

# A Case Study;



## Activated Sludge System Hinckley, Minnesota

### Solution

A simplified activated sludge system was designed by modifying the existing lagoons and adding a clarifier, digester, post aeration and related equipment. Two

earthen aeration basins were constructed from one of the original primary lagoons. Of the remaining lagoons, one was converted to a polishing pond and the other to a sludge storage pond. Four 20HP TORNADO Surface Aspirating Aerators were installed in each of the aeration basins because they are easy to operate and maintain, do not require blowers,

mix extremely well and work without problem in very cold climates. A simple CYCLONE stainless steel

coarse bubble diffused air system, also from AEROMIX Systems, Inc., was installed in the post aeration basin to add oxygen prior to discharge. The simple earthen basin activated sludge system was built for less than \$2,00,000 and consistently produces effluent within the prescribed permit requirements.

### Background

Hinckley, Minnesota wastewater treatment plant consisted of three low cost aerated lagoons designed to handle 200 mg/l of BOD, 250 mg/l SS at a flow of 0.30 mgd. It performed well and consistently produced average effluent of 3 mg/l BOD and 11 mg/l SS, well below the permit requirements. As the population of the town grew with construction of a large casino, phosphorous and ammonia levels began to increase in wastewater influent. New standards were imposed requiring effluent equal to or better than: 15 mg/l BOD, 30 mg/l SS, 1 mg/l phosphorous, and 3 mg/l ammonia at a design flow of 0.57 MGP.

### Problem

Funds were limited and the wastewater treatment plant operator wanted a reliable, yet simple operation. Hinckley is located in Minnesota where winters are extremely cold; making it very difficult to service equipment and to keep it operating in frigid conditions. The existing treatment plant, alone with chemical addition, could meet the effluent requirements for BOD, SS, phosphorous, but not ammonia. A significant plant redesign, therefore, was required to meet all effluent standards. Alternatives were either an oxidation ditch or an activated sludge plant.

