

STATE OF FLORIDA  
DIVISION OF ADMINISTRATIVE HEARINGS

WCI COMMUNITIES LIMITED	)	
PARTNERSHIP and GEORGE SANDERS,	)	
	)	
Petitioners,	)	
	)	
vs.	)	Case No. 96-4995
	)	
DEPARTMENT OF ENVIRONMENTAL	)	
PROTECTION and WASTE MANAGEMENT,	)	
INC., OF FLORIDA,	)	
	)	
Respondents,	)	
	)	
and	)	
	)	
LEE COUNTY BOARD OF COUNTY	)	
COMMISSIONERS,	)	
	)	
Intervenor.	)	
<hr style="width: 40%; margin-left: 0;"/>	)	

RECOMMENDED ORDER

Pursuant to notice, the Division of Administrative Hearings, by its duly designated Administrative Law Judge, Mary Clark, held a formal hearing in the above-styled case on May 20, 21, and 22, 1997, in Fort Myers, Florida.

APPEARANCES

For Petitioners:	Martin S. Friedman, Esquire
WCI Communities Limited	Rose Sundstrom & Bentley
Partnership and	2548 Blainstone Pines Drive
George Sanders	Tallahassee, Florida 32301
	Katherine P. English, Esquire
	Pavese Gardner Haverfield
	Dalton Harrison & Jensen
	Post Office Drawer 1507
	Fort Myers, Florida 33902

For Respondent: William D. Preston, Esquire  
Waste Management, Inc., Michael P. Petrovich, Esquire  
of Florida Hopping Green Sams & Smith  
Post Office Box 6526  
Tallahassee, Florida 32314-6526

For Respondent: W. Douglas Beason, Esquire  
Florida Department of Department of Environmental  
Environmental Protection  
Protection Mail Station 35  
3900 Commonwealth Boulevard  
Tallahassee, Florida 32399-3000

For Intervenor: David S. Dee, Esquire  
Lee County Board of Landers & Parsons  
County Commissioners 310 West College Avenue  
Tallahassee, Florida 32301

David M. Owen, Esquire  
Lee County  
Post Office Box 398  
Fort Myers, Florida 33902

#### STATEMENT OF THE ISSUES

The issue in this case is whether the Florida Department of Environmental Protection (agency or DEP) should issue renewal permit No. SO36-26769E to Waste Management, Inc., of Florida (WMI) for the operation of an existing Class I landfill, the Gulf Coast Sanitary Landfill (GCSL) in Lee County, Florida. In the prehearing stipulation, Petitioners specifically dispute whether WMI has provided reasonable assurances:

(1) regarding control of off-site odors emanating from the landfill, (2) that it has an approved closure plan, and (3) that leachate from the landfill will not pollute the air and water.

### PRELIMINARY STATEMENT

WMI filed an application with DEP to renew its operation permit for the GCSL on or about March 21, 1995. On or about September 25, 1996, the agency issued its notice of intent to grant the permit.

Petitioners, WCI Communities Limited Partnership (WCI) and George Sanders (Sanders), filed a petition requesting a formal hearing on October 10, 1996. The Lee County Board of County Commissioners (Lee County) filed its petition to intervene on December 17, 1996. An order granting Lee County's petition was issued on January 2, 1997.

At the final hearing, WMI called these witnesses: Ronald F. DeBattista (accepted as an expert in solid waste management permitting); David E. Deans (accepted as an expert in civil engineering and sanitary landfill engineering); Joseph E. Fluet, Jr. (accepted as an expert in civil engineering, landfills, and liner/cover systems); Martin N. Sara (accepted as an expert in hydrogeology, ground water assessments, and ground water monitoring systems); John A. Baker (accepted as an expert in water quality monitoring and analysis, water chemistry, and regulatory standards for water quality); Jeffrey Gould (accepted as an expert in geology and ground water regulations); William F. Krumbholz (accepted as an expert in landfill inspections and operations); Philip A. Barbaccia (accepted as an expert in environmental permit administration); and Rudolph Bonaparte

(accepted as an expert in civil engineering, geotechnical engineering, landfill design and construction, leachate generation, and liner performance). WMI's Exhibits 1-21, 24-60, 62, 69-71, and 73-76 were admitted into evidence.

DEP adopted WMI's case-in-chief.

Lee County called Larry Johnson, the Director of the County's Division of Environmental Services. Lee County also introduced the deposition testimony of John A. Bove, who was in North Carolina and unavailable to attend the hearing due to a medical problem. Lee County's Exhibits 1 and 2, including the Bove deposition, were admitted into evidence.

Petitioners presented the following witnesses: Laura Pechous, an employee of WMI; Gsouseddin Minhaj, a professional engineer employed by the DEP; Marcus Pugh (accepted as an expert in civil engineering and the planning and design of landfills); and Thomas M. Missimer (accepted as an expert in hydrogeology, water quality and water quality monitoring). Petitioners' Exhibits 1-17 were admitted into evidence.

A transcript of the hearing was filed with the Division of Administrative Hearings. Proposed recommended orders were submitted by the parties on or before August 11, 1997. These and all evidence of record have been considered in the preparation of this recommended order. Proposed findings of fact have been adopted when consistent with the greater weight of the evidence.

## FINDINGS OF FACT

### The Parties

1. The applicant, WMI, provides waste management services in the state of Florida. These activities include the hauling, transfer, and recycling of solid waste, as well as the construction and operation of landfills.

2. WMI operates GCSL, the facility that is the subject of the permit application, in Lee County, Florida.

3. WCI is a Delaware limited partnership engaged in the business of developing multiple use communities in Southwest Florida. It owns or holds options to purchase lands adjacent to or near GCSL. WCI is also the developer of a planned unit development known as Gateway, which includes residential and commercial properties in close proximity to the landfill.

4. George Sanders owns, personally or as trustee, lands adjacent to or near GCSL.

5. Lee County is a political subdivision of the state with statutory responsibility to plan for and provide efficient, environmentally acceptable solid waste management. Lee County has contracted with WMI to provide solid waste disposal services to citizens of Lee County at GCSL.

6. DEP is the agency of the state with statutory responsibility to regulate and permit landfills such as GCSL.

7. As stipulated, the Petitioners and Intervenor have standing in this proceeding.

### The Landfill Facility

8. The GCSL is a Class I landfill located at 11990 State Road 82, East, in Lee County, Florida, east of Interstate I-75. The landfill is in a remote, undeveloped area and has been in operation for over 20 years. The Gateway development is south of the landfill.

9. The GCSL includes three parcels of land that have been used for the disposal of solid waste. Parcel 1 and Parcel 2, each about 40 acres, are unlined Class I landfills that have been closed and no longer receive any solid waste. Neither liners nor leachate collection were required when these parcels were constructed and operated. Parcel 3 is a lined Class I landfill that is approximately 80 acres in size. Approximately 50 acres of Parcel 3 are closed and have received final cover. Approximately 30 acres still are used for the disposal of solid waste.

10. Parcel 3 was constructed in phases. In 1984, the Department issued a permit authorizing the construction of the "east hill" and "west hill"--i.e., two separate disposal areas in Parcel 3 where solid waste was placed above grade. In 1989, the Department issued a permit authorizing the construction of the "valley fill"--i.e., a disposal area where solid waste was used to fill in the valley between the east hill and the west hill. Parcel 3 now consists of a single mound of solid waste. As each phase of Parcel 3 was developed, liners and leachate collection

systems were installed in Parcel 3 before the commencement of solid waste disposal operations. The liners and leachate collection systems met or exceeded all of the applicable regulatory requirements that were in effect at the time when the waste disposal areas were permitted.

11. Parcel 3 is a well-designed, well-constructed, and well-operated landfill. William Krumbholz is in charge of landfill compliance and enforcement at DEP's district in Ft. Myers. He reports that the GCSL has an "exceptional operation record," and the GCSL is the "best operated Class I landfill" in the district.

12. The GCSL currently is subject to a DEP operation permit (DEP file number S036-180572), as modified. On March 21, 1995, WMI filed an application for a renewal of its operation permit. On or about September 25, 1996, DEP issued its notice of intent to issue the permit to WMI. If issued, the permit would allow WMI to operate the GCSL for an additional five years. See Rule 62-701.330(2), Florida Administrative Code. The landfill is not yet at design capacity and is not expected to reach that capacity during the next five years.

13. WMI desires to renew the operation permit for the GCSL because WMI wishes to continue to provide solid waste management services to Lee County, consistent with WMI's contractual agreement to do so. WMI also wishes to continue operating the GCSL in order to construct Parcel 3 to its final design grades

for closure. The design grades will maximize the site's ability to shed stormwater and thus minimize the production of leachate. Continuing to build Parcel 3 to its design grades is environmentally preferable to closing Parcel 3 at this time in its present configuration.

14. Prior to 1994, the GCSL received approximately 1000 tons of municipal solid waste each day. Approximately 90 per cent of the solid waste was household garbage and about 10 per cent was construction and demolition (C&D) debris. The GCSL did not receive industrial waste.

15. The composition of the waste stream changed in August 1994, when Lee County began to operate a waste-to-energy facility. All of the household garbage generated in the incorporated and unincorporated areas of Lee County is taken to the Lee County waste-to-energy facility, where it is burned, and the ash residue is taken to the GCSL. Currently, the GCSL receives only about 450 tons per day of solid waste, which consists of 65-70 per cent ash residue from the waste-to-energy facility, 30-35 per cent C&D debris, and approximately 2-5 per cent municipal solid waste.

16. DEP would allow WMI to accept more solid waste at the GCSL. However, Lee County has the contractual right with WMI to dictate the types of materials deposited in the GCSL, and it is the county's intent to use the waste-to-energy facility, not the GCSL, for the disposal of putrescible wastes. Lee County is



contractually obligated to send all of the county's municipal solid waste to the county's waste-to-energy facility, and the county has a financial incentive to do so. Lee County will send municipal solid waste to the GCSL only if an emergency occurs, but even then the county will try to limit the duration and extent of the County's use of the GCSL.

#### Objectionable Odors

17. Objectionable odors at a landfill typically are related to the facility's operating practices (e.g., the size of the working face) and the presence of putrescible, organic materials that degrade and produce gases when they come in contact with water. In this case, the GCSL's operating practices minimize odors. The majority of the waste now received at the GCSL is ash residue, which contains little or no organic material and thus produces little or no odor. In addition, because the GCSL is a "particularly dry landfill," any putrescible waste is not likely to degrade and cause odors.

18. There have been no violations of the DEP odor rules at the GCSL since 1991 and only two instances, in 1987 and 1991, when off-site odors were verified by DEP's inspector. WCI filed odor complaints in 1995, but the complaints were investigated by DEP and the county and found to be invalid. Petitioners presented no evidence of present or anticipated future odor problems at the GCSL. To the contrary, the DEP inspectors and

other witnesses established that there are no objectionable odors at the property boundary of the GCSL.

#### WMI's Approved Closure Plan

19. WMI has a closure plan for the GCSL that was approved by DEP when DEP issued the existing operation permit. In the current application WMI asked DEP for authorization to close the remaining portions of Parcel 3 in the same manner that WMI used when closing the other areas at the GCSL. If WMI's request is not granted, WMI may be required to close Parcel 3 with a geomembrane cover or "cap," in accordance with DEP's new requirements for final closure plans. Although DEP's landfill engineer recommends approval of WMI's request for authorization to use an alternate cover material, no proposed agency action has been taken on that request, and DEP will provide notice and a new point of entry for affected persons when the agency decides whether to grant WMI's request. It is, therefore, inappropriate to address the merits of WMI's "alternate procedure" request in this hearing. As provided in Rule 62-701.310(3), Florida Administrative Code, the agency's decision is action subject to a separate Section 120.57, Florida Statutes, proceeding.

20. WMI's closure plan for the GCSL has little significance in this proceeding. The closure plan is used to calculate the cost of closure, which in turn is used to determine whether WMI has the financial resources to pay the cost of closing the landfill. As part of its approved closure plan, WMI previously

demonstrated that it has the financial ability to pay the cost of closing the landfill. WMI could be required to spend an additional \$1,000,000 to close the GCSL if WMI's request for approval of the alternate procedure is denied by DEP, but it is undisputed that WMI has the ability to pay this additional cost for closure.

21. WMI must submit a revised closure plan at the time when WMI is prepared to close Parcel 3. DEP then will determine again whether the closure plan for Parcel 3 is adequate and in compliance with the DEP standards in effect at the time. (See paragraphs 38-42, "Specific Conditions," appended to the Intent to Issue, WMI Exhibit 4)

Leachate Generation Rate at the GCSL

22. While evaluating WMI's request for approval of an alternate closure plan, DEP noted that the amount of leachate collected in Parcel 3 (i.e., approximately 900,000 gallons per year) is relatively low when compared to the amount of leachate generated at other landfills. DEP was concerned that the low leachate collection rate may indicate a problem in the leachate collection system, so DEP requested WMI to evaluate the leachate generation rate at the GCSL in more detail. WMI subsequently presented additional information to DEP.

23. Leachate is defined by DEP as the liquid that has passed through or emerged from solid waste. Rule 62-701.200(50), Florida Administrative Code. Leachate is generated when

rainwater falls on the landfill, sinks in, and percolates through the garbage.

24. One of the primary factors reducing leachate at the GCSL is the use of ash as cover material. The ash, which contains lime, undergoes a reaction and "sets up like mortar." It is extremely hard, cannot be penetrated easily, and has a very low permeability. The permeability of the ash is in the same range as the permeability of the barrier layer that is used in a final cover material. The ash "sets up so well" that the surface water runoff is much greater than with a normal cover material.

25. There is an additional, significant reason why Parcel 3 of the GCSL has a low leachate generation rate. Approximately 50 acres of Parcel 3 already have been closed with a final cover which is designed to shed rainwater and thus minimize the production of leachate. Since most or all of the remaining 30 acres of Parcel 3 have been covered with ash, virtually all of Parcel 3 is covered with low permeability materials that minimize leachate generation.

26. Leachate in Parcel 3 also is minimized because WMI employs good operational practices to limit its generation. WMI uses a small working face and stormwater berms to reduce the size of the area where rainwater may infiltrate. WMI maintains aggressively graded slopes that quickly direct stormwater away from the working face and off of the landfill. WMI's "close-as-you-go" strategy means that the waste at the GCSL is covered

before it becomes saturated with rainwater. Specific conditions in the Intent to Issue require that these practices continue.

27. After DEP requested WMI to evaluate the leachate generation rate in Parcel 3, WMI hired a firm to clean the inside of all of the pipes in the leachate collection system in Parcel 3. A television video camera was used to visually inspect the inside of all of the pipes. This work confirmed that "at least 99.9 per cent" of the leachate collection pipes are clean and functional. WMI promptly repaired the leachate collection pipes in two small areas where there was blockage due to a crushed riser and a valve that was left closed.

28. It is highly unlikely that leachate is mounding up inside the landfill or overtopping the perimeter berm that surrounds Parcel 3. The leachate levels inside Parcel 3 generally are and historically have been less than two feet. The leachate levels at the GCSL do not threaten the liner's integrity. The pipes are working, and no seepage has been observed through the side slopes.

29. WMI verified that the liner and leachate collection systems in Parcel 3 were constructed properly and in accordance with the DEP-approved design. Construction Quality Assurance reports were prepared by professional engineers when the liner systems were installed in Parcel 3. In these reports, the engineers certified that each section of the liner was installed, inspected, and tested appropriately to ensure that there are no

holes in the liner. Where necessary due to failed tests, the reports reflect that repairs were made before any waste was deposited.

#### The HELP Model

30. In response to DEP's questions about the leachate generation rate at the GCSL, WMI's staff attempted to calculate the rate by using a computer program referred to as the HELP model. WMI initially ran the model with default input values which produced a predicted rate of 7.5 million gallons per year (MGY). WMI questioned the validity of the model results, but submitted the results to DEP because it was the best data then available. Given the discrepancy between the model results and the actual field data, WMI hired a nationally recognized consulting firm, Post, Buckley, Schuh, and Jernigan (Post Buckley), to perform a more refined analysis using the HELP model.

31. The HELP model is used to calculate water balances at landfills. The model calculates the amount of water that will move across, into, and through landfills under different conditions. The model is a useful tool for comparing the performance of two alternate landfill designs, but it has limited value when used to predict the actual performance of an operating landfill.

32. The model can be run with default values or with site-specific information. However, the model is designed to be conservative and overpredict the actual leachate generated.

33. In its application of the model, Post Buckley adjusted several input parameters to reflect the actual conditions at the GCSL. Most significantly, Post Buckley adjusted the input parameters for the moisture content of the waste in the GCSL and for the U.S. Soil Conservation Service's (SCS) Curve Number. These adjustments were "reasonable and well-considered."

34. The HELP model assumes that the solid waste in the landfill is at field capacity--i.e., saturated with rainwater. However, it is well established that the solid waste in landfills is not saturated. At the GCSL, the ash cover material and WMI's "close-as-you-go" practices would reduce the likelihood that the waste would be saturated. Indeed, Post Buckley's on-site inspections revealed that the GCSL is a "particularly dry landfill."

35. The users' manual for the HELP model indicates that the Curve Number should be adjusted in certain cases to account for increased stormwater runoff that will occur during short duration, high intensity storms. The default value is used in areas where the rainfall occurs over a 24-hour period. In this case, Post Buckley concluded that the SCS Curve Number should be adjusted because the GCSL receives about 54 inches of rainfall annually during approximately 90 short duration, high intensity

storms. Accordingly, Post Buckley adjusted the model's input parameters to increase runoff by 23 per cent of precipitation. Post Buckley's adjustment to the Curve Number and runoff value is consistent with the findings contained in a report by Benson and Pliska, which in the opinion of WMI's expert is the best study performed to-date on the calibration of the HELP model and which is similar or equivalent to the Peyton and Shroeder calibration relied on by Petitioner's expert.

36. Post Buckley ran the HELP model with three different sets of conditions. In one run, Post Buckley adjusted the input parameter for the moisture content of the waste and calculated an leachate generation rate of 100,000 gallons per year. In the second run, Post Buckley adjusted the Curve Number and calculated a rate of 1.3 MGY. In the third run, Post Buckley adjusted both the Curve Number and the moisture content and calculated a rate of zero gallons per year. Given Post Buckley's landfill experience and its knowledge about the operational practices at the GCSL, the ash used as cover material, the climatological conditions in southwest Florida, and the limitations of the HELP model, Post Buckley concluded that 1.3 MGY is a reasonable estimate or approximation of the actual leachate generation rule for Parcel 3 of the GCSL.

37. The leachate generation rate for the GCSL also has been evaluated by other witnesses. Mr. Joe Fluet calculated that approximately 960,000 gallons to 1,030,000 gallons of leachate



are generated annually in Parcel 3. Mr. Fluet is a nationally recognized landfill expert who was selected by DEP to serve as the chairman of a technical advisory group that helped DEP develop the current DEP landfill rules. Mr. Fluet's conclusion is consistent with the leachate collection data for the GCSL, the Post Buckley analysis, the measurements of leachate in the sumps at the landfill, and his own personal observations of the landfill and WMI's operational practices.

38. It is unlikely that leachate generation in Parcel 3 is as high as 2.0 MGY. This rate would produce about three feet of leachate on the liner. WMI's field data show that the "head" (depth) of leachate over the liner in Parcel 3 generally is less than two feet. By comparison, Post Buckley's estimated rate of 1.3 MGY would produce about 1.8 to 2.5 feet of leachate over the liner, which is more consistent with WMI's field data.

39. Petitioners also attempted to calculate leachate generation for Parcel 3 by running the HELP model. Using default values, Petitioners calculated a rate of approximately 7 MGY. Petitioners also ran the model after adjusting several input parameters. Among other things, Petitioners decreased the slope from 20 per cent to 4 per cent, and Petitioners increased runoff by 30 per cent, as compared to the default value. With these adjustments, Petitioners calculated a rate of 4.2 MGY.

40. The various experts' calculations with the HELP model produced leachate generation rates of 0 to 7.5 MGY. The

magnitude of the range reflects the limitations of the model and underscores the need for sound professional judgment when adjusting the input parameters. In this case, the most persuasive and credible testimony was presented by Mr. Bonaparte, a recognized landfill expert who is assisting EPA with its efforts to calibrate the HELP model, and Mr. Fluet. Consistent with their testimony, the greater weight of the evidence indicates that the leachate generation rate for Parcel 3 of the GCSL is most likely to range between 960,000 gallons and 1.3 MGY.

41. The Petitioners' calculated range of 4.2 to 7.0 MGY is not credible. Even the low end of Petitioners' range is more than twice as much (2.0 MGY) estimated by any other witness. In addition, Petitioners' entire range of calculated leachate generation rates is inconsistent with the other evidence of record, as described below.

42. Petitioners' leachate generation calculations were prepared by Marcus Pugh, who has not visited the GCSL nor performed any site specific field work concerning the GCSL. Mr. Pugh had never used the HELP model before to predict the generation rate of an operating landfill, but rather has used it as others commonly do, to size and design facilities. Although Mr. Pugh initially criticized Post Buckley's calculation of the slopes at the GCSL, he subsequently conceded that the HELP model results obtained by Post Buckley are independent of slopes.

### Missing Leachate?

43. Based on their HELP model calculations that Parcel 3 actually is generating 4.2 to 7.0 MGY of leachate and since WMI is collecting 900,000 gallons per year, Petitioners speculate that there is "unaccounted for" or "missing" leachate (i.e., 3.3 to 6.1 MGY), which must be leaking through the GCSL's liner or seeping out of the sides of the GCSL, or both. Petitioners' allegations, however, are not supported by the evidence of record, which favors a finding that the facility is simply not generating the vast amounts of leachate predicted by Petitioners.

44. The liner and leachate collection systems under Parcel 3 were "state-of-the-art" and in full compliance with all of the applicable DEP rules at the time of their installation. These systems were installed properly, in accordance with standard quality assurance procedures, as certified by a professional engineer. Mr. Bill Krumbholz, the DEP inspector, personally witnessed the installation of portions of the liner. Mr. Fluet also was personally involved with the certification for the landfill. Even the Petitioners' witness, Mr. Pugh, conceded that he had no concerns about or disagreements with the certifications for Parcel 3. Thus, there is no reason to believe that the liner or leachate collection systems were damaged at the time when they were installed. Petitioners theorize that the liner in the GCSL may have been damaged after it was installed, but Mr. Pugh readily admits that this contention is based on "pure

speculation" based on the notion that a minimum wage laborer on heavy equipment might damage the liner. Petitioners presented no direct or credible evidence to support their contention.

45. After the completion of construction and the commencement of operations large scale breaches of a landfill liner are not a common or even occasional occurrence. As part of its standard management practices, WMI places a four-to six-foot thick "fluff" layer of select household garbage over any new landfill liner system. The fluff layer is used to protect the liner and ensure that the liner is not accidentally damaged. This WMI policy was followed when the liners were installed in Parcel 3 of the GCSL. As a result, there is no reason to believe that the liner in Parcel 3 was damaged after installation.

46. There is no circumstantial evidence to support Petitioners' claims. Since 1976, WMI has monitored the water quality at the GCSL in accordance with a DEP-approved ground water monitoring plan, which is designed to detect any significant leakage from the landfill. No groundwater quality violations have been recorded at the GCSL. However, if one were to assume that Petitioners' theory is correct, then one also would have to assume that over the last five years approximately 16.5 to 30.5 million gallons of leachate have leaked through the liner in Parcel 3 and entered the adjacent groundwater, but somehow have evaded detection in the monitoring wells.

47. Respondents' witness Mr. Fluet calculated that a maximum of 56,000 gallons per year of leachate might possibly leak through the liner system in Parcel 3. His calculation conservatively assumed that there may be as many as ten 0.1 cm<sup>2</sup> holes in each acre of the liner in Parcel 3. Petitioners have offered no credible theory that would produce a leakage rate of several million gallons per year. To create a leakage rate of even one million gallons per year, there would have to be at least ten and perhaps dozens of large holes in the liner. Each of the holes would need to be 10-feet long and several inches wide. However, large holes or breaches in a liner system normally are identified and repaired during the installation and quality assurance process.

48. There is no evidence of poor quality assurance or poor operational practices at the GCSL to support Petitioners' speculation. WMI witness, Rudolph Bonaparte, has never encountered a situation where there was evidence of the kinds of "major flaws" that would be necessary to generate the leakage rates hypothesized by Petitioners. Mr. Fluet also was unable to identify any plausible scenario that would support Petitioners' theory. Petitioners' witness, Mr. Pugh, conceded that he has never worked on a lined landfill where 4-to 7-MGY of leachate leaked through the liner.

49. Petitioners questioned whether settlement would affect the liner or leachate collection systems in Parcel 3. Since ash

is denser than MSW, the disposal of ash in the GCSL may affect the settlement of the subsurface soils to some extent, but there will be no shearing or failure of the liner due to any differential settlement. The amount of differential settlement that may occur would be extremely small. Settlement could create a 1000 gallon "puddle" of leachate in the valley fill portion of Parcel 3, or the slope in some portions of the leachate collection system may flatten, but these are relatively minor impacts. Conversely, increased settlement in the base of Parcel 3 would help improve the overall drainage of the east hill and the west hill areas.

50. Petitioners contend that the "unaccounted for" leachate may be escaping from the GCSL through side slope seepage, but this theory is not supported by any direct or credible evidence. It was undisputed that any significant amount of side slope seepage from a landfill is readily apparent. Leachate seeps typically "look ugly and smell bad." When seeps occur, the soil is discolored, the vegetation is killed, and there is sheering, gullyng, rilling, and other signs of erosion.

51. There has been no side slope seepage from Parcel 3, as established by numerous site visits and personal observations of the DEP staff, county representatives, and other witnesses. Petitioners' witnesses have not observed any side slope seepage at the GCSL. Although Petitioners noted that there are discolored areas on Parcel 3, those are the areas where WMI

recently excavated into the sides of the GCSL to complete the repairs to the leachate collection system.

52. The leachate would have to mound up inside the landfill before there would be the amount of seepage predicted by Petitioners. This mounding would create tremendous head pressure in the cleanout pipes. However, no such pressure has been found in the cleanout pipes at the GCSL.

53. Petitioners suggest that leachate may be seeping from the toe of Parcel 3 into the drainage ditch that leads to the stormwater retention pond. Again, the evidence does not support this hypothesis. The liner in Parcel 3 goes over the top of a berm which is built completely around the perimeter of Parcel 3. The berm and the liner rise 3 feet above the base of the leachate collection system. Leachate could not seep from the toe of Parcel 3 unless the leachate level rose above the functioning leachate collection pipes, avoided being drained away by the leachate collection system, and then flowed uphill over the berm. Even if the leachate went up and over the berm, the leachate would enter the ditch from the top of the berm, where it would be readily visible to site inspectors as side slope seepage. No such seepage has been observed at the GCSL, even when people were looking for it.

#### Ground Water Monitoring at GCSL

54. There are three aquifers underlying the GCSL: (a) the surficial water table aquifer; (b) a sandstone aquifer; and

(c) the Hawthorne formation. Each of the aquifers is separated by a low-permeability, confining layer of varying thickness. The confining layer below the surficial water table aquifer is between 40 and 80 feet in thickness. Based on field data and reports of other scientists, including Petitioner's expert, Thomas Missimer, hydrogeologist Martin Sara derived a vertical flow rate of approximately 0.1 feet per year. At this rate, ground water would take approximately 40 to 50 years to move vertically downward through the confining layer.

55. Petitioners contend that the GCSL is affecting the surficial water table aquifer.

56. The surficial water table aquifer contains fresh water and is used extensively as a source of potable water in Lee County, but not in the area of the GCSL. Ground water samples collected from the surficial water table aquifer on Petitioners' property had average total dissolved solids (TDS) concentrations of approximately 500 mg/l. Similar TDS values have been reported for the surficial water table aquifer in the area surrounding the GCSL.

57. In general, the regional groundwater flow in the vicinity of the GCSL is to the northwest. There is a northwesterly flow from WCI's property onto the GCSL that is consistent year after year and during all seasons. Extensive historical monitoring data for the site confirm that the groundwater flow under the GCSL also primarily is to the northwest, but



with some likely localized flow to the west, at least during special events such as landfill dewatering in 1982. The only significant exception to this trend occurs in the area of the stormwater retention pond, where the groundwater usually flows radially outward in all directions.

58. Groundwater monitoring began at the GCSL in 1976, when the facility opened. The groundwater monitoring system at the GCSL has complied with or exceeded the DEP requirements at all times since 1976. Currently there are seven groundwater monitoring wells, each approximately 30-feet deep, in the surficial water table aquifer at the GCSL. These wells surround the perimeter of the GCSL.

59. At the final hearing, Lee County attempted to address concerns about the groundwater monitoring program for the GCSL by agreeing to pay for the redevelopment and installation of additional groundwater monitoring wells. Lee County and WMI stipulated that two existing groundwater monitoring wells (wells 14-S and 18-S) will be redeveloped and a new ground water monitoring well will be installed in the surficial aquifer between existing wells 20-S and 21-S. The two redeveloped wells and the new well will be sampled on a semiannual basis for chloride and the field parameters of pH, specific conductivity, field turbidity, and temperature for the life of the permit. The monitoring may be discontinued if the GCSL closes.

60. The monitoring well network at the GCSL is adequate to monitor the type of area-wide plume that might originate from the GCSL. The evidence demonstrates that any holes in the liner in Parcel 3 are likely to be small and spread widely across the entire site. Although the plume from a single hole may be narrow and elongated, the plume from the entire landfill would be approximately 2400-feet wide. Under most if not all plausible scenarios, leachate leaking out of the liner beneath Parcel 3 will move with the regional groundwater flow toward the monitoring wells located along the western and northern perimeters of Parcel 3. Potential leakage from Parcel 3 will be pushed toward these monitoring wells by the regional groundwater flow and the radial flow from the retention pond.

61. DEP has concluded and the evidence confirms that WMI's groundwater monitoring plan, as modified by Lee County's stipulation, is protective of the environment and satisfies all applicable DEP requirements. Under the facts of this case, it is not necessary to add any additional monitoring wells or otherwise modify the groundwater monitoring plan, except as stipulated by Lee County.

62. It was undisputed that the leachate generated at the GCSL is and always has been "very weak" in comparison to the leachate from other landfills. The leachate contains relatively few contaminants and has low contaminant concentrations. The GCSL's leachate has few volatile or hazardous constituents.

63. It also was undisputed that there have been no violations of DEP groundwater standards detected in any of the groundwater monitoring wells at the GCSL. There have been one-time exceedances or anomalies, but such events do not constitute a violation of the DEP standards.

#### Chloride In the Ground Water

64. Chloride is present in the GCSL's leachate. Over the last ten years, the average chloride concentration in the leachate has been 1021 parts per million (ppm), and the highest concentration has been 2070 ppm.

65. The Department has no primary (i.e., health-based) groundwater quality standard for chloride. The only groundwater quality standard for chloride is a secondary standard of 250 ppm. Secondary standards are intended to address concerns about odor, taste, and aesthetics. If chloride concentrations become too high in drinking water, people simply stop drinking the water before there are any health implications, because the water is too salty.

66. WMI evaluated Petitioners' claim that chloride leaking from Parcel 3 may affect the water quality on Petitioners' property. First, WMI performed a mass balance calculation and concluded that the maximum rate of leakage from Parcel 3 would increase the chloride concentrations beneath the landfill by only 7 to 14 ppm. WMI then used a dispersion model and determined that the maximum leakage rate would increase the chloride

concentrations in the groundwater only 3.5 ppm at a distance of 100 feet from the landfill. This increase in chloride could not be distinguished from the existing background concentrations in the groundwater.

67. WMI also analyzed the groundwater data to determine whether the GCSL is causing an increase in the chloride concentration measured in monitoring well 21-S. WMI plotted the data on trilinear diagrams, consistent with techniques that have been commonly used by hydrogeologists for many years. The trilinear diagrams clearly show that the increased levels of chloride in monitoring well 21-S are not caused by the leachate from the GCSL. The trilinear diagrams do not identify the source of the chloride found in monitoring well 21-S. However, it appears that the chloride originated from a source of "brackish" water.

68. There are several potential sources of the chloride in well 21-S. In the past, there was an irrigation well on WCI's property that pumped water with high chloride concentrations and created a large plume of chloride-enriched groundwater on WCI's property. Historic groundwater monitoring data indicate that the chloride plume was approximately 6000-feet wide and flowing towards the GCSL. This large plume may have reached the GCSL and affected the water quality in well 21-S. There also were irrigation wells located on the site of the GCSL that may have contributed to the chloride concentrations in well 21-S.

Historic water quality data indicate that these irrigation wells produced elevated chloride concentrations in the groundwater at the GCSL.

#### Petitioners' Stormwater Data

69. On May 12, 1997, Petitioners collected samples of the water in the stormwater retention pond at the GCSL. Petitioners also collected a sample of the water in a concrete culvert that carries stormwater runoff from Parcel 3 to the retention pond. The samples were collected during a severe rainstorm when it was "raining cats and dogs." Based on these samples, Petitioners speculate that the "unaccounted for" leachate is entering the stormwater retention pond via a perimeter drainage ditch and the concrete culvert. This speculation is not supported by the evidence.

70. Leachate generated in the GCSL has an ammonia-nitrogen concentration in the range of 700 to 800 ppm. The stormwater collected from the culvert pipe had an ammonia-nitrogen concentration of 1.7 ppm. The disparity between these two values belies the possibility that the stormwater in the ditch contains leachate from the GCSL. Although Petitioners contend that ammonia-nitrogen in the leachate could be oxidized while flowing in the ditch, it would be virtually impossible for the oxidation of stormwater in the ditch to reduce ammonia-nitrogen levels from 700 or 800 to 1.7 ppm. WMI's extensive experience with leachate

has demonstrated that it is "very difficult" to treat and reduce the ammonia-nitrogen levels in the leachate through volatilization and aeration.

71. The water collected by Petitioners in the culvert had a chloride concentration of 2900 ppm, which significantly exceeds the highest chloride level ever found in the GCSL's leachate (2070 ppm). The pH in Petitioners' sample (8.87) also was notably higher than the pH found in the landfill's leachate (e.g., 7.20 in WCI Exhibit 14). The disparity between the values found in Petitioners' sample and the values found in the landfill's leachate suggests that the Petitioners' sample is not representative of leachate from Parcel 3.

72. Stormwater flowing over the ash residue on the top of Parcel 3 is the most probable source of the elevated chloride and high pH found in Petitioners' sample. The ash at the GCSL has elevated chloride concentrations. It also has high pH, due to the addition of lime at the waste-to-energy facility. Both WMI's witness, Mr. DeBattista, and Petitioner's witness, Dr. Missimer, saw stormwater washing over the ash and entering the stormwater conveyance system that led to the culvert where Petitioners' sample was collected while Petitioners were at the GCSL collecting samples.

73. Petitioners noted that the water in the stormwater ditch was discolored. However, Petitioners' photograph of the site (WCI Ex. 10) reveals that the water in the ditch is the same

color as the mulch (compost) that is stockpiled on Parcel 3 and used for intermediate cover. During Petitioners' site visit, stormwater was flowing over the mulch on Parcel 3 before entering the stormwater ditch. Dr. Missimer conceded that the color of the water in the ditch could be caused in part by the mulch and stormwater runoff.

74. Dr. Missimer raised a number of other issues about the GCSL. He claimed that the sediments in the stormwater retention pond have elevated metals concentrations, but he does not contend that the metals concentrations in the sediments violate any applicable DEP standard. He also does not contend that the metals are leaving the site. Dr. Missimer noted that there was "foam" in a stormwater ditch. However, Petitioners presented no competent evidence about the source of the foam or its chemical composition. Finally, Dr. Missimer heard gas escaping from a cleanout pipe at a different location on the landfill, but there were no odors associated with it. There is no evidence to demonstrate that gas in the riser pipes is a cause for concern.

75. In response to Petitioners' chloride data, WMI is taking steps to manage its stormwater better. WMI has placed intermediate cover over 10 acres of exposed ash, thus reducing the potential for the rainwater to come in contact with the ash and convey chloride into the stormwater management system. WMI

also is determining whether it should remove a culvert that served as a conduit for the runoff from Parcel 3 to the retention pond.

76. It was undisputed that the GCSL is an "existing installation," as that term is defined by DEP. Parcels 1 and 2 of the GCSL were unlined and were reasonably expected to release contaminants into the ground water on or before July 1, 1982. The GCSL has operated consistently with the applicable DEP statutes and rules relating to groundwater discharges in effect during the time of its operation. Since the GCSL is an existing installation, WMI is entitled to a zone of discharge that extends to WMI's property boundary. The groundwater within the zone of discharge is not required to meet the DEP water quality standards.

Modifications to Conditions of Draft Permit  
and Summary of Findings

77. In addition to the modification to the ground water monitoring plan described in paragraph 59 above, WMI has requested and DEP has agreed to make minor changes to the language in Specific Conditions 10, 19, 32, 38, and 45(e) of the draft permit. These changes relate respectively to gas monitoring, daily cover, acceptance of C & D debris, data to support the alternate procedure request for final cover, and the zone of discharge. These modifications are reasonable, supported by the evidence, and consistent with DEP rules.



78. Moreover, WMI has provided reasonable assurance of compliance with all applicable DEP rules for continued operation of the GCSL. As amply demonstrated in this proceeding, highly competent professionals can disagree. Petitioners' witness Dr. Missimer, has had years of experience in studying the hydrogeology of Lee County and the area of the landfill and Gateway. His data collected during the development of Regional Impact Studies for Gateway have been relied on by DEP and others. His conclusions, however, regarding enormous amounts of leachate escaping the landfill are simply not supported by the results of years of monitoring the landfill's operations. With continued monitoring, the applicant should be permitted to continue to operate.

#### CONCLUSIONS OF LAW

79. The Division of Administrative Hearings has jurisdiction in this proceeding pursuant to Sections 120.569 and 120.57(1), Florida Statutes. As stipulated, WCI, Sanders, and Lee County have standing to participate in this proceeding.

80. Rule 62-4.070(1), Florida Administrative Code, requires that an applicant for a permit from DEP affirmatively provide DEP with reasonable assurance based on plans, test results, installation of pollution control equipment, or other information that the construction, expansion, modification, operation, or activity of the installation will not discharge, emit, or cause pollution in contravention of Department standards or rules.

The reasonable assurance standard does not require the applicant to perform every known test concerning an issue in order to establish entitlement to a permit. Booker Creek Preservation, Inc. v. Mobil Chemical Co., 481 So. 2d 10, 13 (Fla. 1st DCA 1986). Rather, reasonable assurance means a "substantial likelihood" that the project will be successfully implemented. Metropolitan Dade Co. v. Coscan Florida, Inc., 609 So. 2d 644, 648 (Fla. 3d DCA 1992).

81. As the applicant in this proceeding, WMI has the ultimate burden of persuasion. Florida Department of Transportation v. J.W.C. Co., Inc., 396 So. 2d 778, 787-790. (Fla. 1st DCA 1981). WMI also has the initial burden of presenting prima facie evidence demonstrating that WMI has complied with all applicable DEP standards and rules. Id. The Petitioners then must present "contrary evidence of equivalent quality" proving the truth of the allegations in their petitions. Id. In this case, WMI presented competent, substantial evidence to demonstrate that the GCSL complies with all of the applicable DEP landfill rules in Chapter 62-701, Florida Administrative Code. Petitioners speculated about potential defects in the liner or leachate collection systems, but presented insufficient (substantially lesser quality) evidence to support their speculation.

82. Rule 62-522.200(1), Florida Administrative Code, defines an "existing installation" for the purpose of Chapters 62.520 and 62-522, Florida Administrative Code, as

any installation which had filed a complete application for a water discharge permit on or before January 1, 1983, or which submitted a ground water monitoring plan no later than six months after the date required for that type of installation as listed in Rule 17-4.245, F.A.C., (1983) and a plan was subsequently approved by the Department, or which was in fact an installation reasonably expected to release contaminants into the ground water on or before July 1, 1982, and operated consistently with statutes and rules relating to ground water discharges in effect at the time of the operation.

It was undisputed that the GCSL is an existing installation.

83. The evidence demonstrated that the only aquifer reasonably likely to be affected by a groundwater discharge from the GCSL, the surficial water table aquifer, is not currently used as a potable water source and is not reasonably likely to be used as a potable water source in the area near the GCSL. There is no evidence of record to suggest that discharges from the GCSL have caused violations of the secondary drinking water standards at any private or public water supply well outside the GCSL's zone of discharge.

84. The only evidence of groundwater contamination offered by the Petitioners in this proceeding concerns elevated concentrations of chloride, allegedly caused by discharges from the GCSL's liner, leachate collection system, or stormwater retention pond. The only applicable DEP standard for chloride is

a secondary drinking water standard. See Rule 62-550.320 (Table 4), Florida Administrative Code. Since the GCSL is an existing installation, the GCSL is exempt from the secondary drinking water standards for chloride outside of the GCSL's zone of discharge, and the Petitioners' evidence does not demonstrate that the GCSL has caused a violation of the DEP groundwater standard for chloride, no matter what amount of leachate is being discharged. See Rule 62-522.300(6), Florida Administrative Code. There is no DEP standard limiting the amount of leachate generated at a solid waste management facility.

85. DEP has no standards limiting the depth of the leachate over the GCSL's liner. Current DEP rules limit the head over the liner to one foot (See Rule 62-701.400(3)(b)(2.), Florida Administrative Code), but those requirements do not apply to the GCSL because it was built prior to the current rules becoming effective. See Rule 62-701.220(1), Florida Administrative Code. In any event, the weight of evidence established that the head levels at the GCSL pose no threat to the liner's integrity.

86. Rule 62-701.200, Florida Administrative Code, defines "monitoring wells" as

strategically located wells from which water samples are drawn for water quality analysis.

The GCSL currently has monitoring wells strategically located around the perimeter of the facility. WMI demonstrated that the GCSL's ground water monitoring plan meets the requirements of DEP's rules and is protective of human health and the

environment. To provide additional assurances, WMI and Lee County agreed to include additional wells in the monitoring network. The addition of three monitoring wells increases the protection provided by the ground water monitoring plan and complies with DEP's rules.

87. Dr. Missimer contends that the groundwater monitoring plan is inadequate, but his opinion is based on his erroneous belief that the groundwater monitoring plan must be able to detect leakage from any position in the landfill. The most credible evidence in this case established that any potential plume from the GCSL would be the result of many small holes located across the entire breadth and width of the liner system. The holes would produce a very wide plume, which would be detected by the monitoring wells. Since the leachate at the GCSL is weak and contains relatively few substances, the monitoring plan is adequate, and Lee County's decision to add additional monitoring wells effectively obviates dispute about the direction of groundwater flow at the site or the adequacy of the groundwater monitoring plan.

88. WMI concedes that stormwater came into contact with the ash on top of Parcel 3 at the GCSL, most probably causing the elevated chloride levels in Petitioners' samples. WMI already is taking steps to remedy this situation. Petitioners, however, introduced no evidence to prove that the stormwater from the GCSL

is causing any violations of any applicable surface water regulations.

89. Rule 62-701.400, Florida Administrative Code, provides that a landfill shall not cause objectionable odors beyond the facility's property boundary. The evidence in the record demonstrates that the GCSL has not caused any objectionable odors since 1991 and is not likely to produce objectionable odors in the future. Therefore, the GCSL complies with the applicable DEP rules concerning objectionable odors.

90. The Department's rules require that all facilities have a landfill closure plan in place. The GCSL has, as part of its existing permit, a valid closure plan that was previously approved by DEP.

91. WMI has filed a request for approval of an alternative landfill closure procedure pursuant to Rule 62-701.130, Florida Administrative Code. The Department has not yet officially decided whether WMI's request will be granted. If DEP grants WMI's request, DEP must issue a notice of intended agency action and provide a new point-of-entry for Petitioners and other members of the public. In the instant case, WMI's pending request for approval of an alternative closure procedure is relevant only to the extent that there may be a question as to whether WMI has the financial resources to pay for closure.

Mr. Battista's testimony was uncontroverted that WMI does have adequate financial resources and, therefore, WMI has provided reasonable assurance of its financial responsibility.

92. It is well-settled that an Administrative Law Judge has the authority to recommend permit conditions that will make a project permittable, if such conditions are supported by competent substantial evidence, as they are in this case. See Hopwood v. Department of Environmental Regulation, 402 So. 2d 1296 (Fla. 1st DCA 1981). The renewal of WMI's operating permit should be conditioned by the inclusion of (a) a specific permit condition regarding the additional ground water monitoring stipulated to by Lee County, WMI, and DEP; (b) the changes to Specific Conditions 10, 19, 32, and 38 in the draft permit that are set forth in WMI's Exhibit 6; and (c) a revision to Specific Condition 45(e) that increases the zone of discharge at the GCSL to the property boundary, consistent with rules relating to existing facilities.

#### RECOMMENDATION

Based on the foregoing, it is hereby

RECOMMENDED:

That the Department of Environmental Protection enter a Final Order approving Waste Management, Inc., of Florida's application for a permit renewal to continue to operate the Gulf Coast Sanitary Landfill, subject to the parties' stipulation

regarding additional groundwater monitoring wells and subject to the revisions to the draft permit that are described herein.

DONE AND ENTERED this 17th day of September, 1997, in Tallahassee, Leon County, Florida.

---

MARY CLARK  
Administrative Law Judge  
Division of Administrative Hearings  
The DeSoto Building  
1230 Apalachee Parkway  
Tallahassee, Florida 32399-3060  
(904) 488-9675 SUNCOM 278-9675  
Fax Filing (904) 921-6847

Filed with the Clerk of the  
Division of Administrative Hearings  
this 17th day of September, 1997.

COPIES FURNISHED:

W. Douglas Beason, Esquire  
Department of Environmental Protection  
Mail Station 35  
3900 Commonwealth Boulevard  
Tallahassee, Florida 32399-3000

William D. Preston, Esquire  
Michael P. Petrovich, Esquire  
Post Office Box 6526  
Tallahassee, Florida 32314-6526

Neale Montgomery, Esquire  
Pavese Garner Haverfield Dalton  
Harrison & Jensen  
Post Office Box 1507  
Fort Myers, Florida 33902-1507

David S. Dee, Esquire  
John T. LaVia, III, Esquire  
Landers & Parsons, P.A.  
310 West College Avenue  
Tallahassee, Florida 32301



David M. Owen, Esquire  
Lee County Assistant Attorney  
Post Office Box 398  
Fort Myers, Florida 33902

Kathy Carter, Agency Clerk  
Department of Environmental Protection  
Mail Station 35  
3900 Commonwealth Boulevard  
Tallahassee, Florida 32399-3000

Perry Odom, General Counsel  
Department of Environmental Protection  
Mail Station 35  
3900 Commonwealth Boulevard  
Tallahassee, Florida 32399-3000