

Buffalo Airport

Airport de-icing



Project

Buffalo Airport, New York

Location

New York, USA

Project Type

Design and construct

Wastewater Type

Glycol loaded run off

Completion Date

September 2009

Treatment System

Four aerated vertical flow
reed beds

Need

Buffalo Airport situated in New York State USA is subject to significant range of climatic conditions through the year. Temperatures in winter can drop well below freezing for extended periods requiring the use of substantial levels of antifreeze, in the form of glycol, to keep runways open and aircraft operational. Subsequently, when the ice and snow melt, or following rainfall, the run off generated is contaminated with glycol which constitutes an environmental hazard if it is discharged to the environment without treatment. This had been managed by collection and delivery to the local sewage network which carried significant annual costs charged by the local municipal treatment company based on flows and loads. Buffalo Airport was keen to determine a method of controlling and managing these costs.

Buffalo Airport investigated the options for onsite treatment of the run-off water. The conditions to be met included:

- Fit within the airport
- Treatment of cold, dilute de-icing fluid
- Low profile
- Not a bird-strike hazard
- Low sludge and odour production
- Capable of handling seasonal variations
- Capable of integration into the existing storm management handling system





Solution

The airport chose to use aerated wetland technology to manage the 'first flush' storm water generated on site which carries the highest loading of glycol. Initially a treatability study was undertaken to identify the reaction rates for the treatment of used de-icing fluid. This guided design to maximise the efficiency of the four vertical flow aerated reed beds subsequently constructed on site. Low profile planting of the beds, and sub-surface operation ensured that wildfowl was not attracted to the system and Naturally Wallace's patented Forced Bed Aeration™ ensured air was delivered efficiently and consistently to the microbial biomass which effected treatment.

Benefits

The use of aerated vertical flow gravel reed beds provides a simple and robust low maintenance solution to the run off treatment issues at Buffalo Airport. The system handles a hydraulic load of 4,500m³/d with a glycol based BOD load of 13,600 Kg/d of CBOD.

