



WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2004RI26B

Title: Mitigating Runoff Contamination Due to DeIcing and Anti-Icing Operations at T.F.Green Airport

Project Type: Research

Focus Categories: Management and Planning

Keywords: glycols; aircraft de-icing; aircraft anti-icing; environmental impacts; aircraft; deicing chemicals; runoff; drainage; contaminants; regulations

Start Date: 03/01/2004

End Date: 02/01/2005

Federal Funds: \$19,165

Non-Federal Matching Funds: \$56,248

Congressional District: 2

Principal Investigator:
Chris Dickerson Hunter
University of Rhode Island

Abstract

The deicing and anti-icing of aircraft and airport surfaces is required by the Federal Aviation Administration (FAA) to ensure the safety of passengers. In the midst of providing this safety service, there are potential environmental hazards. In addition to potential aquatic life and human health impacts from the toxicity of deicing and anti-icing chemicals, the biodegradation of propylene or ethylene glycol (typical base-chemicals of deicing fluids) in surface waters can greatly impact water quality.

In Rhode Island, the Rhode Island Airport Corporation (RIAC) oversees airport operations for 6 airports in the state, of which T.F. Green is the principal one. For RIAC, working to mitigate the impact of deicing and anti-icing fluids from T.F. Green is of critical importance. EPA finds that, on average, airports have achieved 70% collection efficiency of the aircraft deicing/ anti-icing fluids applied. T.F. Green does a good job in collecting as well, but they realize that they need to increase their efficiency in collection.

This research focuses on providing a solution or solutions to RIAC for T.F. Green Airport by analyzing various treatments, processes, and collection techniques to provide a better environmental mitigation process. Although, the bottom line for most projects is cost, this project also hopes to apply or develop a framework for an evaluation process that looks at multiple criteria to determine a best solution for mitigation of groundwater contamination from deicing or anti-icing materials. The objectives of the research effort are as follows: (1) to identify alternatives to glycol-based deicing/ anti-icing fluids and determine the possibilities for deployment for T.F.Green; (2) to review procedures or methods of wastewater collection from deicing operations to identify best way to minimize deicing product from contaminating groundwater; and (3) to provide a recommendation for possible alternatives, and procedures to improve T.F. Green's mitigation process for better removal of deicing fluids.