

# **PROGRESS REPORT**

August 1, 2006 to October 31, 2007

**PROJECT TITLE: Soils underneath Florida Landfills and their Role in the Occurrence and Fate of Iron and Arsenic in Groundwater**

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## **Progress to Date:**

The primary objectives of this project are to quantify the contribution that soils beneath landfills can make to iron in groundwater and to evaluate the ability of soils beneath C&D debris landfills to retain and hold arsenic against leaching. The project is broken down into four tasks to meet the objectives and hypothesis.

Currently, we are working on the Task 1 and Task 2 of the project as identified in the project proposal. In Task 1 we are conducting a review of existing literature on the issues pertaining to the role of naturally occurring soil underneath landfills. The literature being reviewed includes peer reviewed journal articles, solid waste industry publications, government reports, and consulting engineering reports. We are in the process of writing a summary of this literature review. The review will focus on the role of naturally occurring soils and their potential to release Fe and/or As under Florida conditions.

The purpose of Task 2 is to test the hypothesis that iron in soils underneath landfills can be liberated by changes in oxidation reduction potential (ORP) caused by in-situ biochemical reaction and to relate the amount of iron released to chemical and physical properties of the soil. We have collected soil from six landfill sites in Florida. Some of these are from existing landfill locations in the state where the problem of high iron concentrations in groundwater is occurring, such as Aucilla and Escambia County Landfill sites. The soil samples will be characterized for parameters relevant to this research such as extractable iron under different conditions. The biological leaching tests (reducing condition) are underway for these soils. The ORP, Ferrous, total Fe and As are being measured in these samples at different intervals.

## **Future Work:**

Experiments measuring reducible iron will be continued in the next quarter of this project duration. The first TAG meeting for this project will be hosted on Dec. 1, 2006.