

CITY OF GRAND PRAIRIE LANDFILL  
DALLAS COUNTY, TEXAS  
TCEQ PERMIT NO. MSW-996C

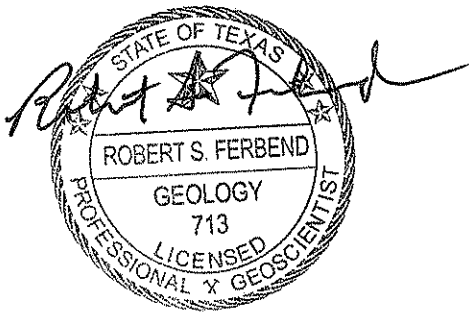
PERMIT MODIFICATION

GROUNDWATER SAMPLING AND ANALYSIS PLAN

Prepared for

City of Grand Prairie

October 2009



10-15-09

Prepared by

**Weaver Boos Consultants, LLC-Southwest**

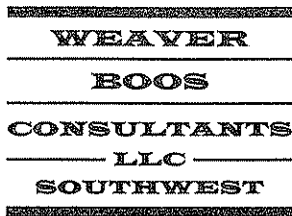
TBPE Registration No. F-3727

6420 Southwest Boulevard, Suite 206

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Project No. 0628-01-14-08-11



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October 15, 2009  
Project No. 0628-01-14-08-11

Elizabeth Slone, Environmental Project Manager  
Waste Permits Division  
Texas Commission on Environmental Quality  
12100 Park 35 Circle, Building F  
Austin, Texas 78753-1808

Re: Response to Comment Regarding GWSAP Revisions  
City of Grand Prairie Landfill – MSW Permit No. 996C  
Dallas County, Texas  
Tracking Nos. 12350828, 12780935; RN100542216 / CN600253967

Dear Ms. Slone:

The purpose of this letter, submitted on behalf of the City of Grand Prairie, is to respond to your GWSAP revision comment included in the TCEQ letter dated September 2, 2009. The following includes your comment in the September 2, 2009 TCEQ letter (in bold) and the response.

1. **Section 6 (Statistical Analysis Plan) states that non-parametric prediction limits (NPPLs) will be combined with Sen's Slope/Mann Kendall trend analysis. NPPLs are useful for detecting statistically significant increases from background groundwater quality for constituents that are not normally distributed or have detection rates below a certain threshold. However, it is not clear in the modification application how the trend analysis would be combined with the NPPL, or whether it is appropriate to do so.**

**We suggest that to expedite the completion of the technical review of the current application, you delete discussions regarding Sen's Slope/Mann Kendall trend analysis from Section 6. If at a later time you prepare a detailed explanation of how the tests would be implemented, and can demonstrate that such a combination is appropriate for detecting increases from background, you may propose o modify the GWSAP to incorporate the procedure.**

**Response:**

Per your suggestion, the discussions regarding Sen's Slope/Mann Kendall trend analysis have been deleted from the GWSAP's Section 6 as indicated in Appendices A and B.

Ms. Elizabeth Slone  
October 15, 2009  
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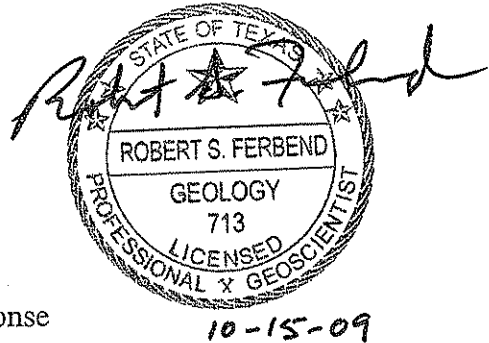
During your review, if you need any additional information or have any questions, please call me.

Sincerely,  
**Weaver Boos Consultants, LLC-Southwest**

Robert S. Ferbend, P.G.  
Senior Hydrogeologist

Attachment: GWSAP Permit Modification Comment Response

cc: Sam Barrett, Waste Program Manager, TCEQ Region 4 Fort Worth Office  
Dr. Patricia Redfearn, City of Grand Prairie Landfill



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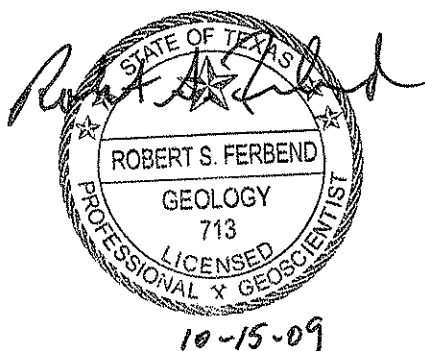
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#### APPENDIX C

Landownership Map and Address List

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TCEQ Part I Application Form 0650/Applicant Certification



## **PERMIT MODIFICATION NARRATIVE**

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### **Introduction**

The purpose of this permit modification is to revise the Groundwater Sampling and Analysis Plan (GWSAP) for the City of Grand Prairie Landfill. These modifications are necessary to comply with the revised Title 30 Texas Administrative Code (TAC) §330 Subchapter J regulations (effective March 26, 2006). The revisions in the Subchapter J rules regarding GWSAPs (reference Title 30 TAC §330.403 through §330.415 and §330.419) require an update to the landfill's GWSAP. The facility submitted a combined monitoring well spacing and GWSAP permit modification in March 2008. At the TCEQ's request, the well spacing permit modification has been addressed separately from the GWSAP revisions. This permit modification submittal only addresses GWSAP revisions and the TCEQ's GWSAP comments in the TCEQ comment letter dated September 2, 2009.

### **Existing GWSAP**

The TCEQ-approved GWSAP contains text that is inconsistent with the revised Subchapter J rules. The existing GWSAP is Attachment 11 of the Major Permit Amendment application (TCEQ approved October 2006 with a Subchapter F permit modification revision in February 2007).

### **Proposed GWSAP**

The proposed GWSAP changes are detailed in the replacement pages portions of this permit modification. In summary, the key areas of GWSAP changes include the following:

- Throughout the proposed GWSAP, specific Title 30 TAC §330 Subchapter J regulatory citations have been updated to the revised Title 30 TAC §330 numbering system.
- Section 4.1 of the GWSAP has been modified to include TCEQ requested Practical Quantitation Limit (PQL) text. In addition, the monitoring constituent table has been migrated to this section and the former EPA methods and reporting limits have been removed.

- Section 4.3 of the GWSAP has been modified to reflect a change to an annual groundwater monitoring report submittal.
- Section 5.3 of the GWSAP has been modified for assessment monitoring response actions.
- References in the GWSAP to statistically significant increases of groundwater constituents in *point of compliance* monitoring wells have been changed to *all* monitoring wells.
- Existing GWSAP Appendix D Statistical Analysis Plan references have been corrected to Attachment 11D Statistical Analyses Flow Charts. The text portion of the Statistical Analysis Plan has been updated and migrated to the GWSAP's Section 6.
- Section 6 has been revised to remove discussions regarding the use of Sen's Slope/Kendall Mann analyses for detection monitoring.

## **SDP Replacement Pages**

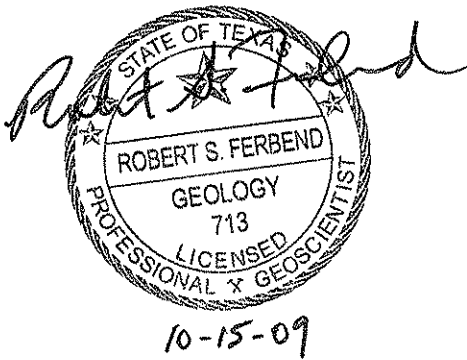
Consistent with Title 30 TAC §305.70(e)(3), applicable drawings and text within the currently permitted SDP that are affected by the changes in this modification are included in Appendix A (redline/strikeout copy) and Appendix B (clean replacement pages Appendix A redline/strikeout copy).

## **Permit Modification Justification**

The City of Grand Prairie understands the importance of maintaining effective environmental controls at its landfill. The purpose of this permit modification is to update the facility's GWSAP with respect to the revised Title 30 TAC §330 rules. Please process this modification with notice in accordance with Title 30 TAC §330.70(l) and §330.401(b). It is our understanding that public notice will be required for this particular modification. One original and one copy of this permit modification submittal are provided for your review and distribution. A copy of the submittal has also been sent to the TCEQ Region 4 office in Fort Worth consistent with Title 30 TAC §305.44 and §305.70(f). Another copy of this submittal has been placed in the facility's site operating record.

Per Title 30 TAC §330.70(e)(5), an adjacent landowners map and landowners list are provided as the Permit Modification's Appendix D. The TCEQ Part I Application Form is provided as the Permit Modification's Appendix E. In accordance with Title 30 TAC §330.59(h)(1), a payment of \$150 has been made online through the TCEQ ePay system as indicated on page 8 of the Part I Application Form in the Permit Modification's Appendix E.

APPENDIX A  
SDP REPLACEMENT PAGES  
(REDLINE/STRIKEOUT COPY)



**CITY OF GRAND PRAIRIE LANDFILL  
DALLAS COUNTY, TEXAS  
TCEQ PERMIT NO. MSW-996C**

**MAJOR PERMIT AMENDMENT APPLICATION**

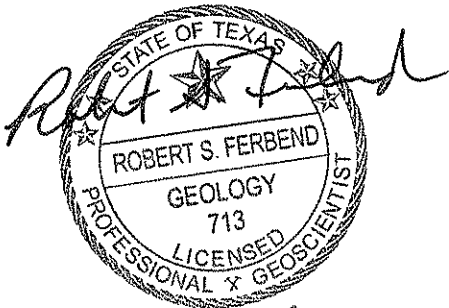
**PART III – SITE DEVELOPMENT PLAN  
ATTACHMENT 11  
GROUNDWATER SAMPLING AND ANALYSIS PLAN  
(GWSAP)**

Prepared for

City of Grand Prairie

TCEQ Approved October 2006  
Revised February 2007

~~Revised August 2009~~  
~~Revised October 2009~~



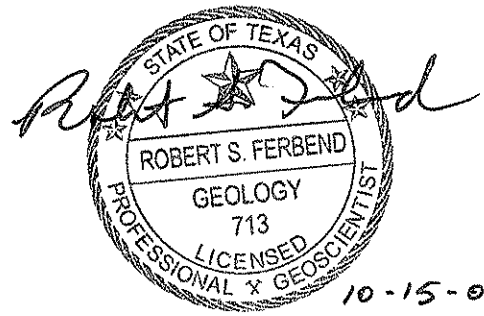
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WBC Project No. 0628-01-14-08-11





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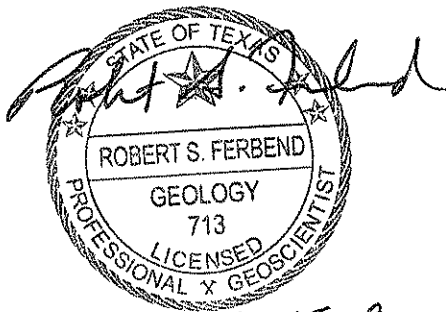
**APPENDIX A** – Sample Field Data Sheet

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## 6 STATISTICAL ANALYSIS PLAN

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### 6.1 Introduction

This section provides a statistical methodology for groundwater monitoring at the City of Grand Prairie Landfill. A tiered evaluation approach has been developed for detection monitoring wells. Intrawell comparisons of heavy metals will be conducted using Shewhart-CUSUM control charts ~~or parametric prediction limits~~. Non-parametric prediction limits ~~combined with Sen's Slope/MannKendall trend analysis~~ will be applied to those parameters with greater than 50 percent non-detections (25 percent under ASTM standards) in the background data set. Statistical limits for volatile organic compounds in detection monitoring wells will be based on method PQL reporting limits as defined by the TCEQ. Assessment monitoring constituents will be statistically evaluated using detection monitoring statistics and 95 percent confidence interval analysis. Details of each method are provided in the following sections. Statistical comparisons will be performed using Sanitas™, a commercial software program developed by Intelligent Decision Technologies, Inc. or another comparable computer program.

This section has been prepared using generally accepted statistical analysis principals and practices. However, it is not possible to predict all of the potential future circumstances. Therefore, alternative methods may be used that are more appropriate for the data distribution of the constituents being evaluated. ~~Non-parametric prediction limits will not be combined with Sen's Slope/Mann Kendall trend analyses without prior TCEQ consultation regarding the applicability of this combined approach and the approach's reporting needs. As of July 2009, the facility has not used this statistical approach.~~

### 6.2 Statistical Analyses for Heavy Metals Detection Monitoring

#### 6.2.1 Shewhart-CUSUM Control Charts

Heavy metals data from detection monitoring events will be statistically evaluated using combined Shewhart-CUSUM control charts. This procedure assumes that the data are independent and normally distributed with a fixed mean and constant variance. The most important assumption is independence, therefore wells should be sampled no more frequently than quarterly (Gibbons, 1994). The assumption of normality is less of a concern and natural log or ladder of powers transformations are adequate for most applications. The analysis is only applied to constituents that have greater than 50 percent detections (25 percent under ASTM standards) in the background data. For those

heavy metals with fewer than 50 percent detections in the background data set, a non-parametric prediction limit/Sen's Slope/Mann-Kendall trend analysis will be used.

Shewhart-CUSUM control charts allow detection of both major and gradual releases from the facility independent of spatial variation. This procedure is specifically recommended in the USEPA document *Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities* (April 1989).

## 6.2.2 Procedure

Control charts are a form of time-series graph, on which a parametric statistical representation of concentrations of a given constituent are plotted at intervals over time. The statistics are computed and plotted together with an upper and/or lower control limit on a chart where the x-axis represents time.

The Procedure for conducting the intrawell analysis using combined Shewhart-CUSUM control charts is provided below and a flow chart illustrating the decision making process is provided as Figure D-1 of Appendix D.

Three parameters are selected prior to plotting:

- h** - The control limit to which the cumulative sum (CUSUM) values are compared. The EPA recommended value for **h** is 5 units of standard deviation.
- K** - A reference value that establishes the upper limit for the acceptable displacement of the standardized mean. The EPA recommended value for **k** is 1.
- SCL** - The upper Shewhart control limit to which the standardized mean will be compared. The EPA recommended value for **SCL** is 4.5.

For each time period,  $T_i$ , take  $n_i$  independent samples ( $n_i$  may be one), and calculate the mean,  $\bar{x}_i$ . Compute the standardized mean  $Z_i$  of the measured concentrations where only a single new measurement is obtained for each constituent at each event as :

$$Z_i = (X_i - \bar{X})\sqrt{n_i} / S$$

Where:

- $x_i$  = value obtained for a constituent during monitoring event  $i$ .
- $s$  = The standard deviation obtained from prior monitoring data from the same well.

When applicable, for each time period,  $T_i$ , compute the cumulative sum,  $S_i$ , as:

$$S_i = \max\{0, (Z_i - k) + S_{i-1}\}$$

Where  $\max\{A,B\}$  is the maximum of A and B, and  $S_0 = 0$ .

may be applied. Parameters may be initially tested using the non-parametric prediction limit analysis. Constituents exceeding the non-parametric prediction limit may then be tested using the Sen's Slope/Mann-Kendall trend analysis. Non-parametric prediction limit values will not be combined with other detection monitoring data in trend analyses. An initial statistical exceedance will be indicated if the measured concentration exceeds both the non-parametric prediction limit and exhibits a significant upward trend.

### 6.2.2.54 Non-Parametric Prediction Limit Analysis

An upper prediction limit is a statistical limit calculated to include one or more observations from the same population with a specified confidence. In groundwater monitoring, an upper prediction limit approach may be used to make comparisons between background and compliance well data. The limit is constructed to contain all  $k$  observations with stated confidence. Any observation exceeding the upper prediction limit provides statistically significant evidence that the observation is not representative of the background group. The number of observations,  $k$ , to be compared to the limit must be specified in advance. A flow chart illustrating the decision making process during the analysis is provided as Figure D-2 of Appendix D.

The highest value from the background data is used to set the upper prediction limit. In the case of a two-tailed test, the lowest value from the background data is used to set the lower prediction limit. Under EPA Standards, the false positive rate is based upon the formula:

$$1-(n/(n+k))$$

Where:

$n$  = The background sample size, and

$k$  = The number of future values being compared to the limit.

### 6.2.2.6 Sen's Slope/Mann-Kendall Trend Analysis

The Sen's Slope/Mann-Kendall trend analysis procedure determines the significance of an apparent trend and evaluates the magnitude (slope) of that trend (IDT, 2002). The Mann-Kendall test for temporal trend is a non-parametric procedure designed to test the null hypothesis,  $H_0$ :

————  $H_0$ : No significant trend of a constituent exists over time.

And the alternative hypothesis,  $H_A$ :

————  $H_A$ : A significant upward trend of a constituent concentration exists over time.

Wells for which less than 41 data points are available, the exact test is applied. For 41 or more data points, the Normal Approximation test is used.

~~The Sen's Slope estimator portion of the combined method provides an estimate of the true slope. The method is a non-parametric procedure not greatly affected by gross data errors or outliers, and can be computed when data are missing.~~

### **6.3 Statistical Evaluation of Volatile Organic Compounds**

Volatile organic compounds (VOCs) will be routinely monitored during the detection monitoring program. The statistical limit for VOCs detected in wells under detection monitoring will be set equal to the laboratory reporting limit (PQL). As with the prediction limit statistical method, VOC detections will not be considered statistically significant unless confirmed by verification resampling. Verification resampling procedures are provided in Section 5.3.

### **6.4 Verification Resampling**

Verification resampling is an integral part of the presented statistical methodology. Results for constituents that exceed statistical limits will not be considered statistically significant unless they are confirmed through verification resampling. Verification resampling procedures are discussed in Section 5.3.

If a statistically significant ~~change~~increase (SSI) from background of any tested constituent at any monitor well has occurred (i.e. is confirmed) and there is reasonable cause that a source other than the landfill exists, then a report will be submitted documenting the alternative source in accordance with Section 5.3 and TCEQ regulations. Otherwise, assessment monitoring will be implemented in accordance with Section 5.3 and TCEQ regulations.

### **6.5 Assessment Monitoring Statistical Analyses**

For assessment wells, Table 4-1 of Section 4 constituents exceeding detection monitoring statistical limits and that have a groundwater protection standard (GWPS) established by the USEPA or the TCEQ, and/or any VOC detections will be statistically compared to GWPS using one-sided 95-percent lower confidence limits (LCL). Evaluations are conducted per Gibbons and Coleman (2001). The method constructs a normal confidence interval on the mean concentration of a constituent incorporating, at a minimum, the four most recent semi-annual measurements. A separate interval is constructed for each constituent of interest in each well of interest. A confidence interval is generally used when down gradient samples are being compared to a GWPS. A flow chart depicting the decision making process during the analysis is provided as Figure D-3 of Appendix D.

The lower 95-percent confidence limit on the mean will be compared to a GWPS to decide initially whether the mean concentration of a constituent of interest has exceeded a GWPS. If the lower 95-percent confidence limit on the mean exceeds the GWPS, then

U.S. Environmental Protection Agency, 1992. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Addendum to Interim Final Guidance. Office of Solid Waste Management Division, U.S. Environmental Protection Agency, Washington D.C.

U.S. Environmental Protection Agency, 1992. RCRA Ground water Monitoring: Draft Technical Guidance. EPA/530-R-93-001, NTIC #PB93-139-350, Office of Solid Waste and Emergency Response, Washington D.C.

U.S. Environmental Protection Agency, 1991b. Handbook – Ground water, Volume II: Methodology. EPA/625/6-90/0166.

U.S. Environmental Protection Agency, November 1986. Test Methods for Evaluating Solid Waste – Physical/Chemical Methods, Third Edition (revised), SW-846. Office of Solid Waste and Emergency Response, Washington, D.C.

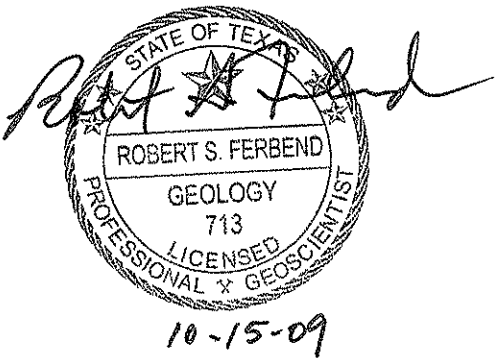
U.S. Environmental Protection Agency, November 1993. Solid Waste Disposal Facility Criteria Technical Manual. EPA/530-R-93-017, NTIC #PB94-100-450, Office of Solid Waste and Emergency Response, Washington, D.C.

Texas Natural Resources Conservation Commission (TNRCC), “Texas Administrative Code, Title 30, Chapter 330, Municipal Solid Waste,” March 27, 2006 (Effective date).



APPENDIX B

SDP REPLACEMENT PAGES (CLEAN REPLACEMENT PAGES)



**CITY OF GRAND PRAIRIE LANDFILL  
DALLAS COUNTY, TEXAS  
TCEQ PERMIT NO. MSW-996C**

**MAJOR PERMIT AMENDMENT APPLICATION**

**PART III – SITE DEVELOPMENT PLAN  
ATTACHMENT 11  
GROUNDWATER SAMPLING AND ANALYSIS PLAN  
(GWSAP)**

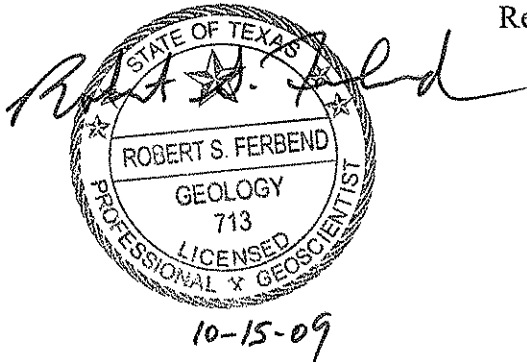
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TCEQ Approved October 2006

Revised February 2007

Revised October 2009

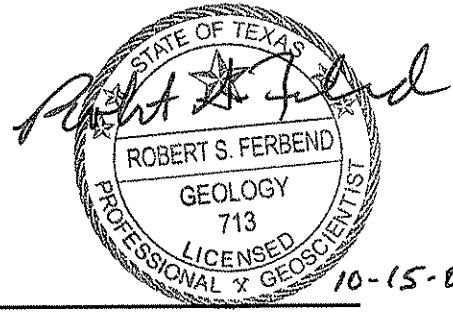


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WBC Project No. 0628-01-14-08-11



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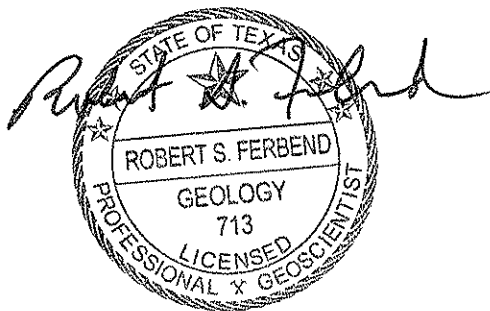
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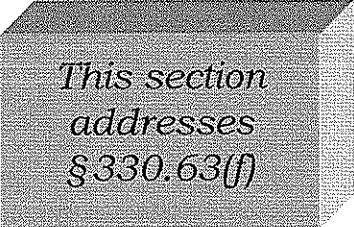
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# 1 INTRODUCTION

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This Groundwater Sampling and Analysis Plan (GWSAP) has been prepared for the City of Grand Prairie Landfill (MSW Permit No. 996C). The City of Grand Prairie Landfill is a Type I MSW disposal facility located approximately one-half mile north of the intersection of Interstate 30 and Macarthur Boulevard in Dallas County, Texas.



*This section  
addresses  
§330.63(f)*

The following plan covers the procedures for collecting representative samples from groundwater monitoring wells and the basic laboratory requirements for obtaining valid, defensible data. The plan is limited to sampling and analysis requirements and does not include monitoring well placement, design, construction, or development procedures.

This GWSAP is, and will be followed, in accordance with 30 TAC §330.405 through §330.415 and §330.419. Groundwater monitoring will be conducted at the facility through the active life and post-closure care period of the landfill, pursuant to 30 TAC §330.401(f).

## 2 FIELD PROCEDURES

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### 2.1 Health and Safety Plan

A Health and Safety Plan is required for all groundwater sampling events at the City of Grand Prairie Landfill. Prior to monitoring well purging and sampling, the sampling contractor's Groundwater Sampling Health and Safety Plan must be in place. Designing the facility's Groundwater Sampling Health and Safety Plan will be the duty of the party performing the actual work.

In addition, each analytic laboratory facility should have their own standard laboratory Health and Safety Plan as required by current OSHA regulations.

### 2.2 Sample Event Preparation and QA/QC

#### 2.2.1 General Event Preparation

The laboratory performing the groundwater analysis shall supply all necessary coolers, pre-cleaned containers, trip blanks, chemical preservatives, labels, custody seals, and chain-of-custody forms. All field data shall be entered on a Field Data Sheet (see example provided in Appendix A) or an equivalent form. Any changes to the monitoring plan and/or procedures need to be given to the laboratory prior to the field sampling personnel arriving at the facility. A specific contact person should be established at both the facility and contract laboratory for communication between the two entities.

#### 2.2.2 Sample Container Selection

Each sample container needs to be constructed of a material compatible and non-reactive with the material it is to contain. Consult Appendix B, *Containerization and Preservation of Samples*, to determine the number, type, and volume of appropriate containers. As noted in Section 2.2.1, the contract laboratory performing the analysis shall supply all the required containers. In circumstances when the facility must obtain its own containers, these containers will be purchased from local container distributors with the exception of septum vials and PTFE (e.g. Teflon<sup>®</sup>) lined caps required for organic analyses, which are available from laboratory supply companies. Metal lids shall not be utilized for any sample containers.

### 2.2.3 Sample Container Preparation

Sample containers will be purchased as a pre-cleaned product, or cleaned in the laboratory in a manner consistent with EPA protocol.

### 2.2.4 Equipment Preparation Prior To Facility Arrival

This section outlines the equipment preparation prior to facility arrival for a specific monitoring event. This equipment preparation includes, at a minimum, decontamination procedures for water level indicator(s) and field parameter (temperature, pH, specific conductivity, and turbidity) measurement device(s). Operation and calibration of field instruments will be performed per the manufacturer's instructions.

- Water Level Indicator(s) – Water level indicator(s) will be decontaminated prior to initial facility arrival by hand washing the sensor probe and entire length of tape in a laboratory grade, non-phosphate detergent followed by rinsing with organic-free water. While the tape is reeled back onto the carrying spool, the tape and probe will be wiped down with a clean, dry paper towel.
- Field Parameter (Temperature, pH, Specific Conductivity, and Turbidity) Measuring Device(s) – Field parameter measuring device(s) will be decontaminated by hand washing the sample cells in a laboratory grade, non-phosphate detergent followed by rinsing with organic-free water. Meters will then be checked for proper calibration and operation as per the manufacturer's instructions. Any malfunctioning meters will be replaced prior to packing.

In the case of equipment failure, it is recommended that back-up instruments be in the sample crew's possession. If a back-up instrument is not available, then sampling should not proceed until the proper equipment is made available.

### 2.2.5 Field QA/QC Samples

Field QA/QC samples consist of two primary areas of quality control. The first area is the quality control designed to prevent sample contamination from occurring in the field and/or shipping procedures. This is monitored in the trip blank, field blank(s), and any applicable equipment (rinsate) blank(s). A basic description of each is as follows:

- Trip Blank – This sample will be prepared in the laboratory by filling the appropriate clean sample containers with organic-free water and adding the applicable chemical preservative, if any, as indicated in Appendix B. These containers are then labeled "Trip Blank", the analyses to be performed on each container indicated, and then shipped in the typical transportation cooler to the field and back to the laboratory along with the other sample set containers for a given event. This blank is tested for any contamination that may occur as a result



of the sample containers, transportation methods, sample coolers, cleaning procedures, or chemical preservatives used. The trip blank will consist of analyses for volatile organics only, and shall be taken and analyzed for each sampling event at a frequency of one per event.

- Field Blank – Field blank containers will be prepared in the field at a routine sample collection point during a monitoring event by filling the appropriate sample containers from the field supply of organic-free water. This blank is tested to detect contamination that may occur as a result of facility ambient air conditions, and serves as an additional check for contamination in the containers, sample transport coolers, cleaning procedures, and any chemical preservatives. Field blanks will consist of analyses for volatile organics only, and shall be taken and analyzed for each sampling event at a frequency of one per day of sampling.
- Equipment (Rinsate) Blank – In the event that non-dedicated equipment is used to sample a well, an equipment blank will be collected. The use of a new disposable bailer in each sampled monitoring well is considered dedicated equipment. In the field, organic-free water will be passed through the non-dedicated equipment in the same manner as a groundwater sample. This blank confirms proper field decontamination procedures on non-dedicated equipment utilized in the field. For each sampling event where non-dedicated equipment is used, an equipment blank will be collected and analyzed for volatile organic compounds at a frequency of one per event.

Other Field QA/QC Samples – A second area of standard field QA/QC samples are field duplicates, matrix spike and matrix spike duplicates.

- A Field Duplicate sample is an extra set of samples taken at a particular monitoring point, generally from a designated downgradient well, and labeled so that the laboratory is unaware at what point the duplicate was collected. These are independent samples which are collected as close as possible to the same point in space and time. The field duplicate is useful in documenting the precision of the sampling and analytical process. Samples shall be collected in proper alternating order for the sample point and field duplicate for each parameter (e.g. VOA – VOA, metals – metals, etc.) The field duplicate sample(s) shall be taken and analyzed for each sampling event at a frequency of one per event.
- Matrix spikes are those samples having a known amount of target analyte added at the lab to a portion of the sample prior to sample preparation and analysis. The matrix spike is used to determine the bias of a method in a given sample matrix. Matrix spike duplicates are intralaboratory split samples spiked with identical concentrations of target analyte(s). The spiking occurs at the lab prior to sample preparation and analysis. They are used to document the precision and bias of a method in a given sample matrix. Matrix spike and matrix spike duplicates will be analyzed at an appropriate frequency as specified in the method requirements.

Field samples specifically for matrix spike/matrix spike duplicates will be collected as requested by the laboratory.

Appropriate field QA/QC documentation should be recorded on the Field Data Sheet (Appendix A) or equivalent form (e.g. location where field blank was collected).

## **2.3 Well Purge**

### **2.3.1 General Well Purge Information**

Purging a monitoring well is as important as the subsequent sampling of the well. Water standing in a monitoring well over a period of time may become unrepresentative of formation water because of chemical and biochemical changes that may cause alterations.

Prior to monitoring well purging, an inspection of each monitoring well's integrity will be noted on the Field Data Sheet (see Appendix A) or equivalent form. Visual problems with the monitoring well integrity should be noted on the Field Data Sheet.

### **2.3.2 Water Level Measurement**

Prior to purge or sampling activity at each monitoring well, a water level measurement is required.

Water level indicator equipment will be constructed of chemically inert materials, and will be decontaminated at each well with a non-phosphate detergent followed with a organic-free water rinse. Water levels will be measured with a precision of  $\pm 0.01$  foot. Each monitoring well has a reference elevation point located at the top of the wellhead assembly. This reference point elevation has been measured by a licensed surveyor in relation to Mean Sea Level (MSL).

Groundwater elevations in wells which monitor the same waste management area must be measured over a period of time short enough to avoid temporal variations in groundwater flow which could preclude accurate determination of groundwater flow rate and direction.

### **2.3.3 Purge Equipment**

Groundwater monitoring wells will be purged using a non-dedicated portable pump or non-dedicated purge bailer, dedicated bladder pumps or dedicated submersible pumps. The well purging procedures for non-dedicated equipment are described in Section 2.4.3.1. If installed, the dedicated pumps will remain dedicated to each respective well throughout the monitoring program – unless replacement is necessary due to damage or wear. In this case, repairs will be completed or a new pump will be installed. Purge procedures for dedicated equipment are provided in Section 2.4.3.2.

In the event that a dedicated pump is inoperative, the dedicated pump and tubing apparatus will be pulled for replacement or repair, and a portable pump or bailer will be used to purge the well until such time the pump is repaired/replaced and reinstalled in the well.

The well purging order will be from the upgradient to downgradient wells. If known impacts exist, purging will take place from the least impacted well to the most impacted well.

Prior to purging, the sampling personnel will put on clean disposable nitrile gloves and an initial water level will be measured in each well as described in Section 2.3.2. Nitrile gloves will be worn and replaced as necessary throughout purge operations at individual wells.

#### 2.3.3.1.1 Non-Dedicated Purge Equipment

##### Required Equipment:

- Non-dedicated pump/bailer
- Pump controller (if required)
- Generator or other power source/driving mechanism for pumps / appropriate disposable string or rope for bailer, downrigger (optional)
- New disposable tubing (if required)
- New disposable gloves of appropriate material (nitrile)
- Graduated pail or other appropriate container
- Field parameter measurement device(s)
- Container for laboratory grade, non-phosphate soap/organic-free water solution
- Container for organic-free water rinse

Operating Instructions (Specific operating instructions vary depending on the type of portable pump used. The steps listed below are generalized procedures.):

- Don a new pair of gloves.
- Cleanse the portable pump/bailer with a non-phosphate, laboratory grade detergent solution followed by an organic-free water rinse. Sufficient water should be passed through a non-dedicated pump to ensure proper cleansing.
- Attach new disposable tubing to pump or new disposable string to bailer.
- Insert pump and tubing/bailer into well.
- Start the portable pump by the appropriate method and adjust flow to desired rate / initiate removal of water from well with bailer. Ensure bailer and string do not touch ground during purging.

When purging with a bailer, introduce bailer into water column slowly (i.e. do not “drop” into water column) to avoid agitation of water in the well and immediate formation area.

Non-dedicated equipment will be constructed of chemically inert materials and will be decontaminated at each well with a non-phosphate detergent followed with an organic-free water rinse. Additional cleaning procedures will be performed as deemed necessary.

Rate of discharge and volume purged will be checked periodically with a graduated bucket and/or timer. Field parameter (temperature, pH, specific conductivity, and turbidity) measurements will be recorded after each well volume of water removed during purging.

### **2.3.3.2 Dedicated Purge Equipment**

Standard procedures for groundwater monitor well purge via dedicated pumps are as follows:

Equipment:

- Pump controller (if required)
- Air Compressor/Generator or other power source/driving mechanism for pumps
- New disposable gloves of appropriate material (nitrile)
- Graduated pail or other appropriate container
- Field parameter measurement device(s)

Procedure:

- Connect air hose/power lead from pump controller to well head.
- Start the pump driving mechanism (compressed air source/generator). Gasoline powered equipment should be in the downwind direction from the sample point
- Initiate pumping and adjust controller to desired flow rate.
- Continue pumping until purge criteria are met. Purge criteria are listed in Section 2.3.5.

The discharge volume purged will be checked periodically with a graduated bucket and/or timer.

### **2.3.4 Purge Volumes**

Groundwater monitoring wells will be purged of three (3) casing volumes or to dryness. The casing volume is the amount of water in the casing prior to purging and does not include the volume of water in the filter pack area.

### **2.3.5 Purge Water Management**

If the groundwater monitoring well purge water is known to be historically contaminated or suspect due to prior analytical data, the purge water shall be stored in appropriate containers until analytical results are available. After review of these analyses, proper arrangements for disposal or treatment of the purge water shall be made. Unimpacted purge water may be discharged on the ground away from the monitoring well location. Any impacted purge water will be handled in a manner similar to leachate, but may not be introduced into the landfill.

## **2.4 Monitoring Well Sample Collection**

### **2.4.1 General Sample Collection Information**

Groundwater sampling should take place as soon as purging is complete in moderate to high yield wells. The time interval between the completion of the monitoring well purge and sample collection normally should not exceed twenty-four hours. The City of Grand Prairie Landfill will use a maximum of seventy-two (72) hours for any low volume/low recharge wells at the facility to assist in the collection of representative samples. The groundwater samples will not be filtered in the field or in the laboratory.

### **2.4.2 Sample Collection Order**

Monitoring well sampling at each event shall proceed from upgradient to downgradient wells, unless contamination is known to be present. If contamination is known to be present, groundwater samples will be collected from the least to most contaminated wells to minimize the potential for cross-well contamination. Samples will be collected and containerized according of the volatility of the analytes. A specific collection order follows:

- Field Parameters
- Volatile Organic Compounds
- Total Metals

### **2.4.3 Sampling Equipment/Procedures**

Groundwater samples will be collected with a new disposable bailer or dedicated purging/sampling bladder or submersible pumps (if installed). Sampling procedures for disposable bailer sampling are described in Section 2.4.3.1. In the event that an installed dedicated pump was found to be inoperative and a portable pump or bailer was used to purge the well (see Section 2.3.4.1), the groundwater samples will be collected using a new disposable bailer. Detailed sampling procedures for dedicated pump sampling are described in Section 2.4.3.2.

#### **2.4.3.1 Non-Dedicated Equipment**

In the event that a dedicated pump is inoperative and the dedicated pump and tubing apparatus have been pulled for replacement or repair, the sample will be collected by means of a new disposable bailer as per the following procedure:

- a. Remove non-operative or non-dedicated purge equipment from well.
- b. Attach new string to a new disposable bailer.
- c. Insert bailer into well. Do not “drop” bailer into water column to avoid agitation of water.

Remove the bailer from well and slowly release water from the bailer directly into the required sample containers in accordance with the sample collection order described in Section 2.4.2. Repeat as necessary to collect sufficient samples for analyses. Ensure the bailer and string do not touch the ground during sampling.

#### **2.4.3.2 Dedicated Equipment**

Standard procedures for collecting representative groundwater samples after completion of purge with dedicated equipment is as follows:

- a. Reduce flow from pump to approximately 100 ml/minute.
- b. Sample field parameters.
- c. Sample for volatile organic compounds.
- d. Increase flow to a moderate rate (0.2 to 1.0 liters/minute).
- e. Sample metals and general water chemistry parameters.

### **2.4.4 VOC Sample Collection**

Filling VOC sample containers involves extra care. The water should be gently added to each vial until a positive meniscus is formed over the top of the container. This insures no headspace is present in the sample vial upon replacing the cap. After the cap has been

placed on the vial and tightened, the vial should be checked for air bubbles by turning upside down and tapping with finger. If a bubble is seen rising to the bottom of the vial, the process outlined above should be repeated. If no air bubbles are seen in each vial, the process is complete.

#### **2.4.5 Sample Preservation**

All samples will be containerized and preserved according to Appendix B, *Sample Containerization and Preservation of Samples*. Preservation acids will be added to the applicable sample container by the laboratory prior to sample collection.

Methods of preservation are intended to retard biological action, retard hydrolysis of chemical compounds and complexes, and reduce the volatility of constituents. Samples requiring refrigeration to four degrees centigrade will be accomplished by placing the sample containers immediately into coolers containing wet ice or the equivalent.

#### **2.4.6 Field Measurements**

Required field measurements include water levels, temperature, pH, and specific conductivity. Water level measurement procedures are described in Section 2.3.2. Field parameters will be measured using hand-held instruments.

All instruments will be properly calibrated and checked with standards according to the manufacturer's instructions. Any malfunctioning instruments must be replaced prior to continuing sample collection operations.

### **2.5 Record Keeping**

#### **2.5.1 Field Data Sheets**

All field notes shall be completely and accurately documented. All field information will be entered on a standard Field Data Sheet (an example of which is provided in Appendix A) or an equivalent form. All entries shall be legible and made in indelible ink. Entry errors will be crossed out with a single line and initialed by the person making the corrections.

#### **2.5.2 Chain-of-Custody/Sample Container Labels**

Proper chain of custody records are required to insure the integrity of the samples and the conditions of the samples upon receipt at the laboratory, including the temperature of the samples at the time of log-in. The sample collector shall fill in all applicable sections and forward the original, with the respective sample(s), to the laboratory performing the

analysis. Upon receipt of the samples at the laboratory, laboratory personnel are to complete the chain of custody, make a copy for his/her files, and make the original documents part of the final analytical report (see example chain of custody provided as Appendix C).

All sample containers will be labeled to prevent misidentification. The following will be indicated on an adhesive label with a waterproof pen:

- Collector's initials, date and time of sampling
- Sample source
- Sample Identification number
- Sample preservatives
- Test(s) to be performed on the sample

## **2.6 Sample Transport**

The samples shall be transported from the field to the analytical laboratory either by hand delivery or utilizing an overnight courier service. The samples shall be shipped in sealed, insulated shipping containers which maintain the samples at approximately 4°C. Overnight courier shipping containers must be a sturdy, water-proof design (ice chests are commonly used) equipped with bottle dividers and cushion material, as needed, to prevent container breakage during shipment.



### 3 LABORATORY QUALITY ASSURANCE AND QUALITY CONTROL

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The owner or operator shall review all analytical data submitted under the requirements of this permit to ensure compliance with data quality objectives, prior to submittal of the data to the commission for review. This data review must include examination of the quality control results and other supporting data, including any data review by the laboratory and must identify any potential impacts such as bias on the quality of the data using qualifiers in the test reports tied to explanations in footnotes and in any laboratory case narrative which is required.

It is the responsibility of the owner or operator to ensure that the laboratory documents and reports all problems and anomalies observed that are associated with the analysis. If the analysis of the data indicates that it failed to meet the quality control goals for the laboratory's analytical data analysis program, it does not necessarily mean that the data is unusable. The owner and/or operator may still report the analytical data but must report any and all problems and corrective action that the laboratory identified during the analysis.

A Laboratory Case Narrative (LCN) report for all problems and anomalies observed must be submitted by the owner and/or operator. The LCN will report the following information:

1. State the exact number of samples, testing parameters and sample matrix.
2. The name of the laboratory involved in the analysis. If more than one laboratory is used, all laboratories shall be identified in the case narrative.
3. State the test objective regarding samples.
4. Explain each failed precision and accuracy measurement determined to be outside of the laboratory and/or method control limits
5. Explain if the effect of the failed precision and accuracy measurements on the results induces a positive or negative bias.

6. Identify and explain problems associated with the sample results, along with the limitations these problems have on data usability.
7. A statement on the estimated uncertainty of analytical results of the samples when appropriate and/or when requested.
8. A statement of compliance and/or noncompliance with the requirements and specifications. Exceedance of holding times and identification of matrix interferences must be identified. Dilutions shall be identified and if dilutions are necessary, they must be done to the smallest dilution possible to effectively minimize matrix interferences and bring the sample into control for analysis.
9. Identify any and all applicable quality assurance and quality control samples that will require special attention by the reviewer.
10. A statement on the quality control of the analytical method of the permit and the analytical recoveries information shall be provided when appropriate and/or when requested.

In addition to the LCN, the following information must be submitted for all analytical data:

1. A Table identifying the field sample name with the sample identification in the laboratory report.
2. Chain of custody must be provided.
3. Analytical Report that documents the results and methods for each sample and analyte to be included for every analytical testing event. These test reports must document the reporting limit/method detection limit the laboratory used.
4. The analytical laboratory will complete a laboratory review checklist that is accepted by the TCEQ. A sample checklist is presented in Appendix E.
5. A release statement must be submitted from the laboratory. This statement must state "I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data."
  - a. If it is an in-house laboratory, it must have the following statement: This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

6. If the data is from soil and/or sediment samples, it must be reported on a dry weight basis with the percent solids and the percent moisture reported so that any back calculations of the wet analysis may be performed.

## 4 BACKGROUND DATA AND DETECTION MONITORING

### 4.1 Background and Detection Monitoring Constituents

The facility will monitor for the specific constituents listed in Table 4-1 in accordance with §330.419(a) and 40 Code of Federal Regulations (CFR) Part 258, Appendix I. The laboratory reporting limits will be quantitation limits that meet the requirements of 30 TAC §330.405(f)(5). Analytical results must be reported to the lowest concentration levels that can be reliably quantified (the practical quantitation limit). The practical quantitation limit (PQL) is defined as the lowest concentration reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions, and is considered equivalent to the limit of quantitation (LOQ) described in the most recent National Environmental Laboratory Accreditation Conference (NELAC) Standard ([www.nemc.us/epa12/2003standards.html](http://www.nemc.us/epa12/2003standards.html)). The PQL is method, instrument, and analyte specific and may be updated as more data becomes available.

The PQL will be below the groundwater protection standard established for each analyte in accordance with 30 TAC §330.409(h) unless approved otherwise by the TCEQ. The PQL will be determined as the concentration that corresponds to the following precision and accuracy criteria:

| Constituents/Chemicals<br>of Concern | Precision<br>(percent RCD) | Accuracy<br>(percent recovery) |
|--------------------------------------|----------------------------|--------------------------------|
| Metals                               | 10                         | 70-130                         |
| Volatiles                            | 20                         | 50-150                         |
| Semi-Volatiles                       | 30                         | 50-150                         |

The precision and accuracy of the PQL initially will be determined from the PQLs reported over the course of a minimum of eight groundwater monitoring events. The results obtained from these events will be used to demonstrate that the PQLs meet the specified precision and accuracy limits. The PQL may be updated as more data becomes available. The PQL will be supported by analysis of a PQL check sample, consisting of a laboratory reagent grade sample matrix spiked with constituents/chemicals of concern at concentrations equal to or less than the PQL. At a minimum, a PQL check sample will be performed quarterly during the calendar year to demonstrate the PQL continues to meet the specified limits for precision and accuracy.

Analytical results for data below the limit of detection ("non-detect" results) must be reported as less than the established PQL that meets the specified precision and accuracy requirements. If a PQL call not be established according to the specified precision and accuracy limits, the owner or operator will ensure that the laboratory provides sufficient

documentation to justify the alternate precision and accuracy limits. This information will be reported to the executive director by the owner or operator and will be evaluated on a case-by-case basis.

**Table 4-1  
Background and Detection Monitoring Constituents  
City of Grand Prairie Landfill**

| 15 Metal Constituents <sup>(1,2)</sup> |
|--|
| Antimony (total)                       |
| Arsenic <sup>3</sup> (total)           |
| Barium <sup>3</sup> (total)            |
| Beryllium (total)                      |
| Cadmium <sup>3</sup> (total)           |
| Chromium <sup>3</sup> (total)          |
| Cobalt (total)                         |
| Copper (total)                         |
| Lead <sup>3</sup> (total)              |
| Nickel (total)                         |
| Selenium (total)                       |
| Silver (total)                         |
| Thallium (total)                       |
| Vanadium (total)                       |
| Zinc (total)                           |

- (1) Analyses will be performed using the TCEQ – recommended EPA test methods or alternative methods with equivalent or better performance. New metals constituents currently compiling background data denoted with an asterisk.
- (2) Test Methods for Evaluating Solid Waste, Physical/Chemical Method, November, 1986, Third Edition, USEPA, SW-846 and additions thereto.
- (3) Existing monitoring wells began total metals background sampling in March 2007. Background sampling is scheduled to be completed in December 2008 after eight quarterly background events. The City will discontinue monitoring for the dissolved metals constituents indicated in Table 4-1 with TCEQ approval of the total metals background data set.

**Table 4-1 (Continued)  
Background and Detection Monitoring Constituents  
City of Grand Prairie Landfill**

| 47 VOC Constituents <sup>(1,2)</sup>                     |
|--|
| Acetone  |
| Acrylonitrile  |
| Benzene  |
| Bromochloromethane                                       |
| Bromodichloromethane                                     |
| Bromoform<br>(Tribromomethane)                           |
| Carbon Disulfide   |
| Carbon Tetrachloride                                     |
| Chlorobenzene  |
| Chloroethane<br>(Ethyl Chloride)                         |
| Chloroform<br>(Trichloromethane)                         |
| Dibromochloromethane<br>(Chlorodibromomethane)           |
| 1,2-Dibromo-3-chloropropane<br>(DBCP)                    |
| 1,2-Dibromoethane<br>(Ethylene Dibromide or EDB)         |
| o-Dichlorobenzene<br>(1,2-Dichlorobenzene)               |
| p-Dichlorobenzene<br>(1,4-Dichlorobenzene)               |
| trans-1,4-Dichloro-2-butene                              |
| 1,1-Dichloroethane<br>(Ethylidene Chloride)              |
| 1,2-Dichloroethane<br>(Ethylene Dichloride)              |
| 1,1- Dichloroethylene<br>(Vinylidene Chloride)           |
| Cis-1,2- Dichloroethylene<br>(Cis-1,2- Dichloroethylene) |
| trans-1,2-Dichloroethylene<br>(trans-1,2-Dichloroethene) |
| 1,2-Dichloropropane<br>(Propylene Dichloride)            |

- (1) Analyses will be performed using the TCEQ – recommended EPA test methods or alternative methods with equivalent or better performance.
- (2) Test Methods for Evaluating Solid Waste, Physical/Chemical Method, November, 1986, Third Edition, USEPA, SW-846 and additions there to.

**Table 4-1 (Continued)**  
**Background and Detection Monitoring Constituents**  
**City of Grand Prairie Landfill**

| 47 VOC Constituents (Continued) <sup>(1,2)</sup>         |
|--|
| cis-1,3-Dichloropropene                                  |
| trans-1,3-Dichloropropene                                |
| Ethyl Benzene  |
| 2-Hexanone<br>(Methyl Butyl Ketone or MBK)               |
| Methyl Bromide<br>(Bromomethane)                         |
| Methyl Chloride<br>(Chloromethane)                       |
| Methylene Bromide<br>(Dibromomethane)                    |
| Methylene Chloride<br>(Dichloromethane)                  |
| Methyl Ethyl Ketone<br>(2-Butanone or MEK)               |
| Methyl Iodide<br>(Iodomethane)                           |
| 4-Methyl-2-Pentanone<br>(Methyl Isobutyl Ketone or MIBK) |
| Styrene  |
| 1,1,1,2-Tetrachloroethane                                |
| 1,1,2,2-Tetrachloroethane                                |
| Tetrachloroethylene<br>(Tetrachloroethane)               |
| Toluene  |
| 1,1,1 Trichloroethane<br>(Methylchloroform)              |
| 1,1,2-Trichloroethane                                    |
| Tetrachloroethylene<br>(Tetrachloroethylene, TCE)        |
| Trichlorofluoromethane<br>(CFC-11)                       |
| 1,2,3-Trichloropropane                                   |
| Vinyl Acetate  |
| Vinyl Chloride   |
| Xylenes  |

- (1) Analyses will be performed using the TCEQ – recommended EPA test methods or alternative methods with equivalent or better performance.
- (2) Test Methods for Evaluating Solid Waste. Physical/Chemical Method, November, 1986, Third Edition, USEPA, SW-846 and additions there to.

#### **4.1.1 Background Data Collection**

As stated in 30 TAC §330.405 (b)(3)(A), the number of samples to be collected to establish groundwater quality data shall be consistent with the appropriate statistical procedures determined pursuant to 30 TAC §330.405(f). The collection of samples to establish background water quality will comply with 30 TAC §330.405(d). Due to the seasonal and temporal variations natural in groundwater analytical data and the groundwater monitoring requirements in Texas, eight (8) independent samples from each background and each downgradient well shall be collected in consecutive quarters and analyzed for the constituents referenced in §330.419(a) to establish initial background water quality. Upon completion of a new monitoring well's background data collection, the facility will evaluate the background data to ensure that the data are representative of background groundwater constituent concentrations unaffected by waste management activities or other sources of contamination. The evaluation shall be documented in a report and submitted to the TCEQ following the final background data collection event.

#### **4.1.2 Updating Background Data**

After completion of the initial eight quarterly background events, new semi-annual detection monitoring results that are demonstrated to be representative of background water quality may be incorporated into the background data pool at a maximum frequency of once every two years. Upon completion of the background update data collection, the facility will evaluate the background data to ensure that the data are representative of background groundwater constituent concentrations unaffected by waste management activities or other sources of contamination. The evaluation shall be documented in a report and submitted to the TCEQ before the next subsequent groundwater monitoring event following the background data collection period.

### **4.2 Detection Monitoring Events**

Within six months after completion of the background data collection period, detection monitoring events will begin that include sampling and analyses for both up gradient (background) and down gradient (point of compliance) monitoring wells. The detection monitoring events will be conducted on a semi-annual basis (approximately six month intervals) for constituents listed in Table 4-1. The TCEQ may, in accordance with 30 TAC §330.407(a)(2), specify an appropriate alternative frequency for repeated sampling and analyses of the constituents referenced in 30 TAC §330.419 during the active life, closure, and post-closure care periods.

### **4.3 Groundwater Analyses Result Submittals**

Three copies of an annual report describing groundwater sampling and analyses results will be completed and submitted to TCEQ within 90 days following the facility's last



calendar year monitoring event. All information required by 30 TAC §330.407(c) will be included in the annual report. In addition to the annual report, detection monitoring information (electronic data deliverables or EDDs) will be submitted to the TCEQ no later than 60 days after each sampling event. EDD data may be submitted to the TCEQ via email, diskette, or another format – as specified by the TCEQ. The annual groundwater monitoring reports will include a statement that all analyses were conducted by a laboratory or laboratories accredited under the Texas Laboratory Accreditation Program in accordance with 30 TAC §25.4, and that the laboratory or laboratories that performed the reported analyses had fields of accreditation for the analyses performed.

For each monitoring event's laboratory data, the facility will submit in the annual report:

The laboratory case narrative and either:

- i) A laboratory checklist similar to the checklist in Appendix E, or
- ii) The laboratory quality assurance and quality control data and laboratory analytical data (which may be submitted in hard-copy or electronic format). In the latter case, the report will specify *laboratory* analytical data, rather than “analytical data,” which could be confused with the analytical data submitted on form TCEQ-0312.

The laboratory case narrative (LCN) is described in detail in Section 3 of the GWSAP. The facility will also provide laboratory analytical data as requested by the TCEQ. The facility will explain any problems encountered in the laboratory analysis, either by adding additional explanations to the laboratory checklist or by extending the laboratory case narrative. Any information required in the laboratory case narrative that cannot be completed by the laboratory will be completed by the facility.

The facility will determine whether there has been a SSI over background of any tested constituent at any monitoring well no later than 60 days after each sampling event. If an SSI has been determined, the facility will notify the TCEQ (and any local pollution agency with jurisdiction that has requested to be notified) in writing within 14 days of the SSI determination.

## **5 STATISTICAL METHODOLOGY – GROUNDWATER DATA ANALYSIS**

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Statistical comparisons will be performed using Sanitas™, a commercial software program developed by Intelligent Decision Technologies, Inc. or another comparable computer program. Statistical analyses of groundwater data will be performed in accordance with 30 TAC §330.405, §330.407 and §330.409. A statistical analysis plan is presented in Section 6 that has been prepared using generally accepted statistical analysis principals and practices. However, it is not possible to predict all of the potential future circumstances. Therefore, alternative methods may be used that are more appropriate for the data distribution of the constituents being evaluated.

### **5.1 Statistical Analysis for Organic Constituents (47 Volatile Organic Compounds)**

Statistical analysis for the forty-seven (47) volatile organic compounds in Table 4-1 of Section 4.1 and referenced in §330.419(a) will commence within six (6) months after completion of the eight (8) quarterly background events as referenced in Section 4.1 of this plan. Statistical analysis of volatile organic compounds will be performed in accordance with Section 6 Statistical Analysis Plan. The facility will determine if an initial Statistically Significant Increase (SSI) of any volatile organic compound is indicated at any detection monitoring well within sixty (60) days of the sampling event as referenced in Section 4.3 of this plan. The facility will submit a written SSI notice to the TCEQ (and any pollution agency with jurisdiction that has requested to be notified) within 14 days of the date of the SSI determination.

### **5.2 Statistical Analysis for Heavy Metals**

Statistical analysis for the fifteen (15) heavy metals listed in Table 4-1 of Section 4.1 and referenced in §330.419(a) will commence within six (6) months after completion of the eight (8) quarterly background events as referenced in Section 4.1 of this plan. Statistical analysis of heavy metals will be performed in accordance with Section 6 Statistical Analysis Plan. The facility will determine if an initial SSI of any heavy metal is indicated at any detection monitoring well within sixty (60) days of the sampling event as referenced in Section 4.3 of this plan. The facility will submit a written SSI notice to the TCEQ (and any pollution agency with jurisdiction that has requested to be notified) within 14 days of the date of the SSI determination.

### **5.3 Statistically Significant Constituents and Verification Resampling**

An initial SSI will be based on reported laboratory concentrations for any compound detected in any monitor well at a concentration above the specific constituent's statistical limit.

Verification resampling is an integral part of the presented statistical methodology. In the event of an initial SSI for constituents listed in Table 4-1, verification resampling will be completed and results submitted prior to the next semi-annual sampling event.

In the event that one or more constituents listed in Table 4-1 are confirmed through verification resampling as an SSI in any monitor well and no source other than the MSWLF, error, or natural variation is demonstrated, then within 90 days of the initial SSI notification date, assessment monitoring will be initiated. The facility will comply with the TCEQ timelines for submittals concerning SSIs and assessment monitoring that are specified in 30 TAC §330.407(b) and 30 TAC §330.409.

## 6 STATISTICAL ANALYSIS PLAN

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### 6.1 Introduction

This section provides a statistical methodology for groundwater monitoring at the City of Grand Prairie Landfill. A tiered evaluation approach has been developed for detection monitoring wells. Intrawell comparisons of heavy metals will be conducted using Shewhart-CUSUM control charts or parametric prediction limits. Non-parametric prediction limits will be applied to those parameters with greater than 50 percent non-detections (25 percent under ASTM standards) in the background data set. Statistical limits for volatile organic compounds in detection monitoring wells will be based on method PQL reporting limits as defined by the TCEQ. Assessment monitoring constituents will be statistically evaluated using detection monitoring statistics and 95 percent confidence interval analysis. Details of each method are provided in the following sections. Statistical comparisons will be performed using Sanitas™, a commercial software program developed by Intelligent Decision Technologies, Inc. or another comparable computer program.

This section has been prepared using generally accepted statistical analysis principals and practices. However, it is not possible to predict all of the potential future circumstances. Therefore, alternative methods may be used that are more appropriate for the data distribution of the constituents being evaluated.

### 6.2 Statistical Analyses for Heavy Metals Detection Monitoring

#### 6.2.1 Shewhart-CUSUM Control Charts

Heavy metals data from detection monitoring events will be statistically evaluated using combined Shewhart-CUSUM control charts. This procedure assumes that the data are independent and normally distributed with a fixed mean and constant variance. The most important assumption is independence, therefore wells should be sampled no more frequently than quarterly (Gibbons, 1994). The assumption of normality is less of a concern and natural log or ladder of powers transformations are adequate for most applications. The analysis is only applied to constituents that have greater than 50 percent detections (25 percent under ASTM standards) in the background data. For those heavy metals with fewer than 50 percent detections in the background data set, a non-parametric prediction limit will be used.

Shewhart-CUSUM control charts allow detection of both major and gradual releases from the facility independent of spatial variation. This procedure is specifically recommended in the USEPA document *Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities* (April 1989).

### 6.2.2 Procedure

Control charts are a form of time-series graph, on which a parametric statistical representation of concentrations of a given constituent are plotted at intervals over time. The statistics are computed and plotted together with an upper and/or lower control limit on a chart where the x-axis represents time.

The Procedure for conducting the intrawell analysis using combined Shewhart-CUSUM control charts is provided below and a flow chart illustrating the decision making process is provided as Figure D-1 of Appendix D.

Three parameters are selected prior to plotting:

- h** - The control limit to which the cumulative sum (CUSUM) values are compared. The EPA recommended value for **h** is 5 units of standard deviation.
- K** - A reference value that establishes the upper limit for the acceptable displacement of the standardized mean. The EPA recommended value for **k** is 1.
- SCL** - The upper Shewhart control limit to which the standardized mean will be compared. The EPA recommended value for **SCL** is 4.5.

For each time period,  $T_i$ , take  $n_i$  independent samples ( $n_i$  may be one), and calculate the mean,  $\bar{x}_i$ . Compute the standardized mean  $Z_i$  of the measured concentrations where only a single new measurement is obtained for each constituent at each event as :

$$Z_i = \left( X_i - \bar{X} \right) \sqrt{n_i} / S$$

Where:

- $x_i$  = value obtained for a constituent during monitoring event  $i$ .
- $s$  = The standard deviation obtained from prior monitoring data from the same well.

When applicable, for each time period,  $T_i$ , compute the cumulative sum,  $S_i$ , as:

$$S_i = \max\{0, (Z_i - k) + S_{i-1}\}$$

Where  $\max \{A,B\}$  is the maximum of A and B, and  $S_0 = 0$ .

Plot  $Z_i$  and  $S_i$  against  $T_i$  on the control chart. The results may be plotted in standardized units or converted to the concentration units of the constituents being evaluated. An "out-of-control" situation (potential contamination) occurs whenever  $Z_i \geq SCL$  or  $S_i \geq h$ . Two

different types of situation are controlled by the limits. Too large a standardized mean will occur if there is a rapid increase in concentration in the well. Too large a cumulative sum may also occur for a more gradual trend. A verified statistically significant increase (SSI) will occur if both the initial result *and* a verification sample result consecutively exceed one of the above mentioned statistical limits.

#### **6.2.2.1 Verification Resamples**

The Shewhart and CUSUM portions of the control chart are affected differently by initial statistically significant changes from background (SSIs). The Shewhart portion of the control chart compares each individual new measurement to the control limit, therefore the next monitoring event constitutes an independent verification of the original result. However, the CUSUM procedure incorporates all historical values in the computation, therefore, the effect of the apparent SSI will be present in both the initial and verification sample. Hence, the statistical test will be invalid unless the verification sample value replaces the initial SSI value. Therefore, initial SSI values will be replaced by verification resample results in order to confirm a SSI (Gibbons, 1994).

#### **6.2.2.2 Updating Control Charts**

As monitoring continues, the background mean and variance will be updated periodically to incorporate new data. At a minimum of every two years all new data that are in control may be pooled with the initial eight background samples and the mean and variance will be recomputed and used in constructing future control charts. TCEQ approval will be obtained prior to updating the background data pool.

#### **6.2.2.3 Censored Data**

If less than 15 percent of the background observations are less than the detection limit, these will be replaced with one half of the laboratory practical quantitation limit prior to running the analysis (U.S. EPA, April 1989).

If more than 15 percent but less than 50 percent of the background data are less than the detection limit, the data's sample mean and sample standard deviation are adjusted according to the method of Cohen or Aitchison.

If more than 50 percent of the background data are less than the detection limit, a nonparametric prediction limit will be computed.

#### **6.2.2.4 Non-Parametric Prediction Limit Analysis**

An upper prediction limit is a statistical limit calculated to include one or more observations from the same population with a specified confidence. In groundwater monitoring, an upper prediction limit approach may be used to make comparisons between background and compliance well data. The limit is constructed to contain all *k* observations with stated confidence. Any observation exceeding the upper prediction limit provides statistically significant evidence that the observation is not representative

of the background group. The number of observations, **k**, to be compared to the limit must be specified in advance. A flow chart illustrating the decision making process during the analysis is provided as Figure D-2 of Appendix D.

The highest value from the background data is used to set the upper prediction limit. In the case of a two-tailed test, the lowest value from the background data is used to set the lower prediction limit. Under EPA Standards, the false positive rate is based upon the formula:

$$1-(n/(n+k))$$

Where:

**n** = The background sample size, and

**k** = The number of future values being compared to the limit.

### **6.3 Statistical Evaluation of Volatile Organic Compounds**

Volatile organic compounds (VOCs) will be routinely monitored during the detection monitoring program. The statistical limit for VOCs detected in wells under detection monitoring will be set equal to the laboratory reporting limit (PQL). As with the prediction limit statistical method, VOC detections will not be considered statistically significant unless confirmed by verification resampling. Verification resampling procedures are provided in Section 5.3.

### **6.4 Verification Resampling**

Verification resampling is an integral part of the presented statistical methodology. Results for constituents that exceed statistical limits will not be considered statistically significant unless they are confirmed through verification resampling. Verification resampling procedures are discussed in Section 5.3.

If a statistically significant increase (SSI) from background of any tested constituent at any monitor well has occurred (i.e. is confirmed) and there is reasonable cause that a source other than the landfill exists, then a report will be submitted documenting the alternative source in accordance with Section 5.3 and TCEQ regulations. Otherwise, assessment monitoring will be implemented in accordance with Section 5.3 and TCEQ regulations.

### **6.5 Assessment Monitoring Statistical Analyses**

For assessment wells, Table 4-1 of Section 4 constituents exceeding detection monitoring statistical limits and that have a groundwater protection standard (GWPS) established by

the USEPA or the TCEQ, and/or any VOC detections will be statistically compared to GWPS using one-sided 95-percent lower confidence limits (LCL). Evaluations are conducted per Gibbons and Coleman (2001). The method constructs a normal confidence interval on the mean concentration of a constituent incorporating, at a minimum, the four most recent semi-annual measurements. A separate interval is constructed for each constituent of interest in each well of interest. A confidence interval is generally used when down gradient samples are being compared to a GWPS. A flow chart depicting the decision making process during the analysis is provided as Figure D-3 of Appendix D.

The lower 95-percent confidence limit on the mean will be compared to a GWPS to decide initially whether the mean concentration of a constituent of interest has exceeded a GWPS. If the lower 95-percent confidence limit on the mean exceeds the GWPS, then there is statistically significant evidence that the mean concentration of that constituent exceeds the GWPS. Upper 95-percent confidence limit analyses may be applied to constituents in which it's 95 percent LCL has exceeded a GWPS. If the upper 95-percent confidence limit on the mean occurs lower than the GWPS, then there is statistically significant evidence that the mean concentration of that constituent has returned to less than the GWPS.

## 6.6 Assumptions

The sample data used to construct the limits must be normally or transformed-normally distributed. In the case of a transformed-normal distribution, the confidence limit must be constructed on the transformed sample concentration values. In addition to the limit construction, the comparison must be made to the transformed GWPS value. When none of the transformed models can be justified, a nonparametric version of each limit may be utilized.

## 6.7 Distribution

The distribution of the data is evaluated by applying the Shapiro-Wilk or Shapiro-Francia test for normality to the raw data or, when applicable, to the Ladder of Powers (Helsel & Hirsch, 1992) transformed data. The null hypothesis,  $H_0$ , to be tested is:

$H_0$ : The population has a normal (or transformed-normal) distribution.

The alternative hypothesis,  $H_A$ , is:

$H_A$ : The population does not have a normal (or transformed-normal) distribution.



## 6.8 Censored Data

If less than 15 percent of the observations are less than the detection limit, these will be replaced with one-half the method detection limit prior to running the normality test and constructing the confidence limit.

If more than 15 percent, but less than 50 percent, of the data are less than the detection limit, the data's sample mean and standard deviation are adjusted according to the method of Cohen or Aitchison (USEPA April 1989). This adjustment is made prior to construction of the confidence limit.

If more than 50 percent of the data are less than the detection limit, these values are replaced with one half the method detection limit and a nonparametric confidence limit is constructed.

## 6.9 Parametric Confidence Limit Procedures

A minimum of four sample values is required for the construction of the parametric confidence limit. The mean,  $\bar{X}$ , and standard deviation,  $S$ , of the sample concentration values are calculated separately for each compliance well. For each well, the confidence limit is calculated as:

$$\bar{X} \pm t_{(1-\alpha, n-1)} \frac{S}{\sqrt{n}}$$

Where:

$S$  = The compliance point's standard deviation;

$n$  = The number of observations for the compliance point; and

$t_{(1-\alpha, n-1)}$  is obtained from the Student's t-Distribution (appendix B; U.S. EPA, April 1989) with (n-1) degrees of freedom.

The use of the 95<sup>th</sup> percentile of the t-Distribution is consistent with the 5 percent  $\alpha$  - level of individual well comparisons. If the lower limit is above the compliance limit, there is statistically significant evidence that the constituent exceeds a GWPS.

## 6.10 Nonparametric Confidence Limit Procedure

The nonparametric confidence limit procedure requires at least seven observations in order to obtain a one-sided significance level of 1 percent. The observations are ordered from smallest to largest and ranks are assigned separately within each well. Average ranks are assigned to tied values. The critical values of the order statistics are determined as follows.

If the minimum seven observations are used, the critical values are the first and seventh values. Otherwise, the smallest integer, **M**, is found such that the cumulative binomial distribution with parameters **n** (sample size) and probability of success,  $p=0.5$ , is at least 0.99.

The exact confidence coefficient for sample sizes from 4 to 11 is given by USEPA (Table 6-3; USEPA, April 1989). For larger samples, take as an approximation the nearest integer value to:

$$\mathbf{M} = \frac{n}{2} + 1 + Z_{(1-\alpha)} \sqrt{\frac{n}{4}}$$

Where:

$Z_{(1-\alpha)}$  = The  $1-\alpha$  percentile from the normal distribution found in Table 4 (appendix B; U.S. EPA, April 1989); and

$n$  = The number of observations in the sample.

Once **M** has been determined,  $(n+1-M)$  is computed and the confidence limits are taken as the order statistics, **X(M)** and **X(n+1-M)**. These confidence limits are compared to the GWPS.

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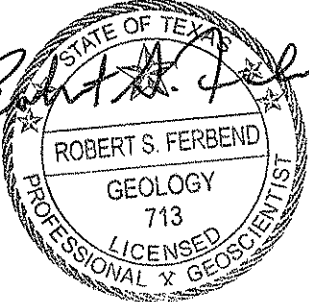
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APPENDIX C  
LAND OWNERSHIP MAP AND ADDRESS LIST

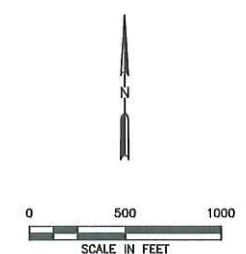
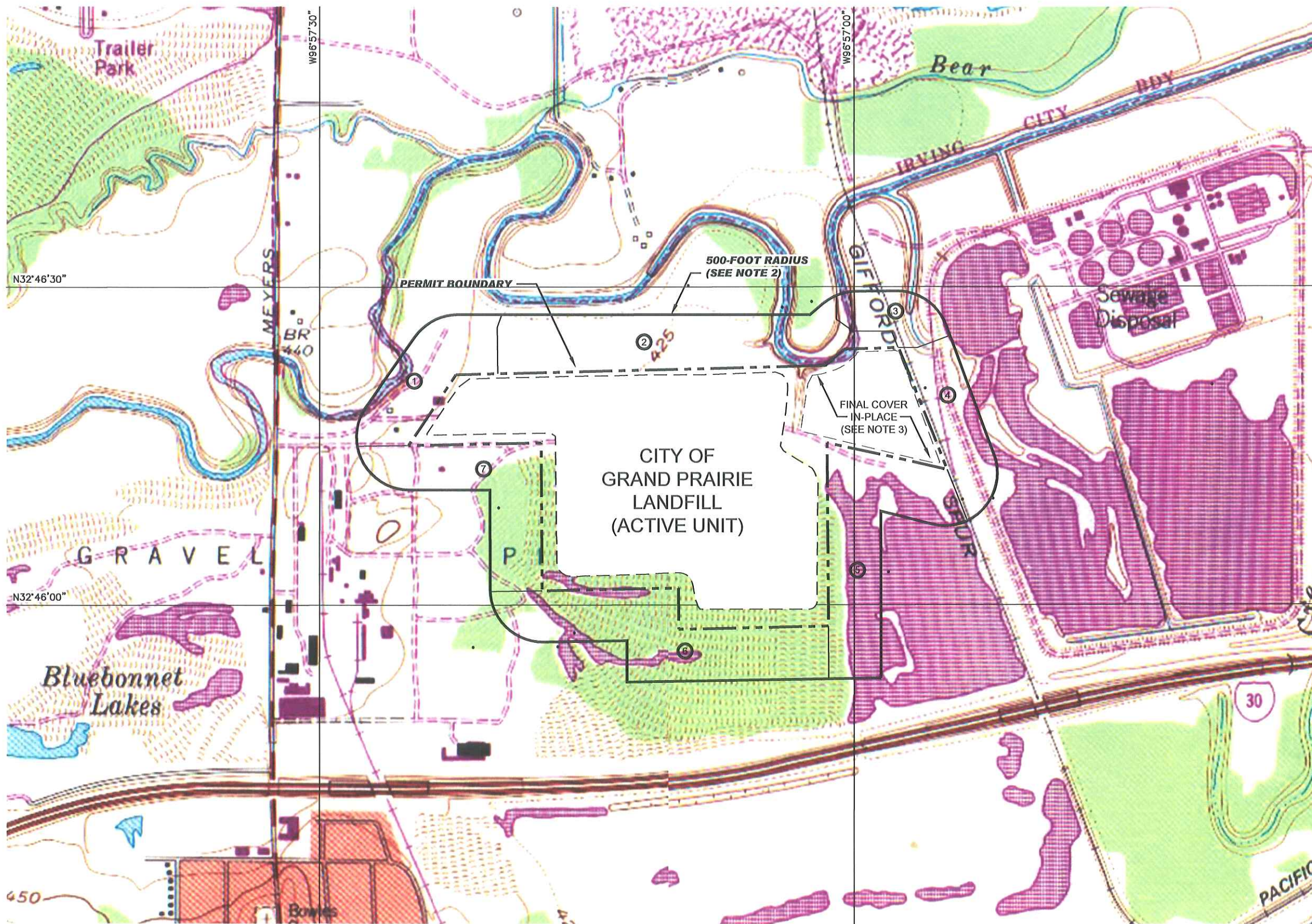
*Robert S. Ferbend*  
  
10-15-09

## **PROPERTY OWNERS AND MINERAL RIGHTS OWNER'S LIST**

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1. BEAZER WEST, INC.  
P.O. BOX 190999  
DALLAS, TX 75219-0999
2. CITY OF GRAND PRAIRIE  
317 COLLEGE STREET  
GRAND PRAIRIE, TX 75050-5636
3. BEAZER WEST, INC.  
LAND DEPARTMENT  
2515 MCKINNEY AVE., FLOOR 10  
DALLAS, TX 75201-1978
4. TRINITY RIVER AUTHORITY  
P.O. BOX 60  
ARLINGTON, TX 76004-0060
5. PRESCOTT INTERESTS LC  
P.O. BOX 7270  
DALLAS, TX 75209-0270
6. CORNERSTONE C&M, INC.  
PROPERTY TAX DEPARTMENT  
P.O. BOX 190999  
DALLAS, TX 75219-0999
7. HANSEN, INC.  
1003 MACARTHUR BLVD.  
GRAND PRAIRIE, TX 75050-7943

Note: The Dallas County Appraisal District does not maintain mineral interest ownership records.



DUNCANVILLE, TEX. N3237.5-W9652.5/7.5  
 IRVING, TEX. SW/4 CARROLLTON 19 QUADRANGLE N3245-W9652.5/7.5  
 1959 PHOTOREVISED 1981 DMA 6649 IV SW-SERIES V882  
 1959 PHOTOREVISED 1981 DMA 6649 IV SW-SERIES V882

**ROAD CLASSIFICATION**  
 Heavy-duty ——— Light-duty ———  
 Medium-duty ——— Unimproved dirt - - - - -  
 Interstate Route U.S. Route State Route

**LEGEND**  
 - - - - - PERMIT BOUNDARY  
 - - - - - LIMITS OF WASTE

- NOTES:**
- ① REFERS TO LANDOWNERS LISTED ON LANDOWNERS LIST IN ATTACHMENT 3—LANDOWNERS LIST AND MAP.
  - THIS LINE REPRESENTS A 500 FOOT DISTANCE FROM THE LIMIT OF THE PERMIT BOUNDARY.
  - FINAL COVER WAS CONSTRUCTED ON THIS UNIT PRIOR TO 1994.
  - PROPERTY OWNERS LIST IS BASED ON INFORMATION OBTAINED FROM THE DALLAS CENTRAL APPRAISAL DISTRICT AND THE CITY OF GRAND PRAIRIE GEOGRAPHIC INFORMATION SYSTEMS (GIS) DEPARTMENT (FEBRUARY 2007).

STATE OF TEXAS  
 ROBERT S. FERBEND  
 GEOLOGY  
 713  
 LICENSED PROFESSIONAL GEOSCIENTIST  
 10-15-09

C:\0628\LFC REMEDIATION MOD (01-2007)\D-1 LAND OWNERS MAP.dwg, 10/15/2009 2:47:31 P.M. bferbend, 1:2

| <input type="checkbox"/> DRAFT<br><input checked="" type="checkbox"/> FOR PERMITTING PURPOSES ONLY<br><input type="checkbox"/> ISSUED FOR CONSTRUCTION<br><input type="checkbox"/> CLIENT APPROVAL BY: _____   | PREPARED FOR                                       | <b>PERMIT MODIFICATION<br/>         LAND OWNERSHIP MAP</b><br><br>CITY OF GRAND PRAIRIE LANDFILL<br>DALLAS COUNTY, TEXAS |     |      |             |  |  |  |  |  |  |  |  |
|--|--|--|-----|------|-------------|--|--|--|--|--|--|--|--|
|  | CITY OF GRAND PRAIRIE                              |  |     |      |             |  |  |  |  |  |  |  |  |
| DATE: 03/2007<br>FILE: 0828-01-17<br>CAD: D-1 LAND OWNERS MAP.DWG  | DRAWN BY: VRS<br>DESIGN BY: SR<br>REVIEWED BY: MKS | <b>Weaver Boos Consultants</b><br><br>CHICAGO, IL<br>NAPERVILLE, IL<br>DENVER, CO  |     |      |             |  |  |  |  |  |  |  |  |
| REVISIONS<br><table border="1"> <thead> <tr> <th>NO.</th> <th>DATE</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table>  |  |  | NO. | DATE | DESCRIPTION |  |  |  |  |  |  |  |  |
| NO.  | DATE   | DESCRIPTION  |     |      |             |  |  |  |  |  |  |  |  |
|  |  |  |     |      |             |  |  |  |  |  |  |  |  |
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|  |  |  |     |      |             |  |  |  |  |  |  |  |  |
| REUSE OF DOCUMENTS<br><small>THIS DOCUMENT, AND THE DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF WEAVER BOOS CONSULTANTS, LLC - SOUTHWEST AND IS NOT TO BE USED IN WHOLE OR IN PART, WITHOUT THE WRITTEN AUTHORIZATION OF WEAVER BOOS CONSULTANTS, LLC - SOUTHWEST.</small> |  | FIGURE D-1<br>FORT WORTH, TX (817) 735-9770<br>GRIFFITH, IN<br>SOUTH BEND, IN<br>SPRINGFIELD, IL<br>ST. LOUIS, MO        |     |      |             |  |  |  |  |  |  |  |  |

**APPENDIX D**

**PART I APPLICATION FORM 0650/APPLICANT CERTIFICATION**





# Texas Commission on Environmental Quality

## Permit or Registration Application for Municipal Solid Waste Facility

### Part I

#### A. General Information

|  |  |        |    |       |
|--|--|--------|----|-------|
| Facility Name:                             | City of Grand Prairie Landfill – MSW Permit No. 996C |        |    |       |
| Physical or Street Address (if available): | 1102 MacArthur Boulevard                             |        |    |       |
| (City) (County)( State)( Zip Code):        | Grand Prairie  | Dallas | TX | 75053 |
| (Area Code) Telephone Number:              | (972) 237-8061                                       |        |    |       |
| Charter Number:                            |  |        |    |       |

If the application is submitted on behalf of a corporation, provide the Charter Number as recorded with the Office of the Secretary of State for Texas.

|                                     |                        |        |    |       |
|-------------------------------------|------------------------|--------|----|-------|
| Operator Name <sup>1</sup> :        | City of Grand Prairie  |        |    |       |
| Mailing Address:                    | 206 West Church Street |        |    |       |
| (City) (County)( State)( Zip Code): | Grand Prairie          | Dallas | TX | 75050 |
| (Area Code) Telephone Number:       | (972) 237-8151         |        |    |       |
| (Area Code) FAX Number:             | (972) 237-8116         |        |    |       |
| Charter Number:                     |                        |        |    |       |

If the permittee is the same as the operator, type "Same as Operator".

|  |                  |  |  |  |
|--|------------------|--|--|--|
| Permittee Name:                            | Same as Operator |  |  |  |
| Physical or Street Address (if available): |                  |  |  |  |
| (City) (County)( State)( Zip Code):        |                  |  |  |  |
| (Area Code) Telephone Number:              |                  |  |  |  |
| Charter Number:                            |                  |  |  |  |

If the application is submitted by a corporation or by a person residing out of state, the applicant must register an Agent in Service or Agent of Service with the Texas Secretary of State's office and provide a complete mailing address for the agent. The agent must be a Texas resident.

|                                     |  |  |  |  |
|-------------------------------------|--|--|--|--|
| Agent Name:                         |  |  |  |  |
| Mailing Address:                    |  |  |  |  |
| (City) (County)( State)( Zip Code): |  |  |  |  |
| (Area Code) Telephone Number:       |  |  |  |  |
| (Area Code) FAX Number:             |  |  |  |  |

#### Application Type:

|                                       |   |   |  |
|---------------------------------------|---|---|--|
| <input type="checkbox"/> Permit       | <input type="checkbox"/> Major Amendment                | <input type="checkbox"/> Minor Amendment                          |  |
| <input type="checkbox"/> Registration | <input checked="" type="checkbox"/> Modification        | <input type="checkbox"/> Temporary Authorization                  |  |
|                                       | <input type="checkbox"/> w/Public Notice                |   |  |
|                                       | <input checked="" type="checkbox"/> w/out Public Notice | <input checked="" type="checkbox"/> Notice of Deficiency Response |  |

<sup>1</sup> The operator has the duty to submit an application if the facility is owned by one person and operated by another [30 TAC 305.43(b)]. The permit will specify the operator and the owner who is listed on this application [Section 361.087 Texas Health and Safety Code].

Facility Classification:

|  |                                     |                                  |                                  |
|--|-------------------------------------|----------------------------------|----------------------------------|
| <input checked="" type="checkbox"/> Type I | <input type="checkbox"/> Type IV    | <input type="checkbox"/> Type V  | <input type="checkbox"/> Type IX |
| <input type="checkbox"/> Type I AE         | <input type="checkbox"/> Type IV AE | <input type="checkbox"/> Type VI |                                  |

Activities covered by this application (check all that apply):

|                                  |                                     |  |
|----------------------------------|-------------------------------------|--|
| <input type="checkbox"/> Storage | <input type="checkbox"/> Processing | <input checked="" type="checkbox"/> Disposal |
|----------------------------------|-------------------------------------|--|

Waste management units covered by this application (check all that apply):

|  |                                     |   |   |
|--|-------------------------------------|---|---|
| <input type="checkbox"/> Containers      | <input type="checkbox"/> Tanks      | <input type="checkbox"/> Surface Impoundments       | <input checked="" type="checkbox"/> Landfills             |
| <input type="checkbox"/> Incinerators    | <input type="checkbox"/> Composting | <input type="checkbox"/> Type IV Demonstration Unit | <input type="checkbox"/> Type IX Energy/Material Recovery |
| <input type="checkbox"/> Other (Specify) |                                     | <input type="checkbox"/> Other (Specify)            |   |
| <input type="checkbox"/> Other (Specify) |                                     | <input type="checkbox"/> Other (Specify)            |   |

Is this submittal part of a Consolidated Permit Processing request, in accordance with 30 TAC Chapter 33?

Yes  No

If yes, state the other TCEQ program authorizations requested.

Provide a brief description of the portion of the facility covered by this application. For amendments, modifications, and temporary authorizations, provide a brief description of the exact changes to the permit or registration conditions and supporting documents referenced by the permit or registration. Also, provide an explanation of why the amendment, modification, or temporary authorization is requested.

This permit modification requests revisions to the facility's groundwater sampling and analyses plan in accordance the 2006 revised MSW 330 rules (effective date March 27, 2006).

Does the application contain confidential Material?  Yes  No

If yes, cross-reference the confidential material *throughout the application* and submit as a separate document or binder conspicuously marked "CONFIDENTIAL."

Bilingual Notice Instructions

For certain permit applications, public notice in an alternate language is required. If an elementary school or middle school nearest to the facility offers a bilingual program, notice may be required to be published in an alternative language. The Texas Education Code, upon which the TCEQ alternative language notice requirements are based, trigger a bilingual education program to apply to an entire school district should the requisite alternative language speaking student population exist. However, there may not exist any bilingual-speaking students at a particular school within a district which is required to offer the bilingual education program. For this reason, the requirement to publish notice in an alternative language is triggered if the nearest elementary or middle school, as a part of a larger school district, is required to make a bilingual education program available to qualifying students and either the school has students enrolled at such a program on-site, or has students who attend such a program at another location in satisfaction of the school's obligation to provide such a program as a member of a triggered district.

If it is determined that a bilingual notice is required, the applicant is responsible for ensuring that the publication in the alternate language is complete and accurate in that language. Electronic versions of the Spanish template examples are available from the TCEQ to help the applicant complete the publication in the alternative language.

**Bilingual Notice Application Form:**

Bilingual notice confirmation for this application:

1. Is a bilingual program required by the Texas Education Code in the school district where the facility is located?  YES  NO

(If NO, alternative language notice publication not required)

2. If YES to question 1, are students enrolled in a bilingual education program at either the elementary school or the middle school nearest to the facility?  YES  NO

(If YES to questions 1 and 2, alternative language publication is required; If NO to question 2, then consider the next question)

3. If YES to question 1, are there students enrolled at either the elementary school or the middle school nearest to the facility who attend a bilingual education program at another location?  YES  NO

(If Yes to questions 1 and 3, alternative language publication is required; If NO to question 3, then consider the next question)

4. If YES to question 1, would either the elementary school or the middle school nearest to the facility be required to provide a bilingual education program but for the fact that it secured a waiver from this requirement, as available under 19 TAC §89.1205(g)?  YES  NO

(If Yes to questions 1 and 4, alternative language publication is required; If NO to question 4, alternative language notice publication not required)

If a bilingual education program(s) is provided by either the elementary school or the middle school nearest to the facility, which language(s) is required by the bilingual program?

Note: Applicants for new permits and major amendments must make a copy of the administratively complete application available at a public in the county where the facility is, or will be, located for review and copying by the public.

|  |                |
|--|----------------|
| Public place where administratively complete permit application will be located. |                |
| Public Place (e.g., public library, county court house, city hall, etc.):        | Not Applicable |
| Mailing Address:   |                |
| (City) (County) (State) (Zip Code):  |                |
| (Area Code) Telephone Number:  |                |

**B. Facility Location (Not Applicable)**

Except for Type I AE and Type IV AE landfill facilities, for permits, registrations, amendments, and modifications requiring public notice, provide the URL address of a publicly accessible internet web site where the application and all revisions to that application will be posted.

<http://www.gptx.org/index.aspx?page=124>

|  |  |
|--|--|
| Local Government Jurisdiction:   |  |
| Within City Limits of:   |  |
| Within Extraterritorial Jurisdiction of City of:   |  |
| Is the proposed municipal or industrial solid waste disposal or processing facility located in an area in which the governing body of the municipality or county has prohibited the disposal or processing of municipal or industrial solid waste? (If YES, provide a copy of the ordinance or order): |  |
| <input type="checkbox"/> YES <input type="checkbox"/> NO   |  |

|   |
|---|
| Provide a description of the location of the facility with respect to known or easily identifiable landmarks: |
| Not Applicable  |

|   |
|---|
| Detail the access routes from the nearest United States or state highway to the facility: |
| Not Applicable  |

Provide the latitudinal and longitudinal geographic coordinates of the facility.

|                       |  |
|-----------------------|--|
| Latitude              |  |
| Longitude             |  |
| Elevation (above msl) |  |

|   |                              |  |
|---|------------------------------|--|
| Is the facility within the Coastal Management Program boundary? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
|---|------------------------------|--|

Texas Department of Transportation District Location:

|                                     |                |  |  |
|-------------------------------------|----------------|--|--|
| TXDOT District Name & Number:       | Not Applicable |  |  |
| District Engineer's Name:           |                |  |  |
| Street or P. O. Box:                |                |  |  |
| (City) (County) (State) (Zip Code): |                |  |  |
| (Area Code) Telephone Number:       |                |  |  |
| (Area Code) FAX Number:             |                |  |  |

The local governmental authority or agency responsible for road maintenance:

|                                     |                |  |  |
|-------------------------------------|----------------|--|--|
| Contact Person's Name:              | Not Applicable |  |  |
| Street or P. O. Box:                |                |  |  |
| (City) (County) (State) (Zip Code): |                |  |  |
| (Area Code) Telephone Number:       |                |  |  |
| (Area Code) FAX Number:             |                |  |  |

State Representative:

|                                     |                |  |  |
|-------------------------------------|----------------|--|--|
| District Number:                    | Not Applicable |  |  |
| State Representative's Name:        |                |  |  |
| District Office Address:            |                |  |  |
| (City) (County) (State) (Zip Code): |                |  |  |
| (Area Code) Telephone Number:       |                |  |  |
| (Area Code) FAX Number:             |                |  |  |

State Senator:

|                                     |                |  |  |
|-------------------------------------|----------------|--|--|
| District Number:                    | Not Applicable |  |  |
| State Senator's Name:               |                |  |  |
| District Office Address:            |                |  |  |
| (City) (County)( State)( Zip Code): |                |  |  |
| (Area Code) Telephone Number:       |                |  |  |
| (Area Code) FAX Number:             |                |  |  |

Council of Government (COG) Information:

|                                     |                |  |  |
|-------------------------------------|----------------|--|--|
| COG Name:                           | Not Applicable |  |  |
| COG Representative's Name:          |                |  |  |
| COG Representative's Title:         |                |  |  |
| Street or P. O. Box:                |                |  |  |
| (City) (County)( State)( Zip Code): |                |  |  |
| (Area Code) Telephone Number:       |                |  |  |
| (Area Code) FAX Number:             |                |  |  |

River Basin Information:

|                                     |                |  |  |
|-------------------------------------|----------------|--|--|
| River Authority:                    | Not Applicable |  |  |
| Contact Person's Name:              |                |  |  |
| Watershed Sub-Basin Name:           |                |  |  |
| Street or P. O. Box:                |                |  |  |
| (City) (County)( State)( Zip Code): |                |  |  |
| (Area Code) Telephone Number:       |                |  |  |
| (Area Code) FAX Number:             |                |  |  |

|   |  |  |                                    |
|---|--|--|------------------------------------|
| This site is located in the following District of the U.S. Army Corps of Engineers: |  |  |                                    |
| <input type="checkbox"/> Albuquerque, NM  | <input type="checkbox"/> Ft. Worth, TX | <input type="checkbox"/> Galveston, TX | <input type="checkbox"/> Tulsa, OK |

**C. Maps (Not Applicable)**

General

For permits, registrations, and amendments only, submit a topographic map, ownership map, county highway map, or a map prepared by a registered professional engineer or a registered surveyor which shows the facility and each of its intake and discharge structures and any other structure or location regarding the regulated facility and associated activities. Maps must be of material suitable for a permanent record, and shall be on sheets 8-1/2 inches by 14 inches or folded to that size, and shall be on a scale of not less than one inch equals one mile. The map shall depict the approximate boundaries of the tract of land owned or to be used by the applicant and shall extend at least one mile beyond the tract boundaries sufficient to show the following:

each well, spring, and surface water body or other water in the state within the map area;

the general character of the areas adjacent to the facility, including public roads, towns and the nature of development of adjacent lands such as residential, commercial, agricultural, recreational, undeveloped, etc;

the location of any waste disposal activities conducted on the tract not included in the application; and

the ownership of tracts of land adjacent to the facility and within a reasonable distance from the proposed point or points of discharge, deposit, injection, or other place of disposal or activity.

#### General location maps

For permits, registrations, and amendments only, submit at least one general location map at a scale of one-half inch equals one mile. This map shall be all or a portion of a county map prepared by Texas Department of Transportation (TxDOT). If TxDOT publishes more detailed maps of the proposed facility area, the more detailed maps shall also be included in Part I. Use the latest revision of all maps.

#### Land ownership map

Provide a map that locates the property owned by adjacent and potentially affected landowners. The maps should show all property ownership within 500 feet of the facility, on-site facility easement holders, and all mineral interest ownership under the facility.

#### Landowners list

Provide the adjacent and potentially affected landowners' list, keyed to the land ownership map with each property owner's name and mailing address. The list shall include all property owners within 500 feet of the facility, easement holders, and all mineral interest ownership under the facility. Provide the property, easement holders', and mineral interest owners' names and mailing addresses derived from the real property appraisal records as listed on the date that the application is filed. Provide the list in electronic form, as well.

#### **D. Property owner information (Not Applicable)**

For permits, registrations, amendments, and modifications that change the legal description, a change in owner, or a change in operator only, provide the following:

- (1) the legal description of the facility;
  - (A) the abstract number as maintained by the Texas General Land Office for the surveyed tract of land;
  - (B) the legal description of the property and the county, book, and page number or other generally accepted identifying reference of the current ownership record;
  - (C) for property that is platted, the county, book, and page number or other generally accepted identifying reference of the final plat record that includes the acreage encompassed in the application and a copy of the final plat, in addition to a written legal description;
  - (D) a boundary metes and bounds description of the facility signed and sealed by a registered professional land surveyor;
  - (E) on-site easements at the facility, and
  - (F) drawings of the boundary metes and bounds description; and
- (2) a property owner affidavit signed by the owner.

#### **E. Legal authority (Not Applicable)**

Provide verification of the legal status of the owner and operator, such as a one-page certificate of incorporation issued by the secretary of state. List all persons having over a 20% ownership in the proposed facility.

|  |         |                          |             |                          |                 |                          |                |                          |                         |
|--|---------|--------------------------|-------------|--------------------------|-----------------|--------------------------|----------------|--------------------------|-------------------------|
| Indicate Ownership status of the facility: |         |                          |             |                          |                 |                          |                |                          |                         |
| <input type="checkbox"/>                   | Private | <input type="checkbox"/> | Corporation | <input type="checkbox"/> | Partnership     | <input type="checkbox"/> | Proprietorship | <input type="checkbox"/> | Non-Profit Organization |
| <input type="checkbox"/>                   | Public  | <input type="checkbox"/> | Federal     | <input type="checkbox"/> | Military        | <input type="checkbox"/> | State          | <input type="checkbox"/> | Regional                |
| <input type="checkbox"/>                   | County  | <input type="checkbox"/> | Municipal   | <input type="checkbox"/> | Other (Specify) |                          |                |                          |                         |

Does the operator own the facility units and the facility property?  Yes  No

If "No," for permits, registrations, amendments, and modifications that changes the legal description, a change in owner, or a change in operators submit a copy of the lease for the use of or the option to buy the facility units or facility property, as appropriate, and identify:

|                                     |                |
|-------------------------------------|----------------|
| Owner Name:                         | Not Applicable |
| Street or P. O. Box:                |                |
| (City) (County)( State)( Zip Code): |                |
| (Area Code) Telephone Number:       |                |
| (Area Code) FAX Number:             |                |
| Charter Number:                     |                |

**F. Evidence of competency (Not Applicable)**

For permits, registrations, amendments, and modifications that change the legal description, a change in owner, or a change in operators submit a list of all Texas solid waste sites that the owner and operator have owned or operated within the last ten years.

| Site Name      | Site Type | Permit/Reg. No. | County | Dates of Operation |
|----------------|-----------|-----------------|--------|--------------------|
| Not Applicable |           |                 |        |                    |

Submit a list of all solid waste sites in all states, territories, or countries in which the owner and operator have a direct financial interest.

| Site Name      | Location | Dates of Operation | Regulatory Agency (Name & Address) |
|----------------|----------|--------------------|------------------------------------|
| Not Applicable |          |                    |                                    |

A licensed solid waste facility supervisor, as defined in 30 TAC Chapter 30, Occupational Licenses and Registrations will be employed before commencing facility operation.

Provide the names of the principals and supervisors of the owner's and operator's organization, together with previous affiliations with other organizations engaged in solid waste activities.

| Name           | Previous Affiliation | Other Organization |
|----------------|----------------------|--------------------|
| Not Applicable |                      |                    |

For landfill permit applications only, evidence of competency to operate the facility shall also include landfilling and earthmoving experience if applicable, and other pertinent experience, or licenses as described in 30 TAC Chapter 30 possessed by key personnel. The number and size of each type of equipment to be dedicated to facility operation will be specified in greater detail on Part IV of the application within the site operating plan.

| Landfilling/Earthmoving Equipment Types | Personnel Experience or Licenses |
|---|----------------------------------|
|   |                                  |
|   |                                  |

For mobile liquid waste processing units, submit a list of all solid waste, liquid waste, or mobile waste units that the owner and operator have owned or operated within the past five years. Submit a list of any final enforcement orders, court judgments, consent decrees, and criminal convictions of this state and the federal government within the last five years relating to compliance with applicable legal requirements relating to the handling of solid or liquid waste under the jurisdiction of the commission or the United States Environmental Protection Agency. Applicable legal requirement means an environmental law, regulation, permit, order, consent decree, or other requirement.

|  |  |
|--|--|
| Solid waste, liquid waste, or mobile waste units owned or operated within past 5 years | Texas and federal final enforcement orders, court judgments, consent decrees, and criminal convictions |
| Not Applicable   |  |
|  |  |

**G. Appointments (Not Applicable)**

Provide documentation that the person signing the application meets the requirements of 30 TAC §305.44, Signatories to Applications. If the authority has been delegated, provide a copy of the document issued by the governing body of the owner or operator authorizing the person that signed the application to act as agent for the owner or operator.

**H. Application Fees**

For a new permit, registration, amendment, modification, or temporary authorization, submit a \$150 application fee.

For authorization to construct an enclosed structure over an old, closed municipal solid waste landfill in accordance with 30 TAC 330 Subchapter T, submit a \$2,500 application fee.

If paying by check, send payment to:

Texas Commission on Environmental Quality  
 Financial Administration Division, MC 214  
 P. O. Box 13087  
 Austin, Texas 78711-3087

|  |                |
|--|----------------|
| Payment maybe made online using TCEQ e-pay at <a href="http://www.tceq.state.tx.us/e-service/index.html">www.tceq.state.tx.us/e-service/index.html</a> |                |
| ePay confirmation number   | 582EA000031926 |



**PROPERTY OWNER AFFIDAVIT (NOT APPLICABLE)**

"I, \_\_\_\_\_  
(property owner)

acknowledge that the State of Texas may hold me either jointly or severally responsible for the operation, maintenance, and closure and post-closure care of the facility. For a facility where waste will remain after closure, I acknowledge that I have a responsibility to file with the county deed records an affidavit to the public advising that the land will be used for a solid waste facility prior to the time that the facility actually begins operating as a municipal solid waste landfill facility, and to file a final recording upon completion of disposal operations and closure of the landfill units in accordance with Title 30 Texas Administrative Code §330.19, Deed Recordation. I further acknowledge that I or the operator and the State of Texas shall have access to the property during the active life and post-closure care period, if required, after closure for the purpose of inspection and maintenance."

\_\_\_\_\_  
(Owner signature)

\_\_\_\_\_  
(Date)

Signature Page

I, Patricia Redfearn, Solid Waste Manager, City of Grand Prairie  
(Operator) (Title)

certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature: Patricia B Redfearn Date: 10/14/09

TO BE COMPLETED BY THE OPERATOR IF THE APPLICATION IS SIGNED BY AN AUTHORIZED REPRESENTATIVE FOR THE OPERATOR

I, \_\_\_\_\_, hereby designate \_\_\_\_\_  
(Print or Type Operator Name) (Print or Type Representative Name)

as my representative and hereby authorize said representative to sign any application, submit additional information as may be requested by the Commission; and/or appear for me at any hearing or before the Texas Commission on Environmental Quality in conjunction with this request for a Texas Water Code or Texas Solid Waste Disposal Act permit. I further understand that I am responsible for the contents of this application, for oral statements given by my authorized representative in support of the application, and for compliance with the terms and conditions of any permit which might be issued based upon this application.

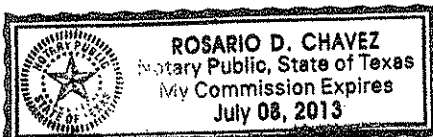
\_\_\_\_\_  
Printed or Typed Name of Operator or Principal Executive Officer

\_\_\_\_\_  
Signature

SUBSCRIBED AND SWORN to before me by the said Patricia Redfearn

On this 14<sup>th</sup> day of October, 2009

My commission expires on the 8<sup>th</sup> day of July, 2013



Rosario D. Chavez  
Notary Public in and for  
Dallas County, Texas

(Note: Application Must Bear Signature & Seal of Notary Public)