

US EPA ARCHIVE DOCUMENT

*Prepared for:*

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**LANDFILL BIOREACTOR PROJECT**  
**JULY 2004**  
**SEMI-ANNUAL REPORT OF**  
**MONITORING ACTIVITIES**

**KING GEORGE RECYCLING AND**  
**WASTE DISPOSAL FACILITY**

**King George County, Virginia**  
**VADEQ Solid Waste Permit No. 586**

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## 1. INTRODUCTION

### 1.1 Terms of Reference

The purpose of this semi-annual monitoring report is to present the results obtained between January 1, 2004 and June 30, 2004 of the Landfill Bioreactor Project at the King George Recycling and Waste Disposal Facility (King George Landfill) in King George County, Virginia. The bioreactor study is being performed by Waste Management of Virginia, Inc. (a Waste Management, Inc. (WMI) company) under the United States Environmental Protection Agency's (USEPA's) Project XL program. This monitoring report was prepared for the Virginia Department of Environmental Quality (VADEQ) by Mr. Douglas T. Mandeville and was reviewed by Mr. William M. Steier, P.E., and Mr. Michael F. Houlihan, P.E., all of GeoSyntec Consultants (GeoSyntec), in accordance with the internal peer review policy of the firm. This report describes the monitoring activities between the above mentioned dates. To aid in the interpretation of the data, the tables and figures contain all of the data collected since leachate recirculation began on November 1, 2002.

### 1.2 Project Overview

The King George Landfill is located in King George County, Virginia, approximately 50 miles north-northeast of Richmond, Virginia. The waste disposal area will cover approximately 290 acres upon completion. Construction of the first cells started in 1996 and construction of additional liner area has been performed every year since. The King George Landfill was constructed having a geomembrane composite double-liner system, with primary leachate collection and leak detection (secondary collection) layers. The current configuration of Cells 1 through 4, including the recirculation trenches, is shown in Figure 1 and in Drawing 1. As part of the XL program, Cell 3 is operated as a bioreactor (i.e., leachate is recirculated), whereas Cells 1, 2, and 4 are operated as standard landfill cells (i.e., no leachate is recirculated). Cell 3 of the King George Landfill is referred to as the test area. Cells 1, 2, and 4 are referred to as the control area.

A landfill becomes a bioreactor when leachate and other liquids are added to the landfill. The purposes of operating a landfill as a bioreactor are to increase the rate of biodegradation in the landfill and to facilitate the management of leachate and other waste liquids. The original intent of the XL program was to recirculate all of the

leachate generated at the site, plus an additional amount of non-hazardous liquids. The goal is to recirculate between 7 million and 8 million gallons of leachate and other non-hazardous liquids per year. This is approximately twice the typical leachate generation rate at King George. WMI will seek to recirculate this amount, while maintaining compliance with applicable rules and regulations. At the time when the program was initially implemented in November 2002, an increase in the occurrence of leachate seeps was observed, causing site personnel to reduce or curtail recirculation operations. As a result of the observed increase in leachate seeps, in the interest of maintaining good landfill operating practices and complying with environmental protection regulations, the actual amount of leachate recirculated may be less than 8 million gallons per year. The amount of liquid applied to the waste will vary based on site inspections and observations. Regardless of the quantity of leachate recirculated, the requirement to perform monitoring during the course of the program will continue.

It is anticipated that the operation of Cell 3 as a bioreactor will result in several environmental and cost saving benefits including, but not limited to, the following: (i) decreased leachate management costs; (ii) increased waste density in the landfill; (iii) reduced period of landfill gas generation; and (iv) improved long-term leachate quality. These benefits are discussed in depth in WMI's Project XL application [GeoSyntec, 2000].

The performance of the landfill is evaluated based on measurements of critical chemical and physical parameters associated with the solids, liquids, and gasses obtained from the test and control areas. Parameters to be measured include: settlement, leachate quantity, leachate quality, in-place density of waste, and air quality. The parameters measured in the bioreactor (i.e., test area) are compared to similar parameters measured from the control area.

### **1.3 Report Organization**

In this report, the results of the analytical tests conducted during the first half of calendar year 2004 are provided. The organization of this report is described below.

- Section 2 addresses the Federal Register site specific rule making.
- Section 3 presents the requirements of the VADEQ Experimental Permit.
- Section 4 describes the sampling and sampling and analysis activities performed during the first half of calendar year 2004.

- Section 5 describes the analytical test results and other data collected during the first half of calendar year 2004.
- Section 6 presents summary comments.
- Section 7 provides references.
- Appendix A presents the leachate laboratory analysis results.
- Appendix B presents the liquid application logs (a daily and monthly liquid application summary is presented in Table 7).
- Appendix C presents settlement data.
- Appendix D presents landfill gas data.
- Appendix E presents groundwater quality compliance data.

## 2. REQUIREMENTS OF FEDERAL REGISTER SITE SPECIFIC RULE MAKING

On July 18, 2002, the EPA promulgated a site-specific rule to implement this project under the USEPA's Project Excellence and Leadership Program (Project XL). This rule was published in the Federal Register and provides site-specific regulatory flexibility under the Resource Conservation and Recovery Act (RCRA) for the King George Landfill. Part 258, Subpart D of the rule identifies 14 conditions that are to be met while leachate is recirculated at the King George Landfill. The remainder of this section addresses 12 of these conditions; the last two conditions are related to the duration of and compliance with the site specific rule.

- 1) *Item 1 relates to the integrity of the liner system and maintaining less than 30 cm of head on the liner system.* In accordance with Item 1, the integrity of the liner system was maintained during construction of the recirculation trenches and the leachate collection system has been maintained in good operating order. To date, the leachate collection records in the test and control areas do not indicate an increase in the leakage rate through the primary liner system. It is noted that design calculations showed that up to 7 to 8 million gallons of liquid per year could be added to the waste mass and that the head on the liner system would remain less than 30 cm. The liquid application rate is approximately 1.7 million gallons per year based on data collected between November 1, 2002 and June 30, 2004. Based on the design calculations and the actual leachate recirculation rate, the head on the liner system is expected to be less than 30 cm. Additionally, the leachate collection system has been designed to operate such that the leachate removal pumps turn on before the head acting on the liner system reaches 30 cm.

With regard to maintaining the integrity of the liner system, there are no apparent signs of slope movement based on daily observations at the site.

- 2) *Item 2 relates to the Code of Federal Regulations (CFR) Section 258.40.* In accordance with Item 2, the groundwater quality for this reporting period has been monitored and analyzed at the compliance point. This analysis was performed by Joyce Engineering, Inc. (Joyce Engineering); a copy of the letter is presented in Appendix E. Arsenic, Cadmium, and Lead have been detected at concentrations that exceed the current MCL; however, it is noted



that the detected concentrations were less than the facility background concentrations at the time of detection. Joyce Engineering determined that the concentrations were not statistically significant. As per VADEQ, the monitoring program at the King George Landfill, Permit No. 586, was allowed to continue in the Detection Monitoring Program.

- 3) *Item 3 relates to the occurrence of seeps at the landfill.* Surface seeps have occurred at the King George Landfill following initial leachate recirculation operations in late 2002 and early 2003. These minor seeps were short in duration and were repaired quickly. These seeps were most likely attributed to the leachate recirculation operations at the site. In accordance with Item 3, WMI is in the process of identifying operating procedures that minimize the occurrence of seeps. Because WMI will operate the King George Landfill in an environmentally responsible manner, the amount of leachate that is recirculated may need to be reduced. Hence, the actual amount of leachate recirculated has been less than the target amount of 8 million gallons per year. During the current reporting period, no leachate seeps were observed at the King George Landfill.
- 4) *Item 4 relates to the leachate quality parameters to be analyzed as part of this project.* In accordance with Item 4, the evaluation of the key leachate quality parameters occurred at the frequency presented in the Final Project Agreement [GeoSyntec, 2000] and the permit application for leachate recirculation submitted to VADEQ [GeoSyntec, 2001]. The test results are discussed in Section 5.1. It should be noted that these parameters (or groups of parameters) have been analyzed in leachate samples collected from the test and control areas. Appendix A includes a summary of the leachate parameters that exceeded the MCL or were detected at concentrations above the method detection limit. A complete set of laboratory results is available upon request.
- 5) *Item 5 relates to the quantity of leachate applied to the test area and the amount of leachate collected in the test and control areas of the landfill.* Leachate was added to the test area at King George in accordance with the Final Project Agreement [GeoSyntec, 2000] and the permit application for leachate recirculation submitted to VADEQ [GeoSyntec, 2001]. The quantities of leachate applied to the test area and the quantities collected from the test and control area are discussed in Section 5.1.

- 6) *Item 6 relates to an initial characterization of the liquid that was added to the test area.* An initial characterization of the leachate added to the landfill was performed in September 2002. The results of this analysis indicate that the leachate is an acceptable liquid to add to the landfill. Between January 1, 2004 and June 30, 2004, leachate was the only liquid added to the test area at King George.
- 7) *Item 7 relates to the occurrence of landfill fires in the test area and the measurement of gas temperature at the wellheads.* The test area at King George has been operated in a manner to prevent landfill fires from occurring and none have been observed during the project. The gas temperature at the wellheads is discussed in Section 5.2.
- 8) *Item 8 relates to topographic surveys at the site.* In accordance with Item 8, two topographic surveys are required to be obtained during the reporting period. The first survey was conducted in January 2004; the second survey was conducted in April 2004.
- 9) *Item 9 relates to odor complaints resulting from liquid application events.* No odor complaints were reported at King George during the reporting period.
- 10) *Item 10 relates to an initial waste characterization in the test area of the landfill.* A total of five borings were drilled in the summer of 2001. Two of these borings were in the control area and three were in the test area. In accordance with the Final Project Agreement [GeoSyntec, 2000] and the permit application for leachate recirculation submitted to VADEQ [GeoSyntec, 2001], a second series of boring was drilled in November 2003. A brief comparison of the 2001 and 2003 results is presented in Section 5.3.
- 11) *Item 11 relates to the preparation of semi-annual reports to the EPA Regional Administrator.* Previous semi-annual monitoring reports were submitted on 8 May 2003, 17 July 2003, and 19 January 2004. The next semi-annual monitoring report will be submitted in January 2005.
- 12) *Item 12 relates to additional landfill gas monitoring.* The monitoring requirements for the New Source Performance Standards and the Title V Air

Permit for the site were met during the reporting period. Copies of the wellhead monitoring results and the surface scans are presented in Appendix D.

### 3. REQUIREMENTS OF VADEQ EXPERIMENTAL PERMIT

On July 18, 2002, the state issued a permit modification allowing bioreactor operations in Phases 1 and 2 at the King George Landfill. Permit module I.F. of the permit amendment issued July 18, 2002, identifies several site specific conditions that must be met while leachate is recirculated at King George. The remainder of this section addresses each of these conditions.

- 1) *Item I.F.1 relates to the issuance of a Certificate to Operate.* Construction of the liquid application trenches was completed within 180 days of the issuance of the permit amendment. A renewal letter to continue recirculation operations will be submitted in October 2004.
- 2) *Item I.F.2 relates to the expiration of the experimental permit and request for a full permit amendment.* This report presents the data obtained during the first half of calendar year 2004. At this time, there is not enough data available to draw conclusions from the experiment. If the project is found to be a success, WMI anticipates submitting a request for a full permit amendment.
- 3) *Item I.F.3 relates to the permitted landfill bioreactor area, Phases 1 and 2.* In accordance with the permit requirements, the liquid application trenches were constructed in Cell 3, and liquid was applied only in this part of the landfill.
- 4) *Item I.F.4 relates to the monitoring, sampling, and reporting requirements.* In accordance with Item I.F.4, the monitoring was completed as identified in Permit Attachment IIB-2. Previous quarterly monitoring reports were submitted in May 2003, June 2003, September 2003, and January 2004. Beginning with this report, monitoring reports will be prepared on a semi-annual basis.
- 5) *Item I.F.5 relates to the Title V Air Permit Issued January 10, 2002 and the New Source Performance Standards Subpart WWW.* In accordance with Item I.F.5, WMI complied with the regulations identified in the Title V Air Permit and the New Source Performance Standards Subpart WWW.

- 6) *Item I.F.6 relates to managing leachate as a hazardous waste if the characterization of leachate indicates that it is hazardous in accordance with the Virginia Hazardous Waste Management Regulations (9 VAC 20-60-10). (It should be noted that leachate is not explicitly listed as a hazardous waste in the Virginia Hazardous Waste Management Regulations). The laboratory results for the leachate samples obtained in March 2004 indicate that the leachate at King George is not a Hazardous Waste.*
- 7) *Item I.F.7 relates to the monitoring of leachate head over the liner at its lowest disposal point to ensure that no more than 1 foot of head of leachate accumulated over the liner. The issue of hydraulic head acting on the liner system is addressed in Section 2, Item 1.*
- 8) *Item I.F.8 relates to the closure of the bioreactor landfill area. At this time, WMI plans to continue bioreactor operations in Cell 3 at King George. In accordance with Item I.F.8, WMI will notify VADEQ at least 180 days prior to the anticipated date of closing.*

## 4. MONITORING PROGRAM AND SAMPLING AND ANALYSIS ACTIVITIES

### 4.1 Monitoring Program

Project XL monitoring activities at the King George Landfill consist of documenting the quality and quantity of leachate, landfill gas, and solid waste in the test and control areas. A detailed description of the monitoring activities for the Project XL Program is presented in the document entitled, “*Monitoring, Sampling, and Analysis Plan*” (Monitoring Plan) [GeoSyntec, 2001], which is contained in the permit application submitted to VADEQ. As part of the USEPA XL program and VADEQ permit requirements, a series of site-specific rules and monitoring requirements have been developed. The USEPA site-specific rule appeared in the Federal Register on July 18, 2002; compliance with these requirements were addressed in Section 2 of this report. The VADEQ site-specific permit requirements appeared in the state permit modification issued for the site on October 20, 2002; compliance with these requirements were addressed in Section 3 of this report. Table 1 shows the planned schedule for the 2004 monitoring events; Table 2 summarizes the dates and sampling events that have occurred to date.

Leachate monitoring events include collecting leachate samples from the control area and the test area for subsequent laboratory analysis. Landfill gas monitoring events include measuring landfill gas composition at the wellheads in the control and test areas, obtaining landfill gas composition samples from the headers of the landfill gas collection system, and performing a surface scan to measure surface emissions. The solid waste monitoring event includes obtaining waste samples for subsequent analysis. In addition to these field monitoring events, leachate generation volumes, liquid application volumes, and landfill settlement are monitored.

The purpose of the monitoring program is to evaluate the performance of the landfill bioreactor throughout the duration of the project. The evaluation is based on the following performance criteria:

- leachate quality and quantity;
- landfill gas quality and quantity; and
- solid waste decomposition/stabilization.

The manner in which these criteria are evaluated is described in the following three subsections.

#### *Leachate Quality and Quantity*

Sampling activities are conducted in both the test area and control area. Leachate sampling was conducted in Cells 1, 2, 3, and 4, and at the leachate storage tank, according to the frequency described in Table 1. Leachate samples are collected by filling the appropriate sample bottles directly from the sampling ports from the primary leachate collection system for the respective phase being sampled. The sampling ports for each of the primary leachate collection systems are located within the vault/riser house of the leachate collection system for each phase. The specific parameters measured, and the associated test methods, are provided in Table 3. Key parameters that identify the presence of biological processes in the landfill have been identified and include: (i) Biological Oxygen Demand (BOD); (ii) Chemical Oxygen Demand (COD); (iii) Total Organic Carbon (TOC); (iv) Chloride; (v) Sulfate; (vi) Nitrate as Nitrogen; and (vii) Ammonia as Nitrogen (Pohland and Harper, 1986). From these indicators, a qualitative inference can be made regarding the degree of organic composition of landfill wastes.

In addition to evaluating the leachate quality in the landfill over time, the amount of liquid added to the leachate recirculation trenches and the amount of leachate collected in the leachate collection sumps was recorded.

#### *Landfill Gas Quality and Quantity*

Measurements of landfill gas quality are obtained from composite gas samples of the landfill gas collection system. The parameters measured and the test methods for the landfill gas monitoring and sampling are described in the Monitoring Plan [GeoSyntec, 2001]. The non methane organic compounds (NMOCs), gas samples were obtained in accordance with the requirements of USEPA Method 25 and samples obtained for volatile organic compounds were obtained in accordance with USEPA Method TO-14.

Landfill gas monitoring is performed at each of the existing landfill gas wells to monitor activity within the test and control areas. Measurements of methane (CH<sub>4</sub>), oxygen (O<sub>2</sub>), carbon dioxide (CO<sub>2</sub>), temperature, and flow rate were obtained from each gas well using portable field instruments, (i.e., a Landtech, Inc., GEM 500). Hydrogen

sulfide (H<sub>2</sub>S) measurements were obtained using a GasTech GT-2 Hydrogen sulfide detector.

Surface emissions monitoring is performed in accordance with the requirements specified by the New Source Performance Standards (NSPS) and Emissions Guidelines (EG) for MSW landfills [40 CFR 60.755]. Methane concentrations were measured within 5 to 10 centimeters (2 to 4 inches) from the landfill surface in the test and control areas.

#### *Solid Waste Decomposition/Stabilization*

To evaluate the degree of decomposition of the solid waste, a series of borings are drilled in the test and control areas on an annual basis. Solid waste samples obtained from these borings are evaluated for: (i) moisture content; (ii) cellulose; (iii) lignin; (iv) pH; and (v) biochemical methane potential (BMP). The moisture content is the percentage of water that is present in the waste. Cellulose is the portion of the volatile solids that will degrade over time; lignin is the portion of the volatile solids that will not degrade. Biochemical methane potential is a measure of how much methane the waste may generate.

A secondary means of evaluating waste decomposition is to measure waste settlement in both the test area and the control area. Topographic surveys of the test and control areas are conducted on a quarterly basis and the cumulative settlement is analyzed.

## **4.2 Sampling and Analytical Activities**

The overall monitoring and sampling program was implemented by GeoSyntec personnel with sampling performed by Joyce Engineering and WMI site personnel.

### **4.2.1 Leachate Quality**

Leachate samples from the test and control areas were obtained by Joyce Engineering on the dates presented in Table 2. The leachate samples were collected from sumps in Cells 1, 2, 3, 4, as well as the leachate storage tank. The leachate samples were collected using the field sampling procedures described in the Monitoring



Plan contained in the permit application for leachate recirculation at the site [GeoSyntec, 2001].

Leachate samples were analyzed by Severn Trent Laboratories, Inc. and were tested for the parameters listed in Table 3. A summary of the key parameters identified in Section 4.1 are presented in Table 5. Also presented in Table 5 are test results for the parameters listed in the Federal Register site-specific rule (i.e., wet chemistry parameters, heavy metals, and common ions). The test results for the organic priority pollutants are not anticipated to indicate the overall performance of the test area and are not presented in Table 5. Section 5.1 of this report provides an analysis of the leachate quality data.

#### **4.2.2 Landfill Gas Quality**

The landfill gas samples were collected using the procedures described in the Monitoring Plan contained in the permit application for leachate recirculation at the site [GeoSyntec, 2001]. The landfill gas samples from the header pipes in the landfill gas collection system were sent to Severn Trent Laboratories, Inc. for laboratory analysis. These landfill gas samples were tested in accordance with USEPA method TO-14. Copies of these results are presented in Appendix D. The landfill gas composition at the wellheads in the test and control areas were monitored for the percentages of oxygen, carbon dioxide, methane, flow rate, and temperature. These results are summarized in Table 4.

#### **4.2.3 Solid Waste Sampling**

Prior to construction of the leachate recirculation system, a series of exploratory borings were drilled in both the test and control areas. Samples of solid waste were collected from a variety of depths at each boring location. Solid waste samples were obtained from five locations in November 2003. The solid waste samples collected during the field activities were sent to Virginia Tech and were analyzed for moisture content, lignin, cellulose, pH, and biochemical methane potential. The results from the initial background samples and the November 2003 event are discussed in Section 5.3.

### **4.3 Other Data**

#### **4.3.1 Leachate Generation Quantities**

Leachate flow was measured bi-weekly from the test area (Cell 3) and the control area (Cells 1, 2, and 4) by site personnel using flowmeters that are installed in the leachate riser vaults near each cell. The leachate generation quantities for each cell are presented in Table 6.

#### **4.3.2 Quantity of Liquid Applied to Landfill**

The amount of liquid added to each trench was recorded by site personnel. The current trench configuration is shown in Figure 1. A summary of the liquid added to the test area is presented in Table 7.

#### **4.3.3 Landfill Settlement**

A series of topographic surveys of the test and control areas has been performed by Flora Surveying. An approximately 100-ft grid system was established, with the elevation measured at the same locations over time. A summary table containing the point identification number, northing, easting, and elevations for the survey data collected in January 2004 and April 2004 is presented in Table 8. The survey grid is shown on Drawing 2.

## 5. DATA ANALYSIS

### 5.1 Leachate Quantity and Quality

Liquid application at the King George Landfill began on November 1, 2002. During the reporting period, leachate was added to the test area. Figure 2 presents the cumulative liquid application volume versus time and the collected leachate volume. For reference, the target liquid application rate of 7 million to 8 million gallons per year (583,333 to 666,666 gallons per month) is also shown on Figure 2. Between January 1, 2004 and June 30, 2004, approximately 13,290 gallons of leachate have been applied to the landfill. To date, a total of approximately 2,870,465 gallons of leachate have been applied at King George Landfill.

In reviewing Table 7, it can be seen that very little leachate has been recirculated at King George Landfill over the last six months. Observations of the recirculation operations indicate that the infiltration rate of the trenches has decreased significantly since the trenches were first constructed. WMI is currently pursuing methods to improve leachate application methods. It should be noted that no seeps have been observed at King George between January 1, 2004 and June 30, 2004.

Weather conditions at the site have been relatively favorable over the first six months of 2004. Table 9 shows the average monthly precipitation, 2003 monthly precipitation, and the departure from normal. Through the end of June 2004, the area near the King George landfill has received approximately 21 inches of rain, which is near the historical average for this six month period.

The amount of leachate collected in the test and control areas during the operation of the liquid application system between January 1, 2004 and June 30, 2004 was 519,930 and 3,549,930 gallons, respectively. Since November 2002, the total amount of leachate collected in the test and control areas was 1,529,640 and 8,305,730 gallons, respectively. Approximately 4,505,077 gallons of leachate has been sent off-site between January 1, 2004 and June 30, 2004.

In examining Figure 2, there does not appear to be a correlation between the amount of liquid applied to the landfill and the amount of leachate collected in the leachate collection system.

Figures 3 through 8 show variation with time in the BOD to COD ratio, COD to TOC ratio chloride, nitrate nitrogen, ammonia nitrogen, and pH, respectively. These figures represent the key leachate parameters identified in Table 5. To date, consistent trends in the data cannot be identified. It should be noted that the analyses of the background leachate quality samples (dated September 27, 2002) are within typical ranges for landfill leachate. Additionally, the leachate samples continue to indicate values of biological oxygen demand (BOD) value the lower range of typical landfill leachate. Table 5 shows a range between approximately 50 mg/l and 3,300 mg/l; typical values range from 20 mg/l to 35,000 mg/l [Kjeldsen et al., 2002].

Additional data related to the leachate quality test results is presented in Appendix A. The tables in Appendix A summarize detected leachate parameters and highlight those that exceed the MCL or method detection limits.

## **5.2 Landfill Gas Quality and Quantity**

Table 4 summarizes the landfill gas composition and temperature measured at the wellheads. The wellheads are identified as being located in the test or control areas. The temperatures measured at the wellheads are consistently less than 140 degrees Fahrenheit; this indicates that there are no landfill fires within the test or control areas.

The trends in the landfill gas quantity for the gas wells in the test and control areas are shown in Figure 9. None of the gas wells presented in Figure 9 show consistent behavior at this time.

Figure 10 shows the percentage methane in the landfill gas at the wells in the test and control areas. The percentage of methane present in the landfill gas appears to have remained relatively constant over the first 18 months of bioreactor operation at the site. At this time, there does not appear to be a clear difference between the percentage methane present in the landfill gas in the test or control areas.

Figure 11 shows the percentage carbon dioxide in the landfill gas at the wells in the test and control areas. The percentage carbon dioxide present in the landfill gas wells in both the test and control areas has remained relatively constant.

### 5.3 Solid Waste Analysis

Solid waste samples were obtained from the test and control areas of the King George landfill in the summer of 2001 and in November 2003. The boring logs from the November 2003 work were included in the January 2004 report; the results from the laboratory analyses are presented in this report. Table 10 summarizes the baseline solid waste sampling results from the field work conducted in the summer of 2001 and in November 2003. It should be noted that the BMP tests for the November 2003 samples are in progress. A brief review of the data available yields the following observations:

- the average moisture content in the test area and in the control area has increased by approximately 4 percent; and
- the average pH of the waste samples increased from 6.33 to 7.32 in the test area and from 6.21 to 7.64 in the control area.

Because of the limited amount of solid waste sampling data collected, trends in the data are not identified at this time.

## 6. SUMMARY

This report has provided a summary of the monitoring activities at the King George Landfill as part of the leachate recirculation operations conducted under the USEPA's XL Program. Because the program has been operating for less than two years, conclusions regarding the performance of the test area at the King George Landfill cannot be provided at this time. However, based on the experience gained during the design, permitting, construction processes, and operation of the program to date, the following comments are offered.

- Using the operational techniques identified in the Project XL program for King George Landfill, the anticipated benefits (i.e., settlement, improved leachate quality, and improved landfill gas quality) cannot be quantified at this time.
- Based on the information obtained to date, it has been observed that leachate recirculation has been performed without major impacts (i.e., excessive odors, slope stability problems). However, additional effort has been required to review the relationship of observed leachate seeps with leachate recirculation activities.
- The effective infiltration rate for leachate in the trenches for the site appears to have decreased when compared to their initial six months of use.
- Because the trenches appear to have a reduced infiltration capacity when compared to their initial design, the ability to accept liquids is reduced. Consequently, a ten acre area may not be large enough to recirculate the target amount of leachate.

In 2004, WMI will consider different alternatives to improve liquid distribution in the recirculation area. WMI is considering a systematic pattern of vertical conduits to increase liquid distribution through the recirculation area. It is anticipated that the vertical conduits may be similar in nature to a landfill gas extraction well.

## 7. REFERENCES

GeoSyntec Consultants, 2000, "*Project XL – Final Project Agreement for Landfill Bioreactor Systems – King George County Landfill and Recycling Center and King George Recycling and Waste Disposal Facility*", dated 28 September 2000.

GeoSyntec Consultants, 2001, "*Landfill Bioreactor Project Application for Permit Amendment for Experimental Permit*," King George Recycling and Waste Disposal Facility, dated 19 September 2001.

Kjeldsen, P., Barlaz, M.P., Rooker, A.P., Baun, A., Ledin, A., and Christensen, T.H., 2002, "*Present and Long-Term Composition of MSW Landfill Leachate: A Review*", *Critical Reviews in Environmental Science and Technology*, 32 (4), p. 297-336.

Pohland, F.G., and Harper, S.R., 1986, "*Critical Review and Summary of Leachate and Gas Production From Landfills*", EPA/600/2-86/073, U.S. Environmental Protection Agency, Cincinnati, Ohio.

Title 40, Code of Federal Regulations, Part 60.

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### APPENDICES

Appendix A: Leachate Quality Test Results

- March 2004

Appendix B: Daily Liquid Application Log

Appendix C: Settlement

Appendix D: Landfill Gas Data

Appendix E: Groundwater Quality Compliance



**TABLE 1**  
**2004 MONITORING ACTIVITIES**  
**Project XL**  
**King George County Landfill and Recycling Center**  
**King George County, Virginia**

	Monitoring Parameters	Responsible Party	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>1. LEACHATE</b>	Chemical parameters measured on site	WM personnel	X						X					
	Physical parameters measured on site	WM personnel	X	X	X	X	X	X	X	X	X	X	X	X
	Chemical parameters sampled on site from test area	Sampled by subcontractor, tested offsite by Geochemical	X						X					
	Chemical parameters sampled on site from storage tanks	Sampled by subcontractor, tested offsite by Geochemical	X						X					
<b>2. LANDFILL GAS</b>	Landfill gas composition measured on site	WM personnel	X	X	X	X	X	X	X	X	X	X	X	X
	Physical parameters measured on site	WM personnel	X	X	X	X	X	X	X	X	X	X	X	X
	Chemical parameters	WM personnel, testing by subcontractor	X						X					
	Surface landfill gas measured on site	Subcontractor	X						X					
<b>3. SOLID WASTE</b>	Survey, on site	Subcontractor	X			X			X			X		
	Solid waste stabilization and decomposition measured on site	WM personnel											X	

**TABLE 2**  
**SUMMARY OF SAMPLING ACTIVITIES**  
**Project XL**  
**King George County Landfill and Recycling Center**  
**King George, Virginia**

Date	Sampling Event
9/27/2002	Background leachate sampling
9/30/2002	Background landfill gas sampling
10/9/2002	Background landfill gas sampling
10/28/2002	Background leachate sampling
11/11/2002	Topographical site survey
11/14/2002	Monthly landfill gas sampling
11/25/2003	Monthly leachate sampling
12/18/2002	Monthly landfill gas sampling
12/19/2002	Monthly leachate sampling
1/23/2003	Monthly landfill gas sampling
1/27/2003	Monthly landfill gas sampling (composite samples)
1/27/2003	Monthly leachate sampling
1/29/2003	Monthly landfill gas sampling (surface emission scan)
2/24/2003	Monthly leachate sampling
2/24/2003	Monthly landfill gas sampling (composite samples)
2/25/2003	Monthly landfill gas sampling
3/19/2003	Monthly landfill gas sampling (surface emission scan)
3/24/2003	Monthly leachate sampling
3/24/2003	Monthly landfill gas sampling (composite samples)
3/25/2003	Monthly landfill gas sampling
4/16/2003	Monthly leachate sampling
4/16/2003	Monthly landfill gas sampling
4/16/2003	Monthly landfill gas sampling (composite samples)
6/13/2003	Monthly landfill gas sampling
7/14/2003	Quarterly leachate sampling
7/15/2003	Monthly landfill gas sampling
8/13/2003	Monthly landfill gas sampling
9/15/2003	Monthly landfill gas sampling
10/14/2003	Quarterly leachate sampling
10/15/2003	Monthly landfill gas sampling
11/13/2003	Monthly landfill gas sampling
1/9/2004	Topographical site survey
1/12/2004	Monthly landfill gas sampling
2/29/2004	Monthly landfill gas sampling
3/11/2004	Monthly landfill gas sampling (composite samples obtained 3/12/2004)
3/12/2004	Quarterly leachate sampling
4/6/2004	Monthly landfill gas sampling
4/6/2004	Topographical site survey
5/29/2004	Monthly landfill gas sampling

**TABLE 3**  
**LEACHATE ANALYSIS PARAMETERS**  
**Project XL**  
**King George County Landfill**  
**King George County Landfill and Recycling Center**

Parameter	Method	Parameter	Method
Cadmium	EPA 200.7	Bromochloromethane	EPA 8260B
Potassium	EPA 200.7	Bromomethane	EPA 8260B
Chloride	EPA 325.2	Carbon Disulfide	EPA 8260B
Ammonia Nitrogen	EPA 350.1	Carbon Tetrachloride	EPA 8260B
Total Kjeldahl Nitrogen	EPA 351.3	Chlorobenzene	EPA 8260B
Nitrate Nitrogen	EPA 353.2	Chlorodibromomethane	EPA 8260B
Phosphorus, ortho	EPA 365.2	Chloroethane	EPA 8260B
Phosphorus, total	EPA 365.2	Chloromethane	EPA 8260B
Sulfate	EPA 375.4	cis-1,2-Dichloroethene	EPA 8260B
Arsenic	EPA 6010 B	cis-1,3-Dichloropropene	EPA 8260B
Barium	EPA 6010 B	Dibromomethane	EPA 8260B
Chromium	EPA 6010 B	Dichlorobromomethane	EPA 8260B
Lead	EPA 6010 B	Dichlorodifluoromethane	EPA 8260B
Selenium	EPA 6010 B	Ethyl Methacrylate	EPA 8260B
Silver	EPA 6010 B	Ethylbenzene	EPA 8260B
Mercury	EPA 7470	Iodomethane	EPA 8260B
1,2-Dibromo-3-chloropropane	EPA 8011	Methacrylonitrile	EPA 8260B
1,2-Dibromoethane	EPA 8011	Methyl Ethyl Ketone	EPA 8260B
1,1,1,2-Tetrachloroethane	EPA 8260B	Methyl methacrylate	EPA 8260B
1,1,1-Trichloroethane	EPA 8260B	Methylene Chloride	EPA 8260B
1,1,2,2-Tetrachloroethane	EPA 8260B	Propionitrile	EPA 8260B
1,1,2-Trichloroethane	EPA 8260B	Styrene	EPA 8260B
1,1-Dichloroethane	EPA 8260B	Tetrachloroethene	EPA 8260B
1,1-Dichloroethene	EPA 8260B	Toluene	EPA 8260B
1,1-Dichloropropene	EPA 8260B	Total Xylene	EPA 8260B
1,2,3-Trichloropropane	EPA 8260B	trans-1,2-Dichloroethene	EPA 8260B
1,2-Dichlorobenzene	EPA 8260B	trans-1,3-Dichloropropene	EPA 8260B
1,2-Dichloroethane	EPA 8260B	trans-1,4-Dichloro-2-butene	EPA 8260B
1,2-Dichloropropane	EPA 8260B	Tribromomethane	EPA 8260B
1,3-Dichlorobenzene	EPA 8260B	Trichloroethene	EPA 8260B
1,3-Dichloropropane	EPA 8260B	Trichlorofluoromethane	EPA 8260B
1,4-Dichlorobenzene	EPA 8260B	Trichloromethane	EPA 8260B
2,2-Dichloropropane	EPA 8260B	Vinyl Acetate	EPA 8260B
2-chloro-1,3-butadiene	EPA 8260B	Vinyl Chloride	EPA 8260B
2-Hexanone	EPA 8260B	1,2,4,5-Tetrachlorobenzene	EPA 8270C
2-Methyl-1-propanol	EPA 8260B	1,2,4-Trichlorobenzene	EPA 8270C
3-Chloro-1-Propene	EPA 8260B	1,3-Dinitrobenzene	EPA 8270C
4-Methyl-2-Pentanone	EPA 8260B	1,4-Naphthoquinone	EPA 8270C
Acetone	EPA 8260B	1-Naphthylamine	EPA 8270C
Acetonitrile	EPA 8260B	1-Nitrosopiperidine	EPA 8270C
Acrolein	EPA 8260B	2,3,4,6-Tetrachlorophenol	EPA 8270C
Acrylonitrile	EPA 8260B	2,4,5-Trichlorophenol	EPA 8270C

**TABLE 3**  
**LEACHATE ANALYSIS PARAMETERS - continued**  
**Project XL**  
**King George County Landfill**  
**King George County Landfill and Recycling Center**

Parameter	Method	Parameter	Method
Benzene	EPA 8260B	2,4,6-Trichlorophenol	EPA 8270C
2,4-Dichlorophenol	EPA 8270C	Dibenzofuran	EPA 8270C
2,4-Dimethylphenol	EPA 8270C	Diethyl Phthalate	EPA 8270C
2,4-Dinitrophenol	EPA 8270C	Dimethoate	EPA 8270C
2,4-Dinitrotoluene	EPA 8270C	Dimethyl Phthalate	EPA 8270C
2,6-Dichlorophenol	EPA 8270C	Di-N-Butyl Phthalate	EPA 8270C
2,6-Dinitrotoluene	EPA 8270C	Di-N-Octylphthalate	EPA 8270C
2-Acetylaminofluorene	EPA 8270C	Di-n-propylnitrosamine	EPA 8270C
2-Chloro-Naphthalene	EPA 8270C	Diphenylamine	EPA 8270C
2-Chlorophenol	EPA 8270C	Disulfoton	EPA 8270C
2-Methyl-4,6-dinitrophenol	EPA 8270C	Ethyl Methanesulfonate	EPA 8270C
2-Methylnaphthalene	EPA 8270C	Famphur	EPA 8270C
2-Naphthylamine	EPA 8270C	Fluoranthene	EPA 8270C
2-Nitroaniline	EPA 8270C	Fluorene	EPA 8270C
2-Nitrophenol	EPA 8270C	Hexachlorobenzene	EPA 8270C
3,3-Dichlorobenzidine	EPA 8270C	Hexachlorobutadiene	EPA 8270C
3,3'-Dimethylbenzidine	EPA 8270C	Hexachlorocyclopentadiene	EPA 8270C
3-Methylcholanthrene	EPA 8270C	Hexachloroethane	EPA 8270C
3-Nitroaniline	EPA 8270C	Hexachloropropene	EPA 8270C
4-Aminobiphenyl	EPA 8270C	Indeno(1,2,3-cd)pyrene	EPA 8270C
4-Bromophenylphenylether	EPA 8270C	Isodrin	EPA 8270C
4-Chloro-3-methylphenol	EPA 8270C	Isophorone	EPA 8270C
4-Chloroaniline	EPA 8270C	Isosafrole	EPA 8270C
4-Chlorophenylphenylether	EPA 8270C	m,p-Cresol	EPA 8270C
4-Nitroaniline	EPA 8270C	Methapyrilene	EPA 8270C
4-Nitrophenol	EPA 8270C	Methyl Methanesulfonate	EPA 8270C
5-Nitro-o-toluidine	EPA 8270C	Methyl Parathion	EPA 8270C
7,12Dimethylbenz(a)-anthracene	EPA 8270C	Naphthalene	EPA 8270C
Acenaphthene	EPA 8270C	Nitrobenzene	EPA 8270C
Acenaphthylene	EPA 8270C	N-Nitrosodibutylamine	EPA 8270C
Acetophenone	EPA 8270C	N-Nitrosodiethylamine	EPA 8270C
Anthracene	EPA 8270C	n-Nitrosodimethylamine	EPA 8270C
Benzo(a)anthracene	EPA 8270C	n-Nitrosodiphenylamine	EPA 8270C
Benzo(a)pyrene	EPA 8270C	N-Nitrosomethylethylamine	EPA 8270C
Benzo(b)fluoranthene	EPA 8270C	N-Nitrosopyrrolidine	EPA 8270C
Benzo(ghi)perylene	EPA 8270C	o,o,o-Triethylphosphothioate	EPA 8270C
Benzo(k)fluoranthene	EPA 8270C	o-Cresol	EPA 8270C
Benzyl Alcohol	EPA 8270C	o-Toluidine	EPA 8270C
bis(2-Chloroethoxy)methane	EPA 8270C	Parathion	EPA 8270C
bis(2-Chloroethyl)ether	EPA 8270C	p-Dimethylaminoazobenzene	EPA 8270C
bis(2-Chloroisopropyl)ether	EPA 8270C	Pentachlorobenzene	EPA 8270C
bis(2-Ethylhexyl)phthalate	EPA 8270C	Pentachloronitrobenzene	EPA 8270C
Butyl benzylphthalate	EPA 8270C	Phenacetin	EPA 8270C
Chlorobenzilate	EPA 8270C	Phenanthrene	EPA 8270C
Chrysene	EPA 8270C	Phenol	EPA 8270C

**TABLE 3**  
**LEACHATE ANALYSIS PARAMETERS - continued**  
**Project XL**  
**King George County Landfill**  
**King George County Landfill and Recycling Center**

Parameter	Method	Parameter	Method
Diallate	EPA 8270C	Phorate	EPA 8270C
Dibenzo(a,h)anthracene	EPA 8270C	p-Phenylenediamine	EPA 8270C
Pronamide	EPA 8270C	Endrin Aldehyde	EPA 8081
Pyrene	EPA 8270C	Gamma BHC (Lindane)	EPA 8081
Safrole	EPA 8270C	Heptachlor	EPA 8081
sym-Trinitrobenzene	EPA 8270C	Heptachlor epoxide	EPA 8081
Thionazin	EPA 8270C	Methoxychlor	EPA 8081
Chemical Oxygen Demand	HACH 8000	Toxaphene	EPA 8081
Total dissolved solids	SM 2540C	2,4,5-T	EPA 8151A
Nitrite Nitrogen	SM 4500-NO2B	2,4-D	EPA 8151A
BOD 5-day	SM 5210B	Dinoseb	EPA 8151A
Total Organic Carbon	SM 5310C	Pentachlorophenol	EPA 8151A
Aldrin	EPA 8081	Silvex	EPA 8151A
Alpha BHC	EPA 8081	Pyruvic	
Beta BHC	EPA 8081	Lactic	
Chlordane	EPA 8081	Formic	
DDD	EPA 8081	Acetic	
DDE	EPA 8081	Propionic	
DDT	EPA 8081	Butyric	
Delta BHC	EPA 8081		
Dieldrin	EPA 8081		
Endosulfan I	EPA 8081		
Endosulfan II	EPA 8081		
Endosulfan Sulfate	EPA 8081		
Endrin	EPA 8081		

Note

This list of parameters was developed from the Monitoring, Sampling, and Analysis Report included in the permit amendment submitted in October 2001.

**TABLE 4  
LANDFILL GAS DATA  
Project XL  
King George County Landfill and Recycling Center  
King George, Virginia**

FLARE																				
Parameter	30-Sep-02	9-Oct-02	14-Nov-02	18-Dec-02	27-Jan-03	25-Feb-03	25-Mar-03	17-Apr-03	29-May-03	13-Jun-03	15-Jul-03	13-Aug-03	15-Sep-03	15-Oct-03	13-Nov-03	12-Jan-04	29-Feb-04	11-Mar-04	6-Apr-04	29-May-04
Temperature (degrees F)	---	---	---	---	---	---	---	62	76	89	90	86	87	70	64	71	---	---	---	---
Flow Rate (scfm)	---	1980	1882	683	1524	2528	1326	1243	1404	636	1487	2089	2930	3593	2540	4065	---	---	---	---
Methane (%)	---	48.6	46	47.3	34.9	47	44.2	39.6	39.5	55.7	44	51.9	55.3	50.6	50.8	55.2	---	---	---	---
Carbon Dioxide (%)	---	37.3	33.5	35.5	21.6	35	35.1	32.4	30.8	40.2	34.3	40.9	41.9	39	39	39.9	---	---	---	---
Oxygen (%)	---	2	4	3.4	9.9	2.9	3.4	5.6	6.1	1.7	4.3	1.6	0.6	1.1	2.4	1.1	---	---	---	---
Balance (%)	---	12.1	16.5	13.8	33.6	15.1	17.3	22.4	23.6	2.4	17.4	5.6	2.2	9.3	7.8	3.8	---	---	---	---

LFG WELL GW-1 (CONTROL AREA)																				
Parameter	30-Sep-02	9-Oct-02	14-Nov-02	18-Dec-02	27-Jan-03	25-Feb-03	25-Mar-03	17-Apr-03	29-May-03	13-Jun-03	15-Jul-03	13-Aug-03	15-Sep-03	15-Oct-03	13-Nov-03	12-Jan-04	29-Feb-04	11-Mar-04	6-Apr-04	29-May-04
Temperature (degrees F)	114	116	116	115	114	115	117	117	118	118	118	119	121	119	120	120	102	120	115	122
Flow Rate (scfm)	---	---	20	20	22	17	24	24	4	11	10	12	10	12	4	---	---	---	---	---
Methane (%)	51.4	45.8	40.9	52	51.9	48.5	52.3	57	52.7	55.7	55	49.7	50	48.6	54.6	54.2	58.0	55.4	62.3	55.7
Carbon Dioxide (%)	32.8	35.7	31.1	39.9	36.6	37.2	39.9	39.7	40.6	43	43	41.2	39.1	29.3	42.1	39.0	42.0	40.1	37.7	42.3
Oxygen (%)	3.8	2.3	4.5	0.2	1.5	0.5	0.5	0.9	1.5	0.6	0.7	0.7	0.6	1.2	0.4	1.0	0.0	1.3	0.0	0.2
Balance (%)	12	16.2	23.5	7.9	10	13.8	7.3	2.4	5.2	0.7	0.4	8.4	10.3	20.9	2.9	6.0	0.0	3.2	0.0	1.8

LFG WELL GW-1A (CONTROL AREA)																				
Parameter	30-Sep-02	9-Oct-02	14-Nov-02	18-Dec-02	27-Jan-03	25-Feb-03	25-Mar-03	17-Apr-03	29-May-03	13-Jun-03	15-Jul-03	13-Aug-03	15-Sep-03	15-Oct-03	13-Nov-03	12-Jan-04	29-Feb-04	11-Mar-04	6-Apr-04	29-May-04
Temperature (degrees F)	124	112	115	113	---	---	73	---	---	---	---	---	---	---	---	---	---	---	---	---
Flow Rate (scfm)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Methane (%)	44.9	56.2	59.8	51	---	---	57.8	---	---	---	---	---	---	---	---	---	---	---	---	---
Carbon Dioxide (%)	30.5	40.7	40.7	36.2	---	---	42.2	---	---	---	---	---	---	---	---	---	---	---	---	---
Oxygen (%)	5.1	0	0	2.2	---	---	0	---	---	---	---	---	---	---	---	---	---	---	---	---
Balance (%)	19.5	3.1	0	10.6	---	---	0	---	---	---	---	---	---	---	---	---	---	---	---	---

LFG WELL GW-2 (CONTROL AREA)																				
Parameter	30-Sep-02	9-Oct-02	14-Nov-02	18-Dec-02	27-Jan-03	25-Feb-03	25-Mar-03	17-Apr-03	29-May-03	13-Jun-03	15-Jul-03	13-Aug-03	15-Sep-03	15-Oct-03	13-Nov-03	12-Jan-04	29-Feb-04	11-Mar-04	6-Apr-04	29-May-04
Temperature (degrees F)	108	112	112	115	114	116	117	117	119	120	120	121	126	124	124	115	104	112	129	120
Flow Rate (scfm)	---	---	37	28	---	55	47	40	7	20	19	20	20	20	24	---	---	---	---	---
Methane (%)	54	45	46.8	53	55.6	52.1	52.8	53	55.8	58	56.3	51.2	55	50.2	51.9	59.3	57.8	59.5	62.8	56.3
Carbon Dioxide (%)	34.7	36.2	34.2	39.9	34.7	39	40.6	40.2	42.7	42	43.5	42.3	42	39.8	41	41.5	42.0	40.5	37.2	42.4
Oxygen (%)	2.2	1.2	3.3	0.9	2.4	0.3	0.5	0.3	0.4	0	0.1	0.3	0.8	0.9	0.8	0.0	0.0	0.0	0.0	0.0
Balance (%)	9.1	17.6	15.7	6.2	7.3	8.6	6.1	6.5	1.1	0	0.1	6.2	2.2	9.1	6.3	0.0	0.2	0.0	0.0	0.8

GW-1A was destroyed during construction activities in January 2003  
Access to gas wells was limited due to waste placement activities.

**TABLE 4**  
**LANDFILL GAS DATA**  
(continued)

**LFG WELL GW-2A (CONTROL AREA)**

Parameter	30-Sep-02	9-Oct-02	14-Nov-02	18-Dec-02	27-Jan-03	25-Feb-03	25-Mar-03	17-Apr-03	29-May-03	13-Jun-03	15-Jul-03	13-Aug-03	15-Sep-03	15-Oct-03	13-Nov-03	12-Jan-04	29-Feb-04	11-Mar-04	6-Apr-04	29-May-04
Temperature (degrees F)	112	112	112	109	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Flow Rate (scfm)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Methane (%)	63.9	44.2	58.1	58.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Carbon Dioxide (%)	34.8	33.7	41.9	40.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Oxygen (%)	1.1	3.7	0	0.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Balance (%)	0.2	18.4	0	0.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

**LFG WELL GW-3 (TEST AREA)**

Parameter	30-Sep-02	9-Oct-02	14-Nov-02	18-Dec-02	27-Jan-03	25-Feb-03	25-Mar-03	17-Apr-03	29-May-03	13-Jun-03	15-Jul-03	13-Aug-03	15-Sep-03	15-Oct-03	13-Nov-03	12-Jan-04	29-Feb-04	11-Mar-04	6-Apr-04	29-May-04
Temperature (degrees F)	97	92	80	85	79	74	81	77	82	88	90	92	93	87	78	100	80	65	---	84
Flow Rate (scfm)	---	---	---	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Methane (%)	55.5	46.5	49.7	43.7	38.4	44.8	44.3	43.7	42	45.8	44.5	54.2	56.1	52.5	50.1	60.0	46.5	45.5	---	57.0
Carbon Dioxide (%)	38.5	36.1	38.9	31.8	25.2	33.9	33.9	33.2	33.5	34.9	35.7	43.8	42.2	41	38.9	40.0	34.7	33.7	---	41.5
Oxygen (%)	0.1	1.2	0.1	3.8	6.8	3.2	4.4	4.4	5.5	3.4	4.4	0.7	0.3	1.3	4.3	0.0	2.1	2.2	---	0.2
Balance (%)	5.9	16.2	11.3	20.7	29.6	18.1	17.4	18.7	19	15.9	15.4	1.3	1.4	5.2	6.7	0.0	16.7	28.6	---	1.3

**LFG WELL GW-3A (TEST AREA)**

Parameter	30-Sep-02	9-Oct-02	14-Nov-02	18-Dec-02	27-Jan-03	25-Feb-03	25-Mar-03	17-Apr-03	29-May-03	13-Jun-03	15-Jul-03	13-Aug-03	15-Sep-03	15-Oct-03	13-Nov-03	12-Jan-04	29-Feb-04	11-Mar-04	6-Apr-04	29-May-04
Temperature (degrees F)	120	118	112	118	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Flow Rate (scfm)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Methane (%)	51.5	53.1	58.3	54	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Carbon Dioxide (%)	33.3	38.9	41.1	42.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Oxygen (%)	3.7	0	0	0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Balance (%)	11.5	8	0.6	3.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

**LFG WELL GW-4 (TEST AREA)**

Parameter	30-Sep-02	9-Oct-02	14-Nov-02	18-Dec-02	27-Jan-03	25-Feb-03	25-Mar-03	17-Apr-03	29-May-03	13-Jun-03	15-Jul-03	13-Aug-03	15-Sep-03	15-Oct-03	13-Nov-03	12-Jan-04	29-Feb-04	11-Mar-04	6-Apr-04	29-May-04
Temperature (degrees F)	97	102	97	90	66	87	98	91	97	100	101	100	103	95	81	95	110	100	100	100
Flow Rate (scfm)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Methane (%)	57.3	45.7	53.2	54.8	0.3	51.7	58	57.5	56.7	58	55.2	54.8	57	55.4	55.1	56.1	60.0	57.5	64.2	58.2
Carbon Dioxide (%)	35.5	35.4	39.1	39.5	3.5	37.8	41.7	41.6	43.3	42	43.8	44.1	43	43.1	42.8	39.3	39.9	39.5	35.8	41.8
Oxygen (%)	2.7	2.7	1.5	1.1	19.7	1.1	0.1	0	0	0	0.9	0.8	0	0	0	1.0	0.0	0.0	0.0	0.0
Balance (%)	4.5	16.2	6.2	4.6	76.5	9.4	0.2	0.9	0	0	0.1	0.3	0	1.5	2.1	4.2	0.1	3.0	0.0	0.0

GW-2A was destroyed during construction activities in March 2003

GW-3A was destroyed during construction activities in January 2003

Access to gas wells was limited due to waste placement activities.

**TABLE 4**  
**LANDFILL GAS DATA**  
(continued)

**LFG WELL GW-5 (CONTROL AREA)**

Parameter	30-Sep-02	9-Oct-02	14-Nov-02	18-Dec-02	27-Jan-03	25-Feb-03	25-Mar-03	17-Apr-03	29-May-03	13-Jun-03	15-Jul-03	13-Aug-03	15-Sep-03	15-Oct-03	13-Nov-03	12-Jan-04	29-Feb-04	11-Mar-04	6-Apr-04	29-May-04
Temperature (degrees F)	100	102	98	99	100	101	102	103	105	105	109	109	109	107	108	120	113	90	110	112
Flow Rate (scfm)	---	37	---	62	---	62	56	58	---	31	32	18	---	19	---	---	---	---	---	---
Methane (%)	67.1	52.9	59	58.2	38.8	53.5	55.7	52.4	55.6	54.4	53.5	56.5	58	55	55.6	45.6	59.9	50.5	66.0	57.5
Carbon Dioxide (%)	32.4	39.3	42.2	40.9	28.6	39.9	43.1	41.1	44.2	42.2	42.9	43.5	42	42.9	43.1	33.2	40.1	36.0	34.5	41.5
Oxygen (%)	0.3	0.4	0	0.4	6.7	0.1	0.7	0.7	0.2	0.1	0.5	0	0	0	0	4.3	0.0	2.0	0.0	0.0
Balance (%)	0.2	7.4	0	0.5	25.9	6.5	0.5	5.8	0	3.3	3.1	0	0	2.1	1.3	17.6	0.0	11.5	0.0	0.0

**LFG WELL GW-6 (CONTROL AREA)**

Parameter	30-Sep-02	9-Oct-02	14-Nov-02	18-Dec-02	27-Jan-03	25-Feb-03	25-Mar-03	17-Apr-03	29-May-03	13-Jun-03	15-Jul-03	13-Aug-03	15-Sep-03	15-Oct-03	13-Nov-03	12-Jan-04	29-Feb-04	11-Mar-04	6-Apr-04	29-May-04
Temperature (degrees F)	100	100	72	55	---	43	---	66	66	92	90	93	---	98	97	110	86	---	---	90
Flow Rate (scfm)	---	7	---	---	---	13	---	---	---	1	---	---	---	---	16	---	---	---	---	---
Methane (%)	38.8	46.1	49.4	57.8	---	26.9	---	3.1	24.1	45.3	0.5	15.7	---	58.8	59.8	44.3	40.2	---	---	57.0
Carbon Dioxide (%)	27.5	34.7	35.1	34.6	---	16	---	3.9	16.9	31.9	4.1	11	---	41.2	40	34.7	26.6	---	---	35.7
Oxygen (%)	6.6	2	3.7	0.4	---	11.6	---	18.8	11.9	3.2	18.7	14.2	---	0	0	4.8	4.8	---	---	1.2
Balance (%)	27.1	17.2	11.8	7.2	---	45.5	---	74.2	47.1	19.6	76.7	59.1	---	0	0.2	17.0	26.6	---	---	6.1

**LFG WELL GW-7 (CONTROL AREA)**

Parameter	30-Sep-02	9-Oct-02	14-Nov-02	18-Dec-02	27-Jan-03	25-Feb-03	25-Mar-03	17-Apr-03	29-May-03	13-Jun-03	15-Jul-03	13-Aug-03	15-Sep-03	15-Oct-03	13-Nov-03	12-Jan-04	29-Feb-04	11-Mar-04	6-Apr-04	29-May-04
Temperature (degrees F)	130	120	134	132	131	132	---	---	132	---	---	134	135	134	136	125	118	128	130	125
Flow Rate (scfm)	---	---	---	24	23	31	---	---	---	---	---	7	---	10	20	---	---	---	---	---
Methane (%)	74.9	49.4	52.1	51.5	50.9	50.1	---	---	54.4	---	---	52	54	50.6	53	59.9	57.0	57.2	62.4	53.9
Carbon Dioxide (%)	24.4	37.9	41	38.7	27.2	40.6	---	---	44.2	---	---	43.7	44.3	41	42	40.0	42.2	42.6	37.6	43.0
Oxygen (%)	0	0.6	0	1.3	1	0	---	---	0	---	---	0.1	0.0	0.4	0	0.0	0.0	0.0	0.0	0.0
Balance (%)	0.7	12.1	6.9	8.5	21	9	---	---	1	---	---	4.2	1.7	8	4.5	0.0	0.8	0.2	0.0	3.1

**LFG WELL GW-8 (TEST AREA)**

Parameter	30-Sep-02	9-Oct-02	14-Nov-02	18-Dec-02	27-Jan-03	25-Feb-03	25-Mar-03	17-Apr-03	29-May-03	13-Jun-03	15-Jul-03	13-Aug-03	15-Sep-03	15-Oct-03	13-Nov-03	12-Jan-04	29-Feb-04	11-Mar-04	6-Apr-04	29-May-04
Temperature (degrees F)	125	123	127	126	125	127	128	128	130	130	130	130	131	130	130	120	125	122	128	128
Flow Rate (scfm)	---	36	---	50	83	61	59	54	---	---	26	28	27	28	---	---	---	---	---	---
Methane (%)	64.4	43.6	53.4	51.3	40.6	53.6	54.7	53.6	58.7	55.1	56.3	55	56	54.6	55.4	60.0	59.0	60.2	62.2	56.0
Carbon Dioxide (%)	25.1	36.7	41.7	40.3	37.1	40.2	42.2	42	41.3	43.5	43.7	44.9	44	43.6	44.5	40.0	41.0	39.8	37.8	44.0
Oxygen (%)	0	0	0	0.8	5.3	0.1	0.2	0.6	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Balance (%)	10.5	19.7	4.9	7.6	17	6.1	2.9	3.8	0	1.4	0	0.1	0	1.8	0.1	0.0	0.0	0.0	0.0	0.0

Access to gas wells was limited due to waste placement activities.

LFG Well GW-6 sampling ports were destroyed, no measurements taken 9/15/03



TABLE 4  
LANDFILL GAS DATA  
(continued)

## LFG WELL GW-9 (TEST AREA)

Parameter	30-Sep-02	9-Oct-02	14-Nov-02	18-Dec-02	27-Jan-03	25-Feb-03	25-Mar-03	17-Apr-03	29-May-03	13-Jun-03	15-Jul-03	13-Aug-03	15-Sep-03	15-Oct-03	13-Nov-03	12-Jan-04	29-Feb-04	11-Mar-04	6-Apr-04	29-May-04
Temperature (degrees F)	116	121	117	119	118	117	117	116	119	119	120	121	123	122	122	120.0	120	100	120	120
Flow Rate (scfm)	---	---	56	36	---	43	37	34	17	14	18	19	---	18	9	---	---	---	---	---
Methane (%)	56.6	46.8	55.3	48.9	26	55.9	55.4	54.9	55.8	54.8	56.9	55.3	56.3	53	55.2	61.2	57.9	62.4	64.1	57.1
Carbon Dioxide (%)	36.6	37.9	40.4	36.6	19.2	34.5	40.9	41.2	39.9	41.9	42.3	44.5	43.7	41.2	42.1	38.0	41.7	37.6	35.9	42.9
Oxygen (%)	0	0	0	1.6	11	0.5	0.5	0.3	1.6	0.1	0.2	0.2	0	0.8	0	0.0	0.1	0.0	0.0	0.0
Balance (%)	6.8	15.3	4.3	12.9	43.8	9.1	3.2	3.6	2.7	3.2	0.6	0	0	5	2.7	0.0	0.3	0.0	0.0	0.0

## LFG WELL GW-10 (CONTROL AREA)

Parameter	30-Sep-02	9-Oct-02	14-Nov-02	18-Dec-02	27-Jan-03	25-Feb-03	25-Mar-03	17-Apr-03	29-May-03	13-Jun-03	15-Jul-03	13-Aug-03	15-Sep-03	15-Oct-03	13-Nov-03	12-Jan-04	29-Feb-04	11-Mar-04	6-Apr-04	29-May-04
Temperature (degrees F)	94	94	92	91	---	89	89	87	88	89	89	89	87	98	97	110.0	85	90	80	88
Flow Rate (scfm)	---	9	---	54	58	---	44	40	21	22	---	30	---	---	20	---	---	---	---	---
Methane (%)	26.3	37.5	49.8	54.6	52.3	56.8	54.3	57.3	57	53.3	0.5	52.8	53	55.9	61.1	47.5	56.4	58.4	65.0	54.4
Carbon Dioxide (%)	19.8	31.6	40.5	39.9	31.8	40.1	43.6	41.7	42.8	40.7	4.7	44.7	45.5	42.9	34.2	34.6	41.4	41.6	35.0	41.1
Oxygen (%)	9.4	4.2	0	0	4.1	0	0.1	0	0.2	0	18.4	0.3	0	0	0	4.3	0.0	0.0	0.0	0.1
Balance (%)	44.5	26.7	9.7	5.5	11.8	3.1	2	1	0	6	76.4	2.2	1.5	1.2	4.7	13.0	2.1	0.0	0.0	4.4

## LFG WELL GW-11 (CONTROL AREA)

Parameter	30-Sep-02	9-Oct-02	14-Nov-02	18-Dec-02	27-Jan-03	25-Feb-03	25-Mar-03	17-Apr-03	29-May-03	13-Jun-03	15-Jul-03	13-Aug-03	15-Sep-03	15-Oct-03	13-Nov-03	12-Jan-04	29-Feb-04	11-Mar-04	6-Apr-04	29-May-04
Temperature (degrees F)	110	108	109	111	112	---	---	---	---	---	---	---	---	---	---	120.0	112	112	108	114
Flow Rate (scfm)	---	---	---	54	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Methane (%)	66.4	46.5	53.7	50.7	36	---	---	---	---	---	---	---	---	---	---	59.3	57.1	60.3	63.8	55.9
Carbon Dioxide (%)	33	36.6	42.1	39.5	24	---	---	---	---	---	---	---	---	---	---	39.7	41.7	39.7	36.2	42.9
Oxygen (%)	0	1.2	0	1.1	9	---	---	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0	0.0
Balance (%)	0.6	15.7	4.2	8.7	31	---	---	---	---	---	---	---	---	---	---	0.3	1.2	0.0	0.0	1.2

## LFG WELL GW-12 (TEST AREA)

Parameter	30-Sep-02	9-Oct-02	14-Nov-02	18-Dec-02	27-Jan-03	25-Feb-03	25-Mar-03	17-Apr-03	29-May-03	13-Jun-03	15-Jul-03	13-Aug-03	15-Sep-03	15-Oct-03	13-Nov-03	12-Jan-04	29-Feb-04	11-Mar-04	6-Apr-04	29-May-04
Temperature (degrees F)	128	122	124	127	---	72	76	---	---	---	---	---	---	---	---	120.0	70	---	---	82
Flow Rate (scfm)	---	32	---	21	---	51	44	---	---	---	---	---	---	---	---	---	---	---	---	---
Methane (%)	65.3	45.5	55.8	51.8	---	55	48.3	---	---	---	---	---	---	---	---	55.6	40.6	---	---	20.9
Carbon Dioxide (%)	33.1	35.1	2.9	36.9	---	37.5	48.8	---	---	---	---	---	---	---	---	40.3	32.1	---	---	17.6
Oxygen (%)	1.6	2.9	0	1.1	---	0	0	---	---	---	---	---	---	---	---	0.4	4.5	---	---	17.0
Balance (%)	0	16.5	1.9	10.2	---	7.5	2.9	---	---	---	---	---	---	---	---	4.0	22.8	---	---	43.7

Access to gas wells was limited due to waste placement activities.

**TABLE 4**  
**LANDFILL GAS DATA**  
(continued)

**LFG WELL GW-13 (TEST AREA)**

Parameter	30-Sep-02	9-Oct-02	14-Nov-02	18-Dec-02	27-Jan-03	25-Feb-03	25-Mar-03	17-Apr-03	29-May-03	13-Jun-03	15-Jul-03	13-Aug-03	15-Sep-03	15-Oct-03	13-Nov-03	12-Jan-04	29-Feb-04	11-Mar-04	6-Apr-04	29-May-04
Temperature (degrees F)	126	120	123	120	---	120	121	---	119	---	---	---	120	80	---	120.0	92	90	105	106
Flow Rate (scfm)	---	7	---	25	---	14	20	---	---	---	---	---	---	---	---	---	---	---	---	---
Methane (%)	72.2	48.8	54.8	49.9	---	52.7	54.6	---	54.7	---	---	---	51	50.2	---	58.3	59.1	58.9	67.9	57.9
Carbon Dioxide (%)	27.4	38.3	43.1	45.2	---	36	41.7	---	42.9	---	---	---	43.6	43.2	---	40.8	40.4	39.1	32.1	42.1
Oxygen (%)	0	0.9	0	0	---	0.5	0.1	---	0	---	---	---	0.7	0.6	---	0.1	0.0	0.0	0.0	0.0
Balance (%)	0.4	12	2.1	4.9	---	10.8	3.6	---	2.4	---	---	---	4.7	6	---	1.7	0.5	0.0	0.0	0.0

**LFG WELL GW-14 (CONTROL AREA)**

Parameter	30-Sep-02	9-Oct-02	14-Nov-02	18-Dec-02	27-Jan-03	25-Feb-03	25-Mar-03	17-Apr-03	29-May-03	13-Jun-03	15-Jul-03	13-Aug-03	15-Sep-03	15-Oct-03	13-Nov-03	12-Jan-04	29-Feb-04	11-Mar-04	6-Apr-04	29-May-04
Temperature (degrees F)	130	96	---	79	---	---	92	---	95	107	114	114	119	106	103	115.0	100	95	98	98
Flow Rate (scfm)	---	11	---	---	---	---	---	---	1	---	---	---	---	---	10	---	---	---	---	---
Methane (%)	42.2	52.8	---	55	---	---	51.1	---	52.1	46.1	52.4	52.3	47.9	45.7	60.4	58.3	58.5	68.0	85.8	58.3
Carbon Dioxide (%)	29	38.1	---	44.6	---	---	41.9	---	40.7	35.3	42	41.6	38.8	35.8	38.7	39.6	41.5	32.0	14.2	41.7
Oxygen (%)	5.6	1	---	0	---	---	0.6	---	1.4	3	1.2	1.3	2.9	3.3	0	0.0	0.0	0.0	0.0	0.0
Balance (%)	23.2	8.1	---	0.4	---	---	6.4	---	5.8	15.6	4.4	4.8	10.4	15.2	0.9	2.1	0.0	0.0	0.0	0.0

**LFG WELL GW-15 (CONTROL AREA)**

Parameter	30-Sep-02	9-Oct-02	14-Nov-02	18-Dec-02	27-Jan-03	25-Feb-03	25-Mar-03	17-Apr-03	29-May-03	13-Jun-03	15-Jul-03	13-Aug-03	15-Sep-03	15-Oct-03	13-Nov-03	12-Jan-04	29-Feb-04	11-Mar-04	6-Apr-04	29-May-04
Temperature (degrees F)	92	90	87	76	---	76	82	83	82	89	92	91	91	99	98	125.0	78	85	---	86
Flow Rate (scfm)	---	8	---	14	---	12	---	38	19	---	---	9	---	8	18	---	---	---	---	---
Methane (%)	66.5	47.9	50.7	37.8	---	57	55	54	39	50	0.6	38.0	39.3	32.9	60.3	53.0	17.8	21.1	---	19.8
Carbon Dioxide (%)	33.5	38.3	41.2	31.4	---	41	44	42	32	41	5.7	30.9	34.0	27.2	31.4	42.3	14.3	14.4	---	15.3
Oxygen (%)	0	1.3	0.9	5.5	---	0	0	0	6	1	18.2	5.9	4.6	7.3	0.0	0.7	14.2	14.3	---	18.6
Balance (%)	0	12.5	7.2	25.3	---	2	1	4	24	8	75.5	25.2	22.1	32.6	8.3	4.3	53.6	50.2	---	46.3

**LFG WELL GW-16 (CONTROL AREA)**

Parameter	30-Sep-02	9-Oct-02	14-Nov-02	18-Dec-02	27-Jan-03	25-Feb-03	25-Mar-03	17-Apr-03	29-May-03	13-Jun-03	15-Jul-03	13-Aug-03	15-Sep-03	15-Oct-03	13-Nov-03	12-Jan-04	29-Feb-04	11-Mar-04	6-Apr-04	29-May-04
Temperature (degrees F)	120	116	118	117	117	---	100	91	120	120	121	121	121	118	111	120.0	118	115	110	120
Flow Rate (scfm)	---	---	---	59	64	---	---	---	21	24	18	18	---	---	---	---	---	---	---	---
Methane (%)	45.1	46.3	55	52.4	40	---	59	61	56	54	56.9	56.5	56.9	56.7	61.8	53.2	55.0	63.1	64.5	56.0
Carbon Dioxide (%)	28.6	38	43.5	39	30	---	40	39	44	42	42.9	43.4	43.1	43.1	38.2	40.1	41.2	36.9	35.5	42.7
Oxygen (%)	5.3	0.8	0	1.8	7	---	0	0	0	0	0	0	0	0	0	0.9	0.5	0.0	0.0	0.0
Balance (%)	21	14.9	1.5	6.8	24	---	2	0	0	4	0	0	0	0	0	5.7	3.3	0.0	0.0	1.3

Access to gas wells was limited due to waste placement activities.

**TABLE 4**  
**LANDFILL GAS DATA**  
(continued)

**LFG WELL GW-17 (TEST AREA)**

Parameter	30-Sep-02	9-Oct-02	14-Nov-02	18-Dec-02	27-Jan-03	25-Feb-03	25-Mar-03	17-Apr-03	29-May-03	13-Jun-03	15-Jul-03	13-Aug-03	15-Sep-03	15-Oct-03	13-Nov-03	12-Jan-04	29-Feb-04	11-Mar-04	6-Apr-04	29-May-04
Temperature (degrees F)	128	126	133	133	---	---	112	---	79	81	---	89	---	60	---	115	100	100	110	110
Flow Rate (scfm)	---	12	---	10	---	---	8	---	30	31	---	20	---	---	---	---	---	---	---	---
Methane (%)	58.9	47	56.9	51.7	---	---	51	---	49.3	49.6	---	51.6	---	52.0	---	59.3	56.8	62.5	64.5	56.5
Carbon Dioxide (%)	36.5	36.2	42.6	38	---	---	38	---	48.5	47.7	---	48.0	---	47.4	---	40.7	42.8	37.5	35.3	43.5
Oxygen (%)	1.5	2.2	0	2	---	---	3	---	0.6	0.1	---	0.4	---	0.1	---	0.0	0.1	0.0	0.0	0.0
Balance (%)	3.1	14.6	0.5	8.3	---	---	9	---	1.6	2.6	---	0.0	---	2.6	---	0.0	0.3	0.0	0.0	0.0

**LFG WELL GW-18 (TEST AREA)**

Parameter	30-Sep-02	9-Oct-02	14-Nov-02	18-Dec-02	27-Jan-03	25-Feb-03	25-Mar-03	17-Apr-03	29-May-03	13-Jun-03	15-Jul-03	13-Aug-03	15-Sep-03	15-Oct-03	13-Nov-03	12-Jan-04	29-Feb-04	11-Mar-04	6-Apr-04	29-May-04
Temperature (degrees F)	140	140	138	---	---	---	---	---	---	---	---	---	---	---	---	115	129	124	125	125
Flow Rate (scfm)	---	7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Methane (%)	46	53.2	60.8	---	---	---	---	---	---	---	---	---	---	---	---	56.3	60.1	65.4	67.2	57.2
Carbon Dioxide (%)	28.8	37.4	39.3	---	---	---	---	---	---	---	---	---	---	---	---	41.7	39.9	34.6	32.8	42.8
Oxygen (%)	6.6	0.9	0	---	---	---	---	---	---	---	---	---	---	---	---	0.2	0.0	0.0	0.0	0.0
Balance (%)	18.6	8.5	0	---	---	---	---	---	---	---	---	---	---	---	---	1.6	0.0	0.0	0.0	0.0

**LFG WELL GW-19 (CONTROL AREA)**

Parameter	30-Sep-02	9-Oct-02	14-Nov-02	18-Dec-02	27-Jan-03	25-Feb-03	25-Mar-03	17-Apr-03	29-May-03	13-Jun-03	15-Jul-03	13-Aug-03	15-Sep-03	15-Oct-03	13-Nov-03	12-Jan-04	29-Feb-04	11-Mar-04	6-Apr-04	29-May-04
Temperature (degrees F)	112	112	---	101	---	---	---	---	---	---	---	---	---	---	---	120	122	120	118	115
Flow Rate (scfm)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Methane (%)	65.1	59.6	---	58.9	---	---	---	---	---	---	---	---	---	---	---	55.7	60.7	70.6	76.2	57.6
Carbon Dioxide (%)	34.7	36.6	---	39.7	---	---	---	---	---	---	---	---	---	---	---	41.3	39.3	29.4	23.7	42.3
Oxygen (%)	0	0	---	0	---	---	---	---	---	---	---	---	---	---	---	0.3	0.0	0.0	0.1	0.0
Balance (%)	0.2	3.8	---	1.4	---	---	---	---	---	---	---	---	---	---	---	3.2	0.0	0.0	0.0	0.1

**LFG WELL GW-20 (CONTROL AREA)**

Parameter	30-Sep-02	9-Oct-02	14-Nov-02	18-Dec-02	27-Jan-03	25-Feb-03	25-Mar-03	17-Apr-03	29-May-03	13-Jun-03	15-Jul-03	13-Aug-03	15-Sep-03	15-Oct-03	13-Nov-03	12-Jan-04	29-Feb-04	11-Mar-04	6-Apr-04	29-May-04
Temperature (degrees F)	94	92	91	92	90	87	93	91	92	96	97	97	98	101	99	120	85	95	90	118
Flow Rate (scfm)	---	---	---	28	38	14	14	3	2	5	---	7	---	8	---	---	---	---	---	---
Methane (%)	54.9	51.9	51.9	55.9	56.8	58.4	54.8	55.5	53.7	51.4	0.8	50.7	52.9	55.2	59.4	55.3	58.0	62.1	67.0	56.2
Carbon Dioxide (%)	36.4	41.4	41.9	43.1	33.9	41.5	44.6	43.1	44.2	43.1	7.0	44.0	45.2	43.7	40.6	41.3	42.0	37.9	33.0	42.8
Oxygen (%)	2.5	0.4	0.3	0.3	4.8	0	0	0	0.7	0	17.7	0.6	0	0	0	0.3	0.1	0.0	0.0	0.0
Balance (%)	6.2	6.3	5.9	0.7	4.5	0.1	0.6	1.4	1.4	5.5	74.5	4.7	1.9	1.1	0	2.4	0.0	0.0	0.0	2.4

GW-2A was destroyed during construction activities in December 2002 and was rebuilt in June 2003.  
Access to gas wells was limited due to waste placement activities.

TABLE 4  
LANDFILL GAS DATA  
(continued)

## LFG WELL GW-21 (CONTROL AREA)

Parameter	30-Sep-02	9-Oct-02	14-Nov-02	18-Dec-02	27-Jan-03	25-Feb-03	25-Mar-03	17-Apr-03	29-May-03	13-Jun-03	15-Jul-03	13-Aug-03	15-Sep-03	15-Oct-03	13-Nov-03	12-Jan-04	29-Feb-04	11-Mar-04	6-Apr-04	29-May-04
Temperature (degrees F)	140	140	141	141	---	---	---	---	---	---	---	---	---	---	110	120	75	60	---	98
Flow Rate (scfm)	---	33	---	33	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Methane (%)	66.3	52.4	56.5	51	---	---	51	---	---	---	---	---	49.4	---	62.1	53.0	53.0	53.4	---	54.8
Carbon Dioxide (%)	33.5	41	42.2	36.6	---	---	48	---	---	---	---	---	36.5	---	36.8	37.3	35.8	36.4	---	41.9
Oxygen (%)	0	0.1	0	2	---	---	0	---	---	---	---	---	0.3	---	0.0	3.2	2.0	2.4	---	0.0
Balance (%)	0.2	6.5	1.3	10.4	---	---	2	---	---	---	---	---	13.8	---	1.1	7.8	4.2	7.8	---	2.3

## LFG WELL GW-22 (TEST AREA)

Parameter	30-Sep-02	9-Oct-02	14-Nov-02	18-Dec-02	27-Jan-03	25-Feb-03	25-Mar-03	17-Apr-03	29-May-03	13-Jun-03	15-Jul-03	13-Aug-03	15-Sep-03	15-Oct-03	13-Nov-03	12-Jan-04	29-Feb-04	11-Mar-04	6-Apr-04	29-May-04
Temperature (degrees F)	138	133	135	139	---	---	73	---	131	136	---	---	---	---	136	115	120	129	133	127
Flow Rate (scfm)	---	11	18	47	---	---	66	---	7	---	---	---	---	---	---	---	---	---	---	---
Methane (%)	69.4	44.9	58.7	53.5	---	---	55	---	57	55	---	---	---	---	55	54.7	57.1	62.6	64.2	56.7
Carbon Dioxide (%)	29.7	30.8	40.2	42.6	---	---	41	---	43	42	---	---	---	---	42	41.3	41.8	37.4	35.8	43.0
Oxygen (%)	0.9	3.7	0	0	---	---	0	---	0	0	---	---	---	---	0	0.8	0.2	0.0	0.0	0.1
Balance (%)	0	20.6	1.1	3.9	---	---	4	---	0	4	---	---	---	---	4	3.2	0.9	0.0	0.0	0.2

## LFG WELL GW-23 (CONTROL AREA)

Parameter	30-Sep-02	9-Oct-02	14-Nov-02	18-Dec-02	27-Jan-03	25-Feb-03	25-Mar-03	17-Apr-03	29-May-03	13-Jun-03	15-Jul-03	13-Aug-03	15-Sep-03	15-Oct-03	13-Nov-03	12-Jan-04	29-Feb-04	11-Mar-04	6-Apr-04	29-May-04
Temperature (degrees F)	---	120	125	126	---	---	---	---	---	---	---	---	---	---	---	105	120	120	114	122
Flow Rate (scfm)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Methane (%)	---	53	59.3	55.5	---	---	---	---	---	---	---	---	---	---	---	56.7	58.5	64.3	70.1	57.2
Carbon Dioxide (%)	---	36.2	40.2	43.2	---	---	---	---	---	---	---	---	---	---	---	40.6	41.4	35.7	28.8	42.3
Oxygen (%)	---	1.3	0	0	---	---	---	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.1	0.1
Balance (%)	---	9.5	0.5	1.3	---	---	---	---	---	---	---	---	---	---	---	3.7	0.1	0.0	0.0	0.4

## LFG WELL GW-24 (CONTROL AREA)

Parameter	30-Sep-02	9-Oct-02	14-Nov-02	18-Dec-02	27-Jan-03	25-Feb-03	25-Mar-03	17-Apr-03	29-May-03	13-Jun-03	15-Jul-03	13-Aug-03	15-Sep-03	15-Oct-03	13-Nov-03	12-Jan-04	29-Feb-04	11-Mar-04	6-Apr-04	29-May-04
Temperature (degrees F)	108	102	100	103	100	97	101	99	100	103	101	104	105	106	118	120	96	98	94	102
Flow Rate (scfm)	---	6	---	21	25	14	11	17	5	5	---	3	---	10	---	---	---	---	---	---
Methane (%)	35.1	32.3	52	52.9	48.6	63.7	53.6	52.0	55.8	52.5	1.2	52.0	51.9	55.3	58.0	56.0	57.2	60.2	63.4	56.2
Carbon Dioxide (%)	25.4	29.8	42.3	42	36.3	32.8	42.1	38.8	44.1	43.1	8.6	46.8	45.3	44.1	41.4	39.3	43.6	39.8	36.6	41.8
Oxygen (%)	7.3	6.3	0	0.1	3.0	0.6	0.3	1.0	0.1	0.2	17.2	0.7	0	0	0.3	0.5	0.0	0.0	0.0	0.0
Balance (%)	32.2	31.6	5.7	5	12.1	2.9	4.0	5.7	0	4.2	73.0	0.5	2.8	0.6	0.3	3.3	0.0	0.0	0.0	0.2

Access to gas wells was limited due to waste placement activities.

**TABLE 4**  
**LANDFILL GAS DATA**  
(continued)

**LFG WELL GW-25 (CONTROL AREA)**

Parameter	30-Sep-02	9-Oct-02	14-Nov-02	18-Dec-02	27-Jan-03	25-Feb-03	25-Mar-03	17-Apr-03	29-May-03	13-Jun-03	15-Jul-03	13-Aug-03	15-Sep-03	15-Oct-03	13-Nov-03	12-Jan-04	29-Feb-04	11-Mar-04	6-Apr-04	29-May-04
Temperature (degrees F)	120	122	121	122	122	121	---	121	103	91	---	121	121	---	109	110	100	112	110	110
Flow Rate (scfm)	---	36	---	27	---	37	---	27	---	---	---	4	---	---	9	---	---	---	---	---
Methane (%)	19.1	34.2	55.3	51.3	20	63	---	51.5	56.9	56.5	54.7	54.7	56.5	---	57.4	54.3	54.2	60.2	63.5	56.6
Carbon Dioxide (%)	12.8	28.6	43.9	39.4	7	31	---	42.8	43.1	41.7	44.3	44.0	43.5	---	36.1	39.3	41.2	39.8	36.5	43.0
Oxygen (%)	13.1	5.7	0	1.6	16	1	---	0	0	0	0.7	0.4	0	---	0.9	0.6	0.5	0.0	0.0	0.0
Balance (%)	55	31.5	0.8	7.7	57	5	---	5.7	0	1.8	0.3	0.9	0	---	5.6	4.8	4.1	0.0	0.0	0.4

**LFG WELL GW-26 (TEST AREA)**

Parameter	30-Sep-02	9-Oct-02	14-Nov-02	18-Dec-02	27-Jan-03	25-Feb-03	25-Mar-03	17-Apr-03	29-May-03	13-Jun-03	15-Jul-03	13-Aug-03	15-Sep-03	15-Oct-03	13-Nov-03	12-Jan-04	29-Feb-04	11-Mar-04	6-Apr-04	29-May-04
Temperature (degrees F)	139	142	144	146	---	78	---	---	102	102	---	---	---	---	---	125	100	105	105	110
Flow Rate (scfm)	---	24	---	22	---	7	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Methane (%)	69.5	51.4	56.9	51.3	---	56	---	---	39	47	---	---	---	---	---	56.6	58.7	63.6	69.5	56.2
Carbon Dioxide (%)	0.1	39.7	41.4	37.8	---	40	---	---	49	50	---	---	---	---	---	39.5	41.3	36.4	30.5	41.7
Oxygen (%)	0.3	0.3	0	1.8	---	0	---	---	1	0	---	---	---	---	---	0.8	0.0	0.0	0.0	0.1
Balance (%)	30.1	8.6	1.7	9.1	---	4	---	---	11	3	---	---	---	---	---	4.2	0.0	0.0	0.0	2.0

**LFG WELL GW-27 (TEST AREA)**

Parameter	30-Sep-02	9-Oct-02	14-Nov-02	18-Dec-02	27-Jan-03	25-Feb-03	25-Mar-03	17-Apr-03	29-May-03	13-Jun-03	15-Jul-03	13-Aug-03	15-Sep-03	15-Oct-03	13-Nov-03	12-Jan-04	29-Feb-04	11-Mar-04	6-Apr-04	29-May-04
Temperature (degrees F)	131	131	134	129	---	128	---	127	130	129	128	121	---	---	---	120	110	104	115	110
Flow Rate (scfm)	---	32	---	51	---	---	---	39	10	---	---	---	---	---	---	---	---	---	---	---
Methane (%)	47.4	42.9	59.9	54.3	---	58	---	40.7	59.3	56.0	55.3	50.3	---	---	---	56.3	57.4	62.6	70.2	55.4
Carbon Dioxide (%)	29.9	32.9	38.5	43.5	---	38	---	46.1	39.0	41.9	43.9	41.7	---	---	---	40.1	42.6	37.4	29.8	41.8
Oxygen (%)	5.7	4	0	0	---	0	---	1.5	0	0	0	1.4	---	---	---	0.6	0.0	0.0	0.0	0.0
Balance (%)	17	20.2	1.6	2.2	---	1	---	11.7	1.7	2.1	0.8	6.6	---	---	---	3.7	0.0	0.0	0.0	2.8

**LFG WELL GW-28 (CONTROL AREA)**

Parameter	30-Sep-02	9-Oct-02	14-Nov-02	18-Dec-02	27-Jan-03	25-Feb-03	25-Mar-03	17-Apr-03	29-May-03	13-Jun-03	15-Jul-03	13-Aug-03	15-Sep-03	15-Oct-03	13-Nov-03	12-Jan-04	29-Feb-04	11-Mar-04	6-Apr-04	29-May-04
Temperature (degrees F)	130	130	131	134	133	134	134	133	136	135	135	136	137	108	117	105	128	128	128	128
Flow Rate (scfm)	---	38	---	32	31	42	35	27	12	16	---	12	---	14	9	---	---	---	---	---
Methane (%)	69.2	52.8	57	49.1	58.2	52.2	57.1	54.1	55.1	50.2	1.9	52.0	52.3	55.2	60.3	59.3	58.0	59.4	63.3	56.2
Carbon Dioxide (%)	29.2	39.1	41.9	36	27.1	35.3	41.1	40.0	42.2	37.0	10.4	42.9	42.1	42.6	31.2	41.2	42.0	40.6	36.7	41.8
Oxygen (%)	0.2	0.4	0	2.4	7.8	2.0	0.8	0.9	0	1.0	16.6	1.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0
Balance (%)	1.4	7.7	1.1	12.5	6.9	10.5	1.0	5.0	2.7	11.8	71.1	4.1	5.6	2.2	8.5	0.0	0.0	0.0	0.0	0.0

Access to gas wells was limited due to waste placement activities.

**TABLE 4**  
**LANDFILL GAS DATA**  
(continued)

**LFG WELL GW-29 (CONTROL AREA)**

Parameter	30-Sep-02	9-Oct-02	14-Nov-02	18-Dec-02	27-Jan-03	25-Feb-03	25-Mar-03	17-Apr-03	29-May-03	13-Jun-03	15-Jul-03	13-Aug-03	15-Sep-03	15-Oct-03	13-Nov-03	12-Jan-04	29-Feb-04	11-Mar-04	6-Apr-04	29-May-04
Temperature (degrees F)	135	137	138	137	137	136	134	134	131	128	94	133	131	122	112	120	124	125	124	128
Flow Rate (scfm)	---	41	---	34	27	48	40	36	---	---	---	26	25	26	---	---	---	---	---	---
Methane (%)	65.7	53.2	60.1	57	31.8	68.4	57.9	59.6	62.6	56.6	58.6	56.9	56.7	56.9	30.9	57.4	59.6	62.0	66.2	56.5
Carbon Dioxide (%)	34.3	38.2	40.1	37.5	14.0	27.9	39.8	40.0	37.4	41.2	41.3	42.8	43.0	42.4	34.1	40.8	40.2	38.0	33.8	43.1
Oxygen (%)	0	0.5	0	1.4	11.1	1.2	0.7	0	0	0	0	0.2	0	0	17.5	0.2	0.2	0.0	0.0	0.2
Balance (%)	0	8.1	0	4.1	43.1	2.5	1.6	0.4	0	2.2	0.1	0.1	0.3	0.7	17.5	1.1	0.0	0.0	0.0	0.2

**LFG WELL GW-30 (TEST AREA)**

Parameter	30-Sep-02	9-Oct-02	14-Nov-02	18-Dec-02	27-Jan-03	25-Feb-03	25-Mar-03	17-Apr-03	29-May-03	13-Jun-03	15-Jul-03	13-Aug-03	15-Sep-03	15-Oct-03	13-Nov-03	12-Jan-04	29-Feb-04	11-Mar-04	6-Apr-04	29-May-04
Temperature (degrees F)	136	131	130	131	---	132	---	112	132	133	132	129	132	---	104	110	115	115	112	112
Flow Rate (scfm)	---	---	---	---	---	16	---	20	---	2	---	---	---	---	---	---	---	---	---	---
Methane (%)	79.4	51.8	57.3	53.4	---	61	---	16.3	57.3	49.4	15.2	50.8	53.0	---	59.8	56.3	58.1	61.5	67.8	57.8
Carbon Dioxide (%)	20.4	38.1	40.4	37.6	---	31	---	49.1	39.8	35.1	27.4	37.4	39.2	---	40.1	41.5	41.9	38.5	32.2	42.2
Oxygen (%)	0	0.9	0	1.3	---	1	---	3.7	0.9	1.8	10.4	2.1	1.1	---	0	0.1	0.0	0.0	0.0	0.0
Balance (%)	0.2	9.2	2.3	7.7	---	7	---	30.9	2.0	13.7	47.0	9.7	6.7	---	0.1	1.8	0.0	0.0	0.0	0.0

**LFG WELL GW-31 (CONTROL AREA)**

Parameter	30-Sep-02	9-Oct-02	14-Nov-02	18-Dec-02	27-Jan-03	25-Feb-03	25-Mar-03	17-Apr-03	29-May-03	13-Jun-03	15-Jul-03	13-Aug-03	15-Sep-03	15-Oct-03	13-Nov-03	12-Jan-04	29-Feb-04	11-Mar-04	6-Apr-04	29-May-04
Temperature (degrees F)	132	131	135	134	132	131	131	129	131	132	133	132	132	115	119	125	125	127	126	128
Flow Rate (scfm)	---	32	---	41	---	45	37	33	18	21	---	---	---	14	10	---	---	---	---	---
Methane (%)	66.8	49.9	54.9	51.8	45.3	64.8	54.3	56.0	55.4	52.9	3.5	54.0	53.3	56.1	57.4	57.3	55.3	58.7	63.5	55.5
Carbon Dioxide (%)	32.8	37.2	41.7	37.9	23.4	34.8	41.5	41.1	42.3	40.3	13.8	43.8	44.2	43.2	36.3	40.8	45.9	41.3	36.5	41.9
Oxygen (%)	0.2	1.5	0	1.2	8.7	0.4	0.5	0.3	0.4	0.1	15.4	0	0	0	0.7	0.0	0.0	0.0	0.0	0.2
Balance (%)	0.2	11.4	3.4	9.1	22.6	0	3.7	2.6	1.9	6.7	67.3	2.2	2.5	0.7	5.6	0.0	0.0	0.0	0.0	2.4

**LFG WELL GW-32 (TEST AREA)**

Parameter	30-Sep-02	9-Oct-02	14-Nov-02	18-Dec-02	27-Jan-03	25-Feb-03	25-Mar-03	17-Apr-03	29-May-03	13-Jun-03	15-Jul-03	13-Aug-03	15-Sep-03	15-Oct-03	13-Nov-03	12-Jan-04	29-Feb-04	11-Mar-04	6-Apr-04	29-May-04
Temperature (degrees F)	129	126	131	131	---	130	131	131	132	132	132	131	133	113	124	115	126	126	122	122
Flow Rate (scfm)	---	27	---	39	---	52	49	39	19	54	---	22	---	14	13	---	---	---	---	---
Methane (%)	70.9	50.5	57.3	55.8	42.5	55.4	54.3	56.2	56.4	53.4	7.3	54.0	53.0	53.9	59.3	57.3	58.1	60.1	63.3	55.8
Carbon Dioxide (%)	28	37.9	40.2	37.6	11.8	36.8	41.9	41.1	41.0	38.8	19.1	42.8	43.5	41.2	40.4	41.9	41.9	39.9	36.7	41.8
Oxygen (%)	0	0.8	0	1	8.7	0.2	0.3	0.1	0.4	0.2	13.6	0.4	0	0.4	0.3	0.0	0.0	0.0	0.0	0.0
Balance (%)	1.1	10.8	2.5	5.6	37.0	7.6	3.5	2.6	2.2	7.6	60.0	2.8	3.5	4.5	0	2.3	0.0	0.0	0.0	2.4

Access to gas wells was limited due to waste placement activities.

**TABLE 4**  
**LANDFILL GAS DATA**  
 (continued)

**LFG WELL GW-33 (CONTROL AREA)**

Parameter	30-Sep-02	9-Oct-02	14-Nov-02	18-Dec-02	27-Jan-03	25-Feb-03	25-Mar-03	17-Apr-03	29-May-03	13-Jun-03	15-Jul-03	13-Aug-03	15-Sep-03	15-Oct-03	13-Nov-03	12-Jan-04	29-Feb-04	11-Mar-04	6-Apr-04	29-May-04
Temperature (degrees F)	---	120	126	130	129	128	129	129	130	130	130	130	131	133	121	115	115	122	120	118
Flow Rate (scfm)	---	43	---	51	62	61	51	44	20	21	---	36	---	18	10	---	---	---	---	---
Methane (%)	---	44.3	60.1	55.4	52.6	61.5	58.7	58.1	56.5	54.9	35.0	55.4	54.9	55.6	61.3	56.8	59.0	61.7	64.5	56.8
Carbon Dioxide (%)	---	30.8	39	37.1	30.7	34.9	40.6	40.4	40.9	39.6	39.9	42.7	42.9	39.3	34.9	41.3	41.0	38.3	35.5	43.1
Oxygen (%)	---	3.9	0	1.1	4.2	0.5	0.4	0.1	0.6	0.2	4.0	0.4	0	0.3	0	0.2	0.0	0.0	0.0	0.0
Balance (%)	---	21	0.9	6.4	12.5	3.1	0.3	1.4	2.0	5.3	21.1	1.5	2.2	4.8	3.8	3.0	0.0	0.0	0.0	0.1

Access to gas wells was limited due to waste placement activities.

**TABLE 5**  
**EXAMPLE OF LEACHATE QUALITY DATA**  
**Project XL**  
**King George County Landfill and Recycling Center**  
**King George, Virginia**

**CELL 1 (CONTROL AREA)**

Parameter	Units	27-Sep-02	28-Oct-02	25-Nov-02	19-Dec-02	27-Jan-03	24-Feb-03	24-Mar-03	16-Apr-03	14-Jul-03	14-Oct-03	12-Mar-04
Biological Oxygen Demand	mg/l	103	30	74.7	346	58	1,800	77	52	58.7	201	97.4
Chemical Oxygen Demand	mg/l	732	508	778	981	854	5,330	1,350	616	906	1,330	1,100
Total Organic Carbon	mg/l	193	88	254	279	260	1,500	175	190	277	331	274
BOD/COD Ratio	-	0.14	0.06	0.10	0.35	0.07	0.34	0.06	0.08	0.06	0.15	0.09
COD/TOC Ratio	-	3.79	5.79	3.06	3.52	3.28	3.55	7.71	3.24	3.27	4.02	4.01
Chloride	mg/l	1380	915	1370	1130	1,760	618	801	1,340	2,390	1,740	2,160
Sulfate	mg/l	47.3	162	23.5	<5	5.00	50.60	9.40	2.00	9.50	94.60	4.8
Nitrate Nitrogen	mg/l as N	<0.05	<0.050	<0.05	<0.05	2.30	0.05	0.05	0.05	0.05	3.20	0.05
Ammonia Nitrogen	mg/l as N	0.82	509	1140	539	800	301	418	530	1,380	908	964
pH	-	7.23	7.02	7.3	7.2	7.10	6.79	7.15	7.22	7.31	7.32	7.4

Secondary Parameters	Units	27-Sep-02	28-Oct-02	25-Nov-02	19-Dec-02	27-Jan-03	24-Feb-03	24-Mar-03	16-Apr-03	14-Jul-03	14-Oct-03	12-Mar-04
Arsenic	mg/l	0.037	0.031	0.034	0.036	0.04	0.03	0.03	0.03	0.04	0.06	0.056
Barium	mg/l	0.57	0.49	0.52	0.46	0.47	0.52	0.26	0.28	0.31	0.35	0.34
Cadmium	mg/l	<0.001	<0.001	<0.001	<0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.001
Chromium	mg/l	0.023	0.017	0.046	0.034	0.05	0.03	0.03	0.04	0.05	0.08	0.072
Lead	mg/l	<0.005	<0.005	<0.005	<0.005	0.01	0.01	0.01	0.01	0.01	0.01	0.005
Mercury	mg/l	<0.0004	<0.0004	<0.0004	<0.0004	0.00	0.00	0.00	0.00	0.00	0.00	0.0004
Nitrite Nitrogen	mg/L	<0.05	<0.05	<0.05	<0.05	0.05	0.13	0.05	0.05	0.06	0.05	0.05
Total Kjeldahl Nitrogen	mg/L	<0.10	293	226	413	772	214	300	390	758	770	777
Ortho Phosphorus	mg/L	0.59	0.54	0.36	0.48	0.86	0.09	0.55	0.86	1.50	1.60	1.5
Potassium	mg/l	383	235	362	308	470	178	258	356	498	557	484
Selenium	mg/l	<0.01	0.01	<0.01	0.014	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Silver	mg/l	<0.05	<0.05	<0.05	<0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Total Dissolved Solids	mg/L	3880	2570	3910	3780	4,560	4,610	3,040	3,580	4,740	5,110	4,640
Total Phosphorus	mg/L	0.87	0.76	1.6	<0.4	0.65	0.68	1.20	1.50	2.20	2.80	2.9



**TABLE 5**  
**EXAMPLE OF LEACHATE QUALITY DATA**  
**(continued)**

**CELL 2 (CONTROL AREA)**

Parameter		27-Sep-02	28-Oct-02	25-Nov-02	19-Dec-02	27-Jan-03	24-Feb-03	24-Mar-03	16-Apr-03	14-Jul-03	14-Oct-03	12-Mar-04
Biological Oxygen Demand	mg/l	357	462	378	396	1,210	1,600	263	81	120	86.1	73.5
Chemical Oxygen Demand	mg/l	1,960	2,050	1,700	1,290	2,480	3,060	1,400	912	1,540	1,540	1,130
Total Organic Carbon	mg/l	311	511	396	408	610	822	391	233	429	408	385
BOD/COD Ratio	-	0.18	0.23	0.22	0.31	0.49	0.52	0.19	0.09	0.08	0.06	0.07
COD/TOC Ratio	-	6.30	4.01	4.29	3.16	4.07	3.72	3.58	3.91	3.59	3.77	2.94
Chloride	mg/l	1970	1,630	1,680	1240	2,290	900	977	1,220	2,360	1,970	2,270
Sulfate	mg/l	<10	89	<5	<10	5.00	60	5.00	5.00	5.00	108.00	10.6
Nitrate Nitrogen	mg/l as N	0.19	0.13	<0.05	0.16	0.05	0.15	0.05	0.05	0.13	0.05	0.05
Ammonia Nitrogen	mg/l as N	1700	1120	1790	1390	1,040	563	771	842	1,940	1,830	1,300
pH	-	6.86	7.44	7.4	7.17	6.83	7.13	7.20	7.09	7.30	7.32	7.42

Secondary Parameters	Units	27-Sep-02	28-Oct-02	25-Nov-02	19-Dec-02	27-Jan-03	24-Feb-03	24-Mar-03	16-Apr-03	14-Jul-03	14-Oct-03	12-Mar-04
Arsenic	mg/l	0.038	0.035	0.028	0.02	0.03	0.02	0.02	0.02	0.03	0.03	0.024
Barium	mg/l	0.11	0.1	0.22	0.14	0.21	0.14	0.20	0.13	0.13	0.11	0.17
Cadmium	mg/l	<0.001	<0.001	<0.001	<0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.001
Chromium	mg/l	0.099	0.076	0.065	0.048	0.08	0.03	0.04	0.04	0.09	0.10	0.07
Lead	mg/l	<0.005	<0.005	<0.005	<0.005	0.01	0.01	0.01	0.01	0.01	0.04	0.035
Mercury	mg/l	<0.0004	<0.0004	<0.0004	<0.0004	0.00	0.00	0.00	0.00	0.00	0.00	0.0004
Nitrite Nitrogen	mg/L	0.19	0.15	0.17	<0.05	0.07	0.05	0.05	0.05	0.16	0.10	0.089
Total Kjeldahl Nitrogen	mg/L	<0.10	965	625	808	897	664	550	548	1,510	1,340	1,040
Ortho Phosphorus	mg/L	1	0.39	0.4	0.53	0.72	0.52	0.68	0.87	1.90	2.30	1.9
Potassium	mg/l	848	617	557	452	750	319	380	430	714	826	579
Selenium	mg/l	<0.01	<0.01	<0.01	<0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Silver	mg/l	<0.05	<0.05	<0.05	<0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Total Dissolved Solids	mg/L	7230	6600	5900	5190	6,590	4,020	4,120	4,390	6,810	7,800	5,570
Total Phosphorus	mg/L	1.8	0.58	1	0.75	0.78	1.40	2.00	2.10	4.50	3.70	3

**TABLE 5**  
**EXAMPLE OF LEACHATE QUALITY DATA**  
**(continued)**

**CELL 3 (TEST AREA)**

Parameter	Units	27-Sep-02	28-Oct-02	25-Nov-02	19-Dec-02	27-Jan-03	24-Feb-03	24-Mar-03	16-Apr-03	14-Jul-03	14-Oct-03	12-Mar-04
Biological Oxygen Demand	mg/l	157	226	65.7	1100	201	944	1,170	200	108	147	89.1
Chemical Oxygen Demand	mg/l	1,600	545	440	1,720	1,600	738	2,780	834	1,640	1,330	1,330
Total Organic Carbon	mg/l	527	132	137	506	594	737	762	259	489	463	452
BOD/COD Ratio	-	0.10	0.41	0.15	0.64	0.13	1.28	0.42	0.24	0.07	0.11	0.07
COD/TOC Ratio	-	3.04	4.13	3.21	3.40	2.69	1.00	3.65	3.22	3.35	2.87	2.94
Chloride	mg/l	1,690	84	660	318	2,360	828	817	999	2,200	1,800	2,340
Sulfate	mg/l	28	32	12.5	<10	5	53	2	41	60.1	65.8	5.9
Nitrate Nitrogen	mg/l as N	0.061	<0.05	<0.05	0.13	0.05	0.08	0.05	0.05	0.20	0.05	0.05
Ammonia Nitrogen	mg/l as N	3,120	15	866	730	1,220	447	420	701	1,180	110	1,320
pH	-	7.3	6.18	7.24	6.17	7.20	6.97	7.03	7.27	7.64	7.29	7.5

Secondary Parameters	Units	27-Sep-02	28-Oct-02	25-Nov-02	19-Dec-02	27-Jan-03	24-Feb-03	24-Mar-03	16-Apr-03	14-Jul-03	14-Oct-03	12-Mar-04
Arsenic	mg/l	0.034	<0.02	<0.02	<0.02	0.04	0.02	0.02	0.02	0.04	0.04	0.037
Barium	mg/l	0.13	0.23	0.3	0.51	0.19	0.28	0.32	0.16	0.13	0.13	0.15
Cadmium	mg/l	<0.001	<0.001	<0.001	<0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.001
Chromium	mg/l	0.13	0.006	0.019	0.032	0.12	0.04	0.04	0.06	0.13	0.14	0.13
Lead	mg/l	<0.005	<0.005	<0.005	0.0076	0.01	0.01	0.01	0.01	0.01	0.01	0.005
Mercury	mg/l	<0.0004	<0.0004	<0.0004	<0.0004	0.00	0.00	0.00	0.00	0.00	0.00	0.0004
Nitrite Nitrogen	mg/L	0.079	<0.05	<0.05	<0.05	0.07	0.05	0.05	0.05	0.20	0.09	0.077
Total Kjeldahl Nitrogen	mg/L	<0.10	30.3	129	316	642	316	296	639	1,430	1,170	1,160
Ortho Phosphorus	mg/L	3.3	0.27	0.36	<0.04	0.81	0.39	0.51	1.20	2.90	3.30	2.7
Potassium	mg/l	853	44.4	246	228	732	225	264	409	750	804	662
Selenium	mg/l	<0.01	<0.01	<0.01	0.012	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Silver	mg/l	<0.05	<0.05	<0.05	<0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Total Dissolved Solids	mg/L	7010	625	2720	2500	7,060	1,300	4,030	3,940	6,590	7,630	6,150
Total Phosphorus	mg/L	5.6	0.29	<0.4	0.36	0.91	0.89	1.70	2.20	10.10	4.00	4.5

**TABLE 5**  
**EXAMPLE OF LEACHATE QUALITY DATA**  
 (continued)

**CELL 4 (CONTROL AREA)**

Parameter		27-Sep-02	28-Oct-02	25-Nov-02	19-Dec-02	27-Jan-03	24-Feb-03	24-Mar-03	16-Apr-03	14-Jul-03	14-Oct-03	12-Mar-04
Biological Oxygen Demand	mg/l	77	64	180	166	64	352	126	128	274	83.6	40.5
Chemical Oxygen Demand	mg/l	1,390	974	926	627	1,000	882	535	790	979	794	812
Total Organic Carbon	mg/l	430	271	290	197	355	281	197	236	274	287	254
BOD/COD Ratio	-	0.06	0.07	0.19	0.26	0.06	0.40	0.24	0.16	0.28	0.11	0.05
COD/TOC Ratio	-	3.23	3.59	3.19	3.18	2.82	3.14	2.72	3.35	3.57	2.77	3.20
Chloride	mg/l	1,640	964	721	592	1,890	479	568	923	794	938	1,380
Sulfate	mg/l	29.5	97.5	<5	<10	5.00	21.90	2.00	2.00	5.00	24.00	12.5
Nitrate Nitrogen	mg/l as N	0.05	0.061	<0.05	0.063	1.80	0.05	0.05	0.05	1.90	0.05	0.05
Ammonia Nitrogen	mg/l as N	1.4	312	912	725	778	217	291	523	581	690	726
pH	-	7.27	7.44	7.13	5.51	7.24	7.09	6.92	7.27	7.40	7.31	7.37

Secondary Parameters	Units	27-Sep-02	28-Oct-02	25-Nov-02	19-Dec-02	27-Jan-03	24-Feb-03	24-Mar-03	16-Apr-03	14-Jul-03	14-Oct-03	12-Mar-04
Arsenic	mg/l	0.026	0.022	<0.02	<0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Barium	mg/l	0.17	0.16	0.21	0.18	0.24	0.19	0.20	0.18	0.20	0.18	0.21
Cadmium	mg/l	<0.001	<0.001	<0.001	<0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.0012
Chromium	mg/l	0.1	0.054	0.04	0.03	0.07	0.02	0.02	0.04	0.04	0.06	0.043
Lead	mg/l	<0.005	<0.005	<0.005	0.0053	0.01	0.01	0.01	0.01	0.01	0.01	0.005
Mercury	mg/l	<0.0004	<0.0004	<0.0004	<0.0004	0.00	0.00	0.00	0.00	0.00	0.00	0.0004
Nitrite Nitrogen	mg/L	0.063	<0.05	0.05	<0.05	0.05	0.12	0.05	0.05	0.09	0.06	0.05
Total Kjeldahl Nitrogen	mg/L	0.11	582	267	399	700	214	234	417	523	751	607
Ortho Phosphorus	mg/L	3.8	2.2	0.8	0.76	0.88	0.14	0.63	0.83	0.93	1.90	1.5
Potassium	mg/l	618	380	353	277	528	164	225	352	306	448	368
Selenium	mg/l	<0.01	<0.01	<0.01	<0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Silver	mg/l	<0.05	<0.05	<0.05	<0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Total Dissolved Solids	mg/L	6820	3800	3660	3000	4,900	2,020	2,680	3,600	3,280	4,620	2,150
Total Phosphorus	mg/L	4.4	2.3	1.2	0.53	0.93	1.00	1.30	2.00	2.10	3.40	2.6

**TABLE 5**  
**EXAMPLE OF LEACHATE QUALITY DATA**  
 (continued)

**LEACHATE STORAGE TANK**

Parameter	Units	27-Sep-02	28-Oct-02	25-Nov-02	19-Dec-02	27-Jan-03	24-Feb-03	24-Mar-03	16-Apr-03	14-Jul-03	14-Oct-03	12-Mar-04
Biological Oxygen Demand	mg/l	408	360	987	114	1,800	3,270	2,600	2,070	1,320	292	2,360
Chemical Oxygen Demand	mg/l	1,160	719	1,740	1,420	6,280	5,730	5,860	3,680	2,700	1,340	4,030
Total Organic Carbon	mg/l	385	412	545	493	1,530	1,340	1,580	1,040	790	277	2,170
BOD/COD Ratio	-	0.35	0.50	0.57	0.08	0.29	0.57	0.44	0.56	0.49	0.22	0.59
COD/TOC Ratio	-	3.01	1.75	3.19	2.88	4.10	4.28	3.71	3.54	3.42	4.84	1.86
Chloride	mg/l	579	555	432	420	1,310	989	862	957	828	926	1,860
Sulfate	mg/l	<5	<5	<5	<5	2.00	5.00	5.00	2.00	5.00	14.60	18.5
Nitrate Nitrogen	mg/l as N	<0.05	0.061	0.075	<0.01	0.05	0.15	0.05	0.05	0.05	0.058	0.05
Ammonia Nitrogen	mg/l as N	0.48	298	781	436	470	458	428	430	734	624	871
pH	-	6.98	7.2	7.11	7.11	6.99	7.16	7.49	7.30	7.42	7.60	7.56

Secondary Parameters	Units	27-Sep-02	28-Oct-02	25-Nov-02	19-Dec-02	27-Jan-03	24-Feb-03	24-Mar-03	16-Apr-03	14-Jul-03	14-Oct-03	12-Mar-04
Arsenic	mg/l	0.026	0.02	<0.02	<0.02	0.03	0.02	0.03	0.02	0.02	0.02	0.056
Barium	mg/l	0.31	0.28	0.27	0.32	0.77	0.48	0.55	0.41	0.17	0.12	0.21
Cadmium	mg/l	<0.001	<0.001	<0.001	<0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.0016
Chromium	mg/l	0.021	0.023	0.022	0.02	0.04	0.03	0.04	0.03	0.04	0.03	0.068
Lead	mg/l	<0.005	<0.005	<0.005	0.0066	0.01	0.01	0.01	0.01	0.01	0.01	0.007
Mercury	mg/l	<0.0004	<0.0004	<0.0004	<0.0004	0.00	0.00	0.00	0.00	0.00	0.00	0.0004
Nitrite Nitrogen	mg/L	0.085	0.11	0.1	0.24	0.08	0.15	0.05	0.05	0.05	0.05	0.4
Total Kjeldahl Nitrogen	mg/L	3.1	3960	201	278	579	434	310	360	531	539	662
Ortho Phosphorus	mg/L	<0.02	<0.02	<0.02	<0.02	0.39	0.02	0.02	0.02	0.03	0.64	0.15
Potassium	mg/l	184	203	175	131	288	272	272	276	328	298	422
Selenium	mg/l	<0.01	<0.01	<0.01	<0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01
Silver	mg/l	<0.05	<0.05	<0.05	<0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Total Dissolved Solids	mg/L	2520	2270	2480	2160	5,500	5,000	5,450	4,620	4,070	3,900	5,300
Total Phosphorus	mg/L	0.26	0.37	<1	0.23	0.42	0.68	1.00	1.70	1.00	1.20	3

**TABLE 6**  
**SUMMARY OF LEACHATE QUANTITY DATA**  
**Project XL**  
**King George County Landfill and Recycling Center**  
**King George, Virginia**

2002

				Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Annual Total
Control Area	Pump House #1	Primary	gallons	60,500	16,300	72,500	84,500	30,000	16,400	17,000	25,100	16,200	64,300	87,600	107,900	598,300
		Secondary	gallons	0	0	0	200	0	0	0	200	0	0	0	200	600
Control Area	Pump House #2	Primary	gallons	38,000	18,800	37,900	33,400	21,900	17,700	18,900	28,300	27,200	60,500	72,000	91,600	466,200
		Secondary	gallons													0
Test Area	Pump House #3	Primary	gallons	13,500	7,600	22,700	33,800	17,100	10,200	10,500	14,000	12,400	38,700	66,900	66,900	314,300
		Secondary	gallons													0
Control Area	Pump House #4	Primary	gallons	40,400	19,100	60,600	66,700	23,400	30,600	17,100	31,100	20,500	68,200	152,700	178,800	709,200
		Secondary	gallons	0	0	0	0	0	0	0	0	0	0	300	0	300
	Monthly Total		gallons	152,400	61,800	193,700	218,600	92,400	74,900	63,500	98,700	76,300	231,700	379,500	445,400	2,088,900

Note:

This table is based on site records for the King George County Landfill and Recycling Center showing the amount of leachate collected in the primary and secondary leachate collection system. These records were provided by the site manager (Howard Burns).

The test area is represented by Pump House #3 and the control area is represented by Pump Houses #1, 2, and 4.

**TABLE 6**  
**SUMMARY OF LEACHATE QUANTITY DATA**  
 (continued)

2003

				Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Annual Total
Control Area	Pump House #1	Primary	gallons	53,400	2,200	0	0	0	0	51,800	55,900	64,000	60,350	67,450	62,630	417,730
		Secondary	gallons	0	0	600	0	0	400	0	0	0	0	0	0	1,000
Control Area	Pump House #2	Primary	gallons	63,700	116,550	116,550	69,000	70,950	70,950	49,600	56,600	70,700	84,500	80,700	81,400	931,200
		Secondary	gallons													0
Test Area	Pump House #3	Primary	gallons	51,400	105,000	105,000	69,200	83,000	83,000	47,400	49,100	69,250	69,250	73,200	71,110	875,910
		Secondary	gallons													0
Control Area	Pump House #4	Primary	gallons	118,700	297,450	297,450	198,300	290,350	390,350	231,200	130,450	178,400	200,100	185,600	195,620	2,713,970
		Secondary	gallons	0	0	0	0	400	400	0	0	0	0	0	0	800
	Monthly Total		gallons	287,200	521,200	519,600	336,500	444,700	545,100	380,000	292,050	382,350	414,200	406,950	410,760	4,940,610

Note:

This table is based on site records for the King George County Landfill and Recycling Center showing the amount of leachate collected in the primary and secondary leachate collection system. These records were provided by the site manager (Howard Burns).

The test area is represented by Pump House #3 and the control area is represented by Pump Houses #1, 2, and 4.

The flowmeter in Pump House #1 malfunctioned and was replaced in June 2003

**TABLE 6**  
**SUMMARY OF LEACHATE QUANTITY DATA**  
 (continued)

				2004												
				Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Annual Total
Control Area	Pump House #1	Primary	gallons	84,360	68,770	95,760	59,880	72,420	109,690							490,880
		Secondary	gallons													0
Control Area	Pump House #2	Primary	gallons	139,750	135,090	136,710	103,290	143,490	132,450							790,780
		Secondary	gallons													0
Test Area	Pump House #3	Primary	gallons	91,110	87,060	82,210	67,950	95,460	96,140							519,930
		Secondary	gallons													0
Control Area	Pump House #4	Primary	gallons	365,740	367,610	362,680	400,820	330,730	440,690							2,268,270
		Secondary	gallons													0
	Monthly Total		gallons	680,960	658,530	677,360	631,940	642,100	778,970	0	0	0	0	0		4,069,860

Note:

This table is based on site records for the King George County Landfill and Recycling Center showing the amount of leachate collected in the primary and secondary leachate collection system. These records were provided by the site manager (Dean Lyle).

The test area is represented by Pump House #3 and the control area is represented by Pump Houses #1, 2, and 4.

**TABLE 7  
LIQUID APPLICATION SUMMARY  
Project XL  
King George County Landfill and Recycling Center  
King George County, Virginia**

Date	Liquid Applied by trench (gallons)							Monthly Summary by trench						
	1	2	3	4	5	6	Cumulative Total	1	2	3	4	5	6	Monthly Total
11/1/2002	27,971	0	5,990	0	0	0	33,962							
11/2/2002	29,017	7,357	0	0	0	0	70,336							
11/3/2002	0	0	0	0	0	0	70,336							
11/4/2002	40,175	0	0	0	0	0	110,511							
11/5/2002	20,871	0	0	0	0	0	131,381							
11/6/2002	0	0	0	0	0	0	131,381							
11/7/2002	0	0	0	0	0	0	131,381							
11/8/2002	39,108	0	0	0	0	0	170,489							
11/9/2002	0	0	35,540	0	0	0	206,029							
11/10/2002	0	0	0	0	0	0	206,029							
11/11/2002	30,676	5,835	0	0	0	0	242,540							
11/12/2002	0	0	34,137	0	0	0	276,676							
11/13/2002	0	0	31,974	0	0	0	308,650							
11/14/2002	0	0	0	0	0	0	308,650							
11/15/2002	7,561	0	20,904	0	0	0	337,115							
11/16/2002	0	0	0	0	0	0	337,115							
11/17/2002	0	0	0	0	0	0	337,115							
11/18/2002	5,122	0	0	0	0	0	342,237							
11/19/2002	4,983	0	0	0	0	0	347,221							
11/20/2002	0	0	0	0	0	0	347,221							
11/21/2002	0	0	0	0	0	0	347,221							
11/22/2002	0	0	0	0	0	0	347,221							
11/23/2002	0	0	0	0	0	0	347,221							
11/24/2002	0	0	0	0	0	0	347,221							
11/25/2002	0	0	0	0	0	0	347,221							
11/26/2002	0	0	0	35,743	0	0	382,964							
11/27/2002	0	0	0	36,506	0	0	419,470							
11/28/2002	0	0	0	0	0	0	419,470							
11/29/2002	0	0	0	38,811	0	0	458,281							
11/30/2002	0	0	0	23,542	0	0	481,823	205,484	13,192	128,544	134,602	0	0	481,823
12/1/2002	0	0	0	0	0	0	481,823							
12/2/2002	0	0	0	32,799	0	0	514,621							
12/3/2002	26,297	0	0	12,542	0	0	553,460							
12/4/2002	19,878	0	13,444	0	0	0	586,782							
12/5/2002	0	0	0	0	0	0	586,782							
12/6/2002	0	0	0	0	0	0	586,782							
12/7/2002	0	0	0	0	0	0	586,782							
12/8/2002	0	0	0	0	0	0	586,782							
12/9/2002	5,592	0	0	22,930	0	0	615,305							
12/10/2002	0	0	0	31,796	0	0	647,101							
12/11/2002	0	0	0	0	0	0	647,101							
12/12/2002	0	0	0	24,137	0	0	671,237							
12/13/2002	0	0	0	0	39,458	0	710,695							
12/14/2002	0	0	0	0	23,177	0	733,873							
12/15/2002	0	0	0	0	0	0	733,873							
12/16/2002	0	0	0	0	31,103	0	764,976							
12/17/2002	0	0	0	0	37,427	0	802,403							
12/18/2002	0	0	0	0	39,616	0	842,019							
12/19/2002	0	0	0	29,137	38,631	0	909,787							
12/20/2002	0	0	0	0	18,261	0	928,048							
12/21/2002	0	0	0	13,062	48,861	0	989,971							
12/22/2002	0	0	0	0	0	0	989,971							
12/23/2002	6,012	0	0	11,801	56,755	0	1,064,540							
12/24/2002	0	0	0	0	18,540	0	1,083,079							
12/25/2002	0	0	0	0	0	0	1,083,079							
12/26/2002	0	0	0	0	36,631	0	1,119,710							
12/27/2002	0	0	0	0	12,343	0	1,132,053							
12/28/2002	0	0	0	0	0	0	1,132,053							
12/29/2002	0	0	0	0	0	0	1,132,053							

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**TABLE 7  
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King George County, Virginia**

Date	Liquid Applied by trench (gallons)							Monthly Summary by trench						
	1	2	3	4	5	6	Cumulative Total	1	2	3	4	5	6	Monthly Total
12/30/2002	0	0	0	0	0	0	1,132,053							
12/31/2002	0	0	0	0	0	0	1,132,053	57,779	0	13,444	178,204	400,803	0	650,230
1/1/2003	0	0	0	0	0	0	1,132,053							
1/2/2003	0	0	0	0	0	0	1,132,053							
1/3/2003	0	0	0	0	0	0	1,132,053							
1/4/2003	0	0	0	0	12,875	0	1,144,928							
1/5/2003	0	0	0	0	0	0	1,144,928							
1/6/2003	0	0	0	0	0	0	1,144,928							
1/7/2003	0	0	0	0	0	0	1,144,928							
1/8/2003	0	0	0	0	0	0	1,144,928							
1/9/2003	0	0	0	0	0	0	1,144,928							
1/10/2003	0	0	0	0	0	0	1,144,928							
1/11/2003	0	0	0	0	0	0	1,144,928							
1/12/2003	0	0	0	0	0	0	1,144,928							
1/13/2003	0	0	0	0	0	0	1,144,928							
1/14/2003	0	0	0	0	0	0	1,144,928							
1/15/2003	0	0	0	0	0	0	1,144,928							
1/16/2003	0	0	0	0	0	0	1,144,928							
1/17/2003	0	0	0	0	0	0	1,144,928							
1/18/2003	0	0	0	0	0	0	1,144,928							
1/19/2003	0	0	0	0	0	0	1,144,928							
1/20/2003	0	0	0	0	0	0	1,144,928							
1/21/2003	0	0	0	0	0	84,945	1,229,873							
1/22/2003	0	0	0	0	0	0	1,229,873							
1/23/2003	0	0	0	0	0	0	1,229,873							
1/24/2003	0	0	0	0	0	84,727	1,314,600							
1/25/2003	0	0	0	0	0	99,859	1,414,458							
1/26/2003	0	0	0	0	0	82,669	1,497,127							
1/27/2003	0	0	0	0	0	0	1,497,127							
1/28/2003	0	0	0	0	0	0	1,497,127							
1/29/2003	0	0	0	0	0	0	1,497,127							
1/30/2003	0	0	0	0	0	0	1,497,127							
1/31/2003	0	0	0	0	0	0	1,497,127	0	0	0	0	12,875	352,199	365,074
2/1/2003	0	0	0	0	0	0	1,497,127							
2/2/2003	0	0	0	0	0	0	1,497,127							
2/3/2003	0	0	0	0	0	0	1,497,127							
2/4/2003	0	0	0	0	0	0	1,497,127							
2/5/2003	0	0	0	0	0	0	1,497,127							
2/6/2003	0	0	0	0	0	0	1,497,127							
2/7/2003	0	0	0	0	0	0	1,497,127							
2/8/2003	0	0	0	0	0	0	1,497,127							
2/9/2003	0	0	0	0	0	0	1,497,127							
2/10/2003	0	0	0	0	0	0	1,497,127							
2/11/2003	0	0	0	0	0	0	1,497,127							
2/12/2003	0	0	0	0	0	0	1,497,127							
2/13/2003	0	0	0	0	0	0	1,497,127							
2/14/2003	0	0	0	0	0	0	1,497,127							
2/15/2003	0	0	0	0	0	0	1,497,127							
2/16/2003	0	0	0	0	0	0	1,497,127							
2/17/2003	0	0	0	0	0	0	1,497,127							
2/18/2003	0	0	0	0	0	0	1,497,127							
2/19/2003	0	0	0	0	0	0	1,497,127							
2/20/2003	0	0	0	0	0	75,374	1,572,501							
2/21/2003	0	0	0	0	0	0	1,572,501							
2/22/2003	0	0	0	0	0	0	1,572,501							
2/23/2003	0	0	0	0	0	0	1,572,501							
2/24/2003	0	0	0	0	0	35,799	1,608,300							
2/25/2003	0	0	0	0	0	0	1,608,300							
2/26/2003	0	0	0	0	0	0	1,608,300							

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**TABLE 7  
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King George County, Virginia**

Date	Liquid Applied by trench (gallons)							Monthly Summary by trench						
	1	2	3	4	5	6	Cumulative Total	1	2	3	4	5	6	Monthly Total
2/27/2003	0	0	0	0	0	0	1,608,300							
2/28/2003	0	0	0	0	0	0	1,608,300	0	0	0	0	0	111,173	111,173
3/1/2003	28,297	0	7,477	0	0	29,194	1,673,269							
3/2/2003	0	0	0	0	0	0	1,673,269							
3/3/2003	0	0	22,096	0	0	77,170	1,772,535							
3/4/2003	28,724	29,947	29,058	7,576	0	0	1,867,839							
3/5/2003	29,952	0	0	29,556	0	0	1,927,348							
3/6/2003	0	0	0	0	0	0	1,927,348							
3/7/2003	0	0	0	0	0	0	1,927,348							
3/8/2003	0	0	0	0	0	0	1,927,348							
3/9/2003	0	0	0	0	0	0	1,927,348							
3/10/2003	0	58,153	0	0	0	0	1,985,501							
3/11/2003	0	0	0	51,444	0	0	2,036,945							
3/12/2003	0	0	0	59,568	0	0	2,096,513							
3/13/2003	21,477	0	0	29,995	0	0	2,147,985							
3/14/2003	0	0	0	0	0	0	2,147,985							
3/15/2003	0	0	0	0	0	0	2,147,985							
3/16/2003	0	0	0	0	0	0	2,147,985							
3/17/2003	0	0	0	0	0	0	2,147,985							
3/18/2003	0	0	0	0	0	0	2,147,985							
3/19/2003	0	0	0	0	0	0	2,147,985							
3/20/2003	0	0	0	0	0	0	2,147,985							
3/21/2003	0	0	0	0	0	0	2,147,985							
3/22/2003	0	0	0	0	0	0	2,147,985							
3/23/2003	0	0	0	0	0	0	2,147,985							
3/24/2003	0	0	0	0	0	0	2,147,985							
3/25/2003	0	0	0	0	0	0	2,147,985							
3/26/2003	0	0	0	0	0	0	2,147,985							
3/27/2003	0	0	0	0	0	0	2,147,985							
3/28/2003	0	0	0	0	0	0	2,147,985							
3/29/2003	0	0	0	0	0	0	2,147,985							
3/30/2003	0	0	0	0	0	0	2,147,985							
3/31/2003	0	0	0	0	0	0	2,147,985	108,451	88,101	58,631	178,139	0	106,365	539,686
4/1/2003	0	0	0	0	0	0	2,147,985							
4/2/2003	0	0	0	0	0	0	2,147,985							
4/3/2003	0	0	0	0	0	0	2,147,985							
4/4/2003	0	0	0	0	0	0	2,147,985							
4/5/2003	0	0	0	0	0	0	2,147,985							
4/6/2003	0	0	0	0	0	0	2,147,985							
4/7/2003	0	0	0	0	0	0	2,147,985							
4/8/2003	0	0	0	0	0	0	2,147,985							
4/9/2003	0	0	0	0	0	0	2,147,985							
4/10/2003	0	0	0	0	0	0	2,147,985							
4/11/2003	0	0	0	0	0	8,026	2,156,012							
4/12/2003	0	0	0	0	0	0	2,156,012							
4/13/2003	0	0	0	0	0	0	2,156,012							
4/14/2003	0	0	0	0	0	0	2,156,012							
4/15/2003	0	0	0	0	0	0	2,156,012							
4/16/2003	0	0	0	0	0	0	2,156,012							
4/17/2003	0	0	0	0	0	0	2,156,012							
4/18/2003	0	0	0	0	0	0	2,156,012							
4/19/2003	0	0	8,312	0	0	0	2,164,324							
4/20/2003	0	0	0	0	0	0	2,164,324							
4/21/2003	0	0	0	0	0	0	2,164,324							
4/22/2003	0	0	0	0	0	0	2,164,324							
4/23/2003	0	0	0	0	0	0	2,164,324							
4/24/2003	0	0	0	0	0	0	2,164,324							
4/25/2003	0	0	0	0	0	0	2,164,324							
4/26/2003	0	0	0	2,753	0	0	2,167,077							

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**TABLE 7  
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King George County Landfill and Recycling Center  
King George County, Virginia**

Date	Liquid Applied by trench (gallons)							Monthly Summary by trench						
	1	2	3	4	5	6	Cumulative Total	1	2	3	4	5	6	Monthly Total
4/27/2003	0	0	0	0	0	0	2,167,077							
4/28/2003	0	0	0	0	0	0	2,167,077							
4/29/2003	0	0	0	0	0	0	2,167,077							
4/30/2003	0	0	0	0	0	0	2,167,077	0	0	8,312	2,753	0	8,026	19,091
5/1/2003	0	0	0	0	0	0	2,167,077							
5/2/2003	0	0	0	0	0	0	2,167,077							
5/3/2003	0	0	0	0	0	0	2,167,077							
5/4/2003	0	0	0	0	0	0	2,167,077							
5/5/2003	0	0	0	0	0	0	2,167,077							
5/6/2003	0	0	0	0	0	0	2,167,077							
5/7/2003	0	0	0	0	0	0	2,167,077							
5/8/2003	0	0	0	0	0	0	2,167,077							
5/9/2003	0	0	0	0	0	0	2,167,077							
5/10/2003	0	0	0	0	0	0	2,167,077							
5/11/2003	0	0	0	0	0	0	2,167,077							
5/12/2003	0	0	0	0	0	35,882	2,202,959							
5/13/2003	30,679	0	0	0	0	0	2,233,638							
5/14/2003	0	14,787	0	13,050	0	0	2,261,475							
5/15/2003	0	0	0	6,842	22,372	0	2,290,688							
5/16/2003	0	0	0	0	0	52,966	2,343,655							
5/17/2003	0	0	0	0	0	0	2,343,655							
5/18/2003	0	0	0	0	0	0	2,343,655							
5/19/2003	7,475	30,309	0	0	0	0	2,381,439							
5/20/2003	0	7,607	0	0	29,746	0	2,418,791							
5/21/2003	0	0	0	0	7,492	29,398	2,455,681							
5/22/2003	0	0	0	29,463	0	7,369	2,492,513							
5/23/2003	0	29,187	0	7,971	0	0	2,529,671							
5/24/2003	0	0	0	0	0	0	2,529,671							
5/25/2003	0	0	0	0	0	0	2,529,671							
5/26/2003	0	7,106	0	0	0	30,072	2,566,849							
5/27/2003	0	23,012	0	0	0	0	2,589,861							
5/28/2003	0	13,540	0	0	24,213	0	2,627,614							
5/29/2003	0	0	0	32,146	7,760	0	2,667,520							
5/30/2003	0	0	0	7,225	0	31,175	2,705,921							
5/31/2003	0	11,616	11,576	22,933	0	11,192	2,763,237	38,153	137,163	11,576	119,631	91,583	198,055	596,161
6/1/2003	0	0	0	0	0	0	2,763,237							
6/2/2003	0	0	0	0	0	0	2,763,237							
6/3/2003	0	0	0	0	0	0	2,763,237							
6/4/2003	0	0	0	0	0	0	2,763,237							
6/5/2003	0	0	0	0	0	0	2,763,237							
6/6/2003	0	0	0	0	0	0	2,763,237							
6/7/2003	0	0	0	0	0	0	2,763,237							
6/8/2003	0	0	0	0	0	0	2,763,237							
6/9/2003	0	0	0	0	0	0	2,763,237							
6/10/2003	0	0	0	0	0	0	2,763,237							
6/11/2003	0	0	0	0	0	0	2,763,237							
6/12/2003	0	0	0	0	0	0	2,763,237							
6/13/2003	0	0	0	0	0	0	2,763,237							
6/14/2003	0	0	0	0	0	0	2,763,237							
6/15/2003	0	0	0	0	0	0	2,763,237							
6/16/2003	0	0	0	0	0	0	2,763,237							
6/17/2003	0	0	0	0	0	0	2,763,237							
6/18/2003	0	0	0	0	0	0	2,763,237							
6/19/2003	0	0	0	0	0	0	2,763,237							
6/20/2003	0	0	0	0	0	0	2,763,237							
6/21/2003	0	0	0	0	0	0	2,763,237							
6/22/2003	0	0	0	0	0	0	2,763,237							
6/23/2003	0	0	0	0	0	0	2,763,237							
6/24/2003	0	0	0	0	0	0	2,763,237							

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**TABLE 7  
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Date	Liquid Applied by trench (gallons)							Monthly Summary by trench						
	1	2	3	4	5	6	Cumulative Total	1	2	3	4	5	6	Monthly Total
6/25/2003	0	0	0	0	0	0	2,763,237							
6/26/2003	0	0	0	0	0	0	2,763,237							
6/27/2003	0	0	0	0	0	0	2,763,237							
6/28/2003	0	0	0	0	0	0	2,763,237							
6/29/2003	0	0	0	0	0	0	2,763,237							
6/30/2003	0	0	0	0	0	0	2,763,237	0	0	0	0	0	0	0
7/1/2003	0	0	0	0	0	0	2,763,237							
7/2/2003	0	0	0	0	0	0	2,763,237							
7/3/2003	0	0	0	0	0	0	2,763,237							
7/4/2003	0	0	0	0	0	0	2,763,237							
7/5/2003	0	0	0	0	0	0	2,763,237							
7/6/2003	0	0	0	0	0	0	2,763,237							
7/7/2003	0	0	0	0	0	0	2,763,237							
7/8/2003	0	0	0	0	0	0	2,763,237							
7/9/2003	0	0	0	0	0	0	2,763,237							
7/10/2003	0	0	0	0	0	0	2,763,237							
7/11/2003	0	0	0	0	0	0	2,763,237							
7/12/2003	0	0	0	0	0	0	2,763,237							
7/13/2003	0	0	0	0	0	0	2,763,237							
7/14/2003	0	0	0	0	0	0	2,763,237							
7/15/2003	0	0	0	0	0	0	2,763,237							
7/16/2003	0	0	0	0	0	0	2,763,237							
7/17/2003	0	0	0	0	0	0	2,763,237							
7/18/2003	0	0	0	0	0	0	2,763,237							
7/19/2003	0	0	0	0	0	0	2,763,237							
7/20/2003	0	0	0	0	0	0	2,763,237							
7/21/2003	0	0	0	0	0	0	2,763,237							
7/22/2003	0	0	0	0	0	0	2,763,237							
7/23/2003	0	0	0	0	0	0	2,763,237							
7/24/2003	0	0	0	0	0	0	2,763,237							
7/25/2003	0	0	0	0	0	0	2,763,237							
7/26/2003	0	0	0	0	0	0	2,763,237							
7/27/2003	0	0	0	0	0	0	2,763,237							
7/28/2003	0	0	0	0	0	0	2,763,237							
7/29/2003	0	0	0	0	0	0	2,763,237							
7/30/2003	0	0	0	0	0	0	2,763,237							
7/31/2003	0	0	0	0	0	0	2,763,237	0	0	0	0	0	0	0
8/1/2003	0	0	0	0	0	0	2,763,237							
8/2/2003	0	0	0	0	0	0	2,763,237							
8/3/2003	0	0	0	0	0	0	2,763,237							
8/4/2003	0	0	0	0	0	0	2,763,237							
8/5/2003	0	0	0	0	0	0	2,763,237							
8/6/2003	0	0	0	0	0	0	2,763,237							
8/7/2003	0	0	0	0	0	0	2,763,237							
8/8/2003	0	0	0	0	0	0	2,763,237							
8/9/2003	0	0	0	0	0	0	2,763,237							
8/10/2003	0	0	0	0	0	0	2,763,237							
8/11/2003	0	0	0	0	0	0	2,763,237							
8/12/2003	0	0	0	0	0	0	2,763,237							
8/13/2003	0	0	0	0	0	0	2,763,237							
8/14/2003	0	0	0	0	0	0	2,763,237							
8/15/2003	0	0	0	0	0	0	2,763,237							
8/16/2003	0	0	0	0	0	0	2,763,237							
8/17/2003	0	0	0	0	0	0	2,763,237							
8/18/2003	0	0	0	0	0	0	2,763,237							
8/19/2003	0	0	0	0	0	0	2,763,237							
8/20/2003	0	0	0	0	0	0	2,763,237							
8/21/2003	0	0	0	0	0	0	2,763,237							
8/22/2003	0	0	0	0	0	0	2,763,237							

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**TABLE 7  
LIQUID APPLICATION SUMMARY - continued  
Project XL  
King George County Landfill and Recycling Center  
King George County, Virginia**

Date	Liquid Applied by trench (gallons)							Monthly Summary by trench						
	1	2	3	4	5	6	Cumulative Total	1	2	3	4	5	6	Monthly Total
8/23/2003	0	0	0	0	0	0	2,763,237							
8/24/2003	0	0	0	0	0	0	2,763,237							
8/25/2003	0	0	0	0	0	0	2,763,237							
8/26/2003	0	0	0	0	0	0	2,763,237							
8/27/2003	0	0	0	0	0	0	2,763,237							
8/28/2003	0	0	0	0	0	0	2,763,237							
8/29/2003	0	0	0	0	0	0	2,763,237							
8/30/2003	0	0	0	0	0	0	2,763,237							
8/31/2003	0	0	0	0	0	0	2,763,237	0	0	0	0	0	0	0
9/1/2003	0	0	0	0	0	0	2,763,237							
9/2/2003	0	0	0	0	0	0	2,763,237							
9/3/2003	0	0	0	0	0	0	2,763,237							
9/4/2003	0	0	0	0	0	0	2,763,237							
9/5/2003	0	0	0	0	0	0	2,763,237							
9/6/2003	0	0	0	0	0	0	2,763,237							
9/7/2003	0	0	0	0	0	0	2,763,237							
9/8/2003	0	0	0	0	0	0	2,763,237							
9/9/2003	0	0	0	0	0	0	2,763,237							
9/10/2003	0	0	0	0	0	0	2,763,237							
9/11/2003	0	0	0	0	0	0	2,763,237							
9/12/2003	0	0	0	0	0	0	2,763,237							
9/13/2003	0	0	0	0	0	0	2,763,237							
9/14/2003	0	0	0	0	0	0	2,763,237							
9/15/2003	0	0	0	0	0	0	2,763,237							
9/16/2003	0	0	0	0	0	0	2,763,237							
9/17/2003	0	0	0	0	0	0	2,763,237							
9/18/2003	0	0	0	0	0	0	2,763,237							
9/19/2003	0	0	0	0	0	31693	2,794,930							
9/20/2003	0	0	0	0	0	25201	2,820,131							
9/21/2003	0	0	0	0	0	13672	2,833,803							
9/22/2003	0	1794	0	0	0	0	2,835,597							
9/23/2003	0	0	0	0	0	15062	2,850,659							
9/24/2003	0	0	0	0	0	0	2,850,659							
9/25/2003	0	0	0	0	0	0	2,850,659							
9/26/2003	0	0	0	0	0	0	2,850,659							
9/27/2003	0	0	0	0	0	0	2,850,659							
9/28/2003	0	0	0	0	0	0	2,850,659							
9/29/2003	0	0	0	0	0	0	2,850,659							
9/30/2003	0	0	0	0	0	0	2,850,659	0	1794	0	0	0	85628	87422
10/1/2003	0	0	0	0	0	0	2,850,659							
10/2/2003	0	0	0	0	0	0	2,850,659							
10/3/2003	0	0	0	0	0	0	2,850,659							
10/4/2003	0	0	0	0	0	0	2,850,659							
10/5/2003	0	0	0	0	0	0	2,850,659							
10/6/2003	0	0	0	0	0	0	2,850,659							
10/7/2003	0	0	0	0	0	0	2,850,659							
10/8/2003	0	0	0	0	0	0	2,850,659							
10/9/2003	0	0	0	0	0	0	2,850,659							
10/10/2003	0	0	0	0	0	0	2,850,659							
10/11/2003	0	0	0	0	0	0	2,850,659							
10/12/2003	0	0	0	0	0	0	2,850,659							
10/13/2003	0	0	0	0	0	0	2,850,659							
10/14/2003	0	0	0	0	0	0	2,850,659							
10/15/2003	0	0	0	0	0	0	2,850,659							
10/16/2003	0	0	0	0	0	0	2,850,659							
10/17/2003	0	0	0	0	0	6515	2,857,174							
10/18/2003	0	0	0	0	0	0	2,857,174							
10/19/2003	0	0	0	0	0	0	2,857,174							
10/20/2003	0	0	0	0	0	0	2,857,174							

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**TABLE 7  
LIQUID APPLICATION SUMMARY - continued  
Project XL  
King George County Landfill and Recycling Center  
King George County, Virginia**

Date	Liquid Applied by trench (gallons)							Monthly Summary by trench						
	1	2	3	4	5	6	Cumulative Total	1	2	3	4	5	6	Monthly Total
10/21/2003	0	0	0	0	0	0	2,857,174							
10/22/2003	0	0	0	0	0	0	2,857,174							
10/23/2003	0	0	0	0	0	0	2,857,174							
10/24/2003	0	0	0	0	0	0	2,857,174							
10/25/2003	0	0	0	0	0	0	2,857,174							
10/26/2003	0	0	0	0	0	0	2,857,174							
10/27/2003	0	0	0	0	0	0	2,857,174							
10/28/2003	0	0	0	0	0	0	2,857,174							
10/29/2003	0	0	0	0	0	0	2,857,174							
10/30/2003	0	0	0	0	0	0	2,857,174							
10/31/2003	0	0	0	0	0	0	2,857,174	0	0	0	0	0	6515	6515
11/1/2003	0	0	0	0	0	0	2,857,174							
11/2/2003	0	0	0	0	0	0	2,857,174							
11/3/2003	0	0	0	0	0	0	2,857,174							
11/4/2003	0	0	0	0	0	0	2,857,174							
11/5/2003	0	0	0	0	0	0	2,857,174							
11/6/2003	0	0	0	0	0	0	2,857,174							
11/7/2003	0	0	0	0	0	0	2,857,174							
11/8/2003	0	0	0	0	0	0	2,857,174							
11/9/2003	0	0	0	0	0	0	2,857,174							
11/10/2003	0	0	0	0	0	0	2,857,174							
11/11/2003	0	0	0	0	0	0	2,857,174							
11/12/2003	0	0	0	0	0	0	2,857,174							
11/13/2003	0	0	0	0	0	0	2,857,174							
11/14/2003	0	0	0	0	0	0	2,857,174							
11/15/2003	0	0	0	0	0	0	2,857,174							
11/16/2003	0	0	0	0	0	0	2,857,174							
11/17/2003	0	0	0	0	0	0	2,857,174							
11/18/2003	0	0	0	0	0	0	2,857,174							
11/19/2003	0	0	0	0	0	0	2,857,174							
11/20/2003	0	0	0	0	0	0	2,857,174							
11/21/2003	0	0	0	0	0	0	2,857,174							
11/22/2003	0	0	0	0	0	0	2,857,174							
11/23/2003	0	0	0	0	0	0	2,857,174							
11/24/2003	0	0	0	0	0	0	2,857,174							
11/25/2003	0	0	0	0	0	0	2,857,174							
11/26/2003	0	0	0	0	0	0	2,857,174							
11/27/2003	0	0	0	0	0	0	2,857,174							
11/28/2003	0	0	0	0	0	0	2,857,174							
11/29/2003	0	0	0	0	0	0	2,857,174							
11/30/2003	0	0	0	0	0	0	2,857,174	0	0	0	0	0	0	0
12/1/2003	0	0	0	0	0	0	2,857,174							
12/2/2003	0	0	0	0	0	0	2,857,174							
12/3/2003	0	0	0	0	0	0	2,857,174							
12/4/2003	0	0	0	0	0	0	2,857,174							
12/5/2003	0	0	0	0	0	0	2,857,174							
12/6/2003	0	0	0	0	0	0	2,857,174							
12/7/2003	0	0	0	0	0	0	2,857,174							
12/8/2003	0	0	0	0	0	0	2,857,174							
12/9/2003	0	0	0	0	0	0	2,857,174							
12/10/2003	0	0	0	0	0	0	2,857,174							
12/11/2003	0	0	0	0	0	0	2,857,174							
12/12/2003	0	0	0	0	0	0	2,857,174							
12/13/2003	0	0	0	0	0	0	2,857,174							
12/14/2003	0	0	0	0	0	0	2,857,174							
12/15/2003	0	0	0	0	0	0	2,857,174							
12/16/2003	0	0	0	0	0	0	2,857,174							
12/17/2003	0	0	0	0	0	0	2,857,174							
12/18/2003	0	0	0	0	0	0	2,857,174							

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**TABLE 7  
LIQUID APPLICATION SUMMARY - continued  
Project XL  
King George County Landfill and Recycling Center  
King George County, Virginia**

Date	Liquid Applied by trench (gallons)							Monthly Summary by trench						
	1	2	3	4	5	6	Cumulative Total	1	2	3	4	5	6	Monthly Total
12/19/2003	0	0	0	0	0	0	2,857,174							
12/20/2003	0	0	0	0	0	0	2,857,174							
12/21/2003	0	0	0	0	0	0	2,857,174							
12/22/2003	0	0	0	0	0	0	2,857,174							
12/23/2003	0	0	0	0	0	0	2,857,174							
12/24/2003	0	0	0	0	0	0	2,857,174							
12/25/2003	0	0	0	0	0	0	2,857,174							
12/26/2003	0	0	0	0	0	0	2,857,174							
12/27/2003	0	0	0	0	0	0	2,857,174							
12/28/2003	0	0	0	0	0	0	2,857,174							
12/29/2003	0	0	0	0	0	0	2,857,174							
12/30/2003	0	0	0	0	0	0	2,857,174							
12/31/2003	0	0	0	0	0	0	2,857,174	0	0	0	0	0	0	0
1/1/2004	0	0	0	0	0	0	2,857,174							
1/2/2004	0	0	0	0	0	0	2,857,174							
1/3/2004	0	0	0	0	0	0	2,857,174							
1/4/2004	0	0	0	0	0	0	2,857,174							
1/5/2004	0	0	0	0	0	0	2,857,174							
1/6/2004	0	0	0	0	0	0	2,857,174							
1/7/2004	0	0	0	0	0	0	2,857,174							
1/8/2004	0	0	0	0	0	0	2,857,174							
1/9/2004	0	0	0	0	0	0	2,857,174							
1/10/2004	0	0	0	0	0	0	2,857,174							
1/11/2004	0	0	0	0	0	0	2,857,174							
1/12/2004	0	0	0	0	0	0	2,857,174							
1/13/2004	0	0	0	0	0	0	2,857,174							
1/14/2004	0	0	0	0	0	0	2,857,174							
1/15/2004	0	0	0	0	0	0	2,857,174							
1/16/2004	0	0	0	0	0	0	2,857,174							
1/17/2004	0	0	0	0	0	0	2,857,174							
1/18/2004	0	0	0	0	0	0	2,857,174							
1/19/2004	0	0	0	0	0	0	2,857,174							
1/20/2004	0	0	0	0	0	0	2,857,174							
1/21/2004	0	0	0	0	0	0	2,857,174							
1/22/2004	0	0	0	0	0	0	2,857,174							
1/23/2004	0	0	0	0	0	0	2,857,174							
1/24/2004	0	0	0	0	0	0	2,857,174							
1/25/2004	0	0	0	0	0	0	2,857,174							
1/26/2004	0	0	0	0	0	0	2,857,174							
1/27/2004	0	0	0	0	0	0	2,857,174							
1/28/2004	0	0	0	0	0	0	2,857,174							
1/29/2004	0	0	0	0	0	0	2,857,174							
1/30/2004	0	0	0	0	0	0	2,857,174							
1/31/2004	0	0	0	0	0	0	2,857,174	0	0	0	0	0	0	0
2/1/2004	0	0	0	0	0	0	2,857,174							
2/2/2004	0	0	0	0	0	0	2,857,174							
2/3/2004	0	0	0	0	0	0	2,857,174							
2/4/2004	0	0	0	0	0	0	2,857,174							
2/5/2004	0	0	0	0	0	0	2,857,174							
2/6/2004	0	0	0	0	0	0	2,857,174							
2/7/2004	0	0	0	0	0	0	2,857,174							
2/8/2004	0	0	0	0	0	0	2,857,174							
2/9/2004	0	0	0	0	0	0	2,857,174							
2/10/2004	0	0	0	0	0	0	2,857,174							
2/11/2004	0	0	0	0	0	0	2,857,174							
2/12/2004	0	0	0	0	0	0	2,857,174							
2/13/2004	0	0	0	0	0	0	2,857,174							
2/14/2004	0	0	0	0	0	0	2,857,174							
2/15/2004	0	0	0	0	0	0	2,857,174							

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**TABLE 7  
LIQUID APPLICATION SUMMARY - continued  
Project XL  
King George County Landfill and Recycling Center  
King George County, Virginia**

Date	Liquid Applied by trench (gallons)							Monthly Summary by trench						
	1	2	3	4	5	6	Cumulative Total	1	2	3	4	5	6	Monthly Total
2/16/2004	0	0	0	0	0	0	2,857,174							
2/17/2004	0	0	0	0	0	0	2,857,174							
2/18/2004	0	0	0	0	0	0	2,857,174							
2/19/2004	0	0	0	0	0	0	2,857,174							
2/20/2004	0	0	0	0	0	0	2,857,174							
2/21/2004	0	0	0	0	0	0	2,857,174							
2/22/2004	0	0	0	0	0	0	2,857,174							
2/23/2004	0	0	0	0	0	0	2,857,174							
2/24/2004	0	0	0	0	0	0	2,857,174							
2/25/2004	0	0	0	0	0	0	2,857,174							
2/26/2004	0	0	0	0	0	0	2,857,174							
2/27/2004	0	0	0	0	0	0	2,857,174							
2/28/2004	0	0	0	0	0	0	2,857,174							
2/29/2004	0	0	0	0	0	0	2,857,174	0	0	0	0	0	0	0
3/1/2004	0	0	0	0	0	0	2,857,174							
3/2/2004	0	0	0	0	0	0	2,857,174							
3/3/2004	0	0	0	0	0	0	2,857,174							
3/4/2004	0	0	0	0	0	0	2,857,174							
3/5/2004	0	0	0	0	0	0	2,857,174							
3/6/2004	0	0	0	0	0	0	2,857,174							
3/7/2004	0	0	0	0	0	0	2,857,174							
3/8/2004	0	0	0	0	0	0	2,857,174							
3/9/2004	0	0	0	0	0	0	2,857,174							
3/10/2004	0	0	0	0	0	0	2,857,174							
3/11/2004	0	0	0	0	0	0	2,857,174							
3/12/2004	0	0	0	0	0	0	2,857,174							
3/13/2004	0	0	0	0	0	0	2,857,174							
3/14/2004	0	0	0	0	0	0	2,857,174							
3/15/2004	0	0	0	0	0	0	2,857,174							
3/16/2004	0	0	0	0	0	0	2,857,174							
3/17/2004	0	0	0	0	0	0	2,857,174							
3/18/2004	0	0	0	0	0	0	2,857,174							
3/19/2004	0	0	0	0	0	0	2,857,174							
3/20/2004	0	0	0	0	0	0	2,857,174							
3/21/2004	0	0	0	0	0	0	2,857,174							
3/22/2004	0	0	0	0	0	0	2,857,174							
3/23/2004	0	0	0	0	0	0	2,857,174							
3/24/2004	0	0	0	0	0	0	2,857,174							
3/25/2004	0	0	0	0	0	0	2,857,174							
3/26/2004	0	0	0	0	0	0	2,857,174							
3/27/2004	0	0	0	0	0	0	2,857,174							
3/28/2004	0	0	0	0	0	0	2,857,174							
3/29/2004	0	0	0	0	0	0	2,857,174							
3/30/2004	0	0	0	0	0	0	2,857,174							
3/31/2004	0	0	0	0	0	0	2,857,174	0	0	0	0	0	0	0
4/1/2004	0	0	0	0	0	0	2,857,174							
4/2/2004	0	0	0	0	0	0	2,857,174							
4/3/2004	0	0	0	0	0	0	2,857,174							
4/4/2004	0	0	0	0	0	0	2,857,174							
4/5/2004	0	0	0	0	0	0	2,857,174							
4/6/2004	0	0	0	0	0	0	2,857,174							
4/7/2004	0	0	0	0	0	0	2,857,174							
4/8/2004	0	0	0	0	0	0	2,857,174							
4/9/2004	0	0	0	0	0	0	2,857,174							
4/10/2004	0	0	0	0	0	0	2,857,174							
4/11/2004	0	0	0	0	0	0	2,857,174							
4/12/2004	0	0	0	0	0	0	2,857,174							
4/13/2004	0	0	0	0	0	0	2,857,174							
4/14/2004	0	0	0	0	0	0	2,857,174							

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**TABLE 7  
LIQUID APPLICATION SUMMARY - continued  
Project XL  
King George County Landfill and Recycling Center  
King George County, Virginia**

Date	Liquid Applied by trench (gallons)							Monthly Summary by trench						
	1	2	3	4	5	6	Cumulative Total	1	2	3	4	5	6	Monthly Total
4/15/2004	0	0	0	0	0	0	2,857,174							
4/16/2004	0	0	0	0	0	0	2,857,174							
4/17/2004	0	0	0	0	0	0	2,857,174							
4/18/2004	0	0	0	0	0	0	2,857,174							
4/19/2004	0	0	0	0	0	0	2,857,174							
4/20/2004	0	0	0	0	0	0	2,857,174							
4/21/2004	0	0	0	0	0	0	2,857,174							
4/22/2004	0	0	0	0	0	0	2,857,174							
4/23/2004	0	0	0	0	0	0	2,857,174							
4/24/2004	0	0	0	0	0	0	2,857,174							
4/25/2004	0	0	0	0	0	0	2,857,174							
4/26/2004	0	0	0	0	0	0	2,857,174							
4/27/2004	0	0	0	0	0	0	2,857,174							
4/28/2004	0	0	0	0	0	0	2,857,174							
4/29/2004	0	0	0	0	0	0	2,857,174							
4/30/2004	0	0	0	0	0	0	2,857,174	0	0	0	0	0	0	0
5/1/2004	0	0	0	0	0	0	2,857,174							
5/2/2004	0	0	0	0	0	0	2,857,174							
5/3/2004	0	0	0	0	0	0	2,857,174							
5/4/2004	0	0	0	0	0	0	2,857,174							
5/5/2004	0	0	0	0	0	0	2,857,174							
5/6/2004	0	0	0	0	0	0	2,857,174							
5/7/2004	0	0	0	0	0	0	2,857,174							
5/8/2004	0	0	0	0	0	0	2,857,174							
5/9/2004	0	0	0	0	0	0	2,857,174							
5/10/2004	0	0	0	0	0	0	2,857,174							
5/11/2004	0	0	0	0	0	0	2,857,174							
5/12/2004	0	0	0	0	0	0	2,857,174							
5/13/2004	0	0	0	0	0	0	2,857,174							
5/14/2004	0	0	0	0	0	0	2,857,174							
5/15/2004	0	0	0	0	0	0	2,857,174							
5/16/2004	0	0	0	0	0	0	2,857,174							
5/17/2004	0	0	0	0	0	0	2,857,174							
5/18/2004	0	0	0	0	0	0	2,857,174							
5/19/2004	0	0	0	0	0	0	2,857,174							
5/20/2004	0	0	0	0	0	0	2,857,174							
5/21/2004	0	0	0	0	0	0	2,857,174							
5/22/2004	0	0	0	0	0	0	2,857,174							
5/23/2004	0	0	0	0	0	0	2,857,174							
5/24/2004	0	0	0	0	0	0	2,857,174							
5/25/2004	0	0	0	0	0	0	2,857,174							
5/26/2004	0	0	0	0	0	0	2,857,174							
5/27/2004	0	0	0	0	0	0	2,857,174							
5/28/2004	0	0	0	0	0	0	2,857,174							
5/29/2004	0	0	0	0	0	0	2,857,174							
5/30/2004	0	0	0	0	0	0	2,857,174							
5/31/2004	0	0	0	0	0	0	2,857,174	0	0	0	0	0	0	0
6/1/2004	0	0	0	0	0	0	2,857,174							
6/2/2004	0	0	0	0	0	0	2,857,174							
6/3/2004	0	0	0	0	0	0	2,857,174							
6/4/2004	0	0	0	0	0	0	2,857,174							
6/5/2004	0	0	0	0	0	0	2,857,174							
6/6/2004	0	0	0	0	0	0	2,857,174							
6/7/2004	0	0	0	0	0	0	2,857,174							
6/8/2004	0	0	0	0	0	0	2,857,174							
6/9/2004	0	0	0	0	0	0	2,857,174							
6/10/2004	0	0	0	10,500	2,790	0	2,870,464							
6/11/2004	0	0	0	0	0	0	2,870,464							
6/12/2004	0	0	0	0	0	0	2,870,464							

**US EPA ARCHIVE DOCUMENT**

**TABLE 7  
LIQUID APPLICATION SUMMARY - continued  
Project XL  
King George County Landfill and Recycling Center  
King George County, Virginia**

Date	Liquid Applied by trench (gallons)							Monthly Summary by trench						
	1	2	3	4	5	6	Cumulative Total	1	2	3	4	5	6	Monthly Total
6/13/2004	0	0	0	0	0	0	2,870,464							
6/14/2004	0	0	0	0	0	0	2,870,464							
6/15/2004	0	0	0	0	0	0	2,870,464							
6/16/2004	0	0	0	0	0	0	2,870,464							
6/17/2004	0	0	0	0	0	0	2,870,464							
6/18/2004	0	0	0	0	0	0	2,870,464							
6/19/2004	0	0	0	0	0	0	2,870,464							
6/20/2004	0	0	0	0	0	0	2,870,464							
6/21/2004	0	0	0	0	0	0	2,870,464							
6/22/2004	0	0	0	0	0	0	2,870,464							
6/23/2004	0	0	0	0	0	0	2,870,464							
6/24/2004	0	0	0	0	0	0	2,870,464							
6/25/2004	0	0	0	0	0	0	2,870,464							
6/26/2004	0	0	0	0	0	0	2,870,464							
6/27/2004	0	0	0	0	0	0	2,870,464							
6/28/2004	0	0	0	0	0	0	2,870,464							
6/29/2004	0	0	0	0	0	0	2,870,464							
6/30/2004	0	0	0	0	0	0	2,870,464	0	0	0	10500	2790	0	13290
7/1/2004	0	0	0	0	0	0	2,870,464							

Total per trench	381,897	240,250	214,515	623,828	508,051	867,961		Total Leachate Recirculated	2,870,464
Daily Average	628	395	353	1,026	836	1,428		Total Daily Average	4,721

All units are in gallons

US EPA ARCHIVE DOCUMENT

**TABLE 8**  
**SUMMARY OF LANDFILL SETTLEMENT DATA**  
**Project XL**  
**King George County Landfill and Recycling Center**  
**King George County, Virginia**

Point No.	Northing	Easting	Elev 1/9/2004	Elev 4/6/2004	Difference 1/9/2004 to 4/6/2004
Control Area					
2004	6,785,273.540	11,825,080.835	221.58	221.00	0.58
2005	6,785,281.902	11,825,180.470	218.85	218.09	0.76
2006	6,785,286.082	11,825,230.287	207.97	207.57	0.40
2007	6,785,386.598	11,825,231.963	211.46	211.09	0.37
2008	6,785,373.252	11,825,072.613	232.20	231.36	0.84
2017	6,785,464.512	11,824,964.606	236.04	234.66	1.38
2018	6,785,472.923	11,825,064.335	233.08	232.22	0.86
2019	6,785,481.240	11,825,163.909	210.84	210.42	0.43
2020	6,785,487.529	11,825,238.699	216.04	215.55	0.49
2021	6,785,587.234	11,825,230.410	236.25	235.30	0.95
2022	6,785,580.952	11,825,155.668	238.63	237.61	1.02
2033	6,785,663.938	11,824,948.007	241.22	240.21	1.01
2034	6,785,672.348	11,825,047.680	237.86	237.02	0.84
2035	6,785,680.711	11,825,147.352	213.96	213.67	0.29
2036	6,785,689.045	11,825,246.985	219.83	219.26	0.57
2037	6,785,788.719	11,825,238.636	217.10	216.32	0.78
2038	6,785,790.026	11,825,253.647	241.25	240.28	0.97
2039	6,785,780.391	11,825,139.023	244.23	243.42	0.81
2050	6,785,863.427	11,824,931.430	245.77	244.35	1.42
2051	6,785,871.714	11,825,031.054	243.86	243.02	0.84
2052	6,785,880.114	11,825,130.756	229.38	228.76	0.62
2053	6,785,888.458	11,825,230.378	219.14	218.46	0.69
2054	6,785,891.411	11,825,265.294	224.76	224.26	0.49
2055	6,785,991.104	11,825,256.952	220.79	220.62	0.17
2056	6,785,992.789	11,825,276.900	244.89	244.05	0.84
2057	6,785,979.834	11,825,122.448	247.07	246.09	0.98
2068	6,786,062.852	11,824,914.813	248.97	247.89	1.08
2069	6,786,071.068	11,825,014.403	246.57	245.76	0.81
2070	6,786,079.485	11,825,114.077	239.61	238.86	0.75
2071	6,786,087.793	11,825,213.694	223.66	223.10	0.56
2072	6,786,094.066	11,825,288.420	227.58	227.18	0.40
2073	6,786,193.636	11,825,280.010	226.46	226.04	0.42
2074	6,786,195.259	11,825,299.912		222.72	
2075	6,786,294.827	11,825,291.503		222.46	
2076	6,786,295.215	11,825,296.486		222.00	
2077	6,786,298.125	11,825,331.369			
Test Area					
2000	6,785,240.088	11,824,682.224	219.55	219.05	0.50
2001	6,785,248.456	11,824,781.930	218.02	217.52	0.50
2002	6,785,256.812	11,824,881.506	217.70	217.22	0.48

**TABLE 8**  
**SUMMARY OF LANDFILL SETTLEMENT DATA - continued**  
**Project XL**  
**King George County Landfill and Recycling Center**  
**King George County, Virginia**

Point No.	Northing	Easting	Elev 1/9/2004	Elev 4/6/2004	Difference 1/9/2004 to 4/6/2004
2003	6,785,265.180	11,824,981.217	218.93	218.44	0.49
2009	6,785,364.886	11,824,972.951	233.96	232.94	1.02
2010	6,785,356.487	11,824,873.240	232.79	231.77	1.02
2011	6,785,348.144	11,824,773.755	233.67	232.79	0.88
2012	6,785,348.134	11,824,773.630	235.08	233.83	1.25
2013	6,785,339.845	11,824,674.019	241.20	240.29	0.91
2014	6,785,439.424	11,824,665.653	240.08	238.90	1.18
2015	6,785,447.827	11,824,765.325	238.92	237.72	1.20
2016	6,785,456.211	11,824,865.005	237.33	236.16	1.18
2023	6,785,572.591	11,825,056.004	239.46	238.05	1.41
2024	6,785,564.236	11,824,956.388	241.10	240.01	1.09
2025	6,785,555.898	11,824,856.730	242.70	241.92	0.78
2026	6,785,547.534	11,824,757.074	242.10	241.08	1.01
2027	6,785,539.183	11,824,657.418	242.78	241.79	0.98
2028	6,785,537.109	11,824,632.498	244.34	243.28	1.06
2029	6,785,636.758	11,824,624.140	243.83	243.77	0.06
2030	6,785,638.817	11,824,649.053	244.85	244.07	0.79
2031	6,785,647.264	11,824,748.715	244.22	243.16	1.06
2032	6,785,655.574	11,824,848.362	242.59	241.60	0.99
2040	6,785,772.064	11,825,039.413	245.79	245.13	0.67
2041	6,785,763.606	11,824,939.696	246.72	245.96	0.76
2042	6,785,755.305	11,824,840.099	247.34	246.54	0.81
2043	6,785,746.963	11,824,740.458	245.98	245.34	0.65
2044	6,785,738.644	11,824,640.796	246.48	245.62	0.86
2045	6,785,734.462	11,824,590.978	247.57	246.18	1.38
2046	6,785,834.070	11,824,582.620	247.20	246.07	1.14
2047	6,785,838.299	11,824,632.437	246.41	246.41	0.00
2048	6,785,846.689	11,824,732.115	248.00	246.72	1.29
2049	6,785,854.908	11,824,831.718	247.67	246.72	0.95
2058	6,785,971.553	11,825,022.844	249.04	248.42	0.62
2059	6,785,963.148	11,824,923.161	248.91	248.05	0.86
2060	6,785,954.797	11,824,823.503	249.65	248.71	0.93
2061	6,785,946.396	11,824,723.855	249.75	248.82	0.93
2062	6,785,938.014	11,824,624.196	249.66	248.36	1.30
2063	6,785,931.278	11,824,544.488	249.89	248.95	0.95
2064	6,786,030.993	11,824,536.111	249.12	248.36	0.75
2065	6,786,037.774	11,824,615.832	249.51	248.53	0.98
2066	6,786,046.102	11,824,715.479	247.49	247.49	0.00
2067	6,786,054.381	11,824,815.140	249.63	248.83	0.79

**TABLE 9**  
**RAINFALL DATA SUMMARY**  
**Project XL**  
**King George County Landfill and Recycling Center**  
**King George County, Virginia**

Month	Average Precipitation	2004 Precipitation	Departure from Normal
January	3.3	3	-0.3
February	3.05	0.97	-2.08
March	4.01	5.36	1.35
April	3.1	3.23	0.13
May	3.78	5.08	1.3
June	3.63	3.7	0.07
July	4.11		-4.11
August	3.68		-3.68
September	3.66		-3.66
October	3.47		-3.47
November	3.25		-3.25
December	3.39		-3.39
Total	42.42	21.34	-21.09

Note: The totals for 2004 precipitation and departure from normal are for the year to date.  
 Rainfall data is for Falmouth, Virginia.

**TABLE 10**  
**SUMMARY OF WASTE CHARACTERIZATION DATA**  
**Project XL**  
**King George County Landfill and Recycling Center**  
**King George County, Virginia**

2001 test results

	Sample Date	Location	Depth (ft)	Moisture (%)	VS (%)	Cellulose (%)	Lignin (%)	Cell/Lig Ratio	pH (Field)	BMP (mL/g)	
Control Area	8/2/2001	Control 1	0-15	46.79	54.93 55.95 54.61	34.07 34.58	16.98 15.50	2.01 2.23	6.5	65.98 55.33 61.81	
	8/2/2001	Control 1	15-30	38.83	36.15 51.33 47.20	35.77 39.24	17.40 14.40	2.06 2.73	7.1	61.36 65.39 56.84	
	8/2/2001	Control 1	30-45	24.00	47.33 43.58 43.46	28.92 34.10	14.60 16.10	1.98 2.12	6.5	47.28 60.02 45.69	
	8/2/2001	Control 1	45-55	31.63	50.48 38.85 39.56	31.33 31.36	20.60 20.20	1.52 1.55	5.9	56.82 53.45 49.90	
	8/2/2001	Control 1	55-70	26.19	49.18 56.22 51.10	37.83 33.82	15.50 16.30	2.44 2.07	5.4	60.60 49.01 63.11	
	8/2/2001	Control 2	0-15	26.87	51.70 54.71 54.23	28.13 30.31	16.60 18.40	1.69 1.65	6.8	66.89 63.09 70.96	
	8/2/2001	Control 2	15-30	37.94	70.30 72.41 72.29	37.24 33.80	14.50 14.95	2.57 2.26	6.8	54.11 67.40 52.77	
	8/3/2001	Control 2	30-45	34.14	66.71 67.42 65.93	40.00 41.51	17.50 17.90	2.29 2.32	5.6	41.72 50.13 59.66	
	8/3/2001	Control 2	45-60	25.74	43.16 36.85 42.51	31.34 30.31	16.03 14.27	1.96 2.12	5.7	44.21 44.92 52.92	
	8/3/2001	Control 2	60-70	30.99	63.42 68.24 64.19	38.31 38.87	19.20 20.20	2.00 1.92	5.8	60.29 62.82 58.47	
	Test Area	8/1/2001	Bio 1	0-15	43.24	37.92 42.52 40.81	41.54 29.56	15.10 14.80	2.75 2.00	6.2	54.23 52.86 55.11
		8/1/2001	Bio 1	15-30	33.22	59.11 56.11 55.61	30.16 31.50	15.90 19.60	1.90 1.61	6.3	59.65 59.43 59.11
		8/1/2001	Bio 1	30-45	29.98	84.09 86.16 85.87	46.36 44.05	22.80 21.60	2.03 2.04	6.7	58.09 59.01 63.08
		8/1/2001	Bio 1	45-60	29.57	71.82 70.59 69.91	42.96 41.52	19.80 20.00	2.17 2.08	6.7	68.43 69.13 68.51
		8/1/2001	Bio 1	60-75	28.40	76.52 73.66 75.50	43.71 47.18	16.50 16.00	2.65 2.95	6.5	65.75 64.50 65.72
		7/31/2001	Bio 2	0-15	47.55	66.33 67.31 68.67	38.17 35.99	22.80 23.25	1.67 1.55	6.3	56.99 59.11 61.44

**TABLE 10**  
**SUMMARY OF WASTE CHARACTERIZATION DATA - continued**  
**Project XL**  
**King George County Landfill and Recycling Center**  
**King George County, Virginia**

2001 test results

	Sample Date	Location	Depth (ft)	Moisture (%)	VS (%)	Cellulose (%)	Lignin (%)	Cell/Lig Ratio	pH (Field)	BMP (mL/g)
Test Area	7/31/2001	Bio 2	15-30	46.26	65.61 63.50 65.55	31.50 34.17	23.28 21.10	1.35 1.62	5.8	55.19 55.45 54.29
	7/31/2001	Bio 2	30-45	39.97	53.11 57.05 54.32	31.42 39.49	19.94 22.94	1.58 1.72	6.6	51.14 49.98 53.29
	7/31/2001	Bio 2	45-60	45.44	71.56 72.01 70.82	39.00 32.99	23.06 23.91	1.69 1.38	5.6	67.27 67.47 66.77
	7/31/2001	Bio 2	60-75	40.19	69.23 71.53 71.75	37.46 41.60	25.85 25.56	1.45 1.63	5.4	61.65 60.32 60.20
	7/31/2001	Bio 3	0-15	30.70	71.60 72.68 71.80	44.34 52.14	15.50 15.00	2.86 3.48	5.4	65.01 58.48 62.03
	7/31/2001	Bio 3	15-30	35.71	61.58 57.21 58.64	34.48 35.86	14.70 14.10	2.35 2.54	5.8	53.58 53.53 54.16
	8/1/2001	Bio 3	30-45	39.86	55.12 51.37 52.84	26.07 26.51	23.54 29.46	1.11 0.90	8.3	54.72 55.69 51.44
	8/1/2001	Bio 3	45-60	43.87	69.44 72.26 65.85	37.02 33.94	19.63 21.22	1.89 1.60	7.6	62.05 62.58 63.07
	8/1/2001	Bio 3	60-75	35.18	49.21 44.06 43.13	16.72 21.16	19.71 21.33	0.85 0.99	5.8	54.91 57.04 57.49

**TABLE 10**  
**SUMMARY OF WASTE CHARACTERIZATION DATA - continued**  
**Project XL**  
**King George County Landfill and Recycling Center**  
**King George County, Virginia**

2003 test results

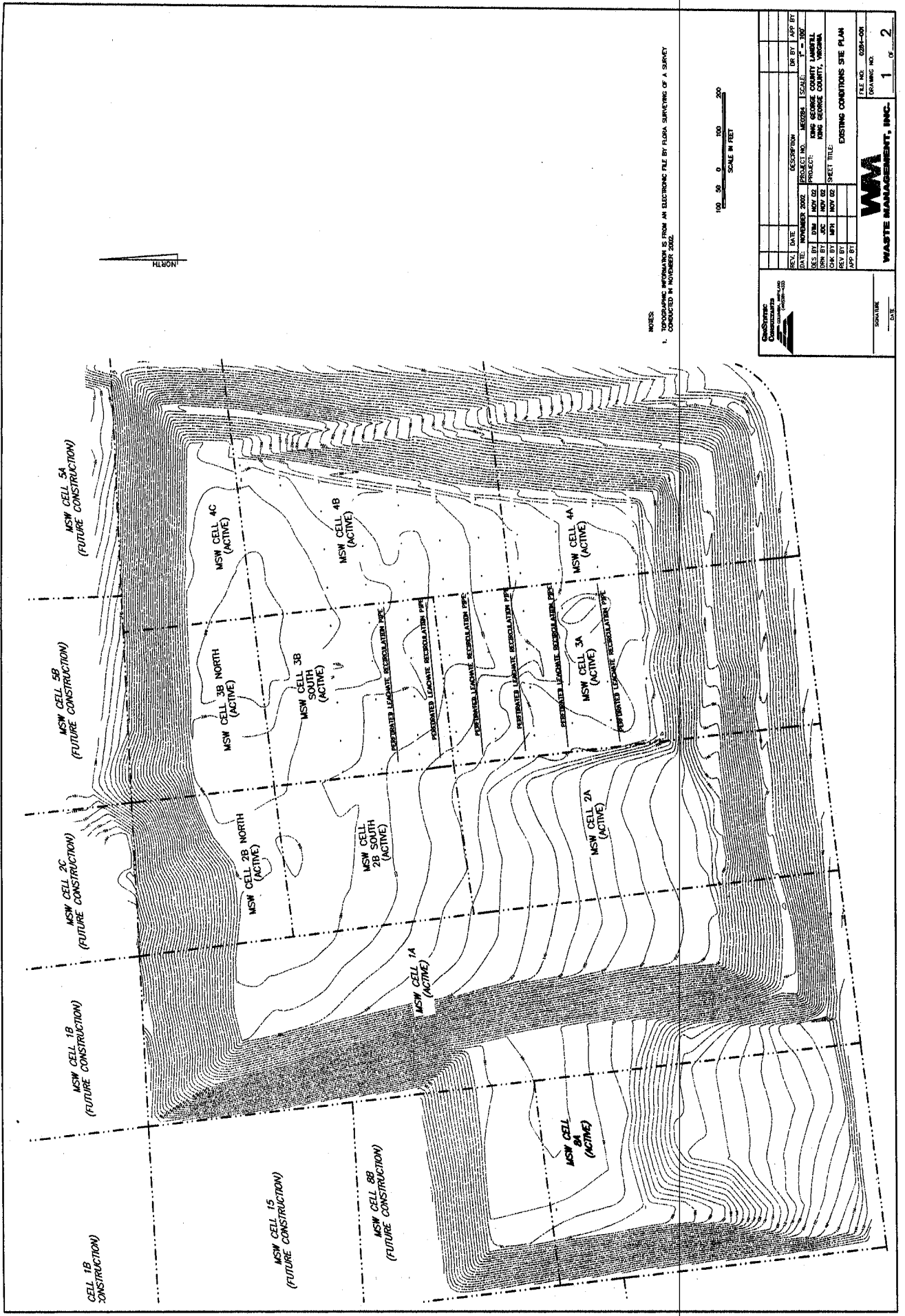
	Sample Date	Location	Depth (ft)	Moisture (%)	VS (%)	Cellulose (%)	Lignin (%)	Cell/Lig Ratio	pH (Field)	BMP (mL/g)
Control Area	11/12/2003	C1	3-10	40.99	52.78	27.71	22.61	1.23	6.68	
	11/12/2003	C1	10-25	36.89	52.87	25.96	24.70	1.05	8.74	
	11/12/2003	C1	25-40	42.75	65.63	23.04	22.28	1.03	8.46	
	11/12/2003	C1	40-55	33.14	70.47	32.69	21.95	1.49	7.38	
	11/12/2003	C2	3-15	32.36	51.09	20.34	14.04	1.45	6.74	
	11/12/2003	C2	15-30	41.05	73.80	37.52	23.52	1.60	7.17	
	11/12/2003	C2	30-45	32.97	49.18	17.62	17.38	1.01	8.18	
	11/12/2003	C2	45-60	30.57	47.97	17.35	18.54	0.94	7.77	
Test Area	11/17/2003	T1	0-15	36.27	56.87	23.80	23.02	1.03	7.52	
	11/17/2003	T1	15-30	41.76	71.58	41.90	23.01	1.82	7.14	
	11/17/2003	T1	30-45	35.23	51.80	25.57	17.06	1.50	7.35	
	11/17/2003	T1	45-60	54.09	53.75	21.30	21.21	1.00	7.33	
	11/17/2003	T2	4-20	36.47	45.54	21.26	20.51	1.04	7.41	



**TABLE 10**  
**SUMMARY OF WASTE CHARACTERIZATION DATA - continued**  
**Project XL**  
**King George County Landfill and Recycling Center**  
**King George County, Virginia**

2003 test results

	Sample Date	Location	Depth (ft)	Moisture (%)	VS (%)	Cellulose (%)	Lignin (%)	Cell/Lig Ratio	pH (Field)	BMP (mL/g)
Test Area	11/17/2003	T2	20-37	40.69	63.73	36.49	22.15	1.65	7.44	
	11/17/2003	T2	37-47	51.23	31.20	20.62	16.02	1.29	7.59	
	11/17/2003	T2	47-59	32.50	15.05	12.49	8.25	1.51	7.86	
	11/17/2003	T3	4-17	39.82	55.80	28.93	22.61	1.28	7.25	
	11/17/2003	T3	17-30	42.07	57.12	25.04	20.86	1.20	6.68	
	11/17/2003	T3	30-40	41.55	51.01	21.52	16.79	1.28	6.91	



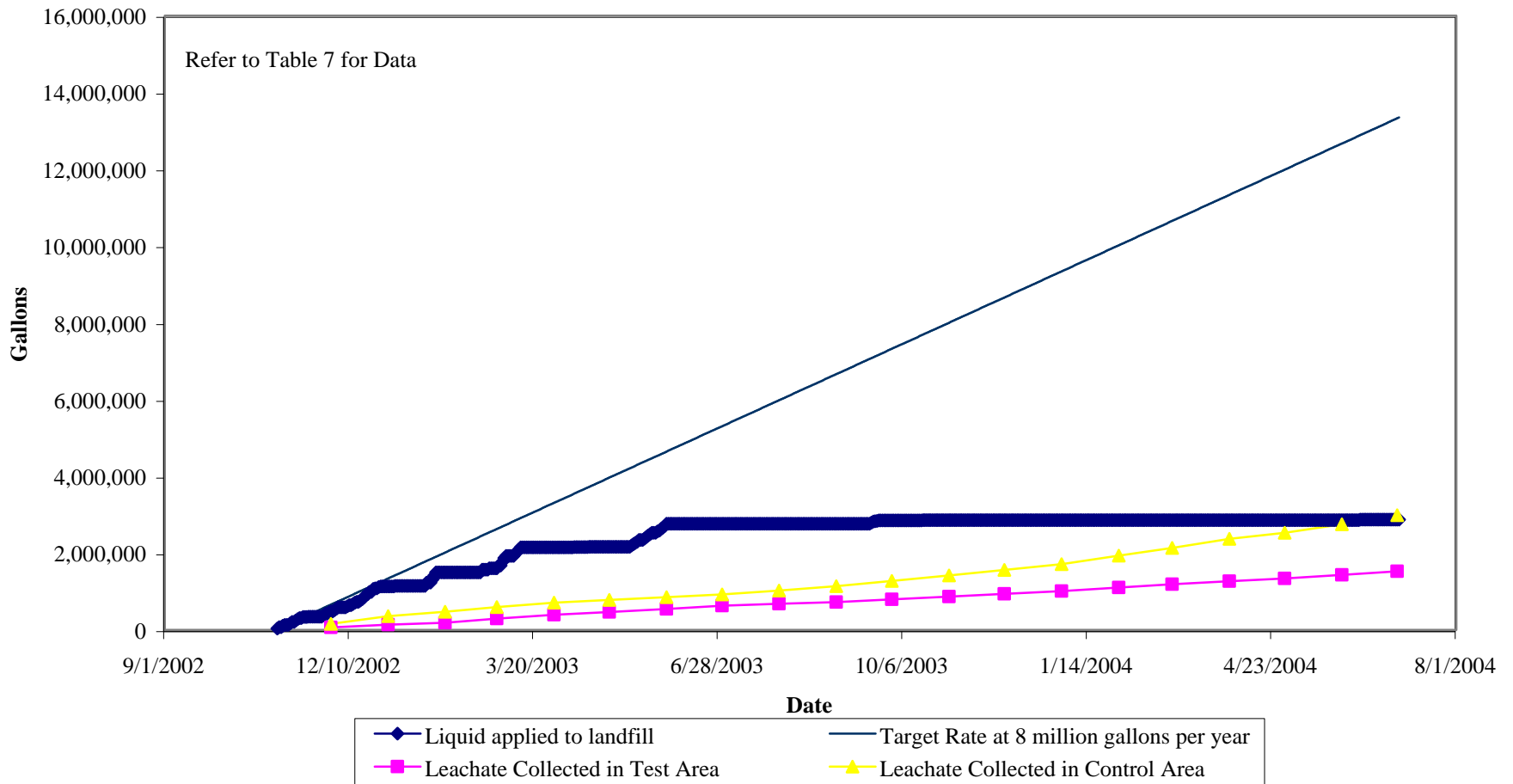
NOTES:  
 1. TOPOGRAPHIC INFORMATION IS FROM AN ELECTRONIC FILE BY FLORIDA SURVEYING OF A SURVEY CONDUCTED IN NOVEMBER 2002.



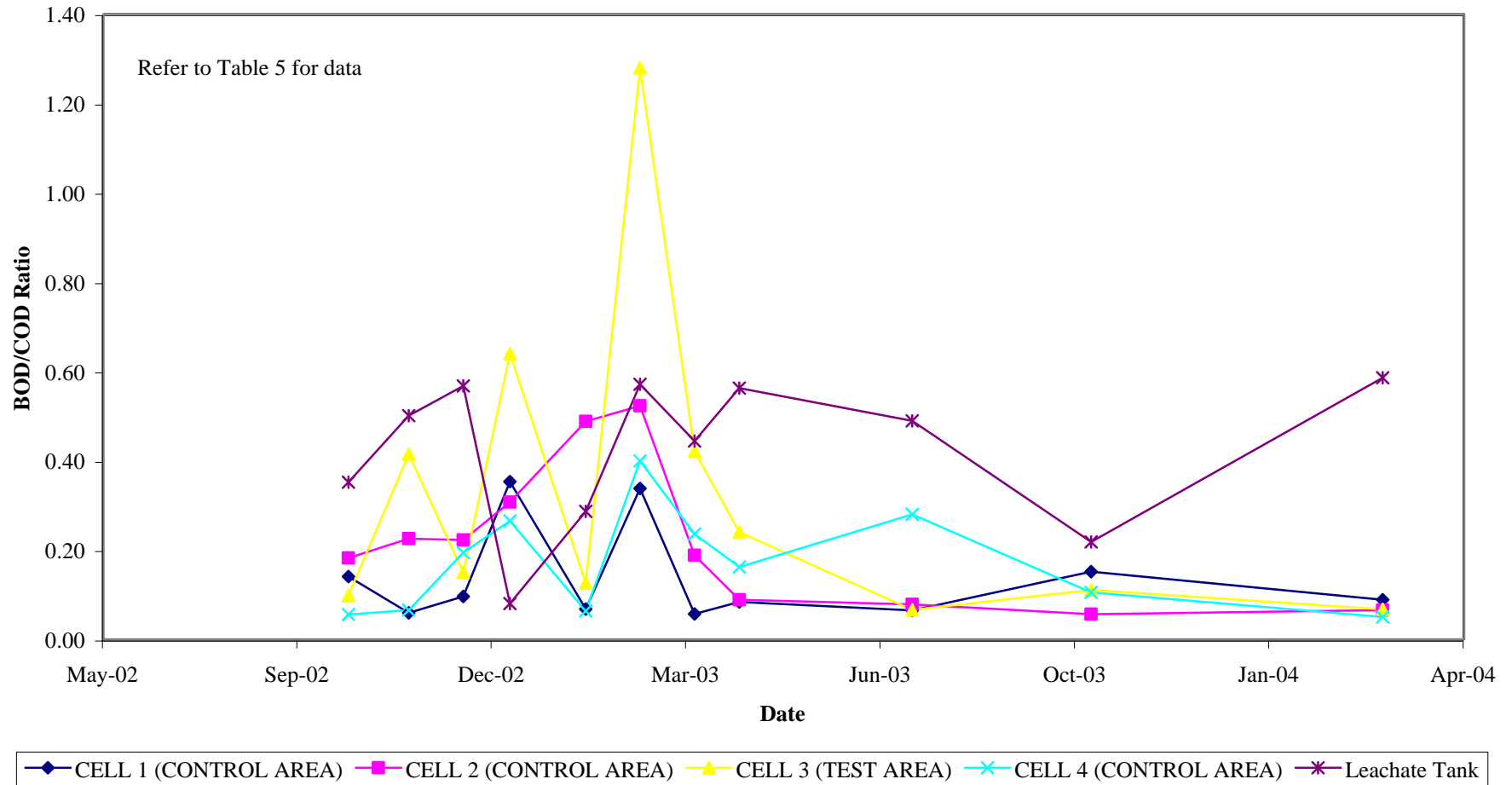
DATE	DESCRIPTION	DR BY	APP BY
NOVEMBER 2002	CELL NO. 1A	W. J. KING	W. J. KING
NOV 02	PROJECT	WASTE MANAGEMENT	
NOV 02	SHEET TITLE	EXISTING CONDITIONS SITE PLAN	
NOV 02	FILE NO.	0284-001	
NOV 02	DRAWING NO.	1	2

WASTE MANAGEMENT, INC.

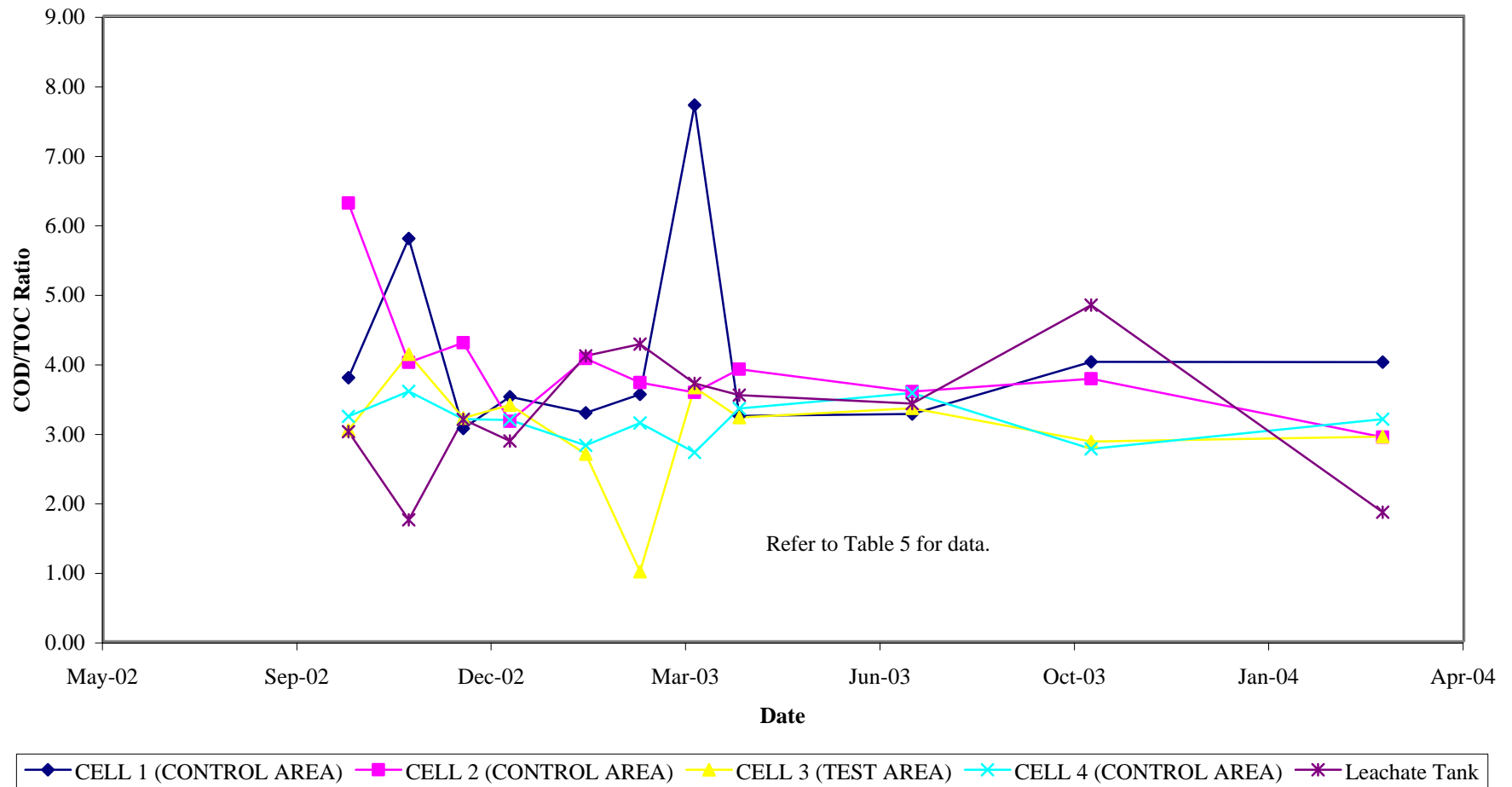
**FIGURE 2**  
**LIQUID APPLIED TO LANDFILL - CUMULATIVE**  
**Project XL**  
**King George County Landfill and Recycling Center**  
**King George, Virginia**



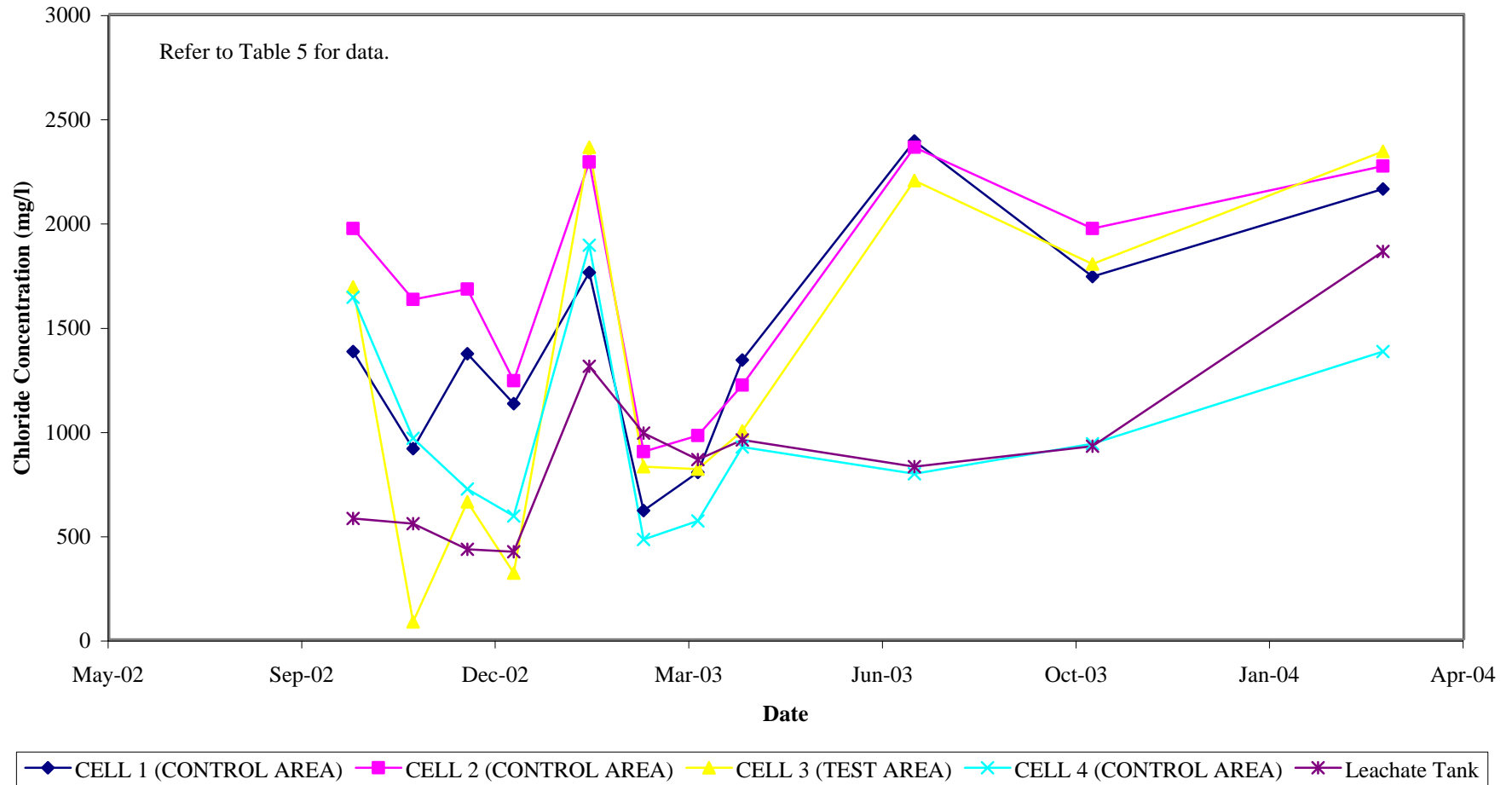
**FIGURE 3**  
**BOD/COD RATIO**  
**Project XL**  
**King George County Landfill and Recycling Center**  
**King George, Virginia**



**FIGURE 4**  
**COD/TOC RATIO**  
**Project XL**  
**King George County Landfill and Recycling Center**  
**King George, Virginia**

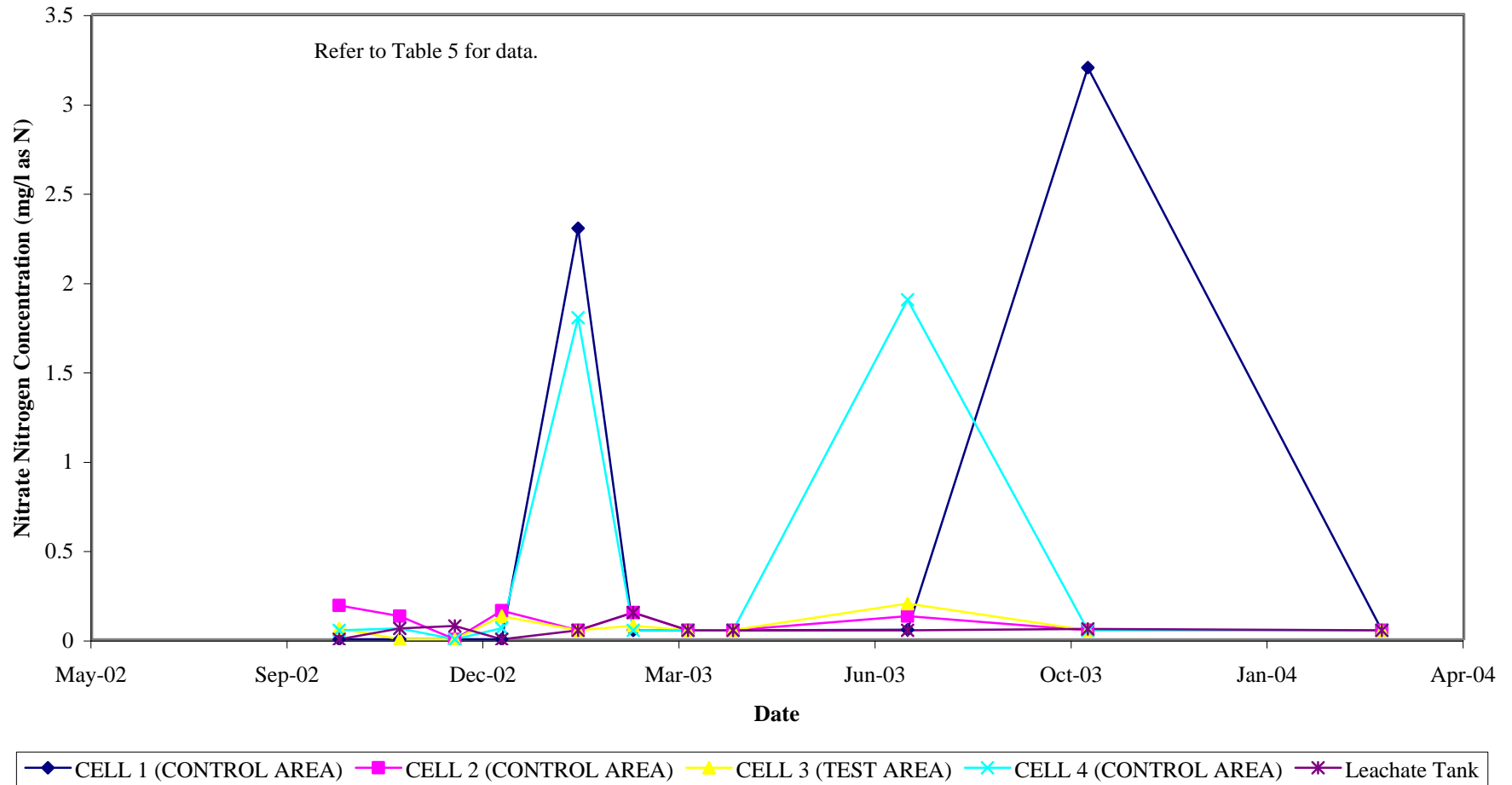


**FIGURE 5**  
**CHLORIDE CONCENTRATION**  
**Project XL**  
**King George County Landfill and Recycling Center**  
**King George, Virginia**

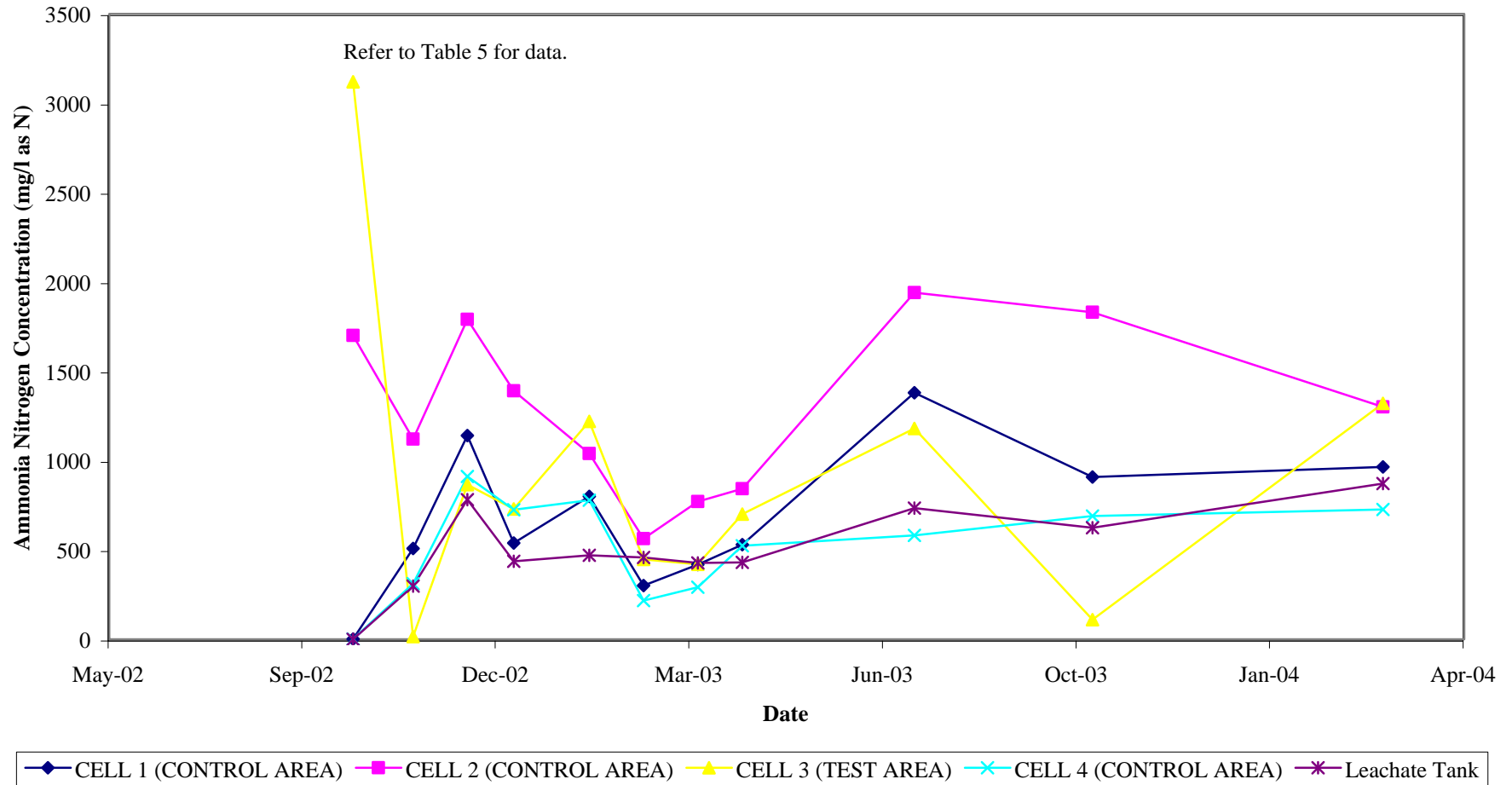


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**FIGURE 6**  
**NITRATE NITROGEN CONCENTRATION**  
**Project XL**  
**King George County Landfill and Recycling Center**  
**King George, Virginia**

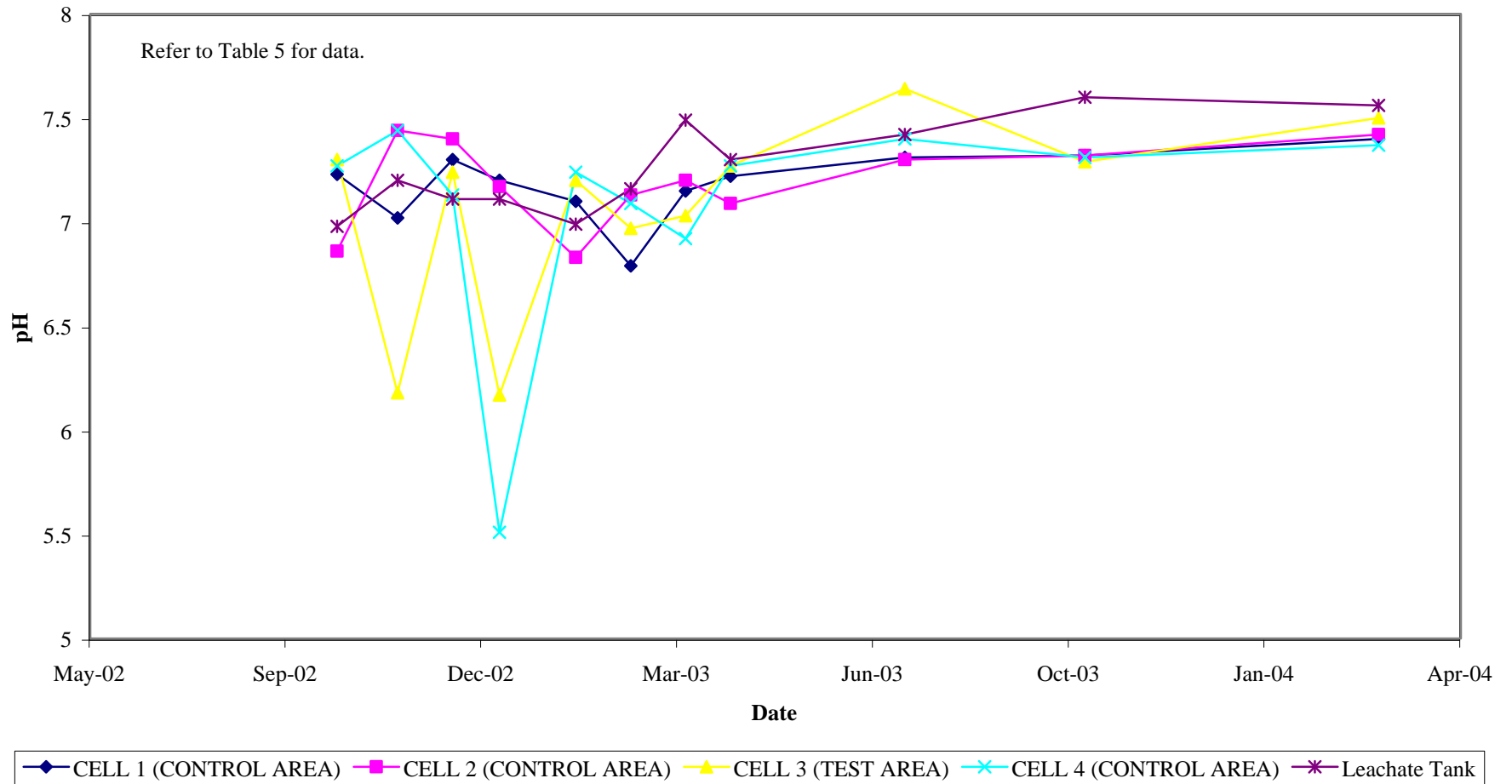


**FIGURE 7**  
**AMMONIA NITROGEN CONCENTRATION**  
**Project XL**  
**King George County Landfill and Recycling Center**  
**King George, Virginia**

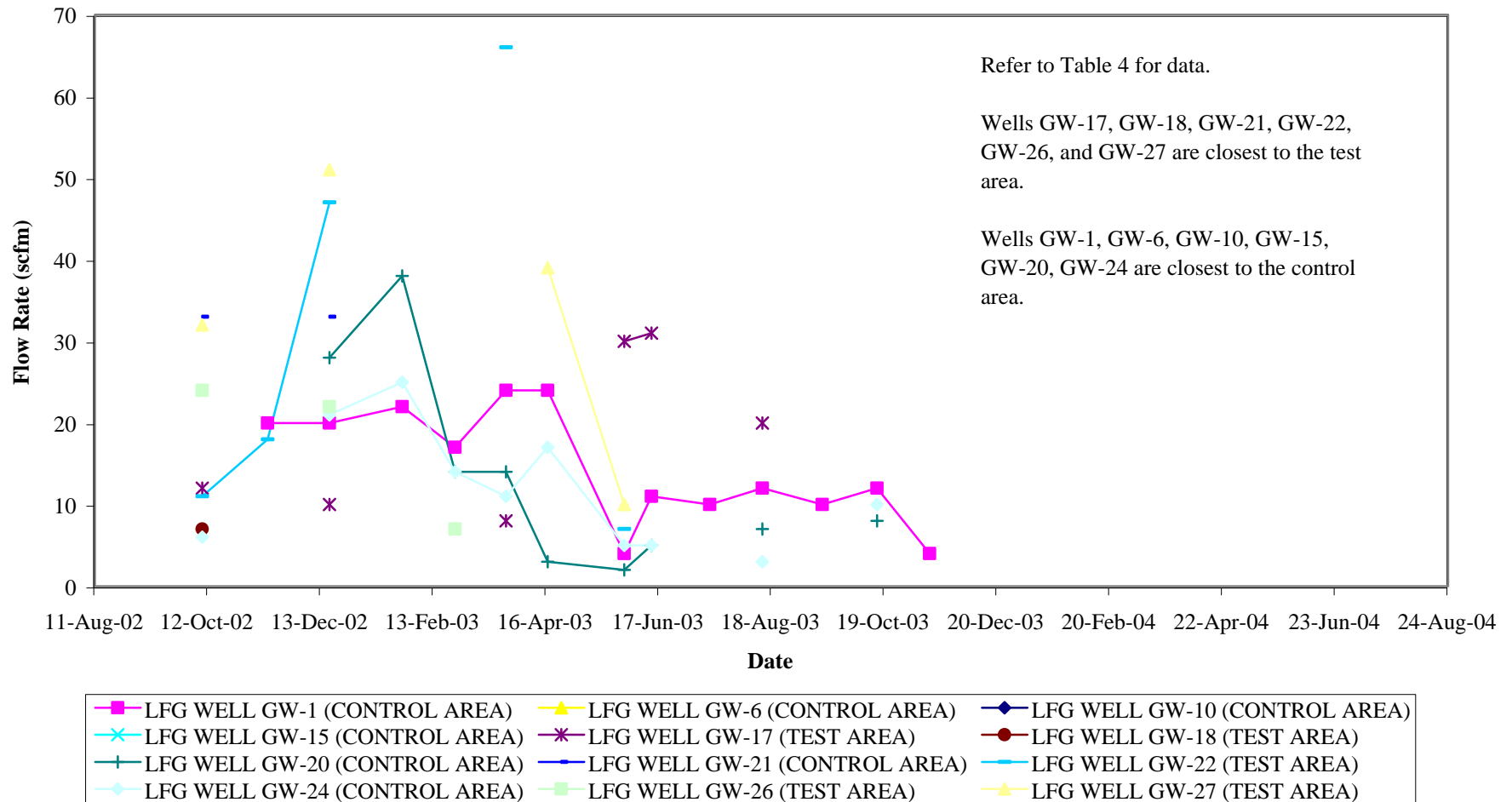




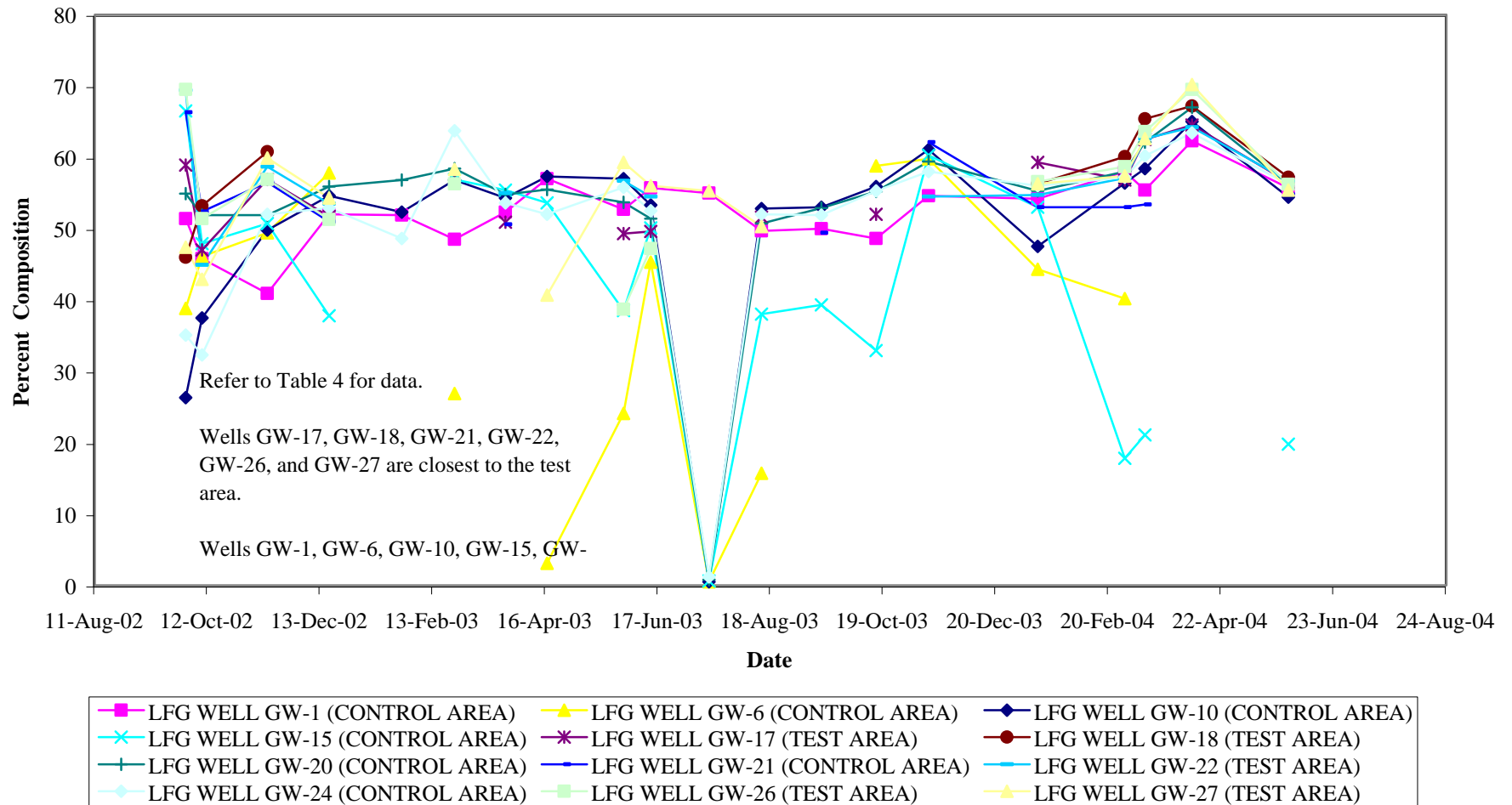
**FIGURE 8**  
**Variation in pH**  
**Project XL**  
**King George County Landfill and Recycling Center**  
**King George, Virginia**



**FIGURE 9**  
**LANDFILL GAS QUANTITY DATA**  
**Project XL**  
**King George County Landfill and Recycling Center**  
**King George, Virginia**

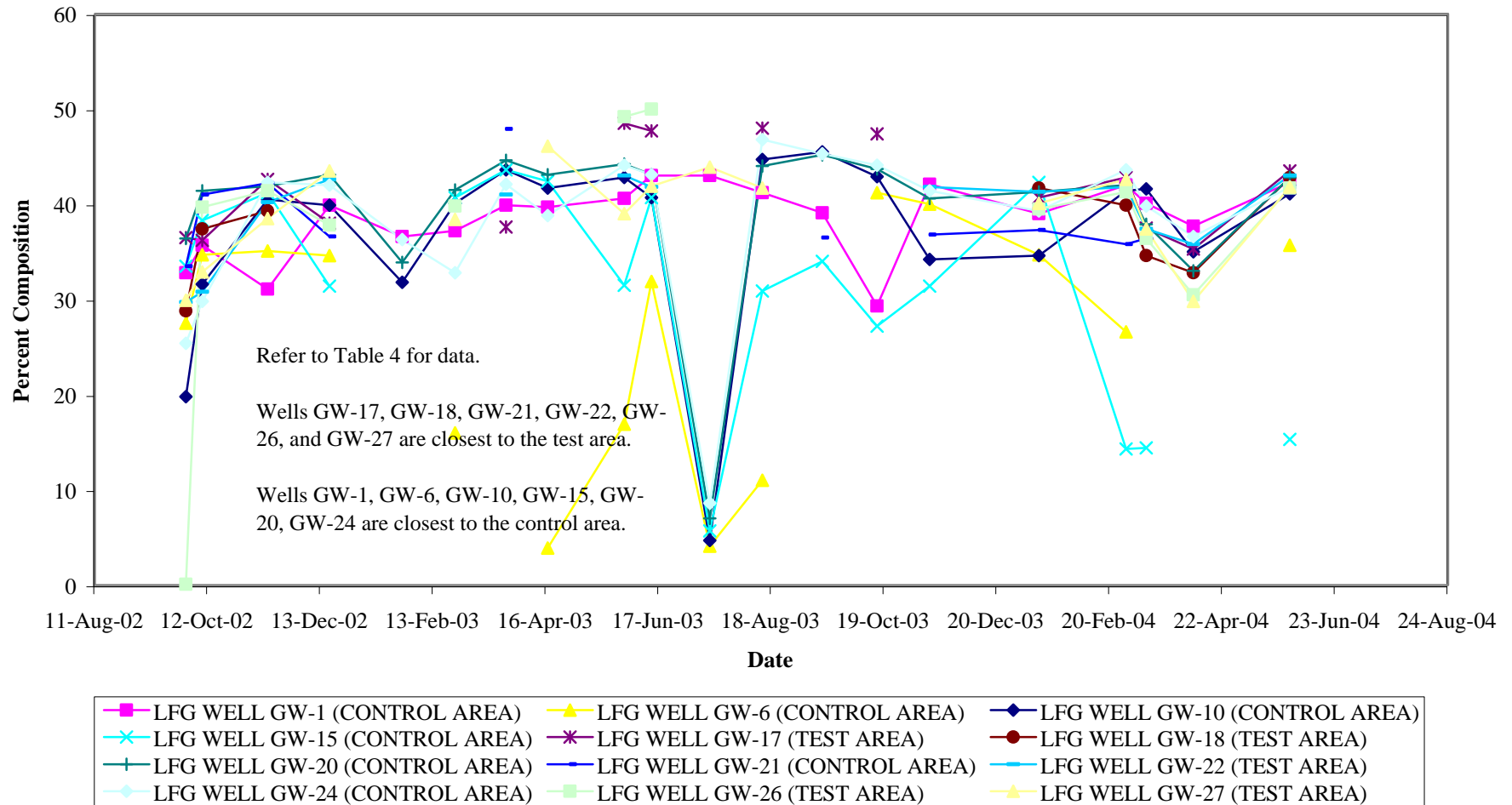


**FIGURE 10**  
**LANDFILL GAS QUALITY DATA - METHANE**  
**Project XL**  
**King George County Landfill and Recycling Center**  
**King George, Virginia**

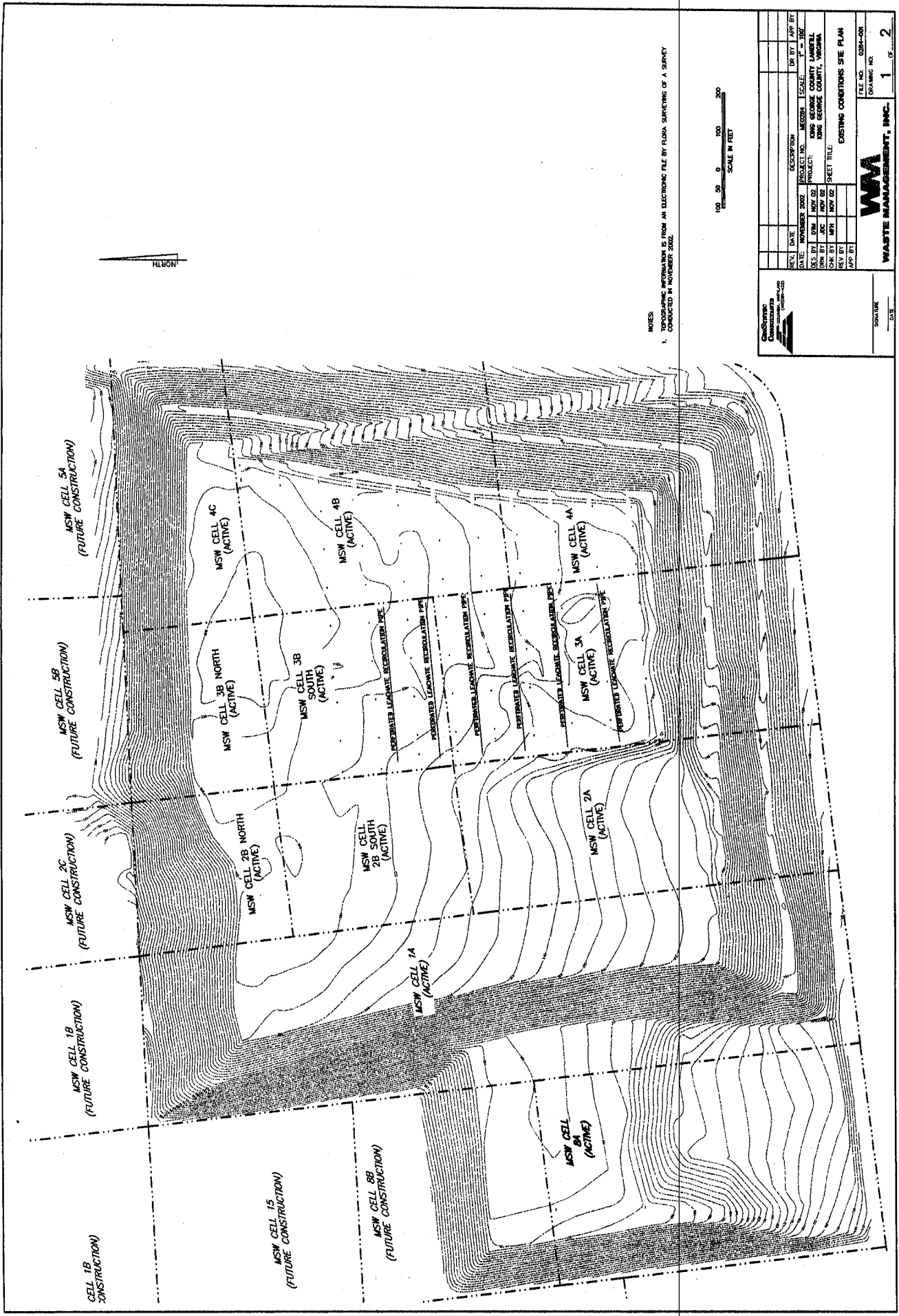


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**FIGURE 11**  
**LANDFILL GAS QUALITY DATA - CARBON DIOXIDE**  
**Project XL**  
**King George County Landfill and Recycling Center**  
**King George, Virginia**



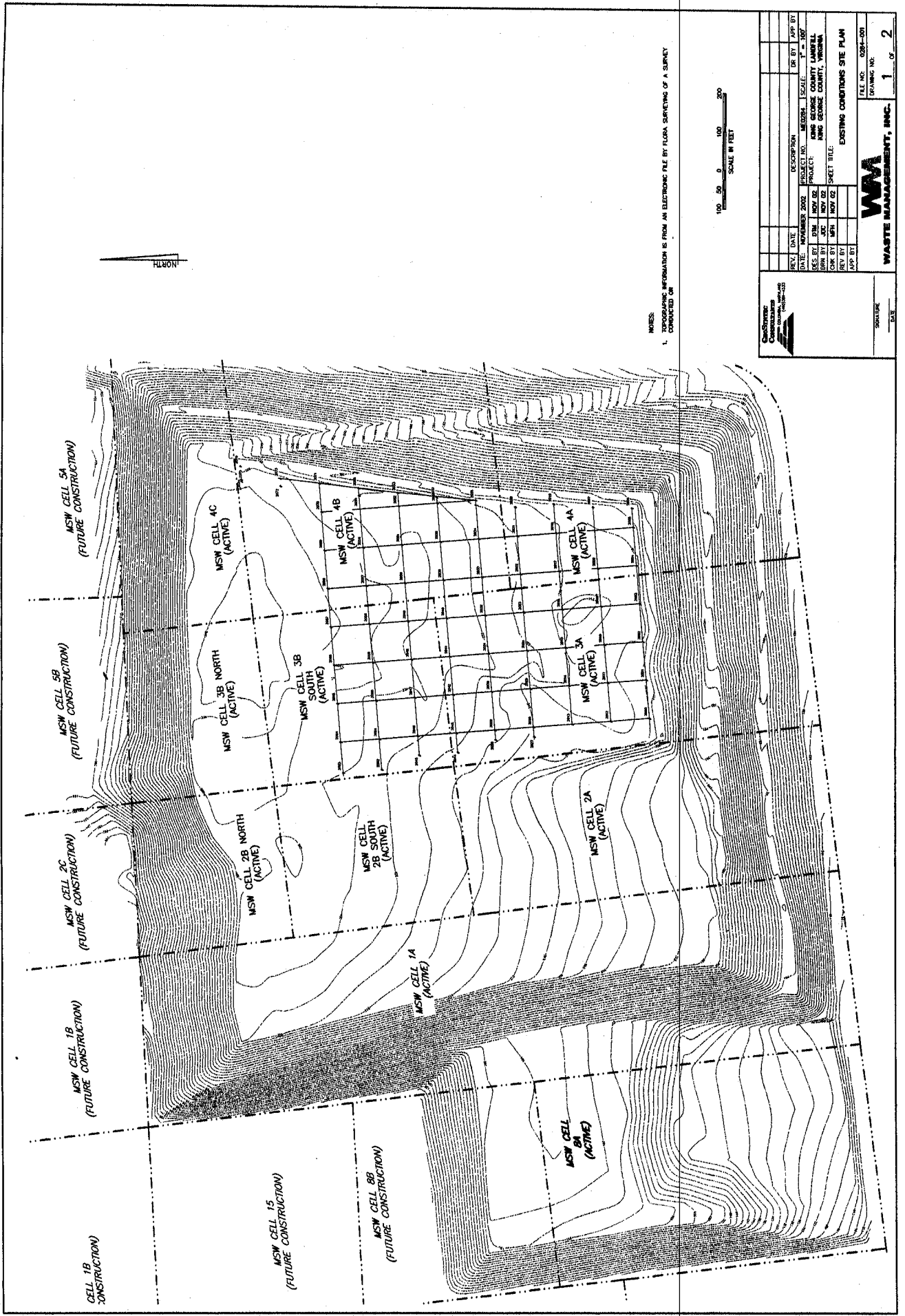
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NOTES:  
 1. TOPOGRAPHIC INFORMATION IS FROM AN ELECTRONIC FILE BY FLORIDA SURVEYING OF A SURVEY CONDUCTED IN NOVEMBER 2002.



DATE	DESCRIPTION	DR BY	APP BY
NOVEMBER 2002	CELL NO. 15	M. J. BOGGS	M. J. BOGGS
DATE	DESCRIPTION	SCALE	BY
NOV 02	PROJEN	1" = 100'	M. J. BOGGS
CHK BY	NOV 02	NOV 02	NOV 02
APP BY	NOV 02	NOV 02	NOV 02
EXISTING CONDITIONS SITE PLAN		FILE NO.	00284-001
DRAWING NO.		1	2
DATE		WASTE MANAGEMENT, INC.	



NOTES:  
1. TOPOGRAPHIC INFORMATION IS FROM AN ELECTRONIC FILE BY FLORA SURVEYING OF A SURVEY CONDUCTED ON



REV	DATE	DESCRIPTION	PROJECT NO.	ISSUE NO.	SCALE	DR BY	APP BY
1	NOVEMBER 2002	ISSUE NO. 001	0284-001	1	1" = 100'		
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WASTE MANAGEMENT, INC.  
FILE NO. 0284-001  
DRAWING NO. 1 OF 2

## APPENDIX A

# LEACHATE QUALITY TEST RESULTS

(available upon request)

**Leachate Parameters Detected - Cell 1**  
 Project XL  
 King George County Landfill and Recycling Center  
 King George County, Virginia

Parameter	Units	MCL	27-Sep-02	28-Oct-02	25-Nov-02	19-Dec-02	27-Jan-03	24-Feb-03	24-Mar-03	16-Apr-03	14-Jul-03	14-Oct-03	12-Mar-04
1,4-Dichlorobenzene	ug/L	NA	-	7	6	10	7	-	14	9	-	-	-
2,4-Dimethylphenol	ug/L	NA	-	-	7	-	-	-	-	-	-	-	-
Acetone	ug/L	NA	400	99	180	2000	-	10000	640	-	-	4800	1400
Acetonitrile	ug/L	NA	-	86	-	180	-	-	-	-	-	-	-
Acetophenone	ug/L	NA	-	-	26	-	-	8	-	-	-	-	-
<b>Benzene</b>	ug/L	5	-	<b>16</b>	<b>14</b>	<b>16</b>	<b>11</b>	-	<b>18</b>	<b>13</b>	-	<b>22</b>	<b>12</b>
Calcium	ug/L	NA	195000	237000	254000	286000	180000	659000	232000	220000	178000	194000	216000
Diethyl Phthalate	ug/L	NA	-	4	46	46	-	55	-	44	-	-	-
<b>Ethylbenzene</b>	ug/L	700	23	38	22	42	30	61	78	42	-	50	45
Magnesium	ug/L	NA	142000	99300	149000	134000	186000	908000	118000	150000	175000	-	140000
m,p-Cresol	ug/L	NA	-	-	2100	-	-	2200	1000	-	-	69	37
Methyl Ethyl Ketone	ug/L	NA	600	180	450	3000	67	14000	1100	-	-	10000	2200
Methyl Isobutyl Ketone	ug/L	NA	-	-	52	61	-	-	52	-	-	-	-
Methylene Chloride	ug/L	NA	24	4	-	8	-	-	-	-	-	-	-
Naphthalene	ug/L	NA	3	3	4	-	-	280	-	-	-	-	-
Nickel	ug/L	NA	58	35	41	40	68	24	34	44	69	87	69
o-Cresol	ug/L	NA	-	14	-	4000	-	-	-	-	-	-	-
Phenol	ug/L	NA	-	4	8	68	-	460	-	-	-	86	35
Sodium	ug/L	NA	761000	444000	770000	679000	956000	368000	533000	776000	1060000	1120000	1080000
<b>Toluene</b>	ug/L	1000	54	46	91	420	17	750	730	41	-	48	24
<b>Total Xylene</b>	ug/L	10000	68	100	130	110	79	150	190	120	89	130	130
Vanadium	ug/L	NA	31	19	39	31	48	16	30	37	45	64	63
Vinyl Chloride	ug/L	2	-	<b>3</b>	<b>2</b>	-	-	-	-	-	-	-	-
Zinc	ug/L	NA	20	48	32	61	260	150	100	71	61	130	140

Notes:  
 This table summarizes the leachate parameters that were detected in Cell 1. Samples where the concentration may be greater than the MCL are show in in **bold**.  
 In some cases, the method detection limit is higher than the MCL.

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**Leachate Parameters Detected - Cell 2**  
 Project XL  
 King George County Landfill and Recycling Center  
 King George County, Virginia

Parameter	Units	MCL	27-Sep-02	28-Oct-02	25-Nov-02	19-Dec-02	27-Jan-03	24-Feb-03	24-Mar-03	16-Apr-03	14-Jul-03	14-Oct-03	12-Mar-04
1,1-Dichloroethane	ug/L	NA	-	10	7	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	ug/L	NA	11	13	12	-	14	-	16	13	-	14	16
2,4-Dimethylphenol	ug/L	NA	-	7	7	11	-	-	-	-	-	-	-
Acetone	ug/L	NA	1900	700	530	1100	950	5500	1000	150	-	-	-
Acetonitrile	ug/L	NA	-	340	-	200	-	-	-	-	-	-	-
Acetophenone	ug/L	NA	-	-	10	10	-	-	-	-	-	-	-
Antimony	ug/L	NA	12	-	-	-	-	-	-	-	-	-	6
<b>Benzene</b>	ug/L	5	<b>18</b>	<b>9</b>	<b>16</b>	<b>9</b>	<b>15</b>	-	-	-	-	-	7
bis (2-ethylhexyl) phthalate	ug/L	NA	-	-	-	-	-	-	-	-	-	-	73
Calcium	ug/L	NA	73300	107000	159000	130000	165000	291000	199000	150000	98600	84100	127000
Cyanide	ug/L	NA	-	12	14	-	-	-	-	61	-	-	-
Diethyl Phthalate	ug/L	NA	45	81	61	66	-	-	-	-	55	-	-
<b>Ethylbenzene</b>	ug/L	700	54	46	68	70	70	52	79	54	40	56	65
Magnesium	ug/L	NA	364000	267000	227000	186000	286000	135000	162000	167000	269000	298000	200000
m,p-Cresol	ug/L	NA	200	2000	1200	1700	980	1700	930	21	-	-	-
Methyl Ethyl Ketone	ug/L	NA	4400	3600	-	2200	2100	8200	1600	250	-	-	-
Methyl Isobutyl Ketone	ug/L	NA	92	78	65	56	-	78	32	-	-	-	-
Methylene Chloride	ug/L	NA	42	-	-	-	-	-	-	-	-	-	-
Naphthalene	ug/L	NA	3	-	-	6	-	-	-	-	-	-	-
Nickel	ug/L	NA	390	260	190	180	280	100	140	140	290	330	230
Phenol	ug/L	NA	3	25	25	22	-	220	-	-	-	-	-
Sodium	ug/L	NA	2000000	1400000	1270000	1080000	1700000	732000	895000	1000000	1640000	1830000	1480000
<b>Toluene</b>	ug/L	1000	220	320	330	280	100	260	340	25	-	61	36
<b>Total Xylene</b>	ug/L	10000	130	120	190	190	190	160	200	160	150	160	180
Vanadium	ug/L	NA	81	59	47	41	72	30	38	35	74	88	55
Zinc	ug/L	NA	250	18	160	140	140	98	94	89	170	880	760

Notes:  
 This table summarizes the leachate parameters that were detected in Cell 2. Samples where the concentration may be greater than the MCL are show in in **bold**.  
 In some cases, the method detection limit is higher than the MCL.

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**Leachate Parameters Detected - Cell 3**  
 Project XL  
 King George County Landfill and Recycling Center  
 King George County, Virginia

Parameter	Units	MCL	27-Sep-02	28-Oct-02	25-Nov-02	19-Dec-02	27-Jan-03	24-Feb-03	24-Mar-03	16-Apr-03	14-Jul-03	14-Oct-03	12-Mar-04
1,1-Dichloroethane	ug/L	NA	20	23	-	<b>22</b>	-	-	-	-	-	-	-
1,4-Dichlorobenzene	ug/L	NA	12	-	-	12	17	-	16	19	22	21	21
Acetone	ug/L	NA	-	2000	-	5400	210	4100	2900	-	-	-	-
Acetonitrile	ug/L	NA	400	-	-	-	-	-	-	-	-	-	-
Acetophenone	ug/L	NA	-	-	-	8	-	-	-	-	-	-	-
<b>Benzene</b>	ug/L	5	-	<b>18</b>	-	<b>15</b>	-	-	-	-	-	-	7
Calcium	ug/L	NA	52600	67300	168000	211000	112000	297000	440000	175000	81000	76000	107000
<b>cis-1,2-Dichloroethene</b>	ug/L	70	-	20	-	16	-	-	-	-	-	-	-
Cyanide	ug/L	NA	12	-	-	-	-	-	-	-	16	-	-
Diethyl Phthalate	ug/L	NA	-	-	6	38	-	-	-	-	-	-	-
Dichlorofluoromethane	ug/L	NA	-	-	-	6	-	-	-	-	-	-	-
<b>Ethylbenzene</b>	ug/L	700	47	40	7	64	44	50	75	61	53	54	66
Magnesium	ug/L	NA	270000	18100	99300	101000	213000	88100	100000	133000	224000	228000	168000
m,p-Cresol	ug/L	NA	-	-	25	990	180	26	960	44	-	12	-
Methyl Ethyl Ketone	ug/L	NA	-	5200	110	12000	280	6500	8000	-	-	-	-
Methyl Isobutyl Ketone	ug/L	NA	-	73	-	110	-	-	-	-	-	-	-
Methylene Chloride	ug/L	NA	-	470	-	58	-	75	61	-	-	-	-
Naphthalene	ug/L	NA	-	-	-	3	-	-	-	-	-	18	-
Nickel	ug/L	NA	380	21	72	94	260	-	62	130	280	300	220
o-Cresol	ug/L	NA	-	86	-	13	-	-	-	-	-	-	-
o-Toluidine	ug/L	NA	16	-	-	16	27	19	-	-	-	-	-
Phenol	ug/L	NA	-	14	-	260	-	-	-	-	-	-	-
Sodium	ug/L	NA	1990000	84800	578000	531000	1600000	540000	580000	934000	1670000	1700000	1640000
Styrene	ug/L	NA	-	14	-	-	-	-	-	-	-	-	-
Tetrachloroethene	ug/L	NA	-	11	-	9	-	-	-	-	-	-	-
<b>Toluene</b>	ug/L	1000	58	420	12	420	96	280	410	50	44	60	14
<b>Total Xylene</b>	ug/L	10000	120	110	21	170	120	140	180	180	180	200	210
<b>Trichloroethene</b>	ug/L	5	-	-	-	<b>8</b>	-	-	-	-	-	-	-
Vanadium	ug/L	NA	120	5.2	13	26	94	26	31	44	100	110	91
Vinyl Chloride	ug/L	2	-	<b>13</b>	-	<b>10</b>	-	-	-	-	-	-	-
Zinc	ug/L	NA	80	120	48	150	160	87	140	110	200	220	120

## Notes:

This table summarizes the leachate parameters that were detected in Cell 3. Samples where the concentration may be greater than the MCL are show in in **bold**.

In some cases, the method detection limit is higher than the MCL.

**Leachate Parameters Detected - Cell 4**  
 Project XL  
 King George County Landfill and Recycling Center  
 King George County, Virginia

Parameter	Units	MCL	27-Sep-02	28-Oct-02	25-Nov-02	19-Dec-02	27-Jan-03	24-Feb-03	24-Mar-03	16-Apr-03	14-Jul-03	14-Oct-03	12-Mar-04
1,1-Dichloroethane	ug/L	NA	-	-	-	-	-	9	-	-	-	-	-
1,4-Dichlorobenzene	ug/L	NA	-	10	3	16	17	29	30	17	17	15	16
2,4-Dimethylphenol	ug/L	NA	-	3	-	-	-	-	-	-	-	-	-
Acetone	ug/L	NA	-	44	530	770	-	1200	380	230	640	-	-
Acetonitrile	ug/L	NA	-	100	-	-	-	-	-	-	-	-	-
<b>Benzene</b>	ug/L	5	-	<b>5</b>	4	<b>6</b>	-	<b>10</b>	<b>9</b>	-	-	-	-
Calcium	ug/L	NA	119000	154000	251000	214000	194000	220000	248000	221000	210000	190000	195000
Cyanide	ug/L	NA	25	16	-	-	-	-	-	-	-	-	38
Diethyl Phthalate	ug/L	NA	-	7	10	20	-	-	-	-	-	17	-
<b>Ethylbenzene</b>	ug/L	700	-	21	64	53	51	130	120	49	45	63	63
Magnesium	ug/L	NA	186000	134000	128000	102000	164000	64200	94100	112000	96500	127000	106000
m,p-Cresol	ug/L	NA	-	11	-	1000	-	290	330	300	2100	-	-
Methyl Ethyl Ketone	ug/L	NA	-	65	1100	2600	-	1100	590	420	1200	18	-
Methyl Isobutyl Ketone	ug/L	NA	-	-	18	31	-	22	-	-	30	-	-
Methylene Chloride	ug/L	NA	21	-	-	-	-	-	-	-	25	-	-
Naphthalene	ug/L	NA	-	6	9	9	-	-	-	-	-	-	-
Nickel	ug/L	NA	220	120	80	66	120	30	-	-	62	120	90
o-Cresol	ug/L	NA	-	-	970	-	-	-	-	-	-	-	-
o-Toluidine	ug/L	NA	16	13	-	-	11	-	-	-	-	-	-
Phenol	ug/L	NA	-	-	-	7	-	69	-	-	-	-	-
Sodium	ug/L	NA	1390000	791000	723000	-	1130000	353000	453000	753000	660000	906000	850000
<b>Toluene</b>	ug/L	1000	-	13	92	36	21	330	290	41	50	21	-
<b>Total Xylene</b>	ug/L	10000	14	110	180	150	140	340	300	150	140	200	180
Vanadium	ug/L	NA	78	38	20	18	34	8	13	20	21	26	22
Vinyl Chloride	ug/L	2	-	-	<b>2</b>	-	-	<b>9</b>	-	-	-	-	-
Zinc	ug/L	NA	280	98	140	110	140	89	150	250	190	130	77

Notes:  
 This table summarizes the leachate parameters that were detected in Cell 4. Samples where the concentration may be greater than the MCL are show in in **bold**.  
 In some cases, the method detection limit is higher than the MCL.

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**Leachate Parameters Detected - Leachate Tank**  
 Project XL  
 King George County Landfill and Recycling Center  
 King George County, Virginia

Parameter	Units	MCL	27-Sep-02	28-Oct-02	25-Nov-02	19-Dec-02	27-Jan-03	24-Feb-03	24-Mar-03	16-Apr-03	14-Jul-03	14-Oct-03	12-Mar-04
1,1-Dichloroethane	ug/L	NA	44	-	57	10	-	-	-	-	-	-	-
1,4-Dichlorobenzene	ug/L	NA	-	-	-	10	-	-	-	-	-	-	-
2,4-Dimethylphenol	ug/L	NA	42	-	-	-	-	-	-	-	-	-	-
Acetone	ug/L	NA	15000	9100	9000	5400	15000	9000	22000	19000	5300	6000	35000
Acetonitrile	ug/L	NA	170	-	-	-	-	-	-	-	-	-	-
Acetophenone	ug/L	NA	-	11	-	8	28	-	-	-	-	-	-
Antimony	ug/L	NA	-	-	-	-	-	-	-	-	-	-	810
<b>Benzene</b>	ug/L	5	-	-	<b>28</b>	-	-	-	-	-	-	-	-
Benzyl Alcohol	ug/L	NA	-	-	-	62	250	170	-	-	-	-	-
Calcium	ug/L	NA	98800	99900	164000	149000	575000	486000	559000	482000	245000	153000	160000
<b>cis-1,2-Dichloroethene</b>	ug/L	70	-	-	49	-	-	-	-	-	-	-	-
Cyanide	ug/L	NA	-	10	-	-	-	-	-	310	-	-	-
Diethyl Phthalate	ug/L	NA	41	32	5	32	82	-	-	-	-	-	-
<b>Ethylbenzene</b>	ug/L	700	-	-	73	38	26	36	30	-	-	-	-
Magnesium	ug/L	NA	81100	78100	23100	57000	115000	108000	111000	102000	119000	94400	129000
m,p-Cresol	ug/L	NA	580	310	680	80	2800	3200	3100	2200	7900	880	-
Methyl Ethyl Ketone	ug/L	NA	36000	12000	23000	8100	27000	19000	37000	40000	1200	13000	50000
Methyl Isobutyl Ketone	ug/L	NA	400	-	220	100	240	330	210	-	110	-	300
Methylene Chloride	ug/L	NA	870	-	58	150	48	40	52	-	49	-	-
Methyl methacrylate	ug/L	NA	68	-	-	-	-	-	-	-	-	-	-
Naphthalene	ug/L	NA	-	-	-	5	-	-	-	-	-	-	-
Nickel	ug/L	NA	76	69	9.8	54	76	75	65	58	67	-	110
o-Cresol	ug/L	NA	-	-	-	8	-	-	-	-	-	23	690
o-Toluidine	ug/L	NA	-	8	-	-	-	-	-	-	-	-	-
Phenol	ug/L	NA	450	130	55	330	1300	1400	920	640	700	120	1200
Sodium	ug/L	NA	422000	456000	-	276000	622000	631000	570000	602000	700000	647000	990000
<b>Toluene</b>	ug/L	1000	550	96	670	200	130	180	230	400	83	300	-
<b>Total Xylene</b>	ug/L	10000	76	-	200	100	70	99	76	-	-	-	-
Vanadium	ug/L	NA	16	16	8.7	16	31	21	28	23	22	24	47
Vinyl Chloride	ug/L	2	-	-	<b>10</b>	-	-	-	-	-	-	-	-
Zinc	ug/L	NA	110	54	120	670	250	330	310	130	70	65	190

Notes:  
 This table summarizes the leachate parameters that were detected in the Leachate Tank. Samples where the concentration may be greater than the MCL are show in **bold**.  
 In some cases, the method detection limit is higher than the MCL.

US EPA ARCHIVE DOCUMENT

## APPENDIX B

### DAILY LIQUID APPLICATION LOG

(available upon request)

**DAILY LIQUID APPLICATION LOG**

King George County Landfill and Recycling Center  
King George County, Virginia

Date 6/10/2004

Trench	Gallons Applied	Liquid Description	Source
1			
2			
3			
4	10,500	leachate	on-site
5	2,790	leachate	on-site
6			
7			
8			
9			

Tank	Initial Liquid Level	Final Liquid Level
1		
2		

APPENDIX C

SETTLEMENT

(available upon request)

**TABLE 8**  
**SUMMARY OF LANDFILL SETTLEMENT DATA**  
**Project XL**  
**King George County Landfill and Recycling Center**  
**King George County, Virginia**

Point No.	Northing	Easting	Elev 1/9/2004	Elev 4/6/2004	Difference 1/9/2004 to 4/6/2004
Control Area					
2004	6,785,273.540	11,825,080.835	221.58	221.00	0.58
2005	6,785,281.902	11,825,180.470	218.85	218.09	0.76
2006	6,785,286.082	11,825,230.287	207.97	207.57	0.40
2007	6,785,386.598	11,825,231.963	211.46	211.09	0.37
2008	6,785,373.252	11,825,072.613	232.20	231.36	0.84
2017	6,785,464.512	11,824,964.606	236.04	234.66	1.38
2018	6,785,472.923	11,825,064.335	233.08	232.22	0.86
2019	6,785,481.240	11,825,163.909	210.84	210.42	0.43
2020	6,785,487.529	11,825,238.699	216.04	215.55	0.49
2021	6,785,587.234	11,825,230.410	236.25	235.30	0.95
2022	6,785,580.952	11,825,155.668	238.63	237.61	1.02
2033	6,785,663.938	11,824,948.007	241.22	240.21	1.01
2034	6,785,672.348	11,825,047.680	237.86	237.02	0.84
2035	6,785,680.711	11,825,147.352	213.96	213.67	0.29
2036	6,785,689.045	11,825,246.985	219.83	219.26	0.57
2037	6,785,788.719	11,825,238.636	217.10	216.32	0.78
2038	6,785,790.026	11,825,253.647	241.25	240.28	0.97
2039	6,785,780.391	11,825,139.023	244.23	243.42	0.81
2050	6,785,863.427	11,824,931.430	245.77	244.35	1.42
2051	6,785,871.714	11,825,031.054	243.86	243.02	0.84
2052	6,785,880.114	11,825,130.756	229.38	228.76	0.62
2053	6,785,888.458	11,825,230.378	219.14	218.46	0.69
2054	6,785,891.411	11,825,265.294	224.76	224.26	0.49
2055	6,785,991.104	11,825,256.952	220.79	220.62	0.17
2056	6,785,992.789	11,825,276.900	244.89	244.05	0.84
2057	6,785,979.834	11,825,122.448	247.07	246.09	0.98
2068	6,786,062.852	11,824,914.813	248.97	247.89	1.08
2069	6,786,071.068	11,825,014.403	246.57	245.76	0.81
2070	6,786,079.485	11,825,114.077	239.61	238.86	0.75
2071	6,786,087.793	11,825,213.694	223.66	223.10	0.56
2072	6,786,094.066	11,825,288.420	227.58	227.18	0.40
2073	6,786,193.636	11,825,280.010	226.46	226.04	0.42
2074	6,786,195.259	11,825,299.912		222.72	
2075	6,786,294.827	11,825,291.503		222.46	
2076	6,786,295.215	11,825,296.486		222.00	
2077	6,786,298.125	11,825,331.369			
Test Area					
2000	6,785,240.088	11,824,682.224	219.55	219.05	0.50
2001	6,785,248.456	11,824,781.930	218.02	217.52	0.50
2002	6,785,256.812	11,824,881.506	217.70	217.22	0.48



**TABLE 8**  
**SUMMARY OF LANDFILL SETTLEMENT DATA - continued**  
**Project XL**  
**King George County Landfill and Recycling Center**  
**King George County, Virginia**

Point No.	Northing	Easting	Elev 1/9/2004	Elev 4/6/2004	Difference 1/9/2004 to 4/6/2004
2003	6,785,265.180	11,824,981.217	218.93	218.44	0.49
2009	6,785,364.886	11,824,972.951	233.96	232.94	1.02
2010	6,785,356.487	11,824,873.240	232.79	231.77	1.02
2011	6,785,348.144	11,824,773.755	233.67	232.79	0.88
2012	6,785,348.134	11,824,773.630	235.08	233.83	1.25
2013	6,785,339.845	11,824,674.019	241.20	240.29	0.91
2014	6,785,439.424	11,824,665.653	240.08	238.90	1.18
2015	6,785,447.827	11,824,765.325	238.92	237.72	1.20
2016	6,785,456.211	11,824,865.005	237.33	236.16	1.18
2023	6,785,572.591	11,825,056.004	239.46	238.05	1.41
2024	6,785,564.236	11,824,956.388	241.10	240.01	1.09
2025	6,785,555.898	11,824,856.730	242.70	241.92	0.78
2026	6,785,547.534	11,824,757.074	242.10	241.08	1.01
2027	6,785,539.183	11,824,657.418	242.78	241.79	0.98
2028	6,785,537.109	11,824,632.498	244.34	243.28	1.06
2029	6,785,636.758	11,824,624.140	243.83	243.77	0.06
2030	6,785,638.817	11,824,649.053	244.85	244.07	0.79
2031	6,785,647.264	11,824,748.715	244.22	243.16	1.06
2032	6,785,655.574	11,824,848.362	242.59	241.60	0.99
2040	6,785,772.064	11,825,039.413	245.79	245.13	0.67
2041	6,785,763.606	11,824,939.696	246.72	245.96	0.76
2042	6,785,755.305	11,824,840.099	247.34	246.54	0.81
2043	6,785,746.963	11,824,740.458	245.98	245.34	0.65
2044	6,785,738.644	11,824,640.796	246.48	245.62	0.86
2045	6,785,734.462	11,824,590.978	247.57	246.18	1.38
2046	6,785,834.070	11,824,582.620	247.20	246.07	1.14
2047	6,785,838.299	11,824,632.437	246.41	246.41	0.00
2048	6,785,846.689	11,824,732.115	248.00	246.72	1.29
2049	6,785,854.908	11,824,831.718	247.67	246.72	0.95
2058	6,785,971.553	11,825,022.844	249.04	248.42	0.62
2059	6,785,963.148	11,824,923.161	248.91	248.05	0.86
2060	6,785,954.797	11,824,823.503	249.65	248.71	0.93
2061	6,785,946.396	11,824,723.855	249.75	248.82	0.93
2062	6,785,938.014	11,824,624.196	249.66	248.36	1.30
2063	6,785,931.278	11,824,544.488	249.89	248.95	0.95
2064	6,786,030.993	11,824,536.111	249.12	248.36	0.75
2065	6,786,037.774	11,824,615.832	249.51	248.53	0.98
2066	6,786,046.102	11,824,715.479	247.49	247.49	0.00
2067	6,786,054.381	11,824,815.140	249.63	248.83	0.79

## APPENDIX D

### LANDFILL GAS DATA

(summary data included,  
complete data available upon request)

APPENDIX E  
GROUNDWATER QUALITY  
COMPLIANCE



Waste Industry Experts

Joyce Engineering, Inc  
1604 Ownby Lane  
Richmond, VA 23220

tel: 804/355-4520  
fax: 804/355-4282

www.JoyceEngineering.com

RECEIVED JUL 16 2004

July 14, 2004

Mr. Mike Thomas, P.E.  
c/o Waste Management, Inc.  
10376 Bullock Drive  
King George, Virginia 22485

Re: King George County Landfill, Permit No. 586  
XL Project  
JEI Project No. 464.04.01 File No. 1.2

Dear Mike:

Per your request, Joyce Engineering, Inc. has compared the available groundwater monitoring data through June 2004 for the uppermost aquifer compliance monitoring network at the King George County Landfill, Permit No. 586, to the current Maximum Contaminant Levels (MCL) for the constituents that are listed in Table 1 of 40 CFR Part 258.40. I understand that this comparison is required pursuant to the Site Rule Making Requirements for the XL Project.

Based on my review, the following constituents in Table 1 of 40 CFR Part 258.40 have been detected at concentrations that exceed the current MCL; however, it is noted that the detected concentrations were less than the facility background concentrations at the time of detection. Subsequently, the concentrations did not represent statistically significant concentrations and the monitoring program at the King George County Landfill, Permit No. 586, was allowed to continue in the Detection Monitoring Program.

Constituent	Current MCL (ug/L)	Sample Location	Sample Date	Monitoring Result (ug/L)
Arsenic	10.0	TW02U	8/8/96	20
		TW06D	6/21/96	33
		TW11D	12/17/02	12
Cadmium	5.0	TW02U	3/18/99	16
			9/8/98	6.4
			3/19/97	12
			12/29/97	9.2
			1/17/97	8.5
			2/13/97	8.4
			9/5/97	7
			12/16/96	14
		TW06D	6/21/96	8.9

Mr. Mike Thomas  
January 14, 2004  
Page 2

Constituent	Current MCL (ug/L)	Sample Location	Sample Date	Monitoring Result (ug/L)
Cadmium	5.0	TW13D	3/19/99	18
			12/17/98	9.5
			6/16/98	6.8
Lead	15.0	TW01U	3/10/03	31
			12/11/00	20
		TW02U	8/8/96	51
			6/21/96	20

Note that the wells designated with the postscript "U" are considered upgradient wells at this facility. If you have any questions, please contact me at 804-355-4520.

Sincerely  
JOYCE ENGINEERING, INC.



David McMillan,  
Staff Environmental Scientist II

Cc: Doug Mandeville, Staff Engineer, Geosyntec Consultants, Inc.,  
10015 Old Columbia Road, Suite A-200, Columbia, Maryland 21046

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