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Ms. Jeanne J. Wallace, Manager
300 Area Project
Nuclear Waste Program
State of Washington
Department of Ecology
1315 W. Fourth Avenue
Kennewick, WA 99336

Dear Ms. Wallace:

TRANSMITTAL OF DOCUMENT IN RESPONSE TO THE 325 HAZARDOUS WASTE TREATMENT UNITS (HWTUs) DANGEROUS WASTE PERMIT CONDITION III.6.B.o.

Enclosed for your approval is a revised document in response to the 325 HWTUs Dangerous Waste Permit condition III.6.B.o. This document contains three tables with the respective accuracy, precision, and quantitation limit (or minimum detectable activity) for each parameter necessary to meet the regulatory or decision limit for dangerous waste as well as revised text to incorporate the tables into the 325 HWTU Waste Analysis Plan.

An earlier version of this document was submitted to the State of Washington Department of Ecology (Ecology) on April 1, 1998, for review and approval as required by the permit condition. This revised document contains changes that are in response to comments received from Ecology.

If this document meets with your approval, please send a letter indicating your approval within two weeks of receiving this letter. If you have any questions or need further information concerning the enclosed documents, please contact Tony McKarns of my staff at (509) 376-8981, Annette Barnard of the RL-Science and Technology Operations Division on (509) 372-4931, or Mike McCoy of the Pacific Northwest National Laboratory at (509) 376-1483.

Sincerely,

James E. Rasmussen

James E. Rasmussen, Director
Environmental Assurance, Permits,
and Policy Division

STO:MEB

Enclosure

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Administrative Record (T-3-4)

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5.0 QUALITY ASSURANCE AND QUALITY CONTROL

The QA and QC requirements outlined in this section are applicable to field and laboratory activities supporting 325 HWTU needs. The selection of any laboratory shall be based upon its ability to demonstrate compliance to this section. Experience and capabilities will be determined in three major areas:

1. comprehensive written QA/QC program that conforms to the requirements of this section

2. the laboratory audited for effective implementation of QA/QC program by a group or agency deemed acceptable by the 325 HWTU

3. participation and demonstrated proficiency in a performance-evaluation program acceptable to the 325 HWTU.

All laboratories providing analytical support to the 325 HWTU are required to have the following QA/QC documentation.

- Analytical data generated are controlled by the implementation of a laboratory QA program that meets the requirements of this section.

- Before commencement of analytical work, the laboratory staff will submit their QA plan for review by the 325 HWTU. At a minimum, the QA plan shall address the following:

  - sample custody and management practices (see also Sections 4.1 through 4.3 of this waste analysis plan [WAP])

  - sample preservation protocols

  - sample preparation and analytical procedure requirements

  - instrument maintenance and calibration requirements

  - internal QC measures, e.g., method blanks, spikes

  - analytical capabilities.

When it is necessary to send samples to a laboratory, contracts or work agreements are not awarded until a pre-award evaluation of the prospective laboratory has been performed. In the pre-award evaluation process, the laboratory's QA plan is submitted to the waste-analysis Project Manager and the QA officer for approval. QA personnel and a technical expert may also visit the site, or the prospective laboratories' QA/QC documents and records of surveillances/inspections, audits, non-conformances, and corrective actions maintained by PNNL or other Hanford Facility contractors may be reviewed.

5.1 OBJECTIVES FOR THE 325 HWTUs

The primary purpose of waste testing is to ensure that the waste is properly characterized, when process-knowledge is insufficient, in compliance

with RCRA requirements for general waste analysis [WAC 173-303-300(2); 40 CFR 264.13]. Waste is also tested to ensure that stored waste is safely managed, residuals from incidents that might occur are properly disposed of, and the process of accepting waste for storage is controlled. The specific objectives of the waste-sampling and analysis program at the HWTUs are as follows:

- Identify the presence of waste that is substantially different from waste currently stored (e.g., compatibility).
- Provide a detailed chemical and physical analysis of a representative sample of the waste before the waste is accepted at or transferred from 325 HWTUs to an offsite TSD facility to ensure proper management and disposal.
- Provide an analysis that is accurate and up-to-date to ensure that waste is properly treated and disposed of.
- Ensure safe management of waste being stored at the HWTUs.
- Ensure proper disposal of residuals.
- Ensure compliance with LDRs.
- Identify and reject waste that does not meet the HWTU's acceptance requirements (e.g., incomplete information).
- Identify and reject waste that does not meet specifications for the HWTUs (e.g., Part A listing, restricted from storage at the 325 HWTUs).
- Determine if waste samples are representative of the contents of the containers at the time the samples were taken.
- Determine if waste accepted for storage is allowed by RCRA permit application.
- Determine if waste accepted for storage meets the requirements of 325 HWTU's waste-acceptance criteria.
- Determine if waste accepted for storage meets the information provided by the generator.

5.2 DATA QUALITY REQUIREMENTS

The overriding goal of this program is to adequately designate or certify waste, through either process knowledge or analytical testing, such that it can be appropriately managed or dispositioned. The clear objective in such a case is to either "prove the negative" or accurately designate/certify any waste for which the negative cannot be proven. The first objective is to control and characterize any errors associated with the data collected in the field. Field QC activities, such as the use of standard procedures for locating and collecting samples, are intended to limit the introduction of sampling error. QC activities, such as collecting duplicate field samples and including field blanks in sample sets, are intended to provide the information

required to characterize any errors in the data introduced by field-related activities. Additionally, laboratory QC activities are directed at identifying any potential errors introduced during the preparative, analytical, and/or reporting phases of work. Other oversight QA activities, such as planning the field and laboratory QC program requirements and auditing ongoing and completed activities, ensure that the specified procedures are followed and that the QA information needed for characterizing error, to permit adequate decision-making, is obtained.

The second objective is to illustrate that waste has been tested according to the specifications in this WAP. Activities related to this objective include the following:

- Field inspections – performed by a PNNL QA officer or designee, depending on the activity. The inspections primarily are visual. The purpose of these inspections is to verify that a specific guideline, specification, or procedure for the activity is completed successfully.

- Laboratory analyses – performed by onsite or offsite laboratories on samples of waste. The purpose of the laboratory analyses is to determine constituents or characteristics present, the concentration or level, and whether the results either "prove the negative" or result in designation/certification.

- Checklists – required for inspections and designed to ensure that the appropriate areas are addressed, consistently. Checklists are filled out during the course of inspection to document inspection results.

- Instrument calibration and calibration verification activities – required for ensuring data of known accuracy and precision. This activity includes maintaining records of calibration of all instruments used to perform surveying, field testing, and laboratory analyses to ensure traceability to reported results.

5.2.1 Data Assessment

The acquired data need to be scientifically sound, of known quality, and thoroughly documented. Data will be assessed to determine compliance with national quality standards, which are as follows:

- Precision – The overall precision shall be the agreement between the collected samples (duplicates) for the same parameters, at the same location, subjected to the same preparative and analytical techniques.

- Representativeness – The representativeness will address the degree to which the data accurately and precisely represent a real characterization of the sub waste stream, parameter variation at a sampling point, sampling conditions, and the environmental condition at the time of sampling. The issue of representativeness will be addressed for the following points:

  - Based on the generating process, the waste stream, and its volume, an adequate number of sampling locations is selected.

- The representativeness of selected media has been defined accurately.

- The sampling and analytical methodologies are appropriate.

- The environmental conditions at the time of sampling are documented.

- Completeness – The completeness shall be defined as the amount of usable and/or valid data obtained from a measurement system compared to the total amount of data requested.

- Comparability – The confidence with which one data set can be compared to another.

5.3 FIELD QUALITY CONTROL

Internal QC checks will be established by submitting QC samples from the field to the analytical laboratory. The number of field QC samples will be approximately 5% of the total number of field samples taken. The 5% criterion commonly is accepted as a minimum number of QC samples. The types and frequency of collection for field QC samples are as follows:

- Trip Blank – A sample of analyte-free media taken from the laboratory to the sampling site and returned to the laboratory unopened. Trip blanks are prepared and preserved using sample containers from the same lot as the other samples collected that day. A trip blank is used to document contamination attributable to shipping and field-handling procedures. This type of blank is useful in documenting contamination of volatile organic samples.

- Equipment Rinsate Blank – A sample of analyte-free media that has been used to rinse the sampling equipment. It is collected after completion of decontamination and before sampling. This blank provides evidence of the adequacy of decontamination procedures. An equipment rinsate blank is only required when equipment is reused.

- Field Duplicates – defined as independent samples collected in such a manner that the samples are equally representative of the variables of interest at a given point in space and time. The laboratory shall not know that the sample is a duplicate. Thus, for the duplicate sample, there will be the normal sample analysis for both the field duplicate and the laboratory duplicate (or matrix-spike duplicate). Field-duplicate samples will provide an estimate of sampling precision.

5.4 LABORATORY QUALITY ASSURANCE/QUALITY CONTROL

All analytical work shall be defined and controlled by a Statement of Work, prepared in accordance with this section. Samples will be handled according to approved laboratory procedures. The accuracy, precision, and any limitations of analytical data generated in the laboratory will be determined by QC performance.

5.4.1 Analytical Methods

The HWTU's customers may need to conduct analyses to provide information to fill out CDRRs and to determine compatibility, safety, and operating information. As needed, PNNL Environmental Management Services (EMS) staff also will conduct analyses to determine completeness of information and whether treatment and verification material meets the acceptance criteria for either disposal via the RLWS, treatment or storage at one of the Hanford Facility-permitted TSD areas or that of the offsite TSD facility. Examples of the Waste-Treatment Verification form and the RLWS Disposal Log are included at the end of this section for informational purposes only. Any revision or update of these forms will be available at the 325 HWTU for review and inspection. Testing and analytical methods will depend on the type of analysis sought and the reason for needing the information.

Testing shall be performed by chemists and/or appropriate analytical personnel working under approved QA guidelines. Analytical methods may be selected from those that are used routinely by the laboratories and suitable for the matrix and analyte(s) being tested. However, the TCLP shall follow SW-846. Any deviations to the SW-846 Toxicity Characteristic procedure, due to limitations such as sample quantity or sample radioactivity, shall be documented and agreed upon before starting work. All methods employed by the laboratory shall be agreed upon by the 325 HWTU before the start of work.

Laboratories performing work to support the 325 HWTU shall have a system in place and documented, which ensures that procedures are properly prepared, reviewed, approved, issued, and controlled. Procedures shall be controlled such that only the most current version is available for use.

5.4.2 Quality Control Requirements

The types of quality control required are as follows:

- Method or Preparative Blanks – These blanks usually consist of laboratory reagent-grade water treated in the same manner as the sample (i.e., digested, extracted, distilled). They are prepared, analyzed, and reported as a standard sample would be reported. Method or preparation blanks indicate contamination from reagents or materials used. A blank is considered acceptable if 1) the concentration of any analyte of interest detected in the blank is 20 times lower then that of the samples, or 2) the analyte of interest in the sample is less than 80% of the Regulatory Decision Limit. The laboratory shall contact the HWTU point-of-contact (POC) if 1) or 2) above cannot be met.

- Blank Spike – This type of spike is a sample of laboratory reagent-grade water fortified (spiked) with the analytes of interest that is prepared and analyzed with the associated sample batch. A blank, spiked with surrogates, can meet this requirement in the case of organic extractions, which includes the use of surrogates. This QC provides information on the adequacy of the preparative process under optimum conditions. Failure indicates a laboratory error that should have been controllable. When this QC fails, all samples in the same batch should be re-prepared and re-analyzed with the following exceptions: 1) the actual concentration of the analyte in the sample would not exceed the

regulatory decision limit regardless of QC recovery, or 2) the actual concentration of the analyte in the sample already exceeds the regulatory decision limit. However, the HWTU POC shall be notified in such instances of QC failure.

- Laboratory Control Sample – A reference material, similar in matrix to the samples, introduced into a process to monitor the performance of the system. It is used in place of a method or blank spike when the matrix warrants, and an adequate material is available. The laboratory control sample (LCS) is used similarly to the Blank Spike. The requirements for the Blank Spike would also apply to the LCS.

- Matrix Spike – An aliquot of sample spiked with a known concentration of target analyte(s). The spiking occurs at the time of sample preparation (Note: when TCLP is required, spiking occurs after leaching at the time of digestion or extraction). Matrix spikes shall be performed on 5% of the samples (1 in 20) or one per batch of samples. The Matrix Spike gives an indication of any limitations of the preparative process employed for the matrix tested. Wherever possible and practical, the sample should be spiked at a level which is at or near the regulatory decision limit. Generally, a matrix spike and matrix spike duplicate are prepared and analyzed in an organic analysis; inorganics include a sample, duplicate, and matrix spike. Accuracy limits for Matrix Spikes are specified in Tables 5.1 through 5.3. Failure to achieve these limits for any analyte of interest warrants corrective action with the following exceptions: 1) the analyte of interest in the sample is so low in relation to the spike recovery that it would not exceed the regulatory decision limit, or 2) the analyte of interest in the sample exceeds the regulatory decision limit. It is essential that the laboratory QC "prove the negative;" sample results within 20% of the regulatory decision limit that exhibit spike failure for that analyte require timely HWTU POC notification. Appropriate corrective action is determined in consultation with the HWTU POC. Note: Laboratory performance-based limits may be used in lieu of those presented in Tables 5.1 through 5.3 if negotiated before starting work with the client. Such limits would only be applicable if based upon data representing more then 20 recovery determinations in a matrix determined to be similar to that of the samples being tested.

- Laboratory Duplicate Samples – Laboratory duplicates are obtained by splitting a field sample into two separate aliquots and analyzing the aliquots separately. The analyses of laboratory duplicates monitor the precision of the preparative and analytical method for the sample matrix. Laboratory duplicates shall be performed on 5% of the samples (1 in 20) or one per batch of samples. In the case of testing for organic constituents, a matrix spike and matrix-spike duplicate are typically analyzed. Precision limits are presented in Tables 5.1 through 5.3 and are reported as the Relative Percent Difference (RPD). If the precision value exceeds the control limit, then corrective action is required with the following exceptions: 1) the sample results, regardless of precision, would not exceed the regulatory decision limit, or 2) the sample results clearly exceed the regulatory decision limit, regardless of precision. Again, the emphasis is on the laboratory's ability to "prove the negative." Results within 20% of the regulatory decision

Table 5.1. Criteria for Waste Designation

Waste Code	Analyte	Reg. Decision Limit (TCLP)[a] (mg/L)	Accuracy and Precision at the Regulatory Decision Limit,[b] RPD[c]
D001	Ignitable	[d]	
D002/WSC2	Corrosive	[d]	
D003	Reactive	[d]	
Inorganic Toxicity Characteristic Constituents			
D004	Arsenic	5.0	75-150%, 20
D005	Barium	100.0	75-150%, 20
D006	Cadmium	1.0	75-150%, 20
D007	Chromium	5.0	75-150%, 20
D008	Lead	5.0	75-150%, 20
D009	Mercury (Retort Residues)	0.2	75-150%, 20
D009	Mercury (all other Residues)	0.2	75-150%, 20
D010	Selenium	1.0	75-150%, 20
D011	Silver	5.0	75-150%, 20
Organic Toxicity Characteristic Constituents			
D018	Benzene	0.5	70-150%, 25
D019	Carbon Tetrachloride	0.5	70-150%, 25
D020	Chlordane	0.03	70-150%, 25
D021	Chlorobenzene	100.0	70-150%, 25
D022	Chloroform	6.0	70-150%, 25
D023	o-Cresol	200.0	70-150%, 25
D024	m-Cresol	200.0	70-150%, 25
D025	p-Cresol	200.0	70-150%, 25
D026	Cresol	200.0	70-150%, 25
D016	2,4-D	10.0	70-150%, 25
D027	1,4-Dichlorobenzene	7.5	70-150%, 25
D028	1,2-Dichlorethane	0.5	70-150%, 25
D029	1,1-Dichloroethylene	0.7	70-150%, 25
D030	2,4-Dinitrotoluene	0.13	70-150%, 25
D012	Endrin	0.02	70-150%, 25
D031	Heptachlor (and its epoxide)	0.08	70-150%, 25
D032	Hexachlorobenzene	0.13	70-150%, 25
D033	Hexachlorobutadiene	0.5	70-150%, 25
D034	Hexachloroethane	3.0	70-150%, 25
D013	Lindane	0.4	70-150%, 25
D014	Methoxychlor	10.0	70-150%, 25
D035	Methyl ethyl ketone	200.0	70-150%, 25
D036	Nitrobenzene	2.0	70-150%, 25

Table 5.1. (contd)

Waste Code	Analyte	Reg. Decision Limit (TCLP)[a] (mg/L)	Accuracy and Precision at the Regulatory Decision Limit,[b] RPD[c]
D037	Pentachlorophenol	100.0	70-150%, 25
D038	Pyridine	5.0	70-150%, 25
D039	Tetrachloroethylene	0.7	70-150%, 25
D015	Toxaphene	0.5	70-150%, 25
D040	Trichloroethylene	0.5	70-150%, 25
D041	2,4,5-Trichlorophenol	400.0	70-150%, 25
D042	2,4,6-Trichlorophenol	2.0	70-150%, 25
D017	2,4,5-TP (Silvex)	1.0	70-150%, 25
D043	Vinyl Chloride	0.2	70-150%, 25

(a) The regulatory limit is given in terms of the leachate levels from TCLP (Toxicity Characteristic Leaching Procedure) testing. The TCLP protocol can be found in SW-846, Volume 1C, Method 1311.
(b) The spike recovery is evaluated against the concentration in the sample and its relation to the regulatory decision limit. As the analyte concentration in the sample approaches the regulatory threshold (i.e., 80 to 99.5% of the regulatory decision limit), the performance levels indicated must be achieved or an alternate approach must be employed (e.g., for TCLP metals, the use of internal calibration methods such as the method of standard additions would be required). The emphasis is on proving the negative; the inability to prove the negative results in designation for that analyte.
(c) RPD is the Relative Percent Difference calculated from duplicate or matrix spike duplicate samples.
(d) A solid waste is considered ignitable if it meets the criteria identified in WAC 173-303-090 (5).
(e) A solid waste is considered corrosive if it meets the criteria identified in WAC 173-303-090 (6).
(f) A solid waste exhibits the characteristic of reactivity if it meets the criteria identified in WAC 173-303-090 (7).

limit that exhibit RPD failure require corrective action. Appropriate corrective action is determined in consultation with the HWTU POC. Note: Laboratory performance-based limits may be used in lieu of those presented in Tables 5.1 through 5.3 if negotiated before starting work with the client. Such limits would only be applicable if based upon data representing more than 20 RPD determinations in a matrix determined to be similar to that of the samples being tested.

5.5 RECORD-KEEPING

Records associated with the waste-analysis plan and waste-verification program are maintained by the waste-management organization. A copy of the CDRR for each waste stream accepted at 325 HWTUs is maintained as part of the operating record. Generators maintain their sampling and analysis records.

Analytical data will be documented and presented clearly to verify that 325 HWTU data-quality requirements have been achieved. The focus of the laboratory shall be directed on how well the data support either "proving the negative" or supporting the fact that the constituent is actually present above the regulatory threshold.

Table 5.2. Criteria for Land Disposal Certification, Universal Treatment Standards - Inorganic Constituents

	Wastewater, Total Composition[a]		Nonwastewater, TCLP[b]	
Regulated Hazardous Constituent	Reg. Limit (mg/L)	Accuracy and Precision at the Regulatory Limit,[c] RPD[d]	Reg. Limit (mg/L)	Accuracy and Precision at the Regulatory Limit,[c] RPD[d]
Antimony	1.9	75-150%, 20	2.1	75-150%, 20
Arsenic	1.4	75-150%, 20	5.0	75-150%, 20
Barium	1.2	75-150%, 20	7.6	75-150%, 20
Beryllium	0.82	75-150%, 20	0.014	75-150%, 20
Cadmium	0.69	75-150%, 20	0.19	75-150%, 20
Chromium	2.77	75-150%, 20	0.86	75-150%, 20
Cyanide (Total)	1.2	75-150%, 20	590 mg/kg[e]	75-150%, 20
Cyanide (Amenable)	0.86	75-150%, 20	30 mg/kg[e]	75-150%, 20
Fluoride[f]	35	75-150%, 20	N/A	N/A
Lead	0.69	75-150%, 20	0.37	75-150%, 20
Mercury (Retort Residues)[g]	N/A		0.20	75-150%, 20
Mercury (all other Residues)[g]	0.15	75-150%, 20	0.025	75-150%, 20
Nickel	3.98	75-150%, 20	5.0	75-150%, 20
Selenium	0.82	75-150%, 20	0.16	75-150%, 20
Silver	0.43	75-150%, 20	0.30	75-150%, 20
Sulfide	14	75-150%, 20	N/A	N/A
Thallium	1.4	75-150%, 20	0.078	75-150%, 20
Vanadium[e]	4.3	75-150%, 20	0.23	75-150%, 20
Zinc[e]	2.61	75-150%, 20	5.3	75-150%, 20

(a) Based upon analysis of composite samples.
(b) Based upon analysis of grab samples.
(c) The spike recovery is evaluated against the concentration in the sample and its relation to the regulatory decision limit. As the analyte concentration in the sample approaches the regulatory threshold (i.e., 80 to 99.5% of the regulatory decision limit), the performance levels indicated must be achieved or an alternate approach must be employed (e.g., for TCLP metals, the use of internal calibration methods such as the method of standard additions would be required). The emphasis is on proving the negative; the inability to prove the negative results in designation for that analyte.
(d) The RPD is the Relative Percent Difference.
(e) Total concentration (not TLCP) based on distilling a 10 gram sample for 1 hour and 15 minutes.
(f) Not an "underlying hazardous constituent" in characteristic wastes.
(g) Applicable to low mercury (<260 mg/kg) subcategory only.

All results shall be traceable to the methods employed and calibrations performed.

The WAP will be revised whenever regulation changes affect the WAP.

Table 5.3. Criteria for Land Disposal Certification, Universal Treatment Standards - Organic Constituents

Regulated Hazardous Constituent	Wastewater, Total Composition[a]		Nonwastewater, Total Composition[b]	
	Reg. Limit (mg/L)	Accuracy and Precision at the Regulatory Limit,[c] RPD[d]	Reg. Limit (mg/kg)	Accuracy and Precision at the Regulatory Limit[c], RPD[d]
A2213	0.042	70-150%, 25	1.4	70-150%, 25
Acenaphthene	0.059	70-150%, 25	3.4	70-150%, 25
Acenaphthylene	0.059	70-150%, 25	3.4	70-150%, 25
Acetone	0.28	70-150%, 25	160	70-150%, 25
Acetonitrile	5.6	70-150%, 25	38	70-150%, 25
Acetophenone	0.010	70-150%, 25	9.7	70-150%, 25
2-Acetylaminofluorene	0.059	70-150%, 25	140	70-150%, 25
Acrolein	0.29	70-150%, 25	N/A[e]	N/A
Acrylamide	19	70-150%, 25	23	70-150%, 25
Acrylonitrile	0.24	70-150%, 25	84	70-150%, 25
Aldicarb Sulfone	0.056	70-150%, 25	0.28	70-150%, 25
Aldrin	0.021	70-150%, 25	0.066	70-150%, 25
4-Aminobiphenyl	0.13	70-150%, 25	N/A[e]	70-150%, 25
Aniline	0.81	70-150%, 25	14	70-150%, 25
Anathracene	0.059	70-150%, 25	3.4	70-150%, 25
Aramite	0.36	70-150%, 25	N/A[e]	N/A
alpha-BHC	0.00014	70-150%, 25	0.066	70-150%, 25
beta- BHC	0.00014	70-150%, 25	0.066	70-150%, 25
delta-BHC	0.023	70-150%, 25	0.066	70-150%, 25
Barban	0.056	70-150%, 25	1.4	70-150%, 25
Bendiocarb	0.056	70-150%, 25	1.4	70-150%, 25
Bendiocarb phenol	0.056	70-150%, 25	1.4	70-150%, 25
Benomyl	0.056	70-150%, 25	1.4	70-150%, 25
Benz(a)anthracene	0.059	70-150%, 25	3.4	70-150%, 25
Benzal chloride	0.055	70-150%, 25	6.0	70-150%, 25
Benzene	0.14	70-150%, 25	10	70-150%, 25
Benzo(a)pyrene	0.061	70-150%, 25	3.4	70-150%, 25
Benzo(b)fluoranthene[f]	0.11	70-150%, 25	6.8	70-150%, 25
Benzo(k)fluoranthene[f]	0.11	70-150%, 25	6.8	70-150%, 25
Benzo(g,h,i)perylene	0.0055	70-150%, 25	1.8	70-150%, 25
Bis(2-chlorethoxy) methane	0.036	70-150%, 25	7.2	70-150%, 25
Bis(2-chloroethyl)ether	0.033	70-150%, 25	6.0	70-150%, 25
Bis(2-chloroisopropyl) ether	0.055	70-150%, 25	7.2	70-150%, 25
Bis(2-ethylhexyl) phthalate	0.28	70-150%, 25	28	70-150%, 25
Bromodichloromethane	0.35	70-150%, 25	15	70-150%, 25

Table 5.3. (contd)

Regulated Hazardous Constituent	Wastewater, Total Composition[a]		Nonwastewater, Total Composition[b]	
	Reg. Limit (mg/L)	Accuracy and Precision at the Regulatory Limit,[c] RPD[d]	Reg. Limit (mg/kg)	Accuracy and Precision at the Regulatory Limit[c], RPD[d]
Bromomethane	0.11	70-150%, 25	15	70-150%, 25
4-Bromophenyl phenyl ether	0.055	70-150%, 25	15	70-150%, 25
n-Butyl alcohol	5.6	70-150%, 25	2.6	70-150%, 25
Butyl benzyl phthalate	0.017	70-150%, 25	28	70-150%, 25
Butylate	0.042	70-150%, 25	1.4	70-150%, 25
2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	0.066	70-150%, 25	2.5	70-150%, 25
Carbaryl	0.006	70-150%, 25	0.14	70-150%, 25
Carbendazim	0.056	70-150%, 25	1.4	70-150%, 25
Carbofuran	0.006	70-150%, 25	0.14	70-150%, 25
Carbofuran phenol	0.056	70-150%, 25	1.4	70-150%, 25
Carbon disulfide	3.8	70-150%, 25	4.8 mg/L[g]	70-150%, 25
Carbon Tetrachloride	0.057	70-150%, 25	6.0	70-150%, 25
Carbosulfan	0.028	70-150%, 25	1.4	70-150%, 25
Chlordane[h]	0.0033	70-150%, 25	0.26	70-150%, 25
p-Chloroaniline	0.46	70-150%, 25	16	70-150%, 25
Chlorobenzene	0.057	70-150%, 25	6.0	70-150%, 25
Chlorobenzilate	0.10	70-150%, 25	N/A[e]	
2-Chloro-1,3-butadiene	0.057	70-150%, 25	0.28	70-150%, 25
Chlorodibromomethane	0.057	70-150%, 25	15	70-150%, 25
Chloroethane	0.27	70-150%, 25	6.0	70-150%, 25
Chloroform	0.046	70-150%, 25	6.0	70-150%, 25
p-Chloro-m-cresol	0.018	70-150%, 25	14	70-150%, 25
2-Chloroethyl vinyl ether	0.062	70-150%, 25	N/A[e]	N/A
Chloromethane (Methyl chloride)	0.19	70-150%, 25	30	70-150%, 25
2-Chloronaphthalene	0.055	70-150%, 25	5.6	70-150%, 25
2-Chlorophenol	0.044	70-150%, 25	5.7	70-150%, 25
3-Chloropropylene	0.036	70-150%, 25	30	70-150%, 25
Chrysene	0.059	70-150%, 25	3.4	70-150%, 25
o-Cresol	0.11	70-150%, 25	5.6	70-150%, 25
m-Cresol[i]	0.77	70-150%, 25	5.6	70-150%, 25
p-Cresol[i]	0.77	70-150%, 25	5.6	70-150%, 25
Cresol	N/A	N/A	N/A	N/A
m-Cumenyl methyl-carbamate	0.056	70-150%, 25	1.4	70-150%, 25
Cyclohexanone	0.36	70-150%, 25	0.75 mg/L[g]	70-150%, 25

Table 5.3. (contd)

Regulated Hazardous Constituent	Wastewater, Total Composition[a]		Nonwastewater, Total Composition[b]	
	Reg. Limit (mg/L)	Accuracy and Precision at the Regulatory Limit,[c] RPD[d]	Reg. Limit (mg/kg)	Accuracy and Precision at the Regulatory Limit[c], RPD[d]
o,p'-DDD	0.023	70-150%, 25	0.087	70-150%, 25
p,p'-DDD	0.023	70-150%, 25	0.087	70-150%, 25
o,p'-DDE	0.031	70-150%, 25	0.087	70-150%, 25
p,p'-DDE	0.031	70-150%, 25	0.087	70-150%, 25
o,p'-DDT	0.0039	70-150%, 25	0.087	70-150%, 25
p,p'-DDT	0.0039	70-150%, 25	0.087	70-150%, 25
Dibenz(a,h)anthracene	0.055	70-150%, 25	8.2	70-150%, 25
Dibenzo(a,e)pyrene	0.061	70-150%, 25	N/A[e]	N/A
1,2-Dibromo-3-chloro-propane	0.11	70-150%, 25	15	70-150%, 25
1,2-Dibromoethane (Ethylene dibromide)	0.028	70-150%, 25	15	70-150%, 25
Dibromomethane	0.11	70-150%, 25	15	70-150%, 25
1,2-Dichlorobenzene	0.088	70-150%, 25	6.0	70-150%, 25
1,3-Dichlorobenzene	0.036	70-150%, 25	6.0	70-150%, 25
1,4-Dichlorobenzene	0.090	70-150%, 25	6.0	70-150%, 25
Dichlorodifluoromethane	0.23	70-150%, 25	7.2	70-150%, 25
1,1-Dichloroethane	0.059	70-150%, 25	6.0	70-150%, 25
1,2-Dichloroethane	0.21	70-150%, 25	6.0	70-150%, 25
1,1-Dichloroethylene	0.025	70-150%, 25	6.0	70-150%, 25
trans-1,2-Dichloroethylene	0.054	70-150%, 25	30	70-150%, 25
2,4-Dichlorophenol	0.044	70-150%, 25	14	70-150%, 25
2,6-Dichlorophenol	0.044	70-150%, 25	14	70-150%, 25
2,4-D (2,4-Dichlorophenoxy-acetic acid)	0.72	70-150%, 25	10	70-150%, 25
1,2-Dichloropropane	0.85	70-150%, 25	18	70-150%, 25
cis-1,3-Dichloropropylene	0.036	70-150%, 25	18	70-150%, 25
trans-1,3-Dichloropropylene	0.036	70-150%, 25	18	70-150%, 25
Dieldrin	0.017	70-150%, 25	0.13	70-150%, 25
Diethyl Phthalate	0.20	70-150%, 25	28	70-150%, 25
Diethylene glycol, dicarbamate	0.056	70-150%, 25	1.4	70-150%, 25
p-Dimethylamino-azobenzene	0.13	70-150%, 25	N/A[e]	N/A
2,4-Dimethylphenol	0.036	70-150%, 25	14	70-150%, 25
Dimethyl phthalate	0.047	70-150%, 25	28	70-150%, 25
Dimetilan	0.056	70-150%, 25	1.4	70-150%, 25

Table 5.3. (contd)

Regulated Hazardous Constituent	Wastewater, Total Composition[a]		Nonwastewater, Total Composition[b]	
	Reg. Limit (mg/L)	Accuracy and Precision at the Regulatory Limit,[c] RPD[d]	Reg. Limit (mg/kg)	Accuracy and Precision at the Regulatory Limit[c], RPD[d]
Di-n-butyl phthalate	0.047	70-150%, 25	28	70-150%, 25
1,4-Dinitrobenzene	0.32	70-150%, 25	2.3	70-150%, 25
4,6-Dinitro-o-cresol	0.28	70-150%, 25	160	70-150%, 25
2,4-Dinitrophenol	0.12	70-150%, 25	160	70-150%, 25
2,4-Dinitrotoluene	0.32	70-150%, 25	140	70-150%, 25
2,6-Dinitrotoluene	0.55	70-150%, 25	28	70-150%, 25
Di-n-octyl phthalate	0.017	70-150%, 25	28	70-150%, 25
Di-n-propylnitrosamine	0.40	70-150%, 25	14	70-150%, 25
1,4-Dioxane	12.0	70-150%, 25	170	70-150%, 25
Diphenylamine	0.92	70-150%, 25	13	70-150%, 25
Diphenylnitrosamine	0.92	70-150%, 25	13	70-150%, 25
1,2-Diphenyl hydrazine	0.087	70-150%, 25	N/A[e]	N/A
Disulfoton	0.017	70-150%, 25	6.2	70-150%, 25
Dithiocarbamates	0.028	70-150%, 25	28	70-150%, 25
Endosulfan I	0.023	70-150%, 25	0.0660	70-150%, 25
Endosulfan II	0.029	70-150%, 25	0.13	70-150%, 25
Endosulfan sulfate	0.029	70-150%, 25	0.13	70-150%, 25
Endrin	0.0028	70-150%, 25	0.13	70-150%, 25
Endrin aldehyde	0.025	70-150%, 25	0.13	70-150%, 25
EPTC	0.042	70-150%, 25	1.4	70-150%, 25
Ethyl acetate	0.34	70-150%, 25	33	70-150%, 25
Ethyl benzene	0.057	70-150%, 25	10	70-150%, 25
Ethyl ether	0.12	70-150%, 25	160	70-150%, 25
Ethyl methacrylate	0.14	70-150%, 25	160	70-150%, 25
Ethylene oxide	0.12	70-150%, 25	N/A[e]	N/A
Famphur	0.017	70-150%, 25	15	70-150%, 25
Fluoranthene	0.068	70-150%, 25	3.4	70-150%, 25
Fluorene	0.059	70-150%, 25	3.4	70-150%, 25
Formetanate hydrochloride	0.056	70-150%, 25	1.4	70-150%, 25
Formparanate	0.056	70-150%, 25	1.4	70-150%, 25
Heptachlor	0.0012	70-150%, 25	0.066	70-150%, 25
Heptachlor epoxide	0.016	70-150%, 25	0.066	70-150%, 25
Hexachlorobenzene	0.055	70-150%, 25	10	70-150%, 25
Hexachlorobutadiene	0.055	70-150%, 25	5.6	70-150%, 25
Hexachlorocyclo-pentadiene	0.057	70-150%, 25	2.4	70-150%, 25
Hexachlorodibenzo-p-dioxins	0.000063	70-150%, 25	0.001	70-150%, 25

Table 5.3. (contd)

Regulated Hazardous Constituent	Wastewater, Total Composition[a]		Nonwastewater, Total Composition[b]	
	Reg. Limit (mg/L)	Accuracy and Precision at the Regulatory Limit,[c] RPD[d]	Reg. Limit (mg/kg)	Accuracy and Precision at the Regulatory Limit[c], RPD[d]
Hexachlorodibenzo-furans	0.000063	70-150%, 25	0.001	70-150%, 25
Hexachloroethane	0.055	70-150%, 25	30	70-150%, 25
Hexachloropropylene	0.035	70-150%, 25	30	70-150%, 25
Indeno(1,2,3-c,d)pyrene	0.0055	70-150%, 25	3.4	70-150%, 25
Iodomethane	0.19	70-150%, 25	65	70-150%, 25
Isobutyl alcohol	5.6	70-150%, 25	170	70-150%, 25
Isodrin	0.021	70-150%, 25	0.066	70-150%, 25
Isolan	0.056	70-150%, 25	1.4	70-150%, 25
Isosafrole	0.081	70-150%, 25	2.6	70-150%, 25
Kepone	0.0011	70-150%, 25	0.13	70-150%, 25
Lindane (gamma-BHC)	0.0017	70-150%, 25	0.066	70-150%, 25
Methacrylonitrile	0.24	70-150%, 25	84	70-150%, 25
Methanol	5.6	70-150%, 25	0.75 mg/L[g]	70-150%, 25
Methapyrilene	0.081	70-150%, 25	1.5	70-150%, 25
Methiocarb	0.056	70-150%, 25	1.4	70-150%, 25
Methomyl	0.028	70-150%, 25	0.14	70-150%, 25
Methoxychlor	0.25	70-150%, 25	0.18	70-150%, 25
3-Methylcholanthrene	0.0055	70-150%, 25	15	70-150%, 25
4,4-Methylene-bis (2-chloroaniline)	0.50	70-150%, 25	30	70-150%, 25
Methylene chloride	0.089	70-150%, 25	30	70-150%, 25
Methyl ethyl ketone	0.28	70-150%, 25	36	70-150%, 25
Methyl isobutyl ketone	0.14	70-150%, 25	33	70-150%, 25
Methyl methacrylate	0.14	70-150%, 25	160	70-150%, 25
Methyl methansulfonate	0.018	70-150%, 25	N/A[e]	N/A
Methyl parathion	0.014	70-150%, 25	4.6	70-150%, 25
Metolcarb	0.056	70-150%, 25	1.4	70-150%, 25
Mexacarbate	0.056	70-150%, 25	1.4	70-150%, 25
Molinate	0.042	70-150%, 25	1.4	70-150%, 25
Naphthalene	0.059	70-150%, 25	5.6	70-150%, 25
2-Naphthylamine	0.52	70-150%, 25	N/A[e]	N/A
o-Nitroaniline	0.27	70-150%, 25	14	70-150%, 25
p-Nitroaniline	0.028	70-150%, 25	28	70-150%, 25
Nitrobenzene	0.068	70-150%, 25	14	70-150%, 25
5-Nitro-o-toluidine	0.32	70-150%, 25	28	70-150%, 25
o-Nitrophenol	0.028	70-150%, 25	13	70-150%, 25
p-Nitrophenol	0.12	70-150%, 25	29	70-150%, 25

Table 5.3. (contd)

Regulated Hazardous Constituent	Wastewater, Total Composition[a]		Nonwastewater, Total Composition[b]	
	Reg. Limit (mg/L)	Accuracy and Precision at the Regulatory Limit,[c] RPD[d]	Reg. Limit (mg/kg)	Accuracy and Precision at the Regulatory Limit[c], RPD[d]
N-Nitrosodiethylamine	0.40	70-150%, 25	28	70-150%, 25
N-Nitrosodimethylamine	0.40	70-150%, 25	2.3	70-150%, 25
N-Nitrosodi-n-butyl-amine	0.40	70-150%, 25	17	70-150%, 25
N-Nitrosomethylethyl-amine	0.40	70-150%, 25	2.3	70-150%, 25
N-Nitrosomorpholine	0.40	70-150%, 25	2.3	70-150%, 25
N-Nitrosopiperidine	0.013	70-150%, 25	35	70-150%, 25
N-Nitrosopyrrolidine	0.013	70-150%, 25	35	70-150%, 25
Oxamyl	0.056	70-150%, 25	0.28	70-150%, 25
Parathion	0.014	70-150%, 25	4.6	70-150%, 25
PCBs (total)[3]	0.10	70-150%, 25	10	70-150%, 25
Pebulate	0.042	70-150%, 25	1.4	70-150%, 25
Pentachlorobenzene	0.055	70-150%, 25	10	70-150%, 25
Pentachlorodibenzo-p-dioxins	0.000063	70-150%, 25	0.001	70-150%, 25
Pentachlorodibenzo-furans	0.000035	70-150%, 25	0.001	70-150%, 25
Pentachloroethane	0.055	70-150%, 25	6.0	70-150%, 25
Pentachloronitro-benzene	0.055	70-150%, 25	4.8	70-150%, 25
Pentachlorophenol	0.089	70-150%, 25	7.4	70-150%, 25
Phenacetin	0.081	70-150%, 25	16	70-150%, 25
Phenanthrene	0.059	70-150%, 25	5.6	70-150%, 25
Phenol	0.039	70-150%, 25	6.2	70-150%, 25
o-Phenylenediamine	0.056	70-150%, 25	5.6	70-150%, 25
Phorate	0.021	70-150%, 25	4.6	70-150%, 25
Phthalic acid	0.055	70-150%, 25	28	70-150%, 25
Phthalic anhydride	0.055	70-150%, 25	28	70-150%, 25
Physostigmine	0.056	70-150%, 25	1.4	70-150%, 25
Physostigmine salicylate	0.056	70-150%, 25	1.4	70-150%, 25
Promecarb	0.056	70-150%, 25	1.4	70-150%, 25
Pronamide	0.093	70-150%, 25	1.5	70-150%, 25
Propanenitrile (Ethyl cyanide)	0.24	70-150%, 25	360	70-150%, 25
Propham	0.056	70-150%, 25	1.4	70-150%, 25
Propoxur	0.056	70-150%, 25	1.4	70-150%, 25
Prosulfocarb	0.042	70-150%, 25	1.4	70-150%, 25
Pyrene	0.067	70-150%, 25	8.2	70-150%, 25
Pyridine	0.014	70-150%, 25	16	70-150%, 25