A) For each constituent, set background to the upper 95 percent confidence prediction limit as described in ASTM D-7804-04 and Gibbons (1994). The prediction limits are computed from all available data collected from up-gradient wells only. The data are first screened for outliers and then tested for normality as follows:

1) If the test of normality cannot be rejected, background is equal to the 95 percent confidence normal prediction limit.

2) If the test of normality is rejected but the test of log normality cannot be rejected, background is equal to the 95 percent confidence lognormal prediction limit.

3) If the data are neither normal nor lognormal, or the detection frequency is less than 50 percent, background is the nonparametric prediction limit, which is computed as the maximum number of up-gradient measurements.

Data evaluation during assessment monitoring will consist of the establishment of 95 percent Lower Confidence Limits (LCLs) for any Appendix II constituent detected in concentrations greater than the PQL, assuming that a minimum of four background samples exist for each parameter detected during the assessment monitoring program. If inadequate background data exists, sufficient background data will be collected to provide adequate sample size for statistical analysis. According to technical guidance, if the 95 percent LCL of one parameter exceeds action levels defined as if applicable, or a health-based alternate GWPS, the Site is to initiate an assessment of corrective measures.

The use of LCLs for assessment monitoring is stipulated in the 1989 statistical guidance document and supported by Dr. Kirk Cameron (statistical consultant to USEPA), Jim Brown (EPA), and Dr. Robert Gibbons. In accordance with the document entitled "*Statistical Analysis of Ground-Water Data at RCRA Facilities, Interim Final Guidance*" dated April 1989, Section 6.2.1;

> "When a regulated unit is in compliance monitoring with a fixed compliance limit (either an MCL or an ACL), confidence intervals are the recommended procedure .....If the entire confidence interval exceeds the compliance limit, this is statistically significant evidence that the mean concentration exceeds the compliance limit." Furthermore, it is

stated in Section 6.2.1.1 of the referenced document: "If any well confidence interval's lower limit exceeds the compliance limit, this is statistically significant evidence of contamination."

In accordance with 30 TAC §330.409(d), within 60 days of each sampling event, the results from the initial and subsequent sampling events will be submitted to the TCEQ and placed in the operating record. Results will be evaluated within 60 days of each sampling event to determine if constituents were detected at statistically significant levels above the GWPS. If the GWPS has been exceeded, the TCEQ and appropriate local government officials will be notified in writing within seven days of this determination.

If the concentrations of all 40 CFR Part 258, Appendix II constituents are detected at or below background values, in accordance with the Site's statistical procedures, for two consecutive sampling events, WMTX will notify the TCEQ and return to detection monitoring if approved.

~~**ASSESSMENT MONITORING PLAN §330.235 through §330.238**~~

~~Assessment monitoring will be performed on a site-specific basis in accordance with 30 TAC §330.235 and with the concurrence of the Commission. These activities may include:~~

~~Assessment of Corrective Measures (30 TAC §330.236) shall be initiated within 90 days of finding that any of the assessment constituents have been detected at a statistically significant level exceeding the groundwater protection standards defined under 30 TAC §235(h) or (i). Such an assessment shall be completed within a reasonable period of time approved by the executive director. The owner or operator shall continue to~~

~~monitor in accordance with the assessment monitoring program as specified in 30 TAC §330.235. The assessment shall include analysis of the effectiveness of potential corrective measures in meeting all of the requirements and objectives of the remedy as described under 30 TAC §330.237. The owner or operator shall discuss the results of the corrective measures assessment, prior to the selection of a remedy, in a public meeting with interested and affected parties. The owner or operator shall arrange for the meeting and provide notice in accordance with 30 TAC §305.107(c).~~

~~Based on the results of the corrective measures assessment, the owner or operator shall select a remedy that, at a minimum, meets the standards set forth under 30 TAC §330.237(b). Within 30 days of completing the Assessment of Corrective Measures the owner or operator shall submit a report to the executive director for review and approval and place it in the operating record of the site.~~

~~Based on the established schedule (30 TAC §330.237) the owner or operator shall establish and implement a corrective action groundwater monitoring program that meets the requirements specified in 30 TAC §330.238 as it relates to Corrective Action Implementation.~~

7.0 REFERENCES

Gibbons, R. D., 1994, *Statistical Methods for Groundwater Monitoring*, Wiley, New *York, NY*
ASTM D-7048-04, Applying Statistical Methods for Assessment and Corrective Action Environmental Monitoring Programs, published June 2004

Freeze, R.A. and J.A. Cherry, 1970, Groundwater, Prentice Hall, Englewood Cliff, NJ, Section 7, pp.34

~~REFERENCES~~

Puls, R.W. and M.J. Barcelona, 1996, Low_-Flow (Minimal Drawdown) Ground_-Water Sampling Procedure, EPA/540/S_-95/504, 12 pp.

~~Freeze, R.A. and J.A. Cherry, 1979, Groundwater, Prentice Hall, Englewood Cliff, NJ~~

FIGURE 2-~~III-11.~~1
FIELD INFORMATION FORM

(For informational purposes only. Actual form may vary)

FIGURE ~~III-11.~~2-2
CHAIN OF CUSTODY FORM~~RECORD~~

(For informational purposes only. Actual form may vary)

FIGURE 3-1
LABORATORY REVIEW CHECKLIST

(For informational purposes only. Actual form may vary)

TABLE 2-~~III-11.~~1: Williamson County ~~RDF~~
Sample Collection, Preservation, and Holding Times

PARAMETER[1]	SAMPLE COLLECTION AND CONTAINER[2]	SAMPLE PRESERVATION[3,4]	RECOMMENDED HOLDING TIME[5]
Acid Extractables	1000 ml Glass only (Amber) w/Teflon liner	Cool, 4 C	Extract within 7 days; analyze within 40 days
Alkalinity	100 ml P,G	Cool, 4 C	14 days
Ammonia	125 ml P,G	Cool, 4 C H_2SO_4 to pH <2	28 days
Base/Neutral Extractables (priority pollutants)	1000 ml Glass only (Amber) w/Teflon liner	Cool, 4 C	Extract within 7 days; analyze within 40 days
Biochemical Oxygen demand, 5 day (BOD5)	1000 ml P,G	Cool, 4 C	24~~48~~ hours
Calcium	500 ml P	HNO_3 to pH <2	6 months
Chemical Oxygen demand (COD)	125 ml P,G	Cool, 4 C H_2SO_4 to pH <2	28 days
Chloride	250 ml P,G	Cool, 4 C	28 days
Coliform, fecal and total	100 ml PP,G sterilized	Cool, 4 C	24 hours
Cyanide	1000 ml P,G	Cool, 4 C NaOH to pH >12 0.6g ascorbic acid[6]	14 days[7]
Fluoride	250 ml P	Cool, 4 C	28 days
Hardness	100 ml P,G	HNO_3 to pH <2	6 months
Metals			
Chromium (hexavalent)	200 ml P,G	Cool, 4 C	24 hours
~~Mercury (dissolved)~~	~~1000 ml P,G~~	~~Filter on site~~ ~~HNO_3 to pH <2~~	~~28 days~~

Mercury (total)	1000 ml P,G	HNO_3 to pH <2	28 days

TABLE2 ~~TABLE III-11.~~1: Williamson County ~~RDF~~
Sample Collection, Preservation, and Holding Times (Cont'd)

PARAMETER[1]	SAMPLE COLLECTION AND CONTAINER[2]	SAMPLE PRESERVATION[3,4]	RECOMMENDED HOLDING TIME[5]
~~Other metals, (dissolved) (Arsenic, Barium, Boron Cadmium, Chromium, Cobalt, Iron, Lead, Magnesium, Manganese, Nickel, Potassium, Selenium, Silver, Sodium, Vanadium, Zinc)~~	~~1000 ml P,G~~	~~Filter on site HNO_3 to pH <2~~	~~6 months~~
Other metals, (totals) (Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Zinc)	1000 ml P,G	HNO_3 to pH <2	6 months
Nitrate	125 ml P,G	Cool, 4 C	48 hours
Nitrite	125 ml P,G	Cool, 4 C	48 hours
~~Oil and Grease~~	~~1000 ml, G only~~	~~Cool, 4 C H_2SO_4 to pH <2~~	~~28 days~~
PCB (priority pollutant)	1000 ml, Glass only (Amber w/Teflon liner	Cool, 4 C	Extract within 7 days; analyze within 40 days
Pesticides Endrin Lindane Toxaphene Methoxychlor	1000 ml, Glass only (Amber) w/Teflon liner	Cool, 4 C	Extract within 7 days; analyze within 40 days
pH (field)	25 ml P,G	None required	Analyze immediately

TABLE2-Phenols	500 ml G only	Cool, 4 C H_2SO_4 to pH <2	28 days
Phosphorous (total)	125 ml P,G	Cool 4 C H_2SO_4 to pH <2	28 days

~~TABLE III-11.~~1: Williamson County ~~RDF~~
Sample Collection, Preservation, and Holding Times (Cont'd)

PARAMETER[1]	SAMPLE COLLECTION AND CONTAINER[2]	SAMPLE PRESERVATION[3,4]	RECOMMENDED HOLDING TIME[5]
Specific Conductance (field)	100 ml P,G	None required	Analyze immediately
~~Sulfate~~	~~50 ml P,G~~	~~Cool, 4 C~~	~~28 days~~
Temperature (field)	1000 ml P,G	None required	Analyze immediately
~~Total Dissolved Solids residue on evaporation (TDS/ROE) 180 C~~	~~1000 ml P~~	~~Cool, 4 C~~	~~7 days~~
~~Total Organic Carbon (TOC)~~	~~2-40 ml P~~	~~Cool, 4 C~~ ~~H_2SO_4 to pH <2~~	~~28 days~~
~~Total Suspended Solids (TSS)~~	~~1000 ml P~~	~~Cool, 4 C~~	~~7 days~~
Volatile Organic Acids, priority pollutants	4-40 ml glass vial w/septum caps	Cool, 4 C Cool, 4 C; HCl to pH<2	7 days 14 days

1. Table may include more parameters than required for groundwater sampling. A general discussion on sampling water and industrial waste water may be found in ASTM, Part 31, pages 72-81 (1976) Method D-3370.

2. Plastic (P) or Glass (G). For metals, polyethylene with a polypropylene cap (no liner) is preferred.

3. Sample preservation should be performed immediately upon sample collection. For composite samples, each aliquot should be preserved at the time of collection. When use of an automated sampler makes it impossible to preserve each aliquot, then samples may be preserved by maintaining at 4 C until compositing and sample splitting is completed.

4. When any sample is to be shipped by common carrier or sent through the United States mail, it must comply with the Department of Transportation Hazardous Materials Regulations (49 CFR Part 172). The person offering such material for transportation is responsible for ensuring such compliance. For the preservation requirements of Table III-11.1, the Office of Hazardous Materials, Materials Transportation Bureau, Department of Transportation has determined that the Hazardous Materials Regulations do not apply to the following materials: Hydrochloric acid (HCl) in water solutions at concentrations of 0.04% by weight or less (pH about 1.96 or greater); Nitric acid (HNO_3) in water solutions at concentrations of 0.15% by weight or less (pH about 1.62 or greater); Sulfuric acid (H_2SO_4) in water solutions at concentrations of 0.35% by weight or less (pH about 1.15 or greater); Sodium hydroxide (NaOH) in water solutions at concentrations of 0.080% by weight or less (pH about 12.30 or less).

5. Samples should be analyzed as soon as possible after collection. The times listed are the maximum times that samples may be held before analysis and still considered valid. Samples may be held for longer periods only if the permittee, or monitoring laboratory, has data on file to show that the specific types of sample under study are stable for the longer time. A permittee, or monitoring laboratory, is obligated to hold the sample for a shorter time if knowledge exists to show this is necessary to maintain sample stability.

6. Should only be used in the presence of residual chlorine.

7. Maximum holding time is 24 hours when sulfide is present. Optionally, all samples may be tested with lead acetate paper before the pH adjustment in order to determine if sulfide is present. If sulfide is present, it can be removed by the addition of cadmium nitrate powder until a negative spot test is obtained. The sample is filtered and then NaOH is added to pH 12.

TABLE 2-III-11.2: Williamson County RDF
Methodologies for Testing and Analysis

PARAMETER	METHOD DESCRIPTION	METHOD*
Acid Extractables (priority pollutants)	GC/MS	EPA 625/8270(D)
Alkalinity Automated Methyl Orange	Autotritator (A)310.2/310.1	2320Colorimetric,
Ammonia (A)350.1/300.0A	Colormetric/Colorimetric; Automated Phenate	*; IC
Base/Neutral Extractables (priority pollutants)	GC/MS	8270C(D)
Biochemical Oxygen demand, 5 day (BOD5)	BOD (5 day, 20 C)	(A)405.1
Calcium Spectrometric	ICP (A)200.7/6010B(D)	Atomic Emission
Chemical Oxygen demand (COD)	Colorimetric	(A)410.4
Chloride	Colorimetric, Automated Ferricyanide, IC	(A)325.2/300.0A
Coliform (fecal)	Delayed Incubation Procedure	(B)909C
Coliform (total)	Standard Membrane Filter Procedure	(B)909A
Cyanide UV	(total) (A)335.3/9012(D)	Colorimetric, Automated
Fluoride (A)340.2, 300.0A	Potentiometric, Ion selective electrode	*Selective Electrode, IC
Hardness	Calculation	**SM(C)2340B
Metals, dissolved		
Arsenic	Atomic Absorption, furnace technique, ICPMS	(A)206.2/6020(D)
Barium	Atomic Emission Spectrometric, ICP	(A)200.7/6010B(D)
Boron	Atomic Emission Spectrometric, ICP	(A)200.7/6010B(D)
Cadmium	Atomic Emission Spectrometric, ICP	(A)200.7/6010B(D)
Chromium	Atomic Emission Spectrometric, ICP	(A)200.7/6010B(D)

~~Chromium (hexavalent)~~	~~Atomic Absorption, Chelation extraction, ICPMS~~	~~(A)218.4/6020~~
~~Cobalt~~	~~Atomic Emission Spectrometric, ICP~~	~~(A)200.7/6010B(D)~~
~~Iron~~	~~Atomic Emission Spectrometric, ICP~~	~~(A)200.7/6010B~~
~~Lead~~	~~Atomic Absorption, furnace technique, ICPMS~~	~~(A)239.21/7421/6020(D)~~
~~Magnesium~~	~~Atomic Emission Spectrometric, ICP~~	~~(A)200.7/6010B(D)~~
~~Manganese~~	~~Atomic Emission Spectrometric, ICP~~	~~(A)200.7/6010B(D)~~
~~Mercury~~	~~Atomic Absorption, cold vapor technique~~	~~(A)245.2/7470(D)~~

~~**TABLE III-11.2: Williamson County RDF**~~
~~**Methodologies for Testing and Analysis** (Cont'd)~~

~~PARAMETER~~	~~METHOD DESCRIPTION~~	~~METHOD*~~
~~Metals, dissolved~~		
~~Nickel~~	~~Atomic Emission Spectrometric, ICP~~	~~(A)200.7/6010B(D)~~
~~Potassium~~	~~Atomic Absorption, direct aspiration, ICP~~	~~(A)258.1/6010B~~
~~Selenium~~	~~Atomic Absorption, furnace technique, ICPMS~~	~~(A)270.2/6020(D)~~
~~Silver~~	~~Atomic Emission Spectrometric, ICP~~	~~(A)200.7/6010B(D)~~
~~Sodium~~	~~Atomic Emission Spectrometric, ICP~~	~~(A)200.7/6010B(D)~~
~~Vanadium~~	~~Atomic Emission Spectrometric, ICP~~	~~(A)200.7/6010B(D)~~
~~Zinc~~	~~Atomic Emission Spectrometric, ICP~~	~~(A)200.7/6010B(D)~~
Metals, total		
Antimony	Atomic Emission Spectrometric, ICPMS	(A)200.7/6020(D)
Arsenic	Atomic Absorption, furnace technique, ICPMS	(A)206.2/6020(D)
Barium	Atomic Emission Spectrometric, ICP	(A)200.7/6010B(D)
Beryllium	Atomic Emission Spectrometric, ICP	(A)200.7/6010B(D)
Boron	Atomic Emission Spectrometric, ICP	(A)200.7/6010B(D)
Cadmium	Atomic Emission Spectrometric, ICP	(A)200.7/6010B(D)
Chromium	Atomic Emission Spectrometric, ICPMS	(A)200.7/6020B(D)
Copper	Atomic Emission Spectrometric, ICP	(A)200.7/6010B(D)
Iron	Atomic Emission Spectrometric, ICP	(A)200.7/6010B(D)
Lead	Atomic Emission Spectrometric, ICP	(A)200.7/6010B(D)
Magnesium	Atomic Emission Spectrometric, ICP	(A)200.7/6010B(D)
Manganese	Atomic Emission Spectrometric, ICP	(A)200.7/6010B(D)
Mercury	Atomic Emission Spectrometric, ICP	(A) 245.2/7470(D)
Nickel	Atomic Emission Spectrometric, ICP	(A)200.7/6010B(D)
Potassium	Atomic Absorption, direct aspiration, ICP	(A)258.1/6010B(D)
Selenium	Atomic Absorption, furnace technique, ICPMS	(A)270.2/6020(D)
Silver	Atomic Emission Spectrometric, ICP	(A)200.7/6010(BD)
Sodium	Atomic Emission Spectrometric, ICP	(A)200.7/6010B(D)
Thallium	Atomic Absorption, furnace technique, ICPMS	(A)279.2/6020(D)
Zinc	Atomic Emission Spectrometric, ICP	(A)200.7/6010B(D)
Nitrate	Colorimetric, Automated, Hydrazine Reduction, IC	(A)353.1/300.0A
~~Nitrite~~	~~Colorimetric, Automated, Hydrazine Reduction, IC~~	~~(A)353.1/300.A~~
~~Oil and Grease~~	~~Gravimetric, Seperatory Funnel Extraction or Spectrometric, Infrared~~	~~(A)413.1/9070(D) OR (A)413.2~~
PCB (priority pollutants)	Gas Chromatograph	EPA 8270(B)/8080(D)
~~Pesticides (Endrin, Lindane, Toxaphene, Methoxychlor)~~	~~Gas Chromatograph~~	~~EPA 8270(B)/8080(D)~~
pH (field)	Electrometric	(A)150.1

TABLE 2-~~III-11.~~2: Williamson County ~~RDF~~
Methodologies for Testing and Analysis (Cont'd)

PARAMETER	METHOD DESCRIPTION	METHOD*
~~Phenols with Distillation~~	~~Colorimetric, Automated 4-AAP~~	~~(A)420.2/9066(D)~~
~~Phosphorous~~	~~Colorimetric, Automated Ascorbic Acid, IC~~	~~(A)365.4/300.A~~Specific
Conductance (field)	Wheatstone bridge	(A)120.1
~~Sulfate~~	~~Turbidimetric, IC~~	~~(A)375.2/300.A~~
Temperature (field)	Reversing Thermometer	(B)212
~~Total dissolved solids Residue on evaporation (TDS/ROE)~~	~~Gravimetric, Dried at 180 C~~	~~(A)160.1~~
~~Total Organic Carbon (TOC)~~	~~Combustion or Oxidation~~	~~(A)415.1~~
~~Total Suspended Solids (TSS)~~	~~Gravimetric, Dried at 103-105 C~~	~~(A)160.2~~
Volatile Organic Acids (PP/VOA), priority pollutants	Purge and Trap/GC/MS	EPA 323/8260(D)

**NOTE: Analytical methods listed above may be substituted for as deemed necessary provided that the alternate methods provide adequate analytical data to fulfill monitoring requirements and meet regulatory performance standards.*

References:

: *'Test Methods for Evaluating Solid Waste – Physical Chemical Methods'*. EPA/SW 846.3rd edition, 1986 Final. Update 1 dated November, 1990. or Final Update 1 dated July, 1992.

~~*~~A: *Methods for Chemical Analysis of Water and Wastes*, EPA 600/4-79-0920, EMSL, Cincinnati, Revision (March 1983)

B: *Standard Methods for the Examination of Water and Wastewaters*, 17th~~15th~~ Edition, APHA-AQWQA-WPCF, 1989~~1980~~

C**: Standard Methods for the Examination of Water and Wastewaters, 18th Edition, APHA-AWWA-WEF, 1992

D: Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition, as revised.

** 2340B is the same in the 18th Edition as in the 17th Edition.

TABLE ~~III-11.3~~-1: Williamson County – Background Monitoring Parameter List~~RDF - Reporting Limits~~

~~*GeneralParameters*~~
~~Calcium~~
~~Magnesium~~
~~Sodium~~
~~Potassium~~
~~Chloride~~
~~Sulfate~~
~~Total Alkalinity~~
~~Iron~~
~~Manganese~~
~~Ammonia, Nitrogen~~
~~Total Dissolved Solids~~

COMMON NAME		
Inorganic ~~(Trace Metal)~~ Constituents (Totals):		~~)[2]~~
(1)	Antimony	(Total)~~6.0~~
(2)	Arsenic	(Total)~~10.0~~
(3)	Barium	(Total)~~200~~
(4)	Beryllium	(Total)~~2.0~~
(5)	Cadmium	(Total)~~5.0~~
(6)	Chromium	(Total)~~10.0~~
(7)	Cobalt	(Total)~~50.0~~
(8)	Copper	(Total)~~25.0~~
(9)	Lead	(Total)~~5.0~~
(10)	Nickel	(Total)~~40.0~~
(11)	Selenium	(Total)~~5.0~~
(12)	Silver	(Total)~~25.0~~
(13)	Thallium	(Total)~~2.0~~
(14)	Vanadium	(Total)~~50.0~~
(15)	Zinc	(Total)~~20.0~~

COMMON NAME	CAS RN

~~TABLE III-11.3: Williamson County RDF - Reporting Limits~~
~~(Cont'd)~~

			~~RL[1]~~ ~~(µg/L)~~
Organic Constituents:			
(16)	Acetone	67-64-1	~~34~~
(17)	Acrylonitrile	107-13-1	~~100.0~~
(18)	Benzene	71-43-2	~~5.0~~
(19)	Bromochloromethane	74-97-5	~~10.0~~
(20)	Bromodichloromethane	75-27-4	~~5.0~~
(21)	Bromoform (tribromomethane)	75-25-2	~~5.0~~
(22)	Carbon disulfide	75-15-~~5.~~0	
(23)	Carbon tetrachloride	5~~6~~-23-5~~.0~~	
(24)	Chlorobenzene	108-90-7	~~5.0~~
(25)	Chloroethane (ethyl chloride)	75-00-3	~~10.0~~
(26)	Chloroform (trichloromethane)	67-66-3	~~5.0~~
(27)	Dibromochloromethane (chlorodibromomethane)	124-48-1	~~5.0~~

TABLE 4-1: Williamson County - Detection Monitoring Parameter List (Cont'd)

	COMMON NAME	CAS RN	
(28)	1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	1.0*
(29)	1,2-Dibromoethane (ethylene dibromide, EDB)	106-93-4	1.0*
(30)	o-Dichlorobenzene (1,2-dichlorobenzene)	95-50-1	10.0
(31)	p-Dichlorobenzene (1,4-dichlorobenzene)	106-46-7	10.0
(32)	trans-1,4-Dichloro-2-butene	110-57-6	10.0
(33)	1,1-Dichloroethane (ethyldidene chloride)	75-34-4	5.0
(34)	1,2-Dichloroethane (ethylene dichloride)	107-06-2	5.0
(35)	1,1-Dichloroethylene (1,1-dichloroethene, vinylidene chloride)	75-35-4	5.0
(36)	cis-1,2-Dichloroethylene (cis-1,2-dichloroethene)	156-59-2	10.0
(37)	trans-1,2-Dichloroethylene (trans-1,2-dichloroethene)	156-60-5	10.0
(38)	1,2-Dichloropropane (Propylene dichloride)	78-87-	5.0
(39)	cis-1,3-Dichloropropene	10061-01-5	5.0
(40)	trans-1,3-Dichloropropene	10061-02-6	5.0
(41)	Ethylbenzene	100-41-4	5.0
(42)	2-Hexanone (methyl butyl ketone)	591-78-6	10.0
(43)	Methyl bromide (bromomethane)	74-83-9	10.0
(44)	Methyl chloride (chloromethane)	74-87-3	10.0
(45)	Methylene bromide (dibromomethane)	74-95-3	10.0

~~TABLE III-11.3: Williamson County RDF - Reporting Limits (Cont'd)~~

			~~RL[+] (µg/L)~~
(46)	Methylene chloride (dichloromethane)	75-09-2	5.0
(47)	Methyl ethyl ketone (MEK, 2-butanone)	78-93-3	50.0
(48)	Methyl iodide (iodomethane)	74-88-4	10.0
(49)	4-Methyl-2-pentanone (methyl isobutyl ketone)	108-	10-1.0
(50)	Styrene	100-42-	5.0
(51)	1,1,1,2-Tetrachloroethane	630-20-6	5.0
(52)	1,1,2,2-Tetrachloroethane	79-34-5	0
(53)	Tetrachloroethylene (tetrachloroethane,		

	perchloroethylene)		127-18-45.0
(54)	Toluene		108-88-3 5.0
(55)	1,1,1-Trichloroethane (methylchloroform)	71-55-6	5.0
(56)	1,1,2-Trichloroethane		79-00-5.0
(57)	Trichloroethylene (trichloroethene)		79-01-6 5.0
(58)	Trichlorofluoromethane (CFC-11)		75-69-4 10.0
(59)	1,2,3-Trichloropropane		96-18-410.0
(60)	Vinyl acetate		108-05-4.0
(61)	Vinyl chloride		75-01-42.0
(62)	Xylenes (total)		1330-20-710.0

TABLE4-1

This list defines all those constituents identified in Appendix I of 40 CFR 258 and 30 TAC 330.241, Table 1.

[1] On rare occasions, the laboratory MDL may exceed the RL listed above (usually due to matrix interference issues). In such cases, the analyte will be reported to the lowest concentration level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions that are available to the facility.

[2] If required, background for total metals will be established semiannually for eight consecutive events.

[*] Reporting limits for EDB and DBCP are greater than promulgated MCLs. In accordance with requirements of the TCEQ, any detected values between the MDL and RL will be reported to the TCEQ as an estimated value.

In accordance with 30 TAC §330.241, sample preservation, handling, and analysis will meet the specifications described by "Test Methods for Evaluating Solid Waste Physical/Chemical Methods, third edition" (EPA Publication Number SW-846, 1986, as revised) or an equivalent substitute meeting the performance standards listed above.

~~TABLE III-11.4~~: Williamson County ~~RDF~~ - Detection Monitoring Parameter List

	COMMON NAME	~~CAS RN~~
Inorganic Constituents[1]*:*		
(1)	Antimony	(Total)
(2)	Arsenic	(Total)
(3)	Barium	(Total)
(4)	Beryllium	(Total)
(5)	Cadmium	(Total)
(6)	Chromium	(Total)
(7)	Cobalt	(Total)
(8)	Copper	(Total)
(9)	Lead	(Total)
(10)	Nickel	(Total)
(11)	Selenium	(Total)
(12)	Silver	(Total)
(13)	Thallium	(Total)
(14)	Vanadium	(Total)
(15)	Zinc	(Total)

	COMMON NAME	CAS RN
Organic Constituents:		
(16)	Acetone	67-64-1
(17)	Acrylonitrile	107-13-1
(18)	Benzene	71-43-2
(19)	Bromochloromethane	74-97-5
(20)	Bromodichloromethane	75-27-4
(21)	Bromoform (tribromomethane)	75-25-2
(22)	Carbon disulfide	75-15-0
(23)	Carbon tetrachloride	56-23-5
(24)	Chlorobenzene	108-90-7
(25)	Chloroethane (ethyl chloride)	75-00-3
(26)	Chloroform (trichloromethane)	67-66-3
(27)	Dibromochloromethane (chlorodibromomethane)	124-48-1

TABLE ~~III-11.4~~-1: Williamson County ~~RDF~~ Detection Monitoring Parameter List (Cont'd)

	COMMON NAME	CAS RN
(28)	1,2-Dibromo-3-chloropropane (DBCP)	96-12-8
(29)	1,2-Dibromoethane (ethylene dibromide, EDB)	106-93-4
(30)	o-Dichlorobenzene (1,2-dichlorobenzene)	95-50-1
(31)	p-Dichlorobenzene (1,4-dichlorobenzene)	106-46-7
(32)	trans-1,4-Dichloro-2-butene	110-57-6
(33)	1,1-Dichloroethane (ethyldidene chloride)	75-34-4
(34)	1,2-Dichloroethane (ethylene dichloride)	107-06-2
(35)	1,1-Dichloroethylene (1,1-dichloroethene, vinylidene chloride)	75-35-4
(36)	cis-1,2-Dichloroethylene (cis-1,2-dichloroethene)	156-59-2
(37)	trans-1,2-Dichloroethylene (trans-1,2-dichloroethene)	156-60-5
(38)	1,2-Dichloropropane (Propylene dichloride)	78-87-5
(39)	cis-1,3-Dichloropropene	10061-01-5
(40)	trans-1,3-Dichloropropene	10061-02-6
(41)	Ethylbenzene	100-41-4
(42)	2-Hexanone (methyl butyl ketone)	591-78-6
(43)	Methyl bromide (bromomethane)	74-83-9
(44)	Methyl chloride (chloromethane)	74-87-3
(45)	Methylene bromide (dibromomethane)	74-95-3
(46)	Methylene chloride (dichloromethane)	75-09-2
(47)	Methyl ethyl ketone (MEK, 2-butanone)	78-93-3
(48)	Methyl iodide (iodomethane)	74-88-4
(49)	4-Methyl-2-pentanone (methyl isobutyl ketone)	108-10-1
(50)	Styrene	100-42-5
(51)	1,1,1,2-Tetrachloroethane	630-20-6
(52)	1,1,2,2-Tetrachloroethane	79-34-5
(53)	Tetrachloroethylene (tetrachloroethane, perchloroethylene)	127-18-4
(54)	Toluene	108-88-3
(55)	1,1,1-Trichloroethane (methylchloroform)	71-55-6
(56)	1,1,2-Trichloroethane	79-00-5
(57)	Trichloroethylene (trichloroethene)	79-01-6
(58)	Trichlorofluoromethane (CFC-11)	75-69-4
(59)	1,2,3-Trichloropropane	96-18-4
(60)	Vinyl acetate	108-05-4
(61)	Vinyl chloride	75-01-4
(62)	Xylenes (total)	1330-20-7

In accordance with 30 TAC §330.234(a)(2) those constituents not detected in Site leachate ("not reasonably expected to be in or derived from the waste contained in the unit") may be deleted from the detection monitoring list with approval from the Commission. At a future date, when leachate data are compiled and evaluated, the detection monitoring parameter list will be revised to exclude compounds not found in the Site leachate in sufficient quantity for statistical contrast.

ATTACHMENT A

~~If required, background for total metals will be established semiannually for eight consecutive events.~~

~~APPENDIX A~~

~~FACILITY~~ STATISTICAL METHODOLOGIES [GIBBONS REPORT]~~PLAN~~

ATTACHMENT B~~"Statistical Methods for Ground-Water Monitoring at the Williamson County Landfill"~~

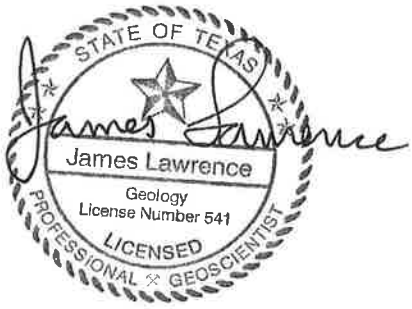
APPLICANT'S CERTIFICATION

APPLICANT CERTIFICATION

I 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 gathered and evaluated 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 is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Document: Permit Modification for Revisions to Attachment 11, Groundwater Sampling and Analysis Plan
Williamson County Recycling and Disposal Facility, Permit No. MSW-1405B

Signature: James Lawrence Date: 7-1-2011



7-1-2011

WILLIAMSON COUNTY
RECYCLING & DISPOSAL FACILITY
PERMIT AMENDMENT APPLICATION MSW-1405B
WILLIAMSON COUNTY, TEXAS

LANDFILL GAS MANAGEMENT PLAN

PART III, ATTACHMENT 14

Prepared for:

WILLIAMSON COUNTY
301 S.E. Inner Loop, Suite 109
Georgetown, Texas 78626

and

WASTE MANAGEMENT OF TEXAS, INC.
9900 Giles Road
Austin, Texas 78754

Prepared by:

SCS ENGINEERS
Texas Board of Professional Engineers Registration No. F-3407
12651 Briar Forest Dr., Suite 205
Houston, Texas 77077

MAY 2005
TECHNICALLY COMPLETE: FEBRUARY 2006
REVISION 1: MAY 2009
REVISION 2: MAY 2011
REVISION 3: JULY 2011

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the southwest corner of the existing property boundary, the nearest residents are approximately 1,800 feet away. The closest residences to the proposed expansion area are approximately 1,800 feet north of the northeast corner and approximately 2,800 feet south of the southeast corner. The locations of existing probes and probes proposed for the expansion area are shown on Figure III-14.1, Proposed Gas Probe Layout. Existing probes GMP-1 through GMP-4, GMP-11 through GMP-15, and GMP-22 through GMP-27 will remain in service as constructed. Existing probes, GMP-5 through GMP-10, and GMP-21 will be plugged as the landfill expands in their directions. GMP 16 through GMP-19 and GMP-28 through GMP-39 will be installed prior to placing waste in adjacent cells. See Table 1 – Existing Gas Monitoring Probe Details and Table 2 – Proposed Gas Monitoring Probe Details for more information on the adjacent cell. The monitoring probe is to be installed prior to waste placement in the respective adjacent cells listed in Tables 1 and 2. If methane is detected at a concentration greater than 5% volume by air at any permanent monitoring probe, additional monitoring probes may be placed at the permit boundary.

3.1.2 Monitoring Probe Construction Details

There are 22 existing monitoring probes at the site. These probes generally consist of a riser and a screened section, with both sections fabricated from PVC pipe. Probes 1, 2 and 3 consist of 1-inch diameter PVC pipe while the remaining existing probes consist of 2-inch diameter, Schedule 40 PVC pipe. The riser consists of solid pipe and extends from approximately 3 feet above ground level to a depth approximately 3 to 5 feet below ground level. Table 1 summarizes details regarding the existing probes.

TABLE 1
EXISTING GAS MONITORING PROBE DETAILS

GAS PROBE ID	ADJ. LANDFILL CELL[1]	TOTAL DEPTH (ft)	TOP OF SCREEN IN ELEV.	TOP OF GRAVEL PACK IN ELEV.	DEPTH OF SEAL (ft)	TOP OF CASING ELEV.	HIST. LOW GW ELEV.	BASE GRADE ELEV.
GMP-1	A-4	20	721.76	722.26	2.5	727.76	674.0	705.0
GMP-2	A-4	20	719.96	720.46	2.5	725.96	675.0	705.0
GMP-3	A-4	30	718.96	719.47	2.5	724.97	680.0	705.0
GMP-4	A-5	30	721.99	721.99	3.0	729.65	695.0	706.0
GMP-5	B-6a	25	706.17	706.17	4.5	713.84	694.0	695.0
GMP-6	B-1	25	710.67	710.67	3.0	718.64	676.0	700.0
GMP-7	C-1	25	711.8	711.80	4.5	719.75	682.0	695.0

GMP-8	D-1	25	705.3	705.30	4.5	712.89	683.0	690.0
GMP-9	2C	30	699.5	699.50	4.0	707.10	698.0	675.0
GMP-10	2C	27	691.2	691.20	4.0	698.50	672.0	670.0
GMP-11	2C	23.5	678.71	680.21	3.5	686.47	667.0	670.0
GMP-12	2A	17	691.37	691.37	4.0	698.60	672.0	675.0
GMP-13	N-4	22	707.8	707.80	4.0	715.23	689.0	690.0
GMP-14	A-5	16	720.25	720.25	4.0	727.70	680.0	706.0
GMP-15	~~3B~~5B	35	716.5	716.50	4.0	724.79	692.0	690.0
GMP-21	~~3E~~6D	39	710.89	710.89	4.0	718.51	692.0	680.0
GMP-22	2B	19.8	679.88	680.38	3.5	687.81	666.0	670.0
GMP-23	2A	20	689.03	689.03	4.0	696.54	671.0	675.0
GMP-24	~~3C~~5C	5.7	687.12	687.12	2.0	693.18	689.0	NA
GMP-25	~~3E~~6C	5.0	682.01	682.01	2.0	687.73	667.0	NA
GMP-26	2A	5.0	684.17	684.17	2.0	689.60	673.0	NA
GMP-27	~~3C~~5C	5.0	688.92	688.92	1.0	693.68	689.0	NA

(1) Cell and Sector locations are shown on Figure III-14.1.

Table 2 summarizes details regarding the proposed probes to be completed with the construction of each probe prior to conducting waste fill operations in the adjacent landfill cell.

TABLE 2
PROPOSED GAS MONITORING PROBE DETAILS

GAS PROBE ID	ADJ. LANDFILL CELL(1)	TOTAL DEPTH (ft)	TOP OF SCREEN IN ELEV.	TOP OF GRAVEL PACK IN ELEV.	DEPTH OF SEAL (ft)	TOP OF CASING ELEV.	HIST. LOW GW ELEV.	BASE GRADE ELEV.
GMP-16	~~3B~~5C	32	685.5	687.0	3.0	693.0	689.0	663.0
GMP-17	~~3B~~5C	21	679.5	681.0	3.0	687.0	676.0	668.0
GMP-18	~~3B~~5C	13	675.5	677.0	3.0	683.0	671.3	672.0
GMP-19	~~3C~~6C	16	677.5	679.0	3.0	685.0	665.0	671.0
GMP-28	~~4B~~3B	40.0	690.5	692.0	3.0	698.0	660.0	656.0
GMP-29	~~4F~~3D	39.0	690.5	692.0	3.0	698.0	661.0	652.0

GMP-30	~~4L~~7A	33.5	688.0	689.5	3.0	695.5	664.0	650.0
GMP-31	~~4L~~7C	26.5	685.0	686.5	3.0	692.5	668.0	650.0
GMP-32	~~4L~~7C	29.5	687.0	688.5	3.0	694.5	667.0	650.0
GMP-33	~~4L~~7C	39.6	687.1	688.6	3.0	694.6	657.0	650.0
GMP-34	~~4K~~7D	50.6	686.1	687.6	3.0	693.6	645.0	652.0
GMP-35	~~4K~~7D	66.6	682.1	683.6	3.0	689.6	625.0	652.0
GMP-36	~~4K~~7D	76.2	677.7	679.2	3.0	685.2	611.0	652.0
GMP-37	~~4K~~7D	68.1	680.7	682.1	3.0	688.1	622.0	652.0
GMP-38	~~4K~~7B	59.2	683.7	685.2	3.0	691.2	634.0	652.0
GMP-39	~~4G~~6G	46.0	686.5	688.0	3.0	694.0	650.0	654.0

(1) Cell and Sector locations are shown on Figure III-14.1.

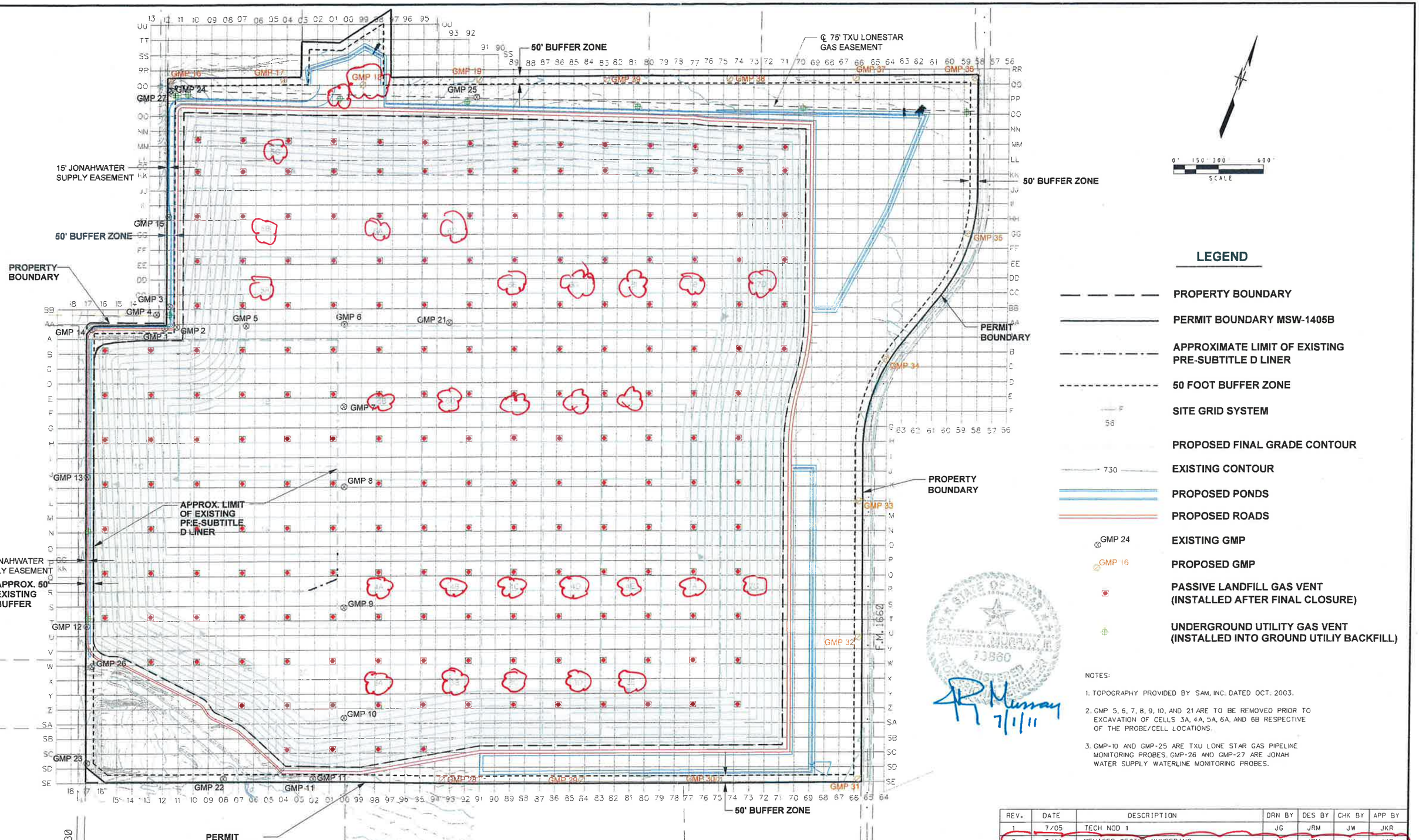
A qualified drilling contractor licensed in Texas will drill the gas monitoring probes. All boreholes will be logged during drilling by an engineer or a geologist and the soils will be described and identified according to ASTM D2488-90 (Unified Soil Classification System).

Each permanent gas monitoring probe will consist of a riser and a screened section, with both sections fabricated from 2-inch diameter, Schedule 40 PVC pipe. The riser will consist of solid pipe and extends from approximately 3 feet above ground level to a depth approximately 5 feet below ground level. The screened section will extend from the base of the riser, 5 feet below ground level, to a depth 5 feet below the historical low water elevation or the lowest base grade elevation of the adjacent landfill cell, whichever is the higher elevation. Typical details of the probe and construction requirements are shown on Figure III-14.2, Typical Gas Vent and Monitoring Probe Details, of this document.

Existing and proposed base grades and historical low groundwater level data shall be reviewed prior to monitoring probe construction and design of monitoring probes adjusted accordingly.

3.1.3 Monitoring Probe Testing Procedures

The permanent monitoring probes will be tested at least quarterly for the percentage of methane by volume. Field data sheets will be prepared prior to the start of sampling. Sample data sheets are included in Appendix III-14-A of this attachment.



LEGEND

- PROPERTY BOUNDARY
- PERMIT BOUNDARY MSW-1405B
- APPROXIMATE LIMIT OF EXISTING PRE-SUBTITLE D LINER
- 50 FOOT BUFFER ZONE
- F / 56 — SITE GRID SYSTEM
- PROPOSED FINAL GRADE CONTOUR
- 730 — EXISTING CONTOUR
- PROPOSED PONDS
- PROPOSED ROADS
- GMP 24 — EXISTING GMP
- GMP 16 — PROPOSED GMP
- PASSIVE LANDFILL GAS VENT (INSTALLED AFTER FINAL CLOSURE)
- UNDERGROUND UTILITY GAS VENT (INSTALLED INTO GROUND UTILIY BACKFILL)

NOTES:

1. TOPOGRAPHY PROVIDED BY SAM, INC. DATED OCT. 2003.
2. GMP 5, 6, 7, 8, 9, 10, AND 21 ARE TO BE REMOVED PRIOR TO EXCAVATION OF CELLS 3A, 4A, 5A, 6A, AND 6B RESPECTIVE OF THE PROBE/CELL LOCATIONS.
3. GMP-10 AND GMP-25 ARE TXU LONE STAR GAS PIPELINE MONITORING PROBES. GMP-26 AND GMP-27 ARE JONAH WATER SUPPLY WATERLINE MONITORING PROBES.

STATE OF TEXAS — JAMES R. MURRAY JR. — 73560 — REGISTERED PROFESSIONAL ENGINEER
7/1/11

REV.	DATE	DESCRIPTION	DRN BY	DES BY	CHK BY	APP BY
1	7/05	TECH MOD 1	JG	JRM	JW	JKR
2	7/11	REVISED SECTOR NUMBERING	JG	JRM	JW	JKR

SCS ENGINEERS

TEXAS BOARD OF PROFESSIONAL ENGINEERS REGISTRATION F-3407

October 2004 REV. JULY 2011
Project: 10109
CADD File: wllgas.dgn

WILLIAMSON COUNTY RECYCLING & DISPOSAL FACILITY
EXPANSION PERMIT AMENDMENT APPLICATION
PERMIT NO. MSW-1405B
HUTTO, WILLIAMSON COUNTY, TEXAS

GAS MANAGEMENT SITE LAYOUT

FIGURE III-14.1