Attachment B5.D

LEAK DETECTION, COLLECTION AND REMOVAL SYSTEMS SAMPLING & ANALYSIS PLAN

MASTER CELL VI
WAYNE DISPOSAL, INC. SITE #2
MID 048 090 633

SAMPLING AND ANALYSIS PLAN FOR LEAK DETECTION, COLLECTION AND REMOVAL SYSTEMS

MASTER CELL VI
WAYNE DISPOSAL, INC. SITE #2
MID 048 090 633

1.0 INTRODUCTION

The following sampling and analysis plan outlines the standard procedures for measuring flow volumes and for the collection and analysis of samples of the liquids collected from the leak detection, collection and removal system (LDCRS) in Master Cell VI. There are currently ten LDCRS sumps within Master Cell VI: VI-A South, VI-A North, VI-B, VI-C and VI-D, VI-E-SE, VI-E-SW, VI-E-NW, VI-ENE and VI-G (phase 1). The locations of these sumps are shown on Attachment A. Additional LDCRS sumps will located in subsequent phases of master cells, MC-VI-F and MC-VI -G however these will not be operational until these cells are constructed and begin to receive waste.

This document has been prepared to direct the efforts of monitoring personnel in the collection of samples and volume measurements so as to meet the requirements of the Operating License issued under Part 111 of Michigan Act 451 for the facility and to ensure sound practices for the collection of these data.

This plan must be revised if there are any changes to the equipment or procedures contained herein. All proposed changes must be submitted to the Materials Management Division (MMD) of the Department of Environment, Energy and Great Lakes (EGLE) for review and approval prior to implementation.

2.0 PUMPING/SAMPLING EQUIPMENT

Each LDCRS sump must be equipped with a submersible pump with a controller package and totalizing flow meter. These pumps were selected for the following attributes: 1) they are composed of stainless steel and Teflon and thus have low potential to impact the quality of environmental samples, 2) the pumps are designed to collect groundwater samples with minimal aeration or perturbation of the sample and, 3) the pumping rates are adjustable with high rates for removing liquids from the sump and low rates for sampling. Any pump system installed in the LDCRS should have similar attributes for pumping and for collecting samples.

The reinforcement of the LDCRS in Master Cell VI subcell A-North completed in August, 2006 required the installation of a Black Hawk Model 101 pump system. This system was selected for its ability to draw water from a suction tube that extends through the 1-inch diameter slipline.

The discharge tube for the pumps is composed of HDPE. At the surface, this tube is connected to a stainless steel or PVC discharge tube with the flow meter in line. The opening at the top of each LDCRS riser must be tightly covered with a cap in which the discharge tube and electrical cable penetrate through sealed ports. The discharge tube and electrical cable must be configured such that it does not come into contact with the ground surface and such that the end valve is

protected. Any changes to the configuration of the LDCRS riser pipe as the waste surface ascends must ensure that the sampling tube is not susceptible to contamination.

3.0 INSPECTION AND VOLUME AND FIELD MEASUREMENTS

Each LDCRS must be inspected on a weekly basis to ensure that there is no evidence of damage or tampering that could allow waste or waste constituents to have entered the system. This includes potential vapor sources that could introduce contamination into the LDCRS, such as the leachate collection system. Any relevant observations must be recorded and include evidence of malfunctioning equipment or other potential problems described in detail. The weekly/monthly inspection form (Attachment B)is used for documenting these inspections. The form must be fully completed with evidence of malfunctioning equipment or other potential problems described in detail.

Except as described below, once per week each LDCRS is pumped to dryness and the meter readings from the flow meters are recorded on Attachment B. The exception is for any LDCRS that is yielding less than 1 gpad which is pumped on a monthly basis to dryness in order to ensure that there is sufficient volume for monthly and quarterly sampling. The volume data must be evaluated each month to determine the average flow rate for the month produced on a gallons-per-acre-per day basis.

Once per month, a sample of the water from each LDCRS sump must be field tested for pH and specific conductivity. These values must be recorded on Attachment B. The monthly volume data and field parameter data must be evaluated by the Environmental Manager, or their designee, at the end of each month, to determine if there are anomalous flow rates or field tests.

4.0 COLLECTION OF SAMPLES

Unless there is an insufficient amount of liquid generated by a LDCRS during a month's time (time between monthly purging/volume recording events), samples must be collected for analysis on a quarterly basis from each LDCRS sump. In addition, any sump which yields volumes above the maximum expected volume (see Section 7.1) during a monthly purging/volume recording event must be sampled and analyzed for the quarterly parameter list. Further, any time a monthly field specific conductivity value exceeds the maximum expected value (see Section 7.1) a sample must be collected and analyzed for quarterly parameters, unless the conductivity measurement was made during the collection of the quarterly sample for that sump.

Prior to collecting the samples, the sump should be pumped until a minimum of 20 gallons are removed in order to ensure that the lines have been flushed (this is approximately 3 tubing volumes) unless the production rate of the sump indicates that less than 20 gallons will be available. Prior to sampling the flow rate of the pump must be throttled back to the minimum deliverable flow rate and then the samples are collected. The sump then must be pumped until dry.

Samples are collected within a nitrogen glove box whenever possible, unless access to a sump is temporarily not possible. Prior to sampling, the glove box is purged with nitrogen for approximately 20 minutes. The sample containers are placed within the box during purging.

The glove box is connected to the LDCRS pumps with a fitting that allows new Tygon™ tubing to be used for each sample. At the time of sampling, the flow from the LDCRS is diverted into the glove box by turning the valve on the back of the box. All containers are then filled within the box while under positive pressure from the nitrogen. All containers are closed before opening the glove box to remove them.

During the sample event, specific conductance and pH of the liquid must be measured on a sample of the liquid. The volume purge data and pH/conductance data for each sump must be recorded on the Attachment B.

Samples for VOC's are collected first while ensuring that no headspace is present within the sampling vials. Next, fill the bottles for total organic carbon, total phenolics and dissolved metals in that order. Finally, collect the remaining miscellaneous samples (e.g. sulfate, chloride, etc.). All samples are to be collected in the appropriate containers with the appropriate preservatives as outlined on Attachment C, "Handling Requirements of Monitoring Parameters." Care must be taken to ensure that preservatives are not spilled during sampling. Samples for dissolved metals may be field filtered with an in-line 0.45 micron filter cartridge and acidified to pH < 2 with HNO3, or, filtered and preserved at the laboratory upon delivery.

A trip blank and a field blank for VOC analyses must be maintained and submitted for analysis for each 10 samples collected and/or for each day samples are collected. In addition, one blind duplicate samples must be submitted for complete analyses for every other sampling event (two per year). Each sample container must be carefully labeled with the sampling location, time and date, identity of preservatives contained within and the sampler's initials. After collection, the samples shall be stored in a clean cooler containing ice or ice packs. The coolers containing samples must be stored in a secure location until transport to the laboratory.

5.0 ANALYTICAL PROCEDURES

Each sample is to be analyzed for the parameters listed on Attachment D, "Method Detection Limits for Organic and Inorganic Parameters." The analytical methods and targeted method detection limits must be those specified in Policy and Procedures Document WMRPD-111/115-8 unless EGLE approves alternate detection limits. If a revised WMRPD-111/115-8 is published by EGLE, Attachment E must be modified (if necessary) to be consistent with the revisions. Laboratory quality control frequencies and precision/accuracy requirements are provided in the quality assurance manual for the current contract laboratory.

6.0 RECORD KEEPING

In addition to the inspection/volume measurement forms contained in Attachment B there are two other items required to ensure adequate record keeping for the LDCRS monitoring program. First, a field notebook must be maintained during sampling which includes, at a minimum, the identity of sampling personnel, the dates and time when samples are collected, a description of the sampling event, volume purged prior to sampling and any pertinent observations of sample characteristics or sampling environment. Secondan equipment inventory, repair and maintenance log must be maintained. This log shall contain the serial numbers of all sampling equipment and a record of any repairs, maintenance, calibration or replacement of this equipment. Lastly, a chain of custody form must be filled out for each

sampling event. A sample copy is included as Attachment E. This form must be filled out fully for each sample submitted for analysis and each person responsible for the handling of these samples must sign and date the form. When the samples are delivered to the laboratory and the lab has signed for their receipt, a copy of this form must be retained. All recordkeeping information must be maintained onsite as part of the operating record.

7.0 DATA ANALYSIS AND REPORTING

Data analysis and reporting are required for both the volume data and the analytical data. Both volume and analytical data are evaluated statistically to determine if there has been a significant change.

7.1 Volume Rate Analysis

Volume data must be evaluated monthly to determine an average daily flow rate in gallons-per-acre-per-day (gpad). This is done by utilizing the following formula:

Flow Rate (gpad) = (Total Volume (gal)/Time (days))/Area of LDCRS (acres)

Areas, in acres, for the seven LDCRS are as follows: VI-AS (7.65), VI-AN (5.83), VI-B (6.13), VI-C (4.87) VI-D (7.24), VI-ESE (8.9), VI-ESW (4.6), VI-ENW (9.4), VI-ENE (13.6) and VI-G Phase 1 (17). Areas, in acres, for the future LDCRS for future phases of Cells VI-F and VI-G will be calculated based on as-built drawings.

Experience with LDCRS volume rate data suggest the following behaviors are expected: 1) volume rates generally decrease over time, 2) the rates are dependent on filling rates and initial moisture content of the compacted clay component of the area being filled, and 3) short term fluctuations in rates (e.g. weekly or daily) may be large compared to average monthly rates. Evaluating the volume rate data as an indication of performance of the primary liner must take into account the expected behavior of LDCRS.

The volume data for each individual LDCRS are evaluated by comparing each monthly rate to a maximum expected rate which is based on a moving window to account for trends or fluctuations. The maximum expected rate is defined as the mean plus three standard deviations calculated from the previous two years data for each sump individually. It must be noted that an exceedance of the maximum expected rate may be a normal response to an increase in the filling rate or the return to active filling over an area which has not received waste for a period of time. Monthly volumes that result in an exceedance of an expected rate must not be used in subsequent expected volume calculations unless they can be demonstrated to be associated with changes in filling rates or filling location. The volume data and statistical flow limits must be reported to EGLE with the quarterly report. However, if the monthly volume yields a rate greater than the maximum expected rate, then a sample must be collected and analyzed for the parameters listed on Attachment E as soon as practical (allowing time for sump to recharge) unless it can be demonstrated to EGLE that the increase is due to changes in filling rates or filling location in the affected cell. The EGLE must be notified of the nature of the exceedance and the intention to sample.

7.2 Evaluation of Field Specific Conductance Data

The monthly specific conductance data from each LDCRS sump must be evaluated for increases compared to recent data. This is done by comparing the measured specific conductance to the mean plus three standard deviations calculated from the previous eight conductance measurements from that sump. Monthly specific conductance data that result in an exceedance of an expected rate must not be used in subsequent statistical calculations unless they can be demonstrated to be associated with changes in filling rates or filling location. If the measured conductance exceeds this value then a sample must be collected and analyzed for the parameters listed on Attachment D as soon as practical unless the conductance measurement was collected at the time of the quarterly sample collection. The EGLE must be notified of the nature of the exceedance and the intention to sample.

7.3 Analytical Data Evaluation

All quarterly analytical results must be evaluated statistically and reported to the EGLE within 60 days of the completion of each sampling event. The statistical program for the LDCRS monitoring results is presented in Attachment F. In addition to the use of statistics to evaluate the occurrence of organic compounds, WDI also tracks the concentrations of all other monitoring parameters within a database. This database should be updated upon receipt of each set of analytical results and observed for unusual data points or trends. In addition to the analytical data, the quarterly report must also include a description of the sampling events, a table of the volume measurements, a narrative description of the results of the statistical and trend analyses, and a summary of the QA/QC information both field and laboratory.

7.4 Annual Report

An annual report describing the sampling events, a summary of the QA/QC information, sampling documentation, an evaluation of the volume records (graphical and tabular) and analytical results and a summary of any non-compliance or maintenance items that occurred during the previous year must be prepared. This annual report must be submitted to EGLE by March 1 of the following year.

8.0 DECONTAMINATION PROCEDURES

While the landfill cells are in operation, sampling of the LDCRS requires that the sampling vehicle drive into active cells and, in some cases onto the waste. For this reason, it is important that the sampling vehicle and equipment are properly decontaminated after sampling. The sampling vehicle must be power-washed by the mobile decon unit both outside and inside prior to leaving the cell area. All disposable PPE used by sampling personnel should be removed and disposed of in an appropriate receptacle at this time as well. The glove box should be cleaned with TSP or other non-organic detergent both inside and out on at least a quarterly basis.

ATTACHMENT A
Sump Location Map

LEGEND:

- EXISTING LEACHATE COLLECTION SUMP
- PROPOSED LEACHATE COLLECTION SUMP
- EXISTING LEACHATE DETECTION SUMP RISER
- PROPOSED LEACHATE DETECTION SUMP RISER
- NEW CELL BOUNDARY LOCATION
- OLD CELL BOUNDARY LOCATION
- PROPERTY LINE LOCATION
- EXISTING CONTOUR (2 FT INTERVAL)
- EXISTING STRUCTURE / BUILDING
- PAVED / GRAVEL — EXISTING ROAD
- GRID COORDINATES

NOTES:

1. AERIAL TOPGRAPHY BY DRONEVIEW TECHNOLOGIES DATE OF AERIAL: DECEMBER 10, 2020 UPDATED WITH FLYOVER 9-2-21.

SCALE 0' 100' 200' 400'

DATE:	2-9-21
DESIGNED BY:	XZ
DRAWN BY:	BDA
CHECKED BY:	HS
APPROVED BY:	XZ

CTI and Associates, Inc.
28001 Cabot Drive, Ste. 250
Novi, Michigan 48377
248.486.5100 (fax)248.486.5050
www.cticompanies.com

REV	DATE	REVISION DESCRIPTION	DRN	APP

REVISIONS

WAYNE DISPOSAL SITE NO. 2
WAYNE, MICHIGAN

LEACHATE COLLECTION AND LEAK DETECTION LOCATIONS

PROJECT NUMBER 1218070066

SCALE 1" = 200'

DRAWING NO

DRAWING SIZE: 24" X 36"

ATTACHMENT B

Weekly/Monthly Inspection Form

WEEKLY/MONTHLY INSPECTION CHECKLIST FOR LEAK DETECTION SYSTEM PUMPING AND SAMPLING RECORD
WAYNE DISPOSAL, INC.

Inspector: _____ **Date:** _____

Cell	Meter Reading Prior to Pumping	Meter Reading After Pumping	Sump Pumped Dry? Y	Sump Pumped Dry? N	Volume Pumped (gallons)	**Specific Conductance	**pH	Sump/Meter in Good Condition? Y	Sump/Meter in Good Condition? N
VI-AS									
VI-AN									
VI-B									
VI-C									
VI-D									
VI-ESE									
VI-ESW									
VI-ENE									
VI-ENW									
VI-G									

**Specific Conductance and pH are tested monthly

Other Comments (include description of sample if any unusual characteristics are observed):

_____

_____

_____

Description A. Leak Detection, Collection, and Removal System	Yes	No	Comments/Corrective Actions Indicate Location
Sump riser caps present and properly seated?			
Condition of sump risers acceptable?			
No evidence of tampering?			
Is the top of the riser and sample port protected from direct contact with waste?			
Motor controller condition acceptable? Protected from weathering?			

ATTACHMENT C

Sample Handling Requirements of Monitoring Parameters

Handling Requirements of Monitoring Parameters

Parameter	Perservation	Holding Time	Bottle Type	Minimum Volume
Total Phenolics	1,2	28 Days	Amber Glass	0.5 L
Sulfate	2	28 Days	Plastic	50 ml*
Alkalinity	2	14 Days	Plastic	100 ml*
Chloride	2	28 Days	Plastic	50 ml*
Nitrate/Nitrite	1,2	48 Hrs	Plastic	0.5 L
Aluminum	3,5	6 Mos	Plastic	200 ml**
Antimony	3,5	6 Mos	Plastic	200 ml**
Arsenic	3,5	6 Mos	Plastic	200 ml**
Barium	3,5	6 Mos	Plastic	200 ml**
Beryllium	3,5	6 Mos	Plastic	200 ml**
Cadmium	3,5	6 Mos	Plastic	200 ml**
Calcium	3,5	6 Mos	Plastic	200 ml**
Chromium	3,5	6 Mos	Plastic	200 ml**
Chromium, Hexavalent	2,5	24 Hrs	Plastic	100 ml
Cobalt	3,5	6 Mos	Plastic	200 ml**
Copper	3,5	6 Mos	Plastic	200 ml**
Iron	3,5	6 Mos	Plastic	200 ml**
Potassium	3,5	6 Mos	Plastic	200 ml**
Lead	3,5	6 Mos	Plastic	200 ml**
Magnesium	2,3,5	6 Mos	Plastic	200 ml**
Manganese	2,3,5	6 Mos	Plastic	200 ml**
Mercury	3,5	6 Mos	Plastic	200 ml**
Molybdenum	2,3,5	6 Mos	Plastic	200 ml**
Nickel	2,3,5	6 Mos	Plastic	200 ml**
Selenium	3,5	6 Mos	Plastic	200 ml**
Silver	3,5	6 Mos	Plastic	200 ml**
Sodium	3,5	6 Mos	Plastic	200 ml**
Thallium	3,5	6 Mos	Plastic	200 ml**
Tin	3,5	6 Mos	Plastic	200 ml**
Vanadium	3,5	6 Mos	Plastic	200 ml**
Zinc	3,5	6 Mos	Plastic	200 ml**
pH		Immediate	Plastic	25 ml
Bicarbonate	2	14 Days	Plastic	100 ml*
Carbonate	2	14 Days	Plastic	100 ml*
TOC	7	28 Days	Glass	100 ml
Specific Conductivity	2	28 Days	Plastic	100 ml
Total Cyanide	2,4	14 Days	Plastic	500 ml
Amenable Cyanide	2,4	14 Days	Plastic	500 ml
Volatile Organics	2,6	14 Days	Glass	2x40 ml
PCBs	2	7 Days-Extraction	Glass	2 L
	2	40 Days-Analysis	Glass	40 ml

1) pH<2 with concentrated Sulfuric Acid
2) Store at 4 degrees centigrade
3) pH<2 with nitric acid
4) pH>12 with sodium hydroxide
5) Filtered in the field using 0.45 micron membrane filters on the time of collection
6) 4 drops HCL, no headspace
7) pH<2 with hydrochloric acid

* Note: One liter for all of these parameters stored similarily
** Note: One liter for all of these parameters stored similarily

ATTACHMENT D

Monitoring Parameters and Reporting Limits

METHOD DETECTION LIMITS FOR INORGANIC PARAMETERS

PARAMETER	MDL (mg/L)	SAMPLE PREP METHOD	ANALYTICAL METHOD
TOTAL PHENOLICS	0.01	EPA 420.4	EPA 420.4
SULFATE	2	---	SM 4500-SO4 E-11
TOTAL ALKALINITY	10	---	SM 2320B-11
CHLORIDE	1	---	SM 4500-Cl E-11
NITRATE/NITRITE	0.01	---	SM 4500 NO3 F-11
ALUMINUM	0.05	EPA 3010A	EPA 6010C
ANTIMONY	0.001	EPA 3020A	EPA 6020A
ARSENIC	0.001	EPA 3020A	EPA 6020A
BARIUM	0.005	EPA 3010A	EPA 6010C
BERYLLIUM	0.001	EPA 3020A	EPA 6020A
CADMIUM	0.0002	EPA 3020A	EPA 6020A
CALCIUM	1	EPA 3010A	EPA 6010C
CHROMIUM	0.001	EPA 3020A	EPA 6020A
HEX. CHROMIUM	0.005	---	EPA 7196A
COBALT	0.015	EPA 3020A	EPA 6020A
COPPER	0.01	EPA 3010A	EPA 6010C
IRON	0.02	EPA 3010A	EPA 6010C
LEAD	0.001	EPA 3020A	EPA 6020A
MAGNESIUM	1	EPA 3010A	EPA 6010C
MANGANESE	0.005	EPA 3020A	EPA 6020A
MERCURY	0.0002	EPA 7470A	EPA 7470A
MOLYBDENUM	0.025	EPA 3020A	EPA 6020A
NICKEL	0.002	EPA 3010A	EPA 6010C
POTASSIUM	0.1	EPA 3010A	EPA 6010C
SELENIUM	0.001	EPA 3020A	EPA 6020A
SILVER	0.0002	EPA 3020A	EPA 6020A
SODIUM	1	EPA 3010A	EPA 6010C
THALLIUM	0.002	EPA 3020A	EPA 6020A
TIN	0.2	EPA 3020A	EPA 6020A
VANADIUM	0.002	EPA 3020A	EPA 6020A
ZINC	0.01	EPA 3010A	EPA 6010C
pH	N/A	---	SM 4500-H+ B-11
BICARBONATE	10	---	SM 2320B-11
CARBONATE	10	---	SM 2320B-11
TOTAL CYANIDE	0.005	EPA 9014	EPA 9014
AMENABLE CYANIDE	0.005	EPA 9014	EPA 9014
TOTAL ORGANIC CARBON	0.2	---	SM 5310C-11
SPEC. CONDUCTANCE	5 (umhos/cm)	---	SM 2510B-11

EPA methods from TEST METHODS FOR EVALUATING SOLID WASTE, USEPA SW-846
SM methods from STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER
MDLs are Target Detection Limits per Op Memo OWMRP 111/115-8

METHOD DETECTION LIMITS - ORGANIC ANALYSIS

Parameter	Sample Preparation Method	Analytical Method	Detection Limit (mg/l)
Acetone	---	EPA 8260B	0.020
Bromodichloromethane	---	EPA 8260B	0.001
Bromoform	---	EPA 8260B	0.001
Bromomethane	---	EPA 8260B	0.005
Carbon Disulfide	---	EPA 8260B	0.005
Carbon tetrachloride	---	EPA 8260B	0.001
Chlorobenzene	---	EPA 8260B	0.001
Chloroethane	---	EPA 8260B	0.005
2-Chloroethylvinyl Ether	---	EPA 8260B	0.010
Chloroform	---	EPA 8260B	0.001
Chloromethane	---	EPA 8260B	0.001
Dibromodifluoromethane	---	EPA 8260B	0.001
1,2 Dichlorobenzene	---	EPA 8260B	0.001
1,3 Dichlorobenzene	---	EPA 8260B	0.001
1,4 Dichlorobenzene	---	EPA 8260B	0.001
Dichlorodifluoromethane	---	EPA 8260B	0.001
1,1-Dichloroethane	---	EPA 8260B	0.001
1,2-Dichloroethane	---	EPA 8260B	0.001
1,1-Dichloroethene	---	EPA 8260B	0.001
1,2-Dichloroethene	---	EPA 8260B	0.001
1,2 Dichloropropane	---	EPA 8260B	0.001
cis-1,3 Dichloropropene	---	EPA 8260B	0.001
trans-1,3 Dichloropropene	---	EPA 8260B	0.001
1,1,1,2, Tetrachloroethane	---	EPA 8260B	0.001
1,1,2,2, Tetrachloroethane	---	EPA 8260B	0.001
Tetrachloroethene	---	EPA 8260B	0.001
1,1,2-Trichloroethane	---	EPA 8260B	0.001
1,1,1-Trichloroethane	---	EPA 8260B	0.001
Trichloroethene	---	EPA 8260B	0.001
Trichlorofluoromethane	---	EPA 8260B	0.001
Vinyl Chloride	---	EPA 8260B	0.001
Methylene Chloride	---	EPA 8260B	0.005
2- Butanone (MEK)	---	EPA 8260B	0.005
Benzene	---	EPA 8260B	0.001
Toluene	---	EPA 8260B	0.001
Ethylbenzene	---	EPA 8260B	0.001
Total Xylenes	---	EPA 8260B	0.003
PCB-1016	EPA 3510C	EPA 8082A	0.0001
PCB-1221	EPA 3510C	EPA 8082A	0.0001
PCB-1232	EPA 3510C	EPA 8082A	0.0001
PCB-1242	EPA 3510C	EPA 8082A	0.0001
PCB-1248	EPA 3510C	EPA 8082A	0.0001
PCB-1254	EPA 3510C	EPA 8082A	0.0001
PCB-1260	EPA 3510C	EPA 8082A	0.0001

EPA methods from TEST METHODS FOR EVALUATING SOLID WASTE, USEPA SW-846
SM methods from STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER
MDLs are Target Detection Limits per Op Memo OWMRP 111/115-8

ATTACHMENT E

Sample Chain of Custody

Pace Analytical®
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: of

Section A
Required Client Information:

Company:	
Address:	
Email To:	
Phone:	Fax:
Requested Due Date/TAT:	

Section B
Required Project Information:

Report To:
Copy To:
Purchase Order No.:
Project Name:
Project Number:

Section C
Invoice Information:

Attention:
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location
STATE: _____

Requested Analysis Filtered (Y/N)

Section D
Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Matrix Codes
MATRIX / CODE

Drinking Water	DW
Water	WT
Waste Water	WW
Product	P
Soil/Solid	SL
Oil	OL
Wipe	WP
Air	AR
Tissue	TS
Other	OT

ITEM #	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COLLECTED: COMPOSITE START TIME	COLLECTED: COMPOSITE END/GRAB DATE	COLLECTED: COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test											Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1																												
2																												
3																												
4																												
5																												
6																												
7																												
8																												
9																												
10																												
11																												
12																												

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER:

DATE Signed (MM/DD/YY):

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Instructions for completing Chain of Custody (COC)

1. **Section A and B:** Complete all Client information at top of sheet: company name, address, phone, fax, contact (the person to contact if there are questions, and who will receive the final report.), e-mail address (if available), PO#, Project Name and/or Project Number as you would like to see it appear on the report.

2. **Section C:** Invoice Information: Billing information is included in this section. This information should include the name and address of the person receiving the invoice.

3. Quote Reference should be completed if a quotation was provided by Pace Analytical. The Project Manager, and Profile No. will be completed by Pace Analytical Services.

4. **Site Location:** A separate COC must be filled out for each day of sample collection. Record the two letter postal code for the US state in which the samples were collected.

5. **Regulatory Agency:** List the program that is guiding the work to ensure proper regulations are followed.

6. **Section D:** Complete a Sample Description in the "SAMPLE ID' section as you would like it to appear on the laboratory report. The following information should also be included: the sample matrix, sample type (G (grab) or C (composite). When collecting a composite, the start time and end time should be documented in the respective boxes. The collection time for a grab (G) sample should be entered in the boxes marked 'Composite End/Grab'), Sample temp at collection (if required by state), the total number of containers, and preservative used.

7. Mark if the sample was filtered in the field by marking Y or N in 'Filtered' row by the Analysis requested.

8. Requested Analysis: List the required analysis and methods on the lines provided and place a check in the column for the samples requiring the analysis. Additional comments should be referenced in the bottom left hand corner or include attachments for extended lists of parameters.

9. The sampler should print their name in the space provided and sign their name followed by the date of the sampling event at the bottom of the COC in the spaces designated for 'SAMPLER NAME AND SIGNATURE'.

10. When relinquishing custody of the samples to a representative of the laboratory or other organization, indicate the Item Numbers of those samples being transferred; sign relinquished by, date and time, and include your affiliation.

***Important Note:**

Standard Turnaround Time is 2 Weeks/10 business days. Results will be delivered by end of business on the date due unless other arrangements have been made with your project manager.

Special Project Requirements such as Low Level Detection Limits or level of QC reported must be included on the chain of custody in the Additional Comments section.

ATTACHMENT F

Statistical Program for the LDCRS

Attachment G - LDCRS Statistical Monitoring Plan

STATISTICAL EVALUATION

With the exception of PCBs at the LDCRS for Cell VI-AN, vinyl chloride for Cell VI-B, and landfill gas components (acetone, vinyl chloride and 1,1-dichloroethane) for Cell VI-ENW,the statistical program for LDCRS monitoring utilizes Nonparametric Prediction Limits (NPPLs) to evaluate the monitoring data. In order to balance false positive and statistical power with this test, resamples are used, the number of which are determined by the number of sampling points and the number of background observations. Since there is no "upgradient" in the LDCRS system, and there was no substantial pre-waste disposal sampling program, the definition of background is not defined in a traditional sense.

The NPPL is defined as the highest concentration of a monitoring parameter detected in a background sample. For parameters that are never detected in the background, the NPPL is defined as the reported detection limit. Since the parameters to be analyzed statistically are all organic compounds, the reported detection limit, as listed on Attachment E of the LDCRS Sampling and Analysis Plan are the NPPLs. Therefore, any reported concentration of an Attachment E parameter at or above these limits is considered an apparent statistically significant increase.

If an Attachment E compound is detected, then the NPPL been exceeded and WDI will immediately notify the Materials Management Division (MMD) of the Michigan Department of

Environment, Great Lakes and Energy (EGLE) and arrange resampling as soon as possible to confirm or refute the apparent statistically significant increase. Quadruplicate samples will be collected for confirmation purposes and analyzed for the offending parameter(s). Since these quadruplicates are not independent samples, it does not constitute a multiple resampling as defined by the NPPL test. Thus, the quadruplicate samples constitute a single resampling. If three of the four quadruplicate samples are clean, then the statistical increase is not confirmed. If two or more of the quadruplicates contain the compound of interest the apparent increase will be deemed confirmed and WDI shall respond in accordance with the current Operating License.

Cell VI-AN was contaminated during the repair of a collapsed LDCRS riser pipe and low levels of PCBs have been detected sporadically in samples since this work was completed. To address PCBs at this location the results from each analysis will be plotted on a time series graph to determine if concentrations are increasing with time. If the concentration of total PCBs is shown to increase in three consecutive samples it will reported as an apparent statistically significant increase and WDI will respond per the Operating License.

In addition, vinyl chloride has been detected sporadically in samples from Cell VI-B and has been determined to be unrelated to liner performance. In the event of future detections of only vinyl chloride, this sump will be sampled monthly for three months to ensure no other parameters appear and the concentration of vinyl chloride is not increasing. If either of these occurs within the three monthly samples, WDI will report the results as a statistically significant increase and respond according license conditions. If not, WDI will return to quarterly sampling. For Cell VI-ENW, the detection of landfill gas parameters acetone, vinyl chloride and 1,1-

dichloroethane will require WDI to monitor the riser pipe for the presence of methane and investigate the active gas collection system to determine the cause and repair or recalibrate the system. Monthly monitoring will occur during (assuming methane levels are safe for operating the pump) and after this process until three “clean” samples are collected.

Cells VI-ESE and VI-AN were impacted by contact water and the effects are still seen in the major ion chemistry. This compromises the usefulness of these data. However, VOCs have not been detected is several years and can be used as NPPL criteria.