

Energy

Exploration & Production

Client

Arco Alaska

Location

North Slope and Prudhoe Bay, AK,
USA

Environmental, Water and Wastewater, Solid Waste, and Engineering Services

Project Description



CH2M HILL performed more than 50 environmental, water and wastewater, solid waste, and engineering projects for Arco Alaska (sites now owned by ConocoPhillips), all within the harsh arctic environment of the North Slope of Alaska adjacent to the Arctic Ocean. These projects have ranged from site investigations and remediation to spill planning, permit assistance, and facility design. Many of these projects were directed at enhancing compliance with existing permits and regulations.

Our environmental and ecological work focused on acquisition of new permits for development and closeout of old facilities. Closeout activities consisted of investigating contaminated sites, sampling, identifying risk-based cleanup levels, designing field test kits for use in measuring selected types of contamination under extreme environmental conditions, and designing treatability studies to remediate the contaminated areas of reserve pits and drill pads. In one project, we designed and operated a waste-handling facility to treat drilling waste and inject the waste into a subsurface zone below the permafrost. This project was awarded a U.S. Patent and a North Slope Environmental Achievement Award.

The operators of the North Slope oil fields have a goal of “zero discharge” in terms of petroleum product spills. Projects related to spill planning included developing a qualitative assessment of financial liabilities and environmental damage that would result from an unplanned release or spill of product en route to the North Slope and creating a comprehensive model spill contingency plan for use by the client’s transportation and spill response contractors. In addition, we prepared both oil and seawater spill contingency plans for the Prudhoe Bay and Kuparuk Fields. To develop these plans, we summarized regulatory, permitting, and notification requirements; determined likely spill volume; considered ecological factors; and defined disposal methods, spill equipment, and primary spill response procedures.

Because no groundwater aquifer is present and no surface discharge of wastes is permitted, obtaining drinking water and disposing of domestic sewage present unique problems. Our water and wastewater services included preparing a dilution study for the seawater treatment plant outfall, conducting an investigation to determine the potential effects of oil field reserve pits on local tundra ponds and surface water surrounding reserve pits, and developing a water quality improvement plan for the oil field wastewater treatment lake.

Within the North Slope oil fields, all materials and products brought into the area must be tracked from arrival through final disposition. Waste management highlights included developing concepts and screening alternative technologies to manage wastes generated by North Slope oil production, preparing field guidance documents to manage and recycle solid wastes and hazardous wastes, conducting training courses for North Slope workers on the RCRA and Toxic Substances Control Act (TSCA) hazardous



and toxic materials and wastes, and preparing a waste management manual that described waste streams and recommended disposal and management options.

The arctic environment imposes unique challenges for structural, geotechnical, and mechanical engineering. Engineering projects supporting environmental programs included the siting of a treatment, storage, and disposal (TSD) facility in an arctic setting encompassing the preparation of siting constraints and the identification of set-back zones for physical features or incompatible use areas addressed by applicable regulations. We also provided engineering and design services to renovate an existing abandoned warehouse that was to be converted to a visitor center. Tasks included developing the conceptual design drawings, cost estimate, and project schedule.