

Characterization and Remediation of Sites Contaminated by Historical Fuel Spills in Arctic Alaska.

Keith W. Torrance¹

¹UMIAQ Environmental, LLC

ABSTRACT

The Naval Arctic Research Laboratory (NARL) was operational from 1947 until 1980 occupying a 350 acre site north of the city of Barrow. At a latitude of 71 degrees north Barrow is the most northerly city in North America and is located at the strategic junction of the Chukchi and Beaufort Seas. Most of the original structures at NARL are still intact and have been put to other uses. However, complete utilization of the facility is limited by soil contamination dating back to its former use. Most of the contamination relates to fuel spills but metals, PCBs and chlorinated solvents are also present at some locations above action levels. Characterization and remediation efforts have been ongoing since the Navy left NARL and are expected to continue for another decade or more. Sub-surface movement of contaminants is complicated by the presence of permafrost which limits vertical migration of contaminants and restricts lateral migration to the unfrozen zone, which is active during the summer months. As extreme low temperatures in Barrow during the Arctic winter greatly reduce the effectiveness of natural degradation contaminant concentrations can remain elevated for an extended period. Other remediation options are limited by the high cost of transporting contaminated soil by barge during the short window when ocean transportation is possible; there are no road connections to Barrow. This poster provides an overview of efforts to characterize sub-surface contamination at the former NARL site and the effectiveness of previous attempts to remediate specific sites. Observations on the future direction of clean-up activities will be presented in light of the growing importance of the Arctic as an economic and strategic resource and the environmental concerns of local inhabitants.