



**INDEPENDENT EXTERNAL PEER REVIEW  
PANEL  
for the  
CHICAGO AREA WATERWAYS SYSTEM  
DREDGED MATERIAL MANAGEMENT PLAN  
AND  
INTEGRATED  
ENVIRONMENTAL IMPACT STATEMENT  
CALUMET HARBOR AND RIVER  
ILLINOIS AND INDIANA**

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).

<b>Entity Conducting the Review</b>	
Outside Eligible Organization:	Battelle 505 King Avenue Columbia, OH 43201
<b>Dates of Review</b>	
Review Initiation:	29 Jun 2019
Type I IEPR Final Report Submittal:	19 Aug 2019
<b>Reviewer Names and Qualifications</b>	
<b>JEFF MULLEN</b>	<b>Economist</b>
Dr. Mullen is an associate professor in the Department of Agricultural and Applied Economics at the University of Georgia, specializing in water resource, natural resource, and environmental economics. He earned his Ph.D. in Agricultural and Applied Economics/Natural Resource Economics from Virginia Polytechnic Institute and State University in 1999. He has over 24 years of experience conducting numerous studies in the field of environmental and natural resources economics and has taught graduate courses in environmental and natural resource economics and econometrics. He is familiar with large, complex Civil Works projects with high public and interagency interests and has served on USACE IEPR panels as an economist for both the Lock and Dam 22 Fish Passage Project, Hannibal, Missouri, and Aquatic Ecosystem Restoration Project, Mountain Park Dam, Mountain Park, Georgia. Dr. Mullen is exceptionally qualified to evaluate the appropriateness of cost effectiveness/incremental cost analysis (CE/ICA) applied to dollar costs and ecosystem restoration. In addition to the experience described above, he has taught theory and application of the techniques used by USACE to estimate National Economic Development (NED), Environmental Quality (EQ), Regional Economic Development (RED), and Other Social Effects (OSE) benefits. He has detailed knowledge of USACE benefit and cost calculations for ecosystem restoration, agricultural production, urban flood damage, transportation, and recreation. In addition, both IEPRs that Dr.	

Mullen participated in required the extensive application of CE/ICA. He has detailed knowledge of the Institute for Water Resources (IWR) Planning Suite, the USACE tool for CE/ICA, utilizing the program in his Water Resource Economics course to illustrate the complexity of water management decisions and incremental cost analysis. He has coauthored numerous peer-reviewed articles concerning economic analyses and impacts related to municipal, wastewater, irrigation, and water impoundment projects and has been a contributing author to numerous publications concerning environmental economics and evaluation, economic modeling, and price analysis. His textbook “Water Resource Economics” (Routledge Press) is forthcoming. Dr. Mullen is the President of the Southern Natural Resource Economics Committee and a member of the American Agricultural Economics Association.

**CRAIG VOGT**

**Environmental Law Compliance Specialist**

Mr. Vogt is an independent ocean and coastal environmental consultant, focusing on such areas as ecosystem restoration techniques, NEPA and environmental compliance, dredging and dredged material management, and sediment management for wetlands, shorelines, and coastal restoration. He earned his M.S. in environmental engineering from Oregon State University in 1971. From 1971 to 2008, Mr. Vogt worked for the U.S. Environmental Protection Agency (EPA), the last 20 years of which was in the Oceans & Coastal Protection Division (OCPD) at EPA Headquarters. His time at EPA provided him extensive experience in environmental, estuarine, and coastal processes, including being responsible for field monitoring in his early years in EPA’s Region X Office to measure the environmental impacts of wastewater discharge to the coastal and fresh waters of the Pacific Northwest. As Deputy Director of OCPD, Mr. Vogt was responsible for implementation of the National Estuary Program (NEP), the goal of which was, and still is, healthy and productive estuary habitats and ecosystems for the 28 separate NEP programs around the country. Much of the focus was on the restoration of aquatic resources, including beneficially using dredged material for restoration and beach nourishment; restoration included improving the condition of habitat such as fish and eelgrass beds and wetlands/marshes, as well as recognizing the influence of point and nonpoint sources of contamination, invasive species, development (including dredging of channels), toxic chemicals, and climate change. Mr. Vogt has extensive experience in evaluating environmental compliance documents and cultural resources assessments in support of navigation projects. As Deputy Director of OCPD, Mr. Vogt was also responsible for the national implementation of the Ocean Dumping Act for dredged material, including environmental criteria, testing requirements, site designation, and coordination with USACE permitting. The NEPA requirements for developing descriptions of the environmental impacts of a proposed project and its alternatives form the basis for nearly all of the work Mr. Vogt has been involved in since the late 1980s, as a regulator and as a consultant. While Deputy Director, Mr. Vogt also served as co-chair of the National Dredging Team, an interagency team established to bring together the Federal agencies involved in dredging and dredged material management, under the Clean Water Act and the Ocean Dumping Act. He was involved in facilitating and supporting the operations of the Regional Dredging Teams, which were established to bring state and local government agencies together to move dredging and restoration projects forward. Working with the National Marine Fisheries Service and the U.S. Fish and Wildlife Service on endangered species and critical habitat was a key to proceeding with approval of dredging projects. Also, in that role, great progress was made in understanding,

and EPA allowing, placement of clean dredged material in the littoral drift along shorelines, with the objective of rebuilding beaches, mudflats, and coastal wetlands. Mr. Vogt's experience in water resource environmental evaluation and NEPA compliance for deep-draft navigation channel improvement and dredged material management projects (i.e., to include open-water, ocean disposal and beneficial use) includes a number of pertinent activities. Mr. Vogt prepared a guidance manual for USACE-Headquarters on tracking the beneficial use of dredged material by USACE Districts. The manual categorized beneficial uses, which included such categories as beach / dune restoration and wetlands / marsh restoration, with the objective of increasing shoreline and ecosystem restoration. Since his retirement from the EPA in 2008, Mr. Vogt has used his knowledge of ecosystem restoration techniques for creation of wetlands, beaches, dunes, and oyster reefs in a variety of projects. He provided (and is continuing) consulting services to USACE under the National Shoreline Management Study, the objective of which is to assess the impacts of accretion and erosion on shorelines and coastal environmental resources, such as the freshwater wetlands in the Great Lakes. In addition, he was an independent reviewer of the required NEPA documents for a coal transport project on the Columbia River, the Matagorda Navigation Dredging Project in Texas, and the Redwood City proposed dredging project in San Francisco Bay. Mr. Vogt also was an independent reviewer of the Hudson-Raritan USACE Coastal Restoration Project, for which environmental assessments under NEPA were a very important element in understanding the proposed project; these assessments included potential impacts to historical and cultural resources, as well as social and environmental justice concerns. Mr. Vogt assisted Environment Canada in the preparation of its contaminated sediments management manual, to be used for remediation of Canadian Areas of Concern in the Great Lakes. Mr. Vogt prepared and was co-author of the USACE Technical Note titled "The Application of Adaptive Management to Ecosystem Restoration Projects" (ERDC TN-EMRRP-EBA-10, April 2012). The Technical Note provided overall guidance on management of ecosystem restoration projects, including conceptual ecological models, uncertainties in ecosystem restoration projects, ecosystem restoration goals, and the use of metrics in monitoring approaches to measure success. Mr. Vogt is an active member of the Western Dredging Association (WEDA), serving on its Board of Directors and on several committees, and is Chair of the WEDA Environmental Commission.

**R. WILLIAM RUDOLPH**

**Civil Design/Geotechnical Engineer**

Mr. Rudolph is an independent, licensed P.E., G.E., and Principal Engineer with over 41 years of experience on a wide variety of geotechnical engineering projects throughout the western United States. He earned his M.S. degree in geotechnical engineering from the University of California at Berkeley in 1978 and is an active member of the American Society of Civil Engineers and the Coasts, Oceans, Ports, and Rivers Institute. Mr. Rudolph has project experience with large river, dredging, and other Civil Works projects with high levels of public and interagency interest. These projects include the harbor dredging projects at the Ports of Oakland, Richmond, and San Francisco. He has supervised explorations for geotechnical and environmental characterization, evaluated the effects of harbor deepening on shoreline/marine structure stability, and consulted on alternatives for the transportation, handling, and disposal/reuse of dredge materials. These projects including the Hamilton Wetland Restoration and the Oakland Inner Harbor Shallow Water Habitat projects in the USACE San Francisco District. The geotechnical design of the projects involved in-water and upland dredge material placement; stability analysis of

containment levees, sheet pile walls, and submerged rock sills and weirs; and levee and marsh plain settlement/stability analysis. Mr. Rudolph is experienced in urban levees, floodwalls, and channel structures along large river systems. He has worked on riverine projects on the American, Sacramento, and San Joaquin Rivers near Sacramento, California, and projects on the Mississippi River in Illinois, Missouri, and New Orleans, Louisiana. He has consulted on projects performing geotechnical evaluation and geo-civil design for all phases of flood risk management, channel widening, and dredging projects. He is currently principal consultant to the Marin County Flood Control and Water Conservation District on the evaluation of Corte Madera Creek and levee system in the San Francisco Bay Area, California. The Corte Madera Creek project is in a dense urban area and will involve a wide variety of improvements, including tidal gates, levee raises, flood walls, and channel dredging to reduce flood risks. The project includes developing project alternatives and cost estimates for future planning purposes. Mr. Rudolph is familiar with and has demonstrated experience related to USACE geotechnical and civil design practices associated with dredging, flood management channels, construction, and cost estimating. He has managed numerous geotechnical investigations and participated in design teams for USACE projects as well as local projects that have applied USACE practices.