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P A R T N E R S

August 27, 1997

Lennie Fottrell
Division of Solid Waste Management
3000 Morgan Road
Joelton, Tennessee 37080

Subject: Dickson County Landfill ^{file}
Proposal for Dye Study and Leachate Collection/Treatment
GS&P Project No. 19259.00

As per our discussion on August 22, 1997 at the Nashville Field Office, Gresham, Smith and Partners is presenting a formal proposal for the identification of the migration pathways beneath the Dickson County landfill area and the implementation of a wetland treatment system to treat the leachate within the landfill.

This proposal is focused on providing a system for managing leachate at the Dickson County landfill. Previous studies at the landfill have indicated that there is a large mound of leachate beneath the older sections of the landfill. The study further determined that the presence of the large mound of leachate is due to a landfill cover system which allows a large quantity of rainwater to migrate downward through the waste fill. The large quantity of leachate within the landfill poses a significant potential for an impact to groundwater as well as surface water resources. Presently, volatile organic compounds have been discovered in a spring northwest of the Dickson County Landfill as well as in a municipal water well used by the city of Dickson, Tennessee. The large quantity of leachate and the presence of the volatile organic compounds detected in groundwater in the vicinity of the landfill has resulted in a proposal to determine the impact of the site upon local groundwater and to mitigate leachate within the landfill. The following pages present the scope of the proposal as well as the specific tasks required to evaluate the impact of the leachate on groundwater and surface water.

The following paragraph outlines the scope of work proposed for determining the present impact the landfill has upon groundwater and surface water resources and also to minimize the potential for surface water and groundwater contamination in the vicinity of the landfill.

- ⊙ Perform a dye study in order to determine if there is a hydraulic connection between the landfill and sources of groundwater such as springs and water wells in the vicinity of the landfill.
- ⊙ Perform a pilot study to demonstrate the effectiveness of constructed wetlands to treat the landfill leachate.
- ⊙ Design and construct the subsurface wetlands.
- ⊙ Design and construct a final cover system for the older landfill.
- ⊙ Treat the landfill leachate with the constructed wetlands.

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The following tasks will be performed to accomplish the scope stated above:

- ◆ Perform a qualitative dye study to determine if there is a hydraulic connection between the landfill and sources of groundwater such as springs and water wells in the vicinity of the landfill.
- ◆ Sample groundwater springs and wells that are determined to be hydraulically connected to the landfill for laboratory analytical testing. Evaluate the results of the laboratory analytical test data utilizing analytical tools such as the trilinear diagram so as to determine the impact of the landfill leachate.
- ◆ Evaluate pumping data of the Dickson County water well situated northeast of the landfill.
- ◆ Demonstrate effectiveness of constructed wetlands to treat landfill leachate.
 - GS&P will correspond with the Tennessee Department of Conservation so as to obtain permission for the pilot study and to keep the Department advised as to the progress of the study and the results.
 - Characterize the leachate within the old and new fill areas. Within the new fill area 4 to 5 leachate wells will need to be installed to determine the amount of leachate within the fill area as well as provide a sampling point for the leachate characterization process. Additional sampling will be conducted in the old fill area to further correlate the available data to the appropriate treatment system.
 - Two sampling events will be scheduled for both the new and old fill areas. The sample points within the new fill area shall be analyzed for volatile organic compounds, total metals, BOD, COD, and a variety of additional indicator parameters. While the old fill area shall be sampled for BOD, COD and the indicator parameters.
 - The Tennessee Valley Authority will execute the treatability study.
 - A report will be prepared that provides a summary of the results of the field study as well as recommendations for implementation of the total leachate collection and treatment system at the landfill.
 - GS&P will prepare the NPDES permit for application for submittal to TDEC



- ◆ Design and construct the wetland system
 - Based upon treatability study performed by TVA.
- ◆ Design and construct the final cover system
 - Based upon the findings of the dye trace study, infiltration on side-slopes and permeability data.
- ◆ Treat leachate and maintain the wetlands.

Dickson County and Gresham, Smith and Partners are very pleased to present this, hopefully pro-active, approach to dealing with the situation at the Dickson County landfill. We hope that you will find all the necessary information contained herein to provide us with authorization to proceed with this concept. Should you need any additional information please feel free to call either Gresham, Smith and Partners or Dickson County.

Sincerely,
Gresham, Smith and Partners

A handwritten signature in black ink that reads "C. Jason Repsher".

C. Jason Repsher, P.G.
Senior Geologist

A handwritten signature in black ink that reads "J. K. House".

J. K. House, P.E., P.G.
Senior Environmental Engineer

xc: Jim Lunn, Dickson County Solid Waste Director
Mark McWhorter, DSWM, NFO
Alan Spear, DSWM, NFO/CO
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