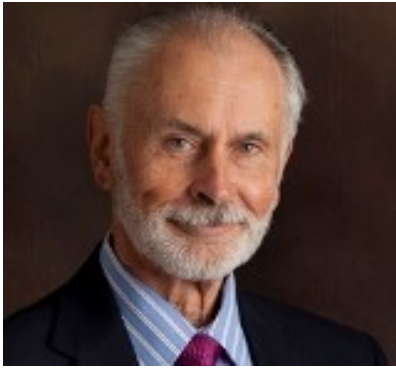


Environmental Effects of Beaufort Sea Causeways

Presented by Jack Colonell



Abstract: Two gravel-fill causeways have been constructed into the shallow nearshore Beaufort Sea on the north coast of Alaska for support of petroleum developments near Prudhoe Bay. As expected, these linear (4 – 8 km length) structures interact with prevailing coastal currents and thus alter local circulation and hydrography (i.e., spatial distributions of temperature and salinity). During the permitting processes for the causeways, which included preparation of

Environmental Impact Statements for each by the Corps of Engineers, resource agencies expressed concerns (1) that the causeways would impede movements of fish along the Beaufort coast such that entire fish populations would be threatened, perhaps even to extinction, and (2) that causeway-induced alterations of local hydrography would be detrimental to the habitat of anadromous fish that inhabit the coastal waters each summer. The species of particular concern was the Arctic Cisco (*coregonus autumnalis*), known regionally by its Inupiat name *qaaqtaq*, and which is the principal target of fall subsistence and commercial fisheries that operate in the Colville River.

Biography: Jack Colonell has nearly four decades experience as a consultant, providing engineering and environmental science support to industrial and governmental clients. His consulting practice has focused on design, development and performance monitoring of coastal and offshore structures with the objective of ensuring their safety and integrity, while also assessing and mitigating their potentially adverse environmental effects. His project experience extends to all coastal environments of Alaska, all three coasts of the Lower-48 states, and several locations abroad.

Prior to his consulting career, Jack was Professor of Civil and Ocean Engineering at University of Massachusetts Amherst, and of Marine Science at University of Alaska Fairbanks. Jack developed and taught the inaugural course in Coastal Engineering at both UAF and UAA, and subsequently, as Adjunct Professor at UAA. He has published numerous papers on his research and consulting activities.

Jack earned BS, MS, and PhD in civil engineering from, respectively, Univ. of Colorado, Washington State Univ., and Stanford Univ. As a Fulbright Scholar, he studied coastal engineering at Delft Technological University, Netherlands. He is a registered Professional Civil Engineer in Alaska and Washington. A Fellow and Life Member of the American Society of Civil Engineers, Jack also holds Diplomate status in Coastal and Ocean Engineering from the ASCE Academy of Coastal, Ocean, Port and Navigation Engineers.

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