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North Slope

The North Slope of Alaska is one of the harshest environments in the world and temperatures with wind chill can reach -100° F. Nevertheless, "The Slope" is home for thousands of oilfield workers, many of whom live in portable camps located in extremely remote locations. In this location, equipment must be reliable, simple to operate, and easy to maintain.

Anadarko Petroleum, Inc., needed wastewater treatment for a remote camp. The system would discharge to an environmentally-sensitive area, predominantly tundra and wetlands. The effluent would need to comply with treatment standards required by Alaska's Department of the Environment. In addition, it had to be energy efficient, easy to operate, reliable and require little operator skill and oversight.

It would also need to be capable of handling the 5,000 gpd of domestic-strength wastewater that would be generated by Anadarko's APC Arctic Camp. The designer and Quanics, Inc., were in agreement that the solution for the camp would be a Synergy® Mobile Treatment System. It consists of a primary treatment trailer that contains an equalization tank and a series of settling tanks with effluent filters followed by a 5000 gpd Synergy® mobile wastewater treatment trailer. This was reviewed and approved for construction by the State of Alaska Department of Environmental Conservation. The Synergy® trailer was built at our facility with the primary treatment trailer constructed in Anchorage.

Wastewater from the camp is first pumped to the primary treatment trailer which consists of a 2,400-gallon aerated equalization tank followed by four 2,400-gallon settling tanks connected in series. Effluent filters with progressive filtration are installed in each settling tank. All are installed inside an insulated and heated structure. As wastewater flows through the series of tanks, the settleable solids, floating solids and some suspended solids are removed through a process of clarification and filtration. Effluent from the primary treatment tank trailer is then transferred to the Synergy® trailer where secondary treatment is achieved.

The Synergy® trailer consists of 6,000 gallons of recirculation/pump tankage and two AeroCell® trickling filter units. The AeroCell® units are filled with an open cell foam media that serves as a surface on which microbes grow. Wastewater is sprayed on the foam and then passes through the pores. During this process, suspended solids are filtered out and the soluble organic waste is consumed by microbes which thrive on the open cell foam cubes.

80% of the effluent is routed back to the recirculation/pump tanks for further treatment. The remaining 20% flows through a chlorination/de-chlorination system and is then discharged directly to the tundra. During low usage, such as overnight, a valve on the 20% discharge line closes and 100% of the effluent is routed back to the recirculation/pump tanks, "super-treating" it.

The system can be moved whenever the camp relocates. Operators have been extremely pleased with the level of treatment and ease of use. Periodically, the tablet chlorination system must be checked, but virtually no operator skill is required. When samples have been tested, BOD and TSS have been found to be within stated requirements, including at least once when the system had been hydraulically and organically overloaded by 20-40%.

SYNERGY™ mobile wastewater treatment system
 Powered by Quanics Inc.
Distributed by: Gannett Engineering Group LTD. (877) 237-6179



Treatment Tank



Primary Septic Tanks