

# QUALITY ASSURANCE PROJECT PLAN

## Oregon Department of Environmental Quality EPA PA/SI Investigations



State of Oregon  
Department of  
Environmental  
Quality

DEQ05-LQ-0069-QAPP (Ver. 1.0)  
November 2005

Land Quality Division  
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**QUALITY ASSURANCE PROJECT PLAN**  
**EPA PA/SI Investigations**  
**Oregon Department of Environmental Quality**

Effective Date: November 2005

**A1 – TITLE AND APPROVAL SHEET**

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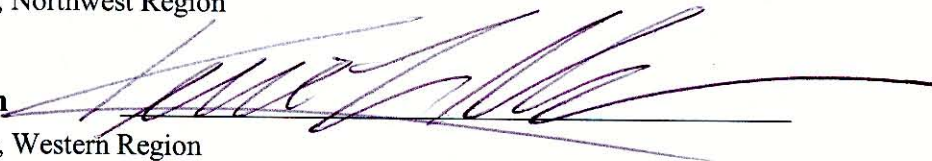
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## **Group A. PROJECT MANAGEMENT**

### **A3 Distribution List**

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Bryn Thoms, Western Region Tanks/Cleanup Program

Mary Camarata, Western Region Site Assessment Program

Ron Doughten, DEQ Quality Assurance Officer

Environmental consultants under contract with DEQ for field work on PA/SI sites

Laboratories under contract with the State of Oregon or DEQ that analyze samples from PA/SI sites

### **A4 Project/Task Organization**

Preliminary Assessment/Site Inspection (PA/SI) investigations may involve DEQ staff or contract staff outside the agency, as well as EPA Region 10 staff, including:

- EPA Region 10's Task Monitor
- Cleanup Program staff at headquarters;
- DEQ regional office staff;
- Environmental contractors;
- Laboratory contractors; and
- DEQ Laboratory Division staff.

#### ***A4.1 EPA Region 10's Task Monitor***

EPA's Task Monitor shall:

- Act as the overall project coordinator and decision-maker;
- Approve site-specific SAPs for PA/SI investigations before field work begins; and
- Ensure proper implementation of the site-specific SAP.

#### ***A4.2 Cleanup Program Staff at DEQ Headquarters***

Cleanup Program staff at DEQ's headquarters office shall:

- Provide policy oversight and training;

- Provide technical assistance; and
- Secure funding.

#### **A4.3 DEQ Project Managers**

Project Managers or their designees in DEQ's regional offices shall:

- Communicate with the EPA Region 10 Task Monitor about project progress and to work out any problems that arise;
- Develop site-specific Sampling and Analysis Plans (SAPs), assemble project teams, implement field work, and coordinate sample analyses for PA/SI investigations;
- Obtain approval for site-specific SAPs from the EPA Region 10 Task Monitor before field work begins;
- Train environmental contractors on the requirements of this PA/SI Quality Assurance Project Plan (QAPP) and site-specific SAPs;
- Review and approve QAPPs of environmental contractors performing PA/SI investigations for the agency;
- Oversee environmental contractor field implementation for PA/SI investigations, including sample management;
- Communicate project Data Quality Objectives (DQOs) to contract laboratories analyzing samples collected during PA/SI investigations, and make sure DQOs are observed;
- Assess laboratory performance in satisfying the specified project DQOs;
- Initiate Technical Assessments of the performance of environmental contractors and contract laboratories on a scheduled basis or as warranted;
- Prepare reports evaluating and summarizing PA/SI activities, sample results, and further-action needs, if any; and
- Update DEQ's Environmental Cleanup Site Information (ECSI) database in a timely manner.

#### **A4.4 Environmental Contractors**

Within the scope of their project involvement, environmental contractors conducting field work for PA/SI investigations shall:

- Develop site-specific SAPs in accordance with this QAPP, assemble project teams, implement field work, and coordinate sample analyses;
- Work closely with the DEQ Project Manager in performing all elements of PAs or SIs;
- Verify the proper functioning of all equipment before beginning field activities;
- Ensure availability of the proper number, type, and quantity of sample containers, including preservation requirements, for field activities;
- Follow standard sampling protocols as defined in this QAPP or in the site-specific SAP;
- Record all field data in the manner specified in this QAPP; and
- Following applicable Standard Operating Procedures (SOPs), ensure that all samples are collected, preserved, labeled, packaged, and shipped to laboratories in a manner acceptable to the EPA Region 10 Task Monitor.

#### **A4.5 Laboratory Contractors**

Outside laboratories analyzing and reporting on samples collected for PAs and SIs shall:

- Understand and follow DQOs outlined in this QAPP and site-specific SAPs;
- Perform requested analyses using appropriate test methods specified in the QAPP and SAP;
- Satisfy all laboratory and analytical Quality Assurance/Quality Control (QA/QC) objectives and activities;

- Prepare laboratory reports for the DEQ Project Manager or environmental contractor project officer, including all relevant data and QC reports;
- Perform data validation that is acceptable to the EPA Region 10 Task Monitor, if required.
- Communicate any analytical problems, issues, or concerns to the DEQ Project Manager and/or environmental contractor in a timely manner; and
- Initiate corrective action when deficiencies in sample collection, preservation, handling, test methods, or documentation are identified internally, by the contract laboratory, by the DEQ Project Manager, or by the EPA Region 10 Task Monitor.

#### **A4.6 DEQ Laboratory Division Staff**

DEQ's Laboratory Division shall:

- Assist in the preparation and evaluation of site-specific SAPs and DQOs;
- Provide technical assistance as needed to agency or contractor staff;
- Assist with training on proper sample collection, preservation, handling, and documentation requirements;
- File and maintain originals of the approved PA/SI QAPP;
- Perform requested test methods on samples, if requested;
- Review analytical results and QC data, if requested;
- Prepare laboratory reports and/or QA reports for DEQ Project Managers, including data validation, as needed;
- Report deficiencies in sample collection, preservation, handling, test methods, or documentation to the DEQ Project Manager and/or environmental contractor; and
- Initiate and support technical audits and corrective action that may arise from deficiencies in sample collection, preservation, handling, test methods, or documentation.

#### **A5 Problem Definition/Background**

The Preliminary Assessment (PA) and Site Inspection (SI) are used to evaluate the potential release of hazardous substances from a site. During the limited-scope investigation of the PA, readily available information about a site and its surrounding areas is gathered to differentiate between sites that pose little or no threat to human health and the environment and those that may pose a serious threat and require further investigation. If the PA determines that further investigation is warranted, an SI is conducted. The SI typically involves the collection and analysis of environmental samples to determine the extent of impact and provide information required to determine a Hazard Ranking System (HRS) score for the site. With this QAPP in place, DEQ or contractor staff need prepare only a streamlined sampling and analysis plan that incorporates this QAPP by reference for EPA-funded PA/SI investigations covered by this QAPP. Moreover, approval of this PA/SI QAPP authorizes DEQ to conduct and oversee sampling activities at sites covered by site assessment grants from EPA. This authority derives from EPA's approval of DEQ's Quality Management Plan (QMP).

DEQ will use data obtained under this QAPP and site-specific SAPs to evaluate the nature and magnitude of contamination at sites that are pre-approved by the EPA Task Monitor. Sampling activities may be performed in more than one event, depending on sample results and EPA funding limitations.

Media to be sampled most frequently under this QAPP include:

- Soil;
- Groundwater; and
- Surface water.

Additional media that may be sampled infrequently under this QAPP include:

- Sludge;

- Sediment;
- Porewater;
- Air; and
- Man-made materials such as concrete.

Categories of contaminants to be analyzed for typically include:

- Volatile and semi-volatile organic compounds;
- Pesticides and herbicides;
- Polychlorinated biphenyls (PCBs);
- Dioxins/furans; and
- Metals.

This QAPP is applicable to any EPA-funded PA/SI investigation that DEQ conducts in Oregon.

Site-specific SAPs should define the problem/background for each individual project. Site plans, maps, and other supporting documentation should be included with the completed SAP.

## **A6 Project/Task Description**

This QAPP defines the duties and responsibilities of staff at DEQ, environmental and laboratory contractors, and DEQ Laboratory staff involved in PA/SI investigations funded by EPA. The objective of all QA activities is to ensure that data obtained from PA/SI investigations are of known quality, represent actual site conditions, and are adequate and appropriate for making informed environmental decisions, including whether the subject sites are eligible for NPL listing. In general, PA/SI projects will include the following tasks:

- Development of the appropriate SAP;
- Approval of the SAP;
- Collection of background information;
- Sample collection;
- Laboratory analysis;
- Data verification and validation;
- Data assessment; and
- Preparation of a final report.

### ***A6.1 Sampling and Analysis Plans***

Site-specific SAPs must describe monitoring and assessment activities, including the elements listed below. As appropriate, the SAP can incorporate by reference standard operating procedures for any of these elements.

- A description of the project with relevant background information.
- A list of project members, their responsibilities, and contact information.
- A description of the sampling plan, including the location, number, and type (i.e., soil, water, air, etc.) of samples to be collected.
- Sample collection procedures.
- Field documentation procedures.
- Management procedures for investigation-derived wastes (IDW) that may be generated.
- Field equipment calibration and analyses.
- The number and type of QC samples to be collected and submitted for analysis (e.g., trip and rinsate blanks, duplicate samples, matrix spikes and duplicates, etc.). The collection rate for quality-control samples may not be less than 5% (one QC sample from all appropriate QC

categories for every 20 field samples). Regardless of the number of samples collected, at least one rinsate blank and one field duplicate should be collected for each media sampled for each field event.

- The analytical methods that laboratories analyzing the samples must use, and the minimum detection limits they must achieve.
- The analytical QC elements (e.g., laboratory blanks, laboratory replicates, fortified samples, etc.) and assessment criteria that the laboratories must meet, if these differ from those described in the laboratories' quality systems manual. The default laboratory QC requirements for analyses of samples from PA/SI investigations appear in Table A7-1.
- Reporting requirements and formats for laboratory data (e.g., reporting units, electronic or printed formats, data flagging, etc.); all laboratory data must be accompanied by supporting QC data and a discussion about data quality.
- Special safety or cautionary information.
- Any additional sampling, analytical, or QA/QC requirements that deviate from those established in this QAPP.

## **A7 Quality Objectives and Criteria for Measurement Data**

The purpose of this section is to provide qualitative and quantitative guidelines that should be used to define goals and DQOs of site-specific SAPs for PA/SI investigations.

The primary goals of sampling and analysis for PA/SI investigations are to: 1) provide valid data of known and documented quality to characterize sources; 2) determine off-site migration of contaminants; 3) determine whether sites are eligible for EPA's National Priority (Superfund) List; and 4) document threats or potential threats that sites pose to human health or the environment.

Data for PA/SI investigations must be of known quality as defined by the standard Data Quality Indicators (DQIs) presented in the EPA Guidance for Quality Assurance Project Plans, Guidance for the Data Quality Objectives Process, and Data Quality Objectives Process for Hazardous Waste Site Investigations. Data quality, as defined by the DQIs, is function of both field and laboratory operations and can be addressed through the following seven elements, each of which is described in detail below:

- Precision;
- Bias;
- Accuracy;
- Representativeness;
- Comparability;
- Completeness; and
- Sensitivity.

### **A7.1 Precision**

**Description:** Precision is a measure of the scatter of the data when multiple measurements are made on the same property under identical, or substantially similar conditions. Precision is generally reported as a range or standard deviation; however, it may also be expressed as a percentage of a mean or a relative standard deviation. Appropriate methodologies for measuring precision may include:

1. Duplicate (or collocated) samples collected in the field and submitted to a single laboratory and analyzed by identical methods that are used to assess precision attributable to sampling activities.
2. Replicate lab analyses performed on subsamples of a single sample by one laboratory following identical laboratory procedures to assess data variability attributable to laboratory analysis.
3. Replicate lab analyses performed on subsamples of a single sample by different laboratories following identical laboratory analytical procedures.

4. Replicate lab analyses for a specific property (or analyte) on subsamples of a single sample by one laboratory using different analytical technologies.

Subsamples used for replicate analyses may be split in the field by the sample collectors or by the analyzing laboratory.

**Frequency:** All PA/SI projects should include at least one duplicate or collocated sample (option 1) for every 20 samples collected by matrix. Replicate laboratory analyses by a single laboratory using a single analytical method (option 2) should be performed at a frequency of 10%. The Project Manager should specify if higher frequencies are required. Precision measurement options 3 and 4 are not required, but may be included at the discretion of the Project Manager; the frequency and control limits for these samples should be specified in the SAP. Site-specific SAPs may specify the frequency of sample splitting, and indicate which samples are to be replicated.

**Control Limits:** Unless otherwise specified in a site-specific SAP, for concentrations or measurements that are five times greater than the method reporting limit (MRL), the control limit for precision measurement options 1, 3, and 4 is set at a relative percent difference (RPD) of 20%. For concentrations or measurements less than five times greater than the MRL, the control limits are set at a difference no greater than twice the absolute value of the difference. Precision measurements above these control limits should be confirmed or disproved through a corrective-action investigation. The Project Manager may set looser or stricter quality-control limits in site-specific SAPs. Control limits may be varied based upon sampling location, sample matrix, analytical method, and/or analyte/property of measurement. The analytical laboratory shall determine its own control limit for precision measurement 2. Until the analyzing laboratory has collected sufficient data, it is acceptable to arbitrarily set the control limit to that presented in the cited method.

A Matrix Spike/Matrix Spike Duplicate (MS/MSD) pair may be used for precision measurements for analyses where contaminants are not routinely detected.

**Reporting:** Each analytical laboratory must report precision data with its analytical results. The DEQ QA section will review precision data and summarize all findings in a QA report.

### **A7.2 Bias**

**Description:** Bias is a systematic or persistent distortion of the measurement process (including sample collection) that results in errors in one direction. Bias is generally identified with the precision and accuracy measurements.

**Reporting:** The QA report will include a statement of data bias if bias is observed during data validation.

### **A7.3 Accuracy**

**Description:** Accuracy is a measure of the difference between observed test results and true sample concentrations. Inasmuch as true concentrations are not known, accuracy is inferred from recovery data determined from the analysis of standard reference materials (SRMs) and by matrix spikes (MS). Some organic methods require surrogate spikes on each sample, from which accuracy is assessed.

**Frequency:** Unless specified in the SAP, the analytical laboratory is not required to spike samples collected from a PA/SI project. However, accuracy shall be assessed from other samples of the same analytical matrix that were spiked and analyzed by the laboratory at the same time. The frequency of MSs must be at least 5%. In the absence of MS samples, accuracy must be assessed using SRMs at a frequency of at least 5%. A site-specific SAP may specify different frequencies and/or require specific samples from the project to be spiked.

**Control Limits:** The analyzing laboratory shall determine its own control limits based on its own laboratory data. Until the analyzing laboratory has collected sufficient data, it is acceptable to arbitrarily set the control limit to that presented in the cited method. For those methods that do not, the default accuracy limits for inorganic parameters is  $100 \pm 20\%$  recovery for spikes, and  $100 \pm 10\%$  recovery for standard reference materials. For organic parameters, the default accuracy is  $\pm 30\%$  for standard reference materials, and  $100 \pm 50\%$  for matrix spikes.

**Reporting:** Each analytical laboratory shall report accuracy data with its analytical results. The DEQ QA section will review the accuracy data and summarize all findings in a QA report.

#### ***A7.4 Representativeness***

**Description:** Representativeness is a measure of how closely observed test results for a given sample matrix reflect actual site conditions. Representativeness is ensured by designing and following sampling procedures so that the final analytical results are appropriate for the matrix being measured. Sample handling protocols such as storage, preservation, and transportation described in both sampling and analytical SOPs have been developed to preserve the representativeness of collected samples.

Since special or unusual sample conditions might affect the accuracy of an analysis, it is helpful to have information about the sample matrix. Results of such matrix tests may give additional insight into the representativeness of the analyses. Tests describing the sample matrix may be requested on a site-specific basis.

When appropriate, other QA tools such as ion balance reports, solid balances, conductivity-dissolved solid comparisons, etc. will be used to establish the representativeness of the data.

**Reporting:** Field and laboratory documentation will be used to confirm that proper sampling and analytical protocols have been followed. Trip blanks, rinsate blanks, and field duplicates will be used to assess whether field and transport activities may have impacted the representativeness of the sample. Laboratory QC will also be evaluated to ascertain if the analytical results are representative.

The DEQ QA section and Project Manager will review field and analytical notes and data to ensure that representativeness is maintained. Conclusions will be included in the QA reviewer's QA report.

#### ***A7.5 Comparability***

**Description:** Comparability is a qualitative term that expresses the degree to which data accurately and precisely represent a characteristic of a population, parameter variation at a sampling point, a process condition, or an environmental condition. Comparability is determined by reviewing sampling collection and handling methods, sample preparation and analytical procedures, holding times, stability issues, and QA protocols. The development of new field or laboratory methods requires validation against accepted reference methods before being adopted. Method performance data from analytical laboratories must be available for review upon request of the DEQ QA section or Project Manager. The analyzing laboratory shall measure comparability of test methods not cited in EPA or agency documentation by evaluating inter-laboratory splits and/or alternate test procedures.

#### ***A7.6 Completeness***

**Description:** Completeness measures the amount of valid data obtained from the sample collection and analytical measurement systems compared to the quantity expected. It is defined as the total number of samples taken for which valid analytical data are obtained, divided by the total number of samples collected, multiplied by 100. At least 90% of all samples tested should yield valid data.

**Reporting:** A completeness statement will be reported in QA reports written by the QA section.

## **A7.7 Sensitivity**

**Description:** Sensitivity is the ability of an analytical method and/or instrument to discriminate between measurement response representing different levels of the variable of interest. Sensitivity shall be expressed by the analytical laboratory for each analyte-matrix-method combination of interest as the Method Detection Limit (MDL), as defined by 40 CFR Part 136, Appendix B, and the Method Reporting Limit (MRL). The analytical laboratory must have a statistically determined MRL that is greater than the MDL and is at least 10 times lower than the decision level. The site-specific SAP shall identify the decision levels for each analyte-matrix that will be sampled. Sensitivity will also be assessed by the analysis and reporting of Laboratory Control Samples at or below the decision level.

**Frequency:** MDLs and MRLs shall be determined by the laboratory initially with the development of any new analytical methods or whenever any major changes in procedure or equipment occurs. A Laboratory Control Sample must be analyzed at a concentration equal to or less than the concentration of interest with every analytical batch.

**Control Limits:** Percent recovery of the LCS should be within 80-120%, unless specified otherwise in a site-specific SAP. Each analytical laboratory must have an acceptable MDL study on file prior to the analysis of any PA/SI project samples submitted for analysis. Moreover, this data must be available for review upon request of the DEQ QA section and/or Project Manager.

**Reporting:** The analytical report submitted by the analyzing laboratory must include its MRLs and the results of the LCS analyses (and the percent recovery). The QA section will review the LCS results submitted with the analytical data, the MDL, and MRLs, as well as other supporting analytical data to assess the sensitivity of the analytical methodology and analytical results. Conclusions will be included in the QA summary report.

To meet these specific DQI objectives, field personnel and laboratories analyzing samples must perform and retain sufficient notes and QC documentation to demonstrate and support the level of data quality required for these projects. Before initiating any PA/SI investigation, contractors tasked for field work, analytical work (i.e., laboratories), and data-assessment activities must submit a Quality Management Plan (QMP) or Quality Systems Manual for DEQ approval. The QMPs of contractors responsible for planning, field work, and data assessment should adequately describe their policies and procedures for ensuring data quality in their activities, including, but not limited to: 1) their QA policy; 2) a description of their Quality Management System structure; 3) Quality Management System activities; and 4) document- and record-management procedures. Laboratories analyzing samples must submit a Quality Systems Manual that meets standards outlined by the National Environmental Laboratory Accreditation Conference (NELAC) (<http://www.epa.gov/nelac/>). This manual must address all essential quality-control elements in the most recently approved NELAC standards.<sup>1</sup>

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<sup>1</sup> NELAC 2001, section "5.5.4 Essential Quality Control Procedures"

**Table A7-1 Field and Laboratory QC Elements and Assessment Criteria**

QC Element	Frequency	Media <sup>#</sup>	Analyte Type <sup>*</sup>	Criteria	
Field QC	Trip Blank	1 per cooler	All	Organic	Only required when collecting VOCs
	Rinsate Blank	5% for each media sampled (but at least one sample per field event)	All	All	< method reporting limit, or <10% of the lowest concentration identified in any sample
	Field Duplicate	5% for each media sampled (but at least one sample per field event)	Air, water	Inorganic	RPD +/- 20% for concentrations > 5X the MRL, or Absolute difference ≤ MRL for average concentrations ≤ MRL
				Organic	RPD +/- 35% for concentrations > 5X the MRL, or Absolute difference ≤ MRL for average concentrations ≤ MRL
			Solids, non-aqueous liquids	Inorganic	RPD +/- 35% for concentrations > 5X the MRL, or Absolute difference ≤ MRL for average concentrations ≤ MRL
				Organic	RPD +/- 50% for concentrations > 5X the MRL, or Absolute difference ≤ 2X MRL for average concentrations ≤ MRL
Laboratory QC	Method Blank	5% for each preparation	All	All	< method reporting limit or <10% of the lowest concentration identified in any sample
	Laboratory Duplicates or Matrix Spike Duplicates	5% for each media sampled	Air, water	Inorganic	RPD +/- 20% for concentrations > 5X the MRL, or Absolute difference ≤ MRL for average concentrations ≤ MRL
				Organic	RPD +/- 35% for concentrations > 5X the MRL, or Absolute difference ≤ MRL for average concentrations ≤ MRL
			Solids, non-aqueous liquids	Inorganic	RPD +/- 35% for concentrations > 5X the MRL, or Absolute difference ≤ MRL for average concentrations ≤ MRL
				Organic	RPD +/- 50% for concentrations > 5X the MRL, or Absolute difference ≤ 2X MRL for average concentrations ≤ MRL
	Laboratory Fortified Sample (Matrix Spike)	5% for each preparation	Air, water	Inorganic	Recovery: 80-120%
				Organic	Recovery: 60-140%
			Solids, non-aqueous liquids	Inorganic	Recovery: 70-130% for at least 80% of the analytes
				Organic	Recovery: 50-120% for at least 80% of the analytes
	Surrogates	Each sample	All	Organic	Recovery: 30-150%
Laboratory Control Sample	1 per analytical batch	All	Inorganic	Recovery: 85-115%	
			Organic	Recovery: 70-130%	

Notes:

<sup>#</sup>Water applies to all aqueous media containing less than 15% settleable solids, including drinking water, groundwater, surface water, waste effluent, etc. Solids applies to all aqueous media containing 15% or more settleable solids, including soils, sediments, and sludges. Non-aqueous liquids applies to any non-water substance containing less than 15% solids, including solvents, fuels, oils, etc. Air applies to all media in the gaseous state at ambient conditions at the time of sampling.

<sup>\*</sup>Inorganic analytes include all metals, nutrients, anions. Organic analytes include petroleum hydrocarbons, volatile/semi-volatile organic compounds, pesticides, herbicides, PCBs, and dioxins/furans. Not all analytes may be covered by this list. For additional

information, contact the QA chemist at the DEQ laboratory.

## **A8 Special Training Needs/Certification**

Safety and training courses relevant to PA/SI investigations, and, more broadly, for hazardous-substance site investigations, are readily available. All DEQ field personnel conducting PA/SI investigations are required to have 40 hours of OSHA health and safety training for hazardous waste sites, supplemented by annual 8-hour refresher courses, and must have attended EPA's 4-day PA/SI training. All environmental contractors are required to have 40 hours of OSHA health and safety training for hazardous waste sites, supplemented by annual 8-hour refresher courses. Contractors are responsible for ensuring that their personnel are informed about and trained on relevant OSHA guidelines. For sites where DEQ staff perform field activities, a site-specific Health and Safety Plan (HASP) will be approved by DEQ's Health and Safety Manager and the appropriate Program Manager before field work begins. For sites where an environmental contractor performs field activities, the contractor will prepare and approve its own HASP.

Field activities pose certain risks. Staff must obtain the proper training to recognize, and protect themselves from, hazardous chemicals known or suspected to be present at Contaminated sites. Staff with questions about risks they might be dealing with should use existing resources (*e.g.*, Material Safety Data Sheets [MSDS], literature, laboratory staff) and contact the appropriate authority (*e.g.*, DEQ's Health & Safety Manager, Laboratory Managers, or Safety Committee). DEQ's Safety Committee continually reviews health and safety needs. The Health & Safety Manager can recommend and supply the most appropriate personal protective equipment for work at specific sites, and is responsible for managing the respiratory protection program.

DEQ has a Quality Assurance Officer who is also the Chemical Hygiene Officer (CHO) for the Laboratory Division. Quarterly Laboratory inspections are made and potentially unsafe conditions corrected. The CHO manages the Laboratory Chemical Hygiene Program that includes the Chemical Hygiene Plan. Copies of this plan are available in the DEQ laboratory library, reception area, and from the CHO. MSDSs are available to all DEQ staff for review in the front office of the Laboratory Division, or can be obtained from the CHO. The Chemical Hygiene Plan and a companion video describe the Emergency Operations Plan (EOP) that is in place for the DEQ laboratory. The video is used to train new employees. Practice evacuation drills are run twice a year.

## **A9 Documentation and Records**

### **A9.1 Introduction**

Documents and records produced during PA/SI investigations must be properly managed. Documents and records typically produced may include, but are not limited to:

- Site-specific SAPs;
- Site assessment reports;
- Field notes and records;
- Chain-of-custody forms;
- Laboratory analytical reports;
- Field and laboratory QC data;
- Data validation reports; and
- Records of communication such as phone logs, memos, e-mails, or other written correspondence.

All documents associated with a specific project will be filed with the Project Manager and will be uniquely identified by the Site ID number in DEQ's ECSI database. Project records will be maintained in both printed and electronic formats whenever practicable. Printed records serve as the official record and will be maintained in the site's ECSI file for a period of no less than 10 years after project completion. Electronic records, wherever possible, will be maintained in write-protected formats such as the Portable

Document Format (.pdf). In maintaining and archiving these electronic records, Project Managers will follow guidance and procedures established for electronic records within DEQ's Cleanup Program, which were under development as of May 2005.

Each contracted organization must have its own record-keeping system that the organization uses to present, organize, and store data. This system should be described in each organization's QMP or Quality Systems Manual. The described record-keeping system must permit the historical reconstruction of all activities that produced the resultant sample analytical data. The history of the sample must be readily understood through the documentation. This shall include field and inter-laboratory transfers of samples and/or extracts.

Each laboratory must document its record-handling policies in its Quality System Manual. Samples submitted to laboratories from PA/SI investigations must be accompanied by a Chain of Custody form that identifies each sample, its location, date/time of collection, collector's name, preservation type, sample type, requested analytes, and any special remarks concerning the sample. The Chain of Custody form(s) for each contracted laboratory must be adequate for potential enforcement purposes, and must be reviewed and approved by the DEQ Project Manager before field activities begin.

### **A9.2 Required Project Documentation**

Each contract laboratory must have a stated sample acceptance policy documented in its Quality Systems Manual. This policy must describe the minimum data elements for samples submitted to the laboratory for analyses. The policy should state that the following conditions will be met for all samples received at the laboratory:

1. Complete sample documentation must be provided, including:
  - Unique sample identification;
  - Sample location;
  - Sample matrix (e.g., liquid, solid, sludge, sediment);
  - Sample classification (grab, continuous, composite);
  - Date and time of collection;
  - Sampler's name(s);
  - Analytes to be analyzed and, when appropriate, the specific analytical method; and
  - Special remarks describing the sample, if appropriate.
2. Adequate quantities of properly preserved sample material must be supplied to accommodate analytical tests requested by the collector, as stipulated in a SAP. Exceptions, such as allowing analyses of improperly preserved samples or using non-standard quantities (i.e., processing samples with less volume than stated in the laboratory's SOPs), may be allowed at the discretion of laboratory management and approval of the DEQ Project Manager in consultation with the EPA Region 10 Task Monitor.
3. Every PA/SI investigation will include a SAP, which must include the following:
  - A brief site description;
  - Description of contaminants of concern, sampling rationale, and sample locations;
  - Number of samples by matrix, including QA (duplicates, matrix spikes & duplicates, blanks, etc.);
  - Anticipated field work schedule;
  - Name of the Project Manager;
  - Name of the person to whom the data are to be reported;
  - Analyses requested; and

- Detection limits needed [e.g., EPA Region 9 Preliminary Remediation Goals (PRGs), DEQ Risk-Based Concentrations (RBCs), drinking water Maximum Contaminant Levels (MCLs), Toxicity Characteristic Leaching Procedure (TCLP), NPDES permit compliance, etc.].

Sample(s) failing to meet any of the relevant criteria above may be analyzed, depending on the circumstances, but the data will be *clearly flagged* when reported as having been compromised due to a deficiency in one or more of the elements listed above. Release of data from compromised samples will be deferred, awaiting the necessary documentation.

Documentation of any of missing elements may be furnished to the laboratory *in writing* at any time up to the release of the data by the laboratory. When all sample acceptance criteria are met, the qualifying data flag will be expunged from the report, provided the quality of the data has not been compromised.

4. Laboratory analytical reports must include the following information:

- A QA summary of the report, including a discussion of sample conditions upon arrival, as well as any QA/QC issues that may have arisen during analysis.
- Complete result package that identifies the result, the units, and any qualifying data flags.
- A complete QC package for each analyte-matrix combination that includes the QC data identified by the project's DQOs and DQIs.

### **A9.3 Corrections to Documentation**

All original data recorded in field notebooks, chain-of-custody records, and other forms will be written in waterproof ink. None of these documents will be destroyed or discarded, even if they are illegible or contain inaccuracies that require a replacement document. If an error is made on a document assigned to one individual, that individual will make corrections by crossing a single line through the error, entering the correct information, and initialing the correction. Alterations or changes to SAPs, analytical reports, or any other formal written documentation will be accomplished by attaching an Erratum or Addendum to the *front* of the original document. All Errata and Addenda must be signed and dated. Changes to electronic records must mirror appropriate changes in printed records.

## **Group B. DATA GENERATION AND ACQUISITION**

### **B1 Sampling Process Design**

PA/SI investigations primarily involve sampling of soil and surface water, as well as subsurface soil and groundwater. These investigations occasionally require sampling of sediment, porewater, sludge, hard surfaces that are potentially contaminated (e.g., concrete), or air (soil gas or vapors).

From a QA/QC standpoint, the primary purpose of PA/SI sampling is to generate sufficient information for EPA to determine the subject site's NPL eligibility. Data from PA/SI investigations could be used for enforcement purposes. As a result, all elements of sample collection, analysis, and reporting must be designed to withstand potential legal scrutiny.

Sampling plans for individual PA/SI sites are designed to fill data gaps from past investigations, or in the absence of past data, to locate the areas and media most likely to be contaminated, based on historic site activities. PA/SI investigations include the collection of enough samples to determine if historic releases have occurred, and if resulting contamination is present above background levels.

Field sampling personnel will make arrangements with the appropriate laboratory for proper sample containers, sampling request forms, and sampling equipment at least two weeks before field work begins. Projects involving the collection of 10 or less samples during a single day in the field may be completed using this QAPP. Projects requiring the collection and analysis of 10 or more samples or repeated sampling and analyses should be described in a site-specific SAP. All SAPs must be reviewed and approved by the appropriate DEQ Manager or his/her designee, including the section Lead Worker.

Equipment should be assembled based on the type of samples to be collected. Preparation and assembly of required equipment and materials should follow these steps:

1. All equipment will be checked for proper calibration, assembly, and operation prior to use.
2. Sampling equipment will be transported in such a manner as to maintain its cleanliness.

To the greatest extent possible, disposable and/or dedicated personal protective and sampling equipment will be used to avoid cross-contamination. All sampling equipment will be cleaned between sample locations. Decontamination will be conducted in a central location, upwind and away from suspected contaminant sources. Investigation-derived wastewater (IDW) from decontamination of soil probing or augering equipment, if used, will be stored in 55-gallon drums prior to disposal. A water sample will be collected from the IDW and analyzed for disposal purposes. The following procedures will be used for all equipment used to collect routine samples undergoing trace organic or inorganic constituent analyses:

1. Clean with tap water and nonphosphate detergent using a brush if necessary to remove particulate matter and surface films. Equipment may be steam cleaned (using high-pressure hot water) as an alternative to brushing. Sampling equipment that is steam cleaned should be placed on racks or saw horses at least two feet above the floor of the decontamination pad. PVC or plastic items should not be steam cleaned.
2. Rinse thoroughly with tap water.
3. Rinse thoroughly with analyte-free water.
4. Rinse with a 10% nitric acid/deionized water mix, if the sample will be analyzed for trace inorganics. Do not rinse PVC or plastic items with acid.
5. Rinse thoroughly with analyte free water.
6. Rinse with a pesticide-grade acetone/deionized water mix if the sample will be analyzed for organics.
7. Rinse again with distilled/deionized water.

8. Air-dry the equipment completely.
9. Remove the equipment from the decontamination area and cover with plastic. Equipment stored overnight should be wrapped in aluminum foil and covered with clean, unused plastic.

### ***B1.1 Parameter-Specific Sampling Requirements***

Parameter-specific sampling requirements, including container type, preservation requirements, and holding times, will be documented in a site-specific SAP whenever they depart from those defined in the DEQ Field Sampling Reference Guide (<http://www.deq.state.or.us/lab/lab.htm>). Exceptions to standard sampling requirements may be made with written approval of the DEQ Project Manager.

The order of sample collection, regardless of the matrix, should be from the most volatile to the least volatile, as follows:

1. VOCs;
2. SVOCs (PAHs);
3. Chlorinated phenolics;
4. Pesticides and PCBs;
5. Total recoverable metals; and
6. Cyanide.

## **B2 Sampling Methods**

All samples must be collected in a manner consistent with the media being sampled and the analytes of interest. Collection methods must follow a DEQ or EPA-approved sampling protocol. Additional methods may be used with the approval of the Project Manager. Some sources for the appropriate sampling methods include:

- DEQ WQM/BIO Mode of Operation Manual - describes collection methods for surface waters, groundwaters, sediments, benthic infauna, fish, benthic macro invertebrates, and aquatic invertebrates.
- EPA SW-846, Chapter 10 - describes sampling techniques for various media, including soils, sediments, air, water, etc.

It is important to use proper sample containers and appropriate preservation techniques when collecting samples. Samples should always be collected in containers supplied by the analyzing laboratory. This ensures that the container has been properly cleaned and that the analyzing laboratory will have sufficient sample material to do the requested test. Samples submitted to the laboratory that are not in a laboratory-supplied container (e.g., mayonnaise, pickle, or peanut butter jars) are likely to be rejected. Samples must also be properly preserved, or they may be rejected. Table B2-1 summarizes required sample containers, preservation techniques, and holding times for the most commonly requested analytes in PA/SI investigations. For information about analytes not listed in Table B2-1, check with the analyzing laboratory. If a required sampling or field method is not documented in either of the documents referenced above, the appropriate Standard Operating Procedure (SOP) must be identified or developed, and then approved before initiating field activities.

Specific sampling methods for media of interest are discussed in greater detail in Sections B2-1 to B2-6.

**Table B2-1**

**Sample Containers, Preservation, and Holding Times<sup>†</sup>**

<b>PARAMETER</b>	<b>CONTAINER <sup>(1)</sup></b>	<b>PRESERVATIVE</b>	<b>HOLDING TIMES</b>
<b>Volatile Organics, including BTEX &amp; MTBE</b>			
Liquids	Two 40-ml vials with Teflon-lined septum caps	4 drops conc. HCL Cool, 4°C No headspace	14 days
Solids	1-pint brown/amber glass jar with Teflon liner (widemouth), or 4-oz. clear glass jar with Teflon liner	minimize headspace Cool, 4°C	4 days
Pure Product	One 40-ml vial with Teflon-lined septum caps	Cool, 4°C	14 days
Air	Consult specific analytical method		
<b>Semi-Volatile Organics, including Chlorinated Phenols</b>			
Liquids	1-quart brown/amber glass jar with Teflon liner	Cool, 4°C	7 days to extraction; 40 days thereafter
Solids	1-pint brown/amber glass jar with Teflon liner (widemouth)	Cool, 4°C	7 days to extraction; 40 days thereafter
Air	Consult specific analytical method		
<b>Fuel-Range Hydrocarbons, including Stoddard Solvent</b>			
Liquids	Two 40-ml vials with Teflon-lined septum caps	4 drops conc. HCl to pH<2 Cool, 4°C No headspace	14 days
Solids	1-pint brown/amber glass jar with Teflon liner (widemouth), or 4-oz. clear glass jar with Teflon liner	minimize headspace Cool, 4°C	14 days
Air	Consult specific analytical method		
<b>PCBs, Chlorinated Pesticides, and Dioxins/Furans</b>			
Liquids	1-quart brown/amber glass jar with Teflon liner (widemouth)	Cool, 4°C	7 days to extraction; analysis within 40 days of extraction
Solids	1-pint brown/amber glass jar with Teflon liner (widemouth)	Cool, 4°C	7 days
Air	Consult specific analytical method		
<b>Organophosphorus Pesticides</b>			
Liquids	1-quart brown/amber glass jar with Teflon liner (widemouth)	Adjust pH to 5-8 with NaOH or H <sub>2</sub> SO <sub>4</sub> Cool, 4°C	7 days to extraction; analysis within 40 days of extraction
Solids	1-pint brown/amber glass jar with Teflon liner (widemouth)	Cool, 4°C	7 days to extraction; analysis within 40 days of extraction
Air	Consult specific analytical method		
<b>Metals (except Cr <sup>+6</sup> and Hg)</b>			

Liquids	250-ml polyethylene	Total aqueous - unfiltered Dissolved aqueous - filter on-site HNO <sub>3</sub> , pH<2	6 months
Solids	Polyethylene or glass jar	None	6 months
Air	Consult specific analytical method		
<b>Hexavalent Chromium (Cr<sup>+6</sup>)</b>			
Liquids	250-ml polyethylene	Cool, 4°C	24 hours
Solids	Polyethylene or glass jar	Cool, 4°C	1 mo. to extraction; 4 days after extraction
Air	Consult specific analytical method		
<b>Mercury<sup>(2)</sup></b>			
Liquids	250-ml polyethylene	Total aqueous - unfiltered Dissolved aqueous - filter on-site HNO <sub>3</sub> , pH<2	28 days
Solids	Polyethylene or glass jar	Cool, 4°C	28 days
Air	Consult specific analytical method		
<b>Cyanide</b>			
Liquids	1000-ml polyethylene	NaOH pellets, pH<12	14 days
Solids	1-pint brown/amber glass jar with Teflon liner	Cool, 4°C	14 days
Air	Consult specific analytical method		

‡Always consult the specific analytical method for special sample collection, handling, and storage requirements.

(1) Collect duplicate containers on at least 5% of the water samples for matrix spike/matrix spike duplicate analysis.

(2) Methyl mercury - consult with the analytical laboratory.

## **B2.1 Sampling Soil**

Use a stainless steel spoon to collect samples from surface soils. Subsurface soils can be collected during the installation of soil boring or wells, during excavation and removal of USTs, from shallow test pits, or using DEQ's PowerProbe, split spoons, or a hand auger. Samples will be collected according to procedures outlined in *A Compendium of Superfund Field Operations Methods* (EPA/540/P-87/001).

Composite sampling, achieved by collecting several roughly equal sub-samples and thoroughly mixing to form one sample, is generally not acceptable for the analysis of volatile materials. All soil samples will be discrete samples, unless a site-specific plan -- approved in advance by the EPA Task Monitor -- has been developed to collect composite samples for a specified purpose. Soil samples should contain as few cobbles or stones as possible, unless the sampler wishes them to be included in the analysis.

### **B2.1.1 Hand Augers**

Hand augers can be used to collect soil samples to depths of approximately 10 feet. The sample is extruded into an aluminum or stainless steel pan followed by immediate placement into appropriate sample containers. It is possible to obtain samples from discrete depths by forcing the soil core from the auger and collecting from the depth of interest. The Project Manager for DEQ or for the environmental contractor shall assess whether a lined or stainless steel auger is necessary.

### **B2.1.2 Test Pits**

Test pits may be excavated by hand or with power equipment such as a backhoe to permit detailed examination and a better understanding of the nature and extent of contamination. Samples are collected from the wall or floor of the pit after removing 1 inch of the exposed surface layer, and are placed directly into appropriate sample containers. Samples can also be taken from an undisturbed volume of soil within a backhoe bucket. Test pits deeper than 4 feet should not be entered for sample collection; in these circumstances, use mechanized equipment to bring an undisturbed volume of soil to the surface.

### **B2.1.3 Boreholes**

Subsurface soil samples can be collected from boreholes using a split-spoon sampler during probing or drilling operations. Soil samples collected during push-probe activities are collected in 4-foot long acetate or PETG liners, and transferred to appropriate lab-supplied jars. During drilling, cuttings or sample materials are sealed in a plastic bag and screened using a photoionization detector (PID) such as the HNU, or a flame ionization detector (FID) to determine where samples should be collected. Each split-spoon sample will be collected according to the ASTM D1586 standard penetration test method, with the sample being transferred directly from the split spoon into appropriate sample containers. All soil classifications will be performed using the ASTM D2487 Soil Classification Method.

## ***B2.2 Sampling Sediment***

There are many factors to consider when choosing sediment sampling equipment, including, but not limited to: sample site access, sample volume requirements, sediment texture, and target depth for sediment collection. In general, piston samplers are best used for soft, fine-grained sediments where sediments at depth are required. Grab/dredge samplers are best for coarse, shallow sediments and where large volumes of sediment are required. Detailed information on sediment sampling is available at: <http://www.epa.gov/waterscience/cs/collectionmanual.pdf>.

## ***B2.3 Sampling Sludge***

Sampling of sludge could involve a variety of situations and sampling equipment will be site-specific. One of the more common sludge-sampling situations is for catch-basin materials. Equipment might include stainless steel trowels or spoons, hand augers, or dredges. More information on standard operating procedures for catch basin sampling is available at the following DEQ internal web page: <http://deq05/intranet/WMC/ec/Documents/SamplingCatchBasinSedimentAndSludge.pdf>.

## ***B2.4 Sampling Water***

Water sampling is usually needed to determine whether hazardous substance releases have migrated to nearby surface water or groundwater. Physical evidence such as odors, organic films on the surface of water, and discoloration of soil in the vicinity of surface water or groundwater are indicators of likely contamination.

Surface water samples are typically acquired from streams, brooks, drainage ways, and wetlands determined to be downgradient (or downstream) from contamination sources. Groundwater samples are typically collected from wells screened within the uppermost aquifer, but may also be collected from deeper aquifers, and from nearby residential, industrial, irrigation, or municipal/community wells.

All long-term water sampling requires an approved site-specific SAP.

### **B2.4.1 Surface Water**

Surface water samples are best collected using a stainless steel bucket. Before collecting a sample, the container should be rinsed out with water from the area to be sampled. Then collect a fresh sample.

Avoid dipping sample bottles into the collection container, since residue from the outside surface of the bottle, or your hands, could contaminate samples and/or expose you to hazardous materials. Instead, pour from the collection container, with minimal agitation, into the sample bottle. If a stainless sampling container is not available, dip the sample bottle directly into the water, install a lid, and wipe off the outside of the container with a paper towel.

#### B2.4.2 Groundwater (excluding Water-Supply Wells)

Monitoring wells may be sampled using dedicated pumps, disposable bailers, peristaltic pumps with new tubing, foot-valve inertia pumps with polyethylene tubing, or 2-inch submersible pumps. DEQ staff performing the sampling may request disposable bailers or tubing from the Sample Tracker at DEQ's laboratory.

If collecting split samples, ensure they are homogeneous by filling a large clean container and gently swirling the contents before pouring into appropriate bottles. For VOC analytes, the sample containers will be filled directly from the sample source in the following manner: one from the primary sample bottle set, then one from the split-sample bottle set, and so forth. Samples used to measure field parameters (temperature, pH, DO, etc.), or samples collected in purge vials for VOC analyses, cannot be split in this manner. They must be filled individually, directly from the tap or bailer. All samples from a given site should be representative of the water source from which they're collected.

All monitoring wells must be properly installed and developed as specified in the DEQ's *Groundwater Monitoring Well Drilling, Construction, and Decommissioning* guidance document (<http://www.deq.state.or.us/wmc/tank/documents/monwell.pdf>). Nonstandard wells or problems encountered during sampling should be noted in the field log and in subsequent reports.

Groundwater samples from push-probe holes or soil borings may be collected by: 1) grab samples, using polyethylene or Teflon tube (use depends upon analyte of concern); or 2) temporary well points using a stainless steel screen (with polyethylene or Teflon tubing) or installation of small-diameter PVC screen and casing. Once the sampling device is installed at the desired depth, groundwater samples can be obtained by using a small bladder pump, peristaltic pump, small stainless steel or Teflon bailers, or polyethylene tubing and foot valve. Most groundwater samples should be collected using grab sampling techniques or temporary well points. All probe holes installed must meet Oregon Department of Water Resources (WRD) regulations regarding Geotechnical Holes (i.e., well points and other temporary groundwater sampling devices that are removed from the ground within 72 hours). See [http://www1.wrd.state.or.us/pdfs/MW\\_Rules\\_Appendix.pdf](http://www1.wrd.state.or.us/pdfs/MW_Rules_Appendix.pdf).

#### B2.4.3 Water-Supply Wells, including Drinking-Water Wells

The following procedures should be employed when sampling residential water supplies or water-supply wells of any kind:

- Obtain permission to access property and obtain samples for analysis.
- Inspect the water system to locate the tap nearest the wellhead. Samples should be collected prior to any treatment units (UV units, reverse osmosis, etc.) if possible.
- Before collecting samples from drinking water, irrigation, or industrial wells, purge the water lines for a few minutes to flush the plumbing and holding tanks -- so that the sample collected is as representative as possible. Remove any faucet aerators, and reduce water flow prior to collecting samples. Then fill the sample container directly from the tap (unless the sample is to be split, in which case the sample should be homogenized before distributing into the duplicate split containers). Collect all samples intended for VOC analyses according to SOPs in DEQ's *Field Sampling Reference Guide*: <http://www.deq.state.or.us/lab/qa/techdocs.htm>.

Additional sampling procedures may be found in the DEQ Water Quality Monitoring (WQM) section's *Mode of Operation Manual* (MOM), which includes procedures for sampling rivers, streams, estuaries,

lakes, groundwater wells, soil, shellfish, fish, and sediment. See <http://www.deq.state.or.us/lab/qa/DEQ03-LAB-0036-SOP.pdf>.

### **B2.5 Sampling Porewater**

Porewater is water within the upper few centimeters of sediments below surface water bodies. This zone is known as the *hyporheic zone*, and represents the groundwater/surface water interface. Sampling of this zone can be done with various equipment such as seepage meters and push-point porewater samplers. More information is available at: <http://www.pca.state.mn.us/cleanup/gsw-sw-interaction.html#methods>. Discharge of groundwater to surface water through the hyporheic zone is unlikely to be homogeneous; therefore, determining locations for sampling can involve additional investigative steps.

### **B2.6 Sampling Air**

Air sampling should always be approached with caution as the source of contamination is often not readily apparent, such as at operating dry cleaners or auto fueling/servicing facilities. Air sampling equipment depends on sampling objectives, the nature of the site itself, the contaminants of concern, and analytical methods. Methods to sample air at active facilities include soil gas sampling or sampling with flux chambers. Typical sampling containers include stainless steel SUMA canisters and glass sorbent traps used with sampling pumps. More information on air sampling and analysis can be found at: <http://www.airtoxics.com/>.

## **B3 Sample Handling and Custody**

Sample quality must be maintained throughout the collection, transport, storage, and analysis process. Consequently all field activities must be fully documented, the samples must be clearly identified, and custody procedures followed in both field and laboratory operations.

The primary objective of chain-of-custody procedures is to provide an accurate written or computerized record that can be used to trace the possession and handling of a sample from collection through completion of all required laboratory analyses. A sample is considered in custody when it is:

- In someone's physical possession;
- In someone's view; or
- Locked up or kept in a secured area that is restricted to authorized personnel.

All changes in sample possession must be fully and completely documented, with the date, time, and persons relinquishing and receiving the samples on the appropriate chain-of-custody record.

### **B3.1 Field Documentation**

The following types of field documentation should be maintained as part of the sample handling and custody record. Additional types of documentation may be relevant and should be identified in the site-specific SAP.

- Field logbooks;
- Site observations and photographs (with written descriptions);
- Sample collectors;
- Date/time of sample collection;
- Sample number;
- Location of sampling station (include latitude/longitude);
- Number and type of samples shipped;
- Number of shipping containers sent;

- Equipment numbers and/or calibration information;
- Sample collection forms; and
- Analytical request forms.

### ***B3.2 Sample Identification***

All samples must be uniquely identified using numbers assigned by the Project Manager.

### ***B3.3 Custody Seals***

Custody seals must be present on all shipping containers. These seals are designed to show evidence of tampering or disturbance and must be present on the shipping container in as many places as necessary to ensure security. The seals must be dated and signed before application to the shipping containers. The seals may be covered in clear tape to prevent accidental damage during the shipping process.

### ***B3.4 Field Custody Procedures***

To ensure proper custody while in the field, the following custody procedures will be followed:

- As few people as possible will handle the samples;
- Coolers or boxes containing clean sample containers will be sealed with the appropriate custody seals until opened in the field;
- Sample bottles from containers that appear to have been compromised shall not be used;
- The sample collector will assume responsibility for the samples until transferred to another person following the appropriate chain-of-custody procedures;
- All sample data will be recorded in ink in a field notebook and on the appropriate field forms;
- A site team leader will assess if additional samples are required;
- All samples requiring thermal preservation will be shipped with an appropriate temperature blank, which will (at a minimum) consist of a 100-mL polyethylene bottle filled with clean water;
- Each cooler (shipping container) in which samples are packed will be sealed and accompanied by one copy of the chain-of-custody record that is sealed in a zip-lock bag and taped to the inside lid of the shipping container;
- A separate chain-of-custody record will accompany each shipment of samples;
- Packaging, marking, labeling, and shipping of samples will comply with all regulations promulgated by the U.S. Dept. of Transportation, 49 CFR 171-177, and International Air Transport Association (IATA); and
- Freight bills and bills of lading will be maintained as part of the permanent project record.

### ***B3.5 Laboratory Custody Procedures***

Transfer of the samples into laboratory custody will follow standard custody procedures and be fully documented on the Chain-of-Custody form. The sample receiver shall note the condition of the shipping containers and the custody seals (i.e., broken, unbroken). The laboratory individual responsible for sample intake shall document the condition of individual samples in the shipping container as well as the temperature of the container upon receipt. If the shipping container, any individual sample containers, or the shipping temperature is out of control, the laboratory should contact the Project Manager for instructions on how to proceed with sample processing. The laboratory should follow the procedures documented in its Quality Manual for chain-of-custody sample handling, unless otherwise specified by the DEQ Project Manager.

## B4 Analytical Methods

All analytical methods used on samples from PA/SI investigations must comply with relevant requirements of applicable federal or state programs for which they were collected (e.g., Clean Water Act – CWA, Safe Drinking Water Act - SDWA, Resource Conservation and Recovery Act - RCRA, Clean Air Act - CAA, etc.), or EPA-approved alternate methods. The most recently approved methods under the CWA and SDWA were promulgated in the Code of Federal Regulations (40 CFR Part 136) on July 21, 2003. Current, approved methods under RCRA SW-846 can be obtained from the EPA website at <http://www.epa.gov/epaoswer/hazwaste/test/sw846.htm>. Since the list of approved analytical methods is subject to routine update, contact the Project Manager or DEQ laboratory for a list of currently approved methods. Appendix A lists all the currently approved methods under RCRA SW-846. Table B4-1 below lists the classes of analytes that are typically of the greatest interest during PA/SI investigations, as well as DEQ's preferred analytical methods. This table provides a starting point for selecting analytical methods for PA/SI investigations. In addition to the analytical methods listed in Table B4-1, the Statement of Work (SOW) documents issued by EPA under the Contract Laboratory Program (CLP) include detailed analytical instructions that may be used to quantify parameters of interest in PA/SI projects. The most recently approved versions of those documents may be found on EPA's website at <http://www.epa.gov/superfund/programs/clp/index.htm>. Additional methods not mentioned here may also be available and appropriate; consult with the Project Manager for approval of alternate methods.

Any specific analytical methods required by the project shall be explicitly identified in the site-specific SAP. Laboratories must use any methods specifically identified in the SAP unless an exception is given to the laboratory *in writing* by the Project Manager.

**Table B4-1 Preparation and Analytical Methods for Common Analytes of Interest**

Analytes of Interest	DEQ Preferred Method
<b>Inorganics - general</b>	<b>Preparation Methods:</b> 1311 Rev 0 (7/92) - Toxicity Characteristic Leaching Procedure 3010A Rev 1 (7/92) - Acid Digestion of Aqueous Samples and Extracts for Total Metals for Analysis by FLAA or ICP Spectroscopy 3020A Rev 1 (7/92) - Acid Digestion of Aqueous Samples and Extracts for Total Metals for Analysis by GFAA Spectroscopy 3031 Rev 0 (12/96) - Acid Digestion of Oils for Metals Analysis by Atomic Absorption or ICP Spectrometry 3050B Rev 2 (12/96) - Acid Digestion of Sediments, Sludges, and Soils 3051 Rev 0 (9/94) - Microwave Assisted Acid Digestion of Sediments, Sludges, Soils, and Oils
<b>Metals</b>	<b>Analytical Methods:</b> 6010B Rev 2 (12/96) - Inductively Coupled Plasma-Atomic Emission Spectrometry 6020 Rev 0 (9/94) - Inductively Coupled Plasma - Mass Spectrometry 7061A Rev 1 (7/92) - Arsenic (Atomic Absorption, Gaseous Hydride) 7062 Rev 0 (9/94) - Antimony and Arsenic (Atomic Absorption, Borohydride Reduction) 7741A Rev 1 (9/94) - Selenium (Atomic Absorption, Gaseous Hydride) 7742 Rev 0 (9/94) - Selenium (Atomic Absorption, Borohydride Reduction) 7470A Rev 1 (9/94) - Mercury in Liquid Waste (Manual Cold-Vapor Technique) 7471A Rev 1 (9/94) - Mercury in Solid or Semisolid Waste (Manual Cold-Vapor Technique) 7472 Rev 0 (12/96) - Mercury in Aqueous Samples and Extracts by Anodic Stripping Voltammetry (ASV)
<b>Mercury speciation</b> (elemental vs. organic/methylmercury)	Contact the DEQ Project Manager and DEQ Laboratory
<b>Cyanide</b>	<b>Preparation Methods:</b> 9010B Rev2 (10/96) - Total and Amenable Cyanide: Distillation 9013 Rev 0 (7/92) - Cyanide Extraction Procedure for Solids and Oils <b>Analytical Methods:</b> 9012A Rev 1 (12/96) - Total and Amenable Cyanide (Automated Colorimetric, with

Analytes of Interest	DEQ Preferred Method
	Offline Distillation) 9014 Rev 0 (12/96) - Titrimetric and Manual Spectrophotometric Determinative Methods for Cyanide 9213 Rev 0 (12/96) - Potentiometric Determination of Cyanide in Aqueous Samples and Distillates with Ion-Selective Electrode SW-846 Vol IC Chap 7 Sec 7.3.3.2 - Test Method to Determine Hydrogen Cyanide Released from Wastes (Guidance Only)
<b>Organics - general</b>	<b>Preparation Methods:</b> 3500B Rev 2 (12/96) - Organic Extraction and Sample Preparation 3510C Rev 3 (12/96) - Separatory Funnel Liquid-Liquid Extraction 3520C Rev 3 (12/96) - Continuous Liquid-Liquid Extraction 3535 Rev 0 (12/96) - Solid-Phase Extraction (SPE) 3540C Rev 3 (12/96) - Soxhlet Extraction 3541 Rev 0 (9/94) - Automated Soxhlet Extraction 3542 Rev 0 (12/96) - Extraction of Semivolatile Analytes Collected Using Method 0010 (Modified Method 5 Sampling Train) 3545 Rev 0 (12/96) - Pressurized Fluid Extraction (PFE) 3550B Rev 2 (12/96) - Ultrasonic Extraction 3560 Rev 0 (12/96) - Supercritical Fluid Extraction of Total Recoverable Petroleum Hydrocarbons 3561 Rev 0 (12/96) - Supercritical Fluid Extraction of Polynuclear Aromatic Hydrocarbons 3580A Rev 1 (7/92) - Waste Dilution 3585 Rev 0 (12/96) - Waste Dilution for Volatile Organics
<b>Volatile organics, including BTEX and MTBE</b>	<b>Analytical Methods:</b> 8260B Rev 2 (12/96) - Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)
<b>Stoddard solvent</b>	<b>Analytical Methods:</b> 8021B Rev 2 (12/96) - Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors
<b>Semivolatile organics</b>	<b>Analytical Methods:</b> 8270C Rev 3 (12/96) - Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS) 8275A Rev 1 (12/96) - Semivolatile Organic Compounds (PAHs and PCBs) in Soils/Sludges and Solid Wastes Using Thermal Extraction/Gas Chromatography/Mass Spectrometry (TE/GC/MS)
<b>Chlorinated phenols</b>	<b>Analytical Methods:</b> 8041 Rev 0 (12/96) - Phenols by Gas Chromatography
<b>Dioxins/furans</b>	<b>Analytical Methods:</b> 8280A Rev 1 (12/96) - The Analysis of Polychlorinated Dibenzo- <i>p</i> -Dioxins and Polychlorinated Dibenzofurans by High Resolution Gas Chromatography/Low Resolution Mass Spectrometry (HRGC/LRMS) 8290 Rev 0 (9/94) - Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry (HRGC/HRMS)
<b>PCBs/Aroclors and PCB/congeners</b>	<b>Analytical Methods:</b> 8082 Rev 0 (12/96) - Polychlorinated Biphenyls (PCBs) by Gas Chromatography
<b>Pesticides &amp; herbicides (chlorinated and organophosphorous)</b>	<b>Analytical Methods:</b> 8081A Rev 1 (12/96) - Organochlorine Pesticides by Gas Chromatography 8141A Rev 1 (9/94) - Organophosphorus Compounds by Gas Chromatography: Capillary Column Technique 8151A Rev 1 (12/96) - Chlorinated Herbicides by GC Using Methylation or Pentafluorobenzoylation Derivatization

The DEQ Field Sampling Reference Guide (FSRG) (<http://www.deq.state.or.us/lab/qa/techdocs.htm>) documents the analytical methods currently used by DEQ's laboratory.

## **B5 Quality Control**

DEQ recognizes that regulatory actions and environmental decision-making requires data and information of the highest possible quality. Consequently, DEQ has implemented an agency-wide Quality Management System, which is documented in the DEQ Quality Management Plan. Every procedural aspect, from project planning, sample collection, laboratory analysis, to data assessment, imparts a significant and often critical bearing on environmental decisions.

### ***B5.1 Project Planning***

DEQ employs a team-based project planning approach that draws together diverse interests and participants to define the scope and framework of a project before actual work begins. This QAPP describes and defines the general quality objectives of the PA/SI investigation program. Site-specific quality objectives are often further defined by individual Project Managers in SAPs. This "graded" approach to quality system management ensures that quality activities are conducted throughout the project, but allows for the flexibility to tailor quality-related activities to individual projects.

### ***B5.2 Field QC Requirements***

#### **B5.2.1 Training Field Personnel**

DEQ has a training program for DEQ personnel that addresses acceptable sampling techniques, sample collection, preservation and handling procedures, and field instrument operation and documentation procedures. This is coordinated through DEQ's Quality Assurance Officer and the Watershed Assessment Section at DEQ's laboratory.

#### **B5.2.2 Field QC Samples**

Field transport (trip) blanks will be submitted for each PA/SI investigation that involves sampling for VOCs. These blanks are prepared by the analyzing laboratory using distilled, deionized water, shipped with the other sample bottles to the field, and then returned to the analyzing laboratory with the samples for analysis. Field transport blanks are not separated from other samples, but are packaged with the environmental samples collected during the sampling event.

Rinsate blanks will also be collected for each PA/SI investigation. Each blank consists of two VOC purge vials filled with purified water at the site and shipped back with the samples. Rinsate blanks are used to assess potential contamination of samples resulting from improperly decontaminated sampling equipment.

Field duplicates will be collected at a rate of one per 20 samples in each media, with a minimum of one duplicate within each media per sampling event. Field duplicates are taken within five minutes of collecting the original samples, and include all sub-samples. These samples are shipped back with the other sample bottles for analysis. The use of matrix spikes and matrix spike/duplicates are described in the *DEQ Field Sampling Reference Guide*.

Table A7-1 summarizes the required field QC samples, their frequency, and control limits. Deviations from the QC measurements specified in this QAPP must be clearly documented in the SAP.

In addition to the abovementioned field QC, any field measurements (e.g., conductivity, pH, dissolved oxygen, etc.) shall be made following accepted field protocols using documented and calibrated equipment. Instrument calibration information and field QC measurements shall be documented in the field notebook.

### **B5.3 Laboratory QC Requirements**

Routine laboratory QA activities are documented in the analyzing laboratory's *Quality Manual*. Laboratory quality manuals must adhere to consensus standards adopted by the National Environmental Laboratory Accreditation Conference (NELAC), which include at a minimum the following elements:

1. Daily instrument calibration or calibration verification prior to analysis of any samples.
2. Method blank analysis daily or at a frequency of 1/20 samples, whichever is greater.
3. Analysis of an independent reference standard daily to assess the accuracy of the calibration. This reference standard check should cover low, mid-level, and high ranges when appropriate.
4. Analysis of a matrix spike at a frequency of 1/20 samples, or as the matrix changes, to assess accuracy and identify possible matrix interferences.
5. Analysis of laboratory sample duplicates or matrix spike/matrix spike duplicates (MS/MSD) on a frequency of 1/20 samples to assess the precision of the analysis.
6. Determination of the minimum reporting limit based on detection limit studies and the concentration range of calibration standards.

QC assessment criteria are presented in Table A7-1. Precision and accuracy will vary with the analytical method and laboratory procedures. The analyzing laboratory must make precision and accuracy statements available upon request. The analyzing laboratory must prepare a quality assurance report evaluating the QC measurements listed above. Any deviations from the QC requirements presented in this QAPP must be documented in a site-specific SAP.

### **B5.4 Data Assessment**

Data processing, verification, and validation are the quality-management tools used to determine if project data meet the planned DQOs and requirements defined in this QAPP and in site-specific SAPs. During data processing and validation, project data should be evaluated for completeness, correctness, and compliance against the method, and procedural or contractual requirements of the project.

The following data qualifying flags will be used by analytical laboratories providing services for PA/SI investigations. The "Q" flag should be used to identify QC issues that may be relevant to interpretation of the analytical and are not identified using one of the other flags. All "Q" flags must have explanatory statements. Laboratories may use additional data flags; however, each flag must be defined unambiguously in the analytical report.

- **J** - the result is an estimate because the measured sample concentration is less than the laboratory's method reporting limit (MRL) but greater than the method detection limit (MDL), or laboratory QC criteria were not satisfied.
- **J+** - the result is an estimate (see "J"), and may be biased high.
- **J-** - the result is an estimate (see "J"), and may be biased low.
- **B** - the blank was contaminated with the analyte being reported.
- **U** - the measured sample concentration is less than the laboratory's reported quantitation limit (MRL).
- **N** - the analysis indicates the presence of an analyte for which there is sufficient evidence to make a "tentative identification."
- **R** - the data are unusable due to serious QC failures. The presence or absence of an analyte cannot be verified. Resampling and/or reanalysis is required for verification.
- **UJ** - the analyte was analyzed for but not detected at the reported quantitation limit. Result is also estimated because of QC failures.
- **NJ** - the analysis has indicated the presence of an analyte that has been "tentatively identified" and the associated value represents its approximate concentration.
- **Q** - not all quality control criteria were satisfied.

Data validation and grading are done by evaluating data against five Quality Assurance elements:

- Precision;
- Accuracy;
- Representativeness;
- Comparability; and
- Completeness.

The generic data assessment criteria for project data is discussed and defined in sections B5.3.1 to B5.3.5. DEQ validates the data against performance measures and DQOs established in this QAPP and in site-specific SAPs, and may assign QC grades of A+, A, B, C, D, E, and F following the criteria used by DEQ's QA section, which is specific to the analytical method, sample matrix, and the analyte of interest:

- **A+** – Data of known quality; collected by DEQ; meets QC limits established in the QAPP.
- **A** – Data of known quality; submitted by entities outside of DEQ; meets QC limits established in a *DEQ-approved* QAPP.
- **B** – Data of known *but lesser* quality; data may not meet established QC but is within marginal acceptance criteria; or data value may be accurate, but controls used to measure DQO elements failed (e.g., batch failed to meet blank QC limit); such data may be useful in limited situations or in supporting other, higher quality data.
- **C** – Data of unacceptable quality; data are discarded (void), typically in response to analytical failure.
- **D** – Incomplete data; no sample collected or no reportable results, typically due to sampling failure.
- **E** – Data of unknown quality or known to be of poor quality; no QA information is available, data could be valid, but no evidence is available to prove either way. Data is provided for educational use only.
- **F** – Exceptional event; "A" quality data (data is of known quality), but is not representative of sampling conditions as required in the QAPP or SAP (e.g., an air particulate sampler fails to sample the full time period because adverse conditions such as a forest fire overloaded the sampling equipment).

The criteria for data grades are subject to routine updates. The DEQ QA section should be contacted when developing grading criteria for site-specific SAPs.

## **B6 Instrument/Equipment Testing, Inspection, and Maintenance**

All field and laboratory analytical instruments and equipment will be tested, inspected, and maintained according to the manufacturer's guidelines and recommendations. Data collected from improperly functioning equipment will not be used. The equipment testing, inspection, and maintenance logs for all contractor equipment must be made available to the DEQ Project Manager or his/her representative upon request.

## **B7 Instrument/Equipment Calibration and Frequency**

All field and laboratory instruments and equipment used for measurement data will be operated and calibrated according to manufacturer's guidelines and recommendations. Calibration records must include the following information (whenever available and appropriate for the specific instrument or equipment): calibration date, test method, instrument, analysis date, each analyte's name, analyst's initials or signature, concentration and response, calibration curve or response factor. Only personnel properly trained in these procedures shall operate and calibrate the instruments. Calibration records must be made available to the DEQ Project Manager or his/her representative upon request.

## **B8 Inspection/Acceptance of Supplies and Consumables**

All supplies and consumables should be examined for damage or other characteristics that would otherwise compromise data quality. Contractors and laboratories shall have written procedures for

inspecting and accepting supplies and consumables in their Quality Management Plans or Quality System Manuals.

## **B9 Non-Direct Measurements**

Data from non-measurement sources, such as computer databases, computer programs, or scientific publications, must be approved for use by DEQ in a site-specific SAP. The SAP must:

- Identify the data sources;
- Describe the intended purpose and use of the data;
- Cite any acceptance criteria for the data; and
- Clearly describe any limitations for use of the data.

## **B10 Data Management**

Field data from PA/SI investigations, such as sample ID and latitude/longitude coordinates, are recorded on field data sheets or hand-held computers. Field data is reported to the Project Manager through submission of field notebooks or field sampling data sheets, if used, by DEQ or contractor field staff. Laboratory analytical data should be submitted to the DEQ Project Manager in both printed and electronic form. The Project Manager or his/her designee will update the ECSI database with field and analytical data, both in a narrative form and in the appropriate hazardous-substance fields in ECSI. Alternatively, the Project Manager or his/her designee may record analytical data from PA/SI investigations in DEQ's LASAR database, or in other DEQ databases that may be designed to store analytical data from specified locations.

## **Group C. ASSESSMENT AND OVERSIGHT**

### **C1 Assessment and Response Actions**

For long-term sampling projects (which are expected to be rare for PA/SI investigations), the DEQ Project Manager will meet at least weekly with field crews to discuss any problems, and ensure that all planned samples are being collected. For such sites, the Project Manager will review data weekly, observe sampling, and arrange re-sampling as needed. Contract laboratories will participate in Performance Evaluation studies twice yearly and satisfy NELAC requirements. Personnel responsible for data assessment will check the results of every sampling event for precision and completeness. Technical and/or quality system audits of environmental or laboratory contractors may be initiated on a prescribed schedule or on an as-needed basis in response to identified or suspected problems. Assessment and response actions will be documented and submitted to the DEQ Project Manager. Identified deficiencies will be followed up by written corrective action plans.

### **C2 Reports to Management**

Project Managers are responsible for reporting PA/SI activities to Program Managers in their respective regions. Procedures for preparing these reports may vary between regions.

## **Group D. DATA VALIDATION AND USABILITY**

### **D1 Data Review, Verification, and Validation**

Data review, verification, and validation procedures and requirements are discussed in Section B5 - Quality Control.

### **D2 Verification and Validation Methods**

Verification and validation method are discussed in Section B5- Quality Control.

### **D3 Reconciliation with User Requirements**

The Project Manager shall ensure that data collected during a PA or SI investigation address the agency's needs for evaluating that site. Moreover, the Project Manager will ensure that all environmental and laboratory contractors satisfy requirements specified in this QAPP, in site-specific SAPs, and in any binding contracts between parties. The laboratory conducting sample analyses shall submit all QC data identified in this plan (Group B) with its analytical data.

**APPENDIX A. STATUS TABLES FOR SW-846, THIRD EDITION.  
REVISED JANUARY 2005**

STATUS TABLES FOR  
SW-846, THIRD EDITION

ADDRESSES:

FINAL UPDATES I, II, IIA, IIB, III, IIIA, AND IIIB  
DRAFT UPDATES IVA AND IVB  
OTHER METHODS AT THE OSW METHODS WEB SITE

REVISED JANUARY 2005

## HOW TO USE THIS DOCUMENT

This document provides historical information regarding EPA-published draft, proposed, and final SW-846 methods and chapters. It contains two status tables, namely; the "SW-846 Method Status Table," which is a listing of SW-846 methods; and the "Status Table for SW-846 Chapter Text and Other Documents," which lists all other documents in SW-846.

Use the "SW-846 Method Status Table" as a reference guide to identify the historical and latest versions of SW-846 methods. Methods in this status table are listed sequentially by method number. The column showing "Other Methods" includes those methods that appear as new SW-846 methods at EPA's Office of Solid Waste Methods Team internet site, <http://www.epa.gov/SW-846/>. An integrated version of the manual is also available at the Methods Team internet site.

Use the "Status Table for SW-846 Chapter Text and Other Documents" as a reference guide to identify the historical and latest versions of chapters and other SW-846 documents (e.g., the Disclaimer).

Previous versions of the "SW-846 Method Status Table" included a column for "Current Promulgated Method." The November 2004 version of that table does not contain that column because, with the publication of the final Methods Innovation Rule, SW-846 and its methods are no longer required in general by any RCRA regulation. See 40 CFR 260.11(a)(11) for a listing of those SW-846 methods that may be still required by the RCRA regulations for the analysis of method-defined parameters.

Do **not** use a status table as a guide for putting together a paper version of SW-846. Refer to the "Table of Contents" of the update for the order in which chapters and methods should appear in SW-846.

**SW-846 METHOD STATUS TABLE**  
**January 2005**

Note: The date in parenthesis is the date found at the bottom right-hand corner of the method.

METHOD NUMBER								METHOD TITLE
THIRD ED (9/86)	FINAL UP. I (7/92)	FIN. UP. II (9/94) IIA (8/93) IIB (1/95)	FIN. UP. III (12/96) IIIA (4/98)	FIN. UP. IIIB (11/04)	DRAFT UP. IVA (1/98)	DRAFT UP. IVB (11/00)	OTHER METHODS (e.g., at web site)	
0010	--	--	--	--	--	--	--	Modified Method 5 Sampling Train
--	--	--	0011 (Up. III)	--	--	--	--	Sampling for Selected Aldehyde and Ketone Emissions from Stationary Sources
0020	--	--	--	--	--	--	--	Source Assessment Sampling System (SASS)
--	--	--	0023A (Up. III) Revision of Method 23, 40 CFR Part 60	--	--	--	--	Sampling Method for Polychlorinated Dibenzo- <i>p</i> -Dioxins and Polychlorinated Dibenzofuran Emissions from Stationary Sources
--	--	--	--	--	--	25D Referral	--	Determination of the Volatile Organic Content of Waste Samples
--	--	--	--	--	--	25E Referral	--	Determination of Vapor Phase Organic Concentration in Waste Samples
0030	--	--	--	--	--	--	--	Volatile Organic Sampling Train
--	--	--	0031 (Up. III)	--	--	--	--	Sampling Method for Volatile Organic Compounds (SMVOC)
--	--	--	0040 (Up. III)	--	--	--	--	Sampling of Principal Organic Hazardous Constituents from Combustion Sources Using Tedlar® Bags
--	--	--	0050 (Up. III)	--	--	--	--	Isokinetic HCl/Cl <sub>2</sub> Emission Sampling Train

SW-846 METHOD STATUS TABLE (1/05), CONTINUED

Note: The date in parenthesis is the date found at the bottom right-hand corner of the method.

METHOD NUMBER								METHOD TITLE
THIRD ED (9/86)	FINAL UP. I (7/92)	FIN. UP. II (9/94) IIA (8/93) IIB (1/95)	FIN. UP. III (12/96) IIIA (4/98)	FIN. UP. IIIB (11/04)	DRAFT UP. IVA (1/98)	DRAFT UP. IVB (11/00)	OTHER METHODS (e.g., at web site)	
--	--	--	0051 (Up. III)	--	--	--	--	Midget Impinger HCl/Cl <sub>2</sub> Emission Sampling Train
--	--	--	0060 (Up. III)	--	--	--	--	Determination of Metals in Stack Emissions
--	--	--	0061 (Up. III)	--	--	--	--	Determination of Hexavalent Chromium Emissions from Stationary Sources
--	--	--	0100 (Up. III)	--	--	--	--	Sampling for Formaldehyde and Other Carbonyl Compounds in Indoor Air
--	--	--	--	--	--	207-1 Referral	--	Sampling Method for Isocyanates
--	--	--	--	--	--	207-2 Referral	--	Analysis for Isocyanates by High Performance Liquid Chromatography (HPLC)
1010	--	--	--	1010A	--	--	--	Test Methods for Flash Point by Pensky-Martens Closed Cup Tester (Method text is a referral to ASTM Standard D 93-79 or Standard D 93-80)
1020	1020A	--	--	1020B	--	--	--	Standard Test Methods for Flash Point by Setafash (Small Scale) Closed-cup Apparatus (Method text is a referral to ASTM Standard D 3278-78)
--	--	--	1030 (Up. III)	--	--	--	--	Ignitability of Solids
--	--	--	--	--	--	1040	--	Test Method for Oxidizing Solids

SW-846 METHOD STATUS TABLE (1/05), CONTINUED

Note: The date in parenthesis is the date found at the bottom right-hand corner of the method.

METHOD NUMBER								METHOD TITLE
THIRD ED (9/86)	FINAL UP. I (7/92)	FIN. UP. II (9/94) IIA (8/93) IIB (1/95)	FIN. UP. III (12/96) IIIA (4/98)	FIN. UP. IIIB (11/04)	DRAFT UP. IVA (1/98)	DRAFT UP. IVB (11/00)	OTHER METHODS (e.g., at web site)	
--	--	--	--	--	--	1050	--	Test Methods to Determine Substances Likely to Spontaneously Combust
1110	--	--	--	1110A	--	--	--	Corrosivity Toward Steel
--	--	--	1120 (Up. III)	--	--	--	--	Dermal Corrosion
1310	1310A	--	--	1310B	--	--	--	Extraction Procedure (EP) Toxicity Test Method and Structural Integrity Test
--	1311	--	--	--	--	--	--	Toxicity Characteristic Leaching Procedure
--	--	1312 (Up. II)	--	--	--	--	--	Synthetic Precipitation Leaching Procedure
1320	--	--	--	--	--	--	--	Multiple Extraction Procedure
1330	1330A	--	--	--	--	--	--	Extraction Procedure for Oily Wastes
3005	3005A	--	--	--	--	--	--	Acid Digestion of Waters for Total Recoverable or Dissolved Metals for Analysis by FLAA or ICP Spectroscopy
3010	3010A	--	--	--	--	--	--	Acid Digestion of Aqueous Samples and Extracts for Total Metals for Analysis by FLAA or ICP Spectroscopy
--	--	3015 (Up. II)	--	--	3015A	--	--	Microwave Assisted Acid Digestion of Aqueous Samples and Extracts
3020	3020A	--	--	--	--	--	--	Acid Digestion of Aqueous Samples and Extracts for Total Metals for Analysis by GFAA Spectroscopy

SW-846 METHOD STATUS TABLE (1/05), CONTINUED

Note: The date in parenthesis is the date found at the bottom right-hand corner of the method.

METHOD NUMBER								METHOD TITLE
THIRD ED (9/86)	FINAL UP. I (7/92)	FIN. UP. II (9/94) IIA (8/93) IIB (1/95)	FIN. UP. III (12/96) IIIA (4/98)	FIN. UP. IIIB (11/04)	DRAFT UP. IVA (1/98)	DRAFT UP. IVB (11/00)	OTHER METHODS (e.g., at web site)	
--	--	--	3031 (Up. III)	--	--	--	--	Acid Digestion of Oils for Metals Analysis by Atomic Absorption or ICP Spectrometry
3040	--	--	3040A (Up. III)	--	--	--	--	Dissolution Procedure for Oils, Greases, or Waxes
3050	3050A	--	3050B (Up. III)	--	--	--	--	Acid Digestion of Sediments, Sludges, and Soils
--	--	3051 (Up. II)	--	--	3051A	--	--	Microwave Assisted Acid Digestion of Sediments, Sludges, Soils, and Oils
--	--	--	3052 (Up. III)	--	--	--	--	Microwave Assisted Acid Digestion of Siliceous and Organically Based Matrices
[3060, in the 2nd Ed.]	--	--	3060A (Up. III)	--	--	--	--	Alkaline Digestion for Hexavalent Chromium
3500	3500A	--	3500B (Up. III)	--	--	3500C	--	Organic Extraction and Sample Preparation
3510	3510A	3510B (Up. II)	3510C (Up. III)	--	--	--	--	Separatory Funnel Liquid-Liquid Extraction
--	--	--	--	--	--	--	3511 (11/02)	Organic Compounds in Water by Microextraction
3520	3520A	3520B (Up. II)	3520C (Up. III)	--	--	--	--	Continuous Liquid-Liquid Extraction
--	--	--	3535 (Up. III)	--	3535A	3535A (Replaces IVA version)	--	Solid-Phase Extraction (SPE)

SW-846 METHOD STATUS TABLE (1/05), CONTINUED

Note: The date in parenthesis is the date found at the bottom right-hand corner of the method.

METHOD NUMBER								METHOD TITLE
THIRD ED (9/86)	FINAL UP. I (7/92)	FIN. UP. II (9/94) IIA (8/93) IIB (1/95)	FIN. UP. III (12/96) IIIA (4/98)	FIN. UP. IIIB (11/04)	DRAFT UP. IVA (1/98)	DRAFT UP. IVB (11/00)	OTHER METHODS (e.g., at web site)	
3540	3540A	3540B (Up. II)	3540C (Up. III)	--	--	--	--	Soxhlet Extraction
--	--	3541 (Up. II)	--	--	--	--	--	Automated Soxhlet Extraction
--	--	--	3542 (Up. III)	--	--	--	--	Extraction of Semivolatile Analytes Collected Using Method 0010 (Modified Method 5 Sampling Train)
--	--	--	3545 (Up. III)	--	3545A	3545A (Replaces IVA version)	--	Pressurized Fluid Extraction (PFE)
--	--	--	--	--	--	3546	--	Microwave Extraction
3550	--	3550A (Up. II)	3550B (Up. III)	--	--	3550C	--	Ultrasonic Extraction
--	--	--	3560 (Up. III)	--	--	--	--	Supercritical Fluid Extraction of Total Recoverable Petroleum Hydrocarbons
--	--	--	3561 (Up. III)	--	--	--	--	Supercritical Fluid Extraction of Polynuclear Aromatic Hydrocarbons
--	--	--	--	--	3562	--	--	Supercritical Fluid Extraction of Polychlorinated Biphenyls (PCBs) and Organochlorine Pesticides
--	--	--	--	--	--	--	3570 (11/02)	Microscale Solvent Extraction (MSE)
3580	3580A	--	--	--	--	--	--	Waste Dilution

SW-846 METHOD STATUS TABLE (1/05), CONTINUED

Note: The date in parenthesis is the date found at the bottom right-hand corner of the method.

METHOD NUMBER								METHOD TITLE
THIRD ED (9/86)	FINAL UP. I (7/92)	FIN. UP. II (9/94) IIA (8/93) IIB (1/95)	FIN. UP. III (12/96) IIIA (4/98)	FIN. UP. IIIB (11/04)	DRAFT UP. IVA (1/98)	DRAFT UP. IVB (11/00)	OTHER METHODS (e.g., at web site)	
--	--	--	3585 (Up. III)	--	--	--	--	Waste Dilution for Volatile Organics
3600	3600A	3600B (Up. II)	3600C (Up. III)	--	--	--	--	Cleanup
3610	3610A	--	3610B (Up. III)	--	--	--	--	Alumina Cleanup
3611	3611A	--	3611B (Up. III)	--	--	--	--	Alumina Column Cleanup and Separation of Petroleum Wastes
3620	3620A	--	3620B (Up. III)	--	--	3620C	--	Florisil Cleanup
3630	3630A	3630B (Up. II)	3630C (Up. III)	--	--	--	--	Silica Gel Cleanup
3640	--	3640A (Up. II)	--	--	--	--	--	Gel-Permeation Cleanup
3650	3650A	--	3650B (Up. III)	--	--	--	--	Acid-Base Partition Cleanup
3660	3660A	--	3660B (Up. III)	--	--	--	--	Sulfur Cleanup
--	--	3665 (Up. II)	3665A (Up. III)	--	--	--	--	Sulfuric Acid/Permanganate Cleanup
3810	--	--	--	--	Noticed for removal from SW-846	--	--	Headspace

SW-846 METHOD STATUS TABLE (1/05), CONTINUED

Note: The date in parenthesis is the date found at the bottom right-hand corner of the method.

METHOD NUMBER								METHOD TITLE
THIRD ED (9/86)	FINAL UP. I (7/92)	FIN. UP. II (9/94) IIA (8/93) IIB (1/95)	FIN. UP. III (12/96) IIIA (4/98)	FIN. UP. IIIB (11/04)	DRAFT UP. IVA (1/98)	DRAFT UP. IVB (11/00)	OTHER METHODS (e.g., at web site)	
--	--	--	--	--	--	3815	--	Screening Solid Samples for Volatile Organics
3820	--	--	--	--	--	--	--	Hexadecane Extraction and Screening of Purgeable Organics
--	--	--	4000 (Up. III)	--	--	--	--	Immunoassay
--	--	4010 (Up. IIA)	4010A (Up. III)	--	--	--	--	Screening for Pentachlorophenol by Immunoassay
--	--	--	4015 (Up. III)	--	--	--	--	Screening for 2,4-Dichlorophenoxyacetic Acid by Immunoassay
--	--	--	4020 (Up. III)	--	--	--	--	Screening for Polychlorinated Biphenyls by Immunoassay
--	--	--	--	--	--	--	4025 (10/02)	Screening for Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans (PCDD/Fs) by Immunoassay
--	--	--	4030 (Up. III)	--	--	--	--	Soil Screening for Petroleum Hydrocarbons by Immunoassay
--	--	--	4035 (Up. III)	--	--	--	--	Soil Screening for Polynuclear Aromatic Hydrocarbons by Immunoassay
--	--	--	4040 (Up. III)	--	--	--	--	Soil Screening for Toxaphene by Immunoassay
--	--	--	4041 (Up. III)	--	--	--	--	Soil Screening for Chlordane by Immunoassay

SW-846 METHOD STATUS TABLE (1/05), CONTINUED

Note: The date in parenthesis is the date found at the bottom right-hand corner of the method.

METHOD NUMBER								METHOD TITLE
THIRD ED (9/86)	FINAL UP. I (7/92)	FIN. UP. II (9/94) IIA (8/93) IIB (1/95)	FIN. UP. III (12/96) IIIA (4/98)	FIN. UP. IIIB (11/04)	DRAFT UP. IVA (1/98)	DRAFT UP. IVB (11/00)	OTHER METHODS (e.g., at web site)	
--	--	--	4042 (Up. III)	--	--	--	--	Soil Screening for DDT by Immunoassay
--	--	--	4050 (Up. III)	--	--	--	--	TNT Explosives in Soil by Immunoassay
--	--	--	4051 (Up. III)	--	--	--	--	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) in Soil by Immunoassay
--	--	--	--	--	--	4425	--	Screening Extracts of Environmental Samples for Planar Organic Compounds (PAHs, PCBs, PCDDs/PCDFs) by a Reporter Gene on a Human Cell Line
--	--	--	--	--	4500	--	--	Mercury in Soil by Immunoassay
--	--	--	--	--	4670	--	--	Triazine Herbicides as Atrazine in Water by Quantitative Immunoassay
--	--	--	5000 (Up. III)	--	--	--	--	Sample Preparation for Volatile Organic Compounds
--	--	--	5021 (Up. III)	--	--	--	5021A (6/03)	5021A: Volatile Organic Compounds in Various Sample Matrices Using Equilibrium Headspace Analysis
5030	5030A	--	5030B (Up. III)	--	--	--	5030C (5/03)	Purge-and-Trap for Aqueous Samples
--	--	--	5031 (Up. III)	--	--	--	--	Volatile, Nonpurgeable, Water-Soluble Compounds by Azeotropic Distillation
--	--	--	5032 (Up. III)	--	--	--	--	Volatile Organic Compounds by Vacuum Distillation

SW-846 METHOD STATUS TABLE (1/05), CONTINUED

Note: The date in parenthesis is the date found at the bottom right-hand corner of the method.

METHOD NUMBER								METHOD TITLE
THIRD ED (9/86)	FINAL UP. I (7/92)	FIN. UP. II (9/94) IIA (8/93) IIB (1/95)	FIN. UP. III (12/96) IIIA (4/98)	FIN. UP. IIIB (11/04)	DRAFT UP. IVA (1/98)	DRAFT UP. IVB (11/00)	OTHER METHODS (e.g., at web site)	
--	--	--	5035 (Up. III)	--	--	--	5035A (7/02)	Closed-System Purge-and-Trap and Extraction for Volatile Organics in Soil and Waste Samples
5040	--	5040A (Up. II)	Deleted from SW-846 (Up. III)	--	--	--	--	Analysis of Sorbent Cartridges from Volatile Organic Sampling Train (VOST): Gas Chromatography/Mass Spectrometry Technique
--	--	5041 (Up. II)	5041A (Up. III)	--	--	--	--	Analysis for Desorption of Sorbent Cartridges from Volatile Organic Sampling Train (VOST)
--	--	5050 (Up. II)	--	--	--	--	--	Bomb Preparation Method for Solid Waste
6010	6010A	--	6010B (Up. III)	--	--	6010C	--	Inductively Coupled Plasma-Atomic Emission Spectrometry
--	--	6020 (Up. II)	--	--	6020A	--	--	Inductively Coupled Plasma - Mass Spectrometry
--	--	--	--	--	6200	--	--	Field Portable X-Ray Fluorescence Spectrometry for the Determination of Elemental Concentrations in Soil and Sediment
--	--	--	--	--	6500	--	--	Dissolved Inorganic Anions in Aqueous Matrices by Capillary Ion Electrophoresis
--	--	--	--	--	6800	--	--	Elemental and Speciated Isotope Dilution Mass Spectrometry
7000	7000A	--	--	--	7000B	--	--	7000B (Draft Up. IVA): Flame Atomic Absorption Spectrophotometry

SW-846 METHOD STATUS TABLE (1/05), CONTINUED

Note: The date in parenthesis is the date found at the bottom right-hand corner of the method.

METHOD NUMBER								METHOD TITLE
THIRD ED (9/86)	FINAL UP. I (7/92)	FIN. UP. II (9/94) IIA (8/93) IIB (1/95)	FIN. UP. III (12/96) IIIA (4/98)	FIN. UP. IIIB (11/04)	DRAFT UP. IVA (1/98)	DRAFT UP. IVB (11/00)	OTHER METHODS (e.g., at web site)	
--	--	--	--	--	7010	--	--	Graphite Furnace Atomic Absorption Spectrophotometry
7020	--	--	--	--	Noticed for removal from SW-846	--	--	Aluminum (Atomic Absorption, Direct Aspiration)
7040	--	--	--	--	Noticed for removal from SW-846	--	--	Antimony (Atomic Absorption, Direct Aspiration)
7041	--	--	--	--	Noticed for removal from SW-846	--	--	Antimony (Atomic Absorption, Furnace Technique)
7060	--	7060A (Up. II)	--	--	Noticed for removal from SW-846	--	--	Arsenic (Atomic Absorption, Furnace Technique)
7061	7061A	--	--	--	--	--	--	Arsenic (Atomic Absorption, Gaseous Hydride)
--	--	7062 (Up. II)	--	--	--	--	--	Antimony and Arsenic (Atomic Absorption, Borohydride Reduction)
--	--	--	7063 (Up. III)	--	--	--	--	Arsenic in Aqueous Samples and Extracts by Anodic Stripping Voltammetry (ASV)

SW-846 METHOD STATUS TABLE (1/05), CONTINUED

Note: The date in parenthesis is the date found at the bottom right-hand corner of the method.

METHOD NUMBER								METHOD TITLE
THIRD ED (9/86)	FINAL UP. I (7/92)	FIN. UP. II (9/94) IIA (8/93) IIB (1/95)	FIN. UP. III (12/96) IIIA (4/98)	FIN. UP. IIIB (11/04)	DRAFT UP. IVA (1/98)	DRAFT UP. IVB (11/00)	OTHER METHODS (e.g., at web site)	
7080	--	7080A (Up. II)	--	--	Noticed for removal from SW-846	--	--	Barium (Atomic Absorption, Direct Aspiration)
--	7081	--	--	--	Noticed for removal from SW-846	--	--	Barium (Atomic Absorption, Furnace Technique)
7090	--	--	--	--	Noticed for removal from SW-846	--	--	Beryllium (Atomic Absorption, Direct Aspiration)
7091	--	--	--	--	Noticed for removal from SW-846	--	--	Beryllium (Atomic Absorption, Furnace Technique)
7130	--	--	--	--	Noticed for removal from SW-846	--	--	Cadmium (Atomic Absorption, Direct Aspiration)

SW-846 METHOD STATUS TABLE (1/05), CONTINUED

Note: The date in parenthesis is the date found at the bottom right-hand corner of the method.

METHOD NUMBER								METHOD TITLE
THIRD ED (9/86)	FINAL UP. I (7/92)	FIN. UP. II (9/94) IIA (8/93) IIB (1/95)	FIN. UP. III (12/96) IIIA (4/98)	FIN. UP. IIIB (11/04)	DRAFT UP. IVA (1/98)	DRAFT UP. IVB (11/00)	OTHER METHODS (e.g., at web site)	
7131	--	7131A (Up. II)	--	--	Noticed for removal from SW-846	--	--	Cadmium (Atomic Absorption, Furnace Technique)
7140	--	--	--	--	Noticed for removal from SW-846	--	--	Calcium (Atomic Absorption, Direct Aspiration)
7190	--	--	--	--	Noticed for removal from SW-846	--	--	Chromium (Atomic Absorption, Direct Aspiration)
7191	--	--	--	--	Noticed for removal from SW-846	--	--	Chromium (Atomic Absorption, Furnace Technique)
7195	--	--	--	--	--	--	--	Chromium, Hexavalent (Coprecipitation)
7196	7196A	--	--	--	--	--	--	Chromium, Hexavalent (Colorimetric)
7197	--	--	--	--	--	--	--	Chromium, Hexavalent (Chelation/Extraction)
7198	--	--	--	--	--	--	--	Chromium, Hexavalent (Differential Pulse Polarography)

SW-846 METHOD STATUS TABLE (1/05), CONTINUED

Note: The date in parenthesis is the date found at the bottom right-hand corner of the method.

METHOD NUMBER								METHOD TITLE
THIRD ED (9/86)	FINAL UP. I (7/92)	FIN. UP. II (9/94) IIA (8/93) IIB (1/95)	FIN. UP. III (12/96) IIIA (4/98)	FIN. UP. IIIB (11/04)	DRAFT UP. IVA (1/98)	DRAFT UP. IVB (11/00)	OTHER METHODS (e.g., at web site)	
--	--	--	7199 (Up. III)	--	--	--	--	Determination of Hexavalent Chromium in Drinking Water, Groundwater and Industrial Wastewater Effluents by Ion Chromatography
7200	--	--	--	--	Noticed for removal from SW-846	--	--	Cobalt (Atomic Absorption, Direct Aspiration)
7201	--	--	--	--	Noticed for removal from SW-846	--	--	Cobalt (Atomic Absorption, Furnace Technique)
7210	--	--	--	--	Noticed for removal from SW-846	--	--	Copper (Atomic Absorption, Direct Aspiration)
--	7211	--	--	--	Noticed for removal from SW-846	--	--	Copper (Atomic Absorption, Furnace Technique)
7380	--	--	--	--	Noticed for removal from SW-846	--	--	Iron (Atomic Absorption, Direct Aspiration)

SW-846 METHOD STATUS TABLE (1/05), CONTINUED

Note: The date in parenthesis is the date found at the bottom right-hand corner of the method.

METHOD NUMBER								METHOD TITLE
THIRD ED (9/86)	FINAL UP. I (7/92)	FIN. UP. II (9/94) IIA (8/93) IIB (1/95)	FIN. UP. III (12/96) IIIA (4/98)	FIN. UP. IIIB (11/04)	DRAFT UP. IVA (1/98)	DRAFT UP. IVB (11/00)	OTHER METHODS (e.g., at web site)	
--	7381	--	--	--	Noticed for removal from SW-846	--	--	Iron (Atomic Absorption, Furnace Technique)
7420	--	--	--	--	Noticed for removal from SW-846	--	--	Lead (Atomic Absorption, Direct Aspiration)
7421	--	--	--	--	Noticed for removal from SW-846	--	--	Lead (Atomic Absorption, Furnace Technique)
--	7430	--	--	--	Noticed for removal from SW-846	--	--	Lithium (Atomic Absorption, Direct Aspiration)
7450	--	--	--	--	Noticed for removal from SW-846	--	--	Magnesium (Atomic Absorption, Direct Aspiration)

SW-846 METHOD STATUS TABLE (1/05), CONTINUED

Note: The date in parenthesis is the date found at the bottom right-hand corner of the method.

METHOD NUMBER								METHOD TITLE
THIRD ED (9/86)	FINAL UP. I (7/92)	FIN. UP. II (9/94) IIA (8/93) IIB (1/95)	FIN. UP. III (12/96) IIIA (4/98)	FIN. UP. IIIB (11/04)	DRAFT UP. IVA (1/98)	DRAFT UP. IVB (11/00)	OTHER METHODS (e.g., at web site)	
7460	--	--	--	--	Noticed for removal from SW-846	--	--	Manganese (Atomic Absorption, Direct Aspiration)
--	7461	--	--	--	Noticed for removal from SW-846	--	--	Manganese (Atomic Absorption, Furnace Technique)
7470	--	7470A (Up. II)	--	--	--	--	--	Mercury in Liquid Waste (Manual Cold-Vapor Technique)
7471	--	7471A (Up. II)	--	--	7471B	--	--	Mercury in Solid or Semisolid Waste (Manual Cold-Vapor Technique)
--	--	--	7472 (Up. III)	--	--	--	--	Mercury in Aqueous Samples and Extracts by Anodic Stripping Voltammetry (ASV)
--	--	--	--	--	7473	--	--	Mercury in Solids and Solutions by Thermal Decomposition, Amalgamation, and Atomic Absorption Spectrophotometry
--	--	--	--	--	7474	--	--	Mercury in Sediment and Tissue Samples by Atomic Fluorescence Spectrometry
7480	--	--	--	--	Noticed for removal from SW-846	--	--	Molybdenum (Atomic Absorption, Direct Aspiration)

SW-846 METHOD STATUS TABLE (1/05), CONTINUED

Note: The date in parenthesis is the date found at the bottom right-hand corner of the method.

METHOD NUMBER								METHOD TITLE
THIRD ED (9/86)	FINAL UP. I (7/92)	FIN. UP. II (9/94) IIA (8/93) IIB (1/95)	FIN. UP. III (12/96) IIIA (4/98)	FIN. UP. IIIB (11/04)	DRAFT UP. IVA (1/98)	DRAFT UP. IVB (11/00)	OTHER METHODS (e.g., at web site)	
7481	--	--	--	--	Noticed for removal from SW-846	--	--	Molybdenum (Atomic Absorption, Furnace Technique)
7520	--	--	--	--	Noticed for removal from SW-846	--	--	Nickel (Atomic Absorption, Direct Aspiration)
--	--	--	7521 (Up. III)	--	Noticed for removal from SW-846	--	--	Nickel (Atomic Absorption, Furnace Method)
7550	--	--	--	--	Noticed for removal from SW-846	--	--	Osmium (Atomic Absorption, Direct Aspiration)
--	--	--	7580 (Up. III)	--	--	--	--	White Phosphorus (P <sub>4</sub> ) by Solvent Extraction and Gas Chromatography
7610	--	--	--	--	Noticed for removal from SW-846	--	--	Potassium (Atomic Absorption, Direct Aspiration)

SW-846 METHOD STATUS TABLE (1/05), CONTINUED

Note: The date in parenthesis is the date found at the bottom right-hand corner of the method.

METHOD NUMBER								METHOD TITLE
THIRD ED (9/86)	FINAL UP. I (7/92)	FIN. UP. II (9/94) IIA (8/93) IIB (1/95)	FIN. UP. III (12/96) IIIA (4/98)	FIN. UP. IIIB (11/04)	DRAFT UP. IVA (1/98)	DRAFT UP. IVB (11/00)	OTHER METHODS (e.g., at web site)	
7740	--	--	--	--	Noticed for removal from SW-846	--	--	Selenium (Atomic Absorption, Furnace Technique)
7741	--	7741A (Up. II)	--	--	--	--	--	Selenium (Atomic Absorption, Gaseous Hydride)
--	--	7742 (Up. II)	--	--	--	--	--	Selenium (Atomic Absorption, Borohydride Reduction)
7760	7760A	--	--	--	Noticed for removal from SW-846	--	--	Silver (Atomic Absorption, Direct Aspiration)
--	7761	--	--	--	Noticed for removal from SW-846	--	--	Silver (Atomic Absorption, Furnace Technique)
7770	--	--	--	--	Noticed for removal from SW-846	--	--	Sodium (Atomic Absorption, Direct Aspiration)

SW-846 METHOD STATUS TABLE (1/05), CONTINUED

Note: The date in parenthesis is the date found at the bottom right-hand corner of the method.

METHOD NUMBER								METHOD TITLE
THIRD ED (9/86)	FINAL UP. I (7/92)	FIN. UP. II (9/94) IIA (8/93) IIB (1/95)	FIN. UP. III (12/96) IIIA (4/98)	FIN. UP. IIIB (11/04)	DRAFT UP. IVA (1/98)	DRAFT UP. IVB (11/00)	OTHER METHODS (e.g., at web site)	
--	7780	--	--	--	Noticed for removal from SW-846	--	--	Strontium (Atomic Absorption, Direct Aspiration)
7840	--	--	--	--	Noticed for removal from SW-846	--	--	Thallium (Atomic Absorption, Direct Aspiration)
7841	--	--	--	--	Noticed for removal from SW-846	--	--	Thallium (Atomic Absorption, Furnace Technique)
7870	--	--	--	--	Noticed for removal from SW-846	--	--	Tin (Atomic Absorption, Direct Aspiration)
7910	--	--	--	--	Noticed for removal from SW-846	--	--	Vanadium (Atomic Absorption, Direct Aspiration)

SW-846 METHOD STATUS TABLE (1/05), CONTINUED

Note: The date in parenthesis is the date found at the bottom right-hand corner of the method.

METHOD NUMBER								METHOD TITLE
THIRD ED (9/86)	FINAL UP. I (7/92)	FIN. UP. II (9/94) IIA (8/93) IIB (1/95)	FIN. UP. III (12/96) IIIA (4/98)	FIN. UP. IIIB (11/04)	DRAFT UP. IVA (1/98)	DRAFT UP. IVB (11/00)	OTHER METHODS (e.g., at web site)	
7911	--	--	--	--	Noticed for removal from SW-846	--	--	Vanadium (Atomic Absorption, Furnace Technique)
7950	--	--	--	--	Noticed for removal from SW-846	--	--	Zinc (Atomic Absorption, Direct Aspiration)
--	7951	--	--	--	Noticed for removal from SW-846	--	--	Zinc (Atomic Absorption, Furnace Technique)
8000	8000A	--	8000B (Up. III)	--	--	--	8000C (3/03)	Determinative Chromatographic Separations
8010	8010A	8010B (Up. II)	Deleted from SW-846 (Up. III)	--	--	--	--	Halogenated Volatile Organics by Gas Chromatography
--	8011	--	--	--	--	--	--	1,2-Dibromoethane and 1,2-Dibromo-3-chloropropane by Microextraction and Gas Chromatography
8015	8015A	--	8015B	--	--	8015C	8015D (6/03)	Nonhalogenated Organics Using GC/FID

SW-846 METHOD STATUS TABLE (1/05), CONTINUED

Note: The date in parenthesis is the date found at the bottom right-hand corner of the method.

METHOD NUMBER								METHOD TITLE
THIRD ED (9/86)	FINAL UP. I (7/92)	FIN. UP. II (9/94) IIA (8/93) IIB (1/95)	FIN. UP. III (12/96) IIIA (4/98)	FIN. UP. IIIB (11/04)	DRAFT UP. IVA (1/98)	DRAFT UP. IVB (11/00)	OTHER METHODS (e.g., at web site)	
8020	--	8020A (Up. II)	Deleted from SW-846 (Up. III)	--	--	--	--	Aromatic Volatile Organics by Gas Chromatography
--	8021	8021A (Up. II)	8021B (Up. III)	--	--	--	--	Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors
8030	8030A	--	Deleted from SW-846 (Up. III)	--	--	--	--	Acrolein and Acrylonitrile by Gas Chromatography
--	--	8031 (Up. II)	--	--	--	--	--	Acrylonitrile by Gas Chromatography
--	--	8032 (Up. II)	8032A (Up. III)	--	--	--	--	Acrylamide by Gas Chromatography
--	--	--	8033 (Up. III)	--	--	--	--	Acetonitrile by Gas Chromatography with Nitrogen-Phosphorus Detection
8040	8040A	--	Deleted from SW-846 (Up. III)	--	--	--	--	Phenols by Gas Chromatography
--	--	--	8041 (Up. III)	--	--	8041A	--	Phenols by Gas Chromatography

SW-846 METHOD STATUS TABLE (1/05), CONTINUED

Note: The date in parenthesis is the date found at the bottom right-hand corner of the method.

METHOD NUMBER								METHOD TITLE
THIRD ED (9/86)	FINAL UP. I (7/92)	FIN. UP. II (9/94) IIA (8/93) IIB (1/95)	FIN. UP. III (12/96) IIIA (4/98)	FIN. UP. IIIB (11/04)	DRAFT UP. IVA (1/98)	DRAFT UP. IVB (11/00)	OTHER METHODS (e.g., at web site)	
8060	--	--	Deleted from SW-846 (Up. III)	--	--	--	--	Phthalate Esters
--	--	8061 (Up. II)	8061A (Up. III)	--	--	--	--	Phthalate Esters by Gas Chromatography with Electron Capture Detection (GC/ECD)
--	8070	--	8070A (Up. III)	--	--	--	--	Nitrosamines by Gas Chromatography
8080	--	8080A (Up. II)	Deleted from SW-846 (Up. III)	--	--	--	--	Organochlorine Pesticides and Polychlorinated Biphenyls by Gas Chromatography
--	--	8081 (Up. II)	8081A (Up. III)	--	8081B	8081B (Replaces IVA version)	--	Organochlorine Pesticides by Gas Chromatography
--	--	--	8082 (Up. III)	--	8082A	8082A (Replaces IVA version)	--	Polychlorinated Biphenyls (PCBs) by Gas Chromatography
				--		8085	--	Compound-independent Elemental Quantitation of Pesticides by Gas Chromatography with Atomic Emission Detection (GC/AED)
8090	--	--	Deleted from SW-846 (Up. III)	--	--	--	--	Nitroaromatics and Cyclic Ketones

SW-846 METHOD STATUS TABLE (1/05), CONTINUED

Note: The date in parenthesis is the date found at the bottom right-hand corner of the method.

METHOD NUMBER								METHOD TITLE
THIRD ED (9/86)	FINAL UP. I (7/92)	FIN. UP. II (9/94) IIA (8/93) IIB (1/95)	FIN. UP. III (12/96) IIIA (4/98)	FIN. UP. IIIB (11/04)	DRAFT UP. IVA (1/98)	DRAFT UP. IVB (11/00)	OTHER METHODS (e.g., at web site)	
--	--	--	8091 (Up. III)	--	--	--	--	Nitroaromatics and Cyclic Ketones by Gas Chromatography
--	--	--	--	--	--	8095	--	Explosives by Gas Chromatography
8100	--	--	--	--	--	--	--	Polynuclear Aromatic Hydrocarbons
--	8110	--	Deleted from SW-846 (Up. III)	--	--	--	--	Haloethers by Gas Chromatography
--	--	--	8111 (Up. III)	--	--	--	--	Haloethers by Gas Chromatography
8120	--	8120A (Up. II)	Deleted from SW-846 (Up. III)	--	--	--	--	Chlorinated Hydrocarbons by Gas Chromatography
--	--	8121 (Up. II)	--	--	--	--	--	Chlorinated Hydrocarbons by Gas Chromatography: Capillary Column Technique
--	--	--	8131 (Up. III)	--	--	--	--	Aniline and Selected Derivatives by Gas Chromatography
8140	--	--	Deleted from SW-846 (Up. III)	--	--	--	--	Organophosphorus Pesticides

SW-846 METHOD STATUS TABLE (1/05), CONTINUED

Note: The date in parenthesis is the date found at the bottom right-hand corner of the method.

METHOD NUMBER								METHOD TITLE
THIRD ED (9/86)	FINAL UP. I (7/92)	FIN. UP. II (9/94) IIA (8/93) IIB (1/95)	FIN. UP. III (12/96) IIIA (4/98)	FIN. UP. IIIB (11/04)	DRAFT UP. IVA (1/98)	DRAFT UP. IVB (11/00)	OTHER METHODS (e.g., at web site)	
--	8141	8141A (Up. II)	--	--	8141B	8141B (Replaces IVA version)	--	8141B: Organophosphorus Compounds by Gas Chromatography
8150	8150A	8150B (Up. II)	Deleted from SW-846 (Up. III)	--	--	--	--	Chlorinated Herbicides by Gas Chromatography
--	--	8151 (Up. II)	8151A (Up. III)	--	--	--	--	Chlorinated Herbicides by GC Using Methylation or Pentafluorobenzoylation Derivatization
8240	8240A	8240B (Up. II)	Deleted from SW-846 (Up. III)	--	--	--	--	Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)
8250	--	8250A (Up. II)	Deleted from SW-846 (Up. III)	--	--	--	--	Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)
--	8260	8260A (Up. II)	8260B (Up. III)	--	--	--	--	Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)
--	--	--	--	--	--	8261	--	Volatile Organic Compounds by Vacuum Distillation in Combination with Gas Chromatography/Mass Spectrometry (VD/GC/MS)

SW-846 METHOD STATUS TABLE (1/05), CONTINUED

Note: The date in parenthesis is the date found at the bottom right-hand corner of the method.

METHOD NUMBER								METHOD TITLE
THIRD ED (9/86)	FINAL UP. I (7/92)	FIN. UP. II (9/94) IIA (8/93) IIB (1/95)	FIN. UP. III (12/96) IIIA (4/98)	FIN. UP. IIIB (11/04)	DRAFT UP. IVA (1/98)	DRAFT UP. IVB (11/00)	OTHER METHODS (e.g., at web site)	
--	--	--	--	--	--	--	8265 (3/02)	Volatile Organic Compounds in Water, Soil, Soil Gas and Air by Direct Sampling Ion Trap Mass Spectrometry (DSITMS)
8270	8270A	8270B (Up. II)	8270C (Up. III)	--	8270D	--	--	Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)
--	--	8275 (Up. II)	8275A (Up. III)	--	--	--	--	Semivolatile Organic Compounds (PAHs and PCBs) in Soils/Sludges and Solid Wastes Using Thermal Extraction/Gas Chromatography/Mass Spectrometry (TE/GC/MS)
8280	--	--	8280A (Up. III)	--	8280B	--	--	8280B: Polychlorinated Dibenzo- <i>p</i> -Dioxins and Polychlorinated Dibenzofurans by High Resolution Gas Chromatography/Low Resolution Mass Spectrometry (HRGC/LRMS)
--	--	8290 (Up. II)	--	--	8290A	--	--	Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry (HRGC/HRMS)
8310	--	--	--	--	--	--	--	Polynuclear Aromatic Hydrocarbons
--	--	8315 (Up. II)	8315A (Up. III)	--	--	--	--	Determination of Carbonyl Compounds by High Performance Liquid Chromatography (HPLC)
--	--	8316 (Up. II)	--	--	--	--	--	Acrylamide, Acrylonitrile and Acrolein by High Performance Liquid Chromatography (HPLC)
--	--	8318 (Up. II)	--	--	--	8318A	--	<i>N</i> -Methylcarbamates by High Performance Liquid Chromatography (HPLC)

SW-846 METHOD STATUS TABLE (1/05), CONTINUED

Note: The date in parenthesis is the date found at the bottom right-hand corner of the method.

METHOD NUMBER								METHOD TITLE
THIRD ED (9/86)	FINAL UP. I (7/92)	FIN. UP. II (9/94) IIA (8/93) IIB (1/95)	FIN. UP. III (12/96) IIIA (4/98)	FIN. UP. IIIB (11/04)	DRAFT UP. IVA (1/98)	DRAFT UP. IVB (11/00)	OTHER METHODS (e.g., at web site)	
--	--	8321 (Up. II)	8321A (Up. III)	--	8321B	8321B (Replaces IVA version)	--	Solvent-Extractable Nonvolatile Compounds by High Performance Liquid Chromatography/Thermospray/Mass Spectrometry (HPLC/TS/MS) or Ultraviolet (UV) Detection
--	--	--	--	--	--	--	8323 (1/03)	Determination of Organotins by Micro-liquid Chromatography-electrospray Ion Trap Mass Spectrometry
--	--	--	8325 (Up. III)	--	--	--	--	Solvent Extractable Nonvolatile Compounds by High Performance Liquid Chromatography/Particle Beam/Mass Spectrometry (HPLC/PB/MS)
--	--	8330 (Up. II)	--	--	8330A	--	--	Nitroaromatics and Nitramines by High Performance Liquid Chromatography (HPLC)
--	--	8331 (Up. II)	--	--	--	--	--	Tetrazene by Reverse Phase High Performance Liquid Chromatography (HPLC)
--	--	--	8332 (Up. III)	--	--	--	--	Nitroglycerine by High Performance Liquid Chromatography
--	--	8410 (Up. II)	--	--	--	--	--	Gas Chromatography/Fourier Transform Infrared (GC/FT-IR) Spectrometry for Semivolatile Organics: Capillary Column
--	--	--	8430 (Up. III)	--	--	--	--	Analysis of Bis(2-chloroethyl) Ether and Hydrolysis Products by Direct Aqueous Injection GC/FT-IR
--	--	--	8440 (Up. III)	--	--	--	--	Total Recoverable Petroleum Hydrocarbons by Infrared Spectrophotometry

SW-846 METHOD STATUS TABLE (1/05), CONTINUED

Note: The date in parenthesis is the date found at the bottom right-hand corner of the method.

METHOD NUMBER								METHOD TITLE
THIRD ED (9/86)	FINAL UP. I (7/92)	FIN. UP. II (9/94) IIA (8/93) IIB (1/95)	FIN. UP. III (12/96) IIIA (4/98)	FIN. UP. IIIB (11/04)	DRAFT UP. IVA (1/98)	DRAFT UP. IVB (11/00)	OTHER METHODS (e.g., at web site)	
				--		8510	--	Colorimetric Screening Procedure for RDX and HMX in Soil
--	--	--	8515 (Up. III)	--	--	--	--	Colorimetric Screening Method for Trinitrotoluene (TNT) in Soil
--	--	--	8520 (Up. III)	--	--	--	--	Continuous Measurement of Formaldehyde in Ambient Air
--	--	--	--	--	--	8535	--	Screening Procedure for Total Volatile Organic Halides in Water
--	--	--	--	--	--	8540	--	Pentachlorophenol by UV-induced Colorimetry
--	--	--	--	--	9000	--	--	Determination of Water in Waste Materials by Karl Fischer Titration
--	--	--	--	--	9001	--	--	Determination of Water in Waste Materials by Quantitative Calcium Hydride Reaction
9010	9010A	--	9010B (Up. III)	9010C	--	--	--	Total and Amenable Cyanide: Distillation
9012	--	--	9012A (Up. III)	9012B	--	--	--	Total and Amenable Cyanide (Automated Colorimetric, with Off-line Distillation)
--	9013	--	--	--	--	--	9013A (11/04)	Cyanide Extraction Procedure for Solids and Oils
--	--	--	9014 (Up. III)	--	--	--	--	Titrimetric and Manual Spectrophotometric Determinative Methods for Cyanide
--	--	--	--	--	--	--	9015 (11/04)	Metal Cyanide Complexes by Anion Exchange Chromatography and UV Detection

SW-846 METHOD STATUS TABLE (1/05), CONTINUED

Note: The date in parenthesis is the date found at the bottom right-hand corner of the method.

METHOD NUMBER								METHOD TITLE
THIRD ED (9/86)	FINAL UP. I (7/92)	FIN. UP. II (9/94) IIA (8/93) IIB (1/95)	FIN. UP. III (12/96) IIIA (4/98)	FIN. UP. IIIB (11/04)	DRAFT UP. IVA (1/98)	DRAFT UP. IVB (11/00)	OTHER METHODS (e.g., at web site)	
9020	9020A	9020B (Up. II)	--	--	--	--	--	Total Organic Halides (TOX)
--	9021	--	--	--	--	--	--	Purgeable Organic Halides (POX)
9022	--	--	--	--	--	--	--	Total Organic Halides (TOX) by Neutron Activation Analysis
--	--	--	9023 (Up. III)	--	--	--	--	Extractable Organic Halides (EOX) in Solids
9030	9030A	--	9030B (Up. III)	--	--	--	--	Acid-Soluble and Acid-Insoluble Sulfides: Distillation
--	9031	--	--	--	--	--	--	Extractable Sulfides
--	--	--	9034 (Up. III)	--	--	--	--	Titrimetric Procedure for Acid-Soluble and Acid-Insoluble Sulfides
9035	--	--	--	--	--	--	--	Sulfate (Colorimetric, Automated, Chloranilate)
9036	--	--	--	--	--	--	--	Sulfate (Colorimetric, Automated, Methylthymol Blue, AA II)
9038	--	--	--	--	--	--	--	Sulfate (Turbidimetric)
9040	--	9040A (Up. II) 9040B (Up. IIB)	--	9040C	--	--	--	pH Electrometric Measurement
9041	9041A	--	--	--	--	--	--	pH Paper Method

SW-846 METHOD STATUS TABLE (1/05), CONTINUED

Note: The date in parenthesis is the date found at the bottom right-hand corner of the method.

METHOD NUMBER								METHOD TITLE
THIRD ED (9/86)	FINAL UP. I (7/92)	FIN. UP. II (9/94) IIA (8/93) IIB (1/95)	FIN. UP. III (12/96) IIIA (4/98)	FIN. UP. IIIB (11/04)	DRAFT UP. IVA (1/98)	DRAFT UP. IVB (11/00)	OTHER METHODS (e.g., at web site)	
9045	9045A	9045B (Up. II) 9045C (Up. IIB)	--	9045D	--	--	--	Soil and Waste pH
9050	--	--	9050A (Up. III)	--	--	--	--	Specific Conductance
--	--	9056 (Up. II)	--	--	--	9056A	--	Determination of Inorganic Anions by Ion Chromatography
--	--	--	9057 (Up. III)	--	--	--	--	Determination of Chloride from HCl/Cl <sub>2</sub> Emission Sampling Train (Methods 0050 and 0051) by Anion Chromatography
				--		9058	--	Determination of Perchlorate Using Ion Chromatography with Chemical Suppression Conductivity Detection
9060	--	--	--	9060A	--	--	--	Total Organic Carbon
9065	--	--	--	--	--	--	--	Phenolics (Spectrophotometric, Manual 4-AAP with Distillation)
9066	--	--	--	--	--	--	--	Phenolics (Colorimetric, Automated 4-AAP with Distillation)
9067	--	--	--	--	--	--	--	Phenolics (Spectrophotometric, MBTH with Distillation)

SW-846 METHOD STATUS TABLE (1/05), CONTINUED

Note: The date in parenthesis is the date found at the bottom right-hand corner of the method.

METHOD NUMBER								METHOD TITLE
THIRD ED (9/86)	FINAL UP. I (7/92)	FIN. UP. II (9/94) IIA (8/93) IIB (1/95)	FIN. UP. III (12/96) IIIA (4/98)	FIN. UP. IIIB (11/04)	DRAFT UP. IVA (1/98)	DRAFT UP. IVB (11/00)	OTHER METHODS (e.g., at web site)	
9070	--	--	9070 Title and text replaced with referral to Method 1664 (Up. IIIA)	9070A (Suffix and title added)	--	--	--	n-Hexane Extractable Material (HEM) for Aqueous Samples (Method text is a referral to Method 1664: n-Hexane Extractable Material (HEM; Oil and Grease) and Silica Gel Treated n-Hexane Extractable Material (SGT-HEM; Non-polar Material) by Extraction and Gravimetry)
9071	--	9071A (Up. II)	9071B (Up. IIIA)	--	--	--	--	n-Hexane Extractable Material (HEM) for Sludge, Sediment, and Solid Samples
--	--	--	--	--	9074	--	--	Turbidimetric Screening Method for Total Recoverable Petroleum Hydrocarbons in Soil
--	--	9075 (Up. II)	--	--	--	--	--	Test Method for Total Chlorine in New and Used Petroleum Products by X-Ray Fluorescence Spectrometry (XRF)
--	--	9076 (Up. II)	--	--	--	--	--	Test Method for Total Chlorine in New and Used Petroleum Products by Oxidative Combustion and Microcoulometry
--	--	9077 (Up. II)	--	--	--	--	--	Test Methods for Total Chlorine in New and Used Petroleum Products (Field Test Kit Methods)
--	--	--	9078 (Up. III)	--	--	--	--	Screening Test Method for Polychlorinated Biphenyls in Soil
--	--	--	9079 (Up. III)	--	--	--	--	Screening Test Method for Polychlorinated Biphenyls in Transformer Oil

SW-846 METHOD STATUS TABLE (1/05), CONTINUED

Note: The date in parenthesis is the date found at the bottom right-hand corner of the method.

METHOD NUMBER								METHOD TITLE
THIRD ED (9/86)	FINAL UP. I (7/92)	FIN. UP. II (9/94) IIA (8/93) IIB (1/95)	FIN. UP. III (12/96) IIIA (4/98)	FIN. UP. IIIB (11/04)	DRAFT UP. IVA (1/98)	DRAFT UP. IVB (11/00)	OTHER METHODS (e.g., at web site)	
9080	--	--	--	--	--	--	--	Cation-Exchange Capacity of Soils (Ammonium Acetate)
9081	--	--	--	--	--	--	--	Cation-Exchange Capacity of Soils (Sodium Acetate)
9090	9090A	--	--	--	--	--	--	Compatibility Test for Wastes and Membrane Liners
9095	--	--	9095A (Up. III)	9095B	--	--	--	Paint Filter Liquids Test
--	--	9096 (Up. II)	--	--	--	--	--	Liquid Release Test (LRT) Procedure
9100	--	--	--	--	--	--	--	Saturated Hydraulic Conductivity, Saturated Leachate Conductivity, and Intrinsic Permeability
9131	--	--	--	--	--	--	--	Total Coliform: Multiple Tube Fermentation Technique
9132	--	--	--	--	--	--	--	Total Coliform: Membrane-Filter Technique
9200	--	--	Deleted from SW-846 (Up. III)	--	--	--	--	Nitrate
--	--	--	9210 (Up. III)	--	--	9210A	--	Potentiometric Determination of Nitrate in Aqueous Samples with Ion-Selective Electrode
--	--	--	9211 (Up. III)	--	--	--	--	Potentiometric Determination of Bromide in Aqueous Samples with Ion-Selective Electrode

SW-846 METHOD STATUS TABLE (1/05), CONTINUED

Note: The date in parenthesis is the date found at the bottom right-hand corner of the method.

METHOD NUMBER								METHOD TITLE
THIRD ED (9/86)	FINAL UP. I (7/92)	FIN. UP. II (9/94) IIA (8/93) IIB (1/95)	FIN. UP. III (12/96) IIIA (4/98)	FIN. UP. IIIB (11/04)	DRAFT UP. IVA (1/98)	DRAFT UP. IVB (11/00)	OTHER METHODS (e.g., at web site)	
--	--	--	9212 (Up. III)	--	--	--	--	Potentiometric Determination of Chloride in Aqueous Samples with Ion-Selective Electrode
--	--	--	9213 (Up. III)	--	--	--	--	Potentiometric Determination of Cyanide in Aqueous Samples and Distillates with Ion-Selective Electrode
--	--	--	9214 (Up. III)	--	--	--	--	Potentiometric Determination of Fluoride in Aqueous Samples with Ion-Selective Electrode
--	--	--	9215 (Up. III)	--	--	--	--	Potentiometric Determination of Sulfide in Aqueous Samples and Distillates with Ion-Selective Electrode
--	--	--	--	--	9216	--	--	Potentiometric Determination of Nitrite in Aqueous Samples with Ion-Selective Electrode
9250	--	--	--	--	--	--	--	Chloride (Colorimetric, Automated Ferricyanide AAI)
9251	--	--	--	--	--	--	--	Chloride (Colorimetric, Automated Ferricyanide AAI)
9252	--	9252A (Up. II)	Deleted from SW-846 (Up. III)	--	--	--	--	Chloride (Titrimetric, Mercuric Nitrate)
--	--	9253 (Up. II)	--	--	--	--	--	Chloride (Titrimetric, Silver Nitrate)
9310	--	--	--	--	--	--	--	Gross Alpha and Gross Beta
9315	--	--	--	--	--	--	--	Alpha-Emitting Radium Isotopes

SW-846 METHOD STATUS TABLE (1/05), CONTINUED

Note: The date in parenthesis is the date found at the bottom right-hand corner of the method.

METHOD NUMBER								METHOD TITLE
THIRD ED (9/86)	FINAL UP. I (7/92)	FIN. UP. II (9/94) IIA (8/93) IIB (1/95)	FIN. UP. III (12/96) IIIA (4/98)	FIN. UP. IIIB (11/04)	DRAFT UP. IVA (1/98)	DRAFT UP. IVB (11/00)	OTHER METHODS (e.g., at web site)	
9320	--	--	--	--	--	--	--	Radium-228
HCN Test Meth.	HCN Test Meth.	HCN Test Method (Up. II)	HCN Test Method (Up. III)	Deleted from SW-846	--	--	--	Test Method to Determine Hydrogen Cyanide Released from Wastes
H <sub>2</sub> S Test Meth.	H <sub>2</sub> S Test Meth.	H <sub>2</sub> S Test Method (Up. II)	H <sub>2</sub> S Test Method (Up. III)	Deleted from SW-846	--	--	--	Test Method to Determine Hydrogen Sulfide Released from Wastes

## STATUS TABLE FOR SW-846 CHAPTER TEXT AND OTHER DOCUMENTS

Note: The date in parenthesis is the date found at the bottom right hand corner of the document.

TITLE	THIRD ED. (9/86)	FINAL UP. I (7/92)	FIN. UP. II (9/94) IIA (8/93) IIB (1/95)	FINAL UP. III (12/96) IIIA 4/98)	DRAFT UP. IVA	DRAFT UP. IVB	FINAL UP. IIIB	CURRENT FINAL VERSION
Disclaimer	--	✓	--	✓ (Up. III)	--	--	--	Rev 1 (12/96)
Abstract	✓	✓	✓ (Up. II)	--	--	--	--	Rev 2 (9/94)
Table of Contents	✓	✓	✓ (Up. II & IIB)	✓ (Up. III & IIIA)	✓	✓ (Replaces IVA version)	✓	Rev 6 (11/04)
Method Index and Conversion Table	✓	--	--	--	--	--	--	Rev 0 (9/86)
Preface and Overview	✓	--	--	✓ (Up. III)	--	--	--	Rev 1 (12/96)
Acknowledgments	✓	--	--	--	--	--	--	Rev 0 (9/86)
Chapter One -- Quality Control	✓	✓	--	--	--	--	--	Rev 1 (7/92)
Chapter Two -- Choosing the Correct Procedure	✓	✓	✓ (Up. II)	✓ (Up. III)	✓	✓ (Replaces IVA version)	--	Rev 3 (12/96)
Chapter Three -- Inorganic Analytes	✓	✓	✓ (Up. II)	✓ (Up. III)	✓	✓ (Replaces IVA version)	--	Rev 3 (12/96)
Chapter Four -- Organic Analytes	✓	--	✓ (Up. II)	✓ (Up. III)	✓	✓ (Replaces IVA version)	--	Rev 3 (12/96)

TITLE	THIRD ED. (9/86)	FINAL UP. I (7/92)	FIN. UP. II (9/94) IIA (8/93) IIB (1/95)	FINAL UP. III (12/96) IIIA 4/98)	DRAFT UP. IVA	DRAFT UP. IVB	FINAL UP. IIIB	CURRENT FINAL VERSION
Chapter Five -- Miscellaneous Test Methods	✓	--	✓ (Up. II)	✓ (Up. III & IIIA)	✓	✓ (Replaces IVA version)	✓	Rev 4 (11/04)
Chapter Six -- Properties	✓	--	✓ (Up. II & IIB)	✓ (Up. III)	--	✓	✓	Rev 4 (11/04)
Chapter Seven -- Characteristics Introduction and Regulatory Definitions	✓	✓	✓ (Up. II)	✓ (Up. III)	--	--	✓	Rev 4 (11/04)
Chapter Eight --Methods for Determining Characteristics	✓	--	✓ (Up. II)	✓ (Up. III)	--	--	✓	Rev 3 (11/04)
Chapter Nine -- Sampling Plan	✓	--	--	--	--	--	--	Rev 0 (9/86)
Chapter Ten -- Sampling Methods	✓	--	--	✓ (Up. III)	--	✓	--	Rev 2 (12/96)
Chapter Eleven -- Ground Water Monitoring	✓	--	--	--	--	--	--	Rev 0 (9/86)
Chapter Twelve -- Land Treatment Monitoring	✓	--	--	--	--	--	--	Rev 0 (9/86)
Chapter Thirteen -- Incineration	✓	--	--	--	--	--	--	Rev 0 (9/86)
Appendix -- Company References	✓	--	--	--	--	--	--	Rev 0 (9/86)