human health risk estimates in RAGS Part D table format for several media and receptors.

Risk Assessor; US Navy, CLEAN; Naval Station Newport; Portsmouth, RI; March 2014 to May 2014. Prepared human health risk estimates in RAGS Part D table format for several media and receptors with associated report text.

Risk Assessor; US Navy, CLEAN; NCBC Davisville; North Kingstown, RI; September 2013 to January 2014. Created chemicals of potential concern selection tables and risk-ratio tables for human health risk assessment for sediment and shellfish data. Prepared human health risk assessment report.

Assistant Risk Assessor; US Navy, CLEAN; Naval Air Station Brunswick; Brunswick, ME; December 2012 to February 2013. Prepared human health risk estimates in RAGS Part D table format for several media, receptors, and exposure units with associated report text.

Risk Assessor; US Navy, CLEAN; NSA Crane; Crane, IN; March 2012 to January 2013. Prepared human health risk estimates in RAGS Part D table format for several media and receptors with associated report text.

Risk Assessor; US Navy, CLEAN; Naval Activity Puerto Rico: Ceiba, Puerto Rico; September 2012 to November 2012. Prepared human health risk estimates in RAGS Part D table format for several media and receptors with associated report text.

Risk Assessor; US Navy, CLEAN; MCAS Beaufort, SC; May 2012 to August 2012. Prepared human health risk estimates in RAGS Part D table format for several media and receptors with associated report text. Also prepared fate and transport and nature and extent of contamination text sections and assisted with report compilation.

Assistant Risk Assessor; US Navy, CLEAN; MCRD Parris Island; SC; April 2010 to August 2012. Updated human health risk assessment RAGS Part D tables for various receptors/sites.

Risk Assessor; US Navy, CLEAN; NAS South Weymouth; Multiple Sites; Weymouth, MA; February 2009 to August 2012. Performed human health risk assessments for multiple sites; created risk-ratio analysis tables as well as risk assessment tables in RAGS Part D format for various receptors and exposure pathways. Prepared several corresponding human health risk assessment reports. Calculated preliminary remediation goals (PRGs) as part of Feasibility Study support.

Risk Assessor; US Navy, CLEAN; Joint Base Charleston; Charleston, SC; December 2011 to April 2012. Prepared a risk ratio report for human health receptors and associated report text at one site. Prepared human health risk estimates in RAGS Part D table format for several media and receptors with associated report text at two other sites.

Assistant Risk Assessor; Confidential Client; Remedial Investigation Report; MD; February 2012. Prepared human health risk estimates in RAGS Part D table format for several media and receptors. Prepared associated sample calculations and risk estimate figures.

Assistant Risk Assessor; Confidential Client; Remedial Investigation Report; MD; October 2009 to February 2012. Assisted with data analysis and report writing for human health risk assessment incorporating several site media.

Risk Assessor; US Navy, CLEAN; Remedial Investigation Report for Operable Unit 9 Portsmouth Naval Shipyard: Kittery, ME; February 2011 to January 2012. Performed updates to human health risk assessments for various receptors and exposure pathways and associated tables in RAGS Part D format.

Risk Assessor; US Navy, CLEAN; Remedial Investigation Report for Operable Unit 9 Portsmouth Naval Shipyard: Kittery, ME; February 2011 to January 2012. Performed updates to human health risk assessments for various receptors and exposure pathways and associated tables in RAGS Part D format.

Risk Assessor; Confidential Client; Additional Phase II Site Investigation Report; MD; September 2011 to December 2011. Created human health risk assessment tables in RAGS Part D format for soil and groundwater at several exposure units. Prepared the corresponding human health risk assessment report.

Risk Assessor; US Army; Fort Belvoir, VA; May 2010 to October 2011. Created human health risk assessment tables in RAGS Part D format for several site media in three exposure units. Prepared corresponding human health risk assessment report.

Risk Assessor; United States Coast Guard; Former Atwater Facility; Detroit, MI; August 2011. Created human health risk assessment tables in RAGS Part D format for site media for several receptors. Prepared corresponding human health risk assessment report.

Risk Assessor; Otterbein University, Westerville, OH; December 2010 to July 2011. Prepared work plan for a human health risk assessment considering United States Environmental Protection Agency and Ohio Environmental Protection Agency guidance.

Risk Assessor; US Navy, CLEAN; Former NCBC Davisville; North Kingstown, RI; October 2009 to July 2011. Verified database completion and prepared sample list for inclusion in risk assessment. Created chemicals of potential concern selection tables and risk-ratio tables for human health risk assessment for four individual sites. Prepared human health risk assessment report and associated nature and extent text.

Risk Assessor; US Navy, CLEAN; Remedial Investigation Report for Operable Unit 2 Portsmouth Naval Shipyard: Kittery, ME; May 2011 to June 2011. Prepared human health risk estimates in RAGS Part D table format and associated report text and figures.

Risk Assessor; Confidential Client; Sediment Characterization; MD; May 2010 to May 2011. Created chemicals of potential concern selection tables and risk-ratio tables for assessment of human health risks for recreational users exposed to sediment via direct contact and fish consumption. Assisted with the preparation of the Nature and Extent of Contamination section.

Risk Assessor; US Navy, CLEAN; Naval Computer and Telecommunications Area Master Station – Atlantic Detachment Cutler (NCTAMSLANT); Multiple Sites; Cutler, ME; February 2010 to October 2010. Prepared human health chemicals of potential concern selection tables and risk-ratio tables and associated text

for one site. Updated previous risk assessment chemicals of potential concern selection tables and risk-ratio tables to incorporate new data for a second site.

Assistant Risk Assessor; US Navy, CLEAN; NAS Brunswick: Brunswick, ME; March 2009 to April 2010. Performed human health risk assessments for several sites, receptors, and exposure pathways; created risk ratio tables and risk assessment tables in RAGS Part D format.

Risk Assessor; US Navy, CLEAN; Remedial Investigation Report for Operable Unit 7 Portsmouth Naval Shipyard: Kittery, ME; August 2009 to January 2010. Performed human health risk assessments for various receptors and exposure pathways; created assessment tables in RAGS Part D format. Assisted with site-specific screening level calculation using published toxicity data and site-specific exposure assumptions. Aided in preparing the human health risk assessment report.

Risk Assessor; US Navy, CLEAN; NCBC Gulfport, Gulfport, MS; April 2009 to July 2009. Performed human health risk assessments for various receptors and exposure pathways; created assessment tables in RAGS Part D format. Prepared the human health risk assessment report.

Assistant Risk Assessor; US Navy, CLEAN; NSA Annapolis: Annapolis, MD; October 2008 to March 2009. Created chemicals of potential concern selection tables and RAGS Part D tables and calculated exposure point concentrations for the human health risk assessment.

Assistant Risk Assessor; US Navy, CLEAN; NWS Charleston; Charleston, SC; August 2008 to September 2008. Created chemicals of potential concern selection tables; prepared draft human health risk assessment reports for two sites.

Assistant Risk Assessor; US Navy, CLEAN; Former Melville Water Tower Site; Portsmouth, RI; July 2008 to August 2008. Interpreted site data and prepared a human health risk assessment report incorporating several land use scenarios and potential human receptors.

PRELIMINARY ASSESSMENT

Researcher; US Navy, CLEAN; Marine Corps Logistics Base Albany; Albany, GA; January 2019 to February 2019. Performed literature reviews and report writing and compilation and assisted with interview and site visit activities for a PA of potential sources of PFAS.

Assistant Researcher; US Navy, CLEAN; Naval Weapons Station Yorktown, Yorktown, VA; January 2019 to February 2019. Performed literature reviews and assisted with report writing and compilation for a PA of potential sources of PFAS.

Assistant Researcher; US Navy, CLEAN; Naval Weapons Industrial Reserve Plant Calverton; Calverton, NY; August 2017 to November 2017. Performed literature reviews and assisted with report writing and compilation for a PA of potential sources of PFAS.

Assistant Researcher; US Navy, CLEAN; Naval Weapons Industrial Reserve Plant Bethpage; Bethpage, NY; July 2017 to October 2017. Performed literature reviews and assisted with report writing and compilation for a PA of potential sources of PFAS.

RI/FS

Technical Support; Otterbein University, Westerville, OH; October 2013 to November 2013. Prepared Nature and Extent of Contamination text and associated tables. Prepared fate and transport text. Several areas of concern were evaluated, including off-site areas. Media evaluated included surface soil, sediment, and surface water.

Risk Assessor; U.S. Navy, CLEAN; Feasibility Study for Operable Unit 7 Portsmouth Naval Shipyard: Kittery, ME; December 2011 to February 2012. Calculated PRGs and post-remedial risk estimates. Assisted with associated report writing for the Feasibility Study and the Remedial Alternatives Analysis. Responsibilities also included preparing site background information sections of these reports.

STATISTICAL ANALYSIS

Technical Support; NSA Mechanicsburg; Mechanicsburg, PA; February to March 2023. Assisted with preparation of statistical evaluations (Mann-Kendall) for chemicals in groundwater for several rounds of data.

Technical Support; NSF Indian Head; MD; March 2022. Prepared statistical evaluations (Mann-Kendall) short-term and long-term trends for evaluation of chemicals in groundwater for several sites in support of the Five-Year Review.

Technical Support; Naval Industrial Reserve Ordnance Plant Fridley; Fridley, MN; February to April 2021. Assisted with preparation of statistical evaluations (Mann-Kendall) for chemicals in groundwater for several depth intervals and rounds of data.

Technical Support; NASA, Kennedy Space Center, FL; January 2020. Prepared statistical evaluations (UCL calculations) for soil contaminants.

Technical Support; NASA, Kennedy Space Center, FL; March 2017 and February 2018. Prepared statistical evaluations (Mann-Kendall) for over one hundred groundwater wells for three contaminants using several rounds of data.

QA/QC

Technical Editor; 2018 to Present. Performs technical edits for report text, tables, and figures. Items reviewed include PAs, SAPs, SIs, LTMs, proposals, and presentations.

DATA VALIDATION

Data Validator; US Navy, CLEAN; NSF Dahlgren; Dahlgren, VA; August 2008 and April 2021. Validated organic and inorganic data according to Region IV guidelines and other relevant project criteria.

Data Validator; Confidential Client; MD; June 2015 to December 2017; August 2020 to January 2021. Performed full validation for organic data and inorganic data according to relevant national guidelines.

Data Validator; US Navy, CLEAN; NAS South Weymouth; Weymouth, MA; July 2017 to December 2018; October 2020. Performed Stage 2A and Stage 2B validation for organic data and inorganic data according to relevant national guidelines.

Data Validator; US Navy, CLEAN; NAS Brunswick; ME; December 2010 and January 2020. Performed a Tier II validation for organic and inorganic data according to Region I guidelines and other relevant project criteria.

Data Validator; US Navy, CLEAN; NAVSTA Newport; Newport, RI; January 2018 to February 2019. Performed full validation for organic data and inorganic data according to relevant national guidelines.

Data Validator; USACE Baltimore; MAMMS; Multiple Sites; February 2019. Performed full validation for inorganic data according to relevant national guidelines.

Data Validator; US Navy, CLEAN; NCBC Davisville; North Kingstown, RI; January 2018 to January 2019. Performed full validation for organic data and inorganic data according to relevant national guidelines.

Data Validator; US Navy, CLEAN; NAS Cecil Field; Jacksonville, FL; November 2008; November 2018. Validated organic data according to Region IV guidelines and other relevant project criteria.

Data Validator; US Navy, CLEAN; NAS Key West; Key West, FL; January 2009, September 2010, and April 2018. Performed limited validation for organic data according to Region IV guidelines and other relevant project criteria.

Data Validator; Former Tronox Pigment Site; Savannah, GA; July 2015 to September 2015. Performed full validation and Stage 2 validation for organic data and inorganic data according to relevant national guidelines and other project-specific criteria.

Data Validator; Confidential Client; MD; October 2008 to December 2010. Validated organic data and inorganic data according to Region III guidelines and other relevant project criteria.

Data Validator; US Navy, CLEAN; NWIRP Bethpage; NY; October 2010. Performed full data validation for air samples according to Region II guidelines and other relevant project criteria.

Data Validator; US Navy, CLEAN; NWS Charleston; Charleston, SC; February 2010. Performed limited validation for volatile organic data including explosives and inorganic data according to Region IV guidelines and other relevant project criteria.

Data Validator; US Navy, CLEAN; NAS Whiting Field; Milton, FL; July 2008 and January 2010. Validated organic data according to Region IV guidelines and other relevant project criteria.

Data Validator; US Navy, CLEAN; Naples; Naples, Italy; August 2008 to January 2010. Perform data verifications on organic, inorganic, and miscellaneous parameters.

Data Validator; US Navy, CLEAN; NTC Great Lakes; Great Lakes, IL; January 2009 to February 2009. Validated organic data according to Region V guidelines and other relevant project criteria.

Data Validator; US Navy, CLEAN; NSB New London; Groton, CT; December 2008 to January 2009. Performed a Tier III validation for organic data according to Region I guidelines and other relevant project criteria.

Data Validator; US Navy, CLEAN; NSA Annapolis; Annapolis, MD; October 2008 to November 2008. Validated organic data according to Region III guidelines and other relevant project criteria.

Data Validator; US Navy, CLEAN; NWSC White Oak; Silver Springs, MD; November 2008. Validated organic data including explosive parameters according to Region III guidelines and other relevant project criteria.

Data Validator; US Coast Guard, Elizabeth City; Elizabeth City, NC; October 2008. Validated organic data according to Region IV guidelines and other relevant project criteria.

Data Validator; US Coast Guard, Site 1; Baltimore Yard; Baltimore, MD; August 2008 to October 2008. Validated organic data according to Region III guidelines and other relevant project criteria.

Data Validator; US Navy, CLEAN; NAS Albany; Albany, GA; November 2008. Validated organic data according to Region IV guidelines and other relevant project criteria.

Data Validator; US Navy, CLEAN; NSF Indian Head; MD; August 2008. Validated organic data according to relevant project criteria.

Data Validator; US Navy, CLEAN; NCBC Gulfport; MS; July 2008. Validated organic data according to relevant project criteria.

Data Validator; US Navy, CLEAN; NS Mayport; FL; July 2008. Validated organic data according to Region IV guidelines and other relevant project criteria.

Data Validator; US Navy, CLEAN; NAS Jacksonville; Jacksonville, FL; June 2008. Validated organic data according to Region IV guidelines and other relevant project criteria.

ENVIRONMENTAL ANALYSIS/PLANNING

Technical Support; US Navy, CLEAN; Former NCBC Davisville; North Kingstown, RI; April 2020 to Present. Prepare data tables containing data from multiple monitoring events to support long-term monitoring reports for three sites.

Technical Support; EPA, RAC; Shaffer Equipment/Arbuckle Creek Area Site; Fayette County, Minden, WV; August 2019 to June 2020. Prepared chemicals of potential concern selection tables and risk-ratio tables for several media. Compiled human health screening criteria for selection of project screening levels (PSLs) from several sources for site media as part of SAP preparation. Updated PSLs for use in the subsequent technical memorandum.

Technical Support; EPA, RAC; North 25th Street Glass and Zinc Site; Harrison County, Clarksburg, WV; January 2020 to May 2020. Compiled human health screening criteria for selection of PSLs from several sources for site media as part of SAP preparation. Updated PSLs for use in the subsequent technical memorandum.

Technical Support; US Navy, CLEAN; Naval Industrial Reserve Ordnance Plant Fridley; Fridley, MN; September 2018 to May 2020. Prepared the data quality review (DQR) reports for annual sampling events.

Project Support; NASA; Kennedy Space Center, FL; June to September 2016. Prepared Operations, Maintenance, and Monitoring Reports (OMMRs) for two sites and assisted with report production.

Technical Support; US Navy, CLEAN; Naples; Naples, Italy; April 2014 to May 2014. Assist with data analysis and report preparation tasks.

Technical Support; Confidential Client; MS; January 2014 to October 2019. Assist in the preparation of graphical data displays and prepare associated report text and tables.

Technical Support; US Navy, CLEAN; Former Naval Construction Battalion Center (NCBC) Davisville; North Kingstown, RI; December 2012 to May 2014. Prepared data tables and groundwater trend graphs to support a five-year review report.

Project Chemist; US Navy, CLEAN; NAS Key West; Key West, FL; July 2010 to September 2010. Prepared the PRGs for sampling. Prepared the DQR report and associated data tables.

Technical Support; US Navy, CLEAN; MCRD Parris Island; SC; April 2010 to June 2010. Assisted in updating two SAPs.

Technical Support; US Navy, CLEAN; NSA Mechanicsburg; Mechanicsburg, PA; December 2009 to June 2010. Prepared the SAP for verification sampling work.

Technical Support; Confidential Client; MD; September 2008 to October 2008. Assisted in the preparation of a sediment sampling workplan to be used for future site sampling events. Created chemicals of potential concern selection tables for human health and ecological receptors.

CHRONOLOGICAL HISTORY

Environmental Scientist III; Tetra Tech, Inc.; June 2008 to Present; Pittsburgh, PA

Graduate Research Assistant; University of North Dakota; January 2006 to December 2007; Grand Forks, ND. Responsibilities included processing of aerial photography remote sensing images for the Upper Midwest Aerospace Consortium (UMAC) AeroCAM project using geographic information systems (GIS) software.

TETRA TECH

LEANNE M. HAWN

Environmental Scientist

EXPERIENCE SUMMARY

Ms. Hawn has 18 total years of professional experience. As a risk assessment specialist and environmental scientist, she prepares human health and ecological risk assessments and conducts environmental data evaluations. She has project management experience and manages tasks including coordinating and ensuring completion of project reports. In addition, she provides technical editing and statistical evaluations.

Ms. Hawn has provided technical support for an assortment of investigation/remedial activities being conducted under state and federal programs, such as Work Plans, Sampling and Analysis Plans, Site Investigations, Remedial Investigations/Feasibility Studies, Proposed Plans, Record of Decisions and Five-Year Reviews. She has been involved with risk assessments prepared for US Environmental Protection Agency Regions I, II, III, IV, V, VI, and VIII; and the following states: CT, FL, IN, MD, ME, NC, NJ, NY, OH, PA, RI, SC, TX, UT, VA. She is the project manager for a sediment sampling investigation at NSF Dahlgren, VA, a stream restoration monitoring project at NSA Crane, IN, and a PFAS remedial investigation at NSB New London, CT. She performs editorial reviews to ensure document quality, and final report production and submission to external clients. Statistical support includes calculation of upper confidence limits using EPA ProUCL software and trend analysis based on the Mann Kendall trend test.

EDUCATION

MS, Marine, Estuarine, and Environmental Science, University of Maryland, 2006

BS, Environmental Science, Chatham University, 2004

AREA OF EXPERTISE

Ecological Risk Assessment

Human Health Risk Assessment

Technical Editing

ProUCL software

NIRIS Land Use Control (LUC) Tracker

OFFICE

Pittsburgh, PA

YEARS OF EXPERIENCE

18

YEARS WITH TETRA TECH

16

RELEVANT EXPERIENCE

PROJECT MANAGEMENT

Project Manager/Ecological Risk Assessor; US Navy, CLEAN, NSF Dahlgren, VA; Sediment Sampling Investigation, August 2019 to Present, $158K. Acts as project manager and oversaw the preparation of a sampling and analysis plan, field work and preparation of associated reports. The May 2020 field work included sediment sample collection from 19 locations within Gambo Creek. Reports included a Technical Memorandum, Sites Screening Process Report including an ecological risk assessment, and a Decision Document documenting no further action for Gambo Creek. Project funds are also being used to provide partnering support including participation in partnering meetings and agenda calls, preparation of meeting agenda and meeting minutes, providing updates for the Tier 2 tracker. Activities also include managing the budget and schedule, preparing monthly status reports and communicating with the Navy Remedial Project Manager.

Project Manager; US Navy, CLEAN, NSA Crane, Indiana; Stream Restoration Monitoring, May 2021 to Present, $163K. Acts as project manager oversaw the preparation of field work and preparation of associated

stream monitoring reports. Project funds are also being used to provide Navy Environmental Restoration Program support including well inspection and maintenance activities at SWMUs 1, 5, 11, and 16. Activities also include managing the budget and schedule, preparing monthly status reports and communicating with the Navy Remedial Project Manager.

Project Manager; US Navy, CLEAN, NSB New London, Connecticut; PFAS Site 10 Remedial Investigation, August 2021 to Present, $355K. Acts as project manager overseeing the preparation of a sampling and analysis plan and field work. Activities also include managing the budget and schedule, preparing monthly status reports and communicating with the Navy Remedial Project Manager.

PRELIMINARY ASSESSMENT/SITE INSPECTION

Environmental Scientist; Preliminary Assessment for Basewide Investigation of PFAS; US Navy, CLEAN; Naval Support Activity, Crane, IN, August 2018 to August 2019. Coordinated preparation of a Preliminary Assessment for identifying potential historical sources or releases of per- and poly-fluoroalkyl substances (PFAS) at NSA Crane. Potential PFAS AOCs were identified based on interviews with base personnel, review of historical records, and site visit. A Technical Memorandum was prepared to document areas at the installation that were considered and then screened from further evaluation. A PA Report was prepared to document the need to proceed to an SI or no further evaluation.

Environmental Scientist; Preliminary Assessment for Basewide Investigation of PFAS; US Navy, CLEAN; Naval Station, Great Lakes, June 2018 to October 2021. Coordinated preparation of a Preliminary Assessment for identifying potential historical sources or releases of per- and poly-fluoroalkyl substances (PFAS) at Naval Station Great Lakes. Potential PFAS AOCs were identified based on interviews with base personnel, review of historical records, and site visit. A PA Report was prepared to document the need to proceed to an SI or no further evaluation.

RCRA FACILITY ASSESSMENT

Environmental Scientist; US Navy, CLEAN, Naval Support Activity, Crane, IN, August 2017 to February 2018. Assisted in completion of sampling and analysis plan for SWMU 38. Prepared and coordinated completion of RCRA Facility Assessment Report for SWMU 38.

RISK ASSESSMENT

Ecological Risk Assessor; McConnell Air Force Base, KS; January 2024 to Present. Evaluated ecological risks for receptors exposed VOCs, SVOCs, and metals in soil, surface water, and sediment and prepared a screening-level ecological risk assessment for OW633. Performed food chain modeling for ecological risk assessment.

Ecological Risk Assessor; US Navy, CLEAN, NSF Dahlgren, VA; February 2024 to April 2024. Evaluated ecological risks for receptors exposed SVOCs, pesticides, PCBs, explosives, and metals in soil and sediment and prepared a screening-level ecological risk assessment for Sites 4 and 15. Performed food chain modeling for ecological risk assessment.

Ecological Risk Assessor; NASA, Goddard Space Flight Center, Greenbelt, MD; March 2024 to April 2024. Evaluated ecological risks for receptors exposed VOCs, SVOCs, PCBs, and metals in soil, surface water, and

sediment and prepared a screening-level ecological risk assessment for Area 400. Performed food chain modeling for ecological risk assessment.

Ecological Risk Assessor; US Navy, CLEAN, MCRD Parris Island, SC; October 2022 to March 2023. Evaluated ecological risks for receptors exposed to PFAS and other chemicals in soil and sediment at operable units OU11 and OU12. Performed food chain modeling for ecological risk assessments. Prepared ecological risk assessments.

Ecological Risk Assessor; US Navy, CLEAN, NWIRP Calverton, NY; April to May 2023. Evaluated ecological risks for receptors exposed to PFAS in soil, surface water, and sediment and prepared a screening-level ecological risk assessment for Site 16.

Ecological Risk Assessor; US Navy, CLEAN, NSA Cutler, ME; February to April 2023. Evaluated ecological risks for receptors exposed to PFAS in soil, surface water, and sediment and prepared a screening-level ecological risk assessment for Site 10.

Ecological Risk Assessor; St. Marks, FL; August 2022 to December 2022. Evaluated ecological risks in support of a permit renewal for a facility that conducts open burn of energetic production wastes. Principal site contaminants included energetics, metals, and a variety of organic chemicals. The risk assessment is conducted per the guidelines established in the USEPA guidance document titled, Ecological Risk Assessment Protocol for Hazardous Waste Combustion Facilities (USEPA, September 2005). Risk estimates are produced using commercially available software provided by Lakes Environmental, EcoRisk View.

Ecological Risk Assessor; US Navy, CLEAN, NAVSTA Newport, RI; May 2022 to August 2022. Evaluated ecological risks for receptors exposed to sediment and soil eroding into sediment, performed food chain modeling, and prepared a screening-level ecological risk assessment.

Ecological Risk Assessor; US Navy, CLEAN, NWIRP Calverton, NY; November 2021 to February 2022. Evaluated ecological risks for receptors exposed to PFAS in soil, surface water, and sediment and prepared a screening-level ecological risk assessment for Site 2.

Ecological Risk Assessor; Private Client, TX; December 2020 to April 2021. Evaluated ecological risks for receptors exposed sediment in accordance with Texas Commission on Environmental Quality guidance. Prepared ecological risk assessment.

Ecological Risk Assessor; US Navy, CLEAN; NAS Brunswick, ME; January 2021 to April 2021. Prepare technical memorandum identifying the ecological risk assessment approach for evaluation of PFAS in soil, seeps, pore water, surface water, and sediment.

Ecological Risk Assessor; US Navy, CLEAN; NAS Dallas, TX; September 2020 to April 2021. Evaluated ecological risks for receptors exposed to PFAS in soil, surface water, and sediment. Performed food chain modeling using an Ecological Model Tool developed by Conder, et al (2020). Prepared ecological risk assessment.

Ecological Risk Assessor; US Navy, CLEAN, MCRD Parris Island, SC; April 2021. Prepared discussion points summarizing planned approach to evaluate ecological risks for receptors exposed sediment.

Ecological Risk Assessor; EPA Region 4, Gravel Pit Road Ditch, Atlanta, GA; May 2020 to September 2020. Evaluated ecological risks for receptors exposed to sediment and surface water. Performed food chain modeling for ecological risk assessment. Prepared ecological risk assessment.

Ecological Risk Assessor; Private Client, GA; April 2020 to September 2020. Evaluated ecological risks for receptors exposed to sediment, and surface water. Performed food chain modeling for ecological risk assessment. Prepared ecological risk assessment.

Environmental Scientist, EPA Region 3, Shaffer Equipment Company/Arbuckle Creek Site, Minden, WV; April 2019 to September 2019. Prepared text related to the site background and conceptual site model for a SAP to supports a remedial investigation to characterize and mitigate contamination, primarily PCBs, associated with a former electrical transformer manufactory and maintenance company. Identified ecological screening criteria for soil, sediment, and surface water for the establishment of project screening levels.

Environmental Scientist, EPA Region 3, N. 25th Street Glass and Zinc Site, Clarksburg, WV; 2018 to May 2020. Identified ecological screening criteria for soil, sediment, and surface water for the establishment of project screening levels for a SAP to support a remedial investigation to characterize and mitigate contamination associated with former zinc smelter and glass-making operations. Contaminants include PAHs, PCBs, and metals. Reviewed criteria for updated screening levels for use in the technical memorandum summarizing phase I remedial investigation data.

Ecological Risk Assessor; EPA Region 3, Baghurst Site Drive, PA; November 2018 to April 2020. Evaluated ecological risks for receptors exposed to surface soil, sediment, and surface water. Performed food chain modeling for ecological risk assessment. Prepared ecological risk assessment.

Ecological Risk Assessor; NSF Dahlgren, VA; December 2019 to January 2020. Evaluate ecological risks in support of a permit renewal for a facility that conducts open burn and open detonation of energetic production wastes. Principal site contaminants included energetics, metals, and a variety of organic chemicals. The risk assessments were conducted per the guidelines established in the USEPA guidance document titled, Ecological Risk Assessment Protocol for Hazardous Waste Combustion Facilities (USEPA, September 2005). Risk estimates were produced using commercially available software provided by Lakes Environmental, EcoRisk View.

Ecological Risk Assessor; US Navy, CLEAN, NALF Waldron, TX; November 2019 to December 2019. Evaluated ecological risks for receptors exposed to soil. Performed food chain modeling for ecological risk assessment. Prepared ecological risk assessment.

Ecological Risk Assessor; US Navy, CLEAN, McMullen, TX; June 2019 to December 2019. Evaluated ecological risks for receptors exposed to soil. Performed food chain modeling for ecological risk assessment. Prepared ecological risk assessment.

Ecological Risk Assessor; US Navy, CLEAN, Naval Air Station Key West, FL; August 2017 to March 2019. Prepared technical memorandum with the methodology for ecological risk assessment for SWMU 2. Evaluated ecological risks for receptors exposed to sediment. Performed food chain modeling for ecological risk assessment. Prepared ecological risk assessment.

Ecological Risk Assessor; US Navy, CLEAN, Naval Station Newport, RI, February 2019. Evaluated protectiveness of the remedy based on current ecological risk assessment guidance for the technical assessment of the Five-Year Review.

Ecological Risk Assessor; US Navy, CLEAN, Naval Air Station South Weymouth, MA, November 2018. Evaluated protectiveness of the remedy based on current ecological risk assessment guidance for the technical assessment of the Five-Year Review.

Ecological Risk Assessor; United States Coast Guard Office of Standards Evaluation and Development; September 2015 through December 2018. Wrote ecological risk assessment and performed literature research review for project evaluating the impact of a hypothetical, reasonable "worst case" spill of shale gas extraction wastewater (SGEWW) from a commercial barge transporting the material along navigable rivers within Pennsylvania, Ohio, and West Virginia. Developed white paper on sampling procedure and analytical requirements for SGEWW. The project involved extensive research of the chemicals of potential concern (COPC) in the SGEWW and risk assessment to determine potential adverse impacts to human and ecological receptors exposed to COPC concentrations in the river environment.

Risk Assessor/Technical Editor; NASA, Wallops Island, VA; May 2015 to June 2017. Prepared ecological risk assessment work plan in support of a RCRA Part B permit renewal application in accordance with Virginia Department of Environmental Quality (VADEQ) - Hazardous Waste, Part B, Combustion Facility, RCRA, Permit Renewals - Requirements for Revised Risk Assessments, dated February 2014. The work plan included the methodology that would be used to complete the risk assessment, including the receptors to be evaluated, the bioaccumulation factors that will be used to calculate chemical concentrations in various food items, and toxicity values that will be used to characterize risks. The draft work plan was submitted to VADEQ and after their comments were resolved, the revised work plan was re-submitted. Conducted the risk assessment per the guidelines established in the USEPA guidance document titled, Ecological Risk Assessment Protocol for Hazardous Waste Combustion Facilities (USEPA, September 2005) and risk estimates were produced using commercially available software provided by Lakes Environmental, EcoRisk View. Acted as technical editor and reviewed Human Health and Ecological Risk Assessment Protocol for Open Burning Area for grammatical accuracy, logical organization, and clarity.

Risk Assessor; Private Client, Middle River, MD; December 2016 to March 2017. Evaluate ecological risks for receptors exposed to surface soil, sediment, and surface water as part of alternatives analysis memo. Prepared ecological risk assessment for Strawberry Point. Performed food chain modeling for ecological risk assessment. Addressed comments and revised fish tissue data report.

Risk Assessor; Tooele Army Depot, UT; February 2015 to October 2016. Evaluate ecological risks in support of a RCRA Part B application for a facility that conducts open burn and open detonation of energetic production wastes. Principal site contaminants included energetics, metals, and a variety of organic chemicals. The risk assessments were conducted per the guidelines established in the USEPA guidance document titled, Ecological Risk Assessment Protocol for Hazardous Waste Combustion Facilities (USEPA, September 2005). Risk estimates were produced using commercially available software provided by Lakes Environmental, EcoRisk View.

Risk Assessor; Suffolk County Department of Health Services, NY; September 2015 to July 2016. Evaluate human health risks for Grand Canal Area. Evaluate water quality data including chemicals and nutrients. Calculate cancer and non-cancer risk estimates using risk-ratio approach.

Environmental Scientist/ Risk Assessor; US Navy, CLEAN, MCAS Beaufort, SC; September 2011 to May 2015. Developed watershed contaminated source document. Prepared ecological risk assessment for SWMU 86, SWMU 87, and AOC P.

Risk Assessor; Otterbein University, Westerville, OH; June 2013 to April 2015. Conducted an Ecological Risk Assessment (ERA) in accordance with Ohio EPA guidance for the site, where metals were the primary contaminants of concern. The ERA consisted of Levels I through III of the Ohio EPA ERA guidance and was conducted for several areas of concern, including off-site areas. Media evaluated included surface soil, sediment, and surface water.

Risk Assessor; US Navy, CLEAN; NAS Brunswick, ME; August 2008 to March 2015. Prepared methodology for ecological risk assessment for Skeet Range, Site 9, Site 17, and Quarry. Wrote ecological risk assessment for Skeet Range, Site 9, Site 17 and Quarry. Performed food chain modeling for ecological risk assessment. Assisted in developed of human health and ecological risk assessment text for site screening of Picnic Pond area. Performed risk-ratio evaluation and human health risk screening assessment for Machine Gun Site and Skeet Range.

Environmental Scientist/Risk Assessor; US Navy, CLEAN, MCRD Parris Island, SC; September 2011 to February 2015. Developed watershed contaminated source document. Performed human health risk assessment for various receptors and exposure pathways; created assessment tables in RAGS Part D format. Prepared the human health risk assessment report for Site 9/16. Wrote sections on nature and extent and fate and transport for OU12 RI report.

Risk Assessor; US Navy, CLEAN, Naval Station Newport, RI; April 2011 to May 2014. Performed food chain modeling for ecological risk assessment. Prepared ecological risk assessment for Tank Farms 1, 2, and 3.

Risk Assessor; US Navy, CLEAN, NSA Crane, IN; July 2011 to August 2013. Prepared human health and ecological risk assessment for Resource Conservation and Recovery Act Facility Investigation (RFI) report for SWMU 11. Prepared ecological risk assessment for SWMUs 18, 21, 28, and 35. Performed human health risk assessment for various receptors and exposure pathways; created assessment tables in RAGS Part D format. Performed food chain modeling for ecological risk assessment. Wrote sections on nature and extent and fate and transport of chemicals for SWMU 28 RFI report.

Risk Assessor; US Navy, CLEAN, NALF Cabaniss, TX; January 2012. Performed food chain modeling for ecological risk assessment for former Incinerator Disposal Site and Skeet Range.

Risk Assessor; Charleston AFB, SC; November 2011. Performed human health risk assessment for various receptors and exposure pathways; created assessment tables in RAGS Part D format. Prepared the human health risk assessment report for SWMU 28.

Risk Assessor; US Navy, CLEAN, CNC Charleston, SC; August 2011. Performed human health risk assessment for various receptors and exposure pathways; created assessment tables in RAGS Part D format. Prepared the human health risk assessment report for AOC 721.

Risk Assessor; US Navy, CLEAN; NAS Whiting Field, FL; May 2011 to June 2011. Performed risk-ratio evaluation of groundwater plumes for Site 40. Prepared human health risk screening assessment.

Risk Assessor; US Navy, CLEAN; NWS Earle, NJ; April 2011. Performed food chain modeling for ecological risk assessment for Site 9. Prepared ecological risk assessment.

Technical Lead; US Navy, CLEAN, Fort Belvoir, VA; December 2010 to February 2011. Coordinated completion of human health risk assessment report for SWMU 27. Performed human health risk assessment for various receptors and exposure pathways; created assessment tables in RAGS Part D format. Prepared the human health risk assessment report.

Risk Assessor; US Navy, CLEAN; Naval Submarine Base (NSB) New London, Groton, CT; July 2008 to December 2011. Assisted in the development of text and tables for a draft sampling and analysis plan addendum for Phase IV Remedial Investigation for Area A Wetland- Site 2B. Assist in developing of text and tables for Completion Report for Area A Wetland- Site 2B. Updated analytical methods and human health and ecological screening criteria as part of an update of the monitoring program for Area A Landfill, DRMO and Goss Cove at New London. Evaluated groundwater and soil data from Lower Subase from the 2010 PDI for Data Quality Reviews. Prepared Nature and Extent section for 2010 PDI.

Risk Assessor; US Navy, CLEAN, Davisville, RI; January 2011. Created PowerPoint presentation summarizing human health risk evaluation of soils at Site 3.

Risk Assessor; US Navy, CLEAN, NUWC East Lyme, CT; February 2009 to March 2010. Identified contacts for site visit. Prepared site visit report. Assisted in development of watershed contaminated source document and site investigation summary report.

Risk Assessor; US Navy, CLEAN; NSF Indian Head, MD; November 2009 to December 2009. Prepared text and tables of ecological risk assessment for Site Inspection Report.

Risk Assessor; US Navy, CLEAN; Carr Point Naval Station Newport, Portsmouth, RI; September 2009 to October 2009. Performed food chain modeling for ecological risk assessment. Assisted in development of ecological risk assessment text.

Risk Assessor; CLEAN; Naval Shipyard (NSY) Portsmouth, Kittery, ME; April 2009 to July 2009. Assisted text corrections for Rounds 1 through 10 Data Evaluation Report. Evaluated data from Rounds 8 to 10 and Additional Scrutiny Studies for Data Quality Reviews.

Risk Assessor; US Coast Guard; Baltimore Yard, MD; March 2009. Prepared discussion of the fate and transport of contaminants present in the environmental media at Site 08 to support a human health risk assessment.

Risk Assessor; US Navy, CLEAN; NUSC Newport, RI; December 2008 to February 2009. Prepared chemical concentration plots based on toxicity tests using survival and growth of organisms as endpoints.

Risk Assessor; NASA Langley Research Center (LaRC), Hampton, VA; August 2008 to September 2008. Identified chemicals of potential concern and characterized potential noncarcinogenic and carcinogenic risks resultant from exposure to soil. Wrote methodology and results sections for human health risk assessment. Wrote technical memorandum presenting a human health risk screening evaluation of subsurface soil.

Risk Assessor; US Navy, CLEAN; Naval Shipyard (NSY) Portsmouth, Kittery, ME; July 2008 to September 2008. Assisted in preparation of tables and text for Round 5 data package for OU 3 Post-Remedial Operation, Maintenance, and Monitoring Program (OM&M). Assisted in making corrections to text for Rounds 1 through 4 Data Evaluation Report for OU 3 prepared as part of the Post-Remedial OM&M program.

Risk Assessor; US Navy, CLEAN; Marine Corps Air Station (MCAS) Cherry Point, NC; July 2008. Updated database with screening criteria to be used in ecological and human health risk assessments.

Risk Assessor; US Navy, CLEAN; Naval Base Kitsap (NBK), Bangor, WA; July 2008. Researched State of Washington screening criteria for use in human health risk assessments.

Risk Assessor; US Navy, CLEAN; Solomons Complex, Solomons, MD; June 2008 to July 2008. Identified chemicals of potential concerns and characterized potential noncarcinogenic and carcinogenic risks resultant from exposure to soil, groundwater, surface water, and sediment. Wrote text for ecological and human health site screening risk assessment to support site characterization report.

RI/FS

Environmental Scientist; US Navy, CLEAN, NWIRP Bedford, MA; June 2017 to December 2022. Conducted site visit for 2019 Second Five-Year Review and prepared the report. Communicated with Bedford Department of Heath for public meeting discussing the Five-Year Review. Communicated with town and newspapers for publication of public notices. Update annual Site Management Plans. Update annual Administrative Record Binder summarizing the status of all sites at NWIRP Bedford. Attend biweekly team meeting and prepare meeting minutes.

Environmental Scientist; US Navy, CLEAN, NS Great Lakes, IL; January 2013 to December 2022. Prepared record of decision, proposed plan, and public notices for several sites including sites 5, 9, 12, 17, and 21. Communicated with newspapers for publication of public notices. Updated Site 12 RI report based on response to comments document including writing an ecological risk assessment for Site 12 and updating the Site 12 human health risk assessment. Update annual Administrative Record Binder summarizing the status of all sites at NS Great Lakes. Attend monthly team meetings and prepare meeting minutes.

Environmental Scientist; US Navy, CLEAN, MCRD Parris Island, SC; January 2012 to February 2012. Prepared sections for RI report on nature and extent and fate and transport of chemicals present at Site 5.

Environmental Scientist; US Navy, CLEAN; New London, CT; January 2009 to November 2009. Prepared chemical concentration plots based on toxicity tests using survival and growth of organisms as endpoints. Assist in development of ecological risk assessment for Area A Wetland Remedial Investigation and Feasibility Study.

Environmental Scientist; US Navy, CLEAN; Pensacola, FL; January 2011. Created PowerPoint presentation based on FS for OU16.

STATISTICAL ANALYSES

Environmental Scientist; NS Great Lakes, IL; August 2022 to Present. Provide excel trend graphs and Mann Kendall trend test analysis using USEPA's ProUCL for evaluation of analyte trends from long-term monitoring of groundwater data.

Environmental Scientist; Private Client; October 2015 to Present. Provided statistical support by determining trends on monitoring network using Mann-Kendall trend test combined with the Theil-Sen trend test using USEPA's ProUCL.

Environmental Scientist; NCBC Davisville, North Kingstown, RI; August 2014 to Present. Provided statistical support by determining trends on monitoring network using Mann-Kendall trend test for two sites (Sites 7 and 9). Conduct ecological evaluation of Sites 7 and 9 long term monitoring data for 5 year report (2022).

Environmental Scientist; Private Client; April 2016; January 2017. Provided statistical support by calculating upper confidence limits (UCLs) using USEPA's ProUCL software.

Environmental Scientist; NAS Jacksonville, FL; March 2012. Calculated upper confidence limits for Site 45 using FL Pro software.

Environmental Scientist; Private Client; February 2012. Provided statistical support by providing upper tolerance limits for groundwater monitoring program.

Environmental Scientist; US Navy, CLEAN, NSA Crane, IN; February 2012. Provided statistical support by providing background comparisons for soil from SWMU 11 using graphical techniques (box plots, normal probability plots, scatter plots, etc.) and formal statistical comparison tests (Wilcoxon Rank Sum test, Gehan test, etc.).

ENVIRONMENTAL ANALYSIS/PLANNING

Environmental Scientist; US Navy, CLEAN, Portsmouth Naval Shipyard, ME; January 2019 to April 2019. Coordinate update of Long-Term Monitoring Sampling and Analysis Plan for Operable Unit 2.

Environmental Scientist; US Navy, CLEAN, NSA Crane, IN; August 2017 to 2019. Assist in development of a Tier I Sampling and Analysis Plan for PFAS Investigation at Former Fire Fighting Training Area (SWMU 9). Assist in development of a Tier I Sampling and Analysis Plan for RCRA Facility Assessment evaluating metals contamination in sediment (SWMU 38).

Data Validation Specialist; Data Validation: August 2008 to May 2018. Performed data review for organic, inorganic and miscellaneous parameters for environmental samples according to relevant criteria and guidelines for US Navy, US Coast Guard, US Department of Agriculture, Army Corp of Engineers, and Private Client sites in EPA Regions I, II III, IV, V, VI.

Environmental Scientist; US Navy, CLEAN, MCB Quantico, VA; February 2013. Assisted in development of Tier II Sampling and Analysis Plan for Site 99 Soil Areas. Prepared statement of work to procure laboratory analytical services in support of sediment sampling investigation. Prepared chemistry-related QAPP worksheets. Prepared text on site background and previous investigations.

Environmental Scientist, US Navy, CLEAN, NAS Great Lakes, IL; January 2012. Prepared Tier II Sampling and Analysis Plan for Site 17.

Environmental Scientist; US Navy, CLEAN; NSB New London, Groton, CT; June 2011 to November 2011. Assist in development of Sampling and Analysis Plan for sediment investigation from Zone 4 and Outer Pier 1.

Project Chemist; US Navy, CLEAN, NUWC East Lyme, CT; May 2010 to May 2011. Prepared statement of work to procure laboratory analytical services in support of sediment sampling investigation. Prepared chemistry-related QAPP worksheets. Prepared text for other QAPP worksheets. Responded to comments on Sampling and Analysis plan.

Environmental Scientist; Private Client; Alexandria, LA; May 2011. Review data for Data Quality Reviews.

Project Chemist; US Navy, CLEAN, NWIRP Calverton, NY; February 2011. Prepared chemistry-related QAPP worksheets for CTO WE63.

Project Chemist; US Navy, CLEAN; New London, CT; June 2009. Prepared statement of work to procure laboratory analytical services in support of a pre-design sediment sampling investigation. Prepared chemistry-related QAPP worksheets.

Environmental Scientist; US Navy, CLEAN; Former Naval Construction Battalion Center (NCBC) Davisville, North Kingstown, RI; September 2009 to October 2010. Prepared statement of work to procure laboratory analytical services to support the feasibility study for Site 16.Prepared chemistry-related QAPP worksheets. Tracked chain of custodies to ensure goals of sampling plan were met. Evaluated groundwater, soil, sediment, surface water, and soil gas data for feasibility study for Data Quality Reviews. Prepared summarizes of sampling performed and deviations from sampling plan. Assisted in preparation of Data Package for Feasibility Study for Site 16.

Project Chemist; US Navy, CLEAN; New London, CT; June 2009. Prepared statement of work to procure laboratory analytical services in support of a pre-design sediment sampling investigation. Prepared chemistry-related QAPP worksheets.

Project Chemist; US Navy, CLEAN; MCB Camp Lejeune, NC; December 2008 to January 2009. Prepared statement of work to procure laboratory analytical services in support of a remedial investigation/feasibility study. Identified regional human health and ecological screening criteria for soil, sediment, groundwater, and surface water for select metals and perchlorate.

Project Chemist; US Navy, CLEAN; NSA Mid-South, TN; November 2008 to January 2009. Prepared statement of work to procure laboratory analytical services in support of a munitions response project. Identified regional human health and ecological screening criteria for soil for PAHs, select metals and nitroglycerin. Prepared chemistry-related QAPP worksheets.

TRAINING

Instructor; Tetra Tech, Emergency Response Training Program, July 2018 to March 2020. Instructor for Introduction to Risk Assessment Guidance courses. Courses are 2.5-day or 3.5-day in length and are presented to various Federal, State, and local regulators to help them become familiar and better understand the risk assessment process.

QA/QC

Technical Editor, 2017 to Present. Edits technical reports and proposals. Responsible for grammatical accuracy, logical organization, clarity, and consistency of style. Ensures that deliverables follow appropriate client-required format. Documents include Sampling and Analysis Plans, Quality Assurance Project Plans, Site Investigations, Remedial Investigations/Feasibility Studies, Five-Year Reviews, risk assessments, and groundwater monitoring reports.

Auditor; Tetra Tech internal audit of NIRIS submittals; July to September 2017. Performed audit to assess compliance of select Navy CLEAN projects with requirements of the Final Environmental Restoration Program Recordkeeping Manual, which requires document deliverables be submitted to NIRIS. Wrote audit report and completed detailed audit checklists.

Environmental Scientist; Environmental Compliance Audits; US Customs and Border Protection; Nationwide Program; May 2012 to January 2013. Participated in a nationwide environmental compliance assessment program for CBP facilities. The environmental compliance assessments included development of the federal and state assessment protocols, which covered environmental regulations governing air emissions, hazardous materials, hazardous waste, pesticides, petroleum, oils, and lubricants, solid waste, storage tanks, toxic substances, wastewater, and water quality. Reviewed environmental compliance assessment reports for technical accuracy against the environmental regulations included in the assessments. Worked closely with assessors to ensure evaluation of regulations was accurate. Ensured consistently amongst reports in format. Responded to client comments on reports.

UXO

Ecological Risk Assessor; US Navy, CLEAN, MCRD Parris Island, SC; October 2022 to Present. Evaluated ecological risks for receptors exposed to soil and/or sediment at UXOs 3, 4 5, 6, 7, 8. Performed food chain modeling for ecological risk assessment. Prepared ecological risk assessment.

Risk Assessor; US Navy, CLEAN; Indian Head, MD; March 2011 to February 2012. Performed human health risk assessment for various receptors and exposure pathways; created assessment tables in RAGS Part D format. Prepared the human health risk assessment report for UXO 32.

Risk Assessor; US Navy, CLEAN; Marine Corps Base Quantico, VA; June to July 2010. Evaluated data from UXO 001, 006, 012, and 13CD for Data Quality Reviews. Assisted in preparation of site investigation report for UXO 001, 006, and 012. Performed food chain modeling for ecological risk evaluation.

OTHER

Environmental Scientist; Naval Support Activity Crane, Crane, IN; June 2017 to Present. Coordinate the submittal of documents to Naval Installation Restoration Information Solution (NIRIS). Updated controlled areas in NIRIS Land Use Control (LUC) Tracker. Created LUC inspection checklists in LUC Tracker. Prepared presentation regarding LUC Tracker for Navy project manager. Assisted in preparation of monthly financial reports for two projects.

Environmental Scientist; Naval Weapons Station Earle, NJ; February 2020 to October 2020. Updated controlled areas in NIRIS LUC Tracker. Created LUC inspection checklists in LUC Tracker.

Environmental Scientist; Portsmouth, Kittery, ME; June 2017 to June 2020. Coordinated the submittal of documents to NIRIS.

Environmental Scientist; Health Canada; March to April 2013. Summarized toxicological studies on phthalates using International Uniform Chemical Information Database (IUCLID).

Environmental Scientist; US Navy, CLEAN; NWIRP Calverton, NY; November 2012 to January 2013. Assisted in development of ecological acute and chronic toxicity values for aquatic organisms for the Peconic River.

Environmental Scientist; US Navy, CLEAN; NSA Crane, IN; March 2011. Assisted in development of technical memorandum developing preliminary remediation goals for dyes.

Environmental Scientist; Private Client; Middle River, MD; March 2011. Developed technical memorandum evaluating background concentrations of chemicals in sediment in the Chesapeake Bay.

Environmental Scientist; US Navy, CLEAN; Former Naval Construction Battalion Center (NCBC) Davisville, North Kingstown, RI; July 2009, January 2011. Researched Comprehensive State Groundwater Protection Program for Technical Memorandum on Preliminary Remediation Goals for Groundwater Underlying Site 16 at NCBC Davisville. Contacted federal and state protection agencies to determine implementation and current status of program. Prepared white paper on radon concentrations in groundwater to proposed standards. Prepared white paper on quality and quantity of groundwater for drinking water use.

Environmental Scientist; Private Client; Industrial Gasification Plant, Beaumont, TX; September 2008 and June 2009. Researched county and state health statistics, locations of sensitive populations, area water supply, and emissions of nearby industries. Prepared discussion on air emission and water discharges compared to screening criteria.

Environmental Scientist; Tetra Tech NUS; Pittsburgh, PA; July 2008 to August 2008. Gathered a list of state and federal contacts that will need to be consulted prior to planning and implementing field work. The information was requested to assist in the development of a presentation to private client.

Environmental Scientist; US Navy, CLEAN; Former Naval Construction Battalion Center Davisville, North Kingstown, RI; July 2008. Developed factsheets noting history of two sites and summarizing conclusions of a 5 year review and scope of on-going monitoring program. The factsheets made available to the public using the sites located within the Town of North Kingstown.

Environmental Scientist; Private Client; Middle River, MD; July 2008. Researched regional anthropogenic chemical concentration in sediments near Middle River, Maryland. Determined specifics regarding the development of fish advisories. Identified State of Maryland screening levels for surface water, soil, sediment and fish tissue.

Staff Scientist I; Dynamac Corporation; May 2006 to May 2008. Reviewed and interpreted data from technical studies on the environmental behavior of pesticides for US EPA Office of Pesticide Programs. Analyzed data using Excel and SigmaPlot to determine degradation of pesticides. Authored 100+ reviews of studies on the environmental fate of pesticides.

SCIENTIFIC/TECHNICAL PUBLICATIONS

Bernhardt, A., L. Ganser, T. Brent. 2014. "Effect of Soil pH on Plant Toxicity Tests." Presented at the Society of Environmental Toxicology and Chemistry's 35th Annual Meeting, 9-13 November 2014, Vancouver, British Columbia.

Bernhardt, A., N., L. Ganser, D. O'Connor, V. Jurka, J. Wright, M. Hammond. 2012. "Mercury Investigation at Site 1 - Dodge Pond, East Lyme, Connecticut." Presented at the Society of Environmental Toxicology and Chemistry's 33rd Annual Meeting, 11-15 November 2012, Long Beach, California.

CHRONOLOGICAL HISTORY

Environmental Scientist; Tetra Tech, Inc.; May 2008 to Present; Pittsburgh, PA
Staff Scientist I; Dynamac Corporation; May 2006 to May 2008; Rockville, MD

TETRA TECH

MARISSA A. MADIA

Environmental Scientist II

EXPERIENCE SUMMARY

Ms. Madia has over five years of experience in environmental consulting and regulatory industries conducting small to large-scale projects. She has also provided technical support for various investigations conducted for the Department of the Navy (Mid-Atlantic Division, Naval Facilities Engineering Command) for CERCLA-driven investigations, such as Sampling and Analysis Plans for per- and poly-fluoroalkyl substances (PFAS), human health and ecological risk assessments for Remedial Investigations, and supporting PFAS Preliminary Assessments and Site Inspections. She also has experience conducting environmental due diligence, compliance, site assessment, and remediation projects under state (including Pennsylvania, West Virginia, Ohio, and Florida) and federal programs.

Ms. Madia has experience working with industrial facilities to maintain compliance with the regulatory agencies. Additionally, she has experience working in the permitting department at the Florida DEP where she reviewed and approved industrial wastewater, potable water, and domestic wastewater permit applications. She determined if industrial wastewater facilities, and commercial and residential buildings and developments were required to have a permit.

Ms. Madia has extensive experience in groundwater, potable water, and surface water sampling. She has also performed risk assessments and developed water safety plans for *Legionella* in commercial and residential buildings.

As a graduate research assistant at Duquesne University, Ms. Madia assisted in a water quality research project to analyze the potential impacts from fracking. Her master's thesis included analyzing the potential impacts of oil and gas waste disposal methods including spreading wastewater on roads for dust control and deep underground injection wells.

EDUCATION

MS, Environmental Science and Management, Duquesne University, 2018

BS, Biology, Eckerd College, 2015

BA, Environmental Studies, Eckerd College, 2015

AREA OF EXPERTISE

Ecological and human health risk assessment

Site characterization and remediation

TRAINING/CERTIFICATIONS

OSHA HAZWOPER 40-hour training and annual 8-hour refresher certifications

First Aid/CPR Training

OFFICE

Pittsburgh, PA

YEARS OF EXPERIENCE

6

YEARS WITH TETRA TECH

2

RELEVANT EXPERIENCE

RISK ASSESSMENT

Environmental Scientist, Ecological Risk Assessment, Goddard Space Flight Center, Maryland; February 2023 – Present. Creates Constituents of Potential Concern tables and Food Chain Modeling tables for ecological health risk assessment and writes reports.

Environmental Scientist, Ecological Risk Assessment, Naval Support Facility Dahlgren, Virginia; December 2023 – Present. Creates Constituents of Potential Concern tables and Food Chain Modeling tables for ecological health risk assessment and writes reports.

Environmental Scientist, Human Health Risk Assessment, Poplar Point, Washington D.C.; September 2023 – Present. Creates tables for human health risk assessment and writes reports.

Environmental Scientist, Human Health and Ecological Risk Assessment, Marine Corps Recruit Depot, Parris Island, SC; May 2022 – Present. Creates Constituents of Potential Concern tables and Food Chain Modeling tables for human and ecological health risk assessment and writes reports.

Environmental Scientist, Human Health and Ecological Risk Assessment, Naval Weapons Industrial Reserve Plant Calverton, Calverton, NY; May 2023 – Present. Creates Constituents of Potential Concern tables and Food Chain Modeling tables for human and ecological health risk assessment and writes reports.

Environmental Scientist, Human Health and Ecological Risk Assessment, Naval Air Station Joint Reserve Base Forth Worth, Fort Worth, TX; May 2023 – June 2023. Created Constituents of Potential Concern tables and Food Chain Modeling tables for human and ecological health risk assessment and wrote reports.

Environmental Scientist, Ecological Risk Assessment, Naval Air Station Oceana; November 2022 – December 2022. Created Constituents of Potential Concern tables and Food Chain Modeling tables for ecological risk assessment and wrote reports.

Environmental Scientist, Human Health and Ecological Risk Assessment, Naval Station Newport, RI; May - August 2022. Created Constituents of Potential Concern tables and Food Chain Modeling tables for human and ecological health risk assessment reports.

Environmental Scientist, Human Health and Ecological Risk Assessment, NAS Whiting Field OLF Barin, AL; March 2022. Created Constituents of Potential Concern tables for human and ecological health risk assessment reports.

Environmental Scientist, Human Health Risk Assessment, Former NAS Dallas, TX; April 2022. Prepared Constituents of Potential Concern tables and Exposure Point Concentration Summary tables for a human health risk assessment report.

Consultant 2, Confidential Client, KY, 2019. Prepared an ecological report with extensive data analysis and quality assurance for fish tissue sample and water quality data to determine if a power plant was responsible for water pollution.

Environmental Specialist, Numerous Clients, US, 2018. Conducted over 50 Risk Assessments and Program Audits for *Legionella* in water distribution systems in commercial buildings, residential buildings, and hospitals. Prepared Risk Assessment and Water Safety Management Plans in accordance with ASHRAE Standard 188. Collected potable water and cooling tower water samples to determine presence or absence of *Legionella* in water system.

PFAS INVESTIGATIONS

Environmental Scientist, PFAS Off-Base Drinking Water Investigation Support; Navy CLEAN Contract; Marine Corp Air Station (MCAS) Beaufort, SC; December 2022 – January 2023. Acts as a Field Operations Lead (FOL) to support off-base drinking water investigation where a potential release of PFAS was found within one mile of off-base drinking water wells.

Environmental Scientist, PFAS Off-Base Drinking Water Investigation Support; Navy CLEAN Contract; NSA Mechanicsburg, PA; November 2021 – Present. Provides project support for off-base drinking water investigation where a potential release of PFAS was found within one mile of off-base drinking water wells. Support included extensive county parcel, utility provider, address, and owner search. Documented communications with residents of outreach area as well as data management and preparation of data deliverables.

Environmental Scientist, PFAS Off-Base Drinking Water Investigation Support; Navy CLEAN Contract; NSA Cutler, ME; November 2021 – Present. Provides project support for off-base drinking water investigation where a potential release of PFAS was found within one mile of off-base drinking water wells. Support includes data management and compilation of resident well-water sampling data deliverables.

Environmental Scientist, PFAS Off-Base Drinking Water Investigation Support; Navy CLEAN Contract; Former NAS Brunswick, ME; November 2021 – Present. Provides project support for off-base drinking water investigation where a potential release of PFAS was found within one mile of an off-base drinking water supply. Support includes data management and compilation of resident well-water sampling deliverables.

Environmental Scientist, PFAS Off-Base Drinking Water Investigation Support; Navy CLEAN Contract; Former NAS Weymouth, MA; November 2021 – Present. Provides project support for off-base drinking water investigation where a potential release of PFAS was found within one mile of an off-base drinking water supply. Support includes data management and compilation of resident well-water sampling deliverables.

Environmental Scientist, PFAS Site Inspection; Navy CLEAN Contract; NSA Crane, IN; February 2022 – March 2022. Prepared report and tables for Site Inspection of ten potential PFAS release areas at NSA Crane.

Environmental Scientist, PFAS Preliminary Assessment; Navy CLEAN Contract; NSB New London Special Areas, NY; February 2022. Conducted interviews with Navy personal regarding historical and current uses of the facility and presence of AFFF in support of the preparation of a Preliminary Assessment for identifying potential historical sources or releases of PFAS.

FIVE YEAR REVIEWS

Environmental Scientist, U.S. Navy, Sixth Five-Year Review for Naval Station Newport, Rhode Island; January 2024 – Present. Assisted in preparing the five-year review report including Question B.

Environmental Scientist, US Navy, Fifth Five-Year Review for Naval Weapons Station Earle, NJ; February 2022 – February 2023. Assisted in preparing the five-year review report including site status, site conditions, and schedules projecting future deliverables and site activities.

Environmental Scientist, US Navy, Fourth Five-Year Review for Portsmouth Naval Shipyard, VA; December 2021. Assisted in preparing the five-year review report including site status, site conditions, and schedules projecting future deliverables and site activities.

DUE DILIGENCE

Environmental Scientist, NASA, Phase I Environmental Site Assessment, March 2022. Performed historical research, reviewed, and interpreted information and data from historical reports, prior subsurface investigations, and regulatory data for a NASA property. Prepared a Phase I ESA Report based on historical background and site reconnaissance findings.

Environmental Scientist, Confidential Clients, Pennsylvania, West Virginia, and Ohio, 2020-2021. Conducted over 30 Phase I and Phase II Environmental Site Assessments (ESA) in accordance with current ASTM standards for due diligence and property transaction purposes. Properties included industrial facilities, petroleum stations, retail shopping centers, commercial office buildings, apartment buildings and senior living homes. Performed historical research, reviewed, and interpreted information and data from historical reports, prior subsurface investigations, and regulatory data for each prospective project.

Environmental Scientist, Confidential Clients, Pennsylvania, West Virginia, and Ohio, 2020-2021. Prepared site-specific Sampling and Analysis Plans and coordinated Phase II ESA field Activities based on recognized identified conditions identified during Phase I ESA for numerous projects.

REMEDIATION

Environmental Scientist, Confidential Clients, PA, 2020-2021. Prepared quarterly remedial action progress reports (RAPRs), remedial action plans (RAPs) site characterization reports (SCRs) for Pennsylvania Act 2 sites including report preparation, data analysis and interpretation, generated graphs, and created figures using AutoCad.

Environmental Scientist, Numerous Clients, PA, 2020-2021. Prepared site characterization and remedial action plans for Pennsylvania Act 2 sites including report writing.

COMPLIANCE AND PERMITTING

Environmental Scientist, Numerous Clients, PA, 2020-2021. Prepared reports including Tier II, Residual Waste Reports, Form 25Rs, and Form 26Rs in accordance with the regulatory guidelines.

Environmental Scientist, Numerous Clients, PA, 2020-2021. Submitted monthly discharge monitoring reports to the Pennsylvania Department of Environmental Protection in accordance with the NPDES permit and DEP guidelines.

Engineering Specialist, Numerous Clients, FL, 2019-2020. Reviewed over 400 industrial wastewater, potable water, and domestic wastewater permit applications. Determined if permit applications met regulatory requirements and assisted clients to meet the Florida Administrative codes and regulations. Wrote and approved permit applications once regulations were sufficient.

Engineering Specialist, Numerous Clients, FL, 2019-2020. Conducted over 300 industrial wastewater, potable water, and domestic wastewater permit determinations to assist clients if a permit would be required for construction.

Engineering Specialist, Numerous Clients, FL, 2019-2020. Conducted site inspections and led pre-application meetings for new industrial wastewater facilities and permit renewals. Assisted clients in car wash and concrete batch plant construction design to meet the Florida DEP regulations.

SCIENTIFIC/TECHNICAL PUBLICATIONS

Madia, Marissa. 2018. Environmental Assessment of Road Brining and Injection Wells for Disposal of Oil and Gas Liquid Waste. Master's Thesis, Duquesne University.

Xu, J, Benabou, K, Cui, X, Madia, M, Tzeng, E, Billiar, T, Watkins, S, and Sachdev, U. TLR4 Deters Perfusion Recovery and Upregulates Toll-like Receptor 2 (TLR2) in Ischemic Skeletal Muscle and Endothelial Cells. Molecular Medicine (Cambridge, Mass.). July 14, 2015.

CHRONOLOGICAL HISTORY

Environmental Scientist II, Tetra Tech, Inc., November 2021 to Present, Pittsburgh, PA
Project Specialist, CORE Environmental Services, October 2020 to October 2021, Pittsburgh, PA
Engineering Specialist, Florida Department of Environmental Protection, 2019-2020, Tampa, FL
Consultant II, Ramboll, 2019, Tampa, FL
Environmental Specialist, SPL Consulting, 2018-2019, Pittsburgh, PA
Graduate Research Assistant, 2016-2018, Pittsburgh, PA