Letter of Transmittal

November 5, 2008

The Payne Firm, Inc.
Environmental Consultants

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U.S. EPA
77 West Jackson Blvd., LU-9J
Chicago, IL 60604

Via: FedEx-next day

Project No.: 0654.13.05

Attention: Jennifer Dodds

Reference: RCRA 3008(h) Consent Order RCRA-05-2007-0011
Bway Corporation
Cincinnati, Ohio OHD 004 253 225

CONTENTS:

1 Copy QAPP dated October 8, 2008

COMMENTS:

Ms. Dodds,

The Payne Firm, Inc. (Payne Firm) is pleased to submit, on behalf of Bway Corporation (Bway), the attached Quality Assurance Project Plan (QAPP), as requested in your email on September 30, 2008.

BY: Kevin D. Kallini

Kevin D. Kallini, P.G.
Project Manager

cc: Ms. Patty Peterson – Cincinnati Public Library – Anderson Branch

QUALITY ASSURANCE PROJECT PLAN FOR THE BWAY CORPORATION METAL CONTAINER MANUFACTURING FACILITY RCRA CORRECTIVE ACTION

Cincinnati, Ohio

Project No. 0654.13.05

October 8, 2008

Prepared For

BWAY CORPORATION
8200 Broadwell Road
Cincinnati, Ohio

Prepared By

THE PAYNE FIRM, INC.
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LIST OF ACRONYMS

ASL ..... Analytical Support Levels
Bway ..... Bway Corporation
CLP ..... Contract Laboratory Program
DQO ..... Data Quality Objectives
Facility ..... Bway Corporation 8200 Broadwell Road Metal Container Manufacturing Facility
GC ..... Gas Chromatograph
GC/MS ..... Gas Chromatograph/Mass Spectrometer
LCS/LCSD ..... Laboratory Control Sample/Laboratory Control Sample Duplicates
MS ..... Mass Spectrometer
MS/MSD ..... Matrix Spike/Matrix Spike Duplicate
NIST ..... National Institute of Standards and Technology
ppbv ..... Parts Per Billion By Volume
QA ..... Quality Assurance
QAPP ..... Quality Assurance Project Plan
QC ..... Quality Control
RAS ..... Routine Analytical Services
%R ..... Percent Recover
RCRA ..... Resource Conservation and Recovery Act
RPD ..... Relative Percent Difference
RPD ..... Relative Difference
SAP ..... Sampling & Analysis Plan
SOP ..... Standard Operating Procedure
Streamlined Order ..... Streamlined Administrative Order on Consent
SVOC ..... Semi-Volatile Organic Compounds
U.S. EPA ..... United States Environmental Protection Agency
VOC ..... Volatile Organic Compounds

1.0 INTRODUCTION

This Quality Assurance Project Plan (QAPP) presents the organization, objectives, functional activities and specific quality assurance (QA) and quality control (QC) activities associated with the Resource Conservation and Recovery Act (RCRA) Corrective Action to be conducted at the Bway Corporation (Bway) metal container manufacturing facility located at 8200 Broadwell Road, Cincinnati, Ohio (the "Facility") in accordance with the September 13, 2007 Administrative Order on Consent (Streamlined Order) between the United States Environmental Protection Agency Region 5 (U.S. EPA) and Bway.

As required by the Streamlined Order, all sampling and analysis will be performed in accordance with U.S. EPA Region 5 RCRA QAPP Policy (U.S. EPA, 1998). The sampling and analysis procedures and protocols identified in this QAPP are sufficient to identify, characterize, and delineate the nature and extent of all releases at the Facility, and to determine the need for, and design of, any corrective measures for the Facility. A QAPP specific to construction, operation, and maintenance of corrective measures, if needed, will be prepared separately.

The following elements are addressed in this QAPP:

1. **Data Collection**

   It is anticipated that corrective action may involve the collection of soil, ground water, surface water and sediments for geological property testing and/or chemical analysis. The methods and procedures to assess the precision, accuracy and completeness of the measurement data are provided in Sections 4.0 and 13.0 of this QAPP.

   The rationale used to assure that the data accurately and precisely represent a characteristic of a population, variation of physical or chemical parameters, a process condition or an environmental condition, are provided in Section 2.0 of this QAPP.

   The description of the measures to quantitatively and qualitatively compare data sets is found in Section 4.0. The data to be collected during the sampling effort is expected to be quantitatively comparable to the data collected by Bway in previous investigations and remedial actions at the Facility described in the Current Conditions Report (Payne, 2007). The data collection effort will address the requirements set forth in the RCRA Corrective Action Order.

   The details relating to the schedule and information to be provided in quality assurance reports are provided in Section 15.0.

2. Sample Analysis

Specific information concerning chain-of-custody and sample storage procedures, sample preparation and analytical procedures, calibrative procedures, data reduction, validation and reporting, internal quality control checks, audits, preventive maintenance, and corrective actions are provided in Sections 6.0, 7.0, 8.0, 9.0, 10.0, 11.0, 12.0, and 14.0, respectively. The data will be reported in the format provided in Section 10.0 of this QAPP. Field and laboratory data and assessment of results will be presented in tabular and graphical formats.

2.0 PROJECT DESCRIPTION

2.1 Project Description

The Facility is located approximately five (5) miles east of Cincinnati, Ohio and about one-quarter mile south of the Little Miami River (Figure 1). The site on which the Facility is located was farmland until Baldwin Piano purchased the land and built a single manufacturing building in 1952 (Payne, 2007). Baldwin Piano manufactured pianos on the Facility until 1958 when it was sold to Heekin Can. Heekin Can cut, coated, printed, and assembled three piece cans on the property, and during the 1960s, constructed several additions to the original building. Starting in 1973, Heekin Can added two-piece can manufacturing operations using a drawn and iron process (D&I). This process was subsequently discontinued in 1989, but Heekin Can continued to operate its three piece can manufacturing process on the property until it was acquired by Ball in March 1993. Ball sold the property to Milton Can, a division of Bway, in 1996. Bway continues to manufacture three-piece steel cans at the Facility (Figure 2).

The U.S. EPA ID for Facility is OHD 004 253 225. On behalf of the U.S. EPA, A.T. Kearney, Inc. (Kearney) conducted a PA/VSI of the Facility in 1989. The PA was conducted on June 28, 1989 and the VSI was conducted on July 11, 1989. U.S. EPA requested that Kearney conduct those investigations to identify potential releases from SWMUs and other AOCs (U.S. EPA, 1989) located at the Facility. Based on information gathered during the PA/VSI, U.S. EPA and Kearney identified twenty-three (23) SWMUs and one AOC at the Facility.

Historical operations at the Facility have influenced key areas on the property with regard to waste management practices (Payne, 2007). An area east of the Facility was excavated as a gravel pit as early as 1938 and was later used as a disposal area for various waste streams within the Facility. This debris area is identified as an AOI. Former treated process wastewater from the D&I operation was discharged into an off-property gravel pit to the north from approximately 1973 to 1987. The sewer line that transported this treated wastewater is identified as an AOI. Outdoor drum storage (empty, chemical product, and waste) was a waste management practice started in the early 1960s that was discontinued no later than 2001, according to the Facility representative. These areas comprise several SWMUs and one AOC.

The Current Conditions Report (Payne, 2007) describes the current conditions at all SWMUs and AOCs identified in the PA/VSI, and discusses any other past or present locations at the Facility for which Bway has information relating to past treatment, storage, or disposal of hazardous waste or hazardous constituents. It also incorporates a summary and analysis of existing data available with regard to previous investigations and remedial actions at the Facility to identify areas on and off the property on which the Facility is located where additional investigations are recommended.

Chemical constituents detected most frequently in soil beneath the Facility include volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and total metals. Chemical constituents detected most frequently in ground water beneath the Facility include total metals and one VOC (Trichloroethene) from an off-site source.

In accordance with the Streamlined Order, Bway will perform an investigation to identify the nature and extent of any releases of hazardous waste and hazardous constituents at or from the Facility which may pose an unacceptable risk to human health and the environment (U.S. EPA, 2007). The three primary objectives of the Streamlined Order are to: 1) demonstrate that the migration of contaminated ground water at or from the Facility is stabilized; 2) demonstrate that all current human exposures to contamination at or from the Facility are under control; and 3) propose to U.S. EPA final corrective measures necessary to protect human health and the environment from all current and future unacceptable risks due to releases of hazardous waste and hazardous constituents at or from the Facility.

These objectives will be accomplished by conducting an RCRA Facility investigation (RFI), implementing additional interim measures (if appropriate), evaluating risks to human health and the environment using the data collected during the previous investigations and the RFI, and developing and evaluating a range of potential corrective measures for the Facility (if warranted). The results and progress of these activities will be documented by Bway in various reports during the corrective action process. The reports required by the Streamlined Order include:

- Current Conditions Report
- Quarterly progress reports
- Environmental Indicator CA725 Report – Current Human Exposures Under Control
- Environmental Indicator CA750 Report – Migration of Contaminated Ground Water Under Control
- Final Corrective Measures Proposal (Final CMP)
- Final Remedy Construction Completion Report

2.2 Project Objectives

The overall objective of the Streamlined Order is for Bway to investigate, and as necessary, stabilize and remediate releases of hazardous waste or hazardous constituents at or from the Facility. To date, Bway has completed several activities to identify the nature and extent of releases of hazardous waste and hazardous constituents at and from the Facility, and several interim measures, as discussed above.

- Determine Site-wide hydrogeologic conditions, as necessary, to investigate potential releases from AOIs, AOCs and SWMUs;

- Determine whether a release of hazardous constituents to environmental media has occurred at AOIs, AOCs or SWMUs;

- Characterize the nature and extent of releases of hazardous constituents in or from the Site;

- Characterize actual and potential migration pathways, actual and potential human and environmental receptors, and current and reasonably expected future land and ground water uses;

- Assess potential risk to human health and the environment associated with releases of hazardous constituents;

- Provide sufficient data to support a demonstration that current human exposures to contamination above risk-based screening levels are under control (CA725), and that the migration of ground water contaminated above appropriate screening levels is stabilized for the RCRA corrective action environmental indicators determination (CA750);

- Determine whether interim measures are necessary to control current unacceptable risks, if any, to human health or the environment, or to control migration of contaminated ground water; and

- Determine whether a corrective measures evaluation is necessary to mitigate current and future unacceptable risks, if any, to human health and the environment.

2.3 Data Quality Objectives

Data quality objectives (DQOs) are qualitative and quantitative statements which specify the quality of the data required to support decisions made during investigation activities and are based on the end uses of the data to be collected. As such, different data uses may require different levels of data quality. There are five analytical levels (defined below) which address various data uses and the QA/QC effort and methods required to achieve the desired level of quality.

DQOs for the project have been established in accordance with the U.S. EPA guidance documents, which ensure that the database developed during the facility investigation activities meets the objectives and quality necessary for its intended use (U.S. EPA 1987; 1991; 1996a; 1998a; 1998b; 2000a; 2000b; 2006). The DQOs for the project are shown on Table 1.

DQOs can be classified for the measurement data by defining the level of analytical support assigned to each type of data measurement.

The following defines the different DQO analytical support levels (ASL).

i. ASL I – Field screening or analysis using portable instruments.

ii. ASL II – Field screening analyses using more sophisticated portable analytical instruments.

iii. ASL III – All analyses performed in off-Facility analytical laboratories using U.S. EPA procedures other than the Contract Laboratory Program (CLP) Routine Analytical Services (RAS).

iv. ASL IV – CLP-RAS performed in a CLP analytical laboratory using CLP procedures.

v. Level V – Non-standard analytical methods performed in an off-Facility laboratory (e.g. geological property analyses).

The level of DQO analytical support for each group of media and parameters is presented in Table 2. The level of analytical support have been chosen to provide data quality that is consistent with the end use of data, primarily to characterize the nature and extent of contamination at the facility and to perform a human health and ecological risk assessment, determine contaminant fate and transport, and to perform a corrective measures study of remedial alternatives.

A Data Quality Objective Summary Form will be prepared prior to each sampling event. A completed form for the first phase of the project is depicted in Appendix I. The purpose of this form is to integrate the DQO process into the planning phase of the RCRA Corrective Action. Subsequent forms will be approved by The Payne Firm, Inc.'s (Payne Firm) project manager and placed in the project files.

2.4 Target Parameter List and Screening Levels

The target parameter list initially consists of 40 CFR Appendix IX List volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs); Appendix IX metals and General Chemistry parameters. The specific laboratory methods needed to analyze for these constituents are presented in Section 8.0. As the investigation is being conducted and additional analytical data are generated, it may be appropriate to remove certain chemical groups or specific analytes from the sampling list. Bway will use appropriate risk-based screening levels to determine if further investigation is required.

3.0 PROJECT ORGANIZATION AND RESPONSIBILITY

The Payne Firm, and their sub-consultants, will have responsibility for data collection during the RFI phase of the RCRA Corrective Action that are not related to construction of potential corrective measures (e.g. data collected for the nature and extent of contamination, EI purposes, evaluation and design of corrective measures, and operations and maintenance of on-going interim measures). All samples collected for chemical analysis will be transported to TestAmerica Laboratories (TestAmerica) in North Canton, Ohio or Columbia Laboratories in Kelso, Washington. Chain-of-custody documentation will be maintained during this process as described in Section 6.0. Samples collected for geological property analyses will be shipped directly to TestAmerica or Bowser-Morner, Inc., in Dayton, Ohio. The Payne Firm will maintain a file copy of all laboratory deliverables. All final project deliverables will be issued by the Payne Firm.

Individuals within the Payne Firm and TestAmerica that are responsible for implementing the QAPP are presented below.

Kevin D. Kallini, P.G. – Project Manager – Payne Firm

- Management of project team
- Review and approval of data validation reports
- Approval of QAPP amendments and revisions
- Review and approval of Field Task Statement of Works

Mathew D. Birck – Project Field Coordinator – Payne Firm

- Management of field activities and field QA/QC
- Management of laboratory activities and analyses
- Analytical database management
- Data review assessment and management
- Review of data validation reports
- Technical representation of project activities
- Project file custodian
- Preparation of Field Task Statement of Works
- Quality Assurance Officer
- Field Safety Officer

Curtis S. Kugler – Data Validation Coordinator – Payne Firm

- Data validation and assessment
- Advise on data corrective action procedures
- Preparation and review of data validation reports
- QA/QC representation of project activities

Dorothy Leeson – Laboratory QA Manager – TestAmerica Laboratories (North Canton, Ohio)

- Overview of laboratory quality assurance.
- Overview QA/QC documentation.

The Payne Firm Project Manager has the primary responsibility for project quality. Independent quality assurance will be provided by the laboratories' Project Managers and QA Officers prior to release of all data to the Payne Firm. The U.S. EPA Site Coordinator will be responsible for overview of this project.

During sampling phases of the project, telephone and e-mail contact between the field sampling personnel and the laboratory subcontractors will occur as needed. The laboratories will provide status updates by means of preliminary data telefacsimiles or electronic e-mail. Should unexpected delays or other problems with the laboratory analyses occur, the laboratory project manager will communicate directly to the Payne Firm's Project Field Coordinator and/or Project Manager for resolution.

4.0 QUALITY ASSURANCE OBJECTIVES FOR MEASUREMENT DATA

The overall quality assurance (QA) objective is to develop and implement procedures for field sampling, chain-of-custody, laboratory analyses and reporting that will provide data of known quality. Specific procedures for sampling, chain-of-custody, laboratory instrument calibration, laboratory analysis, reporting of data, internal quality control, audits, routine maintenance of field equipment and corrective action are described in other sections of this QAPP. The purpose of this section is to address the specific objectives for accuracy, precision, completeness, representativeness and comparability for the RCRA Corrective Action.

4.1 Level of Effort

Field blank, trip blank, field equipment rinse, field duplicate and matrix spike samples will be analyzed to assess the quality of the data resulting from the field sampling program. Field and trip blanks consist of analyte-free water and will be submitted to the analytical laboratory to provide the means to assess the quality of the data resulting from the field sampling program. Field blank samples are analyzed to check for procedural contamination at the Facility, which may cause sample contamination. Trip blanks are used to assess the potential for contamination of samples due to contaminant migration during sample shipment and storage. Field equipment rinse samples are analyzed to check that equipment decontamination procedures are adequate. Field duplicate samples are analyzed to check for sampling and analytical precision. Matrix spikes provide information about the effect of the sample matrix on the preparation and measurement methodology. All matrix spikes are performed in duplicate. One matrix spike/matrix spike duplicate (MS/MSD) will be collected for every 20 or fewer investigative samples.

The general level of the Quality Control (QC) effort will consist of one field duplicate, one field equipment rinse, and one field blank per 20 investigative samples with a minimum of one field blank per sampling event. One VOC trip blank sample will be prepared by the laboratory and will be included along with each shipment of aqueous VOC samples. VOC trip blanks will be preserved by the laboratory in the same manner as the investigative samples.

MS/MSD samples are investigative samples. MS/MSD water samples must be collected at triple volume for VOC and double the volume for extractable organics. No additional volume is required for solid samples. The number of duplicate and field blank samples to be collected will be provided on a Data Quality Summary Form as shown in Appendix I. A new form will be prepared for each phase of sampling.

4.2 Accuracy, Precision and Sensitivity of Analyses

The fundamental QA objective with respect to accuracy, precision, and sensitivity of laboratory analytical data is to achieve the QC acceptance criteria of the analytical protocols.

Accuracy will be determined by assessing the percent recoveries of matrix spike samples and QC check samples. Precision will be determined by assessing the relative difference (RPD) determined from the percent recoveries of MS/MSD samples. The equations for determining percent recovery and RPD are presented in Section 13.0.

The targeted quantitation limits, as presented in Table 4, represent the level of sensitivity for the analyses. The units of measure for soil/sediment and water samples will be mg/kg or ug/kg and mg/L or ug/L, respectively. The units of measure for air samples will be parts per billion by volume (ppbv). The units of measure for geological property testing will be consistent with the referenced methods.

Table 4 also presents the accuracy and precision requirements for the analyses in terms of MS/MSD recovery and RPD control limits and surrogate compound control limits.

4.3 Completeness, Representativeness, and Comparability

Completeness is a measure of the amount of valid data obtained from a measurement system compared to the amount that was expected to be obtained under normal conditions. It is expected that the project laboratory will provide data meeting QC acceptance criteria for 90 percent or more of all samples tested using the specified methods.

Following completion of the analytical testing, the percent completeness will be determined by the following equation:

$$\text{Percent Completeness} = \frac{\text{Valid (usable) Data Obtained}}{\text{Total Data Planned}} \times 100$$

The completeness goal for the investigation will be 90 percent or greater.

Representativeness expresses the degree to which data accurately and precisely represent a characteristic of a population, parameter variation at a sampling point, process condition or an environmental condition. Representativeness is a qualitative parameter which is dependent upon the proper design and implementation of the sampling program and the proper laboratory analysis. The sampling network will be designed to provide data that is representative of Facility conditions. During development of this network, consideration will be given to Facility operations, existing analytical data, and physical setting.

5.0 SAMPLING PROCEDURES

Prior to each sampling event or sampling phase, the Project Field Coordinator will have the responsibility of preparing a Field Task Sampling & Analysis Plan (SAP). The Field Task SAP will detail the field work activities that will be completed by the field team, including at a minimum:

- Sampling objectives and purpose
- Sample locations
- Sample numbering and labeling
- Pertinent SOPs to follow
- QA/QC samples
- Any special holding time requirements
- Any task-specific QAPP or QA/QC procedures to follow

Required sampling containers, sample preservation methods, maximum holding times, collection instructions, and sample preparation methods are to be identified in the SAP. Presented on Table 6 is a list of the site-specific SOPs that may be used for field sampling and related activities. The listed SOPs are presented in detail in Appendix II.

The Field Task SAP will be reviewed and approved by the Project Manager. Prior to the sampling event or sampling phase, the Project Manager will meet with the Field Team to review the Field Task SAP. Completed Field Task SAPs will be retained in Appendix IV of the QAPP and electronically in the project's network file.

6.0 SAMPLE CUSTODY AND DOCUMENT CONTROL

The chain-of-custody protocols can be segregated into three parts: 1) Sample collection; 2) laboratory analysis; and 3) project files. Project files, including all originals of laboratory reports, are maintained under document control in a secure area.

A sample or project file is under your custody if it:

i. Is in your possession;
ii. Is in your view, after being in your possession;
iii. Is in your possession and you place them in a secured location; or
iv. Is in a designated secure area.

6.1 Field Chain-of-Custody Procedures

The sample packaging and shipment procedures summarized below will ensure that the samples will arrive at the laboratory with the chain-of-custody intact.

6.1.1 Field Procedures

- The field sampler is personally responsible for the care and custody of the samples until they are transferred or properly dispatched. As few people as possible should handle the samples.
- All bottles will be labeled with unique sample numbers.
- Sample labels are to be completed for each sample using waterproof ink unless prohibited by weather conditions.

6.1.2 Field Logbooks/Documentation

A field logbook will provide the means of recording data collecting activities performed. As such, entries will be described in as much detail as possible so that persons going to the Facility could reconstruct a particular situation without reliance on memory. The use of field notebooks is described in SOP 1-1.

6.1.3 Transfer of Custody and Shipment Procedures

Field chain-of-custody procedures are provided in SOP 1-3. Example chain-of-custody documents and shipping labels are also provided in the SOP.

6.2 Laboratory Chain-of-Custody Procedures

The sample custodian will assign a unique number to each incoming sample for use in the laboratory. The unique number and customer number will then be entered into the sample receiving log. The laboratory date of receipt will also be recorded.

Laboratory custody procedures and document control for those samples analyzed by the project laboratory will be carried out using the laboratory's SOPs (Appendix III).

6.3 Storage of Samples

After the sample custodian has prepared the log book, the chain-of-custody will be checked to ensure that all samples are stored in the appropriate location(s). All samples will be stored within an access-controlled location and will be maintained properly preserved until completion of all analytical work or, at a minimum, for at least 30 days after receipt of the final report, or as specified in the laboratory's SOPs (Appendix III).

6.4 Project Files

Files for the entire project will be maintained by the Payne Firm and their sub-consultants and will consist of the following:

i. Project plan;
ii. Project log books;
iii. Field data records;
iv. Sample identification documents;
v. Chain-of-custody records;
vi. Correspondence;
vii. References, literature;
viii. Final data packages (electronic and/or paper copy);
ix. Miscellaneous – phone notes, maps, drawings, etc.; and
x. Final data validation report (electronic and/or paper copy).

Project file materials will be the responsibility of the file custodian (Payne Firm's Project Field Coordinator) with respect to maintenance and document removal and will be stored in a secured, access-controlled area.

The project laboratory will be responsible for maintaining analytical log books and laboratory data. Raw electronic laboratory data files will be inventoried and maintained by the laboratories for a period of at least five years, at which time the laboratories will notify the Payne Firm regarding the need for additional storage. Each laboratory's document control personnel will be responsible for document control.

7.0 CALIBRATION PROCEDURES AND FREQUENCY

This section describes procedures for maintaining the accuracy for all the instruments and measurement equipment which will be used for conducting field tests and laboratory analyses. These instruments and equipment will be calibrated prior to each use or according to a periodic schedule.

7.1 Field Instruments/Equipment

Instruments and equipment used to gather, generate, or measure environmental data will be calibrated with sufficient frequency and in such a manner that accuracy and reproducibility of results are consistent with the manufacturer's specification and QAPP requirements noted herein.

Field instrument calibration procedures are provided in each specific instrument SOP.

7.2 Laboratory Instruments

Calibration of laboratory equipment will be based on the project laboratory's SOPs (Appendix III). Records of calibration, repairs, or replacement will be filed and maintained by the designated laboratory personnel performing quality control activities. These records will be filed at the location where the work is performed and will be subject to QA audit. For all instruments, the laboratory will maintain an adequately trained repair staff with in-house spare parts or will maintain service contracts with vendors.

The records of calibration will typically be kept as follows:

1. If possible, each instrument will have a record of calibration permanently affixed with an assigned record number.
2. A label will be affixed to each instrument or a notebook available showing description, manufacturer, model numbers, date of last calibration and by whom calibrated (signature), due date of next calibration, where appropriate, and compensation or correction figures, as appropriate.
3. A written calibration procedure will be available for each piece of test and measurement equipment.
4. Any instrument that is not calibrated within the manufacturer's original specification will display an appropriate warning tag.

All standard materials will be traceable to U.S. EPA or National Institute of Standards and Technology (NIST) reference standards, if available. Each calibration standard will receive a reference number that is traceable to the lot number of the reference standard from which it was prepared.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

APR 0 5 2007

REPLY TO THE ATTENTION OF: DE-9J

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

OHD004253225
BWAY PACKAGING
8200 BROADWELL ROAD
CINCINNATI, OH 45244

RE: OHD004253225
BWAY PACKAGING

Dear Plant Manager/President:

The Ohio Environmental Protection Agency (OEPA) and the United States Environmental Protection Agency (U.S. EPA) have compiled a list of all facilities deemed appropriate and important to address using the Resource Conservation and Recovery Act's (RCRA) Corrective Action Program. Because this set of 3,880 facilities has national remediation goals which will culminate in the year 2020, it is referred to as the 2020 Corrective Action Universe. **Your facility is part of this 2020 Universe.**

As a result, the OEPA and U.S. EPA expect that a final remedy will be in place (i.e. remedy construction completed) at your facility by 2020 (although actual attainment of cleanup goals through remedy implementation may take a while longer). If we have not already done so, we will be working with you to develop a plan and a schedule that achieves this goal before 2020.

Your facility has been included in the 2020 Universe because ***one or more of the following is true:***

- It already belongs to the 2008 Corrective Action Baseline,
- It has a RCRA permit obligation,
- OEPA and U.S. EPA agreed that it needs to be addressed under the RCRA Corrective Action Program.

Inclusion on this list does not imply failure on your part to meet any legal obligation, nor should it be construed as an adverse action against you. It only means that OEPA and U.S. EPA have identified your facility—and every other facility in the 2020 Universe—as needing to complete RCRA Corrective Action if they have not done so already. Our national program goal is to largely address these cleanup obligations before the end of 2020. Accordingly, progress will be tracked for each facility in the 2020 Universe. The list of facilities will be posted on our web site at http://www.epa.gov/correctiveaction on April 16, 2007.

U.S. EPA Region 5 will work to address remediation concerns at your facility in a manner consistent with your plans for the property. If you believe that facility-wide corrective actions are already complete for your site, or if you have any questions regarding this letter, please contact Jennifer Dodds at (312) 886-1484.

Sincerely,

Jose G. Cisneros, Chief
Waste Management Branch

In addition to the above, specific calibration procedures are detailed in the laboratory-specific SOPs, which are available at anytime to the Payne Firm, if needed. A summary of calibration procedures and acceptance criteria is provided on Table 5. Failure of instrument calibration to meet the acceptance criteria will result in instrument recalibration.

8.0 ANALYTICAL PROCEDURES

The samples collected for chemical analyses will be analyzed using the methods listed in Table 4. Laboratory-specific SOPs for the methods are presented in Appendix III.

Geotechnical engineering and waste characterization laboratory analyses will be performed using the standard methods also presented in Table 4.

9.0 INTERNAL QUALITY CONTROL

This section presents the internal quality control checks and frequency procedures which will be employed for field and laboratory measurements.

9.1 Field QC

Quality control procedures for field measurements will be limited to checking the reproducibility of the measurement in the field by obtaining multiple readings and by calibrating the instruments as specified in the Field SOPs provided in Appendix II.

Additional field QC procedures include: collecting field duplicate samples to determine the overall precision of the sampling event; collecting field blanks to determine bias of samples due to field conditions; collecting field equipment rinse samples to ensure that the sampling and equipment decontamination procedures are consistent with the SOPs; and the sample preservation, packaging, and shipping procedures are consistent with this QAPP.

9.2 Laboratory QC

Specific procedures related to internal laboratory QC samples (i.e. matrix spikes, surrogate spikes, blanks, QC check samples and matrix spike duplicates) are detailed in the following subsections.

The internal QC checks for the analytical parameters will follow the appropriate methods specified in Table 4 and the laboratory's SOPs presented in Appendix III.

9.2.1 Initial and Continuing Calibration Checks

The compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable quantitative data. The initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an analysis run. The continuing calibration checks document that the initial calibration is still valid. Also documented is the satisfactory maintenance and adjustment of the instrument on a day-to-day basis. The specific control criteria and corrective action requirements for these calibrations will be as specified by the respective methods presented in Table 4 and the applicable SOPs in Appendix III.

9.2.2 Internal Standards Performance

The internal standards performance criteria ensure that gas chromatograph/mass spectrometer (GC/MS) sensitivity and response is stable during every run. Acceptance criteria are as specified by the referenced methods and the SOPs in Appendix III.

9.2.3 Method Blank Samples

A method blank sample will be analyzed by the laboratory at a frequency of one blank per twenty sample analyses or, in the event that an analytical round consists of less than twenty samples, one method blank sample will be analyzed. The method blank sample, an aliquot of analyte-free water or suitable solid material (sodium, sulfate, Ottawa sand) will be carried through the entire analytical procedure.

9.2.4 Matrix Spike/Matrix Spike Duplicates

A MS/MSD sample set will be analyzed at a minimum frequency of one per twenty investigative water samples. A matrix spike sample will be analyzed at a minimum frequency of one per twenty investigative soil samples. Percent spike recoveries will be used to evaluate analytical accuracy while the relative percent difference between the spike and duplicate will be used to assess analytical precision. For air samples, laboratory control sample/laboratory control sample duplicates (LCS/LCSD) will be substituted for MS/MSD samples.

9.2.5 Surrogates

Surrogates are used in all GC and GC/MS analyses. Every blank, standard, and environmental sample including MS/MSD samples will be spiked with surrogate compounds prior to purging volatiles or extracting semi-volatiles.

Surrogates will be spiked into samples according to the appropriate analytical methods. Surrogate spike recoveries will fall within the control limits specified by the method for all analyte concentrations that are within the quantitation limits without dilution. Dilution of samples to bring the analyte concentration into the linear range of calibration may dilute the surrogates out of the quantitation limit; assessment of analytical accuracy in these cases will be based on the quality control information embodied by the check, matrix spike and matrix spike duplicate samples.

9.2.6 Calibration Standards

All primary standard materials will be traceable to U.S. EPA or NIST reference standards, if possible. Each calibration standard will receive a reference number that is traceable to the lot number from the primary reference standard from which it was prepared. The procedures for preparing calibration standards are contained within the applicable SOPs in Appendix III.

9.2.7 Reagent Checks

Reagents prepared for instrumental methods of analysis will be monitored by method blank samples and QC check samples, where appropriate.

9.2.8 QC Check Samples

QC check samples will be analyzed to determine the accuracy of the analytical methods. QC check samples are generally prepared from standards that are from a different source than the calibration standards or are standard reference materials. The percent recoveries will be calculated and compared to the acceptance criteria in the SOPs in Appendix III.

10.0 DATA REDUCTION, VALIDATION AND REPORTING

The project laboratory will perform analytical data reduction and review in-house under the direction of the laboratory QA officer. The laboratory QA officer will be responsible for assessing data quality and advising of any data which were rated "preliminary" or "unacceptable" or other qualifications based on the established QC criteria. The project laboratory will provide analytical support Level (ASL) IV "CLP-like" deliverables. At a minimum, one complete "CLP-like" data package will be delivered. Data reduction, review and reporting by the laboratory is typically conducted as outlined in the following procedure. However, the laboratory may perform data reduction, review and reporting in a slightly different manner.

1. Raw data produced and checked by the responsible analyst is turned over for independent review by another analyst.

2. The area supervisor reviews the data for attainment of quality control criteria established by the QAPP.

3. The area supervisor will decide whether any sample re-analysis is required.

4. Upon completion of all review and acceptance of the raw data by the supervisor, a report will be generated and sent to the laboratory Project Manager.

5. The laboratory Project Manager will complete a thorough inspection of all reports.

6. Upon acceptance of the preliminary reports by the Project Manager, final reports will be generated and signed by the laboratory manager or his designee.

7. A thorough review is performed for all data packages by the Laboratory Quality Assurance Officer, or his designee.

Field data from direct-reading instruments (pH, conductance, turbidity, temperature) will not require reduction. Laboratory data reduction will be performed using the equations in the SOPs provided in Appendix III and the ASTM Standards applied to chemical and geotechnical engineering laboratory analyses, respectively.

The Payne Firm's Data Validation Coordinator will conduct an evaluation of data reduction and reporting by the laboratory. These evaluations will consider the finished data sheets, field blank data and recovery data for surrogate and matrix spikes. The material will be checked for legibility, completeness,

correctness and the presence of requisite dates, initials, and signatures. The results of these checks will be assessed and reported to the Project Manager and the Project Field Coordinator noting any discrepancies and their effect upon the acceptability of the data. All information garnered for QA/QC checks will be discussed in the Data Validation report. The Project Manager will review and approve all validation reports following review by the Project Field Coordinator. The reports will be retained in the QAPP and electronically in the project's network file.

Validation of the analytical data will be performed by the Data Validation Coordinator based on the evaluation criteria outlined in the National Functional Guidelines for Organic and Inorganic Data Review (U.S. EPA, 1999). The assessment of analytical field data will include checks for adherence to laboratory QA procedures and accuracy and precision criteria and also the presence of transmittal errors and anomalously high or low parameter values. The results of these data validations will be reported to the Project Manager and Project Field Coordinator, noting any problems and the effect upon the acceptability of the data. The manner in which the analytical data will be handled by the Payne Firm once it is received from the project laboratory is presented in Appendix V.

Data produced from field measurements and sample collection activities that are used in the project reports will be appropriately identified and appended to the report. Where data have been reduced or summarized, the method of reduction will be documented in the report. In addition, field data will be audited by the Project Field Coordinator for anomalously high or low values that may appear to be inconsistent with other data.

The Data Validation Coordinator will review items listed on the Data Validation Checklist, which is presented in Appendix VI. In addition, the overall completeness of the data package deliverable will be evaluated. One-hundred percent of the analytical data will be validated.

Laboratory data packages for chemical analyses will consist of ASL IV deliverables. The package shall include, at a minimum, the following:

1. Case Narrative

   i. Data of issuance
   ii. Laboratory analysis performed
   iii. Any deviations from intended analytical strategy
   iv. Laboratory batch number
   v. Numbers of samples and respective matrices
   vi. QC procedures utilized and also references to the acceptance criteria
   vii. Laboratory report contents

viii. Project name and number
ix. Condition of samples "as-received"
x. Discussion of whether or not sample holding times were met
xi. Discussion of technical problems or other observations which may have created analytical difficulties
xii. Discussion of any laboratory QC checks which failed to meet project criteria
xiii. Signature of Laboratory QA Manager

2. Chemistry Data Package

i. Case narrative for each analyzed batch of samples
ii. Summary page indicating dates of analyses for samples and laboratory QC checks
iii. Cross referencing of laboratory sample to project sample identification numbers
iv. Description of data qualifiers to be used
v. Sample preparation and analyses for samples
vi. Sample results
vii. Raw data for sample results and laboratory QC samples
viii. Results of (dated) initial and continuing calibration checks, and GC/MS turning results
ix. MS/MSD recoveries, laboratory control samples, method blank results, calibration check compounds, and system performance check compound results
x. Labeled (and dated) chromatograms/spectra of sample results and laboratory QC checks
xi. Results of tentatively identified compounds

Data packages for geological property analyses will present the data in tabular format with graphical displays for grain size distributions.

The data packages will be stored with the project files as described in Section 6.0. Modeling of data for graphical displays such as concentration isopleth, ground water contours, and air emission modeling may be performed using validated data.

All laboratory reports, data, chain-of-custody forms, laboratory QA/QC summaries, photographs, field notes, and other information produced during the corrective action will be submitted to the U.S. EPA. The information will be attached to quarterly progress reports required by the Streamlined Order (prepared by the 15th day of the month following each quarter), or under a separate cover.

11.0 PERFORMANCE AND SYSTEM AUDITS

Performance and system audits of both field and laboratory activities may be conducted to verify that sampling and analysis are performed in accordance with the procedures established in Section 5.0. Performance audits consist of sending performance evaluation samples to the laboratories for analysis and evaluation while system audits determine whether the requirements of the QAPP are being followed. The audits of field and laboratory activities include two separate, independent parts, internal and external audits.

11.1 Field Audits

Internal audits of field activities (sampling and measurements) may be conducted by the Payne Firm's Project Field Coordinator. The audits will include examination of field sampling records, field instrument operating records, sample collection, handling and packaging in compliance with the established procedures, maintenance of QA procedures, chain-of-custody, etc. These audits will be conducted to verify that QA procedures are maintained throughout the investigation and to correct deficiencies, if identified. The audits will involve review of field measurement records, instrumentation calibration records and sample documentation.

At the request of the U.S. EPA, Bway and the Payne Firm will provide or allow a U.S. EPA representative to take split or duplicate samples of any samples collected on Bway's behalf under the Streamlined Order (U.S. EPA, 2007).

11.2 Laboratory Audits

The internal performance and system audits of the project laboratory may be conducted by the Payne Firm's Data Validation Coordinator. The system audits, which may be conducted prior to project commencement and as necessary thereafter based on the results of performance evaluation samples routinely analyzed by the laboratory and will include examination of laboratory documentation of sample receipt, sample log-in, sample storage, chain-of-custody procedures, sample preparation and analysis, instrument operating records, etc. Blind QC samples may be prepared and submitted along with project samples to the laboratory for analysis throughout the project. The laboratory QC officer will evaluate the analytical results of these blind performance samples to ensure the laboratory maintains acceptable performance.

The U.S. EPA may audit the project laboratory, or require Bway to purchase and have analyzed Performance Evaluation samples selected by the U.S. EPA for compounds of concern (U.S. EPA, 2007).

12.0 PREVENTIVE MAINTENANCE

All analytical instruments to be used by the project laboratory will be serviced by the laboratory personnel at regularly-scheduled intervals in accordance with the manufacturer's recommendations. Instruments may also be serviced at other times due to failure. Requisite servicing beyond the abilities of the laboratory personnel will be performed by the equipment manufacturer or its designated representative(s).

Daily checks of each instrument will be completed by the laboratory analyst who has been assigned responsibility for that instrument. This will include changing GC inlet liners, tuning GC/MS, checking operation of data systems, checking for leaks, etc. Manufacturer's recommended procedures will be followed in every case. All maintenance will be recorded in a bound logbook kept with each instrument.

13.0 SPECIFIC ROUTINE PROCEDURS USED TO ASSESS DATA PRECISION, ACCURACY, AND COMPLETENESS

The following sections include the procedures and formulae utilized to assess the levels of precision, accuracy, and completeness achieved during the associated sample analyses.

13.1 Field Measurements

Field data will be assessed by the Project Field Coordinator who will review the field results for compliance with the established QC criteria that are specified in the QAPP. The accuracy of field measurements will be assessed using daily instrument calibration, calibration check, and blank data. Precision will be assessed on the basis of the reproducibility of multiple readings of a single sample. Data completeness will be calculated using the following equation:

$$\text{Percent Completeness} = \frac{\text{Valid (usable) Data Obtained}}{\text{Total Data Planned}} \times 100$$

The required minimum level of completeness will be 90 percent.

13.2 Laboratory Data

Laboratory results will be assessed for compliance with required precision, accuracy, completeness, and sensitivity as follows:

13.2.1 Precision

The precision of laboratory analysis will be assessed by comparing the analytical results between MS/MSD for organic analysis. The relative percent difference (RPD) will be calculated for each pair of duplicate analysis using the equation below:

$$\text{RPD} = \frac{S - D}{(S + D)/2} \times 100$$

Where:
S = First sample value (original or matrix spike value)
D = Second sample value (duplicate or matrix spike duplicate value)

13.2.2 Accuracy

The accuracy of laboratory results will be assessed for compliance with the established QC criteria that are described in Section 4.0 and 9.0 of the QAPP using the analytical results of method blanks,

reagent/preparation blank, check samples and MS/MSD samples. The percent recover (%R) of matrix spike samples and check samples will be calculated as indicated below:

$$\%R = \frac{A - B}{C} \times 100$$

Where:
A = The analyte concentration determined experimentally from the spiked sample
B = The background level determined by a separate analysis of the unspiked sample
C = The amount of spike added

13.2.3 Completeness

Completeness will be assessed by comparing the number of valid (usable) results (as determined by the Data Validation Coordinator) to the total possible number of results using the formula presented below. The required level of completeness for laboratory analyses will be 90 percent or greater.

$$\text{Percent Completeness} = \frac{\text{(number of valid measurements)}}{\text{(number of measurements planned)}} \times 100$$

13.2.4 Sensitivity

The achievement of targeted quantitation limits depends on instrumental sensitivity and matrix effects. Therefore, to ensure the data quality, it is important to monitor the instrumental sensitivity by means of constant instrument performance. The instrumental sensitivity will be monitored through the analysis of method blank, calibration check and laboratory control samples.

13.2.5 Statistical Evaluations

To evaluate large numbers of samples, or to evaluate sample matrix interference and its effect on final data results, statistical analysis and/or hypothesis testing may be required. Guidance on procedures, methods, rationale, and equations for evaluating data of this type is found in U.S. EPA, 1996a.

14.0 CORRECTIVE ACTION

Corrective action is the process of identifying, recommending, approving and implementing measures to counter unacceptable procedures or out of quality control performance which can affect data quality. Corrective action can occur during field activities, laboratory analyses, data validation and data assessment. All corrective action proposed and implemented will be documented.

14.1 Field Corrective Action

Corrective action in the field may be necessary when the sample network is changed (i.e. more/less samples or sampling locations other than those specified in the QAPP) or sampling procedures and/or field analytical procedures require modification, due to unexpected conditions. In general, the field sampling team may identify the need for corrective action. The field sampling team, in consultation with the Field Quality Assurance (QA) Officer, will recommend a corrective action. The Project Manager will approve the corrective action which will be implemented by the field team. It will be the responsibility of the Field QA Officer to ensure the corrective action has been implemented.

Corrective action resulting from internal field audits will be implemented if data are adversely affected due to unapproved or improper use of approved methods. The Payne Firm's Project Field Coordinator will identify deficiencies and recommend corrective action to the Project Manager. The Project Manager will approve the corrective action(s) which will be implemented by the field team. Corrective action will be documented in the field log book.

14.2 Laboratory Corrective Action

Corrective action in the laboratory may occur prior to, during, and after initial analyses. A number of conditions (i.e. broken sample containers, multiple phases, low/high pH readings, potentially high concentration samples) may be identified during sample log-in or just prior to analysis. Following consultation with analysts and section leaders, it may be necessary for the laboratory QA Officer to approve the implementation of corrective action. The laboratory's submitted SOPs specify some conditions, during or after analysis, that may automatically trigger corrective action or optional procedures. These conditions may include dilution of samples, additional sample extract cleanup, automatic re-injection/re-analysis when certain QC criteria are not met.

The calibration acceptance/rejection criteria presented in Table 5 presents examples of situations requiring corrective action for each analytical instrument. In addition, the laboratory SOPs in Appendix III each provide a section on corrective action requirements.

The bench chemist will identify the need for corrective action. The laboratory supervisor will approve the required corrective action to be implemented by the laboratory staff. The laboratory QA Officer will ensure implementation and documentation of the corrective action.

These corrective actions are performed prior to release of the data from the laboratory. The corrective action will be documented in both the laboratory's corrective action report and the narrative data report sent to the Payne Firm.

The need for corrective action may also be identified during systems or performance audits. In these cases, the need for corrective action will be identified by the auditor. The corrective action taken to resolve the problem will be documented by the laboratory QA Manager. The corrective action taken will depend upon the QA/QC criteria which were violated.

14.3 Corrective Action During Data Validation and Data Assessment

The Payne Firm's Data Validation Coordinator may identify the need for corrective action during either the data validation or data assessment. Potential types of corrective action may include re-sampling by the field team or re-injection/re-analysis of samples by the laboratory.

These potential corrective actions are dependent upon the ability to mobilize the field team and whether the data to be collected are necessary to meet the required quality assurance objectives (e.g. the holding time for samples is not exceeded). When the Payne Firm's Data Validation Coordinator identifies a correction action situation, the Project Field Coordinator will be responsible for approving the implementation of corrective action (including re-sampling) during data assessment.

15.0 QUALITY ASSURANCE REPORTS TO MANAGEMENT

The Project Manager may receive an update from the Field Project Coordinator on the performance of the measurement system and data quality following each sampling round and at the conclusion of the project.

These updates may include:

1. Assessment of data quality objectives (i.e. data accuracy, precision, sensitivity, and completeness);
2. Results of system and performance audits;
3. Amendments to the QAPP; and
4. QA problems, action taken, and resolutions.

16.0 REFERENCES

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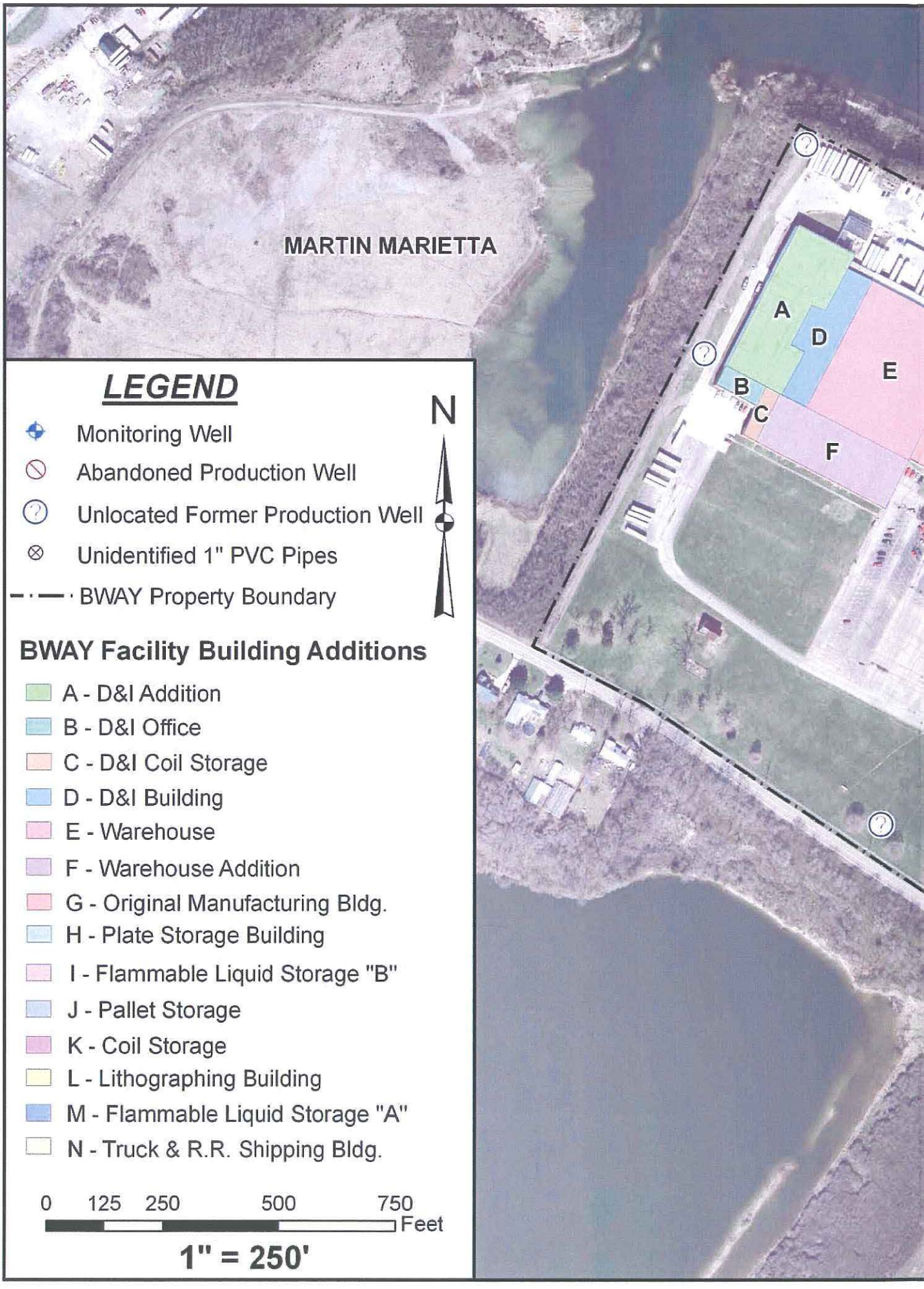
MARTIN MARIETTA
A
D
E
B
C
F
LEGEND
Monitoring Well
Abandoned Production Well
Unlocated Former Production Well
Unidentified 1" PVC Pipes
BWAY Property Boundary
N
BWAY Facility Building Additions
A - D&I Addition
B - D&I Office
C - D&I Coil Storage
D - D&I Building
E - Warehouse
F - Warehouse Addition
G - Original Manufacturing Bldg.
H - Plate Storage Building
I - Flammable Liquid Storage "B"
J - Pallet Storage
K - Coil Storage
L - Lithographing Building
M - Flammable Liquid Storage "A"
N - Truck & R.R. Shipping Bldg.
0 125 250 500 750
Feet
1" = 250'

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TABLE 1: Data Quality Objectives

Facility Investigation	Purpose for Sampling	Inputs Considered	Control Uncertainty
1. Nature and Extent of Contamination: Define the nature and extent of vertical contamination such that informed decisions can be made with respect to completing the human health exposures under control environmental indicator report (CA725 EI); migration of contaminated ground water under control report (CA750 EI), and evaluating the need for corrective measures.	• Sample and analyze sediment, soil, ground water and surface water, as appropriate. • Obtain additional nature and extent of contamination data to support the EI's and the design of corrective measures. • Determine the horizontal and vertical extent of contamination.	• Previous investigations at the Facility indicate that VOCs, SVOCs, and metals are the constituents of potential concern. • Mobility and seasonality were considered requiring single (soil/sediment) and multiple (ground water and surface water) sampling events. • Biased sampling toward locations known to have contamination or within SWMUs, AOCs and AOIs.	• Biased data set to assess potential for a release of hazardous waste or hazardous constituents. • Sample list consists of Appendix IX VOCs, SVOCs, and metals. • Analysis uses SW-846 standard methods at lowest detection l limits achievable. • Laboratory analyses will be reported with a "CLP-Like" data package. • Analyses at ASL IV. • Uncertainty limited by close spatial and temporal coordination between soil and ground water observations, and adherence to QAPP. • Data validation.
2. Define Physical and Hydrogeological System: Continue to define the site geologic/hydrogeologic conceptual model and identify the potential routes of contaminant migration.	• Perform additional stratigraphic and geotechnical engineering sampling, as needed. • Perform surface water sampling to assess potential ground water - surface water interation. • Conduct fate and transport modeling as necessary to support decisions. • Quarterly measurement of ground water elevations. • Measurement of surface water elevations, if appropriate.	• Definition of the overall boundary conditions for the geologic/hydrogeologic model. • Use existing boring log and hydraulic data to confirm geological information.	• Uncertainty controlled by use of standard geological property testing methods and ASL V for non-standard methods. • Biased geotechnical samples to zones likely to have greatest influence on contaminant migration. • Ground water wells correlated to initial stratigraphic borings increase certainty in the model and will increase confidence in contaminant migration routes.

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TABLE 1: Data Quality Objectives

Facility Investigation	Purpose for Sampling	Inputs Considered	Control Uncertainty
3. Human Health/Ecological Risks for Environmental Indicator Determination: Characterize human health risks and environmental impacts necessary to complete the human health EI and ground water EI reports.	• Confirm potential exposure pathways and receptors. • Sample soil, sediment, surface water, and ground water media, as appropriate, for VOCs, SVOCs, and metals.	• Existing information on detected concentrations of contaminants in on-property soil, sediment, surface water and ground water media. • Human health exposure scenarios will include both on- and off-property receptors, and current and future land use.	• Multiple ground water sampling locations and events provide less uncertainty in the evaluation of mobility and fate of contaminants. • Sufficient characterization of source areas and nature & extent of soil, sediment, surface water and ground water contamination provides assurances for the level of significance of human health risks. • ASL IV analyses performed using SW-846 methods for VOCs, SVOCs, and metals. Data reported using "CLP-Like" data packages.
4. Contaminant Migration Under Control for Ground Water Environmental Indicator Determination	• Sample and analyze ground water and surface water, as appropriate. • Obtain sufficient data to support assessment of ground water contaminant plume stability.	• Mobility and seasonality were considered requiring multiple (ground water) sampling events. • Ground water flow conditions and ground water-surface water interaction. • Existing data on detected concentrations of contaminants in ground water. • Existing data on detected concentrations in sediment and surface water media.	• At a minimum, conduct quarterly sampling events until a positive CA750 determination. • Collect QA/QC samples consistent with the QAPP. • ASL IV Analyses performed using SW-846 methods for VOCs, SVOCs, and metals. • Data reported use "CLP-Like" data packages.
5. Contaminant Fate and Transport: If necessary, determine estimates on the rate of migration of contaminants in environmental media to support the ground water EI report corrective measures evaluation.	• Define relationship between contaminant concentrations and the physical hydrogeological system. • Using existing information, and data to be collected from the proposed sampling program. • Obtain, through hydrogeologic sampling, significant transport routes and site physical parameters, such as permeability and hydraulic conductivity.	• Physical parameters related to air emissions, surface water, and ground water transport including gradient and hydraulic conductivity. • Results of ground water transport modeling.	• Uncertainty in estimated future potential for contamination migration could be large; therefore, conservative estimates will be used for transport factors. • Comparisons with actual observations will reduce inherent uncertainties to the maximum extent practical.
6. Evaluation of Corrective Measures: Use on- and off-property data to develop and evaluate an applicable range of corrective measures based on an assessment of site related risks.	• Sample relevant media to assess toxicity, mobility, and volume. • Sample for geotechnical engineering to characterize all geologic units. • Conduct ground water transport and fate transport modeling, as necessary.	• Existing information and knowledge. • Collection of additional data prior to design will assist in corrective action decision-making. • Geological property analyses augment evaluation of key physical parameters.	• Uncertainty reduced through development of site geologic/hydrogeologic model, nature and extent of contamination definition, and determination of key physical parameters (addressed in Parts 1 through 4 above).

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TABLE 2: Levels of Data Quality Objective Analytical Support

Matrix	Analysis	DQO Analytical Support
Water	VOC 8260B App IX	Level IV with "CLP-Like" Data Package
	SVOC 8270C App IX	Level IV with "CLP-Like" Data Package
	Metals 6010B 7470A App IX	Level IV with "CLP-Like" Data Package
	Hardness, as CaCO3	Level IV with "CLP-Like" Data Package
	Total phosphorus	Level IV with "CLP-Like" Data Package
	Chemical Oxygen Demand (COD)	Level IV with "CLP-Like" Data Package
	Specific Conductance	Level IV with "CLP-Like" Data Package
	Chloride	Level IV with "CLP-Like" Data Package
	Fluoride	Level IV with "CLP-Like" Data Package
	Nitrate as N	Level IV with "CLP-Like" Data Package
	Sulfate	Level IV with "CLP-Like" Data Package
	pH	Level IV with "CLP-Like" Data Package
	TOC Walkley-Black	Level IV with "CLP-Like" Data Package
	DOC Walkley-Black	Level IV with "CLP-Like" Data Package
	Alkylated PAH 8270SIM	Level IV with "CLP-Like" Data Package
Solid	VOC 8260B App IX	Level IV with "CLP-Like" Data Package
	SVOC 8270C App IX	Level IV with "CLP-Like" Data Package
	Metals 6010 7471A App IX	Level IV with "CLP-Like" Data Package
	TOC 9060	Level IV with "CLP-Like" Data Package
	VOC 8260B TCLP	Level IV with "CLP-Like" Data Package
	SVOC 8270C TCLP	Level IV with "CLP-Like" Data Package
	Metals 6010 7471A TCLP	Level IV with "CLP-Like" Data Package
	Alkylated PAH 8270SIM	Level IV with "CLP-Like" Data Package
	AVS-SEM Metals 6020 7470	Level IV with "CLP-Like" Data Package
	TOC Walkley-Black	Level IV with "CLP-Like" Data Package
	pH	Level IV with "CLP-Like" Data Package
	Grain Size Analysis	Level IV with "CLP-Like" Data Package

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TABLE 3: Conceptual Project Schedule

Paragraph No.	Requirement	Responsibility	Effective Date of Order
Effective Date of Consent Order and Agreement			September 13, 2007
(AOC V.9.)	EPA and Bway must each designate a Project Manager	U.S. EPA/BWAY	14-days from 9/13/2007 (due 9/27/07)
(AOC VI.11.a.)	Historic Data Facility Condition	BWAY/COMPLETE	30-days from 9/13/2007 (due 10/13/07)
(AOC VI.11.b.)	Current Conditions Report	BWAY/COMPLETE	60-days from 9/13/2007 (due 11/12/07)
(AOC VIII.25.a.)	Cost Estimate	BWAY/COMPLETE	Within 30 days after CCR submission
(AOC VI.20.b.)	Quarterly progress reports	BWAY/ON-GOING	By the 15th of the month after each quarter (initial report due 1/15/08)
(AOC VIII.26.a.)	Financial Assurances	BWAY/COMPLETE	Within forty-five (45) days after U.S. EPA approves the initial Cost Estimate
(AOC VI.20.f.)	Risk Assessments (RA's)	BWAY/ON-GOING	By 12/31/2008
(AOC VI.13.a.)	Environmental Indicator CA725 Report - Current Human Exposures Under Control	BWAY/ON-GOING	By 12/31/2008
(AOC VI.13.b.)	Environmental Indicator CA750 Report - Migration of Contaminated Groundwater Under Control	BWAY/ON-GOING	By 12/31/2008
(AOC VI.15.)	Final Corrective Measures Proposal (Final CMP)	BWAY/ON-GOING	By 6/30/2009
(AOC VI.18.)	Detailed description and justification for the proposal (the "Statement of Basis")	U.S. EPA	Follows Final CMP
(AOC VI.18.)	"Final Decision and Response to Comments" ("Final Decision")	U.S. EPA	Follows Final CMP
(AOC VI.19.)	Implement the final Corrective Measures selected in U.S. EPA 's Final Decision	BWAY/ON-GOING	Upon U.S. EPA's Final Decision
(AOC VI.20.d.)	Final Remedy Construction Completion Report	BWAY/ON-GOING	360-days after U.S. EPA's Final Decision
(AOC XVIII.57.)	"No Further Interest" or "No Further Action" determination for all or a portion of the Facility	U.S. EPA	Follows Final Remedy
(AOC XVIII.58.)	The provisions of the Order will be satisfied upon Bway's and U.S. EPA's execution of an "Acknowledgment of Termination and Agreement on Record Preservation and Reservation of Rights", consistent with U.S. EPA's Model Scope of Work.	U.S. EPA/BWAY	Follows Final Remedy

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TABLE 4: Target Quantitation Limits with MS/MSD and Laboratory Control Standard Recovery and RPD Control Limits and Surrogate Compound Recovery Control Limits

Reference	Matrix	Method	Surrogate	Compound	TQL				LCS/LCSD					MS/MSD				
					RL	Units	MDL	Units	AMT	Units	LCL	UCL	RPD	AMT	Units	LCL	UCL	RPD
App IX	Water	8260B		Acetone	10	ug/L	1.1	ug/L	20	ug/L	22	200	95	10	ug/L	45	128	30
App IX	Water	8260B		Acetonitrile	20	ug/L	3.5	ug/L			50	130	30			50	130	30
App IX	Water	8260B		Acrolein	20	ug/L	2.2	ug/L			50	130	30			50	130	30
App IX	Water	8260B		Acrylonitrile	20	ug/L	2	ug/L			50	130	30			50	130	30
App IX	Water	8260B		Benzene	1	ug/L	0.13	ug/L	20	ug/L	80	116	20	10	ug/L	78	118	20
App IX	Water	8260B		Bromodichloromethane	1	ug/L	0.15	ug/L	20	ug/L	87	130	30	10	ug/L	80	146	30
App IX	Water	8260B		Bromoform	1	ug/L	0.64	ug/L	20	ug/L	76	150	30	10	ug/L	58	176	30
App IX	Water	8260B		Bromomethane	1	ug/L	0.41	ug/L	20	ug/L	64	129	30	10	ug/L	55	145	30
App IX	Water	8260B		2-Butanone (MEK)	10	ug/L	0.57	ug/L			0	0	0			0	0	0
App IX	Water	8260B		Carbon disulfide	1	ug/L	0.13	ug/L	20	ug/L	73	139	30	10	ug/L	69	138	41
App IX	Water	8260B		Carbon tetrachloride	1	ug/L	0.13	ug/L	20	ug/L	75	149	30	10	ug/L	63	176	30
App IX	Water	8260B		Chlorobenzene	1	ug/L	0.15	ug/L	20	ug/L	76	117	20	10	ug/L	76	117	20
App IX	Water	8260B		Chloroprene	2	ug/L	0.29	ug/L			0	0	0			0	0	0
App IX	Water	8260B		Dibromochloromethane	1	ug/L	0.18	ug/L	20	ug/L	81	138	30	10	ug/L	71	158	30
App IX	Water	8260B		Chloroethane	1	ug/L	0.29	ug/L	20	ug/L	66	126	30	10	ug/L	59	142	30
App IX	Water	8260B		Chloroform	1	ug/L	0.16	ug/L	20	ug/L	84	128	30	10	ug/L	83	141	30
App IX	Water	8260B		Chloromethane	1	ug/L	0.3	ug/L	20	ug/L	48	123	30	10	ug/L	40	137	39
App IX	Water	8260B		Allyl chloride	2	ug/L	0.35	ug/L			0	0	0			0	0	0
App IX	Water	8260B		1,2-Dibromo-3-chloropropane	2	ug/L	0.67	ug/L			70	130	30			70	130	30
App IX	Water	8260B		1,2-Dibromoethane (EDB)	1	ug/L	0.24	ug/L			0	0	0			0	0	0
App IX	Water	8260B		Dibromomethane	1	ug/L	0.28	ug/L			70	130	30			70	130	30
App IX	Water	8260B		trans-1,4-Dichloro-2-butene	1	ug/L	0.15	ug/L			0	0	0			0	0	0
App IX	Water	8260B		Dichlorodifluoromethane	1	ug/L	0.31	ug/L			70	130	30			70	130	30
App IX	Water	8260B		1,1-Dichloroethane	1	ug/L	0.15	ug/L	20	ug/L	86	123	30	10	ug/L	88	127	30
App IX	Water	8260B		1,2-Dichloroethane	1	ug/L	0.22	ug/L	20	ug/L	79	136	30	10	ug/L	71	160	30
App IX	Water	8260B		trans-1,2-Dichloroethene	1	ug/L	0.19	ug/L	20	ug/L	80	120	30	10	ug/L	85	116	30
App IX	Water	8260B		1,1-Dichloroethene	1	ug/L	0.19	ug/L	20	ug/L	63	130	20	10	ug/L	62	130	20
App IX	Water	8260B		1,2-Dichloropropane	1	ug/L	0.18	ug/L	20	ug/L	82	115	30	10	ug/L	87	114	30
App IX	Water	8260B		cis-1,3-Dichloropropene	1	ug/L	0.14	ug/L	20	ug/L	84	130	30	10	ug/L	82	130	30
App IX	Water	8260B		trans-1,3-Dichloropropene	1	ug/L	0.19	ug/L	20	ug/L	84	130	30	10	ug/L	73	147	30
App IX	Water	8260B		1,4-Dioxane	50	ug/L	19	ug/L			0	0	0			0	0	0
App IX	Water	8260B		Ethylbenzene	1	ug/L	0.17	ug/L	20	ug/L	86	116	30	10	ug/L	86	132	30
App IX	Water	8260B		Ethyl methacrylate	1	ug/L	0.14	ug/L			0	0	0			0	0	0
App IX	Water	8260B		2-Hexanone	10	ug/L	0.41	ug/L	20	ug/L	35	200	52	10	ug/L	81	128	30
App IX	Water	8260B		Iodomethane	1	ug/L	0.18	ug/L			70	130	30			70	130	30
App IX	Water	8260B		Isobutyl alcohol	50	ug/L	8.2	ug/L			0	0	0			0	0	0
App IX	Water	8260B		Methacrylonitrile	2	ug/L	0.51	ug/L			0	0	0			0	0	0
App IX	Water	8260B		Methylene chloride	1	ug/L	0.33	ug/L	20	ug/L	78	118	30	10	ug/L	82	115	30
App IX	Water	8260B		Methyl methacrylate	2	ug/L	0.49	ug/L			0	0	0			0	0	0
App IX	Water	8260B		4-Methyl-2-pentanone (MIBK)	10	ug/L	0.32	ug/L			0	0	0			0	0	0
App IX	Water	8260B		Propionitrile	4	ug/L	1.2	ug/L			0	0	0			0	0	0
App IX	Water	8260B		Styrene	1	ug/L	0.11	ug/L	20	ug/L	85	117	30	10	ug/L	83	120	30
App IX	Water	8260B		1,1,1,2-Tetrachloroethane	1	ug/L	0.23	ug/L			70	130	30			70	130	30
App IX	Water	8260B		1,1,2,2-Tetrachloroethane	1	ug/L	0.18	ug/L	20	ug/L	85	118	30	10	ug/L	88	116	30
App IX	Water	8260B		Tetrachloroethene	1	ug/L	0.29	ug/L	20	ug/L	88	113	30	10	ug/L	85	121	30
App IX	Water	8260B		Toluene	1	ug/L	0.13	ug/L	20	ug/L	74	119	20	10	ug/L	70	119	20
App IX	Water	8260B		1,1,1-Trichloroethane	1	ug/L	0.22	ug/L	20	ug/L	78	140	30	10	ug/L	71	162	30
App IX	Water	8260B		1,1,2-Trichloroethane	1	ug/L	0.27	ug/L	20	ug/L	83	122	30	10	ug/L	86	129	30
App IX	Water	8260B		Trichloroethene	1	ug/L	0.17	ug/L	20	ug/L	75	122	20	10	ug/L	62	130	20
App IX	Water	8260B		Trichlorofluoromethane	1	ug/L	0.21	ug/L			70	130	30			70	130	30
App IX	Water	8260B		1,2,3-Trichloropropane	1	ug/L	0.43	ug/L			70	130	30			70	130	30
App IX	Water	8260B		Vinyl acetate	2	ug/L	0.19	ug/L			70	130	30			70	130	30
App IX	Water	8260B		Vinyl chloride	1	ug/L	0.22	ug/L	20	ug/L	61	120	30	10	ug/L	88	126	30
App IX	Water	8260B		Xylenes (total)	2	ug/L	0.28	ug/L	60	ug/L	87	116	30	30	ug/L	89	121	30
App IX	Water	8260B	Surrogate	4-Bromofluorobenzene					10	ug/L	74	116	0	10	ug/L	74	116	0
App IX	Water	8260B	Surrogate	1,2-Dichloroethane-d4					10	ug/L	61	128	0	10	ug/L	61	128	0
App IX	Water	8260B	Surrogate	Toluene-d8					10	ug/L	76	110	0	10	ug/L	76	110	0
App IX	Water	8260B	Surrogate	Dibromofluoromethane					10	ug/L	73	122	0	10	ug/L	73	122	0
App IX	Water	8270C		a,a-Dimethylphenethylamine	50	ug/L	11	ug/L			0	0	0			0	0	0
App IX	Water	8270C		Acenaphthene	10	ug/L	0.054	ug/L	50	ug/L	40	110	30	50	ug/L	36	110	30
App IX	Water	8270C		Acenaphthylene	10	ug/L	0.054	ug/L	50	ug/L	43	110	30	50	ug/L	39	110	30
App IX	Water	8270C		Acetophenone	10	ug/L	0.55	ug/L			50	130	30			50	130	30
App IX	Water	8270C		2-Acetylaminofluorene	100	ug/L	0.89	ug/L			0	0	0			0	0	0
App IX	Water	8270C		4-Aminobiphenyl	50	ug/L	0.63	ug/L			0	0	0			0	0	0
App IX	Water	8270C		Aniline	10	ug/L	0.86	ug/L			10	130	30			10	130	30
App IX	Water	8270C		Anthracene	10	ug/L	0.054	ug/L	50	ug/L	54	114	30	50	ug/L	46	110	30
App IX	Water	8270C		Aramite	10	ug/L	0.88	ug/L			0	0	0			0	0	0
App IX	Water	8270C		Benzo(a)anthracene	10	ug/L	0.052	ug/L	50	ug/L	55	115	30	50	ug/L	52	110	30
App IX	Water	8270C		Benzo(b)fluoranthene	10	ug/L	0.049	ug/L	50	ug/L	43	122	30	50	ug/L	33	114	30
App IX	Water	8270C		Benzo(k)fluoranthene	10	ug/L	0.049	ug/L	50	ug/L	43	124	30	50	ug/L	32	121	30

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TABLE 4: Target Quantitation Limits with MS/MSD and Laboratory Control Standard Recovery and RPD Control Limits and Surrogate Compound Recovery Control Limits

Reference	Matrix	Method	Surrogate	Compound	TQL				LCS/LCSD					MS/MSD				
					RL	Units	MDL	Units	AMT	Units	LCL	UCL	RPD	AMT	Units	LCL	UCL	RPD
App IX	Water	8270C		Benzo(ghi)perylene	10	ug/L	0.053	ug/L	50	ug/L	45	120	30	50	ug/L	34	116	30
App IX	Water	8270C		Benzo(a)pyrene	10	ug/L	0.048	ug/L	50	ug/L	43	116	30	50	ug/L	33	110	30
App IX	Water	8270C		Benzyl alcohol	10	ug/L	0.49	ug/L			10	130	30			10	130	30
App IX	Water	8270C		bis(2-Chloroethoxy)methane	10	ug/L	0.49	ug/L	50	ug/L	39	110	30	50	ug/L	35	110	30
App IX	Water	8270C		bis(2-Chloroethyl) ether	10	ug/L	0.088	ug/L	50	ug/L	34	113	30	50	ug/L	27	110	30
App IX	Water	8270C		bis(2-Chloro-1-methylethyl) ether	10	ug/L	0.52	ug/L			0	0	0			0	0	0
App IX	Water	8270C		bis(2-Ethylhexyl) phthalate	10	ug/L	0.88	ug/L	50	ug/L	36	163	30	50	ug/L	40	140	30
App IX	Water	8270C		4-Bromophenyl phenyl ether	10	ug/L	0.52	ug/L	50	ug/L	51	114	30	50	ug/L	42	113	30
App IX	Water	8270C		Butyl benzyl phthalate	10	ug/L	0.51	ug/L	50	ug/L	53	126	30	50	ug/L	51	121	30
App IX	Water	8270C		4-Chloroaniline	10	ug/L	0.56	ug/L	50	ug/L	10	110	30	50	ug/L	10	110	30
App IX	Water	8270C		Chlorobenzilate	10	ug/L	0.62	ug/L			0	0	0			0	0	0
App IX	Water	8270C		4-Chloro-3-methylphenol	10	ug/L	0.41	ug/L	50	ug/L	39	110	30	50	ug/L	33	110	30
App IX	Water	8270C		2-Chloronaphthalene	10	ug/L	0.62	ug/L	50	ug/L	39	110	30	50	ug/L	34	110	30
App IX	Water	8270C		2-Chlorophenol	10	ug/L	0.039	ug/L	50	ug/L	27	110	30	50	ug/L	26	110	30
App IX	Water	8270C		4-Chlorophenyl phenyl ether	10	ug/L	0.55	ug/L	50	ug/L	50	115	30	50	ug/L	43	113	30
App IX	Water	8270C		Chrysene	10	ug/L	0.048	ug/L	50	ug/L	55	115	30	50	ug/L	52	111	30
App IX	Water	8270C		Diallate	20	ug/L	0.93	ug/L			0	0	0			0	0	0
App IX	Water	8270C		Dibenz(a,h)anthracene	10	ug/L	0.039	ug/L	50	ug/L	46	122	30	50	ug/L	35	118	30
App IX	Water	8270C		Dibenzofuran	10	ug/L	0.54	ug/L	50	ug/L	46	111	30	50	ug/L	41	110	30
App IX	Water	8270C		Di-n-butyl phthalate	10	ug/L	0.61	ug/L	50	ug/L	55	122	30	50	ug/L	50	117	30
App IX	Water	8270C		1,2-Dichlorobenzene	10	ug/L	0.59	ug/L	50	ug/L	23	110	30	50	ug/L	22	110	30
App IX	Water	8270C		1,3-Dichlorobenzene	10	ug/L	0.53	ug/L	50	ug/L	19	110	30	50	ug/L	19	110	30
App IX	Water	8270C		1,4-Dichlorobenzene	10	ug/L	0.52	ug/L	50	ug/L	19	110	30	50	ug/L	17	110	30
App IX	Water	8270C		3,3'-Dichlorobenzidine	50	ug/L	0.48	ug/L	50	ug/L	19	110	30	50	ug/L	10	110	30
App IX	Water	8270C		2,4-Dichlorophenol	10	ug/L	1.1	ug/L	50	ug/L	33	110	30	50	ug/L	30	110	30
App IX	Water	8270C		2,6-Dichlorophenol	10	ug/L	0.61	ug/L			0	0	0			0	0	0
App IX	Water	8270C		Diethyl phthalate	10	ug/L	0.63	ug/L	50	ug/L	33	134	30	50	ug/L	33	130	30
App IX	Water	8270C		Dimethoate	20	ug/L	0.64	ug/L			0	0	0			0	0	0
App IX	Water	8270C		p-Dimethylaminoazobenzene	20	ug/L	0.6	ug/L			0	0	0			0	0	0
App IX	Water	8270C		7,12-Dimethylbenz(a)anthracene	20	ug/L	0.64	ug/L			0	0	0			0	0	0
App IX	Water	8270C		3,3'-Dimethylbenzidine	50	ug/L	0.78	ug/L			0	0	0			0	0	0
App IX	Water	8270C		2,4-Dimethylphenol	10	ug/L	0.56	ug/L	50	ug/L	12	110	30	50	ug/L	11	110	30
App IX	Water	8270C		Dimethyl phthalate	10	ug/L	0.44	ug/L	50	ug/L	15	143	30	50	ug/L	36	124	30
App IX	Water	8270C		1,3-Dinitrobenzene	10	ug/L	0.86	ug/L			0	0	0			0	0	0
App IX	Water	8270C		4,6-Dinitro-2-methylphenol	50	ug/L	0.27	ug/L	50	ug/L	28	112	30	50	ug/L	25	110	30
App IX	Water	8270C		2,4-Dinitrophenol	50	ug/L	3.5	ug/L	50	ug/L	17	112	30	50	ug/L	11	119	30
App IX	Water	8270C		2,4-Dinitrotoluene	10	ug/L	0.4	ug/L	50	ug/L	52	123	30	50	ug/L	46	119	30
App IX	Water	8270C		2,6-Dinitrotoluene	10	ug/L	0.47	ug/L	50	ug/L	52	119	30	50	ug/L	48	115	30
App IX	Water	8270C		2-sec-Butyl-4,6-dinitrophenol	20	ug/L	0.68	ug/L			0	0	0			0	0	0
App IX	Water	8270C		Di-n-octyl phthalate	10	ug/L	0.39	ug/L	50	ug/L	44	128	30	50	ug/L	36	124	30
App IX	Water	8270C		Diphenylamine	10	ug/L	0.46	ug/L			0	0	0			0	0	0
App IX	Water	8270C		Disulfoton	50	ug/L	0.76	ug/L			0	0	0			0	0	0
App IX	Water	8270C		Ethyl methanesulfonate	10	ug/L	0.82	ug/L			0	0	0			0	0	0
App IX	Water	8270C		Famphur	10	ug/L	1.2	ug/L			0	0	0			0	0	0
App IX	Water	8270C		Fluoranthene	10	ug/L	0.036	ug/L	50	ug/L	54	122	30	50	ug/L	53	111	30
App IX	Water	8270C		Fluorene	10	ug/L	0.043	ug/L	50	ug/L	47	112	30	50	ug/L	43	110	30
App IX	Water	8270C		Hexachlorobenzene	10	ug/L	0.065	ug/L	50	ug/L	51	112	30	50	ug/L	40	113	30
App IX	Water	8270C		Hexachlorobutadiene	10	ug/L	0.51	ug/L	50	ug/L	13	110	30	50	ug/L	14	110	30
App IX	Water	8270C		Hexachlorocyclopentadiene	10	ug/L	0.74	ug/L	50	ug/L	10	110	30	50	ug/L	10	110	30
App IX	Water	8270C		Hexachloroethane	10	ug/L	0.58	ug/L	50	ug/L	12	110	30	50	ug/L	10	110	30
App IX	Water	8270C		Hexachloropropene	100	ug/L	0.47	ug/L			0	0	0			0	0	0
App IX	Water	8270C		Indeno(1,2,3-cd)pyrene	10	ug/L	0.065	ug/L	50	ug/L	46	121	30	50	ug/L	36	116	30
App IX	Water	8270C		Isophorone	10	ug/L	0.5	ug/L	50	ug/L	44	128	30	50	ug/L	34	125	30
App IX	Water	8270C		Isosafrole	20	ug/L	0.7	ug/L			0	0	0			0	0	0
App IX	Water	8270C		Methapyrilene	50	ug/L	2	ug/L			0	0	0			0	0	0
App IX	Water	8270C		3-Methylcholanthrene	20	ug/L	0.65	ug/L			0	0	0			0	0	0
App IX	Water	8270C		Methyl methanesulfonate	10	ug/L	0.55	ug/L			0	0	0			0	0	0
App IX	Water	8270C		2-Methylnaphthalene	10	ug/L	0.061	ug/L	50	ug/L	35	110	30	50	ug/L	35	110	30
App IX	Water	8270C		2-Methylphenol	10	ug/L	0.56	ug/L	50	ug/L	30	110	30	50	ug/L	26	110	30
App IX	Water	8270C		3-Methylphenol	10	ug/L	0.63	ug/L			0	0	0			0	0	0
App IX	Water	8270C		4-Methylphenol	10	ug/L	0.64	ug/L	50	ug/L	32	110	30	50	ug/L	25	110	30
App IX	Water	8270C		Naphthalene	10	ug/L	0.069	ug/L	50	ug/L	31	110	30	50	ug/L	32	110	30
App IX	Water	8270C		1,4-Naphthoquinone	50	ug/L	0.6	ug/L			0	0	0			0	0	0
App IX	Water	8270C		1-Naphthylamine	10	ug/L	0.44	ug/L			0	0	0			0	0	0
App IX	Water	8270C		2-Naphthylamine	10	ug/L	0.57	ug/L			0	0	0			0	0	0
App IX	Water	8270C		2-Nitroaniline	50	ug/L	0.43	ug/L	50	ug/L	43	130	30	50	ug/L	31	129	30
App IX	Water	8270C		3-Nitroaniline	50	ug/L	0.67	ug/L	50	ug/L	45	116	30	50	ug/L	23	112	30
App IX	Water	8270C		4-Nitroaniline	50	ug/L	0.47	ug/L	50	ug/L	45	120	30	50	ug/L	26	115	30
App IX	Water	8270C		Nitrobenzene	10	ug/L	0.053	ug/L	50	ug/L	37	115	30	50	ug/L	26	118	30
App IX	Water	8270C		2-Nitrophenol	10	ug/L	1.3	ug/L	50	ug/L	29	110	30	50	ug/L	30	110	30

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TABLE 4: Target Quantitation Limits with MS/MSD and Laboratory Control Standard Recovery and RPD Control Limits and Surrogate Compound Recovery Control Limits

Reference	Matrix	Method	Surrogate	Compound	TQL				LCS/LCSD					MS/MSD				
					RL	Units	MDL	Units	AMT	Units	LCL	UCL	RPD	AMT	Units	LCL	UCL	RPD
App IX	Water	8270C		4-Nitrophenol	50	ug/L	0.63	ug/L	50	ug/L	12	130	30	50	ug/L	13	127	30
App IX	Water	8270C		4-Nitroquinoline-1-oxide	100	ug/L	0.5	ug/L			0	0	0			0	0	0
App IX	Water	8270C		N-Nitrosodi-n-butylamine	10	ug/L	0.81	ug/L			0	0	0			0	0	0
App IX	Water	8270C		N-Nitrosodiethylamine	10	ug/L	0.76	ug/L			0	0	0			0	0	0
App IX	Water	8270C		N-Nitrosodimethylamine	10	ug/L	0.83	ug/L			10	130	30			10	130	30
App IX	Water	8270C		N-Nitrosodiphenylamine	10	ug/L	0.46	ug/L	50	ug/L	53	113	30	50	ug/L	28	118	30
App IX	Water	8270C		N-Nitrosodi-n-propylamine	10	ug/L	0.53	ug/L	50	ug/L	37	121	30	50	ug/L	25	119	30
App IX	Water	8270C		N-Nitrosomethylethylamine	10	ug/L	0.72	ug/L			0	0	0			0	0	0
App IX	Water	8270C		N-Nitrosomorpholine	10	ug/L	0.74	ug/L			0	0	0			0	0	0
App IX	Water	8270C		N-Nitrosopiperidine	10	ug/L	0.75	ug/L			0	0	0			0	0	0
App IX	Water	8270C		N-Nitrosopyrrolidine	10	ug/L	0.74	ug/L			0	0	0			0	0	0
App IX	Water	8270C		5-Nitro-o-toluidine	20	ug/L	0.68	ug/L			0	0	0			0	0	0
App IX	Water	8270C		Pentachlorobenzene	10	ug/L	0.71	ug/L			0	0	0			0	0	0
App IX	Water	8270C		Pentachloroethane	50	ug/L	0.76	ug/L			0	0	0			0	0	0
App IX	Water	8270C		Pentachloronitrobenzene	50	ug/L	0.94	ug/L			0	0	0			0	0	0
App IX	Water	8270C		Pentachlorophenol	10	ug/L	0.48	ug/L	50	ug/L	26	110	30	50	ug/L	23	110	30
App IX	Water	8270C		Phenacetin	20	ug/L	0.66	ug/L			0	0	0			0	0	0
App IX	Water	8270C		Phenanthrene	10	ug/L	0.087	ug/L	50	ug/L	52	114	30	50	ug/L	47	110	30
App IX	Water	8270C		Phenol	10	ug/L	0.96	ug/L	50	ug/L	14	112	30	50	ug/L	16	110	30
App IX	Water	8270C		p-Phenylene diamine	100	ug/L	14	ug/L			0	0	0			0	0	0
App IX	Water	8270C		Phorate	50	ug/L	0.69	ug/L			0	0	0			0	0	0
App IX	Water	8270C		2-Picoline	20	ug/L	0.76	ug/L			0	0	0			0	0	0
App IX	Water	8270C		Pronamide	20	ug/L	0.69	ug/L			0	0	0			0	0	0
App IX	Water	8270C		Pyrene	10	ug/L	0.048	ug/L	50	ug/L	55	120	30	50	ug/L	54	115	30
App IX	Water	8270C		Pyridine	20	ug/L	0.78	ug/L	50	ug/L	10	110	30	50	ug/L	10	110	30
App IX	Water	8270C		Safrole	20	ug/L	0.81	ug/L			0	0	0			0	0	0
App IX	Water	8270C		1,2,4,5-Tetrachlorobenzene	10	ug/L	0.55	ug/L			0	0	0			0	0	0
App IX	Water	8270C		2,3,4,6-Tetrachlorophenol	50	ug/L	0.58	ug/L			0	0	0			0	0	0
App IX	Water	8270C		Tetraethyldithiopyrophosphate	50	ug/L	0.91	ug/L			0	0	0			0	0	0
App IX	Water	8270C		Thionazin	50	ug/L	0.68	ug/L			0	0	0			0	0	0
App IX	Water	8270C		o-Toluidine	20	ug/L	0.72	ug/L			0	0	0			0	0	0
App IX	Water	8270C		1,2,4-Trichlorobenzene	10	ug/L	0.59	ug/L	50	ug/L	25	110	30	50	ug/L	25	110	30
App IX	Water	8270C		2,4,5-Trichlorophenol	10	ug/L	0.96	ug/L	50	ug/L	39	110	30	50	ug/L	36	110	30
App IX	Water	8270C		2,4,6-Trichlorophenol	10	ug/L	1.4	ug/L	50	ug/L	35	110	30	50	ug/L	34	110	30
App IX	Water	8270C		O,O,O-Triethyl phosphorothioate	50	ug/L	0.71	ug/L			0	0	0			0	0	0
App IX	Water	8270C		1,3,5-Trinitrobenzene	50	ug/L	0.59	ug/L			0	0	0			0	0	0
App IX	Water	8270C	Surrogate	2-Fluorobiphenyl					50	ug/L	28	110	0	50	ug/L	28	110	0
App IX	Water	8270C	Surrogate	2-Fluorophenol					75	ug/L	10	110	0	75	ug/L	10	110	0
App IX	Water	8270C	Surrogate	2,4,6-Tribromophenol					75	ug/L	22	120	0	75	ug/L	22	120	0
App IX	Water	8270C	Surrogate	Nitrobenzene-d5					50	ug/L	27	111	0	50	ug/L	27	111	0
App IX	Water	8270C	Surrogate	Phenol-d5					75	ug/L	10	110	0	75	ug/L	10	110	0
App IX	Water	8270C	Surrogate	Terphenyl-d14					50	ug/L	37	119	0	50	ug/L	37	119	0
App IX	Water	6010B 7470A		Arsenic	10	ug/L	3.2	ug/L	2000	ug/L	80	120	20	2000	ug/L	75	125	20
App IX	Water	6010B 7470A		Lead	3	ug/L	1.9	ug/L	500	ug/L	80	120	20	500	ug/L	75	125	20
App IX	Water	6010B 7470A		Selenium	5	ug/L	4.1	ug/L	2000	ug/L	80	120	20	2000	ug/L	75	125	20
App IX	Water	6010B 7470A		Thallium	10	ug/L	4.7	ug/L	2000	ug/L	80	120	20	2000	ug/L	75	125	20
App IX	Water	6010B 7470A		Aluminum	200	ug/L	97	ug/L	2000	ug/L	80	120	20	2000	ug/L	75	125	20
App IX	Water	6010B 7470A		Antimony	60	ug/L	1.8	ug/L	500	ug/L	80	120	20	500	ug/L	75	125	20
App IX	Water	6010B 7470A		Barium	200	ug/L	0.67	ug/L	2000	ug/L	80	120	20	2000	ug/L	75	125	20
App IX	Water	6010B 7470A		Beryllium	5	ug/L	0.46	ug/L	50	ug/L	80	120	20	50	ug/L	75	125	20
App IX	Water	6010B 7470A		Cadmium	5	ug/L	0.66	ug/L	50	ug/L	80	120	20	50	ug/L	75	125	20
App IX	Water	6010B 7470A		Calcium	5000	ug/L	130	ug/L	50000	ug/L	80	120	20	50000	ug/L	75	125	20
App IX	Water	6010B 7470A		Chromium	10	ug/L	2.2	ug/L	200	ug/L	80	120	20	200	ug/L	75	125	20
App IX	Water	6010B 7470A		Cobalt	50	ug/L	1.7	ug/L	500	ug/L	80	120	20	500	ug/L	75	125	20
App IX	Water	6010B 7470A		Copper	25	ug/L	4.5	ug/L	250	ug/L	80	120	20	250	ug/L	75	125	20
App IX	Water	6010B 7470A		Iron	100	ug/L	81	ug/L	1000	ug/L	77	122	20	1000	ug/L	75	125	20
App IX	Water	6010B 7470A		Magnesium	5000	ug/L	34	ug/L	50000	ug/L	80	120	20	50000	ug/L	75	125	20
App IX	Water	6010B 7470A		Manganese	15	ug/L	0.41	ug/L	500	ug/L	80	120	20	500	ug/L	75	125	20
App IX	Water	6010B 7470A		Nickel	40	ug/L	3.2	ug/L	500	ug/L	80	120	20	500	ug/L	75	125	20
App IX	Water	6010B 7470A		Potassium	5000	ug/L	72	ug/L	50000	ug/L	80	120	20	50000	ug/L	75	125	20
App IX	Water	6010B 7470A		Silver	10	ug/L	2.2	ug/L	50	ug/L	80	120	20	50	ug/L	75	125	20
App IX	Water	6010B 7470A		Sodium	5000	ug/L	590	ug/L	50000	ug/L	80	120	20	50000	ug/L	75	125	20
App IX	Water	6010B 7470A		Vanadium	50	ug/L	0.64	ug/L	500	ug/L	80	120	20	500	ug/L	75	125	20
App IX	Water	6010B 7470A		Zinc	20	ug/L	5	ug/L	500	ug/L	80	120	20	500	ug/L	75	125	20
App IX	Water	6010B 7470A		Mercury	0.2	ug/L	0.12	ug/L	5	ug/L	81	123	20	1	ug/L	69	134	20
App IX	Water	Gen Chem		Hardness, as CaCO3	5	mg/L	3.1	mg/L			88	110	20	500	mg/L	87	114	20
App IX	Water	Gen Chem		Total phosphorus	0.1	mg/L	0.03	mg/L			53	134	20	0.5	mg/L	10	199	46
App IX	Water	Gen Chem		Chemical Oxygen Demand (COD)	20	mg/L	7.2	mg/L			90	110	20	200	mg/L	90	110	20
App IX	Water	Gen Chem		Specific Conductance	1	umhos/cm	0.43	umhos/cm			75	125	20			75	125	20
App IX	Water	Gen Chem		Chloride	1	mg/L	0.1	mg/L	50	mg/L	90	110	20	50	mg/L	80	120	20

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TABLE 4: Target Quantitation Limits with MS/MSD and Laboratory Control Standard Recovery and RPD Control Limits and Surrogate Compound Recovery Control Limits

Reference	Matrix	Method	Surrogate	Compound	TQL				LCS/LCSD					MS/MSD				
					RL	Units	MDL	Units	AMT	Units	LCL	UCL	RPD	AMT	Units	LCL	UCL	RPD
App IX	Water	Gen Chem		Fluoride	1	mg/L	0.015	mg/L	2.5	mg/L	90	110	20	2.5	mg/L	80	120	20
App IX	Water	Gen Chem		Nitrate as N	0.1	mg/L	0.023	mg/L	2.5	mg/L	90	110	20	2.5	mg/L	80	120	20
App IX	Water	Gen Chem		Sulfate	1	mg/L	0.12	mg/L	50	mg/L	90	110	20	50	mg/L	80	120	20
App IX	Water	Gen Chem		Total Organic Carbon	1	mg/L	0.24	mg/L			88	115	20	25	mg/L	72	136	20
App IX	Water	Gen Chem		CR, Hexavalent	0.02	mg/L	0.002	mg/L			80	118	20	0.25	mg/L	41	136	20
App IX	Soil	8260B		Acetone	20	ug/kg	6.3	ug/kg	20	ug/kg	58	130	30	50	ug/kg	10	200	66
App IX	Soil	8260B		Acetonitrile	100	ug/kg	3.7	ug/kg			50	130	30			50	130	30
App IX	Soil	8260B		Acrolein	100	ug/kg	2.7	ug/kg			50	130	30			50	130	30
App IX	Soil	8260B		Acrylonitrile	100	ug/kg	2.7	ug/kg			50	130	30			50	130	30
App IX	Soil	8260B		Benzene	5	ug/kg	0.23	ug/kg	20	ug/kg	75	129	20	50	ug/kg	55	138	20
App IX	Soil	8260B		Bromodichloromethane	5	ug/kg	0.28	ug/kg	20	ug/kg	72	125	30	50	ug/kg	47	131	51
App IX	Soil	8260B		Bromoform	5	ug/kg	0.33	ug/kg	20	ug/kg	43	149	30	50	ug/kg	26	141	64
App IX	Soil	8260B		Bromomethane	5	ug/kg	0.54	ug/kg	20	ug/kg	24	152	30	50	ug/kg	15	152	72
App IX	Soil	8260B		2-Butanone (MEK)	20	ug/kg	1.4	ug/kg			0	0	0			0	0	0
App IX	Soil	8260B		Carbon disulfide	5	ug/kg	0.44	ug/kg	20	ug/kg	50	137	30	50	ug/kg	27	149	73
App IX	Soil	8260B		Carbon tetrachloride	5	ug/kg	0.37	ug/kg	20	ug/kg	57	137	30	50	ug/kg	32	143	68
App IX	Soil	8260B		Chlorobenzene	5	ug/kg	0.33	ug/kg	20	ug/kg	75	127	22	50	ug/kg	49	139	22
App IX	Soil	8260B		Chloroprene	5	ug/kg	0.37	ug/kg			0	0	0			0	0	0
App IX	Soil	8260B		Dibromochloromethane	5	ug/kg	0.55	ug/kg	20	ug/kg	49	135	30	50	ug/kg	44	135	61
App IX	Soil	8260B		Chloroethane	5	ug/kg	0.86	ug/kg	20	ug/kg	31	144	30	50	ug/kg	32	140	66
App IX	Soil	8260B		Chloroform	5	ug/kg	0.29	ug/kg	40	ug/kg	73	115	30	50	ug/kg	59	128	46
App IX	Soil	8260B		Chloromethane	5	ug/kg	0.41	ug/kg	20	ug/kg	15	136	30	50	ug/kg	28	130	81
App IX	Soil	8260B		Allyl chloride	10	ug/kg	0.89	ug/kg			0	0	0			0	0	0
App IX	Soil	8260B		1,2-Dibromo-3-chloropropane	10	ug/kg	1.3	ug/kg			50	150	30			50	150	20
App IX	Soil	8260B		1,2-Dibromoethane (EDB)	5	ug/kg	0.5	ug/kg			0	0	0			0	0	0
App IX	Soil	8260B		Dibromomethane	5	ug/kg	0.63	ug/kg			70	130	30			70	130	30
App IX	Soil	8260B		trans-1,4-Dichloro-2-butene	5	ug/kg	0.93	ug/kg			0	0	0			0	0	0
App IX	Soil	8260B		Dichlorodifluoromethane	5	ug/kg	0.5	ug/kg			50	150	20			50	150	20
App IX	Soil	8260B		1,1-Dichloroethane	5	ug/kg	0.36	ug/kg	20	ug/kg	77	119	30	50	ug/kg	56	130	54
App IX	Soil	8260B		1,2-Dichloroethane	5	ug/kg	0.34	ug/kg	20	ug/kg	78	121	30	50	ug/kg	56	126	38
App IX	Soil	8260B		trans-1,2-Dichloroethene	5	ug/kg	0.41	ug/kg	20	ug/kg	68	117	30	50	ug/kg	47	127	58
App IX	Soil	8260B		1,1-Dichloroethene	5	ug/kg	0.52	ug/kg	20	ug/kg	55	142	27	50	ug/kg	43	147	27
App IX	Soil	8260B		1,2-Dichloropropane	5	ug/kg	0.69	ug/kg	20	ug/kg	78	116	30	50	ug/kg	54	125	43
App IX	Soil	8260B		cis-1,3-Dichloropropene	5	ug/kg	0.34	ug/kg	20	ug/kg	71	125	30	50	ug/kg	30	138	49
App IX	Soil	8260B		trans-1,3-Dichloropropene	5	ug/kg	0.54	ug/kg	20	ug/kg	67	125	30	50	ug/kg	34	134	57
App IX	Soil	8260B		1,4-Dioxane	250	ug/kg	100	ug/kg			0	0	0			0	0	0
App IX	Soil	8260B		Ethylbenzene	5	ug/kg	0.26	ug/kg	20	ug/kg	79	114	30	50	ug/kg	36	133	72
App IX	Soil	8260B		Ethyl methacrylate	5	ug/kg	0.41	ug/kg			0	0	0			0	0	0
App IX	Soil	8260B		2-Hexanone	20	ug/kg	0.63	ug/kg	20	ug/kg	29	200	41	50	ug/kg	20	190	70
App IX	Soil	8260B		Iodomethane	5	ug/kg	0.54	ug/kg			70	130	30			70	130	30
App IX	Soil	8260B		Isobutyl alcohol	200	ug/kg	34	ug/kg			0	0	0			0	0	0
App IX	Soil	8260B		Methacrylonitrile	5	ug/kg	0.28	ug/kg			0	0	0			0	0	0
App IX	Soil	8260B		Methylene chloride	5	ug/kg	0.67	ug/kg	20	ug/kg	58	130	30	50	ug/kg	45	129	49
App IX	Soil	8260B		Methyl methacrylate	5	ug/kg	0.54	ug/kg			0	0	0			0	0	0
App IX	Soil	8260B		4-Methyl-2-pentanone (MIBK)	20	ug/kg	0.54	ug/kg			0	0	0			0	0	0
App IX	Soil	8260B		Propionitrile	20	ug/kg	2.8	ug/kg			0	0	0			0	0	0
App IX	Soil	8260B		Styrene	5	ug/kg	0.15	ug/kg	20	ug/kg	80	114	30	50	ug/kg	23	136	65
App IX	Soil	8260B		1,1,1,2-Tetrachloroethane	5	ug/kg	0.62	ug/kg			70	130	30			70	130	30
App IX	Soil	8260B		1,1,2,2-Tetrachloroethane	5	ug/kg	0.34	ug/kg	20	ug/kg	70	133	30	50	ug/kg	33	162	90
App IX	Soil	8260B		Tetrachloroethene	5	ug/kg	0.52	ug/kg	20	ug/kg	72	120	30	50	ug/kg	31	137	81
App IX	Soil	8260B		Toluene	5	ug/kg	0.27	ug/kg	20	ug/kg	71	130	24	50	ug/kg	46	147	24
App IX	Soil	8260B		1,1,1-Trichloroethane	5	ug/kg	0.56	ug/kg	20	ug/kg	67	123	30	50	ug/kg	48	132	57
App IX	Soil	8260B		1,1,2-Trichloroethane	5	ug/kg	0.39	ug/kg	20	ug/kg	82	116	30	50	ug/kg	58	128	52
App IX	Soil	8260B		Trichloroethene	5	ug/kg	0.42	ug/kg	20	ug/kg	70	131	23	50	ug/kg	46	143	23
App IX	Soil	8260B		Trichlorofluoromethane	5	ug/kg	0.34	ug/kg			50	150	20			50	150	20
App IX	Soil	8260B		1,2,3-Trichloropropane	5	ug/kg	0.9	ug/kg			70	130	30			70	130	30
App IX	Soil	8260B		Vinyl acetate	10	ug/kg	0.25	ug/kg			0	0	0			0	0	0
App IX	Soil	8260B		Vinyl chloride	5	ug/kg	0.39	ug/kg	20	ug/kg	24	152	30	50	ug/kg	30	136	80
App IX	Soil	8260B		Xylenes (total)	10	ug/kg	0.67	ug/kg	60	ug/kg	80	114	30	150	ug/kg	33	135	78
App IX	Soil	8260B	Surrogate	4-Bromofluorobenzene					50	ug/kg	47	158	0	50	ug/kg	47	158	0
App IX	Soil	8260B	Surrogate	1,2-Dichloroethane-d4					50	ug/kg	61	130	0	50	ug/kg	61	130	0
App IX	Soil	8260B	Surrogate	Toluene-d8					50	ug/kg	60	143	0	50	ug/kg	60	143	0
App IX	Soil	8260B	Surrogate	Dibromofluoromethane					50	ug/kg	59	138	0	50	ug/kg	59	138	0
App IX	Soil	8270C		a,a-Dimethylphenethylamine	1600	ug/kg	110	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		Acenaphthene	330	ug/kg	1.3	ug/kg	1700	ug/kg	46	110	30	1700	ug/kg	10	200	30
App IX	Soil	8270C		Acenaphthylene	330	ug/kg	1.2	ug/kg	1700	ug/kg	47	110	30	1700	ug/kg	10	200	30
App IX	Soil	8270C		Acetophenone	66.6	ug/kg	9	ug/kg			50	130	30			50	130	30
App IX	Soil	8270C		2-Acetylaminofluorene	3300	ug/kg	120	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		4-Aminobiphenyl	1600	ug/kg	97	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		Aniline	330	ug/kg	15	ug/kg			10	130	30			10	130	30

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TABLE 4: Target Quantitation Limits with MS/MSD and Laboratory Control Standard Recovery and RPD Control Limits and Surrogate Compound Recovery Control Limits

Reference	Matrix	Method	Surrogate	Compound	TQL				LCS/LCSD					MS/MSD				
					RL	Units	MDL	Units	AMT	Units	LCL	UCL	RPD	AMT	Units	LCL	UCL	RPD
App IX	Soil	8270C		Anthracene	330	ug/kg	1.3	ug/kg	1700	ug/kg	56	111	30	1700	ug/kg	10	200	30
App IX	Soil	8270C		Aramite	660	ug/kg	4.8	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		Benzo(a)anthracene	330	ug/kg	0.95	ug/kg	1700	ug/kg	58	111	30	1700	ug/kg	10	200	30
App IX	Soil	8270C		Benzo(b)fluoranthene	330	ug/kg	1.2	ug/kg	1700	ug/kg	43	124	30	1700	ug/kg	10	200	30
App IX	Soil	8270C		Benzo(k)fluoranthene	330	ug/kg	1.7	ug/kg	1700	ug/kg	38	122	30	1700	ug/kg	10	200	30
App IX	Soil	8270C		Benzo(ghi)perylene	330	ug/kg	1.3	ug/kg	1700	ug/kg	44	120	30	1700	ug/kg	10	200	30
App IX	Soil	8270C		Benzo(a)pyrene	330	ug/kg	1.3	ug/kg	1700	ug/kg	44	115	30	1700	ug/kg	10	200	30
App IX	Soil	8270C		Benzyl alcohol	330	ug/kg	140	ug/kg			10	130	30			10	130	30
App IX	Soil	8270C		bis(2-Chloroethoxy)methane	330	ug/kg	22	ug/kg	1700	ug/kg	42	110	30	1700	ug/kg	36	110	30
App IX	Soil	8270C		bis(2-Chloroethyl) ether	330	ug/kg	2	ug/kg	1700	ug/kg	41	110	30	1700	ug/kg	32	118	30
App IX	Soil	8270C		bis(2-Chloro-1-methylethyl) ether	330	ug/kg	26	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		bis(2-Ethylhexyl) phthalate	330	ug/kg	18	ug/kg	1700	ug/kg	56	123	30	1700	ug/kg	10	200	30
App IX	Soil	8270C		4-Bromophenyl phenyl ether	330	ug/kg	21	ug/kg	1700	ug/kg	53	112	30	1700	ug/kg	44	120	30
App IX	Soil	8270C		Butyl benzyl phthalate	330	ug/kg	19	ug/kg	1700	ug/kg	57	121	30	1700	ug/kg	43	138	30
App IX	Soil	8270C		4-Chloroaniline	330	ug/kg	17	ug/kg	1700	ug/kg	25	110	30	1700	ug/kg	11	110	30
App IX	Soil	8270C		Chlorobenzilate	330	ug/kg	3.4	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		4-Chloro-3-methylphenol	330	ug/kg	21	ug/kg	1700	ug/kg	42	110	30	1700	ug/kg	32	117	30
App IX	Soil	8270C		2-Chloronaphthalene	330	ug/kg	22	ug/kg	1700	ug/kg	46	110	30	1700	ug/kg	40	110	30
App IX	Soil	8270C		2-Chlorophenol	330	ug/kg	26	ug/kg	1700	ug/kg	39	110	30	1700	ug/kg	32	110	30
App IX	Soil	8270C		4-Chlorophenyl phenyl ether	330	ug/kg	24	ug/kg	1700	ug/kg	53	110	30	1700	ug/kg	47	116	30
App IX	Soil	8270C		Chrysene	330	ug/kg	0.9	ug/kg	1700	ug/kg	56	111	30	1700	ug/kg	10	200	30
App IX	Soil	8270C		Diallate	660	ug/kg	4.6	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		Dibenz(a,h)anthracene	330	ug/kg	1.3	ug/kg	1700	ug/kg	45	122	30	1700	ug/kg	10	200	30
App IX	Soil	8270C		Dibenzofuran	330	ug/kg	20	ug/kg	1700	ug/kg	50	110	30	1700	ug/kg	10	200	30
App IX	Soil	8270C		Di-n-butyl phthalate	330	ug/kg	19	ug/kg	1700	ug/kg	57	119	30	1700	ug/kg	31	145	30
App IX	Soil	8270C		1,2-Dichlorobenzene	330	ug/kg	29	ug/kg	1700	ug/kg	42	110	30	1700	ug/kg	29	110	30
App IX	Soil	8270C		1,3-Dichlorobenzene	330	ug/kg	23	ug/kg	1700	ug/kg	40	110	30	1700	ug/kg	29	110	30
App IX	Soil	8270C		1,4-Dichlorobenzene	330	ug/kg	21	ug/kg	1700	ug/kg	38	110	30	1700	ug/kg	26	110	30
App IX	Soil	8270C		3,3'-Dichlorobenzidine	1600	ug/kg	18	ug/kg	1700	ug/kg	31	110	30	1700	ug/kg	10	110	30
App IX	Soil	8270C		2,4-Dichlorophenol	330	ug/kg	20	ug/kg	1700	ug/kg	40	110	30	1700	ug/kg	33	110	30
App IX	Soil	8270C		2,6-Dichlorophenol	330	ug/kg	4	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		Diethyl phthalate	330	ug/kg	19	ug/kg	1700	ug/kg	55	114	30	1700	ug/kg	48	118	30
App IX	Soil	8270C		Dimethoate	660	ug/kg	130	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		p-Dimethylaminoazobenzene	660	ug/kg	3.4	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		7,12-Dimethylbenz(a)anthracene	660	ug/kg	120	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		3,3'-Dimethylbenzidine	1600	ug/kg	63	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		2,4-Dimethylphenol	330	ug/kg	20	ug/kg	1700	ug/kg	28	110	30	1700	ug/kg	19	114	30
App IX	Soil	8270C		Dimethyl phthalate	330	ug/kg	21	ug/kg	1700	ug/kg	54	112	30	1700	ug/kg	47	116	30
App IX	Soil	8270C		1,3-Dinitrobenzene	330	ug/kg	120	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		4,6-Dinitro-2-methylphenol	1600	ug/kg	13	ug/kg	1700	ug/kg	21	110	30	1700	ug/kg	10	110	30
App IX	Soil	8270C		2,4-Dinitrophenol	1600	ug/kg	83	ug/kg	1700	ug/kg	10	110	30	1700	ug/kg	10	110	30
App IX	Soil	8270C		2,4-Dinitrotoluene	330	ug/kg	18	ug/kg	1700	ug/kg	55	116	30	1700	ug/kg	42	118	30
App IX	Soil	8270C		2,6-Dinitrotoluene	330	ug/kg	21	ug/kg	1700	ug/kg	54	115	30	1700	ug/kg	28	137	30
App IX	Soil	8270C		2-sec-Butyl-4,6-dinitrophenol	660	ug/kg	110	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		Di-n-octyl phthalate	330	ug/kg	18	ug/kg	1700	ug/kg	45	123	30	1700	ug/kg	10	182	30
App IX	Soil	8270C		Diphenylamine	330	ug/kg	21	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		Disulfoton	1600	ug/kg	4.1	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		Ethyl methanesulfonate	330	ug/kg	4	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		Famphur	3300	ug/kg	4.6	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		Fluoranthene	330	ug/kg	1.2	ug/kg	1700	ug/kg	55	118	30	1700	ug/kg	10	200	30
App IX	Soil	8270C		Fluorene	330	ug/kg	1.2	ug/kg	1700	ug/kg	51	110	30	1700	ug/kg	10	187	30
App IX	Soil	8270C		Hexachlorobenzene	330	ug/kg	2.1	ug/kg	1700	ug/kg	51	110	30	1700	ug/kg	37	122	30
App IX	Soil	8270C		Hexachlorobutadiene	330	ug/kg	26	ug/kg	1700	ug/kg	39	110	30	1700	ug/kg	30	110	30
App IX	Soil	8270C		Hexachlorocyclopentadiene	1600	ug/kg	16	ug/kg	1700	ug/kg	10	110	30	1700	ug/kg	10	110	30
App IX	Soil	8270C		Hexachloroethane	330	ug/kg	28	ug/kg	1700	ug/kg	38	110	30	1700	ug/kg	13	110	30
App IX	Soil	8270C		Hexachloropropene	3300	ug/kg	4.6	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		Indeno(1,2,3-cd)pyrene	330	ug/kg	1.5	ug/kg	1700	ug/kg	45	121	30	1700	ug/kg	10	200	30
App IX	Soil	8270C		Isophorone	330	ug/kg	21	ug/kg	1700	ug/kg	46	117	30	1700	ug/kg	32	129	30
App IX	Soil	8270C		Isosafrole	660	ug/kg	3.9	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		Methapyrilene	1600	ug/kg	120	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		3-Methylcholanthrene	660	ug/kg	120	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		Methyl methanesulfonate	330	ug/kg	4.1	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		2-Methylnaphthalene	330	ug/kg	1.5	ug/kg	1700	ug/kg	46	110	30	1700	ug/kg	10	200	30
App IX	Soil	8270C		2-Methylphenol	330	ug/kg	28	ug/kg	1700	ug/kg	36	110	30	1700	ug/kg	19	124	30
App IX	Soil	8270C		3-Methylphenol	330	ug/kg	4.3	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		4-Methylphenol	330	ug/kg	22	ug/kg	1700	ug/kg	40	110	30	1700	ug/kg	27	116	30
App IX	Soil	8270C		Naphthalene	330	ug/kg	1.6	ug/kg	1700	ug/kg	42	110	30	1700	ug/kg	10	200	30
App IX	Soil	8270C		1,4-Naphthoquinone	1600	ug/kg	110	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		1-Naphthylamine	330	ug/kg	3.6	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		2-Naphthylamine	330	ug/kg	3.7	ug/kg			0	0	0			0	0	0

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TABLE 4: Target Quantitation Limits with MS/MSD and Laboratory Control Standard Recovery and RPD Control Limits and Surrogate Compound Recovery Control Limits

Reference	Matrix	Method	Surrogate	Compound	TQL				LCS/LCSD					MS/MSD				
					RL	Units	MDL	Units	AMT	Units	LCL	UCL	RPD	AMT	Units	LCL	UCL	RPD
App IX	Soil	8270C		2-Nitroaniline	1600	ug/kg	22	ug/kg	1700	ug/kg	47	124	30	1700	ug/kg	31	141	30
App IX	Soil	8270C		3-Nitroaniline	1600	ug/kg	16	ug/kg	1700	ug/kg	44	110	30	1700	ug/kg	24	110	30
App IX	Soil	8270C		4-Nitroaniline	1600	ug/kg	26	ug/kg	1700	ug/kg	50	110	30	1700	ug/kg	23	124	30
App IX	Soil	8270C		Nitrobenzene	330	ug/kg	2.2	ug/kg	1700	ug/kg	40	110	30	1700	ug/kg	33	111	30
App IX	Soil	8270C		2-Nitrophenol	330	ug/kg	19	ug/kg	1700	ug/kg	35	110	30	1700	ug/kg	17	110	30
App IX	Soil	8270C		4-Nitrophenol	1600	ug/kg	110	ug/kg	1700	ug/kg	24	117	30	1700	ug/kg	10	125	30
App IX	Soil	8270C		4-Nitroquinoline-1-oxide	3300	ug/kg	85	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		N-Nitrosodi-n-butylamine	330	ug/kg	7.5	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		N-Nitrosodiethylamine	330	ug/kg	4.3	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		N-Nitrosodimethylamine	330	ug/kg	16	ug/kg			10	130	30			10	130	30
App IX	Soil	8270C		N-Nitrosodiphenylamine	330	ug/kg	21	ug/kg	1700	ug/kg	54	112	30	1700	ug/kg	10	169	30
App IX	Soil	8270C		N-Nitrosodi-n-propylamine	330	ug/kg	23	ug/kg	1700	ug/kg	40	114	30	1700	ug/kg	30	121	30
App IX	Soil	8270C		N-Nitrosomethylethylamine	330	ug/kg	5.2	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		N-Nitrosomorpholine	330	ug/kg	5.1	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		N-Nitrosopiperidine	330	ug/kg	110	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		N-Nitrosopyrrolidine	330	ug/kg	3.9	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		5-Nitro-o-toluidine	330	ug/kg	4.6	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		Pentachlorobenzene	330	ug/kg	5.4	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		Pentachloroethane	1600	ug/kg	4.5	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		Pentachloronitrobenzene	1600	ug/kg	6	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		Pentachlorophenol	330	ug/kg	82	ug/kg	1700	ug/kg	10	110	30	1700	ug/kg	10	182	30
App IX	Soil	8270C		Phenacetin	660	ug/kg	6.7	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		Phenanthrene	330	ug/kg	2	ug/kg	1700	ug/kg	54	110	30	1700	ug/kg	10	200	30
App IX	Soil	8270C		Phenol	330	ug/kg	25	ug/kg	1700	ug/kg	39	110	30	1700	ug/kg	10	144	30
App IX	Soil	8270C		p-Phenylene diamine	3300	ug/kg	61	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		Phorate	1600	ug/kg	5.9	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		2-Picoline	660	ug/kg	4.9	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		Pronamide	660	ug/kg	4.8	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		Pyrene	330	ug/kg	1.1	ug/kg	1700	ug/kg	58	113	30	1700	ug/kg	10	200	30
App IX	Soil	8270C		Pyridine	660	ug/kg	17	ug/kg	1700	ug/kg	22	110	30	1700	ug/kg	10	110	30
App IX	Soil	8270C		Safrole	660	ug/kg	4.3	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		1,2,4,5-Tetrachlorobenzene	330	ug/kg	5.3	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		2,3,4,6-Tetrachlorophenol	1600	ug/kg	110	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		Tetraethyldithiopyrophosphate	1600	ug/kg	4.6	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		Thionazin	1600	ug/kg	6.5	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		o-Toluidine	660	ug/kg	4.9	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		1,2,4-Trichlorobenzene	330	ug/kg	24	ug/kg	1700	ug/kg	43	110	30	1700	ug/kg	33	110	30
App IX	Soil	8270C		2,4,5-Trichlorophenol	330	ug/kg	25	ug/kg	1700	ug/kg	42	110	30	1700	ug/kg	32	112	30
App IX	Soil	8270C		2,4,6-Trichlorophenol	330	ug/kg	21	ug/kg	1700	ug/kg	37	110	30	1700	ug/kg	22	110	30
App IX	Soil	8270C		O,O,O-Triethyl phosphorothioate	1600	ug/kg	5.5	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C		1,3,5-Trinitrobenzene	1600	ug/kg	100	ug/kg			0	0	0			0	0	0
App IX	Soil	8270C	Surrogate	2-Fluorobiphenyl					1700	ug/kg	34	110	0	1700	ug/kg	34	110	0
App IX	Soil	8270C	Surrogate	2-Fluorophenol					2500	ug/kg	26	110	0	2500	ug/kg	26	110	0
App IX	Soil	8270C	Surrogate	2,4,6-Tribromophenol					2500	ug/kg	10	118	0	2500	ug/kg	10	118	0
App IX	Soil	8270C	Surrogate	Nitrobenzene-d5					1700	ug/kg	24	112	0	1700	ug/kg	24	112	0
App IX	Soil	8270C	Surrogate	Phenol-d5					2500	ug/kg	28	110	0	2500	ug/kg	28	110	0
App IX	Soil	8270C	Surrogate	Terphenyl-d14					1700	ug/kg	41	119	0	1700	ug/kg	41	119	0
App IX	Soil	6010 7174A		Arsenic	1	mg/kg	0.3	mg/kg	200	mg/kg	80	120	20	200	mg/kg	75	125	20
App IX	Soil	6011 7174A		Lead	0.3	mg/kg	0.19	mg/kg	50	mg/kg	80	120	20	50	mg/kg	75	125	20
App IX	Soil	6012 7174A		Selenium	0.5	mg/kg	0.45	mg/kg	200	mg/kg	80	120	20	200	mg/kg	75	125	20
App IX	Soil	6013 7174A		Thallium	1	mg/kg	0.55	mg/kg	200	mg/kg	80	120	20	200	mg/kg	75	125	20
App IX	Soil	6014 7174A		Aluminum	20	mg/kg	9.6	mg/kg	200	mg/kg	80	120	20	200	mg/kg	75	125	20
App IX	Soil	6015 7174A		Antimony	6	mg/kg	0.39	mg/kg	50	mg/kg	80	120	20	50	mg/kg	75	125	20
App IX	Soil	6016 7174A		Barium	20	mg/kg	0.071	mg/kg	200	mg/kg	80	120	20	200	mg/kg	75	125	20
App IX	Soil	6017 7174A		Beryllium	0.5	mg/kg	0.043	mg/kg	5	mg/kg	80	120	20	5	mg/kg	75	125	20
App IX	Soil	6018 7174A		Cadmium	0.5	mg/kg	0.036	mg/kg	5	mg/kg	80	120	20	5	mg/kg	75	125	20
App IX	Soil	6019 7174A		Calcium	500	mg/kg	16	mg/kg	5000	mg/kg	80	120	20	5000	mg/kg	75	125	20
App IX	Soil	6020 7174A		Chromium	1	mg/kg	0.2	mg/kg	20	mg/kg	80	120	20	20	mg/kg	75	125	20
App IX	Soil	6021 7174A		Cobalt	5	mg/kg	0.16	mg/kg	50	mg/kg	80	120	20	50	mg/kg	75	125	20
App IX	Soil	6022 7174A		Copper	2.5	mg/kg	0.74	mg/kg	25	mg/kg	80	120	20	25	mg/kg	75	125	20
App IX	Soil	6023 7174A		Iron	10	mg/kg	4.9	mg/kg	100	mg/kg	73	137	20	100	mg/kg	75	125	20
App IX	Soil	6024 7174A		Magnesium	500	mg/kg	5.1	mg/kg	5000	mg/kg	80	120	20	5000	mg/kg	75	125	20
App IX	Soil	6025 7174A		Manganese	1.5	mg/kg	0.074	mg/kg	50	mg/kg	80	120	20	50	mg/kg	75	125	20
App IX	Soil	6026 7174A		Nickel	4	mg/kg	0.27	mg/kg	50	mg/kg	80	120	20	50	mg/kg	75	125	20
App IX	Soil	6027 7174A		Potassium	500	mg/kg	6.2	mg/kg	5000	mg/kg	80	120	20	5000	mg/kg	75	125	20
App IX	Soil	6028 7174A		Silver	1	mg/kg	0.1	mg/kg	5	mg/kg	80	120	20	5	mg/kg	75	125	20
App IX	Soil	6029 7174A		Sodium	500	mg/kg	66	mg/kg	5000	mg/kg	80	120	20	5000	mg/kg	75	125	20
App IX	Soil	6030 7174A		Vanadium	5	mg/kg	0.12	mg/kg	50	mg/kg	80	120	20	50	mg/kg	75	125	20
App IX	Soil	6031 7174A		Zinc	2	mg/kg	1	mg/kg	50	mg/kg	80	120	20	50	mg/kg	75	125	20
App IX	Soil	6032 7174A		Mercury	0.1	mg/kg	0.015	mg/kg	0.83333335	mg/kg	73	121	20	0.1666667	mg/kg	11	192	20

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TABLE 4: Target Quantitation Limits with MS/MSD and Laboratory Control Standard Recovery and RPD Control Limits and Surrogate Compound Recovery Control Limits

Reference	Matrix	Method	Surrogate	Compound	TQL				LCS/LCSD					MS/MSD				
					RL	Units	MDL	Units	AMT	Units	LCL	UCL	RPD	AMT	Units	LCL	UCL	RPD
App IX	Soil	9060 TOC		Total Organic Carbon (Walkley Black)	1000	mg/kg	1000	mg/kg			51	128	20			51	128	20
App IX	Soil	Gen Chem		CR, Hexavalent	0.8	mg/kg	0.21	mg/kg			10	200	100			10	200	100
TCLP	Soil	8260B		Benzene	0.025	mg/L	0.13	ug/L	50	ug/L	76	118	30	50	ug/L	76	117	30
TCLP	Soil	8260B		2-Butanone (MEK)	0.25	mg/L	0.57	ug/L			0	0	0			0	0	0
TCLP	Soil	8260B		Carbon tetrachloride	0.025	mg/L	0.13	ug/L	50	ug/L	71	124	30	50	ug/L	72	124	30
TCLP	Soil	8260B		Chlorobenzene	0.025	mg/L	0.15	ug/L	50	ug/L	76	113	30	50	ug/L	72	114	30
TCLP	Soil	8260B		Chloroform	0.025	mg/L	0.16	ug/L	50	ug/L	82	117	30	50	ug/L	82	117	30
TCLP	Soil	8260B		1,2-Dichloroethane	0.025	mg/L	0.22	ug/L	50	ug/L	78	122	30	50	ug/L	80	120	30
TCLP	Soil	8260B		1,1-Dichloroethylene	0.07	mg/L	0.19	ug/L			0	0	0			0	0	0
TCLP	Soil	8260B		Tetrachloroethylene	0.07	mg/L	0.29	ug/L			0	0	0			0	0	0
TCLP	Soil	8260B		Trichloroethylene	0.05	mg/L	0.17	ug/L			0	0	0			0	0	0
TCLP	Soil	8260B		Vinyl chloride	0.025	mg/L	0.22	ug/L	50	ug/L	47	123	30	50	ug/L	54	118	30
TCLP	Soil	8260B	Surrogate	4-Bromofluorobenzene					50	ug/L	84	125	0	50	ug/L	84	125	0
TCLP	Soil	8260B	Surrogate	1,2-Dichloroethane-d4					50	ug/L	80	122	0	50	ug/L	80	122	0
TCLP	Soil	8260B	Surrogate	Toluene-d8					50	ug/L	90	122	0	50	ug/L	90	122	0
TCLP	Soil	8260B	Surrogate	Dibromofluoromethane					50	ug/L	86	124	0	50	ug/L	86	125	0
TCLP	Soil	8270C		m-Cresol & p-Cresol	0.04	mg/L	0.75	ug/L	0.4	mg/L	27	110	30	0.4	mg/L	46	109	32
TCLP	Soil	8270C		1,4-Dichlorobenzene	0.004	mg/L	0.52	ug/L	0.2	mg/L	16	110	30	0.2	mg/L	18	110	36
TCLP	Soil	8270C		2,4-Dinitrotoluene	0.02	mg/L	0.4	ug/L	0.2	mg/L	45	126	30	0.2	mg/L	31	131	32
TCLP	Soil	8270C		Hexachlorobenzene	0.02	mg/L	0.065	ug/L	0.2	mg/L	47	116	30	0.2	mg/L	36	132	22
TCLP	Soil	8270C		Hexachlorobutadiene	0.02	mg/L	0.51	ug/L	0.2	mg/L	10	110	30	0.2	mg/L	18	116	32
TCLP	Soil	8270C		Hexachloroethane	0.02	mg/L	0.58	ug/L	0.2	mg/L	10	110	30	0.2	mg/L	18	110	33
TCLP	Soil	8270C		o-Cresol	0.004	mg/L	0.56	ug/L	0.2	mg/L	24	110	30	0.2	mg/L	33	115	31
TCLP	Soil	8270C		Nitrobenzene	0.004	mg/L	0.053	ug/L	0.2	mg/L	35	117	30	0.2	mg/L	19	211	59
TCLP	Soil	8270C		Pentachlorophenol	0.04	mg/L	0.48	ug/L	0.2	mg/L	12	110	30	0.2	mg/L	10	140	56
TCLP	Soil	8270C		Pyridine	0.02	mg/L	0.78	ug/L	0.2	mg/L	10	110	30	0.2	mg/L	10	148	65
TCLP	Soil	8270C		2,4,5-Trichlorophenol	0.02	mg/L	0.96	ug/L	0.2	mg/L	35	111	30	0.2	mg/L	24	143	22
TCLP	Soil	8270C		2,4,6-Trichlorophenol	0.02	mg/L	1.4	ug/L	0.2	mg/L	32	110	30	0.2	mg/L	36	135	27
TCLP	Soil	8270C	Surrogate	2-Fluorobiphenyl							22	110	0			22	110	0
TCLP	Soil	8270C	Surrogate	2-Fluorophenol							10	110	0			10	110	0
TCLP	Soil	8270C	Surrogate	2,4,6-Tribromophenol							17	117	0			17	117	0
TCLP	Soil	8270C	Surrogate	Nitrobenzene-d5							29	111	0			29	111	0
TCLP	Soil	8270C	Surrogate	Phenol-d5							10	110	0			10	110	0
TCLP	Soil	8270C	Surrogate	Terphenyl-d14							40	119	0			40	119	0
TCLP	Soil	6032 7174A		Arsenic	0.5	mg/L	0.0032	mg/L	2	mg/L	50	150	20	5	mg/L	50	150	20
TCLP	Soil	6033 7174A		Barium	10	mg/L	0.00067	mg/L	2	mg/L	50	150	20	50	mg/L	50	150	20
TCLP	Soil	6034 7174A		Cadmium	0.1	mg/L	0.00066	mg/L	0.05	mg/L	50	150	20	1	mg/L	50	150	20
TCLP	Soil	6035 7174A		Chromium	0.5	mg/L	0.0022	mg/L	0.2	mg/L	50	150	20	5	mg/L	50	150	20
TCLP	Soil	6036 7174A		Lead	0.5	mg/L	0.0019	mg/L	0.5	mg/L	50	150	20	5	mg/L	50	150	20
TCLP	Soil	6037 7174A		Selenium	0.25	mg/L	0.0041	mg/L	2	mg/L	50	150	20	1	mg/L	50	150	20
TCLP	Soil	6038 7174A		Silver	0.5	mg/L	0.0022	mg/L	0.05	mg/L	50	150	20	1	mg/L	50	150	20
TCLP	Soil	6039 7174A		Mercury	0.002	mg/L	0.00012	mg/L	5	ug/L	50	150	20	5	ug/L	50	150	20
TCLP	Soil	Gen Chem		CR, Hexavalent	0.02	mg/L	0.002	mg/L			63	155	20	2.5	mg/kg	10	157	99
AVS-SEM	Soil	6020		Cadmium	0.02	mg/Kg	0.009	mg/Kg										
AVS-SEM	Soil	6020		Copper	0.2	mg/Kg	0.1	mg/Kg										
AVS-SEM	Soil	6020		Lead	0.05	mg/Kg	0.05	mg/Kg										
AVS-SEM	Soil	7470		Mercury	0.02	mg/Kg	0.002	mg/Kg										
AVS-SEM	Soil	6020		Nickel	0.2	mg/Kg	0.03	mg/Kg										
AVS-SEM	Soil	6020		Zinc	0.5	mg/Kg	0.5	mg/Kg										
ALK - PAH	Water	8270C SIM		Anthracene	0.02	ug/L	0.0036	ug/L										
ALK - PAH	Water	8270C SIM		Pyrene	0.02	ug/L	0.0035	ug/L										
ALK - PAH	Water	8270C SIM		Dibenzofuran	0.02	ug/L	0.0046	ug/L										
ALK - PAH	Water	8270C SIM		Dibenzothiophene	0.02	ug/L	0.0038	ug/L										
ALK - PAH	Water	8270C SIM		Benzo(g,h,i)perylene	0.02	ug/L	0.0029	ug/L										
ALK - PAH	Water	8270C SIM		Benzo(e)pyrene	0.02	ug/L	0.0040	ug/L										
ALK - PAH	Water	8270C SIM		Indeno(1,2,3-cd)pyrene	0.02	ug/L	0.0026	ug/L										
ALK - PAH	Water	8270C SIM		Perylene	0.02	ug/L	0.0050	ug/L										
ALK - PAH	Water	8270C SIM		Benzo(b)fluoranthene	0.02	ug/L	0.0023	ug/L										
ALK - PAH	Water	8270C SIM		Fluoranthene	0.02	ug/L	0.0044	ug/L										
ALK - PAH	Water	8270C SIM		Benzo(k)fluoranthene	0.02	ug/L	0.0025	ug/L										
ALK - PAH	Water	8270C SIM		Acenaphthylene	0.02	ug/L	0.0034	ug/L										
ALK - PAH	Water	8270C SIM		Chrysene	0.02	ug/L	0.0034	ug/L										
ALK - PAH	Water	8270C SIM		Benzo(a)pyrene	0.02	ug/L	0.0043	ug/L										
ALK - PAH	Water	8270C SIM		Dibenz(a,h)anthracene	0.02	ug/L	0.0025	ug/L										
ALK - PAH	Water	8270C SIM		Benz(a)anthracene	0.02	ug/L	0.0026	ug/L										
ALK - PAH	Water	8270C SIM		Acenaphthene	0.02	ug/L	0.0044	ug/L										
ALK - PAH	Water	8270C SIM		Phenanthrene	0.02	ug/L	0.0050	ug/L										
ALK - PAH	Water	8270C SIM		Fluorene	0.02	ug/L	0.0038	ug/L										
ALK - PAH	Water	8270C SIM		1-Methylnaphthalene	0.02	ug/L	0.0035	ug/L										
ALK - PAH	Water	8270C SIM		Naphthalene	0.02	ug/L	0.0030	ug/L										

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TABLE 4: Target Quantitation Limits with MS/MSD and Laboratory Control Standard Recovery and RPD Control Limits and Surrogate Compound Recovery Control Limits

Reference	Matrix	Method	Surrogate	Compound	TQL				LCS/LCSD					MS/MSD				
					RL	Units	MDL	Units	AMT	Units	LCL	UCL	RPD	AMT	Units	LCL	UCL	RPD
ALK - PAH	Water	8270C SIM		2-Methylnaphthalene	0.02	ug/L	0.0023	ug/L										
ALK - PAH	Water	8270C SIM		Biphenyl	0.02	ug/L	0.0024	ug/L										
ALK - PAH	Water	8270C SIM		C1-Chrysenes	0.02	ug/L	0.02	ug/L										
ALK - PAH	Water	8270C SIM		C1-Dibenzothiophenes	0.02	ug/L	0.02	ug/L										
ALK - PAH	Water	8270C SIM		C1-Fluoranthenes/Pyrenes	0.02	ug/L	0.02	ug/L										
ALK - PAH	Water	8270C SIM		C1-Fluorenes	0.02	ug/L	0.02	ug/L										
ALK - PAH	Water	8270C SIM		C1-Phenanthrenes/Anthracenes	0.02	ug/L	0.02	ug/L										
ALK - PAH	Water	8270C SIM		C2-Chrysenes	0.02	ug/L	0.02	ug/L										
ALK - PAH	Water	8270C SIM		C2-Dibenzothiophenes	0.02	ug/L	0.02	ug/L										
ALK - PAH	Water	8270C SIM		C2-Fluorenes	0.02	ug/L	0.02	ug/L										
ALK - PAH	Water	8270C SIM		C2-Naphthalenes	0.02	ug/L	0.02	ug/L										
ALK - PAH	Water	8270C SIM		C2-Phenanthrenes/Anthracenes	0.02	ug/L	0.02	ug/L										
ALK - PAH	Water	8270C SIM		C3-Chrysenes	0.02	ug/L	0.02	ug/L										
ALK - PAH	Water	8270C SIM		C3-Dibenzothiophenes	0.02	ug/L	0.02	ug/L										
ALK - PAH	Water	8270C SIM		C3-Fluorenes	0.02	ug/L	0.02	ug/L										
ALK - PAH	Water	8270C SIM		C3-Naphthalenes	0.02	ug/L	0.02	ug/L										
ALK - PAH	Water	8270C SIM		C3-Phenanthrenes/Anthracenes	0.02	ug/L	0.02	ug/L										
ALK - PAH	Water	8270C SIM		C4-Chrysenes	0.02	ug/L	0.02	ug/L										
ALK - PAH	Water	8270C SIM		C4-Naphthalenes	0.02	ug/L	0.02	ug/L										
ALK - PAH	Water	8270C SIM		C4-Phenanthrenes/Anthracenes	0.02	ug/L	0.02	ug/L										
ALK - PAH	Soil	8270C SIM		Anthracene	5	ug/Kg	0.47	ug/Kg										
ALK - PAH	Soil	8270C SIM		Pyrene	5	ug/Kg	0.37	ug/Kg										
ALK - PAH	Soil	8270C SIM		Dibenzofuran	5	ug/Kg	0.59	ug/Kg										
ALK - PAH	Soil	8270C SIM		Dibenzothiophene	5	ug/Kg	0.21	ug/Kg										
ALK - PAH	Soil	8270C SIM		Benzo(g,h,i)perylene	5	ug/Kg	0.64	ug/Kg										
ALK - PAH	Soil	8270C SIM		Benzo(e)pyrene	5	ug/Kg	0.18	ug/Kg										
ALK - PAH	Soil	8270C SIM		Indeno(1,2,3-cd)pyrene	5	ug/Kg	0.16	ug/Kg										
ALK - PAH	Soil	8270C SIM		Perylene	5	ug/Kg	0.32	ug/Kg										
ALK - PAH	Soil	8270C SIM		Benzo(b)fluoranthene	5	ug/Kg	0.25	ug/Kg										
ALK - PAH	Soil	8270C SIM		Fluoranthene	5	ug/Kg	0.61	ug/Kg										
ALK - PAH	Soil	8270C SIM		Benzo(k)fluoranthene	5	ug/Kg	0.15	ug/Kg										
ALK - PAH	Soil	8270C SIM		Acenaphthylene	5	ug/Kg	0.24	ug/Kg										
ALK - PAH	Soil	8270C SIM		Chrysene	5	ug/Kg	0.25	ug/Kg										
ALK - PAH	Soil	8270C SIM		Benzo(a)pyrene	5	ug/Kg	0.14	ug/Kg										
ALK - PAH	Soil	8270C SIM		Dibenz(a,h)anthracene	5	ug/Kg	0.28	ug/Kg										
ALK - PAH	Soil	8270C SIM		Benz(a)anthracene	5	ug/Kg	0.48	ug/Kg										
ALK - PAH	Soil	8270C SIM		Acenaphthene	5	ug/Kg	0.23	ug/Kg										
ALK - PAH	Soil	8270C SIM		Phenanthrene	5	ug/Kg	0.75	ug/Kg										
ALK - PAH	Soil	8270C SIM		Fluorene	5	ug/Kg	0.50	ug/Kg										
ALK - PAH	Soil	8270C SIM		1-Methylnaphthalene	5	ug/Kg	0.31	ug/Kg										
ALK - PAH	Soil	8270C SIM		Naphthalene	5	ug/Kg	0.37	ug/Kg										
ALK - PAH	Soil	8270C SIM		2-Methylnaphthalene	5	ug/Kg	0.39	ug/Kg										
ALK - PAH	Soil	8270C SIM		Biphenyl	5	ug/Kg	0.40	ug/Kg										
ALK - PAH	Soil	8270C SIM		C1-Chrysenes	5	ug/Kg	5	ug/Kg										
ALK - PAH	Soil	8270C SIM		C1-Dibenzothiophenes	5	ug/Kg	5	ug/Kg										
ALK - PAH	Soil	8270C SIM		C1-Fluoranthenes/Pyrenes	5	ug/Kg	5	ug/Kg										
ALK - PAH	Soil	8270C SIM		C1-Fluorenes	5	ug/Kg	5	ug/Kg										
ALK - PAH	Soil	8270C SIM		C1-Phenanthrenes/Anthracenes	5	ug/Kg	5	ug/Kg										
ALK - PAH	Soil	8270C SIM		C2-Chrysenes	5	ug/Kg	5	ug/Kg										
ALK - PAH	Soil	8270C SIM		C2-Dibenzothiophenes	5	ug/Kg	5	ug/Kg										
ALK - PAH	Soil	8270C SIM		C2-Fluorenes	5	ug/Kg	5	ug/Kg										
ALK - PAH	Soil	8270C SIM		C2-Naphthalenes	5	ug/Kg	5	ug/Kg										
ALK - PAH	Soil	8270C SIM		C2-Phenanthrenes/Anthracenes	5	ug/Kg	5	ug/Kg										
ALK - PAH	Soil	8270C SIM		C3-Chrysenes	5	ug/Kg	5	ug/Kg										
ALK - PAH	Soil	8270C SIM		C3-Dibenzothiophenes	5	ug/Kg	5	ug/Kg										
ALK - PAH	Soil	8270C SIM		C3-Fluorenes	5	ug/Kg	5	ug/Kg										
ALK - PAH	Soil	8270C SIM		C3-Naphthalenes	5	ug/Kg	5	ug/Kg										
ALK - PAH	Soil	8270C SIM		C3-Phenanthrenes/Anthracenes	5	ug/Kg	5	ug/Kg										
ALK - PAH	Soil	8270C SIM		C4-Chrysenes	5	ug/Kg	5	ug/Kg										
ALK - PAH	Soil	8270C SIM		C4-Naphthalenes	5	ug/Kg	5	ug/Kg										
ALK - PAH	Soil	8270C SIM		C4-Phenanthrenes/Anthracenes	5	ug/Kg	5	ug/Kg										

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TABLE 5: Laboratory Instrument Maintenance Schedule

Ion Chromatograph[1] Instrument Maintenance Schedule				
As Needed	**Daily**	**Weekly**	**Monthly**	**Semi-Annually**
Clean micromembrane suppressor when decreases in sensitivity are observed.	Check plumbing/leaks.	Check pump heads for leaks.	Check all air and liquid lines for discoloration and crimping, if indicated.	Lubricate left hand piston.
Check fuses when power problems occur.		Check filter (inlet).	Check/change bed supports guard and analytical columns, if indicated.	Clean conductivity cell.
Reactivate or change column when peak shape and resolution deteriorate or when retention time shortening indicates that exchange sites have become deactivated.	Check pump pressure.			Check conductivity cell for calibration.
De-gas pump head when flow is erratic.	Check conductivity meter.			

AlpChem Auto Analyzer[1] Instrument Maintenance Schedule				
As Needed	**Daily**	**Monthly**	**Bi-Monthly**	**Annually**
Prepare fresh reagents.	Check detector and make sure there are no trapped bubbles in detector cell.	Replace tubing.	Lubricate pump roller.	Clean pump rollers with steel wool and lubricate.
	Check valves.			
	Check reference source.			
Replace pump tubing.	Check peristaltic tubing and rollers. Check sampler.	Clean pump, diluter, and XYZ sampler.		
	Clean sample probe shaft.			

TABLE 5: Laboratory Instrument Maintenance Schedule

High Pressure Liquid Chromatograph [1] Instrument Maintenance Schedule	
Daily	**As Needed**
Check level of solution in reservoirs. If adding, verify that solvent is from the same source. If changing, rinse gas and delivery lines to prevent contamination of the new solvent.	Replace columns when peak shape and resolution indicate that chromatographic performance of column is below method requirements.
Check gas supply.	Oil autosampler slides when sample does not advance.
Flush with an appropriate solvent to remove all bubbles.	Rinse flow cell with 1N nitric acid if sensitivity low.
Pre-filter all samples.	Change pump seals when flow becomes inconsistent.
	Repack front end of column. Backflush column.

Inductively Coupled Argon Plasma/Mass Spectrometry (ICP/MS) [1] Instrument Maintenance Schedule					
Daily	**Weekly**	**Monthly**	**Quarterly**	**Annually**	**As Needed**
Check sample waste container level.	Check peristaltic pump: proper roller pressure, sample introduction tubing, correct pump rotation, condition of drain tubing.	Clean all filters and replace fans.	Replace oil in roughing pumps.	Replace oil in turbo-molecular pump.	Check electronic settings for optimum sensitivity: resolution, mass calibration, ion optics, CEM, deflector voltage.
Check quartz torch condition.	Check condition of sampler and skimmer cones.	Check recirculator water level.			
Measure quartz torch for proper alignment.	Check and drain oil mist eliminator on roughing pumps.				
Clean spray chamber and nebulizer.					
Check oil level of roughing pumps.					

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TABLE 5: Laboratory Instrument Maintenance Schedule

Inductively Coupled Argon Plasma (ICP) [1] Instrument Maintenance Schedule			
Daily	**Monthly or As Needed**	**Monthly**	**Quarterly**
Check gases. Check that argon tank pressure is 50-60 psi and that a spare tank is available. Check aspiration tubing.	Clean plasma torch assembly to remove accumulated deposits.	Change vacuum pump oil.	Notify manufacturer service engineer for scheduled preventive maintenance service.
Check vacuum pump gage (<10 millitorr)	Clean nebulizer and drain chamer; keep free flowing to maintain optimum performance.		
Check that cooling water supply system is full and drain bottle is not full. Also that drain tubing is clear, tight fitting and has few bends.	Clean filters on back of power unit to remove dust.		
Check that nebulizer is not clogged.	Replace when needed: peristaltic pump tubing sample capillary tubing autosampler sipper probe.		
Check tat capillary tubing is clean and in good condition.	Check yttrium position. Check o-rings. Clean/lubricate pump rollers.		
Check that peristaltic pump windings are secure.			

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TABLE 5: Laboratory Instrument Maintenance Schedule

Inductively Coupled Argon Plasma (ICP) [1] Instrument Maintenance Schedule			
Daily	**Monthly or As Needed**	**Monthly**	**Quarterly**
Check that high voltage switch is on.			
Check that exhaust screens are clean.			
Check that torch, glassware, aerosol injector tube, bonnet are clean.			

Cold Vapor Atomic Absorption (Leeman PS 200) [1] Instrument Maintenance Schedule		
Daily	**As Needed**	**Annually**
Change drying tube.	Change pump tubing.	Change Hg lamp.
Check pump tubing/drain tubing.	Check/change Hg lamp.	
Check gas pressure.	Clean optical cell.	
Check aperture reading. Check tubing.	Lubricate pump.	

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TABLE 5: Laboratory Instrument Maintenance Schedule

Gas Chromatograph[1] Instrument Maintenance Schedule		
Daily	**As Needed**	**Quarterly/Semi-Annually/Annually**
Check for sufficient supply of carrier and detector gases. Check for correct column flow and/or inlet pressures.	Replace front portion of column packing or break off front portion of capillary columns. Replace column if this fails to restore column performance or when column performance (e.g. peak tailing, poor resolution, high backgrounds, etc.) indicates it is required.	Quarterly ELCD: change-roughing resin, clean cell assembly. Quarterly FID: clean detector.
Check temperatures of injectors and detectors. Verify temperature programs.	Change glass wool plug in injection port and/or replace injection port liner when front portion of column packing is changed or front portion of capillary column is removed.	Semi-annually ECD: perform wipe test.
Check inlets, septa. Replace septum. Clean injector port.		Annually ELCD: change finishing resin, clean solvent filter. Annually FID: replace flame tip. ECD: detector cleaning and re-foiling, every five years or whenever loss of sensitivity, or erratic response or failing resolution is observed.
Check baseline level.	Perform gas purity check (if high baseline indicates that impure carrier gas may be in use).	

TABLE 5: Laboratory Instrument Maintenance Schedule

Gas Chromatograph[1] Instrument Maintenance Schedule		
Daily	**As Needed**	**Quarterly/Semi-Annually/Annually**
Check reactor temperature of electrolytic conductivity detector. Inspect chromatogram to verify symmetrical peak shape and adequate resolution between closely eluting peaks. Clip column leader.	Replace or repair flow controller if constant gas flow cannot be maintained.	Change Hg lamp.
	Replace fuse.	
	Reactivate external carrier gas dryers.	
	Detectors: clean when baseline indicates contamination or when response is low. FID: clean/replace jet, replace ignitor. NPD: clean/replace collector assembly. PID: clean lamp window monthly or replace as needed, replace seals. ELCD: check solvent flow weekly, change reaction tube, replace solvent, change reaction gas, clean/replace Teflon® transfer line. ECD: follow manufacturers suggested maintenance schedule.	
	Reactivate flow controller filter dryers when presence of moisture is suspected.	Change Hg lamp.

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TABLE 5: Laboratory Instrument Maintenance Schedule

Gas Chromatograph[1] Instrument Maintenance Schedule		
Daily	**As Needed**	**Quarterly/Semi-Annually/Annually**
	HP7673 Autosampler: replace syringe, fill wash bottle, dispose of waste bottle contents.	
	Purge and trap devices: periodic leak checks quarterly, replace/condition traps (when poor response or disappearance of reactive or poorly trapped compounds), clean sample lines, valves (if they become contaminated), clean glassware. Clean sparger weekly. check purge flow monthly. Bake trap as needed to correct for high background. change trap annually, or as needed whenever loss of sensitivity, or erratic response or failing resolution is observed.	
	Purge and trap autosamplers: leak check system, clean sample lines, valves. PTA-30 autosampler also requires cleaning the syringes, frits, valves, and probe needles, adjustment of microswitches, replacement of Teflon® valve, and lubrication of components.	

TABLE 5: Laboratory Instrument Maintenance Schedule

Mass Spectrometer[1] Instrument Maintenance Schedule					
Daily	**Weekly**	**As Needed**	**Quarterly**	**Semi-Annually**	**Annually**
Check for sufficient gas supply. Check for correct column flow and/or inlet pressure.	Check mass calibration (PFTBA or FC-43).	Check level of oil in mechanical pumps and diffusion pump if vacuum is insufficient. Add oil if needed between service contract maintenance.	Check ion source and analyzer (clean, replace parts as needed)		Replace the exhaust filters on the mechanical rough pump every 1-2 years.
Check temperatures of injector, detector. Verify temperature programs.		Replace electron multiplier when the tuning voltage approaches the maximum and/or when sensitivity falls below required levels.	Check vacuum, relays, gas pressures and flows.	Clean rods.	
Check inlets, septa.		Clean source, including all ceramics and lenses - the source cleaning is indicated by a variety of symptoms including inability of the analyst to tune the instrument to specifications, poor response, and high background contamination.	Change oil in the mechanical rough pump. Relubricate the turbomolecular pump-bearing wick.		
Check baseline level.		Repair/replace jet separator.			
Check values of lens voltages, electron multiplier, and relative abundance and mass assignments of the calibration compounds.		Replace filaments when both filaments burn out or performance indicates need for replacement.			

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TABLE 5: Laboratory Instrument Maintenance Schedule

Sonicator[1] Instrument Maintenance Schedule	
Daily	**As Needed**
Daily when used: inspect probe tips for inconsistencies (etching/pitting).	Replace probe tip.
	Disassemble and clean sonicator probe tips.
	Tune sonicator assembly.

Analytical/Top Loading Balances [1] Instrument Maintenance Schedule	
Daily	**Annually**
Check using Class S-verified weights once daily or before use. Clean pan and weighing compartment.	Replace probe tip.

Refrigerators/Walk-In Coolers[1] Instrument Maintenance Schedule	
Daily	**As Needed**
Temperatures checked and logged.	Refrigerant system and electronics serviced.

Ovens[1] Instrument Maintenance Schedule	
Daily	**As Needed**
Temperatures checked and logged.	Electronics serviced.

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TABLE 5: Laboratory Instrument Maintenance Schedule

Specific Digital Ion Analyzer[1] Instrument Maintenance Schedule	
Daily	**As Needed**
Daily when used: calibrate with check standards, inspect electrode daily, clean as needed, inspect electrode proper levels of filling solutions daily, fill as needed, clean probe, each use.	Electronics serviced.

Turbidimeter[1] Instrument Maintenance Schedule		
Daily	**As Needed**	**Annually**
Daily when used: adjust linearity on varying levels of NTU standards. Standardize with NTU standards. Inspect cells	Clean instrument housing.	Electronics serviced.

Dissolved Oxygen Meter[1] Instrument Maintenance Schedule	
Daily	**As Needed**
Daily when used: calibrate with check standards, check probe membrane for deterioration, clean and replace membrane with electrode solution.	Electronics serviced.

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TABLE 5: Laboratory Instrument Maintenance Schedule

Conductance Meter[1] Instrument Maintenance Schedule	
Daily	**As Needed**
Daily when used: check probe and cables, standardize with KCl, inspect conductivity cell.	Electronics serviced.

Chemical Oxygen Demand (COD) Reactor[1] Instrument Maintenance Schedule	
Daily	**As Needed**
Daily when used: calibrate with check standards.	Electronics serviced.

Spectrophotometer[1] Instrument Maintenance Schedule			
As Needed	**Monthly or As Needed**	**Monthly**	**Quarterly**
Dust the lamp and front of the front lens.	Check the zero %A adjustment.	Clean windows.	Check instrument panel.
	Clean sample compartment.		Perform wavelength calibration.
	Clean cuvettes.		Replace lamp annually or when erratic response is observed.
			Clean and align optics.

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TABLE 5: Laboratory Instrument Maintenance Schedule

pH Meter[1] Instrument Maintenance Schedule	
As Needed	**Daily**
Clean electrode.	Inspect electrode. Verify electrodes are property connected and filled.
Refill reference electrode.	Inspect electrode property levels of filling solutions. Make sure electrode is stored in buffer (pH 4.0).

Alpkem FS3000[1] Instrument Maintenance Schedule			
1677 Available CNAs Needed	**Daily**	**Monthly**	**Bi-Monthly**
Prepare fresh reagents.	Clean detector cell and make sure there are no trapped bubbles in lines.	Replace tubing.	Lubricate pump roller. Replace diffusion membrane.
Replace pump tubing.	Check peristaltic tubing and rollers.		Clean reference electrode.
			Replace reference solution.

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TABLE 5: Laboratory Instrument Maintenance Schedule

Total Organic Carbon Analyzer (OI 7000) [1] Instrument Maintenance Schedule				
Daily	**As Needed**	**Weekly**	**Monthly**	**Semi-Annually**
Check: oxygen supply, persulfate supply, acid supply, carrier gas flow rate (~150 cc/min), IR millivolts for stability (after 30 minute warm-up), reagent reservoirs	Check injection port septum after 50-200 runs; tube end-fitting connections after 100 hours of use; indicating drying tube, NDIR zero, after 100 hours of use; sample pump after 2000 hours of use, digestion vessel/condensation chamber after 2000 hours of use; permeation tube after 2000 hours of use; NDIR cell after 2000 hours of use.	Check liquid-flow-rate-pump-tubing conditions on autosampler. Check injection port septum.	Clean digestion vessel. Clean condenser column. Do the leak test.	Change pump tubing.

Digestion Block[1] Instrument Maintenance Schedule
Annually
Check temperature with NIST thermometer.

Flash Point Tester[1] Instrument Maintenance Schedule	
Daily	**As Needed**
Check tubing. Clean sample cup each use.	Check thermometer against NIST thermometer when used.
Check gas.	
Clean flash assembly.	
Check stirrer.	

[1]Refer to manufacturer's instructions for each instrument to identify and perform maintenance operations.

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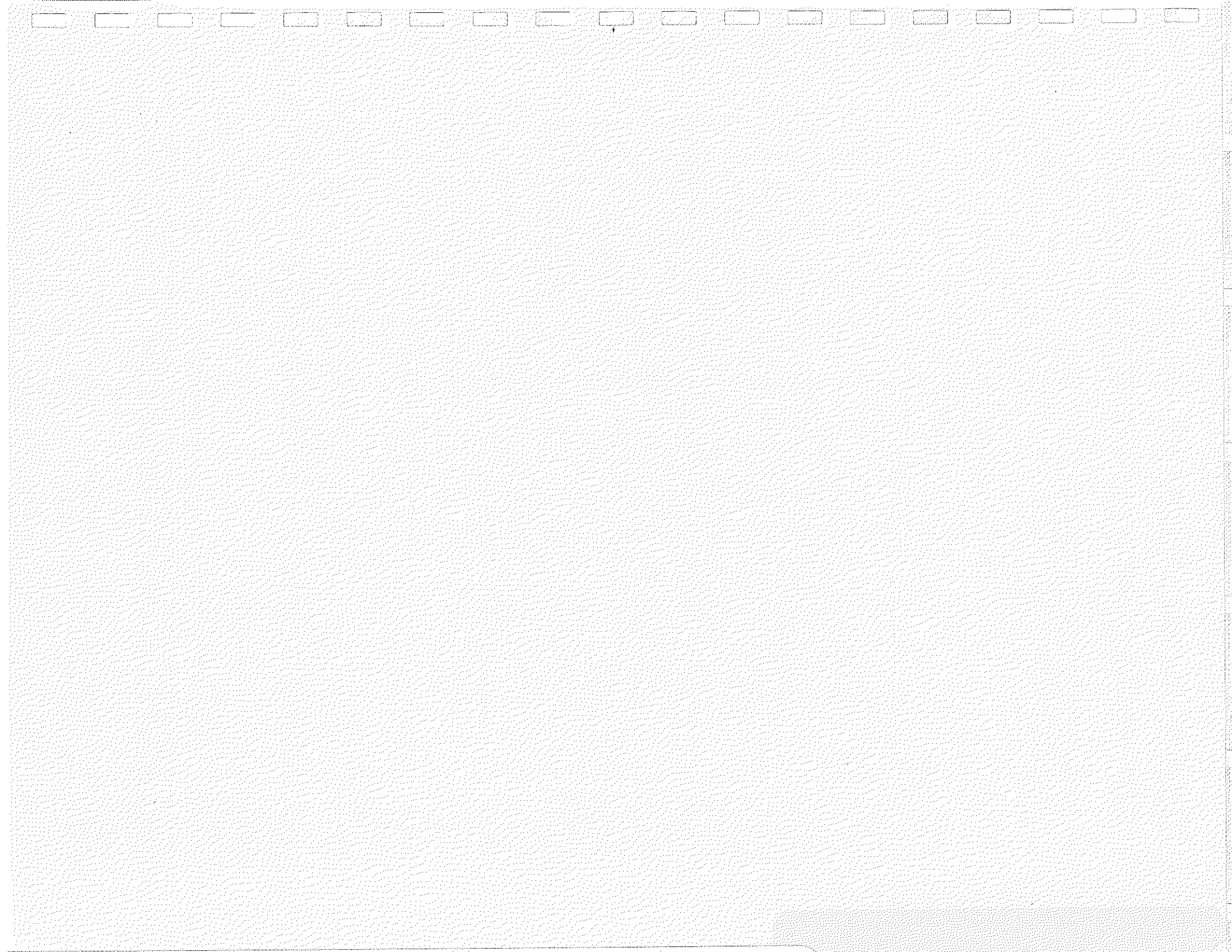
TABLE 6: List of Field Standard Operating Procedures

Field Procedure	The Payne Firm SOP Number[1]
Soil Sampling	5-2
Ground Water Sampling	6-4
Observation of Hollow Stem Auger Drilling Activities	3-2
Observation of Rotasonic Drilling Activities	3-7
Borehole Logging	3-5
Borehole Abandonment	3-6
Decontamination of Drilling Equipment	3-1
Decontamination of Sampling Equipment	5-1, 6-1
Soil Headspace Organic (HSO) Field Screening	5-3
Toxic Vapor Measurement	2-14
Installation of Monitoring Wells	4-2
Well Abandonment	4-4
Well Development	6-2
Well Purging	6-3
Field Filtration of Ground Water Samples	6-6
Measurement of Specific Conductance and pH	2-9
Measurement of Temperature	2-10
Turbidity Measurements	2-7
Water Level Measurements	2-5
Collection of Sediment Samples	ENVIRON SOP 1022
Collection of Surface Water Samples	ENVIRON SOP 1023
Collection of Pore Water Samples	ENVIRON SOP 1024

[1] SOPs are located in Appendix II.



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APPENDIX I: Data Objective Summary Form

Activity:	Ground Water Monitoring (Q3-2008)
Sample Media:	Ground Water
Sample Type:	Grab
Number of Samples:	3 monitoring wells on-property
QA/QC Samples:	1 field blanks
	1 field duplicates
	1 MS/MSD
	1 Trip blank per VOC cooler
	1 Equipment rinsate per day of sampling
Sampling Procedures:	See applicable SOPs attached to QAPP
Analytical Methods:	SW-846 8260B; SW-846 8270C; SW-846 6010B; SW-846 9050A; SW-846 9056A; SW-846 7470A; SM-18 5220D; SM-18 2340C; SM-18 4500-PE
Appropriate Analytical Levels:	ASL-IV

APPENDIX II

FIELD STANDARD OPERATING PROCEDURES (SOPS) – CD ONLY

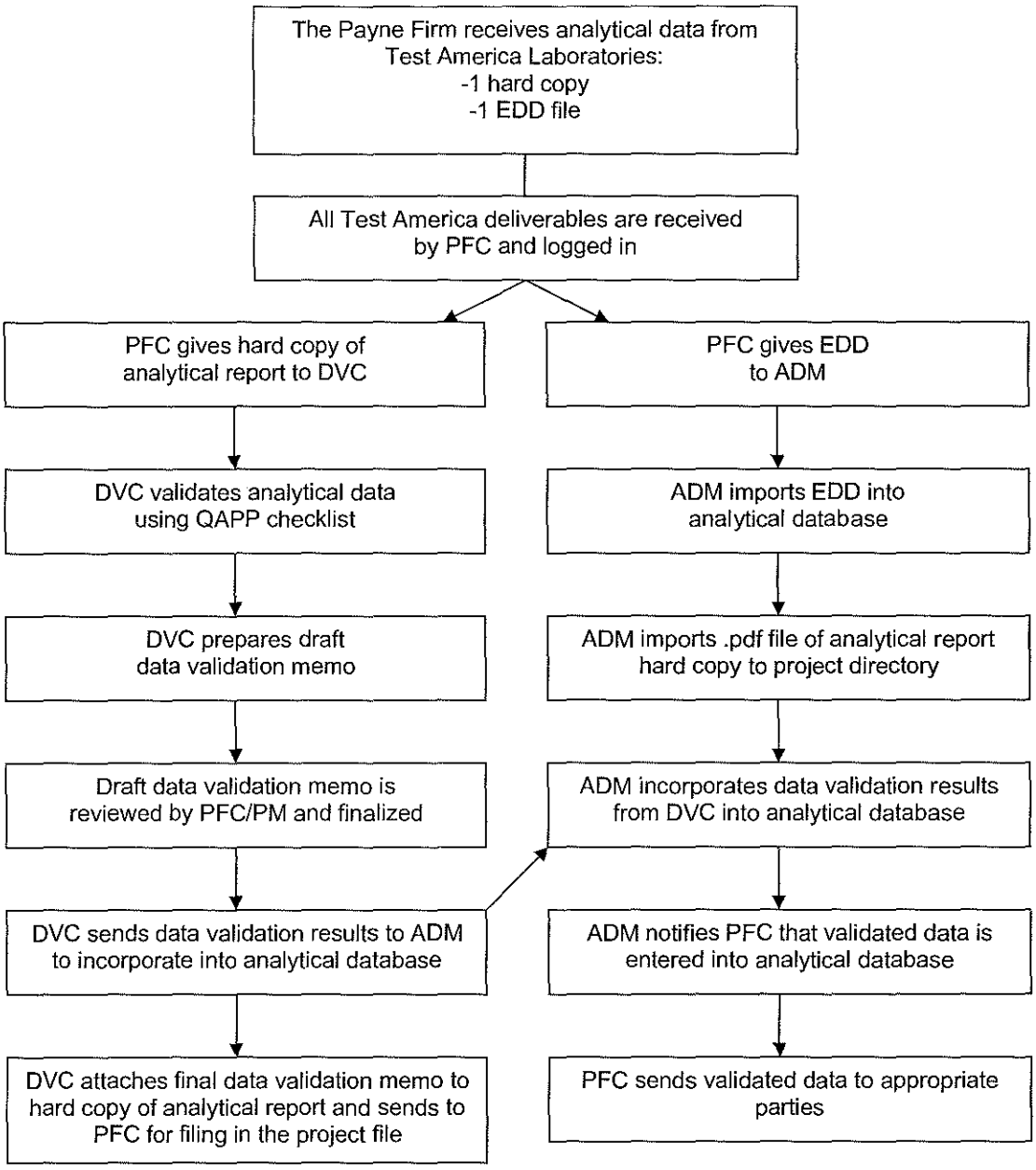
APPENDIX III

LABORATORY STANDARD OPERATING PROCEDURES – CD ONLY

APPENDIX V

ANALYTICAL DATA HANDLING FLOW CHART

BWAY FACILITY
QAPP APPENDIX V: ANALYTICAL DATA HANDLING FLOWCHART



PFC = Project Field Coordinator
DVC = Data Validation Coordinator
PM = Project Manager
ADM = Analytical Database Manager

The Payne Firm, Inc.
QAPP Appendix VI: Data Validation Checklist

Project: Bway Facility
Sampling Event:
Reviewer:
Sample Delivery Groups:
Laboratory Name: Checklist Completion Date:
Note: "X" – Applies; "--" – Does Not Apply

1.0	**Sample Report Completeness**	
This Section provides a checklist of important components of data reports. If the report is incomplete, it may be necessary to halt data validation procedures until all missing information is provided.		
1.1	Review any discrepancies between the chain-of-custody (COC) and submitted sampling data.	
1.2	Presence of signed laboratory statement that attests to the validity of the data.	
1.3	Presence of case narrative that summarizes QA/QC discrepancies and/or other problems.	
1.4	Are COC forms present for all samples?	
1.5 with	Review the COC forms, Sample Receipt form, or the Case Narrative for any problems the sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data.	
1.6	Were Custody Seals present and intact?	
1.7	Is a Sample receipt form present?	
2.0	**Holding times**	
Technical holding times are an important component of assuring that data is valid and not biased from inappropriate handling procedures.		
2.1	**Holding Times - Volatile Organic Compounds**	
2.1.1	Are samples properly preserved? Check preservation requirements, chain-of-custody, and sample receipt form for discrepancies.	
2.1.2	If samples were improperly preserved, or unpreserved, and the technical holding times were exceeded, qualify all positive results for affected samples as "J" estimated and all non-detected results as "UJ" estimated undetected.	
2.1.3	If samples were properly preserved, but technical holding times were exceeded, qualify all positive results for affected samples as "J" estimated and all non-detected results as "UJ" estimated undetected.	
2.1.4 or	If technical holding times are greatly exceeded (>2x the time requirement) upon analysis re-analysis then the reviewer may use professional judgment to qualify all non-detected compounds as "R" rejected and all positive results as "J" estimated.	
2.2	**Holding Times - Semi-Volatile Organic Compounds**	
2.2.1	If technical holding times are exceeded, qualify all positive results for affected samples as "J" estimated and all non-detected results as "UJ" estimated undetected.	
2.2.2	If holding times are greatly exceeded (>2x the time requirement), the reviewer may use professional judgment to qualify all non-detected compounds as "R" rejected and all positive results as "J" estimated.	

2.3	**Holding Times Inorganic Compounds**	
2.3.1	Review whether samples were properly preserved (4 degrees Celsius for solids: acid preservation for aqueous).	
2.3.2	If samples were improperly preserved and the holding times were exceeded, qualify all positive results for affected samples as "J" estimated and all non-detected results as "UJ" estimated undetected.	
2.3.3	If samples were properly preserved, but technical holding times were exceeded, qualify all positive results for affected samples as "J" estimated and all non-detected results as "UJ" estimated undetected.	
2.3.4	If holding times are greatly exceeded (>2x requirement), the reviewer may use professional judgment to qualify all non-detect compounds as "R" rejected and all positive results as "J" estimated.	
2.4	**Holding Times – Ph**	
2.4.1	If technical holding times are exceeded the reviewer may use professional judgment to qualify data as "R" rejected or "J" estimated.	
3.0	**Quality Assurance Summary Data Review**	
VOC Surrogate Compound Recovery - Surrogate compounds are spiked compounds of known composition that are added to samples and blanks. The recovery of surrogate compounds allows an assessment interference. VOC surrogate recoveries are used with other QA/QC data to qualify sample results and to justify laboratory re-analysis.		
3.1.1	Were surrogate recoveries present for each batch?	
3.1.2	Were any outliers marked correctly (based upon the laboratory's criteria)?	
3.1.3	If any surrogate compound was out of compliance was re-analysis performed to confirm matrix interference?	
3.2	**SVOC Surrogate Compound Recovery- Surrogate compounds are spiked compounds of known composition that are added to samples and blanks. The recovery of surrogate compounds allows an assessment of matrix interference. SVOC analyses include compounds that can be divided into two classes: acid compounds and base/neutral compounds. Each class has a specific assigned set of surrogate compounds.**	
3.2.1	Are the surrogate recovery data present for each batch (method and matrix), including TCLP?	
3.2.2	Were any outliers marked correctly?	
3.2.3	If any two surrogate compounds in either the acid or base/neutral classes were out of compliance, was re-analysis performed to confirm a matrix interference? Note: Check the report narrative for an indication of re-analysis.	
3.2.4	If any one surrogate compound has a recovery of less than 10% in either the acid or base/neutral classes, check for indications that re-analysis was performed to confirm a matrix interference?	

3.2.5 Based on the findings, qualify data in either the acid or base/neutral classes with the following criteria: Note: Qualification may not be appropriate for TCLP data. Best professional judgment may be used to qualify data. Action: If two surrogates in a particular class are above the upper control limit, all positive results, for that fraction, in that class should be qualified as "J". If any two surrogates in a particular class have recoveries less than the lower criteria, but the recovery is greater than or equal to 10%, all detected compounds, for that fraction, should be qualified as "J". If any surrogate in a particular class has recoveries less than 10%, all detected compounds, for that fraction, should be qualified as "J" estimated and all non detected compounds as "R" rejected.	
3.3 Quality Assurance Summary Review - Matrix Spike/Matrix Spike Duplicates	
Matrix spike and matrix spike duplicates are performed to assess method precision for VOC and SVOC analyses. Matrix spikes and duplicates are required for every batch of samples (every 20 - 30 samples). The reviewer should be aware that MS/MSD are batch specific not sample specific.	
3.3.1 Is matrix spike/matrix spike duplicate recovery data present?	
3.3.2 Were any VOC spike recoveries are outside the QC limits?	
3.3.3 Check RPDs for matrix spike and matrix spike duplicate recoveries.	
3.4 Matrix Spike/Matrix Spike Duplicates, SVOC	
3.4.1 Is matrix spike/matrix spike duplicate recovery data present?	
3.4.2 Were any SVOC spike recoveries are outside the QC limits?	
3.4.3 Check RPDs for matrix spike and matrix spike duplicate recoveries.	
3.5 Sample Specific	
Metal Spike Recovery - Spikes are elements of known composition that are added to blanks and to samples that measure accuracy and precision of the analyses. At least one spike should be included for each batch of samples. Spike recovery criteria listed in this section are determined from U.S. EPA's National Functional Guidelines for Inorganic Data Review. The criteria applied by an individual laboratory may vary. The laboratory should be consulted and its QA/QC criteria supplied to the reviewer.	
3.5.1 Confirm that at least one spike sample was analyzed per batch and per matrix type.	
3.5.2 Are all spike recoveries (except Hg and Ag) within control limits?	
3.5.3 Based on the results of 3.5.2, if the sample results were <4x the spike amount and spike recoveries were out of criteria, a post-digestion spike should be analyzed. Note: Post-digestion spikes are not required for Ag or Hg. The post digestion spike confirms a matrix interference and should not be used for qualification.	
3.5.4 Are any Aqueous spike recoveries (pre and post digestion): 1. Less than 30%? 2. Between 30% and 74%? 3. Between 126% and 150%? 4. Greater than 150%?	
3.5.5 Are any soil/solid/waste spike recoveries (pre and post digestion): 1. Less than 10%? 2. Between 10% and 74%? 3.Between 126% and 200%? 4. Greater than 200%?	
3.5.6 If the pre-digestion spike was outside the QC limits for Atomic Adsorption furnace analysis (e.g. SW-846 methods in the 7000 series), was a post-digestion spike performed?	
3.5.7 Based on the results from 3.5.6, were the post-digestion spike recoveries within the quality control range (75% to 125%)?	

4.0	**Blank Data Review**	
Blank Data - Laboratory blanks are used to assess whether contamination from the laboratory, reagents or other samples exists and whether this contamination can bias sample results. The qualification of sample results will depend upon the magnitude of blank contamination.		
4.1	**Blank Summary Review – VOC**	
4.1.1	Is the method blank summary data present for each batch (method and matrix), including TCLP?	
4.1.2	Is there an indication that the samples associated with that blank were diluted?	
4.1.3	Check field/trip/rinsate blanks for any positive results for volatile target analytes.	
4.1.4	Check method blanks for VOCs.	
4.2	**Blank Summary Review – SVOC**	
4.2.1	Is the method blank summary data present for each batch (method and matrix), including TCLP?	
4.2.2	Check for dilution associated with that blank.	
4.2.3	Check field/trip/rinsate blanks for any positive results for semi-volatile target analytes.	
4.2.4	Check method blanks for SVOCs.	
4.3	**Blank Summary Review – Metals**	
4.3.1	Were the method blank summary data present for each batch (method and matrix), including TCLP?	
4.3.2	Check for detections in blank.	

APPENDIX VII

ENTIRE QAPP ON CD-ROM