

EXHIBIT 16

**GULF REGION HEALTH OUTREACH PROGRAM
ENVIRONMENTAL HEALTH CAPACITY AND LITERACY PROJECT**

I. EXECUTIVE SUMMARY

A. Purpose

The Environmental Health Capacity and Literacy Project (“EHCLP” or the “Project”) of the Gulf Regional Health Outreach Program (“Outreach Program”) will strengthen the resilience of vulnerable Gulf Coast communities by: building environmental health capacity to deliver coordinated specialty care; integrating the roles of community health workers, including environmental health navigators, as a viable and sustainable component of the health system; and embedding an environmental health science curriculum in public schools and universities across the region to promote environmental health literacy.

An overarching hallmark of the EHCLP is to ensure that programs and activities are developed using Gulf Coast resources, with deliverables tailored to, and embedded within, the affected Gulf Coast communities.

B. Sustainability

The EHCLP has built-in sustainability, as demonstrated by the following:

- Primary care physicians who have been trained to evaluate patients with environmental health complaints will also understand how effectively to access and maximize environmental peer consultation, and arrange specialty referral assets within their respective health services areas.
- Embedding community health workers (“CHWs”) within primary care centers serves to bolster accessibility of the local health workforce and improves the overall quality of care for the community.
- The future capacity of environmental health scientists will be enhanced by integrating environmental health into high school curricula, and by exposing students to environmental health research through close interaction with faculty and graduate students.

C. Target Populations

The primary target populations for the Project are “fisherfolk,” their families and their health care providers, who are living and working together in the designated parishes and counties within Louisiana, Mississippi, Alabama, and the Florida panhandle that may have been impacted by the Deepwater Horizon oil spill.

D. Partnerships and Collaborations

The EHCLP will work in partnership and collaboration with the Tulane University School of Public Health and Tropical Medicine (“Tulane”), the Louisiana Public Health Institute (“LPHI”), the Alliance Institute, Louisiana State University Health Sciences Center, the University of South Alabama, The University of Southern Mississippi and the University of West Florida. The EHCLP will build on both ongoing and recently funded research by the National Institutes of Health (“NIH”): *the RC2 SECURE GO grant* funded by the National Institute of Minority Health and Health Disparities, and the *U-19 GROWH Consortium* recently funded by the National Institute of Environmental Health Sciences (“NIEHS”), as well as a proposed project submitted to the Baton Rouge Area Foundation.

II. BACKGROUND AND RATIONALE

Communities living on our country’s Gulf Coast have faced decades of interdependent challenges directly affecting their individual health and that of their communities. Those challenges include: a lack of preparedness against natural disasters and the impact of those disasters on physical and psychological well-being; a persistence of health disparities, specifically related to chronic health conditions; and historical environmental contamination exacerbated by the aftermath of Hurricanes Katrina and Rita. While progress has been made in documenting those challenges, the solutions to date have been suboptimal. Those solutions have typically employed narrow, “silo-driven” research designs; lacked a community-based participatory approach; and failed to produce sustainable, system-driven solutions. The Deepwater Horizon oil spill provides a unique opportunity to explore rapid, tailored, and evidence-based environmental health services to address these *preventable* health challenges.

A lack of available baseline data has hampered opportunities to establish early, pre-exposure baseline health status, which has been an impediment to accurate risk assessment and subsequent health interventions. Activities to date have not adequately addressed persistent community health concerns. Most importantly, no comprehensive environmental health services have been provided to allay these concerns. The EHCLP is aimed at filling this pivotal gap.

III. OBJECTIVES AND KEY COMPONENTS

A. Objectives

The overall goal of EHCLP is to strengthen the resilience of vulnerable Gulf Coast communities through implementation of a five-year, Gulf Coast-wide integrated, community-based program to strengthen environmental health knowledge, increase the environmental health literacy of the community, and improve the environmental health knowledge of students and teachers along the Gulf Coast.

B. Key Project Components

There are three key components to the Project:

- Build sustained environmental health capacity in the Gulf Coast through an integrated regional network of informed primary care providers supported by a Gulf-wide environmental health specialty care system.
- Establish a cadre of trained Community Health Workers/environmental health navigators linking vulnerable communities in the affected Gulf Coast communities with frontline health services.
- Embed environmental health science in Gulf Coast high school, undergraduate and graduate education.

IV. PROJECT ACTIVITIES

A. Project Activities

- 1. Build sustained environmental health capacity in the Gulf Coast through an integrated regional network of informed primary care providers supported by a Gulf-wide environmental health specialty care system.**

The environmental health specialty care and health professionals education component of the Project will be implemented in collaboration with the Association of Occupational and Environmental Clinics (“AOEC”). Organized in 1987, the AOEC has grown from twenty-two charter clinics to sixty-three clinics in twenty-nine states, the District of Columbia, Canada, Germany and Dubai. AOEC is committed to environmental health promotion and disease prevention. AOEC has addressed the problem of vulnerable sub-populations exposed to low dose chronic exposures as part of both its environmental and occupational training and education. Since 1998, AOEC has augmented its expertise related to pediatric and pre-natal environmental health with the Pediatric Environmental Health Specialty Unit (“PEHSU”) program.

a. Environmental Health Specialty Referral Network

The AOEC will work with the Tulane team to establish a Gulf Coast-wide specialty referral network, specifically collaborating with AOEC clinics and individual AOEC members in the region. The regional capacity in environmental health will be augmented with AOEC expertise at the national level.

(1) Region-Specific Network

To develop a more region-specific network of referral sites, AOEC and Tulane will initially target frontline health providers connected to existing community clinics and

other primary care clinical units. Eventually, the more comprehensive community health clinics funded by the LPHI Primary Care Capacity Project (“PCCP”) will be included. In addition, AOEC will compile a list of medical school faculty from across the Gulf Coast region who specialize in community and occupational/environmental medicine, as well as individual physician members of AOEC (not affiliated with a particular corporate entity) located within the designated parishes and counties across the Gulf Coast.

(2) Peer Consultation

The proposed region-specific network will provide specialty peer consultation to the primary care providers. This will link primary care providers to environmental health specialists in peer-to-peer discussions that will assist the primary care providers in diagnosing and treating conditions with potential environmental causes. Primary care providers will also be able to refer patients to these environmental health specialists, who will provide environmental health specialty clinical evaluations, when indicated. The Project will pay for approximately 1000 of these referrals over its 5-year term. The specialty clinical evaluation will occur in consultation with the primary care provider, in order to maintain a patient-tailored trajectory of care, with referral back into the Patient Centered Medical Home (“PCMH”).

b. Health Professions Education

AOEC personnel will work with their Gulf Coast partners to develop at least three *Case Studies in Environmental Medicine* (“CSEM”) training modules, for use in educating frontline clinical professionals about environmental health topics. These CSEM modules will focus on issues of concern to the community, most notably those relating to seafood consumption and indoor/outdoor air pollution, and in particular, potential risks to sensitive/vulnerable subpopulations, (e.g. pregnant women and women of reproductive age and populations who depend upon subsistence fishing). While community-generated concerns are the primary focus, the CSEM will include generic information regarding occupational and environmental health, as well a section on risk communication and frequently asked questions.

(1) Educational Materials

The CSEM will incorporate existing AOEC educational materials, such as two previous fact sheets prepared by the PEHSU program, which relate to the 2010 Deepwater Horizon oil spill. The existing Deepwater Horizon-related fact sheets are intended to provide educational information for two distinct audiences: the community (especially parents) and community health care providers. The fact sheets are posted in both English and Vietnamese at <http://aoec.org/PEHSU/facts.html>. In addition to the PEHSU fact sheets, AOEC members have developed over a dozen CSEM modules for the Agency for Toxic Substances and Disease Registry (“ATSDR”) since 2005, on a range of topics, including Pediatric Environmental Health, Reproductive/ Developmental Hazards, Environmental Triggers of Asthma, Pre-Conception Health and Poly Aromatic Hydrocarbons (“PAH”).

(2) Continuing Education Credits

CSEM educational materials must be developed in such a way as to qualify for continuing education (“CE”) credits. Given the diversity of the professional population providing patient care across the Gulf Coast, suitable pre- and post-questions are required to satisfy strict requirements for awarding CE (e.g. Continuing Medical Education, Continuing Education Units, and Continuing Health Education Specialist credits). AOEC personnel have worked with the Centers for Disease Control and Prevention (“CDC”) to award CE credits since 2006, and CE credits provided through the CDC are also free of charge to the participating health care providers. Included in the scope of work for the CSEM is duplicating the educational materials into CD format, estimated to be 500 CDs with color labels, cover art and slim line cases, as well as appropriate posting of CSEM modules on the AOEC web site.

(3) Pilot Programs

AOEC and the developers of the new CSEM modules will work directly with the Tulane team to ensure coordination of efforts leading to pilot testing of the materials. There will be two separate pilot tests for each CSEM. The initial pilot testing should be done within the developer’s institution. To ensure appropriate cultural sensitivity to both the community members and the local health care providers, the final pilot testing should be done at a community health center or similar venue in the Gulf Coast region.

2. Establish a cadre of trained community health workers/environmental health navigators linking vulnerable communities in the designated affected Gulf- Coast communities with frontline health services.

Across the Gulf Coast, forty (40) Community Health Workers (“CHWs”)/environmental health navigators will be hired and trained with the ultimate goal of increasing access to health care information for underserved populations, including low-income individuals, minorities, immigrants, and communities with limited English language proficiency.

a. Recruitment

Recruitment strategies will focus on outreach to longstanding community partnerships, including faith-based organizations, teachers, not-for-profit community organizations, frontline health care providers, and well-recognized community leaders. To promote sustainability, the CHWs will be hired and supervised by, and based in, community clinics in the affected parishes and counties, with salary and benefits funded by the EHCLP. Community clinics, along with those funded by the PCCP, will be targeted for linkage to the environmental health specialty referral care system. The CHW navigators will be the “go-to” assets for connecting community members with environmental health information, and will serve as the link between the local health

care system and the Tulane/AOEC team – putting “just-in-time” and “just-in-case” information at the fingertips of their communities.

b. Training

Navigator training will be provided by the Community Health Workers Training Institute at the University of South Alabama, as part of the Outreach Program’s Community Health Workers Training Project. The training will consist of three parts: a core module emphasizing basic CHW skills, including disaster management and basic behavioral and communication skills; an environmental health specialty module, and a mental health module drawn from the Outreach Program’s Mental and Behavioral Health Capacity Project (“MBHCP”); and problem-based learning using adult learning principles, through case studies.

c. Support For Family Well-Being

A subset of the CHWs will be trained to support family wellness and overall well-being. There is a growing body of evidence that, in disaster-prone regions such as the Gulf Coast, there is a significant level of parental distress. This distress is a key contributor to family dysfunction. From a maternal and child health perspective, this is especially the case for first-time mothers. The CHWs trained in the support of family well-being will serve as trusted resources to assist in alleviating these stressors. All CHWs will receive annual re-training and will meet annually in a learning workshop to share experiences and lessons learned.

3. Develop an environmental health curriculum to train healthcare professionals, community health workers, teachers and students.

The environmental health curriculum and case studies will be developed and taught by the Tulane project team. The competency-driven curriculum will provide the performance benchmarks for evaluating CHW’s knowledge, skills and abilities. Tulane environmental health science experts will develop a curriculum in lay format for training CHWs. Faculty members in the Department of Global Environmental Health Sciences at Tulane have expertise in Toxicology, Risk Assessment, Disaster Preparedness and Management, Policy, Environmental Oncology, Environmental Epidemiology, Air Pollution, and Respiratory Disease. Working with the Community Health Workers Training Project, we will develop a tailored curriculum to train CHWs, using an iterative process. Initially, this will be intended to provide 40 CHWs with the knowledge required to communicate effectively about environmental health issues that may arise in future years.

a. Training Topics

- Basic toxicological principles
- Major environmental agents and hazards
- Exposure assessment

- Basic interpretation of air, water, and food quality data
- Basic risk assessment principles
- Disaster Preparedness
- Susceptible and vulnerable groups (e.g. children and pregnant women)
- Online and electronic resources for information
- Biomarkers and clinical tools for health assessment

b. Training Capacity and Portability

An important goal will be to develop a curriculum that is portable across the Gulf Coast in terms of its applicability and level of comprehension. The intent is to create a cadre of community-based CHWs knowledgeable in the field and armed with the tools to inform local community members in a trusting and engaging format. Therefore, our CHWs will serve as the critical hub between local communities and experts, drawn from both clinical and academic sectors across the Gulf Coast. Another key objective of this program will be to educate and train graduate students in environmental health sciences, including community-based participatory research and effective community risk communication. Select students will play an active role in developing the curriculum, disseminating the information, participating in workshops, and engaging CHWs in the process. This is essential to building sustainable partnerships with both current and future environmental health experts and CHWs.

c. High School, Undergraduate and Graduate Education

In collaboration with high schools, colleges and universities across the Gulf Coast, the program will deploy a tailored portfolio of pedagogical strategies to embed environmental health science in the educational institutions' respective curricula. We will partner with The University of Southern Mississippi, the University of South Alabama and the University of West Florida to deploy several key strategies.

(1) Regional Teacher's Education Workshop

Full-time teachers currently working in K-12 public and charter schools will be recruited to participate in a four-day *Regional Teacher's Education Workshop* ("RTEW") focused on environmental health sciences. The goal of the workshop is to engage teachers and expand their knowledge of environmental health, and the related public health implications, through an intensive four-day learning experience focused on environmental health content, instructional design methodologies, skill-based student assessments and strategies for integrating environmental health science into the existing school science curriculum. Workshops will be convened in each of the four affected states and will be hosted by a local teaching institution. A special aspect of the RTEW experience will be fieldtrips where teachers can learn firsthand how seafood is harvested and brought to market, and how oil resources are explored, produced and transported across the Gulf Coast.

(2) Environmental Health Summer Academy

The primary goal of the *Environmental Health Summer Academy* (“EHSA”) for advanced high school students is to provide Gulf-Coast youth with an opportunity for a ‘hands-on’ research experience. In collaboration with the partner universities in the affected areas (South Alabama, Southern Mississippi, West Florida), this program seeks to recruit students with exceptional potential to perform environmental health research, drawing on high schools, as well as undergraduate and master level students, attending regional public schools and colleges/universities. Summer students will design and work on their own research projects in areas of their specific interests. Faculty members who are actively involved in research across the Gulf Coast will act as mentors to provide valuable guidance and support, while simultaneously encouraging independent thought and exploration.

(3) Interacting With University Scientists

Summer students selected from across the Gulf Coast will work closely with post-doctoral fellows and candidates for Masters in Public Health (“MPH”) and Masters in Science (“MS”) degrees. Program participants will communicate research findings to their peers and instructors in a weekly student seminar series, and will be mentored in scientific writing by preparing a written report at the end of their project. Students who are selected to participate in the EHSA program will complete an 8-week internship, and will receive a stipend for successful completion of the training.

(4) The Emerging Scholars Program

This curriculum is designed for select high-school students, primarily those who are predisposed to or interested in science and environmental health sciences. Entrance into this program will be through a competitive process. The goal of this program is to engage promising young students in environmental health sciences, and demonstrate how the results of this experimental field are then applied in public health and policy. Students who participate in this program will be brought into participating university laboratories where a primary mentor will be responsible for their laboratory or field training. It is anticipated that current pre-doctoral and post-doctoral students in participating laboratories will serve as secondary mentors and will be credited for their contributions. This approach is designed to involve the student in the scientific process: from formation of hypotheses using topical research, to experimental analyses, and ultimately to description and presentation of findings. Tulane will develop curricula tailored to the expertise and capabilities of participating institutions and preceptors.

(a) Promoting evidence-based Science

A major goal of this program is to highlight the research being conducted across the Gulf Coast, affording an opportunity for promising young high-school students to participate in research in their region and promoting the training of current graduate students and postdoctoral trainees, as future mentors and leaders. This will create an

academic pipeline for high-school students to attend local Gulf Coast colleges and universities, and ultimately pursue graduate opportunities themselves.

(b) Understanding Gulf Coast Issues

Another key program goal will be to highlight important issues across the Gulf Coast by exposing promising young high-school students, their teachers, and current graduate students to the economic and environmental engines in our region, including the seafood industry, the energy industry and tourism. Participants will go into the field to get first-hand experience and learn how these industries operate and interrelate with one another, and how they interface with our communities, in both positive and negative ways.

V. PROJECT ASSESSMENT

The detailed budget highlights the deliverables. In year one, emphasis will be on conducting health professions education and developing the Gulf Coast environmental health specialty care network. Over its five-year life, the Project will make environmental specialty care services available to approximately 1000 participants by arranging for primary care providers to refer patients with more complex environmental health concerns to members of the network. A triage system will be developed by involving nurse case managers trained in environmental and occupational health.

Formal arrangements with area community clinics will facilitate hiring and supervising of CHWs. Similarly, the collaborative infrastructure in place with partner institutions (University of South Alabama, University of Southern Mississippi, University of West Florida) will facilitate implementation of the emerging scholars program across the Gulf Coast. Full-scale implementation over the five-year term of the EHCLP will result in a trained, primary care provider network, supported by the specialty care system; trained CHWs in each effected parish/county; and a cadre of environmental health scholars, who are put on a path to graduate education in environmental health sciences – from the bench (“lab”) to the community (“frontline”).

Each activity has a built-in evaluation component, which assesses the performance of both the participant/learner and the program components. For primary care providers at the learner level, the assessment of knowledge, skills and abilities will be accompanied by discipline-specific CEs. The AOEC has an existing program in place for evaluation of specialty referral care. Performance benchmarks and learner assessments will accompany the CHW training. Specific learning objectives and a “360 degree evaluation” assessment will be embedded in the Emerging Scholars Program. An evaluation specialist will coordinate the overall project evaluation activities.

VI. PROJECT MANAGEMENT AND ORGANIZATIONAL BACKGROUND

A. Project Management

Dr. Lichtveld, Project Leader, will provide technical and administrative oversight for all aspects of the EHCLP. In collaboration with the Tulane team, she will oversee the scope of work of all partners identified in the budget. It is important to note that, to be successful and foster sustainability, both community clinics and academic partners will have specific responsibilities and accountabilities to be outlined in their respective scope of work. Dr. Wickliffe, EHCLP's co-Project Leader, will provide technical oversight and implement the environmental health CHW training and will co-lead the emerging scholars program, including the teacher summer education workshop. He will coordinate the activities with the partner academic institutions. AOEC will provide technical oversight and programmatic management of all activities related to health professions education and environmental health specialty peer consultation, and clinical evaluations.

Maureen Lichtveld, MD, MPH, the EHCLP's Project Leader, is a Professor and Chair in the Department of Environmental Health Sciences. Dr. Lichtveld has a 30+ year career in public health and is an expert in disaster preparedness and management. She is currently the Principal Investigator for the NIH/NIEHS funded *Transdisciplinary Research Consortium for Gulf Resilience on Women's Health (GROWH)*, bringing together a regional consortium to enhance sustainable community infrastructures to advance innovative, community-centered, transdisciplinary research focusing on the environmental and psychosocial determinants of health. Dr. Lichtveld's expertise includes environmentally-induced disease; research methods in community-based participatory research; environmental health; epidemiology; and randomized intervention trials. Her research focus is primarily on vulnerable populations and reducing health disparities, regionally and nationally. Dr. Lichtveld has served as an expert consultant to the Institute of Medicine for many years on contemporary public health. During her 18-year career at CDC, Dr. Lichtveld provided national expertise in environmental health, emergency preparedness and public health systems research: as Associate Director for Workforce Policy and Planning, Dr. Maureen Lichtveld established and directed the National Network of *Centers for Public Health Preparedness*; directed CDC's prevention research program with schools of public health, schools of medicine, and the Association of Minority Health Professions Schools; was one of the original scientists in public health systems research specifically as it relates to workforce development. During her tenure at the Agency for Toxic Substances and Disease Registry, she provided oversight to the partnership with AOEC and conducted several community-based environmental health studies in minority and disadvantaged populations nationwide.

Jeffery Wickliffe, PhD, is trained as an environmental and ecological toxicologist, interested in the adverse effects that our chemical environment has on the genetic material and impacts on the public's health. He uses biomarkers of exposure and effect in conjunction with estimates and assessments of exposure to occupational toxicants as

well as environmental pollutants. Dr. Wickliffe has developed research projects examining genetic susceptibility to these chemical agents under this same experimental approach. He has expertise in human health and ecological risk assessment and instructs graduate level study in this field. He has a keen interest in risk communication in the context of chemical hazards. He has published on the ecological impacts associated with the Exxon Valdez oil spill in Alaska, as well as research conducted on impacts in the oil-impacted areas near Baku, Azerbaijan. Dr. Wickliffe has collaborative, funded research projects examining the impacts, direct and/or indirect, of the Deepwater Horizon accident on local seafood resources and local Vietnamese-American and non-Vietnamese-American communities using a community-based platform for research and risk communication. The ultimate goal of his research is to characterize and understand the complex nature of exposure to environmental chemicals and elements to better define cumulative stressors that humans actually encounter while not ignoring but incorporating the simultaneous benefits of consumption of important dietary nutrients.

Association of Occupational and Environmental Clinics (“AOEC”) has a long history of providing clinical consultation for primary care health providers. Since 1988, AOEC has been a recipient of cooperative agreements, grants and contracts totaling more than \$16 million with the American Red Cross Liberty Fund, the National Institute for Occupational Safety and Health (“NIOSH”) and the Agency for Toxic Substances and Disease Registry (“ATSDR”). In addition to clinical services, approximately 14,000 health professionals have received instruction under these NIOSH and ATSDR programs, and an additional 16,000 health professionals have been educated under the AOEC Pediatric Environmental Health Specialty Unit program. The AOEC also has supported postgraduate training opportunities in occupational and environmental medicine through one to two month rotations at NIOSH, participation in Health Hazard Evaluations and promotion of the occupational medicine residency programs. On a national basis, the AOEC currently provides over 200 referrals per month for adult occupational and/or environmental issues. These figures do not include the calls made directly to the AOEC clinics. The PEHSU program receives and responds to approximately 100 referral/consultation calls per month. These calls are a mix of referrals for treatment, information, and consultation for both community members and health professionals.

VII. PROJECT TIMELINE

See detailed budget attachment

VIII. BUDGET

See detailed budget attachment



"Environmental Health Capacity and Literacy Project"

Budget for the Entire Proposed Project Period

July 1, 2012 - June 30, 2017

Budget Category Totals	Year 1*	Year 2	Year 3	Year 4	Year 5
Personnel	955,678	982,708	697,375	716,657	736,518
Consultant Costs	28,000	20,000	15,000	15,000	15,000
Supplies	68,000	30,000	30,000	30,000	30,480
Travel	28,500	28,500	23,500	20,250	22,250
Other Expenses	229,190	214,690	214,690	184,000	184,000
Subcontracts	1,390,084	1,401,012	1,700,360	1,710,440	1,670,975
Total Direct Costs	2,699,452	2,676,910	2,680,925	2,676,347	2,659,223
IDC	323,934	321,229	321,711	321,162	319,107
Total Costs	3,023,386	2,998,139	3,002,636	2,997,509	2,978,330

Total Cost - \$15,000,000

* Required Preliminary Budget - \$755,847