BOEM ENVIRONMENTAL STUDIES PROGRAM: Ongoing Studies

Region: Alaska

Planning Area(s): Beaufort Sea

Title: ANIMIDA III: Contaminants, Sources, and Bioaccumulation (AK-11-14b)

BOEM Information Need(s) to be Addressed: This project has monitored the development area in the Beaufort Sea OCS, with last sampling of contaminants, sources, and bioaccumulation in 2006. There is a continuing, ongoing need for this monitoring in the development area within the Beaufort Sea during the performance period of the study, which will coincide with continued production from Northstar, development and production from Liberty, and Camden Bay delineation and potential development. The information will support NEPA analysis and documentation for Beaufort Sea Lease Sales and DPPs.

Total Cost: $2,700,000 **Period of Performance:** FY 2013-2017

Conducting Organization: Olgoonik/Fairweather, LLC

BOEM Contact: Dr. Dan Holiday

Description:

Background: The Arctic Nearshore Impact Monitoring in Development Area (ANIMIDA) and continuation of ANIMIDA (cANIMIDA) started in 1999 and, has provided baseline data and monitoring results for chemical contamination, turbidity, Boulder Patch productivity, and subsistence whaling in the vicinity of oil industry development in the Beaufort Sea OCS. Northstar and Liberty prospects were monitored prior to development and Northstar into development and production. A second continuation of the subsistence whaling task has been completed and a continuation of the Boulder Patch monitoring began in FY 2012.

In 2008, the MMS approved a development plan for the Liberty prospect that would use directional drilling from an enlarged Satellite Drilling Island (SDI) at the east end of the Endicott Causeway. Shell has also submitted an exploration plan to MMS that would delineate existing oil discoveries in the Sivulliq and Torpedo prospects in Camden Bay. Ongoing industry activities necessitate ongoing monitoring projects. The last contaminant sampling under cANIMIDA occurred in 2006 and did not include the deeper Camden Bay area of interest.

Objectives:

- Continue the ANIMIDA/cANIMIDA sediment chemistry monitoring emphasizing hydrocarbon and priority metal concentrations.
- Improve the cANIMIDA conceptual model of suspended sediment interactions, loading, and export from the ANIMIDA area, continue to delineate and quantify the offshore dispersion of river runoff and suspended sediments during the

spring melt, trace the dispersion of suspended sediments into deeper, outer shelf water, continue to refine sourcing techniques for suspended sediments particularly in the expanded eastern ANIMIDA area, expand the chemical analyses of suspended sediments to include hydrocarbon composition, estimate the contribution of shoreline erosion, Mackenzie River, and offshore waters to suspended sediment load and composition.

- Continue development of a conceptual model of bioaccumulation and trophic interaction in ANIMIDA biota, monitor bioaccumulation of contaminants in selected species, and continue ANIMIDA/cANIMIDA contaminant monitoring program for amphipod and bivalve samples.
- Develop and initiate a contaminant monitoring program for deeper water benthic biota found in this expanded ANIMIDA study area. Include mid-Beaufort Distributed Biological Observatory stations as part of the monitoring program

Methods: Field logistics will include small vessel support in the open water season. Larger vessel support will be needed in offshore Camden Bay for the biological/contaminant effort. Primary biological/contaminant field surveys will likely occur in the open-water period, with some effort during breakup with high river flow, and at least once during the ice-covered season.

Sediment and biota sampling will be scheduled such that stations sampled in eastern, central, and western Beaufort in ANIMIDA/cANIMIDA will be resampled at least once and that new deeper eastern Beaufort Region stations around Sivulliq and Torpedo would sampled at least twice (to form a baseline). Focus will be on potential oil and gas development areas and contaminants in sediments and benthic biota, as well as distribution and abundance of benthic biota.

Chemical fingerprinting and ratio techniques developed in ANIMIDA/cANIMIDA will be used to characterize sources of suspended sediments. Profiles for turbidity, salinity, temperature and current would be obtained from numerous sites around the pertinent project area at the time of sampling. The choice of elemental and isotope parameters to be analyzed for suspended sediment will be designed to maximize the potential for discriminating among different sources of particles. A variety of dispersion models and predictive tools should be considered.

The study will use the cANIMIDA conceptual food web model to help guide development of specific objectives for this task, increase statistical viability of the results with the goal of longer-term strategy for biological contaminant monitoring, and will make improvements to this conceptual model based on study findings.

Current Status: Ongoing

Final Report Due: September 2017

Publications Completed: None

Affiliated WWW Sites: http://www.boem.gov/akstudies/

Revised Date: December 2014

ESPIS: Environmental Studies Program Information System
All *completed* ESP studies can be found
here: http://www.data.boem.gov/homepg/data_center/other/espis/espisfront.asp