

K23-985

COOPERATIVE ENDEAVOR AGREEMENT

BY AND BETWEEN

THE CITY OF NEW ORLEANS

AND

VIRGINIA POLYTECHNIC INSTITUTE & STATE UNIVERSITY

"COORDINATED TRAINING AND EVALUATION OF PROFESSIONALS AND PRE-SERVICE STUDENTS TO ACHIEVE AN INTEGRATED WORKFORCE TO MITIGATE COMMUNITY VECTOR-BORNE DISEASE RISKS IN THE GULF COAST REGION"

THIS COOPERATIVE ENDEAVOR AGREEMENT (the "Agreement") is entered into by and between the City of New Orleans, represented by LaToya Cantrell, Mayor (the "City"), and Virginia Polytechnic Institute and State University, represented by Trudy M. Riley, Associate Vice President for Research and Innovation Sponsored Programs ("Virginia Tech"). The City and Virginia Tech may sometimes each be referred to as a "Party," and collectively, as the "Parties." The Agreement is effective as of July 1, 2023 (the "Effective Date").

RECITALS

WHEREAS, the City is a political subdivision of the State of Louisiana; and

WHEREAS, Virginia Tech is a public university in the Commonwealth of Virginia, located at 300 Turner Street Northwest, Suite 4200, Blacksburg, Virginia 24060; and

WHEREAS, pursuant to Article 7, Section (14)(C) of the Louisiana Constitution of 1974, and related statutes, and Section 9-314 of the Home Rule Charter of the City of New Orleans, the City may enter into cooperative endeavors with the State of Louisiana, its political subdivisions and corporations, the United States and its agencies, and any public or private corporation, association, or individual with regard to cooperative financing and other economic development activities, the procurement and development of immovable property, joint planning and implementation of public works, the joint use of facilities, joint research and program implementation activities, joint funding initiatives, and other similar activities in support of public education, community development, housing rehabilitation, economic growth, and other public purposes; and

WHEREAS, the City, through the New Orleans Mosquito, Termite, & Rodent Control Board ("NOMTRCB"), will serve as the Principal Investigator for the Centers for Disease Control and Prevention Grant, entitled: Coordinated Training and Evaluation of Professionals and Pre-Service Students to Achieve an Integrated Workforce to Mitigate Community Vector-Borne Disease Risks in the Gulf Coast Region ("Grant Award"), herein incorporated as Exhibit "A"; and

WHEREAS, Virginia Tech will assist the City in performing services detailed in the grant proposal entitled: Coordinated Training and Evaluation of Pest Management, Vector Control District, Public Health, Sanitary, and Animal Health Professionals to Achieve an Integrated Workforce to Mitigate Community Vector-Borne Disease Risk in the Gulf Coast Region, which will lead to an increased awareness of vector-borne diseases, more consistent training between agencies, and a coordination of regional centers when delivering information to a variety of audiences needing the expertise of specialists, as outlined in the City's Project Narrative, herein incorporated as Exhibit "B", and Project Summary, herein incorporated as Exhibit "C"; and

WHEREAS, the City and Virginia Tech desire to accomplish a valuable public purpose of creating a strong, comprehensive, multi-sectoral Gulf South regional network that combats the effects of inadequate staffing, gaps in mosquito surveillance and controls core competencies within Mosquito Control Abatement Districts; and

NOW THEREFORE, the City and Virginia Tech, each having the authority to do so, agree as follows:

ARTICLE I - VIRGINIA TECH'S OBLIGATIONS

A. **Virginia Tech's Services.** Virginia Tech will be led by Associate Professor Rachel Lin Weaver, School of Visual Arts, who will:

1. Develop media content around vector-borne disease prevention and education in partnership with the City.
2. Oversee the assessment and evaluation of existing communications, media, and educational materials related to vector control in all five of the Gulf South states addressed within the Project Narrative and Project Summary.
3. Carefully gather, collate, and analyze existing educational and media content.
4. Provide creative project development and coordination.
5. Participate in numerous grant subcommittees to gain deeper knowledge.
6. Lead a team of filmmakers and work closely alongside vector-borne disease specialists.
7. Establish clear production goals towards regionally unified and updated media that successfully addresses vector-borne disease education, awareness, and prevention in the Gulf South.

B. **Invoices.** Virginia Tech will provide quarterly invoices and financial reports in accordance with its attached budget justification, herein incorporated as Exhibit "D", and budget allocation submitted to the Centers for Disease Control and Prevention ("CDC") Grant Award 1NUS0CK000638-01-00, herein incorporated as Exhibit "A". Virginia Tech must upload the invoices in Brass, the City's supplier portal. Payment is contingent on the submission of Virginia Tech's quarterly reports and approval of the completed services outlined in the quarterly reports by Dr. Claudia Riegel, Principal Investigator.

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ARTICLE II - THE CITY'S OBLIGATIONS

A. Administration. The City will:

1. Administer this Agreement through the New Orleans Mosquito, Termite, and Rodent Control Board (the "Department").

2. Provide Virginia Tech with the Grant Award information and supporting documentation submitted to the CDC relevant to Grant Award 1NUS0CK000638-01-00, herein incorporated as Exhibit "A".

3. Provide Virginia Tech with all documents deemed necessary for Virginia Tech's performance of any work required under this Agreement, as outlined in the Project Narrative, herein incorporated as Exhibit "B" and in the Project Summary, herein incorporated as Exhibit "C".

4. Provide access to Department personnel to discuss the required services during normal working hours, as requested by Virginia Tech.

B. Payment. The City will make payments to Virginia Tech, not to exceed the maximum amount funded in Article III, Section (A) of the Agreement, based upon Virginia Tech's certified invoices, except:

1. The City's obligation to pay is contingent upon Virginia Tech's: (a) submission of complete and accurate quarterly reports, an example is attached and incorporated herein as Exhibit "E"; (b) submission of quarterly financial reports; (c) submission of complete and accurate invoices; and (d) satisfactory performance of the services and conditions required by this Agreement.

2. The City, in its discretion, may withhold payment of any disputed amounts, and no interest shall accrue on any amount withheld pending the resolution of the dispute.

3. The City may set-off any amounts due to Virginia Tech with any amounts deemed by the City to be owed by the City by Virginia Tech pursuant to this Agreement.

4. All funding owed to Virginia Tech under this Agreement is contingent upon the appropriation and allocation of funds for work under this Agreement by the City.

5. The City is not obligated, under any circumstances, to pay for any work performed or costs incurred by Virginia Tech that: exceed the maximum aggregate amount payable established by this Agreement; are beyond the scope or duration of this Agreement; arise from or relate to any unauthorized change order within the scope of the Agreement; are for services performed on days on which services were suspended due to circumstances beyond the control of the City, and no work has taken place; arise from or relate to the correction of errors or omissions of Virginia Tech or its subcontractors, if applicable; or the City is not expressly obligated to pay under this Agreement.

6. Unless otherwise agreed by the City, payment terms are Net 30 days upon the provision of accepted services, described under this Agreement, and upon the City's receipt of a properly submitted invoice via the City's supplier portal each quarter.

7. If this Agreement is terminated for any reason, the City will pay Virginia Tech only for the work requested and satisfactorily performed by Virginia Tech through the date of termination, except as otherwise provided in this Agreement.

ARTICLE III – FUNDING

A. Maximum Amount. The maximum amount funded by the City under this Agreement is one hundred thousand dollars (\$100,000.00). A purchase order will be issued upon the Agreement's execution by the Parties.

B. This Agreement does not guarantee any amount of work or funding except as specifically authorized by the City in accordance with the terms and conditions of this Agreement.

C. Virginia Tech can resubmit any changes to Dr. Claudia Riegel, Principal Investigator for written approval. Funding within categories can change with written approval by Dr. Claudia Riegel, Principal Investigator.

D. If funding is approved for year two, Virginia Tech can carry over unspent funds.

E. For payment, Virginia Tech must submit its financial reports along with its quarterly reports. Failure to complete the work described under this Agreement may result in a reduction of funding. Any changes in Virginia Tech's scope of work need to be approved in writing by Dr. Claudia Riegel, Principal Investigator.

ARTICLE IV - DURATION AND TERMINATION

A. Term. The term of this Agreement is one (1) year from the Effective Date, provided there is an encumbrance of funds by the New Orleans Mosquito, Termite, & Rodent Control Board, from the funds allotted by the CDC and approved by the Chief Administrative Officer and the City Council. This Agreement shall automatically terminate with respect to any period of time for which funds are not so encumbered.

B. Extension. This Agreement may be extended at the option of the City, provided that funds are allocated by the CDC, and the extension of the Agreement facilitates the continuity of services provided herein. This Agreement may be extended by the City for four (4) additional one-year terms.

C. Termination for Convenience. The Parties may terminate this Agreement at any time during the term of the Agreement by giving the other Party written notice of the termination at

least sixty (60) calendar days before the intended date of termination. Upon termination by either Party, Virginia Tech will be reimbursed for all costs incurred and non-cancellable commitments, that were previously approved by Dr. Claudia Riegel, Principal Investigator, in connection with the Grant Award up to and including the effective date of termination provided in the notice of termination. Virginia Tech will provide media content, assessments, evaluations, and information generated through the effective date of termination provided in the notice of termination.

D. Termination for Cause. The City may terminate this Agreement immediately for cause by sending Virginia Tech written notice. "Cause" includes without limitation any failure to perform any obligation or abide by any condition of this Agreement or the failure of any representation or warranty in this Agreement. The termination shall take effect as of the effective date provided in the notice of termination. If a termination for cause is subsequently challenged in a court of law, and the challenging Party prevails, the termination will be deemed to be a termination for convenience effective thirty (30) days from the date of the original written notice of termination for cause was sent to the challenging Party; no further notice will be required. Upon termination, Virginia Tech will be reimbursed for all costs incurred and non-cancellable commitments, that were previously approved by Dr. Claudia Riegel, Principal Investigator, in connection with the Grant Award up to and including the effective date of termination provided in the notice of termination. Virginia Tech will provide the media content, assessments, evaluations, and information generated through the effective date of termination provided in the notice of termination.

E. Termination for Non-Appropriation. This Agreement will terminate immediately in the event of non-appropriation of funds sufficient to maintain this Agreement without the requirement of notice, and the City will not be liable for any amounts beyond the funds appropriated and encumbered for this Agreement.

ARTICLE V - INDEMNITY

A. Virginia Tech is and will be acting as an independent contractor in the performance of this work. Both parties shall be solely responsible, where found liable to the extent permitted by law for payment of any and all claims for loss, personal injury, death, property damage, or otherwise, arising out of any act or omission of its employees or agents in connection with the performance of this work. Nothing here constitutes a waiver, either express or implied, of the sovereign immunity of the Commonwealth of Virginia.

ARTICLE VI – INSURANCE

A. Virginia Tech is self-insured through the Commonwealth of Virginia Insurance Program. Except as otherwise noted, at all times during this Agreement or the duration of the performance of work required by this Agreement, Virginia Tech will maintain its self-insurance in full force and effect. Evidence of coverage shall be provided prior to the start of any activities/work, in conjunction with Virginia Tech's scope of work under the Agreement.

ARTICLE VII - PERFORMANCE MEASURES

A. Factors. The City will measure the performance of Virginia Tech according to the following non-exhaustive factors: work performed in compliance with the terms of the Agreement; staff availability; staff training; staff professionalism; staff experience; customer service; communication and accessibility; prompt and effective correction of situations and conditions; timeliness and completeness of submission of requested documentation (such as records, receipts, invoices, insurance certificates, and computer-generated reports).

B. Failure to Perform. Failure by either Party to comply with any material term or condition under this Agreement shall entitle the other Party to give the Party in default written notice requiring it to remedy such default. If the Party in default has not cured such default within thirty (30) calendar days of receipt of such notice (or other reasonable time as allowed by such notice, the notifying Party shall be entitled to terminate this Agreement and to seek recovery from the Party in default. The termination shall be given in writing and shall take effect as of the effective date of termination provided in the notice of termination.

ARTICLE VIII - NON-DISCRIMINATION

A. Equal Employment Opportunity. In all hiring or employment made possible by, or resulting from this Agreement, Virginia Tech (1) will not discriminate against any employee or applicant for employment because of race, color, religion, sex, gender, age, physical or mental disability, national origin, sexual orientation, creed, culture, or ancestry, and (2) where applicable, will take affirmative action to ensure that Virginia Tech's employees are treated during employment without regard to their race, color, religion, sex, gender, age, physical or mental disability, national origin, sexual orientation, creed, culture, or ancestry. This requirement shall apply to, but not be limited to the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship. All solicitations or advertisements for employees shall state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, gender, age, physical or mental disability, national origin, sexual orientation, creed, culture, or ancestry.

B. Non-Discrimination. In the performance of this Agreement, Virginia Tech will not discriminate on the basis, whether in fact or perception, of a person's race, color, creed, religion, national origin, ancestry, age, sex, gender, sexual orientation, gender identity, domestic partner status, marital status, physical or mental disability, or AIDS- or HIV-status against (1) any employee of the City working with Virginia Tech in any of Virginia Tech's operations within Orleans Parish or (2) any person seeking accommodations, advantages, facilities, privileges, services, or membership in all business, social, or other establishments or organizations operated by Virginia Tech. Virginia Tech agrees to comply with and abide by all applicable federal, state and local laws relating to non-discrimination, including, without limitation, Title VI of the Civil Rights Act of 1964, Section V of the Rehabilitation Act of 1973, and the Americans with

Disabilities Act of 1990.

C. Incorporation into Subcontracts. Virginia Tech will incorporate the terms and conditions of this Article into all subcontracts, by reference or otherwise, and will require all subcontractors to comply with those provisions.

D. Termination for Breach. The City may terminate this Agreement for cause if Virginia Tech fails to comply with any obligation in this Article, which failure is a material breach of this Agreement.

ARTICLE IX- FORCE MAJEURE

A. Event. An event of Force Majeure will include any event or occurrence not reasonably foreseeable by the Parties at the execution of this Agreement, which will include, but not be limited to, abnormally severe and unusual weather conditions or other acts of God (including tropical weather events, tornados, hurricanes, and flooding); declarations of emergency; shortages of labor or materials (not caused by either Party); riots; terrorism; acts of public enemy; war; sabotage; cyber-attacks, threats, or incidents; epidemics or pandemics; court or governmental order; or any other cause whatsoever beyond the reasonable control of a Party, provided such event was not caused by the negligence or misconduct of a Party, by the failure of a Party to comply with applicable laws, or by the breach of this Agreement.

B. Notice. To seek the benefit of this Article, a Party must provide notice in writing to the other Party stating: (1) an event triggering this Article has occurred; (2) the anticipated effect of the Force Majeure event on performance; and (3) the expected duration of the delay, if the Agreement is being suspended.

C. Effect.

1. Upon the occurrence of a Force Majeure event, for which a Party has provided required notice, the Parties may agree to:
 - a. Suspend this Agreement for a duration to be set by the Parties, not to exceed ninety (90) days. During such time of suspension, the Parties will not be liable nor responsible for performance of their respective obligations under this Agreement, and there will be excluded from the computation of such period of time any delays directly due to the occurrence of the Force Majeure event. During any such period of suspension, the Parties must take all reasonable actions to mitigate against the effects of the Force Majeure event and to ensure the prompt resumption of performance as agreed by the Parties; or
 - b. Terminate this Agreement, either immediately or after one or more periods of suspension, effective on notice to the other Party and without any further compensation due.
2. Notwithstanding Section (C)(1) above, the obligations relating to making payments when due (for services or materials already provided) and those obligations

specified to survive in the Agreement will be unaffected by any suspension or termination.

ARTICLE X - NOTICE

A. In General. Except for any routine communication, any notice, demand, communication, or request required or permitted under this Agreement will be given in writing and delivered in person or by certified mail, return receipt requested as follows:

1. To the City:

Claudia Riegel, Ph.D.
Director
New Orleans Mosquito, Termite, & Rodent Control Board
2100 Leon C. Simon Drive
New Orleans, LA 70122

&

Donesia D. Turner
City Attorney
City of New Orleans
1300 Perdido Street, Suite 5E03
New Orleans, LA 70112

2. To Virginia Tech:

Trudy M. Riley
300 Turner Street NW
Suite 4200
Blacksburg, VA 24060
ospdirector@vt.edu

B. Effectiveness. Notices are effective when received, except any notice that is not received due to the intended recipient's refusal or avoidance of delivery. If the intended recipient refuses or avoids delivery, then the date of the first attempted delivery will be deemed the date of receipt.

C. Notification of Change. Each party is responsible for notifying the other in writing that references this Agreement of any changes in its address(es) set forth above.

ARTICLE XI - ADDITIONAL PROVISIONS

A. Amendment. No amendment of or modification to this Agreement shall be valid unless and until executed in writing by the duly authorized representatives of both Parties to this

Agreement.

B. Assignment. Neither Virginia Tech nor any of its subcontractors, if applicable may assign or transfer its rights, duties, or obligations under this Agreement without the prior written consent of the City.

C. Construction of Agreement. Neither party will be deemed to have drafted this Agreement. This Agreement has been reviewed by the Parties and shall be construed and interpreted according to the ordinary meaning of the words used so as to fairly accomplish the purposes and intentions of the Parties. No term of this Agreement shall be construed or resolved in favor of or against the City or Virginia Tech on the basis of which party drafted the uncertain or ambiguous language. The headings and captions of this Agreement are provided for convenience only and are not intended to have effect in the construction or interpretation of this Agreement. Where appropriate, the singular includes the plural and neutral words and words of any gender shall include the neutral and other gender.

D. Cost Recovery. If a Party fails to meet its contractual obligations, that Party shall reimburse the other Party or disgorge anything of value or economic benefit received from the other Party.

E. Entire Agreement. This Agreement, including all incorporated documents, constitutes the final and complete agreement and understanding between the Parties. All prior and contemporaneous agreements and understandings, whether oral or written, are superseded by this Agreement and are without effect to vary or alter any terms or conditions of this Agreement.

F. Exhibits. The following exhibits will be and are incorporated into this Agreement: Exhibit A: CDC Notice of Award; Exhibit B: Project Narrative; Exhibit C: Project Summary; Exhibit D: Budget and Budget Narrative; and Exhibit E: Quarterly Report Template.

G. Limitations of the City's Obligations. The City has no obligations not explicitly set forth in this Agreement or any incorporated documents or expressly imposed by law.

H. No Third-Party Beneficiaries. This Agreement is entered into for the exclusive benefit of the Parties, and the Parties expressly disclaim any intent to benefit anyone not a party to this Agreement.

I. Non-Exclusivity. This Agreement is non-exclusive, and Virginia Tech may provide services to other clients, subject to the City's approval of any potential conflicts with the performance of this Agreement. The City may engage the services of others for the provision of some or all of the work to be performed under this Agreement.

J. Non-Solicitation Statement. Virginia Tech has not employed nor retained any company or person, other than a bona fide employee working solely for it, to solicit or secure this Agreement. Virginia Tech has not paid nor agreed to pay any person, other than a bona fide employee working for it, any fee, commission, percentage, gift, or any other consideration contingent upon or resulting from this Agreement.

K. Non-Waiver. The failure of either party to insist upon strict compliance with any provision of this Agreement, to enforce any right or to seek any remedy upon discovery of any

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default or breach of the other party at such time as the initial discovery of the existence of such noncompliance, right, default or breach shall not affect nor constitute a waiver of either party's right to insist upon such compliance, exercise such right or seek such remedy with respect to that default or breach or any prior contemporaneous or subsequent default or breach.

L. Order of Documents. In the event of any conflict between the provisions of this Agreement any incorporated documents, the terms and conditions of the documents will apply in this order: the Agreement; Exhibit A: CDC Notice of Award; Exhibit B: Project Narrative; Exhibit C: Project Summary; Exhibit D: Budget and Budget Narrative; and Exhibit E: Quarterly Report Template.

M. Ownership Interest Disclosure. If applicable and upon the request of the City, Virginia Tech will provide the City with a sworn affidavit listing all natural or artificial persons with an ownership interest in Virginia Tech and stating that no other person holds an ownership interest in Virginia Tech via a counter letter. For the purposes of this provision, an "ownership interest" shall not be deemed to include ownership of stock in a publicly traded corporation or ownership of an interest in a mutual fund or trust that holds an interest in a publicly traded corporation. If Virginia Tech fails to submit the required affidavit, the City may, after thirty (30) days' written notice to Virginia Tech, take such action as may be necessary to cause the suspension of any further payments until such required affidavits are submitted.

N. Ownership of Records. Upon final payment, all data collected and all products of work prepared, created or modified by Virginia Tech in the performance of this Agreement, including without limitation any and all notes, tables, graphs, reports, files, computer programs, source code, documents, records, disks, original drawings or other such material, regardless of form and whether finished or unfinished, but excluding Virginia Tech's personnel and administrative records and any tools, systems, and information used by Virginia Tech to perform the services under this Agreement, including computer software (object code and source code), know-how, methodologies, equipment, and processes and any related intellectual property (collectively, "Work Product") will be the exclusive property of the City and the City will have all right, title and interest in any Work Product, including without limitation the right to secure and maintain any copyright, trademark, or patent of Work Product in the City's name. No Work Product may be reproduced in any form without the City's express written consent. The City may use and distribute any Work Product for any purpose the City deems appropriate without Virginia Tech's consent and for no additional consideration to Virginia Tech.

O. Prohibition of Financial Interest in Agreement. No elected official or employee of the City shall have a financial interest, direct or indirect, in this Agreement. For purposes of this provision, a financial interest held by the spouse, child, or parent of any elected official or employee of the City shall be deemed to be a financial interest of such elected official or employee of the City. Any willful violation of this provision, with the expressed or implied knowledge of Virginia Tech, shall render this Agreement voidable by the City and shall entitle the City to recover, in addition to any other rights and remedies available to the City, all monies paid by the City to Virginia Tech pursuant to this Agreement without regard to Virginia Tech's otherwise satisfactory performance of the Agreement.

P. Prohibition on Political Activity. None of the funds, materials, property, or services provided directly or indirectly under the terms of this Agreement shall be used in the performance of this Agreement for any partisan political activity, or to further the election or defeat of any candidate for public office.

Q. Remedies Cumulative. No remedy set forth in the Agreement or otherwise conferred upon or reserved to any party shall be considered exclusive of any other remedy available to a party. Rather, each remedy shall be deemed distinct, separate, and cumulative and each may be exercised from time to time as often as the occasion may arise or as may be deemed expedient.

R. Severability. Should a court of competent jurisdiction find any provision of this Agreement to be unenforceable as written, the unenforceable provision should be reformed, if possible, so that it is enforceable to the maximum extent permitted by law. If reformation is not possible, the unenforceable provision shall be fully severable. The remaining provisions of the Agreement shall remain in full force and effect and shall be construed and enforced as if the unenforceable provision was never a part of the Agreement.

S. Special Conditions for CDC Contracts. The "Terms and Conditions for CDC Contracts," attached as Exhibit "A" to this Agreement, are expressly incorporated into the Agreement and effective immediately if the City has indicated it will or may seek reimbursement from the CDC in the procurement documents or upon the City's notice to Virginia Tech that the City intends to seek reimbursement from the CDC in connection with the work to be performed under this Agreement.

T. Subcontractor Reporting. If applicable and upon the City's request, Virginia Tech will provide a list of all natural or artificial persons who are retained by Virginia Tech at the time of the Agreement's execution and who are expected to perform work as subcontractors in connection with Virginia Tech's work for the City. For any subcontractor proposed to be retained by Virginia Tech to perform work on the Agreement with the City, Virginia Tech must provide notice to the City within thirty (30) days of retaining that subcontractor. If Virginia Tech fails to submit the required lists and notices, the City may, after thirty (30) days' written notice to Virginia Tech, take any action it deems necessary, including, without limitation, causing the suspension of any payments, until the required lists and notices are submitted.

U. Survival of Certain Provisions. All representations and warranties and all obligations concerning record retention, inspections, audits, ownership, insurance, indemnification, payment, remedies, jurisdiction, and choice of law shall survive the expiration, suspension, or termination of this Agreement and continue in full force and effect.

V. Terms Binding. The terms and conditions of this Agreement are binding on any heirs, successors, transferees, and assigns.

ARTICLE XII – COUNTERPARTS

This Agreement may be executed in one or more counterparts, each of which shall be deemed to be an original copy of this Agreement, but all of which, when taken together, shall

constitute one and the same agreement.

ARTICLE XIII - ELECTRONIC SIGNATURE AND DELIVERY

The Parties agree that a manually signed copy of this Agreement and any other document(s) attached to this Agreement delivered by email shall be deemed to have the same legal effect as delivery of an originally signed copy of this Agreement. No legally binding obligation shall be created with respect to a party until such party has delivered or caused to be delivered a manually signed copy of this Agreement.

[SIGNATURES CONTAINED ON THE NEXT PAGE]

[The remainder of this page is intentionally left blank.]

IN WITNESS WHEREOF, the City and Virginia Tech, through their duly authorized representatives, execute this Agreement.

CITY OF NEW ORLEANS

BY: 
LATOYA CANTRELL, MAYOR

Executed on this 7th of November, 2023.

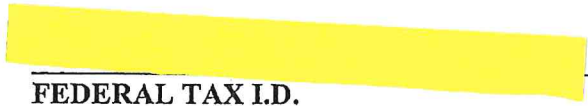
FORM AND LEGALITY APPROVED:
LAW DEPARTMENT

BY: 

PRINTED NAME: Andrew Gregorian

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

BY: Laurie P. Magle for
TRUDY M. RILEY, ASSOCIATE VICE PRESIDENT FOR RESEARCH
AND INNOVATION, SPONSORED PROGRAMS


FEDERAL TAX I.D.

[EXHIBITS FOLLOW ON THE NEXT PAGES]

THE EXHIBIT LIST

EXHIBIT A:	CDC NOTICE OF AWARD
EXHIBIT B:	PROJECT NARRATIVE
EXHIBIT C:	PROJECT SUMMARY
EXHIBIT D:	BUDGET AND/OR BUDGET NARRATIVE
EXHIBIT E:	QUARTERLY REPORT TEMPLATE

EXHIBIT A

CDC NOTICE OF AWARD



DEPARTMENT OF HEALTH AND HUMAN SERVICES
Centers for Disease Control and Prevention

Notice of Award

Award# 1 NU50CK000638-01-00
FAIN# NU50CK000638
Federal Award Date: 06/28/2023

Recipient Information	Federal Award Information
1. Recipient Name CITY OF NEW ORLEANS 2100 Leon C Simon Dr New Orleans, LA 70122-3548	11. Award Number 1 NU50CK000638-01-00 12. Unique Federal Award Identification Number (FAIN) NU50CK000638 13. Statutory Authority 301(A)AND317(K)(2)PUS43USC241(A)247B(K)2
2. Congressional District of Recipient 02 3. Payment System Identifier (ID) 1726000969A1 4. Employer Identification Number (EIN) 726000969 5. Data Universal Numbering System (DUNS) 118981596 6. Recipient's Unique Entity Identifier (UEI) SIDG8N9NHKE3 7. Project Director or Principal Investigator Claudia Riegel Ph.D. criegel@nola.gov 504-658-2408	14. Federal Award Project Title Coordinated training and evaluation of professionals and pre-service students to achieve an integrated workforce to mitigate community vector-borne disease risks in the Gulf Coast region. 15. Assistance Listing Number 93.084 16. Assistance Listing Program Title Prevention of Disease, Disability, and Death by Infectious Diseases 17. Award Action Type New 18. Is the Award R&D? No
B. Authorized Official Ms. Donna Alexander Authorize Official dalexander@nola.gov 504-658-2440	Summary Federal Award Financial Information 19. Budget Period Start Date 07/01/2023 - End Date 06/30/2024 20. Total Amount of Federal Funds Obligated by this Action \$1,643,463.00 20a. Direct Cost Amount \$1,643,463.00 20b. Indirect Cost Amount \$0.00 21. Authorized Carryover \$0.00 22. Offset \$0.00 23. Total Amount of Federal Funds Obligated this budget period \$0.00 24. Total Approved Cost Sharing or Matching, where applicable \$0.00 25. Total Federal and Non-Federal Approved this Budget Period \$1,643,463.00 26. Period of Performance Start Date 07/01/2023 - End Date 06/30/2028 27. Total Amount of the Federal Award Including Approved Cost Sharing or Matching this Period of Performance \$1,643,463.00
Federal Agency Information CDC Office of Financial Resources 9. Awarding Agency Contact Information Benita Bosier-Ingram GIMC uba8@cdc.gov 111-111-1111 10. Program Official Contact Information Ms. Vern Soltero Public Health Analyst Dengue Branch ccu4@cdc.gov 7877064244	28. Authorized Treatment of Program Income ADDITIONAL COSTS 29. Grants Management Officer - Signature Karen Ziou Grants Management Officer
30. Remarks	

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Cooperative Endeavor Agreement between
 The City of New Orleans and Virginia Polytechnic Institute and State University
 "Coordinated Training and Evaluation of Professionals and Pre-Service Students to Achieve an Integrated Workforce to Mitigate Community
 Vector-Borne Disease Risks in the Gulf Coast Region"
 Brass #5255; K23-985



DEPARTMENT OF HEALTH AND HUMAN SERVICES
Centers for Disease Control and Prevention

Notice of Award

Award# 1 NU50CK000638-01-00
FAIN# NU50CK000638
Federal Award Date: 06/28/2023

Recipient Information	
Recipient Name CITY OF NEW ORLEANS 2100 Leon C Simon Dr New Orleans, LA 70122-3548	
Congressional District of Recipient 02	
Payment Account Number and Type 1726000969A1	
Employer Identification Number (EIN) Data 726000969	
Universal Numbering System (DUNS) 118981596	
Recipient's Unique Entity Identifier (UEI) SIDGFN9NBKE3	
31. Assistance Type Cooperative Agreement	
32. Type of Award Other	

33. Approved Budget (Excludes Direct Assistance)	
i. Financial Assistance from the Federal Awarding Agency Only	
ii. Total project costs including grant funds and all other financial participation	
a. Salaries and Wages	\$210,251.00
b. Fringe Benefits	\$81,172.00
c. Total Personnel Costs	\$291,423.00
d. Equipment	\$0.00
e. Supplies	\$204,500.00
f. Travel	\$198,800.00
g. Construction	\$0.00
h. Other	\$878,740.00
i. Contractual	\$70,000.00
j. TOTAL DIRECT COSTS	\$1,643,463.00
k. INDIRECT COSTS	\$0.00
l. TOTAL APPROVED BUDGET	\$1,643,463.00
iii. Federal Share	\$1,643,463.00
iv. Non-Federal Share	\$0.00

34. Accounting Classification Codes						
FY-ACCOUNT NO.	DOCUMENT NO.	ADMINISTRATIVE CODE	OBJECT CLASS	CFDA NO.	AMT ACTION FINANCIAL ASSISTANCE	APPROPRIATION
4-9211175	23NU50CK000638	CK	410Q	93.084	\$1,643,463.00	75-23-0949



DEPARTMENT OF HEALTH AND HUMAN SERVICES Notice of Award

Centers for Disease Control and Prevention

Award# 1 NU50CK000638-01-00

FAIN# NU50CK000638

Federal Award Date: 06/28/2023

Direct Assistance

BUDGET CATEGORIES	PREVIOUS AMOUNT (A)	AMOUNT THIS ACTION (B)	TOTAL (A + B)
Personnel	\$0.00	\$0.00	\$0.00
Fringe Benefits	\$0.00	\$0.00	\$0.00
Travel	\$0.00	\$0.00	\$0.00
Equipment	\$0.00	\$0.00	\$0.00
Supplies	\$0.00	\$0.00	\$0.00
Contractual	\$0.00	\$0.00	\$0.00
Construction	\$0.00	\$0.00	\$0.00
Other	\$0.00	\$0.00	\$0.00
Total	\$0.00	\$0.00	\$0.00

AWARD ATTACHMENTS

CITY OF NEW ORLEANS

1 NU50CK000638-01-00

1. TERMS & CONDITIONS

AWARD INFORMATION

Incorporation: In addition to the federal laws, regulations, policies, and CDC General Terms and Conditions for Non-research awards at <https://www.cdc.gov/grants/federal-regulations-policies/index.html>, the Centers for Disease Control and Prevention (CDC) hereby incorporates Notice of Funding Opportunity (NOFO) number CDC-RFA-CK-23-0005, titled, *Strengthening Training, Evaluation, and Partnerships in the Prevention and Control of Vector-Borne Diseases* and application dated 2/3/2023, as may be amended, which are hereby made a part of this Non-research award, hereinafter referred to as the Notice of Award (NoA).

Approved Funding: Funding in the amount of \$1,643,463 is approved for the Year 01 budget period, which is 7/1/2023 through 6/30/2024. All future year funding will be based on satisfactory programmatic progress and the availability of funds.

The federal award amount is subject to adjustment based on total allowable costs incurred and/or the value of any third-party in-kind contribution when applicable.

Note: Refer to the Payment Information section for Payment Management System (PMS) subaccount information.

Financial Assistance Mechanism: Cooperative Agreement

Substantial Involvement by CDC: This is a cooperative agreement and CDC will have substantial programmatic involvement after the award is made. Substantial involvement is in addition to all post-award monitoring, technical assistance, and performance reviews undertaken in the normal course of stewardship of federal funds.

CDC program staff will assist, coordinate, or participate in carrying out effort under the award, and recipients agree to the responsibilities therein, as detailed in the NOFO.

Budget Revision Requirement: By 8/1/2023 the recipient must submit a revised budget with a narrative justification. Failure to submit the required information in a timely manner may adversely affect the future funding of this project. If the information cannot be provided by the due date, you are required to contact the GMS/GMO identified in the CDC Staff Contacts section of this notice before the due date.

Expanded Authority: The recipient is permitted the following expanded authority in the administration of the award.

- ☒ **Carryover of unobligated balances from one budget period to a subsequent budget period.** Unobligated funds may be used for purposes within the scope of the project as originally approved. Recipients will report use, or intended use, of unobligated funds in Section 12 "Remarks" of the annual Federal Financial Report. If the GMO determines that some or all the unobligated funds are not necessary to complete the project, the GMO may restrict the recipient's authority to automatically carry over unobligated balances in the future, use the balance to reduce or offset CDC funding for a subsequent budget period, or use a combination of these actions.

FUNDING RESTRICTIONS AND LIMITATIONS

Notice of Funding Opportunity (NOFO) Restrictions:

- Recipients may not use funds for research.
- Recipients may not use funds for clinical care except as allowed by law.
- Recipients may use funds only for reasonable program purposes, including personnel, travel, supplies, and services.
- Generally, recipients may not use funds to purchase furniture or equipment. Any such proposed spending must be clearly identified in the budget.
- Reimbursement of pre-award costs generally is not allowed, unless the CDC provides written approval to the recipient.
 - Other than for normal and recognized executive-legislative relationships, no funds may be used for:
 - publicity or propaganda purposes, for the preparation, distribution, or use of any material designed to support or defeat the enactment of legislation before any legislative body the salary or expenses of any grant or contract recipient, or agent acting for such recipient, related to any activity designed to influence the enactment of legislation, appropriations, regulation, administrative action, or Executive order proposed or pending before any legislative body
- See Additional Requirement (AR) 12 for detailed guidance on this prohibition and additional guidance on lobbying for CDC recipients.
- The direct and primary recipient in a cooperative agreement program must perform a substantial role in carrying out project outcomes and not merely serve as a conduit for an award to another party or provider who is ineligible.

Indirect Costs: are not approved for this award, because indirect costs were not requested.

Missing Consultant Elements – The consultant(s) listed below are **not** approved and the recipient may not begin the agreement until *Nature of Services Rendered, Relevance of the Service to the Project, Expected Rate of Compensation, Number of Days of Consultation, Organizational Affiliation, Method of Accountability*, is/are provided via GrantSolutions as an amendment action and GMO approval is provided via Notice of Award.

Consultant Name 1 – Phil Koehler
Consultant Name 2 - Imelda Moise
Consultant Name 3 – NACCHO

Missing Contractual Elements – The contract(s) listed below are not approved and the recipient may not begin the contract until *Period of Performance, Scope of Work, Itemized Budget & Justification, Method of Selection, Method of Accountability*, are provided via GrantSolutions as an amendment action and GMO approval is provided via Notice of Award.

Contractor 1 – Louisiana SPCA

Contractor 2 - Center of Invasive Species and Ecosystem Health at the University of Georgia

REPORTING REQUIREMENTS

Required Disclosures for Federal Awardee Performance and Integrity Information System (FAPIS): Consistent with 45 CFR 75.113, applicants and recipients must disclose in a timely manner, in writing to the CDC, with a copy to the HHS Office of Inspector General (OIG), all information related to violations of federal criminal law involving fraud, bribery, or gratuity violations potentially affecting the federal award. Subrecipients must disclose, in a timely manner in writing to the prime recipient (pass through entity) and the HHS OIG, all information related to violations of federal criminal law involving fraud, bribery, or gratuity violations potentially affecting the federal award. Disclosures must be sent in writing to the CDC and to the HHS OIG at the following addresses:

CDC, Office of Grants Services
Benita Bosier-Ingram, Grants Management Specialist
Centers for Disease Control and Prevention
Office of Grant Services
Branch 1
Email: ula8@cdc.gov (Include "Mandatory Grant Disclosures" in subject line)

AND

U.S. Department of Health and Human Services
Office of the Inspector General
ATTN: Mandatory Grant Disclosures, Intake
Coordinator 330 Independence Avenue, SW
Cohen Building, Room 5527
Washington, DC 20201
Fax: (202)-205-0604 (Include "Mandatory Grant Disclosures" in subject line) or
Email: MandatoryGranteeDisclosures@oig.hhs.gov

Recipients must include this mandatory disclosure requirement in all subawards and contracts under this award.

Failure to make required disclosures can result in any of the remedies described in 45 CFR 75.371. Remedies for noncompliance, including suspension or debarment (See 2 CFR parts 180 and 376, and 31 U.S.C. 3321).

CDC is required to report any termination of a federal award prior to the end of the period of performance due to material failure to comply with the terms and conditions of this award in the OMB-designated integrity and performance system accessible through SAM (currently FAPIIS). (45 CFR 75.372(b)) CDC must also notify the recipient if the federal award is terminated for failure to comply with the federal statutes, regulations, or terms and conditions of the federal award. (45 CFR 75.373(b))

The HHS Office of the Inspector General (OIG) maintains a toll-free number (1-800-HHS-TIPS [1- 800-447-8477]) for receiving information concerning fraud, waste, or abuse under grants and cooperative agreements. Information also may be submitted by e-mail to hhstips@oig.hhs.gov or by mail to Office of the Inspector General, Department of Health and Human Services, Attn: HOTLINE, 330 Independence Ave., SW, Washington DC 20201. Such reports are treated as sensitive material and submitters may decline to give their names if they choose to remain anonymous.

Payment Management System Subaccount: Funds awarded in support of approved activities have been obligated in a subaccount in the PMS, herein identified as the "P Account". Funds must be used in support of approved activities in the NOFO and the approved application.

The grant document number identified beginning on the bottom of Page 2 of the Notice of Award must be known to draw down funds.

EXHIBIT B

PROJECT NARRATIVE

Project Narrative

A. Background and Problem Statement

The increased threat posed by vector-borne diseases in the US over the past two decades has had unprecedented, widespread impacts on mosquito abatement districts, who are the front line of defense. Mosquito control abatement districts on the Gulf Coast are no exception. Of particular concern is the effect of inadequate staffing and funding, lack of competent staff, and gaps in mosquito surveillance and control core competencies, all which reduce the capacity of agencies to implement effective mosquito surveillance systems for the prevention and control of emerging and re-emerging arboviruses. These challenges were also identified by Hadler et al. in their 2014 study assessing the capacity of US mosquito abatement districts, in which 80% of the surveyed states (n=50) and four out of six local jurisdictions indicated the need for at least one additional full-time employee (FTE), for a total of 137.6 additional FTE needed (1). This consequently caused a reduction in the tracking of active human WNV cases in 22% of 56 jurisdictions (mosquito-control districts or territories), discontinued mosquito surveillance in 13%, reduced effort towards mosquito trapping and pathogen testing in 70%, and a 38% reduction in WNV surveillance personnel (2,3). These challenges are augmented by a reactive rather than preventative approach to pest control, a finding that was confirmed in Moise and colleagues' 2020 study of 35 mosquito control abatement districts and in similar studies conducted at the state level with mosquito control districts in Florida (4) and North Carolina (5). These studies, among many others, highlight the need for increased workforce and programmatic capacity for vector-borne disease prevention, an important area of improvement for emerging and zoonotic infectious disease prevention.

Although various training courses and workshops on mosquito-borne disease prevention, biology, epidemiology, and related topics exist for students and professionals in formal (e.g., universities) and informal (e.g., mosquito academics) settings, to our knowledge, there are no programs that offer comprehensive, integrated management training on a combination of medically important pests such as mosquitoes, rodents (fleas/mites), and ticks. Moreover, the extent of mosquito control training programs as well as their capacities is likely to differ within and across jurisdictions. Further, while various guidance documents and best practices exist for integrated mosquito management training, so far, no programs have been designed and evaluated based on comprehensive, integrated pest management training with the purpose of increasing capacity for the prevention and control of vector-borne diseases (VBD) in the US that target both practicing professionals and students potentially entering relevant VBD fields.

B. Approach

i. Purpose

The purpose of this project is to create a strong, comprehensive, multisectoral Gulf South regional network that leverages existing infrastructure to train professionals and students in a region historically susceptible to VBD. Training programs designed by subject matter experts across a multi-disciplinary, regional collaboration will promote a unified workforce that can more effectively monitor and respond to VBD threats. Evaluation and needs assessment of government, private industry, and academic capacity and surveys of educational resources and vector control infrastructure will aid our understanding of regional strengths and barriers to implementing effective vector surveillance and control.

ii. Outcomes (Table 1)

This proposal leverages a panel of experts, the Gulf South Collaborative (GSC), that will unite stakeholders from the Gulf South and beyond to improve both regional and national capacity to address the growing threat of VBD. This will occur by strengthening the prevention and control workforce and its capacity, improving the adoption and evaluation of prevention and control programs, tools, and technologies, and facilitating partnerships between federal, state, tribal, local, and territorial public health agencies, academic institutions, and other interested parties. Education for current and future public health professionals is critical to mitigate public health threats and protect the health of people and animals both in urban and rural settings.

Collaborating with our PARTNERS, the GSC proposes to EVALUATE regional vector control capacity and resources, both public and private, to define uniform standards. We will then create educational materials to TRAIN professionals and students in public health and vector control. Interprofessional training will provide a platform to work together collectively and strategically to meet the aligned objectives of integrated vector control and reduced VBD risk (6,7). We will create operational centers that will showcase and train in best practices. Informatic platforms (8) for data sharing and resource acquisition will be developed for sustainability of partnerships and the breakdown of figurative silos. Bringing together a wide range of professionals in areas such as pest management, vector control, public and animal health, medicine, and academia will help build and achieve an integrated, interprofessional workforce to sustainably mitigate VBD risk in the Gulf South region. Our project activities include those slated for Year 1, along with our long-term goals for Years 1-5.

The short and long-term goal of the collaborative is to understand and address critical gaps in resources, information exchange, infrastructure, evaluation methods, and training standards in a region that is highly vulnerable to VBD threats, the Gulf South. The strategies outlined in this proposal will address these gaps by creating infrastructure that fosters interagency, cross-sector information and resource sharing, increases dialogue, and coordinates training efforts to improve regional VBD preparedness and response capacity.

The scope of the NOFO is expansive and will build on existing partnerships, resources, and strengths in teaching and evaluation to increase educational and training capacity, build new partner networks, and create a channel for dissemination of information across sectors. We will leverage our expertise from other federally and privately funded projects to build a comprehensive repository of needs assessment documents, templates, and data to assist local, state, and federal governments, private industry, and professional/trade associations with the implementation of sustainable vector management programs. Educational content will be developed to highlight procedural best practices, and programming for students and professionals will be designed by subject matter experts in a manner that can be replicated across the region. Increased reach will enhance program and agency visibility, providing students with a better understanding of employment opportunities across VBD disciplines. Standardized evaluation tools will be created to better understand program needs and increase awareness of gaps in knowledge or core competencies across vector control organizations. Finally, we will create a mechanism for sustainability of interagency and cross-sector cooperation, information sharing, and dialogue among stakeholders and partners via the establishment of a centralized, regional online platform that will house the documents, training materials, and other products outlined in this proposal.

Table 1. Training Outcomes

Training outcomes		
Short-term	Intermediate	Long-term
-Improved and standardized VBD prevention and control through training and education. -Increased number of VBD students and professionals trained in best practices. -Increased awareness of VBD prevention and control among professionals and students.	-Improved quality training recognizing and reflecting community diversity. -Improved ability of professionals to explain VBD to others. -Improved professionals' ability to assess VBD risks and implement VBD prevention and control. -Improved understanding of VBDs by the VBD workforce.	-Apply information learned to others to increase VBD and public health issues awareness. -Strengthened public health VBD workforce. -Improved preparedness -Reduce VBD morbidity and mortality in people and animals
Evaluation outcomes		
-New and improved vector control programs, tools, and strategies evaluated at state, tribal, local, and territorial agencies. -Stronger collaborative activities of academic community and agencies. -Increased VBD prevention and control resources evaluated.	-Continue to increase awareness of these resources to all levels of partnerships. -Continue to increase the number of VBD prevention and control resources that are evaluated by VBD professionals.	-Increased adoption and use of new and existing vector control tools, strategies, and programs developed throughout the region.
Partnerships outcomes		
-Increase VBD student and professional trainees. -Stronger collaborative activities of academics and agencies. -Increased VBD prevention and control resources evaluated.	-Improved quality of training and education that recognizes and reflects the diversity of the communities they are trying to reach.	-Strengthened public health workforce with knowledge and capacity for VBD control and prevention. -Improve the health veterinary outcomes

iii. Strategies and Activities

STRATEGY 1: TRAIN - Increase opportunities for students and professionals to receive training in VBD prevention and control.

Activity 1: Improved and standardized VBD prevention and control training and education.

Our diverse group of collaborators will compile a database of existing education and training infrastructure such as academies, meetings, webinars, workgroups, university classes and programs, professional and trade association partnerships, and existing documents to formulate educational standardization across the Gulf Coast region. A central repository will be created that will house core curriculum to be used in the region and associated products for use and dissemination.

Stratified training levels to address needs and knowledge of all stakeholders: The GSC will provide a core curriculum that can be replicated at training facilities across the Gulf South states. The curriculum will consider the needs assessment, workgroup recommendations, and products developed by previously funded projects to target four levels of professional development: Awareness, Beginner, Intermediate, and Expert (Years 1-2).

Stratified, inter-disciplinary training for greater reach: Awareness training is designed for decision makers, city planners, sanitation and environmental health professionals, and recruitment of students. These individuals do not conduct vector control but must understand the basic principles and its importance to ensure long-term sustainability of acquiring resources, program implementation, and acquisition of information. Beginner is for professionals and students new to the VBD profession. These individuals may have awareness-level knowledge of VBD, but may not have knowledge about control measures, use of equipment, pesticide safety, or host-pathogen systems. Intermediate is a VBD professional who has been in the profession for more than three years, has knowledge of the basic operations of VBD management, but requires more depth of knowledge. Expert level professionals are those individuals that have at least five to ten years of experience and would benefit from advanced topic learning. These are the leaders and trainers of the future (Years 1-5).

This project will leverage existing programs in select districts and universities in LA, FL, and TX to provide the four levels of educational training. The GSC team will collaborate to increase the reach of these programs and ensure educational information and evaluation metrics are standardized. This information will be reported back to CDC and others to enhance the educational outcomes through impact reports. A GSC liaison will be identified to communicate with neighboring funded groups to maximize resources and provide uniformity in course offerings (Year 1). Activity 1 will partner with Activity 4 to create a workgroup of members that will help develop the needs assessment used for this metric.

Vector-borne disease threat and public health emergency education and training is essential for improving the preparedness at all levels of government. The GSC has several members with substantial all-hazards emergency management experience. Expanded training and education products for VBD can be designed and utilized through the existing framework. The members work directly with local, state, and federal Homeland Security, volunteer organizations, and emergency management trainers for yearly training. The existing framework will be used to increase vector control training opportunities and produce best practices procedures for response to emerging threats (e.g., St. Louis encephalitis in rural areas, murine typhus outbreak in homeless encampments) that can be utilized throughout the Gulf South. After-action reports after VBD outbreaks and lessons learned modules will be included (Years 1-5).

A greater number of VBD students and professionals trained in best practices can be achieved by inclusion of clinicians, animal health professionals, and students in community colleges and universities. Education on local vectors and endemic pathogens can aid healthcare providers and veterinarians in early diagnosis and appropriate treatment of patients. By networking with state and local health departments, we will collaborate with the medical community. This will allow us all to recognize and access the needs of vulnerable populations. Not only will appropriate treatment be provided, but problems that require further environmental remediation by supporting agencies will be reported. Currently, unless a disease case or suspected outbreak is reported, the information is siloed, and the root problems are not remediated. Online resources and continuing education training will be made available by collaborating with health departments, which can distribute information through the physician communication networks. A survey of stakeholders will be conducted to understand how to best deliver the information (Years 1-2).

The Louisiana Society for the Prevention of Cruelty to Animals (SPCA) currently collaborates with a local community college in New Orleans. The GSC will conduct a pilot program in collaboration with the Louisiana SPCA to increase the best practices knowledge of

students in community college veterinary technician training programs and at pre-veterinary undergraduate programs in two schools in New Orleans. Topics will include host-pathogen interactions, disease pathophysiology, diagnostics, screening and testing, treatment protocols, and prevention strategies (veterinary and environmental vector control). Current curriculums will be evaluated to determine available content, identify gaps in VBD content, and create culturally competent training materials for community practitioners through a diversity, equity, and inclusion lens across all participating states.

For professionals, in-person and virtual training will be offered for veterinarians, animal sheltering professionals, and animal control field officers. We will partner with pharmaceutical companies who provide professional development to private practice veterinarians and sheltering agencies who are their clients and are not active in any of the professional associations.

Professional, high-quality educational materials to engage the diversity of stakeholders in a central location: Effective delivery of content to professionals and students is critical for improving retention and engagement for higher achievement. The inclusion of multimedia components in curriculum have been shown to increase understanding of scientific concepts (9,10). This program will focus on active learning to engage participants. Strategies will include interactive lectures, demonstrations, discussions, and scenarios to reinforce concepts and improve knowledge retention. Learning objectives will be clear and comprehension measured using standardized evaluation strategies. Collaboration between professionals and content developers will create a body of work to maximize professional learning (9).

We will establish a core curriculum with discipline-specific modules to be used in the region. The GSC team will house the current and newly created VBD products at the Center of Invasive Species and Ecosystem Health at the University of Georgia, an established collaborator. A digital database for all VBD information, training materials, and data will be created in Year 1. During Years 2-5, we will continue to upgrade the site as materials and needs assessment data become available for cumulative accountability. Central housing of training products and data will maximize availability for use and dissemination and help to avoid redundancy.

Activity 2: Train and educate VBD prevention and control professionals.

We propose to capitalize upon our current educational capacity to increase education for in-service training of employees in the public and private sectors tasked with arthropod and reservoir host surveillance and abatement throughout the Gulf South region. The program will include modules focused on various core vector control and VBD topics, aimed at four levels: Awareness, Beginner, Intermediate and Expert. A survey will be administered to assess preferred methods of information delivery by interested trainees/parties. Various delivery methods such as in-person, virtual, and modular will be produced to facilitate maximum participation by working professionals. Verification of training will involve certificates of completion and re-certifications within 3-4 years. Pre- and post-training assessments will be completed via subject matter knowledge surveys to determine the impact of training and assess retention and strategy implementation. A central database of all training attendees with their professional background, level of expertise, years of work experience along with pre/post surveys and short- and long-term training evaluations will be created and housed in a secure server only accessible to the PI and selected designees. The goal is to evaluate the training programs across professions and their usefulness to respond to VBD threats in interprofessional teams. Scholarships will be offered for professionals and students for week-long regional training at municipal institutions, private industry partners, and universities and colleges in topics such as VBD, outbreak investigations,

vector surveillance, laboratory and field procedures, vector management strategies, prevention, and communication activities. In-depth mosquito resistance management strategies and practices will be discussed and taught. The training will also prepare participants to provide public outreach and education and effectively communicate with members of their local communities (Years 1-5).

Training will be held throughout the Gulf South with New Orleans as a hub to collect materials, evaluation data, and follow-up reports. The program will be expanded as other regional training centers are identified (see Operational Centers of Excellence, *Activity 8*, Page 11) are identified. Comprehensive assessment of funding, personnel, and overall capacity will be made so that short and long-term goals can be established for sustainable program expansion as a training and resource hub (Years 2– 5).

Activity 3: Increase awareness of VBD prevention and control among professionals and students at universities, colleges, and community colleges.

Include vector control and VBD subject matter in existing framework of trainings and meetings in the Gulf South: The GSC stakeholders and their collaborators organize or participate in an extensive network of professional and academic meetings, training, and webinars that can be used as a foundation and expanded to include additional topics related to vector control and VBD. These meetings include Department of Agriculture continuing education trainings, state sanitarian and environmental health professional CEU trainings, professional meetings, state and local pest management meetings across the Gulf South, internal company trainings (Cook's Pest Control), established academics, mosquito control association meetings and workshops, emergency preparedness annual trainings, volunteer trainings, animal health CEU classes, webinars (EPA, NOMTRCB, Texas A&M University), academies (TX, LA), industry sponsored events, and many other outlets. At the City of New Orleans alone, an estimated 7,500 people across disciplines attended similar training events (nola.gov/mosquito/about/annual-reports).

University-based key personnel from the GSC teach classes or have access to seminar courses. Immediate inclusion of vector control and VBD in university classes can be achieved by incorporating guest lecturers to existing courses; this model is already established at the Department of Global Health at the University of Miami. Exposure to interdisciplinary subjects provides students the opportunity for greater understanding and appreciation of the operational aspects of vector control while providing opportunities for internships, field experience, and future employment.

Career exploration in vector control: A pilot program will be launched with NOMTRCB and the School of Population and Health Sciences at Dillard University, Louisiana's oldest Historically Black University (see LOS attached). Our goal will be to introduce pre-college and college level students from minority populations to the professions involved in vector control. Three, 1-day career exploration workshops will be scheduled at NOMTRCB for students during June and July (Year 1). Professionals from disciplines such as mosquito control, urban pest management, epidemiology, animal health, and local VBD researchers and professors will present career opportunities and the skill sets required to enter the field of vector control. The workshop will be advertised through the public and private school systems in New Orleans and at Dillard, and the existing framework at the universities and 2-year colleges in the region. The event will culminate in an in-person fair with professionals and academics providing hands-on demonstrations and offering summer employment opportunities. Contact information will be collected for each participant or guardian for administering surveys at the event then 6 months, 1

year, and 2 years after attendance to inquire about their major and general vector control knowledge. The program will be expanded into other regions based on the results of the pilot program (Years 1-3).

STRATEGY 2: EVALUATE - Evaluate the impact and effectiveness of VBD prevention and control programs, tools, and strategies.

This project will implement needs assessments and utilize the knowledge, attitudes, and practices (KAP) survey model to determine local vector control capacity, resources, educational needs, and delivery methods. Based on the information gathered, the GSC will collaborate with public, private, and university partners to identify gaps in program assessments and barriers to implementation.

Workgroups will be developed to communicate quarterly to ensure our goals and outcomes are being met. This will allow us to come together to share the current resources available and work with our team of evaluation specialists to develop better performance monitoring tools to evaluate the effectiveness of Awareness, Beginner, Intermediate, and Expert level training efforts. Currently there is not a uniform way to track VBD professional training after an initial course. Typically, these measurements involve pre-post evaluation through a series of multiple-choice questions to ascertain knowledge gain. Our project plans to create survey tools that can be sent out to course participants six and twelve months later to measure applied knowledge and adoption of practices and to determine future needs for training (Years 1-5).

Activity 4: Conduct preliminary needs assessment to determine extent of vector control programs and services throughout the Gulf States; gather data on current knowledge gaps, practices employed, and needs to meet program core competencies (Years 1-2).

We will form a working group that will identify currently active vector control programs and gaps in vector monitoring and control in their respective states. Existing information will be leveraged to further conduct assessments that will be needed for this project (Strategy 3, Activity 6). This project will identify a key VBD program in each state that will serve as an operation training center for long-term sustainability of training in that area. These programs will function as the leaders for each state and assist the workgroup in developing more specific needs assessments and training.

Leverage existing assessments through our key partners, the National Association of County and City Health Officials (NACCHO), the National Environmental Health Association (NEHA), and the Mosquito Biodiversity Enhancement and Control of Non-native Species (BEACONS). Using preliminary information collected in Strategy 1, Activity 1 and existing data and templates from national organizations as a starting point, we will develop and *implement new needs assessment* to fulfill project goals. We will assess online collections of public health tools, regional mosquito control programs, and nationwide health departments (11) (Year 1-3).

We will compile existing vector control informational documents and training tools in the target states and then determine the manner the stakeholders want to receive the information and training via a survey (Strategy 1 Activity 2, Strategy 3 Activity 7, Year 1-2). We will survey individuals working in the field of vector management. Names and emails will be collected for dissemination of resources, training materials and educational events. A central database of professionals in the field will allow for coordinated dissemination of information. Possible

assessment and survey questions include: *What percentage of the target population has participated/pilot tested the developed surveillance and mitigation plan? Where is the program housed? What is the program affiliation? What is the annual budget? How many employees do they have? How many licensed applicators and in which license categories? What equipment do they have? Is vector control contracted? If yes, include the name of the company and bid specifications. Is the service seasonal or year-round? How are they funded (e.g., millage, general fund, special tax, grants, fees, etc.)? Is the leadership appointed? What are the local vectors of concern? What are the preferred methods to receive training materials? (Years 1-5)*

Activity 5: Develop a needs assessment that can be used nationwide to evaluate the operational use of approved VBD prevention and control tools, strategies, and programs.

Working with our national and state partners (see LOS attached), our workgroup will oversee the development of needs assessment tools to evaluate vector management programs and strategies to prevent and control community VBD outbreaks. Based on a survey conducted by BEACONS across 76 programs, we know that capacity varies greatly. Limited financial resources have caused staffing restrictions and equipment shortfalls that impede education, prevent adoption of best practices, and reduce overall preparedness. Programs will be evaluated using the logic model (Table 1) and KAP data collected from all our training events (Years 1-2).

Using our team of municipal abatement programs, private industry, and university partners, the initial needs assessment will be piloted with private industry and state, tribal, local, and territorial health agencies in LA, MS, AL, FL, and TX. This will ensure uniformity and equity across all levels of professionals. This information will be used by the GSC to fulfill the CDC's goal of maintaining a list of vector management districts and capacity throughout the US and determining preparedness for VBD outbreaks in their communities (Years 2-5).

Information collected from needs assessments will be placed into a digital platform created by Center of Invasive Species and Ecosystem Health (see LOS attached), which has the capability and experience to store large quantities of information securely. Their continued work with invasive species and integrated pest management has allowed them to efficiently curate information, survey data, images, and educational materials. This partnership will allow us to utilize a centralized location that can sort information into categories from the public awareness campaigns to scientific information about specific spread of disease vectors by state, county, and zip code. This platform will allow for sharing of resources and sustainability beyond the end of grant (Years 1-5).

Assess the efficacy and create best practices for commercially available products and tools used for vector surveillance and management. The use of carbon dioxide has been a game-changing technology for management of Norway rats and their ectoparasites, particularly in sensitive environments such as homeless encampments. Despite carbon dioxide in pellet and gas formulations being registered in all 50 states, availability to the market is limited to restricted geographies due to EPA requirements for manufacturing and labeling. The pellet formulation of carbon dioxide, commercially named "Rat Ice" by Bell Laboratories, is used in Chicago, New Orleans and select areas of the East Coast states. In 2022, LiphaTech expanded the availability of carbon dioxide gas formulation to include several states in the Gulf Coast, including Louisiana. A pesticide applicator's license is required for application. Both products are used in New Orleans and have reduced rodent activity, but require evaluation to describe best practices for expansion of use in the region and US (Years 1-5).

Activity 6: Develop and implement an evaluation and performance monitoring/improvement plan to evaluate impact of training programs and ensure training goals are accomplished.

The GSC will work with CDC and our academic partners to develop survey tools to evaluate the baseline knowledge of training attendees, the usefulness of these trainings to their work and suggested training improvements. Collaborating with our partners in TX, our goal will be to synergize this information into compatible measurement tools that would be used with our trainings outlined in Strategy 1, Activity 2 (Year 1).

STRATEGY 3: PARTNER - Build partnerships among relevant stakeholders to accomplish the training and evaluation activities proposed in Strategies 1 and 2.

This project will utilize the current workgroup established under CDC-5 NUE1EH001421-03-00 *A Community-based Rodent Surveillance Collaborative for Greater Public Health*. This project is drawing on our team's experience to plan meetings, conduct training, develop evaluation tools, and collaborate with a variety of stakeholders to support the missions of the CDC, USDA, EPA, and other entities and protect the public from VBD.

This project will form a collaborative workgroup whose mandate will be to provide input and guidance regarding project activities, commit to holding virtual meetings monthly, and to act when needed. Key personnel will include the CDC coordination team, NACCHO, the National Pest Management Association (NPMA), NEHA, CDC, the Cooperative Bugwood and Southern IPM Center (SIPMC), state, tribal, local, and territorial health agencies, Homeland Security, universities, businesses and community leaders, and other relevant partners.

The creation of opportunities for cross-sectoral dialogue is critical for advancing the science of vector control. To accomplish this, individuals must take the lead to coordinate efforts and establish guidelines for such dialogue. As practitioners, we are often isolated within our agencies and seldom have opportunities to share case data, ideas, or project results that influence vector control practices. This isolation limits the potential for broader impacts of our work on vectors at the professional, academic, and community level. Increased communication can spark innovation and inform comprehensive, evidence-based vector management strategies.

The metrics used in performance assessments for local government, private industry, and universities can include resources such as equipment, personnel, and dedicated funding, existing vector control ordinances, services provided, governmental structure, and perceived priorities, gaps, and barriers to cooperation and implementation. The GSC evaluators will collect quantitative data on the use of scientifically sound methodologies and vector control activities. Surveys will measure VBD awareness among regional stakeholders. This process will include collection of qualitative data that will be used for continuous quality improvement (CQI).

To collect the quality-related, vector-control capacity and practice data information, the project team will use a Quality Monitoring Checklist. This checklist will be reviewed and revised based on the finalization of new project standards and will be used at all levels of the project. A major goal of these guidelines is to allow us to capture and report the minimum required evaluation and performance information.

Activity 7: Work with our partners to engage undergraduates, graduate students, post-doctoral fellows to be trained in VBD and work with our partners to conduct needs assessments.

The GSC is composed of several members from advanced educational institutions: University of Florida, Louisiana State University (LSU), Florida A&M University, University of Southern Mississippi, Texas A&M University, and Dillard University. Through our network of

collaborators and academic partners, we will create a pilot program providing opportunities for internships and practicums for college and university students. Students can complete embedded modules at local, state, and federal government and private industry partners to gain greater perspective and obtain VBD competencies. They will also learn the importance of collaboration and the roles required for effective VBD prevention and interventions (Strategy 1, Activity 3, Years 1-5).

The GSC university affiliations already have a variety of courses that contain or can accommodate vector control and VBD topics to expose a greater number of students to the subject matter. The list of courses at the participating universities is extensive. A few examples include: Infectious Diseases & Outbreak Investigations (LSU-New Orleans), Epidemiology for Public Health Practice (LSU-New Orleans), Global Public Health (University of Miami), Vector Ecology and Biology (University of South Mississippi), Medical Entomology (University of Florida), Seminar in Public Health/Health Sciences (Dillard University), Introductory and Advanced VBD Management Certification (Texas A&M University), and Veterinary Assistant Clinical Pathology (Delgado Community College).

Students that complete a practicum as part of their public health training gain valuable insight into the inner workings of VBD control and prevention. This is an important step toward expanding the CDC's goal of improving understanding of VBD risk prevention and control. Public health practicums utilize standardized competencies that must be accomplished to receive their certification or pass the course. Currently, students complete their studies at one agency. A pilot program will be developed to offer interdisciplinary VBD training for undergraduate and graduate students in New Orleans, and travel scholarships will allow selected students to visit partner agencies. This will improve the quality of training and education (Strategy 1, Activity 3, Years 1-5).

Activity 8: Create a mechanism for sustainability of partnerships and infrastructure to ensure continued interagency and cross-sector cooperation and information sharing.

The GSC will work to foster the development of needs assessment tools with partners and stakeholders. Work groups will compile a collection of relevant information that defines current VBD preparedness, monitoring, and response capacity in the Gulf Coast region. Districts that want to expand services will be identified (Year 2).

The establishment of regional, sub-state governmental organizations that will serve as "Operational Centers of Excellence (OCE)" will provide sustainable, comprehensive vector surveillance and control programs. OCEs will provide regional best-practices training for interprofessional vector management and training for students and professionals across occupational categories. Through the needs assessment, one agency will be selected from each state to strongly invest in training activities and operational expertise. These agencies will provide the template for communication and networking, encourage dialogue, manage collaborations, and provide expertise in their subject matter area and region (Years 1-2). It is critical to fully understand the risks and to encourage perspectives across a diverse group of stakeholders (6,7). These centers will encourage communication and collaboration among government, private industry, and universities to train current and future public health professionals, equipping them with the tools to effectively combat vectors and reduce the risk of VBD on a regional scale. A framework for designing this program will be established by setting programmatic goals and continued mentoring of the selected VBD district. A five-year plan will be designed for the selected district to become the OCE in their area (Years 1-5).

We will create a centralized online platform to describe project priorities, house educational materials, resources, and opportunity announcements. We will also provide links to other training and educational resources for future sustainability. The platform will have an intranet that will serve as a data portal. We will create linkages between public, private, NGO, and academic organizations using the major professional and trade associations and workgroup meetings with association leaders to align priorities around VBD education, training, and management (Year 1-5). Finally, using information collected over the scope of the project, we will create a system of program mentoring to provide guidance for VBD programs to overcome barriers and preserve resources for sharing and training. This will ensure project sustainability and contribute to the CDC's goal of strengthening the public health workforce. (Year 4-5).

1. Collaborations

Participating agencies include City of New Orleans, Texas A&M AgriLife Extension, University of Florida, Louisiana State University, Cook's Pest Control, Academy of the Sacred Heart New Orleans, Florida A&M University, University of Southern Mississippi, Dillard University, Virginia Tech University, University of Miami, Louisiana SPCA, New Orleans Health Department. For a full list of members of the GSC see resumes and letters of support from over 26 groups.

With other CDC Programs and CDC-funded Organizations. This project will utilize the City of New Orleans' and partners' established collaborations with local, state, and national associations, government agencies and private industry. Based on this long history of interagency and cross-sector collaboration in the field of vector control, NOMTRCB and partners have a depth of institutional knowledge that will foster interagency and cross-sector partnerships with and on behalf communities and state, tribal, local, and territorial health agencies. This will ensure that a full understanding of the resources in place for vector control can be obtained and a fundamental shift in attitude towards the importance of VBD and control can be made. In addition, each of the senior key personnel on this project will bring a wealth of experience and collaborations that will allow for successful execution of this project (see resumes).

In teams or independently, work group members have collaborated with NEHA, NACCHO, CDC, EPA, and state, tribal, local, and territorial health agencies over the years. Examples of these collaborations include teaching training courses, writing on-line mosquito and rodent modules for the Biology and Control of Vectors and Public Health Pests and IPM, research projects, publications, and providing local training to EH and municipal employees and pest management professionals. Some of these trainings have focused on topics such as bioterrorism, mosquito surveillance and control, rodent control, and food safety. Project team members have also provided vector control support after disasters and actively participate in NACCHO and NEHA working groups. These associations have the infrastructure to reach thousands of EH members nationally and have the existing platforms for working groups, data gathering, and information dissemination that will be required. Other CDC programs and CDC-funded collaborators will include NEHA, NACCHO, Louisiana and Alabama Departments of Health, and CDC VBD coordination team.

The members of the GSC have established cooperation with Tulane University's School of Public Health and Tropical Medicine and Texas A&M University. The GSC will support the proposal, "The Member Tulane University Proposal Deep South Regional Program for Strengthening Training, Evaluation, and Partnerships in Vector-Borne Diseases," and the Texas

A&M University led proposal "Vector-Borne Disease Training & Evaluation Center - South-Central (VBD-TECS)" if funded.

With Organizations not funded by CDC. The diverse background of the team will allow for all facets of private industry, state, tribal, local, and territorial health agencies, animal health organizations, universities, and other vector control related programs to be engaged in aspects of this proposed project activities. Senior key personnel regularly contribute to a variety of national and local association seminars and webinars and serve on boards and committees on different work groups and associations. Collaboration with organizations not funded by CDC will include state and municipal agencies (e.g., sanitation, legal, communication and agriculture departments, code enforcement, school boards, finance, mayor's executive staff, homeland security, NOLA Ready), pest management companies, Louisiana SPCA, Audubon Institute, NPMA, BEACONS, and universities.

NOMTRCB and partners will continue to leverage their unique positions within city government, universities, and the vector control and pest management industry to expand the reach of its partnerships with agencies involved in VBD environmental hazard management within city, state, and national government. These collaborations will allow for crucial information and data to be obtained from different sectors including private industry, which will serve as the basis of educational material development and dissemination. NOMTRCB understands the daily challenges felt by government agencies and has been successful in growing the scope of their program despite financial challenges and lack of support observed by other vector control agencies.

2. Target Populations, Health Disparities, Vectors and VBD

Gulf South. The Gulf South is home to more than 64.9 million people and contains states ranked in the bottom tier for economic disparities, income and poverty levels, negative health outcomes, and access to infrastructure such as internet and health services (12). Florida and Texas have 17% and 21% foreign-born persons, respectively, with Spanish being the predominant language. All the Gulf South states have a median household income below the national value of \$69,021 and higher poverty rates compared to the national average of 11.6%. All states except Louisiana have more people under the age of 65 without health insurance compared to the national average of 9.8%. The overall risk of exposure to documented VBD is likely elevated and the ability to obtain healthcare is reduced.

The Gulf South is at high risk for importation of exotic vectors and pathogens to the US (13,14). The presence of numerous large commercial and tourist ports, high poverty rates, and climate conditions favorable for the establishment of invasive vectors combined with widespread distribution of mosquito vectors promotes the emergence of arboviral infections (15). Autochthonous dengue transmission is steadily increasing, with 41 cases reported from four counties in Florida in 2022. Texas and Florida have been hotspots for West Nile and dengue activity over the last decade, and other encephalitic viruses such as Eastern equine encephalitis, St. Louis encephalitis, and Jamestown Canyon virus have been reported in the Gulf South region. *Dirofilariasis* has been documented in all fifty states but is most prevalent in the southeast. The widespread and increasing abundance of tick species in the region, some capable of transmitting multiple agents of diseases, highlights the need for increased efforts toward tick surveillance (15). There have been increased reports in recent years of *Rickettsia typhi*, mainly associated with rodent fleas in cities, in encampments for houseless individuals in Texas and in California. In New Orleans, *Xenopsylla cheopis* is the predominant flea species documented and is present

in the commercial areas of New Orleans and in encampments of unhoused individuals (NOMTRCB insect collection records). In a 2022 survey of interdisciplinary public health professionals (n=591), 76% recognized that rodent control should be a priority for local governments (16).

C. Applicant Evaluation and Performance Measurement Plan

CDC Evaluation and Performance Measurement Strategy. Our method for evaluation for collecting vector control infrastructure will include: 1) a needs assessment conducted yearly with stakeholders to identify relevant information following VBD emerging trends, to surveil public perceptions to inform curricula development, and to conduct a longitudinal psychometric study on stakeholder changes in attitudes using a public health model; 2) process evaluation to document implementation, identify areas for improvement, and offer program improvement guidance; and 3) outcome evaluation to explore and measure program effects. We anticipate using both quantitative data from stakeholders, surveys, and qualitative data from key informant interviews and workgroup meetings. Our broad project questions are as follows:

- 1) Have the needed, relevant, and high-quality vector control resources and data linkages among disparate sources of data been captured and created?
- 2) What and how many *needed* vector control resources have been identified and collected?
- 3) Has a strategic plan been created for how vector control providers can work together across sectors to implement best practices and reduce the risk of VBD?

We will also measure the impact of our educational events using traditional process evaluation: 1) How many courses/certificates/training/field experiences have been planned and facilitated? How many participants participated in each course/certificate/training/field experience? What are industry sectors represented? 2) How could this project improve the recruitment, retention, and enrollment of future scientists and professionals in VBD control and public health? 3) How could this program improve the knowledge base on VBDs? What content should be included or improved? What are the most efficient educational formats?

STRATEGY 1: TRAIN - Increase opportunities for students and professionals to receive training in VBD prevention and control.

- 1) Activity 1: Improve and standardized VBD prevention and control training and education.
- 2) Activity 2: Train and educate VBD prevention and control professionals.
- 3) Activity 3: Increase awareness of VBD prevention and control among professionals and students at universities and community colleges.

Impact Measurement:

- We propose four levels of professional development training: Awareness, Beginner, Intermediate, and Expert. These will educate each target audience on VBD prevention and control.
 - Our goals in year 1 are to conduct: 30 Awareness, 10 Beginner, 5 Intermediate, and at least 5 Expert courses within the region.
 - For Year 1 our goal is to train 300 VBD professionals from Beginner to Expert level, and to train 10 students – each year our goal will increase in numbers by 30%
- We will create several training tools (modules, online courses, guidance documents, etc.) that will be standardized or improved and will highlight ones that recognize and reflect the diversity of the communities they are trying to reach.

- o Resources will be collected and centralized in a digital resource database that will be used by this project, CDC, and others to allow for easy distribution.

STRATEGY 2: EVALUATE - Evaluate the impact and effectiveness of VBD prevention and control programs, tools, and strategies.

- 4) Activity 4: Conduct preliminary needs assessment to determine extent of vector control programs available and services throughout the Gulf States and identify knowledge gaps and areas needed to maximize program core competencies (Years 1-2).
- 5) Activity 5: Develop a needs assessment that can be used nationwide to evaluate the operational use of approved VBD prevention and control tools, strategies, and programs.
- 6) Activity 6: Develop and implement an evaluation and performance monitoring/improvement plan to evaluate impact of training programs and ensure training goals are accomplished.

Impact measurement

- Our goal is to establish 10 new and 20 improved vector control programs, tools, and strategies at state, tribal, local, and territorial agencies within year 1.
- We will conduct 300 evaluations on vector control programs, tools, and strategies and include these in performance monitoring reports to the CDC.
- We will assess the number of adopted vector control tools, strategies, and programs developed or facilitated by the training center, at the institution, community, local, or state level.

STRATEGY 3: PARTNER - Build partnerships among relevant stakeholders to accomplish the activities proposed in Strategies 1 and 2

- 7) Activity 7: Work with our partners to engage undergraduates, graduate students, and post-docs to be trained in VBD and work with our partners to conduct needs assessments.
- 8) Activity 8: Create a mechanism for sustainability of partnerships and infrastructure to ensure continued interagency and cross-sector cooperation, data, and information sharing.

Impact measurement

- We will determine the number of students engaging with partner agencies and conducting needs assessments as well as the number of new partnerships between agencies.

Application Evaluation and Performance Measurement Plan

Develop a procedural plan for obtaining data and a platform for data and resource linkages to obtain baseline data and resource needs (Years 1-2).

- Improve data availability and quality by working with partners to establish public health resources in online locations for easy dissemination for future preparedness (Years 3 -5).
- Increase awareness of these resources to all levels of partnerships (ongoing).

D. Organizational Capacity of Applicants to Implement the Approach

Key Partner Engagement. The GSC is an interdisciplinary group of professionals with varying skill sets in the field of vector control and VBD that can be leveraged to successfully implement project objectives (see Project Roles). The roles and expertise of the team members have been defined to maximize successful implementation (8). The professionals work in

academia, government, national associations, private industry and the health and veterinary fields and have a deep reach into the field.

Every member of the GSC has an extensive network of stakeholders nationally and throughout the Gulf states and *has the existing organizational capacity to train, evaluate and partner*. Many of the partners already have professional working relationships and collaborative projects. Collaborations include participation on graduate student committees, adjunct faculty appointments, grant collaborations (16), vector and pest management association meeting planning committees, academy and outreach guest speakers, internship and practicum appointment project planning, and research projects. The participating university partners have the required infrastructure such as laboratories, classrooms, meeting rooms, and field stations that can be utilized. The institutions also have insect collections, microscopes, and molecular diagnostic tools that can be utilized in training. Members of the GSC are subject matter experts in mosquito ecology, operational control of vectors (including rodents), animal health, human health, epidemiology, emergency preparedness, GIS, and evaluation and assessment techniques as described by the extensive list of publications in these areas (see resumes). Members of the GSC also have expertise in the use of drones, rotary and fixed wing aerial and ground insecticide applications, vector control program management, and budget management (grants and operational programs). Members of the GSC have fluency in more than five languages (including Spanish) and currently work with underrepresented communities, which will help this program reach the demographics found in the Gulf Coast states. The GSC members and organizations have the tools, expertise, and experience needed to successfully implement and execute the program.

The members of the GSC also have extensive teaching experience and have been recognized as leaders in their profession. The University of Florida, Texas A&M University, and Florida A&M University have long-standing educational programs for professionals in pest management, school employees, fumigation, aerial applicators, agricultural applicators, and more. The universities use their main campuses but also have field stations and specialty training locations such as the IPM House at Texas A&M University. Training is often done in collaboration with the pest management and vector control industry and manufacturers. It is essential for manufacturers to bring the available technology to the practitioners. An interdisciplinary approach provides a greater scope of available tools and services.

In addition to what our members can offer, our proposal also includes support from numerous accomplished associations and private and public organizations. Our partners in this project are NACCHO, NEHA, pest management associations, public health agencies (Louisiana Department of Health, New Orleans Health Department), municipalities, Office of Homeland Security and Emergency Preparedness (New Orleans), academic institutions (University of Florida, Florida A&M University, University of Miami, Louisiana State University, Tulane University, University of Southern Mississippi, and Texas A&M University), animal welfare institutions (Louisiana SPCA, Audubon Zoo), private industry, and the Louisiana Guard.

Our evaluation for methods of building our GSC will be measured by these many attendees beyond the eight members of the collaborative submitting this proposal. Key partners who are part of the GSC will participate throughout the project from inception to data collection, analysis, interpretation, and dissemination. Once notified of the award, the main team will schedule an initial meeting of the team and invite members (see letters of support), and other partners. From this first meeting, a schedule will be developed to outline the timeline from the work plan to further track progress on this project. During the planning meetings, the information

needed for all three strategies and activities, individuals will be assigned responsible roles for cohesiveness in reporting by the City of New Orleans to CDC. In addition, once best practices for interagency and cross-sector data sharing including standards have been developed, our project team along with the Collaborative will work with NACCHO, NEHA, and NPMA to review, finalize, and clearly communicate the CQI plan with state, tribal, local, and territorial health agencies, and other agencies. We will also recommend to NACCHO, NEHA, and NPMA the importance of developing a full plan to monitor these standards which includes identifying appropriate indicators and methods of data collection and may require reviewing and adapting tools to be generated during this project for project sustainability post funding.

Leveraging the established collaborations will increase the sustainability of products generated by this proposal. Examples include 1) establishment of new teaching opportunities with public health students by completing a practicum in vector control and acquiring predefined competencies; 2) creation of peer-reviewed publications, educational materials and policy guidelines based on evaluation and assessments; and 3) the continued collaboration with Bugwood (bugwood.org) to provide a sustainable platform (public and private) to house training products and generated data for use by professionals and students. Bugwood's mission is to "to serve a lead role in development, consolidation and dissemination of information and programs focused on invasive species, forest health, and natural and agricultural management through technology development, program implementation, training, applied research and public awareness at the state, regional, national and international levels."

Existing organizational capacity, performance measures, evaluation and financial systems, data systems to implement, physical structure and workforce capacity is in place to successfully execute all proposed strategies. NOMTRCB as the principal investigating institution has long and ongoing collaborative partnerships with universities, national, state, and local associations, state and public health programs, private industry and other agencies and organizations (see letters of support). NOMTRCB is a full-service vector and urban pest management program and possesses the tools (helicopter, plane, molecular diagnostic tools, larvicide rigs, rodent and wildlife traps, photography, infrared camera, etc.) needed to conduct these diverse services. We incorporate our tools into various trainings (i.e., in-person workshops, academies, lectures, identification classes) for other stakeholders to learn about surveillance and control methods. Prior to 2020, over 7,500 people a year from across disciplines would use our facility and attend training events. During the pandemic, NOMTRCB shifted to online webinars and expanded our social media platform (@nolamosquito) for education of the industry and public. As agencies return to in-person events, we expect our attendance to reach previous levels.

NOMTRCB is funded through the general fund and by extramural funding (nola.gov/next/mayors-office/topics/budget) such as from grants, product testing, commercial accounts, and educational services. We conduct vector and urban pest control for public spaces, including government buildings and residential properties to reduce vector population, reduce the VBD and improve the environment, public health, and quality of life of the residents and visitors of Orleans Parish. We work closely with the New Orleans Health Department, the Sanitation Department, Code Enforcement, and other city and state agencies to manage emergencies and remediate conducive conditions that cause the vector and pest infestations. NOMTRCB is considered a public health and safety agency and falls within the framework of Homeland Security which makes us unique from other vector control agencies and allows us to play a vital role during emergencies. We currently have 40 employees on staff (see Organizational Chart) and hire interns throughout the year. Of these employees, four have PhDs, seven have master's

degrees in various disciplines, and 11 have bachelor's degrees. One full-time employee is currently enrolled in a PhD program at Louisiana State University, and many are nationally recognized subject matter experts in vector control and urban pest management.

NOMTRCB facilities comprises four buildings, an administration building, an airplane hangar, a biological control building, and a warehouse complex. The buildings offer over 40,000 square feet of laboratories, offices, training space, warehouse space, and an airplane hangar. We have an additional Biosafety Level 3 (BSL-3) laboratory facility (3,200 sq ft) that is slated for certification in 2023-2024. A training room equipped with audiovisual equipment can accommodate 100 people used for in-person and virtual outreach events. NOMTRCB owns more than 45 vehicles, 12 spray units (adulticide and larvicide), heavy equipment (dump truck, front-end loader), an airplane, a helicopter, and an airboat. NOMTRCB has the field equipment such as traps to conduct mosquito and rodent surveillance, as well as wildlife trapping. Our Administration Building houses two laboratories and a climate-controlled insectary. The laboratories contain equipment including ABI 3500 Genetic Analyzer, Applied Biosystems StepOne Plus real-time PCR machine, and a biosafety cabinet. This laboratory will have increased capacity as a BSL2 laboratory in 2023. The insectary is equipped with supplies needed for insect rearing and lab testing including a Hemotek membrane blood feeding system, insect cages, an environmental chamber, and all supplies needed to handle and rear larval and adult mosquitoes.

E. Work Plan

Below each activity are the measurement steps to describe work to be completed by this GSC. Our first step upon funding will be to hold a workgroup call to bring all our Partners together along with our CDC Coordinator to discuss this project and roles or personnel (Months 1-3). Each quarter thereafter, until the end of the project, this group will meet monthly to ensure that all outcomes are met, and that information is shared with CDC in a timely manner (Years 1-5).

STRATEGY 1: TRAIN - Increase opportunities for students and professionals to receive training in VBD prevention and control.

Activity 1: Improve and standardized VBD prevention and control training and education.

Measurement:

- 1) The GSC will provide a core curriculum that can be replicated at training facilities in all the Gulf South states by reviewing what is currently available and begin training by month 6 after funding. With the aid of Strategy 2, Activity 4, we will review all the materials that are currently available, place them into a digital database, then work with our Partners to improve content. This will allow us to create a variety of standardized training modules for online and in person, media outreach kits to be used by local health authorities and collect training performance data (KAP) in one location [Year 1 meet in person to review all the information collected and begin to determine a hierarchy of usefulness and need.] Members responsible for objective and outcomes met Riegel, Hurley,
- 2) To increase the number of VBD students and professionals trained in best practices our second subgroup will consist of those partners that can offer education to students and those that can offer internships and practicums. Within the first year we will work with Dillard University and Florida A&M to coordinate new pilot efforts for their students who fall into those disparities' areas within the south. The goal will be to enhance this program from year

to year to allow for a measurement of more students, and to track potential cohorts to be followed overtime (Years 1-5).

Activity 2: Train and educate VBD prevention and control professionals.

- 1) Create, pilot test, and evaluate educational content Year 1. Based on information found and collected this information will be used to refine training information to be used by the GSC and all others training about VBDs (Years 1-5). We anticipate this material will change over time, but will also be retained Strategy 3, Activity 8 this will be ongoing throughout the project) Members responsible for objective and outcomes met Riegel,

Activity 3: Increase awareness of VBD prevention and control among professionals and students at universities, colleges, and community colleges.

- 1) Provide interprofessional and cross-sector training and mentorship opportunities for professionals and students to encourage collaboration, provide visibility for information sharing and adoption of best practices to respond to VBD. Include vector control and VBD subject matter in the existing framework of training and meetings in the Gulf South Universities and Colleges that have agreed to partner with us (see LOS, Year 1 – 5).
- 2) Provide internships and practicums for students across interprofessional vector control disciplines to obtain VBD competencies while understanding the importance of collaboration, and roles of the interprofessional team members that are required for effective VBD prevention and control measures. A pilot program will be launched during the first 6 months that will allow for a pathway to explore a career in vector control.

STRATEGY 2: EVALUATE - Evaluate the impact and effectiveness of VBD prevention and control programs, tools, and strategies.

Activity 4: Conduct preliminary needs assessment to determine extent of vector control programs available and services throughout the Gulf States and identify knowledge gaps and areas needed to maximize program core competencies (Years 1-2).

- 1) Form working groups to develop needs assessment tools with internal (e.g., CDC, vector control districts) and external (e.g., pest control industry and community organizations) partners and stakeholders; compile a collection of relevant information that defines current VBD preparedness, monitoring, and response capacity tools and resources available. This step is linked directly to the first measurement to hold monthly workgroup calls. Month 1-3
- 2) Create subgroups to facilitate evaluation strategies and key measurement activities for the remainder of the project. Month 6–12 (Retain and recruit members (Years 2-5).
- 3) Evaluate the capacity, infrastructure, workforce, and resources available across academic, professional, and public sectors to respond to VBD. Year 1 [Year 2-5 we will continue to evaluate and refine materials, needs assessments and other information as meetings progress]

Activity 5: Develop a needs assessment that can be used nationwide to evaluate the operational use of approved VBD prevention and control tools, strategies, and programs.

- 1) Evaluate operational procedures and commercially available tools to establish cost efficient and effective best practices for vector control. Learn from project participants what future tools are needed to help with future planning.

- 2) Evaluate operational procedures and commercially available tools to establish cost efficient and effective best practices for vector control. Learn from project participants what future tools are needed to help with future planning.

Activity 6: Develop and implement an evaluation and performance monitoring/improvement plan to evaluate impact of training programs and ensure training goals are accomplished.

- 1) Conduct surveys to document where vector control services are absent and formulate a plan to expand education and training through partners.
- 2) Create a standardized database of existing education and training infrastructure across the Gulf States.

STRATEGY 3: PARTNER - Build partnerships among relevant stakeholders to accomplish the activities proposed in Strategies 1 and 2.

Activity 7: Work with our partners to engage undergraduates, graduate students, and post-docs to be trained in VBD and work with our partners to conduct needs assessments.

- 1) Create linkages between public, private, non-governmental organizations (NGOs) and academic organizations using the major professional and trade associations. Establish workgroup meetings with association leaders to align priorities around VBD education, training, and management. (Begins within 3 months of funding notification and will continue throughout the project)
- 2) Establish a regional sub-state governmental organization that will serve as the "Operational Centers of Excellence (OCE)" to provide sustainable, comprehensive vector surveillance and control programs (Year 2) with increased awareness of these hubs through Years 3-5 and beyond.

Activity 8: Create a mechanism for sustainability of partnerships and infrastructure to ensure continued interagency and cross-sector cooperation, data, and information sharing.

- 1) Create a centralized online platform to describe project priorities, house educational materials, resources, and opportunity announcements, and provide linkages to other training and educational resources for future sustainability. The platform will also have an intranet that will serve as a data portal. We will also create linkages between public, private, NGO, and academic organizations using the major professional and trade associations and workgroup meetings with association leaders to align priorities around VBD education, training, and management (Years 1-5).
- 2) Develop a five-year mentoring program to allow for beginners in VBD to achieve expert level awareness and preparedness through a Pathway to Excellence program. Beginning in Year 1 a selected municipality in the Gulf south region will be chosen to be mentored by several leaders in the industry to establish the best way to replicate this nationwide. Tracked, expanded, and reported to CDC (Years 2-5).

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- ¹⁴Rosenberg R, et al. 2018. Vital signs: Trends in reported vector-borne disease cases - United States and Territories, 2004-2016. *Morbidity and Mortality Report*. 67:496-501.
- ¹⁵Dye-Braummiller, KC, et al. 2022. Riding the wave: Reactive vector-borne disease policy renders the United States vulnerable to outbreaks and insecticide resistance. *Journal of Medical Entomology*. 59:401-411.
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EXHIBIT C

PROJECT SUMMARY

Our project focuses on **coordinated training and evaluation of pest management, vector control districts, public health, sanitary, animal health professionals and pre-service students in these fields to achieve an integrated workforce to mitigate community vector-borne disease risk in the Gulf Coast region.** The short and long-term goals of the collaborative are to address critical gaps in information exchange, resources, infrastructure, evaluation methods, and training standards in a region that is highly vulnerable to emerging and reoccurring vector-borne disease threats, the Gulf Coast. The strategies outlined in this proposal will address these gaps by creating infrastructure that fosters interagency, cross-sector information and resource sharing, increased dialogue, and coordinated training efforts for improvement of vector-borne disease preparedness and response capacity. To achieve this goal, the project is focused on four major strategies:

- 1) Form working groups for the development of needs assessment tools with internal (e.g., CDC, vector control districts) and external (e.g., business, pest control industry, community organizations) partners and stakeholders; compile a collection of relevant information that defines current VBD preparedness, monitoring, and response capacity in the Gulf Coast region (Year 1)
 - a) Conduct preliminary needs assessment to determine extent of vector control programs and services throughout the Gulf States and gather data on current knowledge gaps, practices employed, and area needs to maximize program core competencies (Year 1-2)
 - 1) Create a workgroup composed of key grant partners, supporters, and stakeholders (including mosquito control associations) that will work together to identify currently active vector control groups and gaps in vector monitoring and control in their respective states
 - 2) Create a paper or online survey on knowledge, practice, and needs that work group liaisons can distribute via mailing list to the identified vector control groups
 - b) Based on preliminary needs assessment data, conduct a survey of local and state governments to document where vector control services are absent and formulate a plan to expand education and training to build capacity. Identify entities and private industry partners that could provide VBD services to these areas in the future. (Year 1-3)
 - c) Using our diverse working group of collaborators, compile a database of existing education and training infrastructure such as academies, meetings, webinars, workgroups, university classes and programs, professional and trade association partnerships, and existing documents to formulate educational standardization across the Gulf Coast region and create a

repository for use and dissemination that can be leveraged. (Year 1-2)

d) Evaluate the VBD capacity, infrastructure, workforce, and resources available across university, professional, and public sectors in the Gulf South. (Year 1-2)

e) Based on the infrastructure and evaluation data gathered, identify programs that would be offered a standardized curriculum plan to serve as in-person training centers throughout the Gulf Coast states for education and training of local workforce and students (Year 3-4)

f) Evaluate operational procedures and tools such as the use of carbon dioxide for flea control in homeless encampments, resistance testing tools, and scheduled insecticide treatments to establish cost efficient and effective best practices for VBD programs and private industry. (Year 3-5)

2) Create, pilot test, and evaluate educational content at proposed in-person training centers with current capacity for these activities. These tests would highlight procedural best practices to offer replicated educational programming for students and professionals that will be evaluated using standardized measurement tools. (Year 1 – 5)

a) From participant feedback, collect assessment baseline data (ABD) action objectives for the year following the programs. After one year, collect follow-up objective data on those actions and the successes or failures of their attempts from each workforce type, then redefine barriers to success. (Year 1-5)

b) Provide the CDC with the action plan and evaluation data for effectiveness of hands-on, center based VBD training for a multi-sectoral workforce across a diverse regional demographic. (Year 5)

c) Provide interdisciplinary and cross-sector training (virtual, in-person) and mentorship opportunities for professionals and students to encourage collaboration, provide visibility for information sharing and adoption of best practices in VBD (Year 2-5)

d) Translate the educational offerings into Spanish and other major languages to reach the full extent of the population in the Gulf Coast (Year 4-5)

e) Provide the opportunity for internships and practicums for university students to complete embedded modules at local, state, federal government, and private industry to gain greater perspective and obtain VBD competencies while understanding the importance of collaboration and roles that are required for effective VBD prevention and interventions (Year 3-5).

3) Create a mechanism for sustainability of partnerships and infrastructure to ensure continued interagency and cross-sector cooperation, data and information sharing among stakeholders and

partners. (Year 1-5)

a) Create a centralized online platform to describe project priorities, house educational materials, resources, and opportunity announcements, and provide linkages to other training and educational resources for future sustainability (Year 4-5)

b) Create linkages between public, private, NGO and academic organizations using the major professional and trade associations. Establish workgroup meetings with association leaders to align priorities around VBD education, training, and management. (Year 1-5)

c) Create a system of program mentoring to provide guidance for VBD programs to overcome barriers and be linked to resources for future sustainability and resource sharing (Year 4-5)

4) Develop a procedural plan for obtaining data and a platform for data linkage to obtain baseline data and information needs (Year 1-2).

a) Improve data availability and quality by working with partners to establish public health resources in multiple online locations for easy dissemination for future preparedness (Year 3-5)

b) Increase awareness of these resources to all levels of partnerships. (Ongoing)

EXHIBIT D

BUDGET AND BUDGET NARRATIVE

Virginia Tech Budget Justification

A. Direct Labor – Senior Personnel (\$160,165 requested)

Rachel Lin Weaver, Associate Professor, School of Visual Arts, Principal Investigator
Effort Per Year = 0.00 AY months. 1.5 Summer months in year 1. 2.75 Summer months in years 3, and 5. 2.5 Summer months in years 2 and 4.

Professor Weaver is responsible for developing media content around vector-borne disease prevention and education in partnership with the City of New Orleans. Initially, Professor Weaver will analyze preexisting media and educational materials. Subsequent stages of the project will involve creative project development and coordination. Professor Weaver will lead a team of filmmakers and work closely alongside vector-borne disease specialists. Ultimately, these efforts will culminate in up-to-date media that successfully addresses vector-borne disease education, awareness, and prevention in the Gulf South.

B. Fringe Benefits (\$11,543 requested)

Fringe Benefits are calculated in accordance with Virginia Tech's federally negotiated fringe rate agreement, which is available at:

https://osp.vt.edu/content/dam/osp_vt_edu/rates/fy24-fixed-fy22-final-cfw-fy25-prov-fringe-rate-agreement.pdf. These rates provide funds that contribute to FICA, medical coverage, and other benefits as provided to the various categories of personnel. Rates are as follows:

FRINGE RATES	Through 6/30/24	On/After 7/1/24
Regular Faculty	32.78%	32.96%
Special Research Faculty	35.52%	35.10%
Part Time Faculty	26.41%	27.50%
SMR Faculty/Wage Employee	6.34%	6.65%
GRA	9.19%	9.83%
Classified Staff	48.00%	47.72%

C. Travel (\$47,973 requested)

Travel costs are needed to facilitate travel to and from, and stays in New Orleans, where the entire project will take place.

G. Other Direct Costs

G.1. Materials and Supplies (\$10,000 requested)

Materials and Supplies costs are needed to support the production and management aspects of the work, including consumable materials and aspects such as tripods, cloud storage, etc.

G.5. Other

G.5.1 Contractual Services (\$176,782 requested)

Contractual Services are needed as this project to facilitate project development and assessment, and to integrate professional media producers into the production, which will require contracting for sound field recording, cinematography, post-production, editing, color correction, etc.

H. Indirect Costs (\$94,485 requested)

The indirect rates applied have been negotiated and approved by Virginia Tech's Federal Cognizant Agency, ONR. The indirect rate used for this proposal is our off-campus outreach is 23.30% MTDC. A copy of VT's current federally negotiated indirect rate agreement can be found here: https://osp.vt.edu/content/dam/osp_vt_edu/rates/fy22-24-fa-predetermined-rate-agreement.pdf.

EXHIBIT E.

QUARTERLY REPORT TEMPLATE

[illegible]