MEMORANDUM

TO: RIVANNA SOLID WASTE AUTHORITY
   BOARD OF DIRECTORS

FROM: ANNE BEDARF, ENVIRONMENTAL AND SAFETY MANAGER
      THOMAS L. FREDERICK, EXECUTIVE DIRECTOR

SUBJECT: CELL 3 EVALUATION

DATE: AUGUST 22, 2005

During a fugitive air scan several months ago, it was determined that landfill gas wells at Cell 3 Lined and Cell 3 Unlined were not expelling gas to the gas collection system at rates that would be expected for a landfill cell the age of these current cells. Although there were no indications of direct environmental impact resulting from Cell 3, the staff made a commitment to identify the cause of this situation and remedy any problem, regardless of degree. Over the past few months, after the Ivy operating staff were unable to resolve the situation from review of operation and maintenance routines, the RSWA staff has been working closely with our consulting team of Environmental Standards and Malcolm Pirnie. Together, we have been using a step-by-step approach to investigate the conditions of these cells, including an investigation of gas system moisture traps, inspections of leachate collection sewer piping outside the cell, monitoring of leachate levels in the cell through gas vents, and several other appropriate measures. Because the landfill cell is below the ground surface, the group has been carefully attempting to identify latent conditions that are not directly observable while not disturbing existing cell conditions.

As of this time, there are no indications of any consequences to the environment directly attributable to the Cell 3 findings. However, our investigation has led to the finding of a serious concern that warrants immediate proactive steps on the part of RSWA. Unfortunately, the steps needed to address this situation are expensive, but a failure to act could lead to structural failure of the landfill cell, with potentially adverse environmental consequences. This staff report briefly summarizes the results of our investigation, our proposed plan, and requests the Board authorize additional funding and immediate actions by the staff to mitigate the current situation.

First, we have learned that the leachate collection system from these cells has likely failed, blocking the full capability of leachate to drain out of the cells. The system failure is inside the landfill cell and we have determined it would be very unwise at this time to open up the bottom of the cell, so we have not determined the exact cause of failure. We also do not know how long this condition has existed; it is possible that the root cause of the failure could lead back to the quality of the original material or installation methods used a number of years ago. Second, our recent monitoring of the leachate levels through gas vents before and after
rainfall events provide some indication that there are areas of the landfill cap that are more permeable than the cap material should permit. It will take further investigation to determine if this condition is a result of defective material, improper installation, differential settling, or a combination of these factors. Our current understanding of the situation indicates that some combination of these conditions has allowed leachate to build up in the landfill cells, and the data we have been able to obtain indicates to us that this build-up is at least a contributing cause of the limited gas extraction.

Within the past month, Malcolm Pirnie has performed a preliminary structural analysis of the landfill cell using the data currently available. On the basis of their findings, Malcolm Pirnie has recommended to us that immediate measures be taken to reduce the leachate levels in Cell 3 Lined.

On the basis of Malcolm Pirnie’s recommendation received earlier this month, the Executive Director has already directed several actions be initiated, within spending limits previously authorized by the RSWA Board of Directors to the Executive Director. In the absence of an effective leachate collection system, the only means available for removing leachate without further construction is through the gas well vents, and we have already set up a mobile pump and generator to pump down water levels in each of the gas vents. Due to the quick drawdown and slow recovery of these wells, we’ve determined that larger wells must be constructed to measurably reduce leachate levels in Cell 3 Lined. We have also already initiated engineering investigations to determine where additional wells should be drilled to facilitate further leachate collection as well as making arrangements for drilling to start, and we are evaluating the quality of the leachate to determine a safe rate at which the extracted leachate can be accepted into the Moores Creek WWTP for treatment.

A very busy program is being proposed over the next three months to include the following broad categories of activities: (1) the drilling of four leachate extraction wells in Cell 3 Lined as soon as ongoing engineering considerations determine the most appropriate location for these wells; (2) the continued investigation of treatability of Cell 3 leachate at Moores Creek WWTP and the determination of any pretreatment that might be required at Ivy; (3) the development of a longer-term plan for handling and treating larger volumes of leachate to include coordination with DEQ and Albemarle County Community Development; (4) ongoing monitoring and engineering assistance to update the rate of leachate that can safely be withdrawn; (5) the drilling of additional piezometers in Cell 3 to permit more extensive data collection of leachate levels in Cell 3 than is now permissible; (6) continued investigations as to the extent of permeable locations within the Cell 3 cap and the development and analysis of alternatives to improve cap performance; (7) the updating of the Ivy Landfill response plan; and (8) regular reporting to appropriate regulatory agencies. We have informed DEQ of the status of Cell 3, and at their specific request, we have outlined our program with them. At this time, DEQ is reviewing our proposed activities.

After significant negotiations with Environmental Standards and Malcolm Pirnie within the past few days, we are estimating a three-month cost for the services outlined in the program above at not to exceed $422,800. In addition, we are anticipating up to an additional $100,000 over the next three months in operating expenses associated with greater volumes of leachate transport to the Moores Creek WWTP, and to obtain and operate portable pretreatment equipment for the leachate should that become necessary. Such operating expenses may include equipment or rolling stock rental, or temporary personnel expenses to
support tasks that are more efficiently assigned to the Ivy Operations Manager instead of through professional services. To cover all of the above estimated expenses, we are respectfully asking for authorization to spend all of the remaining unencumbered funds for professional services ($34,600) budgeted under the FY 2006 Ivy Environmental cost center as well as asking for approval to increase the Ivy Environmental budget for FY 2006 by an additional $488,200. Actual expenses will be closely monitored as we learn more about what actions are necessary and the Board will be kept regularly informed.

As the Board is aware, RSWA’s financial position is very weak at this time, and it is necessary to recommend that the additional budget of $488,200 be financed directly by additional contributions from the County of Albemarle and City of Charlottesville. The executed Memorandum of Understanding includes a provision for funding unanticipated needs such as this related to Ivy Environmental at a split of 64.5% County and 35.5% City. To the extent that this additional contribution may require further approval of the governing boards, we are prepared to assist you in your presentation to these Boards. To permit us to fund the program outlined above at the pace it needs to proceed while allowing time for these approvals, we would also request that the County and City consider advancing the next MOU quarterly payment due October 1 by 30 days. It is also important that efforts by the City and County continue as quickly as feasible to allow us to resubmit a Local Government Guarantee to DEQ for Financial Assurance that will eventually permit us to request from DEQ funds belonging to RSWA that are presently being escrowed by DEQ.

Unfortunately, we must apprise you that there will be additional expenses beyond the three month program outlined above. Because we still have ongoing investigations whose findings could substantially affect costs, it is not practicable to provide a reasonably close estimate of future cost at this time except to advise these further costs will be significant. Malcolm Pirnie has suggested to us it could take as long as 18 to 24 months to remove all accumulated leachate from both Cell 3 Lined and Cell 3 Unlined; efforts to shorten this timeframe will depend on stability issues and longer-term disposal options we have yet to conclude are available to us. Trucking to Moores Creek WWTP will be very costly and inefficient; in the coming weeks we will explore the feasibility of other options that may lower costs. In addition to the continuation of the program defined above and the ongoing removal and treatment of leachate, we have also identified other tasks that will be performed or continue beyond the next three months: (1) the design and installation of repairs to the cap and design and installation of a new permanent leachate collection system with the potential to include the other landfill cells; (2) continued monitoring of settlement of the landfill cell and monitoring of structural stability; and (3) condition assessment of improvements in gas collection. The design and installations under (1) above will be the most costly, but the extent of repairs will depend on findings from investigations that are not complete at this time.

At the Board Meeting, Phil McKalips of Environmental Standards, Inc. will present the results of his findings on current surface or groundwater conditions around the cell. Steve Nesbitt of Malcolm Pirnie Inc. will be present and available to answer any questions on the preliminary stability evaluation. Both can answer questions regarding the attached proposal.

The Cell 3 situation will require a multi-faceted, long-term solution; therefore, project and concurrent funding needs will be dynamic, requiring adjustments as necessary. It is also our intent to be very sensitive to our effect on the local environment and our neighbors as this
work proceeds. The Board, DEQ, and the public will be kept informed on the progress of this project.

**Board Action Needed:**

Staff recommends the Board approve the authorization of $34,600 in available professional services funds and a budget increase of $488,200 to the FY 2006 Ivy Environmental cost center to execute the program outlined above, and authorize the Executive Director to execute task authorizations with Environmental Standards Inc. under an existing contract with RSWA to provide professional services needed to execute the above program within the budgeted resources. A contract for Malcolm Pirnie is addressed separately under Agenda Item 6c. Staff also recommends the Board approve a request on behalf of RSWA to the County of Albemarle for an additional $314,889 in MOU contributions in FY 2006 and to the City of Charlottesville for an additional $173,311 in MOU contributions for FY 2006.