INDEPENDENT EXTERNAL PEER REVIEW PANEL NAMES AND QUALIFICATIONS

for the

New Haven Harbor, Connecticut Draft Integrated Feasibility Report and Environmental Impact Statement

The U.S. Army Corps of Engineers submits the following information per requirements in the Water Resources Reform and Development Act of 2014, Section 1044(c)(4)(B).

Entity Conducting the Review	
Outside Eligible Organization:	Battelle 505 King Avenue Columbus, OH 43201
Dates of Review	
Review Initiation:	3 October 2018
Anticipated Type I IEPR Final Report Submittal:	11 December 2018
Reviewer Names and Qualifications	
David Luckie	**Civil Works Planning/Economics**
Mr. Luckie is an independent consultant with nearly 30 years of professional experience in water resource economics, planning, plan formulation, benefit-cost analysis, and risk-based analysis. His public works experience encompasses decades of work with Federal and non-Federal agencies, as well as local and state organizations. He earned his B.S. in economics and finance from the University of South Alabama in 1986. His professional experience includes working with multidisciplinary teams to provide or review complex planning studies for dam safety, flood risk management, ecosystem restoration, coastal storm risk management, deep draft navigation, inland navigation, and water supply and water quality studies. He is intimately familiar with Engineer Regulation (ER) 1105-2-100 and the 6-Step Planning Process and has prepared, supervised, or reviewed numerous planning studies in his career. Mr. Luckie is familiar with the evaluation of alternative plans for deep draft navigation studies and has conducted, supervised, or reviewed several water resource studies. These studies featured numerous alternative plans constructed from an array of different management measures. Over the last three decades, Mr. Luckie's extensive involvement in such studies has included studies at Bayous Boeuf, Chene, and Black in Louisiana and technical reviews for the Port of Texas City. For private-sector clients, he has also participated in, consulted for, or reviewed studies along the Atlantic Coast, with study efforts including Jacksonville, Savannah, and Norfolk.	

Least-cost analysis, also known as cost-effectiveness analysis, has been a very important aspect of Mr. Luckie's decades of work. As mentioned previously, he is well-informed with regard to the evaluation of alternative plans. As a Regional Economist with the USACE Mobile District (1988-2006), Mr. Luckie conducted, supervised, or reviewed benefit-cost analyses for a variety of water resource projects (both single-purpose and multi-purpose) covering the full range of USACE missions. Relevant studies include the Apalachicola-Chattahoochee-Flint and the Alabama-Coosa-Tallapoosa Comprehensive Studies; the draft programmatic environmental impact statements (EISs) covering the states of Alabama, Florida, and Georgia; and the Hunting Bayou General Reevaluation Report (GRR) in Houston, Texas.

Mr. Luckie is very familiar with USACE standards and procedures. He has extensive experience performing National Economic Development (NED) analyses, specifically as they relate to deep draft navigation. For more than 25 years, he has performed, supervised, or reviewed NED procedures for technical accuracy and compliance with policy, guidance, and accepted planning principles. In addition, he has mentored interns and junior economists in USACE methodologies for the full range of USACE Civil Works missions, often requiring them to calculate without- and with-project condition damages either by hand or with a Microsoft Excel spreadsheet, before allowing them to use one of the many computer models USACE employs in its evaluations. He is also very familiar with the USACE Regional Economic System (RECONS) model and the estimation of Regional Economic Development benefits, and has used the model for both Federal and non-Federal project proponents since its inception.

Mr. Luckie is very familiar with the Continuing Authorities Program (CAP), particularly Section 205 of the Flood Control Act of 1948. He has performed in both economic analysis and plan formulation roles on numerous Section 205 efforts throughout the Southeast. He has also reviewed Section 205 products generated in other regions of the country. He mentored four protégés in developing effective Section 205 reports, coaching them and reviewing their work. Finally, Mr. Luckie wrote the Continuing Authorities Customer Guide for the Mobile District, which helped non-Federal sponsors and their consultants understand the CAP Study process from cradle to closeout. The guide appeared in print and on the Mobile District website from 1998 until 2006.

Barry Vittor, Ph.D. **Environmental Resources**

Dr. Vittor is President and Senior Scientist at Vittor & Associates, with more than 40 years of experience in water resource planning and projects, including port development, beach renourishment, and dune and barrier island reconstruction. He earned his Ph.D. in ecology from the University of Oregon. As Director of the Alabama Coastal Foundation and a member of the Mobile Bay National Estuary Program Management Committee, he has been very active in coastal resource management.

For more than 40 years, Dr. Vittor has conducted National Environmental Policy Act (NEPA) impact assessments for USACE, U.S. Environmental Protection Agency (EPA), and other public sector and private clients. He has conducted wetlands delineation, restoration and management, and threatened/endangered species evaluations, and has assisted in

regulatory agency permitting of hundreds of public and private projects throughout the Southeast. He has prepared EISs and environmental assessments (EAs) for government agency and private clients for port developments, beach renourishment, utility installations, aquatic weed control programs, and hurricane-related debris clean-up. Examples include the Peckman River Basin (New Jersey) flood control and ecosystem restoration feasibility study and the programmatic EIS for New York District navigation projects in the Port of New York/New Jersey.

Dr. Vittor is experienced in coastal storm risk management projects, particularly in urbanized coastal areas. He has been involved in EAs related to barrier island reconstruction after Hurricane Katrina; studies of port development impacts on wave run-up during major storm events; and USACE IEPRs for the Hereford Inlet to Cape May Inlet, New Jersey, Hurricane and Coastal Storm Damage Risk Reduction Project Draft Feasibility Report and Environmental Assessment, and the Surf City and North Topsail Beach Integrated Feasibility Report and Environmental Impact Statement. He is familiar with the habitat and the fish and wildlife species that may be affected by project alternatives in a study area. He has studied ecosystems along the entire U.S. Atlantic coast regarding fisheries, benthic and demersal fauna, avifauna, and other biological resources, along with assessments of beach renourishment/sand borrow projects and port and navigation development projects.

Dr. Vittor has extensive experience in most aspects of the Clean Water Act (CWA) of 1972, including Section 404 wetlands and streams, National Pollutant Discharge Elimination System (NPDES) discharge permit monitoring, ocean disposal of dredged material, and Section 408 Federal projects coordination. Section 404 permitting often triggers comments from the U.S. Fish & Wildlife Service (USFWS); the Fish and Wildlife Coordination Act provides the USFWS with comment authority on wetland/stream permit applications, under Section 7. Dr. Vittor has handled hundreds of such projects, as well as Section 10 coordination with the USFWS where Federal permits are not involved. He has also prepared Habitat Conservation Plans for a number of protected species. Dr. Vittor is familiar with the USFWS Habitat Evaluation Procedure (HEP) and has applied HEP and several other habitat functional value indices (e.g., Cover Type, HGM, WET, WRAP) to field assessments of port development projects along the Gulf Coast, navigation channel maintenance dredging/disposal in riverine and embayment projects in the New York District, and numerous private development projects. He has conducted numerous studies and surveys of plant and animal species listed under the Endangered Species Act (ESA), for a wide variety of public and private client projects, in the Gulf of Mexico and along the Eastern Seaboard. He has prepared biological assessments for terrestrial and aquatic species in accordance with USFWS guidelines and has addressed protected species of plants and animals in reviews of coastal beach and dune reconstruction projects on the U.S. Atlantic Coast. He has assessed essential fish habitat (EFH) impacts related to beach renourishment, sand borrow operations, petroleum development, and port/navigation projects along the U.S. Atlantic and Gulf Coasts, and he has evaluated EFH impacts of storm debris removal operations in the northern Gulf of Mexico.

Dr. Vittor is familiar with the Marine Mammals Protection Act (MMPA) and has assessed potential impacts of offshore oil and gas developments on marine mammals in the Gulf of

Mexico, including noise effects, ship collisions, and seismic surveys. He has also participated in peer reviews of impacts of coastal dune and beach reconstruction on marine mammals along the U.S. Atlantic Coast and has coordinated with the National Marine Fisheries Service regarding potential impacts of storm debris clean-up operations on marine mammals (especially bottlenose dolphin) in the northern Gulf.

Dr. Vittor has served on several USACE IEPR panels as a biology, ecology, and NEPA specialist for coastal storm damage reduction, flood risk management, deep draft navigation, and ecosystem restoration studies.

Michael Kabiling, Ph.D., P.E. **Coastal Hydraulic Engineer**

Dr. Kabiling is a senior engineer with Taylor Engineering, Inc. in Jacksonville, Florida, an engineering consulting firm that specializes in hydrology, hydraulic, and coastal engineering. He has more than 25 years of experience in water resources; hydrologic, hydraulic, and coastal engineering; and numerical modeling. He earned his Ph.D. in hydraulic and coastal engineering from Yokohama National University, Japan, in 1994 and is a professional engineer (PE) licensed in Florida, Georgia, South Carolina, and Washington. In his early career, he served as a hydraulic engineer and numerical modeler in hydrodynamics, water quality, and pollution transport for river rehabilitation projects. He also completed flood studies and sediment engineering works. Among the numerous projects that demonstrate his hydraulic engineering experience are the Dredged Material Particle Tracking Modeling for the Port Everglades Harbor Navigation Channel Deepening and Widening Project, Broward County, Florida (2016 – present); IEPR Charleston Harbor Post 45 Phase II, Charleston, South Carolina, Fesibility Report and Environmental Impact Statement (2014-2015); Jacksonville Harbor Deepening Project Impact Assessment (2009-2014); Pasig River Rehabilitation, Manila, Philippines (1995-2001); Diagnostic Modeling System, Phase II, Duval County, Florida (2001); East Pass Vicinity Borrow Area Excavation, Okaloosa County, Florida (2002-2003); South Carolina Coastal Storm Surge Modeling (2009); and South Carolina SC-171 Bridge Replacements over Folly River and Sol Legare Creek, Charleston County (2008- 2011).

The Port Everglades Sediment Transport Modeling, Broward County, Florida, demonstrates Dr. Kabiling's extensive understanding and experience of coastal systems. As coastal and hydraulic engineer, his sediment transport modeling work supported USACE and Port Everglades planning for navigation channel deepening and widening. For this project, Dr. Kabiling designed a field measurement program of tides, currents, and waves to support model setup and validation; developed and applied state-of-the-art modeling with integrated three-dimensional MIKE hydrodynamic, wave, and particle tracking models; applied the model to determine the fate of the dredged material plume and deposition pattern for normal and extreme tides, waves, Florida Currents, and 25 dredging scenarios; and determined the best dredging method with the least deposition and suspended sediment impact. The IEPR Charleston Harbor Post 45 Phase II, Charleston, South Carolina, Feasibility Report and Environmental Impact Statement demonstrates Dr. Kabiling's professional experience in evaluating the application of various modeling systems for sediment transport and morphology evaluation in navigation channel dredging projects. The Jacksonville Harbor Project demonstrates Dr. Kabiling's extensive experience in deep draft navigation and channel modification. For that project, he provided project management, supervised

Environmental Fluid Dynamics Code (EFDC) model validation and application for various harbor dredging scenarios, and performed quality assurance/quality control (QA/QC) model reviews. The EFDC modeling of the St. Johns River provided the means to evaluate the effect on river hydraulics, salinity, ecology, and water quality of the channel deepening, channel widening at select locations, and construction of new turning basins, as well as the cumulative impacts of other projects. Dr. Kabiling's coastal and hydraulic engineering works on the three projects—Port Everglades Sediment Transport Modeling, IEPR Charleston Harbor Post 45 Phase II, and Jacksonville Harbor Deepening Project—demonstrate Dr. Kabiling's familiarity with USACE coastal engineering requirements for Civil Works projects and feasibility studies. For the Pasig River Rehabilitation Project, he supervised the implementation of field monitoring programs and conducted periodic numerical modeling of water levels, flow, and water quality in rivers and channels. He also prepared technical reports to assess probable scenarios due to various river rehabilitation programs, water quality prognoses, and pollution loads. In addition, he taught training courses on the operation and application of hydrological, hydrodynamic, advection-dispersion, and water quality numerical models.

In 2011, Dr. Kabiling worked on the Ft. Pierce Inlet Sand Bypassing Feasibility Study, Florida, where he provided project management, designed a field measurement program, supervised and performed data evaluation and numerical modeling, supervised the estimation of potential shoaling rates at proposed deposition basins near the deep-draft Ft. Pierce Inlet Navigation Channel, prepared technical reports, and recommended future tasks for engineering design and permitting of the deposition basins. This project involved expertise in deep draft navigation, dredged material disposal, and coastal currents. Additional experience with dredged material disposal includes work on two projects: the Feasibility Study of Sediment Basins near Cut 1 of Okeechobee Waterway, Martin County, Florida (an effort that also required experience in channel modification), and the Assessment of Canal and Embankment Impacts on Hydraulics and Sediment Transport in the Atchafalaya Basin, Louisiana (an effort that also required experience in erosion and deposition). Other erosion-related projects include the South Carolina Bridge Replacements Project mentioned above and a 2011-2012 beach erosion project called Florida Power and Light Engineering and Permitting Services, St. Lucie County, Florida. For the South Carolina Bridge Replacements Project, Dr. Kabiling designed and supervised tide and flow velocity measurements; supervised the application of the one-dimensional Hydrologic Engineering Center River Analysis System (HEC-RAS) model of the Stono River-North Edisto River System; supervised the development and application of two-dimensional surge models at the proposed bridge locations; and supervised erosion depth estimation. For the Florida Power and Light Project, scenarios were analyzed that included a seawall to minimize shoreline erosion and submerged breakwaters to dissipate erosive wave action in the nearshore area. An integrated hydrodynamic, wave, and sediment transport model provided the means to evaluate the impact of the seawall and breakwater along the beach. As the lead modeler, Dr. Kabiling set up an integrated MIKE21 hydrodynamic, wave, and sediment transport model; calibrated and verified the performance of the hydrodynamic and wave models using available hindcasted data; and evaluated the short- and long-term performances of various submerged breakwater layouts and geometries to reduce shoreline erosion.

Dr. Kabiling's expertise in coastal currents includes the following projects: Estimation of Waves, Coastal Currents, and Erosion at the Barrier Island, Peninsulas, and Ring Levee in Lakeshore Estates Project in St. Tammany Parish, Louisiana (2006) (managing efforts to estimate waves, coastal currents, and concomitant erosion); the Atlantic Intracoastal Waterway, Sebastian Inlet (Pelican Island), Indian River County, Florida (2006) (performing hydrodynamic and wave modeling); and the Acadiana Bays Modeling Study, Louisiana (2004) (modeling currents generated by various forces [tides, waves, and winds] and advection-dispersion of saltwater).

Dr. Kabiling is an active member of the American Society of Civil Engineers, the Association of State Floodplain Managers, the American Water Resources Association, the National Society of Professional Engineers, the Florida Engineering Society, and the International Association of Hydraulic Engineering and Research.

Andrew Blystra, CPESC, P.E. **Geotechnical Engineer/Geologist**

Mr. Blystra is an Associate Engineer with GENTERRA Consultants, Inc. with 44 years of experience in civil and geotechnical engineering. He has a M.S. in geotechnical engineering from the University of Illinois at Chicago with continued doctoral work in geotechnical engineering and engineering geology. He is a professional engineer in Pennsylvania, Michigan, Illinois, Indiana, Wisconsin, and Georgia, and is a Certified Professional in Erosion and Sedimentation Control.

Mr. Blystra has characterized sediment to be dredged by USACE at New Buffalo Harbor, Michigan, and for two private dredging contracts at inland lakes in Michigan. He characterized sediment upstream of existing hydroelectric projects at Norway Point, Four Mile, and Ninth Street on Thunder Bay River, Michigan. His experience includes characterizing sediment upstream and downstream of propose hydroelectric projects in Pennsylvania at existing USACE projects at Allegheny Lock and Dam 2, Emsworth Locks and Dam, Emsworth Back Channel Dam, Montgomery Locks and Dam, Monongahela Locks and Dam 4, Maxwell Locks and Dam, Grays Landing Lock and Dam, and Point Marion and in West Virginia at the proposed hydroelectric projects at Morgantown and Opekiska Locks and Dams. Mr. Blystra has characterized sediment upstream and downstream of six proposed hydroelectric projects on the Muskingum River in Ohio, at the Williams Dam in Indiana, at the Kentucky River Lock and Dam 11 in Kentucky, and at the USACE Overton Lock and Dam on the Red River in Louisiana. He also investigated the liquefaction susceptibility of sediment in the reservoir of the Gilboa Dam in New York.

Mr. Blystra's experience in channel slope stability includes physical model testing of proposed hydroelectric projects on the Ohio River at the USACE Cannelton and Meldahl Locks and Dam. He also has experience evaluating channel slope stability and designing erosion reduction measures downstream from existing hydroelectric projects on the Thunder Bay River, Michigan, where over 40 erosion sites existed. He also evaluated the stability of the channel slope that would result from a proposed project to add powerhouse discharges at ten locations on the Allegheny, Ohio, and Monongahela Rivers in Pennsylvania and West Virginia.

Mr. Blystra has also been responsible for drilling programs, including the identification of soils and rock at eight existing Consumers Energy hydroelectric projects in Michigan, the Norway Point and Four Mile hydroelectric projects in Michigan, and the Hatfield power canal in Wisconsin. He also was responsible for several geotechnical investigations in Georgia and Alabama. His experience includes using geophysical methods for investigating subsurface conditions. Projects include using ground-penetrating radar at the upper reservoir of the Ludington Pumped Storage Project, the area upstream of the Elkhart Hydroelectric Project, the Prairie Du Sac spillway and powerhouse, and the Hardy Hydroelectric Project Spillway. Mr. Blystra also has used electrical resistivity and seismic methods to conduct geophysical exploration and has extensive experience using the pressure meter in investigations.