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QUALITY ASSURANCE PROJECT PLAN
FOR
OU2 SUPPLEMENTAL REMEDIAL INVESTIGATION
(including Baseline Ecological Risk Assessment)

VOLUME I

Shieldalloy Metallurgical Site
Newfield, New Jersey

September 2011

Prepared By:

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Philadelphia, PA 19102

QAPP Worksheet #1

1.0 TITLE AND APPROVAL PAGE

Quality Assurance Project Plan for OU2 Supplemental Remedial Investigation, Shieldalloy Metallurgical Site, Newfield, New Jersey
Document Title

United States Environmental Protection Agency
Lead Organization (Agency, State, Tribe, Federal Facility, PRP, or Grantee)

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September 2011
Preparation Date (Day/Month/Year)

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Signature/Date

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Printed Name/Organization

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Jorge Gomez/TRC Environmental
Printed Name/Organization

Investigative Organization's Project QA Manager: _____
Signature/Date

Elizabeth Denly/TRC Environmental
Printed Name/Organization

Laboratory's Project Manager: _____
Signature/Date

Marie Meidhof/Accutest Laboratories
Printed Name/Organization

Laboratory's Project Manager: _____
Signature/Date

Mary Davis/Alpha Analytical Laboratory
Printed Name/Organization

Approval Signatures: _____

Signature/Date

Sherrel Henry/Remedial Project Manager
Printed Name/Title

EPA
Approval Authority

Document Control Number: **L2011-116.doc**

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QAPP Worksheet #2

QAPP IDENTIFYING INFORMATION

Site Name/Project Name: Shieldalloy Metallurgical Site, OU2
Site Location: Newfield, New Jersey
Index Number: CERCLA 02-2010-2017
Contractor Name: TRC
Anticipated start date of QAPP Implementation: October 2011

Refer to Section 4.2.1 for information about the document control format

1. Identify guidance used to prepare QAPP:

Uniform Federal Policy for Quality Assurance Project Plans, Intergovernmental Data Quality Task Force, EPA-505-B-04-900A-C, March 2005

2. Identify regulatory program: CERCLA/Superfund

3. Identify approval entity: EPA Region II, NJDEP

4. Indicate whether the QAPP is a generic program QAPP or a project specific QAPP. (underline one)

5. List dates of scoping meetings that were held:
May 3, 2011

6. List title of QAPP documents and approval dates written for previous site work, if applicable:

Title	Approval Date
Shieldalloy Metallurgical Corporation, Newfield, New Jersey, Remedial Investigation Work Plan, Appendix B, ENSR, December 1989.	Unknown

7. List organizational partners (stakeholders) and connection with EPA and/or State:

SMC

8. List data users:

US EPA Remedial Project Manager; NJDEP Case Manager; TRC

9. If any required QAPP Elements (1-20), Worksheets and/or Required Information are not applicable the project, then underline the omitted QAPP Elements, Worksheets and Required Information on the attached Table. Provide an explanation for their exclusion below:

21, 37: These worksheets will not be included in the QAPP. Information specific to each of these worksheets will be discussed in the QAPP text.

Required QAPP Element(s) and Corresponding QAPP Section(s)	Required Information	QAPP Worksheet #
Project Management and Objectives		
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5.0 Project Planning/Problem Definition 5.1 Project Planning (Scoping) 5.2 Problem Definition, Site History, and Background	- Project Planning Session Documentation (including Data Needs tables) - Project Scoping Session Participants Sheet - Problem Definition, Site History, and Background - Site Maps (historical and present)	9 10
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Required QAPP Element(s) and Corresponding QAPP Section(s)	Required Information	QAPP Worksheet #
Assessment/Oversight		
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Streamlining Data Review Data Review Steps To Be Streamlined Criteria for Streamlining Data Review Amounts and Types of Data Appropriate for Streamlining		NA

3.0 DISTRIBUTION LIST AND PROJECT PERSONNEL SIGN-OFF SHEET

3.1 Distribution List

The Distribution List (Worksheet #3) documents who will receive copies of the approved Quality Assurance Project Plan (QAPP) and any subsequent revisions or amendments to the QAPP. A complete copy of the QAPP and any subsequent revisions will be maintained on file at TRC, Philadelphia, Pennsylvania and will be available to EPA upon request.

3.2 Project Personnel Sign-Off Sheet

Project personnel performing **OU2** Supplemental Remedial Investigation (RI) and Baseline Ecological Risk Assessment (BERA) work at the Shieldalloy Metallurgical Site will read this QAPP and perform tasks as described in this QAPP. The project personnel sign-off sheet (Worksheet #4) will be used to document that the appropriate personnel have read the QAPP.

Copies of signed project personnel sign-off sheets will be returned to TRC and maintained in the central project file at TRC. These sheets will be made available to EPA upon request.

QAPP Worksheet #3

Distribution List

QAPP Recipients	Title	Organization	Telephone Number	Fax Number	E-Mail Address	Document Control Number
Sherrel Henry	Remedial Project Manager	US EPA Region 2	212-637-4273	212-637-3966	Henry.sherrel@epa.gov	L2011-116
Donna L. Gaffigan	Case Manager	NJDEP	609-633-1494	609-633-1439	Donna.gaffigan@dep.state.nj.us	L2011-116
David White	Environmental Director/Site Representative	SMC	614-599-9582		dwhite@amg-v.com	L2011-116
Patrick Hansen	Project Coordinator	TRC	215-246-3449	215-665-5748	phansen@trcsolutions.com	L2011-116
Jorge Gomez	Project Manager	TRC	609-731-8122	215-665-5748	jgomez@trcsolutions.com	L2011-116
Elizabeth Denly	Project QA Manager	TRC	978-656-3577	978-453-1995	edenly@trcsolutions.com	L2011-116
TBD	Field Team Manager/Site Safety Officer	TRC	TBD	TBD	TBD	L2011-116
Karen Vetrano	Human Health Risk Assessor	TRC	508-420-0754	NA	kvetrano@trcsolutions.com	L2011-116
Scott Heim	Ecological Risk Assessor	TRC	978-656-3583	978-453-1995	sheim@trcsolutions.com	L2011-116
Marie Meidhof	Project Manager	Accutest Laboratories	732-329-0200	732-329-3499	mariem@accutest.com	L2011-116
Mary Davis	Project Manager	Alpha Analytical Laboratory	508-898-9220	508-898-9193	mdavis@alphalab.com	L2011-116

TBD – To Be Determined

QAPP Worksheet #4

Project Personnel Sign-Off Sheet

Organization: TRC Environmental

Project Personnel	Title	Telephone Number	Signature	Date QAPP Read
Patrick Hansen	Project Coordinator	215-246-3449		
Jorge Gomez	Project Manager	609-731-8122		
Elizabeth Denly	Project QA Manager	978-656-3577		
TBD	Field Team Manager/Site Safety Officer	TBD		
Karen Vetrano	Risk Assessor (Human Health)	508-420-0754		
Scott Heim	Risk Assessor (Ecological)	978-656-3583		

TBD – To Be Determined

QAPP Worksheet #4

Project Personnel Sign-Off Sheet

Organization: EPA Region 2

Project Personnel	Title	Telephone Number	Signature	Date QAPP Read
Sherrel Henry	Remedial Project Manager	212-637-4273		

Organization: NJDEP

Project Personnel	Title	Telephone Number	Signature	Date QAPP Read
Donna L. Gaffigan	Case Manager	609-633-1494		

Organization: Analytical Laboratories

Project Personnel	Title	Telephone Number	Signature	Date QAPP Read
Marie Meidhof/Accutest Laboratories	Project Manager	732-329-0200		
Mary Davis/Alpha Analytical Laboratory	Project Manager	508-898-9220		

4.0 PROJECT ORGANIZATION

This section identifies the organizations and key personnel participating in the Shieldalloy Metallurgical Site (SMC; the Site) project. The specific roles and responsibilities of the key personnel are included in this section. An explanation of the lines of authority, reporting relationships and communication pathways are provided. Qualifications of key personnel are included in the resumes provided in Appendix A.

4.1 Project Organization Chart

Organizations involved in the Shieldalloy Metallurgical OU2 Site project are identified in the project organization chart (Worksheet #5). The responsibilities of key personnel are described in Section 4.3.

4.2 Communication Pathways

The lines of authority and communication specific to this study are also presented in the organization chart (Worksheets #5 and 6). The TRC Project Coordinator will serve as the communication link between EPA and TRC. The TRC Project Coordinator will be kept verbally apprised of the program's status by the TRC Project Manager, TRC Field Team Manager and the TRC Project Quality Assurance (QA) Manager. These individuals will immediately notify the TRC Project Coordinator of any internal or subcontractor issues that potentially affect budget, schedule, and/or achievement of the project objectives. The TRC Project Coordinator will in turn communicate these issues to the EPA Remedial Project Manager. Laboratories will communicate any potential issues to the TRC Project QA Manager who will in tum communicate these issues to the TRC Project Manager. The TRC Project Manager will in tum notify the TRC Project Coordinator of any issues which may potentially affect the achievement of project objectives. The TRC Project Coordinator will in turn notify the EPA Remedial Project Manager of these issues.

New findings, observations, and analytical resuhs will be reported to the TRC Project Manager in the field. Members of the field team will review updated information at the end of each field day, or the following morning prior to the start of daily sampling events. The TRC Project Manager will be in regular communication with the overall project management team to convey the progress and the status of the field investigation. Current findings and implementation of decision rules will be discussed. In addition, any information that may resuh in a change in scope will also be addressed.

A representative of the project management team will be responsible for providing representatives of the regulatory agencies periodic project updates. At a minimum, such updates will occur when the field team believes that field delineation efforts are nearing completion at an area or medium or in the event of an anticipated scope and/or schedule change. Ideally, representatives from the TRC project team and EPA will be able to meet at the field headquarters to review the findings of the field efforts prior to demobilizing from the Site. In this way, a consensus can be reached with respect to the adequate acquisition of required field information.

4.2.1 Modifications to Approved QAPP

Predetermined changes to the scope or procedures stated in this QAPP will be formally documented as QAPP revisions or as a QAPP Amendment and must go through the same review and approval process as the original QAPP. The control block in the upper right comer of each changed page will be updated to reflect the date of the change and the revision number.

For changes requiring immediate resolution and implementation, approval by phone will be secured from all levels of management (TRC and EPA). This verbal approval will be documented in phone logs and will be followed by formal revision of the QAPP as described above.

If modifications to the QAPP are mandated by the TRC Project Coordinator, the TRC Project QA Manager may schedule a meeting with the appropriate Shieldalloy Metallurgical OU2 Site team members to discuss the changes, make the necessary modifications to the QAPP or create a QAPP Addendum and submit them to the TRC Project Coordinator for review, and submit the revised QAPP or QAPP Amendment to EPA for review and approval. After the QAPP or QAPP Amendment has been approved, the revised QAPP or QAPP Amendment will be provided to the Shieldalloy Metallurgical OU2 Site team members, according to the original QAPP Distribution List. If a revised QAPP is submitted, the old QAPP will be removed and deemed obsolete.

The project personnel sign-off sheet will be resubmitted to the appropriate personnel and will ensure that all appropriate personnel have read the revised QAPP or QAPP Amendment. This sheet will be returned to TRC, stored in the project files, and will be available to EPA upon request.

4.3 Personnel Responsibilities and Qualifications

The responsibilities of management, QA, field, and laboratory personnel are outlined below. Project personnel in responsible roles are identified in Worksheet #7, by name, title and affiliation. The resumes of these key personnel are included in Appendix A.

4.3.1 Management Responsibilities

<u>EPA Remedial Project Manager</u>

The EPA Remedial Project Manager (RPM) for the Site is Ms. Sherrel Henry. Her primary responsibilities include administration of EPA responsibilities, oversight of the day-to-day activities, and receipt of all required written matter. Ms. Henry is also responsible for providing technical oversight and guidance and reviewing all technical deliverables, including plans and reports.

Figure 4-1 Example Phone Log

Telephone Log

Date of Call: _____ Call Placed By: _____

Time of Call: _____ Phone Number: _____

Parties on Call: _____

_____

_____

Subject: _____

_____

_____

Notes: _____

_____

_____

Action Items: _____

_____

_____

NJDEP Case Manager

The NJDEP Case Manager for this Site is Ms. Donna L. Gaffigan. Ms. Gaffigan is responsible for providing to the EPA technical oversight and guidance and reviewing technical deliverables.

TRC Project Coordinator

The TRC Project Coordinator, Mr. Patrick Hansen, will serve as the main contact with the EPA Remedial Project Manager and other regulatory personnel. Other duties, as necessary, include the following:

- Assuring adherence to project plans and obtaining approvals for any changes to these plans,
- Assuring that approved procedures meet project objectives,
- Reviewing and approving all sampling procedures,
- Assigning duties to project staff and orienting the staff to the specific needs and requirements of the project,
- Serving as the focus for coordination of all field task activities, communications, reports, and technical reviews, and other support functions, and facilitating activities with the technical requirements of the project,
- Coordinating field and office activities with the TRC Project Manager, TRC Project QA Manager, and TRC Field Team Manager,
- Implementing recommendations made by the TRC Project QA Manager,
- Initiating corrective actions,
- Monitoring schedules for field, analytical, and data validation activities associated with the field sampling program, and
- Maintaining the project file.

TRC Project Manager

The TRC Project Manager, Mr. Jorge Gomez, will serve as a secondary liaison to EPA and other regulatory personnel and the main contact with the TRC Project Coordinator and TRC Field Team Manager. The TRC Project Manager will ensure that all technical, administrative, and regulatory compliance objectives are met on a day-to-day basis. Other duties as necessary include:

- Assuring adherence to project plans and obtaining approvals for any changes to these plans,
- Assigning duties to project staff and orienting the staff to the specific needs and requirements of the project,
- Assisting in the coordination of all field task activities, communications, reports, and technical reviews, and other support functions, and facilitating activities with the technical requirements of the project,
- Coordinating field and office activities with the TRC Project Coordinator, TRC Project QA Manager, and TRC Field Team Manager,
- Implementing recommendations made by the TRC Project QA Manager,

- Monitoring schedules for field, analytical, and data validation activities associated with the field sampling program,
- Ensuring successful completion of the project in terms of budget, schedule, and data quality objectives, and
- Interpreting site data.

4.3.2 Quality Assurance Responsibilities

TRC Project QA Manager

The TRC Project QA Manager, Ms. Elizabeth Denly, has overall responsibility for quality assurance oversight. The TRC Project QA Manager communicates directly to the TRC Project Coordinator and TRC Project Manager. Specific responsibilities include:

- Preparing the QAPP,
- Reviewing and approving QA procedures, including any modifications to existing approved procedures,
- Ensuring that QA audits of the various phases of the project are conducted as required,
- Providing QA technical assistance to project staff,
- Following up on corrective action,
- Ensuring that data validation/data assessment is conducted in accordance with the QAPP, and
- Reporting on the adequacy, status, and effectiveness of the QA program to the TRC Project Manager.

4.3.3 Field Responsibilities

TRC Field Team Manager/Site Safety Officer

The TRC Field Team Manager and Site Safety Officer have overall responsibility for completion of all field activities in accordance with the QAPP and are the communication link between the field team, subcontractors, and TRC project management. Specific responsibilities include:

- Understanding and implementing the QAPP,
- Coordinating activities in the field,
- Assigning specific duties to field team members,
- Ensuring site security and access,
- Training field staff,
- Overseeing and coordinating field data collection,
- Mobilizing and demobilizing of the field team and subcontractors to and from the Site,
- Resolving any logistical problems that could potentially hinder field activities, such as equipment malfunctions or availability, personnel conflicts, or weather-dependent working conditions,
- Implementing field quality control (QC) including issuance and tracking of measurement and test equipment; the proper labeling, handling, storage, and shipping of samples; chain-of-custody procedures; and control and collection of all field documentation,
- Assisting with report preparation,

- Ensuring all field activities are being implemented in accordance with the Health and Safety Plan,
- Evaluating new hazards and operation changes when necessary, and
- Correcting all noncompliance situations immediately and stopping work in cases of immediate danger.

Field Staff

The field staff reports directly to the TRC Field Team Manager. The responsibilities of the field team include:

- Understanding and implementing QAPP requirements as they relate to their duties,
- Collecting samples, conducting field measurements, and decontaminating equipment according to documented procedures stated in the QAPP,
- Ensuring that field instruments are properly operated, calibrated, and maintained, and that adequate documentation is kept for all instruments,
- Collecting the required QC samples and thoroughly documenting QC sample collection,
- Ensuring that field documentation and data are complete and accurate, and
- Communicating any nonconformance or potential data quality issues to the TRC Field Team Manager.

4.3.4 Laboratory Responsibilities

Analyses will be performed by the following laboratories.

Laboratory	Analyses to Be Performed
Accutest Laboratories 2235 Route 130 Dayton, NJ 08810 1-732-329-0200 Contact: Marie Meidhof	VOCs, SVOCs, PCB Aroclors, Pesticides, Metals, TOC, grain size, pH, Hexavalent Chromium, ORP, hardness
Alpha Analytical Laboratory 320 Forbes Boulevard Mansfield, MA 02048 1-508-898-9220 Contact: Mary Davis	Metals-ICP/MS, Mercury-Atomic Fluorescence

Laboratory Manager

The Laboratory Manager is ultimately responsible for the data produced by the laboratory. Specific responsibilities include:

- Implementing and adhering to the QA and corporate policies and procedures within the laboratory,
- Approving Standard Operating Procedures (SOPs),

- Maintaining adequate staffing, and
- Implementing internal/external audit findings and corrective actions.

Laboratory QA Manager

The Laboratory QA Manager reports directly to the Laboratory Manager. Specific responsibilities include:

- Approving the laboratory SOPs,
- Ensuring and improving quality within the laboratory,
- Supervising and providing guidance and training to laboratory staff,
- Addressing all client inquiries involving data quality issues,
- Performing QA audits and assessments,
- Tracking extemal and intemal findings of QA audits, and
- Coordinating laboratory certification and accreditation programs.

Laboratory Project Manager

The Laboratory Project Manager is the primary point of contact between the laboratory and TRC. Specific responsibilities of the Laboratory Project Manager include:

- Keeping the laboratory and client informed of project status,
- Monitoring, reviewing, and evaluating the progress and performance of projects,
- Reporting client inquiries involving data quality issues or data acceptability to the Laboratory QA Manager and to the operations staff, and
- Reviewing project data packages for completeness and compliance to client needs.

Laboratory Section Leader

Specific responsibilities include:

- Supervising daily activities within the group,
- Supervising QC activities,
- Supervising the preparation and maintenance of laboratory records,
- Evaluating instmment performance and supervising the calibration, preventative maintenance, and scheduling of repairs, and
- Overseeing or performing review and approval of all data.

Laboratory Analyst/Technician

Each analyst or technician is responsible for:

- Performing technical procedures and data recording in accordance with documented procedures,
- Performing and documenting calibration and preventative maintenance,
- Performing data processing and data review procedures,

- Reporting nonconformances to the appropriate personnel, and
- Ensuring sample and data integrity by adhering to intemal chain-of-custody procedures.

Laboratory Sample Custodian

The Sample Custodian ensures implementation of proper sample receipt procedures, including maintenance of chain-of-custody. Other specific responsibilities include:

- Notifying the Laboratory Project Manager of any discrepancies or anomalies with incoming samples,
- Logging samples into the laboratory tracking system,
- Ensuring that all samples are stored in the proper environment, and
- Overseeing sample disposal.

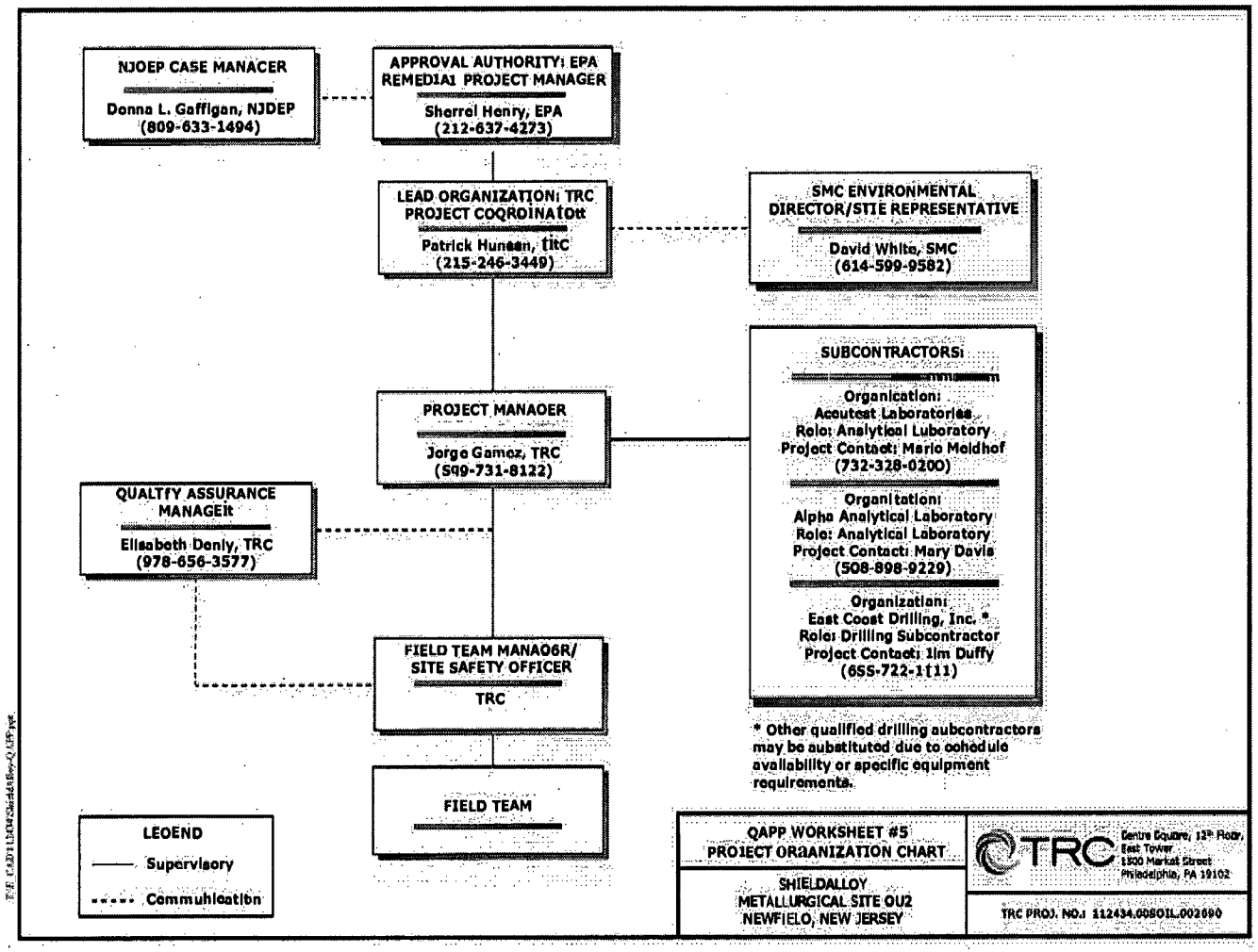
4.3.5 Special Training Requirements/Certification

Most of the activities included in this investigation include routine sampling and analyses with no special training requirements and certifications needed. Staff working on-site will have completed the OSHA/HAZWOPER 40-hour health and safety training and will also have currently (within the past year) completed the OSHA/HAZWOPER 8-hour annual refresher health and safety training. All health and safety training records are maintained in the TRC files. Worksheet #8 summarizes this information. Prior to the start of the investigation, all field personnel will be given instruction specific to the project, covering the following areas:

- Organization and lines of communication and authority,
- Overview of the QAPP, including sample collection, handling, and labeling procedures,
- QA/QC requirements,
- Documentation requirements, and
- Health and safety requirements.

Instructions will be provided by the TRC Project Manager, TRC Field Team Manager, and TRC Project QA Manager.

EPA-NE QAPP Worksheet #5



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QAPP Worksheet #6

Communication Pathways

Communication Drivers	Responsible Entity	Name	Phone Number	Procedure (Timing, Pathways, etc.)
Primary point of contact with EPA	TRC Project Coordinator	Patrick Hansen	215-246-3449	All deliverables and information about the project will be forwarded to Sherrel Henry by Patrick Hansen.
Manages project phases	TRC Project Manager	Jorge Gomez	609-731-8122	Jorge Gomez will be secondary point of contact with Sherrel Henry and liaison between subcontractors, field staff and Patrick Hansen.
QAPP modifications in the field	TRC Field Team Manager	TBD	TBD	Notify Jorge Gomez and/or Elizabeth Denly by phone of modifications to the QAPP made in the field and the reasons.
Daily progress report	TRC Field Team Manager/Site Safety Officer	TBD	TBD	Provide Jorge Gomez daily updates of progress made in the field, any new hazards or operation changes and all noncompliance situations.
Field and Analytical Corrective Actions	TRC Project QA Manager	Elizabeth Denly	978-656-3577	The need for corrective action for field and analytical issues will be determined by Elizabeth Denly.
Monitoring QA/QC in field and laboratory	TRC Project QA Manager	Elizabeth Denly	978-656-3577	Collection of QC samples at the proper frequency and adherence to required procedures will be monitored by Elizabeth Denly.
Reporting Lab Data Quality Issues	Laboratory Project Managers: Accutest Laboratories Alpha Analytical Laboratory	 Marie Meidhof Mary Davis	 732-329-0200 508-898-9220	All QA/QC issues with project field samples will be reported to Elizabeth Denly by the Laboratory Project Managers within 2 business days.

TBD – To Be Determined

QAPP Worksheet #7

Personnel Responsibilities and Qualifications Table

Name	Title	Organizational Affiliation	Responsibilities(+)	Education and Experience Qualifications
Patrick Hansen*	Project Coordinator	TRC	Oversees project and primary contact with EPA	See Resume, Appendix A
Jorge Gomez*	Project Manager	TRC	Manages project – coordinates field team and subcontractors	See Resume, Appendix A
Elizabeth Denly*	Project QA Manager	TRC	QA oversight and prepares QAPPs	See Resume, Appendix A
TBD	Field Team Manager/Site Safety Officer	TRC	Supervises field sampling and coordinates all field activities	TBD
Karen Vetrano*	Risk Assessor	TRC	Performs human health risk assessment	See Resume, Appendix A
Scott Heim*	Risk Assessor	TRC	Performs ecological risk assessment	See Resume, Appendix A
Marie Meidhof*	Project Manager	Accutest Laboratories	Oversees project in laboratory and main contact with TRC	On file at laboratory
Mary Davis*	Project Manager	Alpha Analytical Laboratory	Oversees project in laboratory and main contact with TRC	On file at laboratory

*Project team members
(+)For more detailed descriptions of responsibilities, refer to Section 4.3.
TBD – To Be Determined

QAPP Worksheet #8

Special Personnel Training Requirements Table

Project Function	Specialized Training Title of Course or Description	Training Provided By	Training Date	Personnel/Groups Receiving Training	Personnel Titles/ Organizational Affiliation	Location of Training Records/Certificates
Field Activities on Superfund Site	OSHA/HAZWOPER 40 hour training	Various trainers	Various	All staff to be used on-site	All	On file at TRC
Field Activities on Superfund Site	OSHA/HAZWOPER 8 hour annual refresher training	Various trainers	Within last year, annually	All staff to be used on-site	All	On file at TRC

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5.0 PROJECT PLANNING/PROJECT DEFINITION

This section documents project planning, identifies the environmental problem, defines the environmental questions that need to be answered, and provides background information.

5.1 Project Planning Meetings

Project planning meetings were held during the development of documents and the planning of project-specific investigations and field tasks. Worksheet #9 provides details on the scoping meeting. Meetings held for the planning of project-specific investigations and data reports will be documented in a similar manner following each meeting.

5.2 Problem Definition/Site History and Background

This section presents an overview of historic information, current site condition descriptions, and other existing data applicable to the project. A more detailed discussion with figures is presented in the companion RI and BERA Work Plans.

5.2.1 Site Location

The Site is located at 35 South West Boulevard, primarily in the Borough of Newfield, Gloucester County, New Jersey. A small portion of the southwest corner of the Facility is located in the City of Vineland, Cumberland County, New Jersey. A site location map is provided as Figure 1 in the RI Work Plan. The SMC Facility comprises approximately 67.7 acres. The approximate center of the Facility is located at latitude 39°32'27.6"N, longitude 75°01'06.7"W. SMC also owns an additional 19.8 acres of farmland, referred to as the "Farm Parcel", located in Vineland, approximately 2,000 feet southwest of the Facility. SMC purchased the Farm Parcel to facilitate the groundwater remediation, which includes a pumping well at this location. This Farm Parcel has never been used for manufacturing or related activities.

Specialty glass manufacturing began at the Site in the early 1900s. SMC manufactured specialty metals at the Site from 1955 to approximately 2007. The Site is currently used as office space and is sublet as warehousing and construction equipment storage space.

The Site is bordered as follows:

- To the north by a former rail spur and a former landfill;
- To the west by Conrail rail lines, West Boulevard, and various light industries and residences;
- To the east by a wooded area, residences and small businesses; and
- To the south by Hudson Branch stream, its associated wetlands/headwaters, and residences (located along Weymouth Road).

The Site is secured by a perimeter chain link fence. The facility parking lot along the western property boundary lies outside of the chain link fence to allow visitor and administrative access.

To understand the nature of the Facility and to assist in the characterization, it is helpful to understand certain sections of the Site, defined by the facility's historic operations, current land cover, and potential future uses. The Site consists of six key areas, namely:

- Former Production Area,
- Former Lagoons Area,
- Eastern Storage Areas,
- Southern Area,
- Natural Resource Restoration Areas, and
- Restricted Area.

A description of the key areas is provided below. A plan depicting the boundaries of these areas and the physical features of the facility areas is provided as Figure 2 in the RI Work Plan.

5.2.1.1 Former Production Area

The Former Production Area is located in the northwest part of the Facility and is the area where the majority of former manufacturing activities occurred. The Former Production Area is approximately 22 acres and is the largest key area.

The Former Production Area is largely covered with buildings and asphalt or concrete pavement. TRC uses Building D216 for the Wastewater Treatment Facility component of the OU1 pump and treat system.

A former Degreasing Unit existed in the Former Production Area in former building D109; it was in periodic service for approximately 2 years (1965-1967). After 1967, the system's operation was discontinued and the entire system was removed from the Site. Trichloroethene (TCE) was the primary degreasing chemical used in the unit.

SMC's future plans for the Former Production Area include the continued use of the buildings for warehousing and construction equipment storage space (or replacement/repair thereof).

5.2.1.2 Former Lagoons Area

The Former Lagoons Area is located in the central portion of the Facility and occupies approximately 4.5 acres. The Former Lagoons Area includes closed lagoons that were used from the 1960s to the 1990s for wastewater treatment. During the 1960s, SMC used one unlined lagoon to hold untreated wastewaters at the location of former lined lagoons B-1, B-2, B-3, B-5, B-6, B-7, B-8, B-11 and B-12 (see Figure 2 of Work Plan). In 1971, this one unlined lagoon was closed and replaced by nine smaller, lined lagoons (B-1, B-2, B-3, B-5, B-6, B-7, B-8, B-11 and B-12) in which the wastewater was treated. In 1987, the wastewater treatment process was modified with aboveground tanks replacing some of the lagoons in the wastewater treatment

process. In May 1992, use of all nine lagoons was discontinued. The nine lagoons were characterized, remediated, and closed from 1994 to 1997. Closure activities included sludge removal, liner removal, contaminated soil removal, post-excavation sampling and backfilling.

Two additional lined basins (B-9 and B-10) were located to the west of the former lagoons. These lined basins were used to contain wastewater associated with an air pollution control process. SMC stopped using the basins in early 1990s. In December 1992, the soils below the basins and the adjacent berm soils were sampled per NJDEP requirements. The analytical results indicated that past activities did not impact the surrounding soils. The lined basins were closed in 1993 and the berm soils were used to backfill the former basins.

Currently, the Former Lagoons Area is covered by light vegetation, which includes small trees and grass. SMC is considering a Brownfields/Brightfields approach for the Site, and is considering the Former Lagoons Area as the area to potentially receive a solar field. If viable, solar arrays would be placed in this area after warranted remedial measures have been implemented.

5.2.1.3 Natural Resource Restoration Areas

Natural Resource Restoration Areas were developed in 1999 and 2000 at designated portions of the Facility to provide habitat value. The Natural Resource Restoration Areas cover approximately 9.65 acres, located in a non-contiguous collection of areas around the Facility, generally focused on the eastem and southern portions.

A Natural Resource Restoration Plan was prepared in October 1997 in accordance with the terms of the USEPA and NJDEP Environmental Settlement Agreement (ESA), which was incorporated into SMC's plan of reorganization pursuant to Chapter 11 of the Bankruptcy Code. In November 1997, the Office of Natural Resource Damage (ONRD) reviewed and approved the Natural Resource Restoration Plan.

To ensure the planted areas are maintained as forest areas, the future use of the planted areas is considered restricted. As such, the nature of these areas cannot be changed, without significant regulatory changes.

5.2.1.4 Eastern Storage Areas

The Eastem Storage Areas, which consist of two separate areas bounding the Restricted Area, are located to the east of the Former Production Area and Former Lagoons Area. These areas were previously used as the By-Product Drum Storage Area and a bone yard.

These areas have never included buildings or offices. Currently, the areas are covered with gravel, light vegetation and piles of concrete debris. Most of these areas were developed and included with the Natural Resource Restoration Tree Planting Area.

SMC is considering this area for potential solar installation, or possibly continued use as storage.

5.2.1.5 Southern Area

The Southern Area is located along the southern property line of the Facility. The Southern Area includes undeveloped areas, the on-site impoundment, the Former Thermal Pond Area, and the Pansy Field. The on-site impoundment, as referenced in the current New Jersey Pollutant Discharge Elimination System (NJPDES) permit, receives a combination of facility stormwater and treated water from the on-site groundwater treatment system. The water from the on-site impoundment is directed into a ditch or unnamed tributary of the Hudson Branch. The on-site impoundment was installed in the early 2000s.

The Former Thermal Pond Area covers approximately 0.77 acres and consists of a rectangular depression area of approximately 3 feet deep. The Former Thermal Pond Area was used on a few occasions as an emergency holding reservoir for treated wastewater. The Former Thermal Pond Area is currently covered with vegetation (grass and small trees).

The Pansy Field covers an area of approximately 2.2 acres and was previously used by local farmers to grow pansies. The Former Pansy Field is included with the Natural Resource Restoration Tree Planting Area. Based on historical aerial photographs, some areas in the Southern Area were used for miscellaneous storage.

Currently, the Southern Area is covered with vegetation that includes grass and small trees. Several areas were developed and included with the Natural Resource Restoration Tree Planting Area; these areas are shown on Figure 2 in the RI Work Plan. Wetlands also exist along the property line to the south.

Because of the nature of this area, its proximity to ditches and wetlands, and its non-contiguous nature, SMC is currently planning on no change for future site use.

5.2.1.6 Restricted Area

The Restricted Area is located in the eastern portion of the Facility and is referred to as a controlled area by the Nuclear Regulatory Commission (NRC). Due to the presence of naturally occurring thorium and uranium in the raw material used for ferro-columbium and the resulting slag and dust, this portion of the Facility is restricted.

A chain link fence with barbed wire surrounds this area (providing a second layer of security from the facilities perimeter fence). Additionally, the Restricted Area is posted with specific signage. Site personnel are trained to stay out of this area, unless specific training and/or escort is provided.

The Restricted Area is not the subject of the OU2 RI.

5.2.2 Site History

Specialty glass manufacturing began at the Facility in 1924. SMC purchased the Site in the early 1950s and, from 1955 to approximately 2007, SMC manufactured specialty steel and super alloy

additives, primary aluminum master alloys, metal carbides, powdered metals and optical surfacing products at the Site. Raw materials used at the Facility included ores which contain oxides of columbium (niobium), vanadium, aluminum metal, titanium metal, strontium metal, zirconium metal, and fluoride (titanium and boron) salts.

SMC made various forms of vanadium in the 1980s and mid-1990s. Vanadium-related production generally occurred in Building Dill. The raw material was in the form of an ash, and was transported to the Facility via a variety of containers (e.g., sacks, drums, truck loads). The raw material was stored in the 3-sided "pole building" east of Building Dill.

5.2.3 Summary of Previous Investigations

Details on previous investigations are provided in Sections 1.4 and 2.0 of the RI Work Plan. Brief summaries of these investigations are provided below.

Environmental investigations at the Site began in 1972, after the discovery of hexavalent chromium in a well that triggered studies to evaluate the potential environmental impacts associated with SMC's operations. Non-perchlorate groundwater (OU1) has been addressed by a pump and treatment system that has operated since 1979, and is still in operation.

Consequently, the Site has an extensive site characterization history of groundwater, soil, sediment and surface water sampling, as well as remedial activities. The Statement of Work for the OU2 Supplemental RI and Feasibility Study (FS) requires that all existing soil, surface water, and sediment data for the Site be reviewed to identify possible data gaps or areas where data may require updating. Based on a review of the existing data, contaminants of concem (COCs) for OU2 include metals and certain volatile organic compounds (VOCs). A summary of previous soil, surface water, and sediment environmental investigations conducted at the Site are provided below. The results of these investigations and potential data gaps are discussed in Section 2.0 of the RI Work Plan. Worksheet #13 provides a summary of all documents used in this historical data evaluation process.

5.2.3.1 Soil

Surface and subsurface soil investigations were conducted between October 1990 and April 1991 to characterize the soils across the Site. The RI included the collection of 64 surface soil samples, 72 soil borings, and five test pits. The majority of the soil samples were analyzed for Target Analyte List (TAL) metals, boron, niobium, strontium, titanium, and hexavalent chromium. Selected samples were also analyzed for the Target Compound List (TCL) + 30 peaks and zirconium. The results of the RI were included in a 1992 Remedial Investigation Technical Report.

Characterization of soils was conducted at Former Lined Basins B9 and B10 in December 1992. Eight (8) samples were collected beneath the liners and four (4) samples were collected from the berm materials. The soil samples were analyzed for TAL metals and fluoride. Two (2) samples from the basins were also analyzed for TCL VOCs plus boron, niobium, strontium, titanium and zirconium. The field activities and analytical results were included in a 1993 letter report.

A supplemental RI was conducted in August 1995 to delineate the extent of contamination observed during the 1991 RI. The supplemental RI included the collection of 40 surface soil samples and 52 subsurface soil samples. The samples were analyzed for those parameters that required delineation. The results of the supplemental RI were included with a 1996 Draft Final Feasibility Study Report.

On April 11, 1996, representatives of NJDEP, SMC, and TRC collected a total of 22 samples along the Hudson Branch. Seventeen of the 22 samples were classified as soil samples since they were collected at distances between 20 to 80 feet from the stream center. Five of the 22 samples were classified as sediment samples since they were collected from the middle of the stream or within a broad area of diffuse waster flow. Samples were collected beginning at a point downstream of existing sampling station SD-23 and continuing upstream to a point near existing sediment sampling station SD-17 (located between West Boulevard and Weymouth Road). The soil samples were collected from a depth of 0 to 0.5 feet and analyzed for total chromium, vanadium, nickel and copper. The results of the sampling were included in a letter report prepared by TRC and submitted to the NJDEP on May 3, 1996.

Lagoon closure activities were conducted at the site from 1994 to 1997 and included characterization, remediation, and closure of nine wastewater treatment lagoons. Post-excavation soil samples were collected from the base and sidewalls of the lagoons. All samples were analyzed for TAL metals and hexavalent chromium. In addition, two (2) samples per lagoon were analyzed for TCL VOCs, boron, niobium, strontium, titanium and zirconium. The closure activities and analytical results were summarized in a 1999 Closure Report.

A supplemental soil sampling program was conducted in the Former Lagoons B6, B7, and B8 in November 2000. A total of 36 soil samples were collected from the base of the lagoons and analyzed for hexavalent chromium. The results of the investigation were provided in a 2001 Final Supplemental Soil Sampling Report, Former Lagoons B6, B7, and B8.

A supplemental soil sampling program was conducted in the Former Lagoons B1, B2, B3, B5, B11 and B12 in November 2000. A total of 26 soil samples were collected from the base of the lagoons and analyzed for hexavalent chromium. The results of the investigation were provided in a 2001 Final Supplemental Soil Sampling Report, Former Lagoons B1, B2, B3, B5, B11 and B12.

5.2.3.2 Surface Water

A total of five (5) surface water samples were collected from the Hudson Branch in 1990 to determine the presence, nature and extent of surface water contamination. Three (3) surface water samples were analyzed for TAL metals, hexavalent chromium, VOCs, sulfate, fluoride, and total cyanide. The remaining two (2) samples were analyzed for TCL+30, TAL metals, hexavalent chromium, sulfate, cyanide, fluoride, boron, niobium, strontium, titanium, and zirconium. The results of the investigation were included in the 1992 Remedial Investigation Technical Report.

A total of seven (7) surface water samples were collected within the Hudson Branch, Bumt Mill Pond, and Bumt Mill Branch during the supplemental investigation conducted in 1995. The surface water samples were analyzed for TAL metals, hexavalent chromium, and total hardness. The results of the supplemental surface water investigation were summarized in the 1996 Draft Final Feasibility Study Report.

5.2.3.3 Sediment

A total of five (5) stream sediment samples were collected from the Hudson Branch in 1990 to determine the presence, nature and extent of sediment contamination. Three (3) sediment samples were analyzed for TAL metals, hexavalent chromium, VOCs, sulfate, fluoride, and total cyanide. The remaining two (2) sediment samples were analyzed for TCL+30, TAL metals, hexavalent chromium, sulfate, cyanide, fluoride, boron, niobium, strontium, titanium, and zirconium. The results of the sediment investigation were included in the 1992 Remedial Investigation Technical Report.

In August 1995, a total of 27 stations were selected within the Hudson Branch, Bumt Mill Pond, and Bumt Mill Branch to delineate the extent of metal contamination in sediments and define background conditions. The sediment samples were analyzed for TAL metals, hexavalent chromium, total organic carbon (TOC), grain size and pH. Selected sediment samples were also analyzed for TCL pesticides and polychlorinated biphenyls (PCBs). Following an initial review of the August 1995 supplemental sampling results, additional sediment characterization studies were conducted in September 1995. Eight (8) sediment samples were collected for chemical, sediment bioassay and macrobenthic invertebrate bioassessment analyses. The sediment samples were analyzed for TAL inorganics, pH, total organic content, and acid volatile sulfide analysis. The sediment results were included in a 1996 Draft Final Feasibility Study Report.

On April 11, 1996, representafives of NJDEP, SMC, and TRC collected a total of five sediment samples along the Hudson Branch. The sediment samples were collected from the middle of the stream or within a broad area of diffuse waster flow between existing sampling station SD-23 and existing sediment sampling station SD-17 (located between West Boulevard and Weymouth Road). The sediment samples were collected from a depth of 0 to 0.5 feet and analyzed for total chromium, vanadium, nickel and copper. The results of the supplemental sediment sampling were included in a letter report prepared by TRC and submitted to the NJDEP on May 3, 1996.

In March 2009, a total of 19 sediment samples were collected from 13 sampling stations where previous samples were obtained during the 1990 and 1995 sediment investigation to determine the current sediment quality. The sediment samples were analyzed for metals, pH, TOC, and grain size. Selected samples were analyzed for aquatic toxicity characteristics. The field activities and analytical results were summarized in a 2009 letter report.

5.2.4 Contaminants of Potential Concern

SMC and TRC have implemented a series of investigative activities for OU2 from the 1990s to 2009. Extensive environmental data for different media have been collected throughout the years and analyzed for a broad spectrum of constituents. This body of data provides an excellent

basis for OU2 characterization. A summary of previous environmental investigations conducted at the Site was provided in the previous sections. Based on these investigations, the following contaminants of potential concern (COPCs) have been identified in each medium.

Soil

Numerous soil samples were collected across the Site during the RI conducted in October 1990 and the supplemental investigation conducted in August 1995 to characterize soil conditions and evaluate the extent of soil contaminants. Chemical analysis performed on the soil samples varied, depending on the location of samples within various plant process and storage areas. COPCs identified were as follows:

Former Production Area:	vanadium and hexavalent chromium
Former Lagoons Area:	vanadium and hexavalent chromium
Eastern Storage Areas:	vanadium
Southern Area:	vanadium

Surface Water

Surface water samples were collected during the RI conducted in 1990 and supplemental investigations conducted in 1995. COPCs identified were as follows:

Hudson Branch:	metals and trichloroethene
Burnt Mill Pond:	arsenic, chromium, iron, lead, and vanadium
Burnt Mill Branch:	no COPCs were identified

Sediment

Stream sediments were sampled in 1990, 1995, and 2009. COPCs identified were as follows:

Hudson Branch:	metals, SVOCs, and pesticides/PCBs
Burnt Mill Pond:	chromium, antimony, cadmium, mercury, and nickel
Burnt Mill Branch:	cadmium, chromium, copper, lead, mercury, and nickel

QAPP Worksheet #9

Project Scoping Session Participants Sheet

Project Name: Shieldalloy Metallurgical Site, OU2 RI	**Site Name:** Shieldalloy Metallurgical Site, OU2
Projected Date(s) of Sampling: August 2011	**Site Location:** Newfield, NJ
Project Coordinator: Patrick Hansen	

Date of Session: 5/3/11

Name	Project Role	Affiliation	Phone #	e-Mail Address
Sherrel Henry	Remedial Project Manager	US EPA Region 2	212-637-4273	Henry.sherrel@epa.gov
Patrick Hansen	Project Coordinator	TRC Environmental	215-246-3449	phansen@trcsolutions.com
Jorge Gomez	Project Manager	TRC Environmental	609-731-8122	jgomez@trcsolutions.com
Karen Vetrano	Human Health Risk Assessor	TRC Environmental	508-420-0754	kvetrano@trcsolutions.com
Scott Heim	Ecological Risk Assessor	TRC Environmental	978-656-3583	sheim@trcsolutions.com
Elizabeth Denly	Project QA Manager	TRC Environmental	978-656-3577	edenly@trcsolutions.com
Donna Gaffigan	Case Manager	NJDEP	609-633-1494	donna.gaffigan@dep.state.nj.us
Angela Carpenter	Program Supervisor	US EPA Region 2	212-637-4435	carpenter.angela@epa.gov
Lora Smith	Risk Assessor	US EPA Region 2	212-637-4299	smith.lord@epa.gov
Ron Naman		US EPA Region 2	212-637-4375	naman.ronald@epa.gov
Ed Modica	Geologist	US EPA Region 2		

Scoping Session Purpose: To review OU2 data, risk, and proposed supplemental RI.

Comments: TRC provided a brief undate on the Site overview, a summary of OU2 existing data, an update on the human health risk assessment, an update on the revised SLERA, the proposed supplemental RI and the schedule for the OU2 supplemental RI.

QAPP Worksheet #10

Problem Definition

The problem to be addressed by the project: Refer to Sections 5.2.2, 5.2.3, 6.1, and 8.1

The environmental questions being asked: Refer to Sections 5.2.4, 6.1, and 8.1

Observations from any site reconnaissance reports: Not applicable

A synopsis of secondary data or information from site reports: Refer to Section 5.2.3 and Section 2 ofthe RI Work Plan

The possible classes of contaminants and the affected matrices: Refer to Section 5.2.4

The rational for inclusion of chemical and nonchemical analyses: Refer to Section 5.2.4

Information concerning various environmental indicators: Refer to Sections 5.2.3 and 5.2.4

6.0 PROJECT QUALITY OBJECTIVES AND MEASUREMENT PERFORMANCE CRITERIA

This section provides an overview of the environmental decisions that need to be made and the level of data quality needed to ensure that these decisions are based on sound scientific data. Additional details are presented in the companion RI and BERA Work Plans.

6.1 Project Quality Objectives

The primary objectives of this RI are as follows:

- Define the nature and extent of contamination in soil, sediment and surface water;
- Develop a sufficient database to support the human health and ecological risk assessments;
- Address identified data gaps; and
- Collect sufficient data to support the revised Feasibility Study.

In addition the primary objectives of the BERA are as follows:

- To assess the bioavailability of the contaminants of potential ecological concern (COPECs);
- To develop an understanding of the relationship between the COPEC concentrations in the sediment and aquatic vegetation and aquatic invertebrates (i.e., bioaccumulation factors);
- To develop an understanding of the relationship between the COPEC concentrations in the surface soil and the terrestrial invertebrates (i.e., bioaccumulation factor); and
- To estimate COPEC exposure by the selected assessment endpoints (herbivorous and insectivorous birds and mammals).

These objectives will be satisfied by the sampling and analysis program outlined in Worksheets #20-1 through 20-5 and 30 (see Section 9.0). These worksheets outline the data needs by type, quantity, and quality.

The type of data needed to meet the project quality objectives (PQOs) includes the required contaminants of concern, concentration levels, media to be sampled, analysis type, and appropriate sampling techniques. These are detailed on Worksheets #15-1 through 15-15 in this section, Worksheets #20-1 through 20-5 in Section 9.0 and Worksheet #30 in Section 13.0, as well as in the text of Section 9.0. The quantity of data needed to meet the PQOs includes the number of samples for each analytical parameter of each media and a definition of the project boundaries. The first of these items is detailed in Worksheets #18-1 through 18-7. The second of these items is dictated by the Work Plans. The quality of data needed to achieve the PQOs includes the necessary data quality indicators (precision, accuracy, representativeness, comparability, completeness, selectivity, and sensitivity) required of each analytical parameter used for each media sampled. The limits set on each of these items are referred to as measurement performance criteria and define the quality of data generated. All measurement performance criteria have been established for each parameter in order to ensure the data are sound, highly defensible, and with low enough quantitation limits to meet human health or ecological risk-based standards.

The contaminants of concern (COCs) are outlined in Worksheets #15-1 through 15-15 and include the project quantitation limits and associated project action levels for each contaminant of concern. The worksheet has been completed for each matrix and each parameter. The project action limits are based on the associated risk-based standard. The risk-based standards were derived from one of the following sources:

- EPA Regional Screening Levels for Industrial Soil, June 2011 (used for sediment and soil).
- USEPA, 2006. EPA Region III BTAG, Freshwater Sediment Screening Benchmarks, August 2006 (used for sediment).
- USEPA National Recommended Water Quality Criteria, Freshwater CCC, 2009 (used for surface water).
- USEPA, 2006. EPA Region III BTAG, Freshwater Screening Benchmarks, July 2006 (used for surface water).
- Soil Remediation Standards, NJDEP, Non-Residential Direct Contact, 11/4/09 (used for soil).
- NJDEP Ecological Screening Criteria, Sediment, Freshwater Criteria, Lowest Effects Levels, 3/10/09 (used for sediment).
- NJDEP Ecological Screening Criteria, Surface Water, Freshwater Criteria, Aquatic/Chronic and Human Health, 3/10/09 (used for surface water).

Action limits which are not achievable are highlighted in Worksheets #15-1 through 15-15 and are not achievable due to analytical limitations of the methods. Laboratories will report quantitation limits as low as technically possible and will estimate values detected below the quantitation limit. It should be noted that project action limits are not applicable for the BERA as the results will not be compared to screening levels, etc. Instead, the data will be used to develop site-specific invertebrate: soil and plant: soil bioaccumulation factors.

In general, the proposed analytical methodologies will be able to achieve the PQOs. That is, the analytical methodologies are generally capable of detecting the target analytes below the applicable action limit. These methods provide the highest level of data quality and can be used for purposes of risk assessment, evaluation of remedial systems and verification that cleanup standards have been met. However, in order to ensure that the analytical methodologies are capable of achieving the data quality objectives, measurement performance criteria have been set for the analytical measurements in terms of accuracy, precision, representativeness, completeness, sensitivity, selectivity, and comparability.

The measurement performance criteria for each parameter are further defined in this section. The number of samples needed for each parameter and matrix were defined in the Work Plans and are summarized on Worksheets #20-1 through 20-5.

6.2 Measurement Performance Criteria

The OU2 Supplemental RI and BERA QA/QC program at the Shieldalloy Metallurgical Site is designed to produce data of the quality necessary to achieve PQOs and meet or exceed the minimum standard requirements for field and analytical methods. The overall QA objective is to develop and implement procedures for field sampling, chain-of-custody, laboratory analysis, and reporting which will provide results that are scientifically valid, and the levels of which are

sufficient to meet PQOs. Specific procedures for sampling, chain-of-custody, laboratory and field instruments calibration, laboratory analysis, reporting of data, internal quality control, preventative maintenance of field and laboratory equipment, and corrective action are described in other sections of this QAPP. The purpose of this section is to state the specific, required QA objectives for accuracy, precision, representativeness, completeness, sensitivity, selectivity, and comparability.

Measurement performance criteria for precision, accuracy/bias, representativeness, completeness, sensitivity, quantitation limits, selectivity, and comparability have been established for each matrix and parameter and are summarized in Worksheets #12-1 through 12-12. These measures of performance are also referred to as Data Quality Indicators (DQIs) and are discussed in detail below.

6.2.1 Precision

Precision is the agreement among a set of replicate measurements without consideration of the "true" or accurate value: i.e., variability between measurements of the same material for the same analyte. Precision is measured in a variety of ways including statistically, such as calculating variance or standard deviation.

Field Precision Objectives

Field precision is assessed through the collection and measurement of field duplicates (one extra sample in addition to the original field sample). Field duplicates will be collected at a frequency of one per 20 investigative samples per matrix per analytical parameter. However, field duplicates will not be collected with the aquatic vegetation, aquatic invertebrate, and terrestrial invertebrate samples. Precision will be measured through the calculation of relative percent difference (RPD). The resulting information will be used to assess sample homogeneity, spatial variability at the site, sample collection reproducibility, and analytical variability. Field duplicate RPDs must be $\leq$50 for soil and sediment samples and $\leq$ 30 for surface water samples. Field precision will be improved by following SOPs, utilizing experienced/trained sampling crews, and conducting field audits.

Laboratory Precision Objectives

Precision in the laboratory is assessed through the calculation of RPD for laboratory duplicate samples (two samples from the same container). Laboratory precision measures both sample preparation and analysis reproducibility. Precision control limits are provided in Worksheet #12-1 through 12-12.

For the organic analyses, laboratory precision will be assessed through the analysis of matrix spike/matrix spike duplicate (MS/MSD) samples and/or field duplicates. MS/MSD samples will be performed at a frequency of one per twenty investigative samples per matrix. For the inorganic analyses, laboratory precision will be assessed through the analysis of laboratory duplicate samples. Laboratory duplicate samples will be performed at a frequency of one per twenty investigative samples per matrix.

6.2.2 Accuracy

Accuracy is the closeness of agreement between an observed value and an accepted reference value. The difference between the observed value and the reference value includes components of both systematic error (bias) and random error.

Field Accuracy Objectives

Accuracy in the field is assessed through the adherence to all field instrument calibration procedures, sample handling, preservation, and holding time requirements. Accuracy will also be evaluated through the use of equipment blanks, trip blanks and cooler temperature blanks.

Equipment blanks will be collected by passing laboratory-supplied deionized water over and/or through the respective sampling equipment utilized during each sampling effort. One equipment blank will be collected for each type of non-dedicated field equipment used during each sampling event. Equipment blanks will be collected for each target parameter at a frequency of one per twenty samples; it should be noted that equipment blanks will not be collected for the VOC analyses of soil samples (due to the lack of sampling equipment used), analyses associated with surface water samples (due to the lack of sampling equipment used), and the TOC, pH and oxidation-reduction potential (ORP) analyses of soil and/or sediment samples. Trip blanks will be submitted with each cooler which includes aqueous VOC samples. Trip blank samples will be analyzed for the same VOCs for which the associated media are being analyzed. The equipment and trip blanks will indicate any adverse effects of sample contamination from an outside source (i.e., sample collection) and could result in a positive or negative bias. The bias will be minimized by following standardized SOPs for equipment decontamination, utilizing an experienced/trained sampling crew, conducting field audits, and ensuring the purity of all chemicals.

Laboratory Accuracy Objectives

Laboratories assess the overall accuracy of their instruments and analytical methods (independent of sample or matrix effects) through the measurement of "standards", materials of accepted reference value. Accuracy will vary from analysis to analysis because of individual sample and matrix effects. In an individual analysis, accuracy will be measured in terms of method blank results, the percent recovery (%R) of surrogate or internal standard compounds in organic analyses, or %R of spiked compounds in MSs and/or MSDs, and/or laboratory control samples (LCSs). This gives an indication of expected recovery for analytes tending to behave chemically like the spiked or surrogate compounds and provides a measure of bias for the parameter of interest. Accuracy control limits are provided in Worksheet #12-1 through 12-12. The laboratory method blanks will indicate any adverse effects of sample contamination from an outside source (i.e., sample preparation or sample analysis) and could result in a positive or negative bias.

The frequency of surrogates or internal standards, MSs, MSDs, and LCSs are defined in Worksheets #28-1 through 28-11. Laboratory accuracy will be improved by following the EPA

methods and laboratory SOPs which include detailed requirements for each analysis, utilizing experienced/trained laboratory personnel, ensuring the purity of all chemicals, and conducting laboratory audits.

6.2.3 Representativeness

Representativeness is a qualitative parameter which expresses the degree to which the data and sampling design accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition within a defined spatial and/or temporal boundary. Representativeness is a qualitative parameter which is dependent upon the proper design of the sampling program and the laboratory quality control program.

Measures to Ensure Representativeness of Field Data

Representativeness is dependent upon the proper design of the sampling program and will be satisfied by ensuring that the Work Plans and sampling methods are followed and that proper sampling, sample handling, and sample preservation techniques are used. Representativeness may also be assessed by the use of field duplicate samples. By definition, field duplicate samples are collected so they are equally representative of a given point in space and time. In this way, they provide both precision and representativeness information. As stated previously, field duplicate samples will be collected at a frequency of one per twenty investigative samples per matrix per analytical parameter.

In general, representativeness in the field will be maximized by following methods, proper sample homogenization procedures, proper sample preservation procedures, utilizing experienced/trained sampling crews, and conducting field audits.

Measures to Ensure Representativeness of Laboratory Data

Representativeness in the laboratory is ensured by using the proper analytical procedures, appropriate methods, and meeting sample holding times. Following the detailed requirements outlined in the EPA methods and the laboratory SOPs will maximize the representativeness of the laboratory data.

6.2.4 Comparability

Comparability is a qualitative parameter that expresses the confidence with which one data set can be compared to another.

Measures to Ensure Field Comparability

Comparability is dependent upon the proper design of the sampling program and will be satisfied by ensuring that the Work Plans and QAPP are followed, sampling methods are followed, and that proper sampling and preservation techniques are used.

Measures to Ensure Laboratory Comparability

Comparability is dependent on the use of EPA methods and approved laboratory SOPs, and the reporting of data in standardized units.

6.2.5 Selectivity

Selectivity indicates the capability of an analytical method to identify and quantify a target analyte in the presence of non-target analytes of similar chemical structure. For this program, there are no potential selectivity issues with the analyses being performed.

6.2.6 Sensitivity

Sensitivity is the ability of the instrument or method to detect the contaminants of concern at the level of interest. Worksheets #15-1 through 15-15 outline the required quantitation limits for each matrix, each analytical parameter and each analyte. These quantitation limits are generally below the project Action Limits, as defined by the limitations of the method. In almost all cases, EPA methods were selected to achieve the project Action Limits. Several analytes will not be able to achieve the project Action Limits due to the limitations of the method; these analytes are highlighted in Worksheets #15-1 through 15-15.

An evaluation of analytes with quantitation limits (QLs) above Project Action Limits (PALs) is provided below by matrix and parameter.

- Sediment/SVOCs: 2-Chlorophenol, 2,4-dimethylphenol, 2,4-dichlorophenol, acenaphthylene, acenaphthene, 2,4-dinitrotoluene, hexachlorobenzene, atrazine, 3,3'-dichlorobenzidine, benzo(b)fluoranthene, and indeno(1,2,3-cd)pyrene exhibit QLs above the EPA Region III BTAG PAL with a few also above the NJDEP Ecological Screening Criteria. As per Section 13.3 of the QAPP, laboratories will report positive results between the MDL and QL, if detected. For the majority of these compounds, the MDLs are below the Region III BTAG PAL and therefore these compounds would be reported down to this PAL, if detected. With the exception of the PAHs, these compounds are not contaminants of concern at the site and therefore further options were not pursued to lower the QLs.

- Sediment/Pesticides: Toxaphene exhibits a QL above the EPA Region III BTAG PAL. Since this compound is not a contaminant of concern at the site, further options were not pursued to lower the QL.

- Sediment/PCB Aroclors: Aroclor 1016 and Aroclor 1260 exhibit QLs above the NJDEP Ecological Screening Criteria. Since the QLs for total PCBs are still below all PALs, further options were not pursued to lower the QLs for these two individual Aroclors.

- Sediment/Metals and Soil/Metals: Arsenic exhibits a QL slightly above the EPA RSL for Industrial Soil. As per Section 13.3 of the QAPP, laboratories will report positive results

between the MDL and QL, if detected. The MDL of arsenic is below the EPA RSL PAL and therefore arsenic would be reported down to this PAL, if detected. Therefore further options were not pursued to lower the QL.

- Soil/VOCs: Ethylene dibromide and 1,2-dibromo-3-chloropropane exhibit QLs above the NJDEP Non-residential Direct Contact Soil Remediation Standards and/or the EPA RSLs for Industrial Soil. As per Section 13.3 of the QAPP, laboratories will report positive results between the MDL and QL, if detected. For both of these compounds, the MDLs are below the PALs and therefore these compounds would be reported down to these PALs, if detected. In addition, these compounds are not contaminants of concern at the site. Therefore, further options were not pursued to lower the QLs.

- Surface Water/VOCs: Vinyl chloride, carbon disulfide, carbon tetrachloride, 1,2-dichloroethane, benzene, 1,2-dichloropropane, bromodichloromethane, cis-1,3-dichloropropene, trans-1,3-dichloropropene, tetrachloroethene, dibromochloromethane, and 1,2-dichlorobenzene exhibit QLs above the NJDEP Ecological Screening Criteria and/or the EPA Region III BTAG PAL. As per Section 13.3 of the QAPP, laboratories will report positive results between the MDL and QL, if detected. For the majority of these compounds, the MDLs are below the PALs and therefore these compounds would be reported down to these PALs, if detected. In addition, none of these compounds are contaminants of concern at the site. Therefore, further options were not pursued to lower the QLs.

- Surface Water/Metals: Antimony, arsenic, barium, beryllium, cadmium, cobalt, lead, mercury, selenium, silver, and thallium exhibit QLs above one or more of the three PALs. As per Section 13.3 of the QAPP, laboratories will report positive results between the MDL and QL, if detected. For the majority of these metals, the MDLs are below the PALs and therefore these compounds would be reported down to these PALs, if detected. With the exception of arsenic and lead, these metals are not contaminants of concern at the site. For lead, the QL is just slightly above the PAL. For arsenic, the QL is just slightly above one of the PALs and the other PAL would not be achievable even with a different methodology. Therefore further options were not pursued to lower these QLs. For cadmium and selenium, it should be noted that the more sensitive ICP/MS technique is being utilized; due to analytical limitations, lower QLs would not be possible.

Laboratories will need to adjust all quantitation limits based on dilutions, sample sizes, extract/digestate volumes, percent solids and cleanup procedures. In all cases, the adjusted quantitation limit (or sample quantitation limit) must be below the project Action Limit. In establishing the required quantitation limits for this program, these factors were considered in ensuring the project Action Limits would be achieved.

Sensitivity will be maximized by following the EPA methods or laboratory SOPs utilizing experienced/trained laboratory personnel, and conducting laboratory audits.

6.2.7 Completeness

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. "Normal conditions" are defined as the conditions expected if the sampling plan was implemented as planned.

Field Completeness Objectives

Field completeness is a measure of the amount of (1) valid measurements obtained from all the measurements taken in the project and (2) valid samples collected. The field completeness objective is greater than 90 percent. This allows for the potential loss of samples due to sampling problems or bottle breakage during transport.

Laboratory Completeness Objectives

Laboratory completeness is a measure of the amount of valid measurements obtained from all valid samples submitted to the laboratory. The laboratory completeness objective is greater than 95 percent. This allows for the potential loss of samples impossible to analyze due to unforeseen interferences and rejected data following data validation.

QAPP Worksheet #11

Project Quality Objectives/Systematic Planning Process Statements

Who will use the data?
TRC, USEPA Region 2

What will the data be used for?
Refer to Sections 6.1 and 8.1.

What type of data are needed? (target analytes, analytical groups, field screening, on-site analytical or off-site laboratory techniques, sampling techniques)
Refer to Worksheets # 15-1 through 15-15 and Section 9.0.

How "good" do the data need to be in order to support the environmental decision?
Refer to Worksheets # 12-1 through 12-12.

How much data are needed? (number of samples for each analytical group, matrix, and concentration)
Refer to Worksheets # 20-1 through 20-5.

Where, when, and how should the data be collected/generated?
Refer to Sections 8.0 and 9.0.

Who will collect and generate the data?
Refer to Worksheet # 23.

How will the data be reported?
Refer to Section 13.0.

How will the data be archived?
Refer to Section 13.0.

QAPP Worksheet #12-1

Measurement Performance Criteria Table

Matrix	Soil
Analytical Group	VOCs
Concentration Level	High
Sampling Procedure	See Sections 9.2.1 and 9.2.2

Analytical Method/SOP[1]	Data Quality Indicators (DQIs)	Measurement Performance Criteria	QC Sample and/or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
L-1	Precision – Overall	*RPD ≤ 50 when positive results for both samples are ≥ 2x QL *RPD ≤ 50 when positive result for one sample is ≥ 2x QL and positive result for other sample is < 2x QL *No situations where one result is detected at ≥ 2x QL and other result is not detected.	Field Duplicates	S & A
	Precision – Laboratory[2]	RPDs as follows: 1,1-dichloroethene: 26 benzene: 24 chlorobenzene: 26 toluene: 26 trichloroethene: 25	Matrix Spike/ Matrix Spike Duplicate	A
	Accuracy/Bias[2]	Percent recoveries as follows: 1,1-dichloroedhene: 32-149 benzene: 41-136 chlorobenzene: 33-140 toluene: 32-145 trichloroethene: 34-149	Matrix Spike/ Matrix Spike Duplicate	A
	Accuracy/Bias	Percent recoveries 70-130	Laboratory Control Sample	A
	Accuracy/Bias – Contamination	No target compounds ≥ QL (except methylene chloride and cyclohexane < 2.5x QL and acetone and 2-butanone < 5x QL)	Method Blanks	A
	Accuracy/Bias[2]	Percent recoveries as follows: I,2-dichloroethane-d_4: 65-132 dibromofluoromethane: 67-127 toluene-d_8: 74-129 bromofluorobenzene: 62-138	Surrogates	A

QAPP Worksheet #12-1

Measurement Performance Criteria Table

Matrix	Soil				
Analytical Group	VOCs				
Concentration Level	High				
Sampling Procedure	See Sections 9.2.1 and 9.2.2				
Analytical Method/SOP[1]		Data Quality Indicators (DQIs)	Measurement Performance Criteria	QC Sample and/or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
		Accuracy/Bias	Cooler temperature 4°C ± 2°C	Cooler Temperature Blank	S
		Data Completeness	Field 90%, Laboratory 95%	Data Completeness Check	S & A

[1] Reference number from QAPP Worksheet #23.
[2] Laboratory control limits are periodically updated. The latest control limits will be utilized at the time of sample analysis. All target VOCs will be evaluated; criteria for select VOCs representing the entire list are presented in this worksheet.

QAPP Worksheet #12-2

Measurement Performance Criteria Table

Matrix	Soil/Sediment				
Analytical Group	SVOCs				
Concentration Level	Low				
Sampling Procedure	Soil: See Sections 9.2.1 and 9.2.2 Sediment: See Section 9.2.3				
Analytical Method/SOP[1]		Data Quality Indicators (DQIs)	Measurement Performance Criteria	QC Sample and/or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
L-2		Precision – Overall	*RPD ≤ 50 when positive results for both samples are ≥ 2x QL * RPD ≤ 50 when positive result for one sample is ≥ 2x QL and positive result for other sample is < 2x QL * No situations where one result is detected at ≥ 2x QL and other result is not detected.	Field Duplicates	S & A
		Precision – Laboratory[2]	RPDs as follows: 2,4-dinitrotoluene: 28 2-chlorophenol: 24 4-chloro-3-methylphenol: 27 4-nitrophenol: 39 acenaphthene: 26 n-nitroso-di-n-propylamine: 25 pentachlorophenol: 28 phenol: 27 pyrene: 33	Matrix Spike/ Matrix Spike Duplicates	A
		Accuracy/Bias[2]	Percent recoveries as follows: 2,4-dinitrotoluene: 31-123 2-chlorophenol: 41-106 4-chloro-3-methylphenol: 39-122 4-nitrophenol: 13-136 acenaphthene: 38-116 n-nitroso-di-n-propylamine: 30-124 pentachlorophenol: 13-124 phenol: 35-109 pyrene: 23-139	Matrix Spike/ Matrix Spike Duplicates	A

QAPP Worksheet #12-2

Measurement Performance Criteria Table

Matrix	Soil/Sediment				
Analytical Group	SVOCs				
Concentration Level	Low				
Sampling Procedure	Soil: See Sections 9.2.1 and 9.2.2 Sediment: See Section 9.2.3				
Analytical Method/SOP[1]		Data Quality Indicators (DQIs)	Measurement Performance Criteria	QC Sample and/or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
		Accuracy/Bias[2]	Percent recoveries as follows: 2,4,6-tribromophenol: 28-125 2-fluorobiphenyl: 38-107 2-fluorophenol: 30-109 nitrobenzene d_5: 28-113 phenol-d_5: 28-108 terphenyl-d_{14}: 31-116	Surrogates	A
		Accuracy/Bias	Percent recoveries 40-140	Laboratory Control Sample	A
		Accuracy/Bias – Contamination	No target compounds $\geq$ QL (except phthalates must be $\leq$ 5 x QL)	Equipment Blanks and Method Blanks	S & A
		Accuracy/Bias	Cooler temperature 4°C ± 2°C	Cooler Temperature Blank	S
		Data Completeness	Field 90%, Laboratory 95%	Data Completeness Check	S & A

[1] Reference number from QAPP Worksheet #23.
[2] Laboratory control limits are periodically updated. The latest control limits will be utilized at the time of sample analysis. All target SVOCs will be evaluated; criteria for select SVOCs representing the entire list are presented in this worksheet.

QAPP Worksheet #12-3

Measurement Performance Criteria Table

Matrix	Soil/Sediment
Analytical Group	PCB Aroclors
Concentration Level	Low
Sampling Procedure	Soil: See Sections 9.2.1 and 9.2.2 Sediment: See Section 9.2.3

Analytical Method/SOP[1]	Data Quality Indicators (DQIs)	Measurement Performance Criteria	QC Sample and/or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
L-4	Precision – Overall	* RPD ≤ 50 when positive results for both samples are ≥ 2x QL * RPD ≤ 50 when positive result for one sample is ≥ 2x QL and positive result for other sample is < 2x QL * No situations where one result is detected at ≥ 2x QL and other result is not detected.	Field Duplicates	S & A
	Precision – Laboratory[2]	RPDs as follows: Aroclor 1016: 42 Aroclor 1260: 43	Matrix Spike/ Matrix Spike Duplicates	A
	Accuracy/Bias[2]	Percent recoveries as follows: Aroclor 1016: 28-185 Aroclor 1260: 20-190	Matrix Spike/ Matrix Spike Duplicates	A
	Accuracy/Bias	No target analytes ≥ ½ QL	Instrument Blanks	A
	Accuracy/Bias[2]	Percent recoveries as follows: tetrachloro-m-xylene: 22-141 decachlorobiphenyl: 18-163	Surrogates	A
	Accuracy/Bias	Percent recoveries 40-140	Laboratory Control Sample	A
	Accuracy/Bias – Contamination	No target compounds ≥ QL	Equipment Blanks and Method Blanks	S & A
	Accuracy/Bias	Cooler temperature 4°C ± 2°C	Cooler Temperature Blank	S
	Data Completeness	Field 90%, Laboratory 95%	Data Completeness Check	S & A

[1] Reference number from QAPP Worksheet #23.
[2] Laboratory control limits are periodically updated. The latest control limits will be utilized at the time of sample analysis.

QAPP Worksheet #12-4

Measurement Performance Criteria Table

Matrix	Soil/Sediment
Analytical Group	Pesticides
Concentration Level	Low
Sampling Procedure	Soil: See Sections 9.2.1 and 9.2.2 Sediment: See Section 9.2.3

Analytical Method/SOP[1]	Data Quality Indicators (DQIs)	Measurement Performance Criteria	QC Sample and/or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
L-3	Precision – Overall	* RPD ≤ 50 when positive results for both samples are ≥ 2x QL * RPD ≤ 50 when positive result for one sample is ≥ 2x QL and positive result for other sample is < 2x QL * No situations where one result is detected at ≥ 2x QL and other result is not detected.	Field Duplicates	S & A
	Precision – Laboratory[2]	RPDs as follows: aldrin: 47 dieldrin: 46 endrin: 48 gamma-BHC: 45 heptachlor: 46 4,4'-DDT: 47	Matrix Spike/ Matrix Spike Duplicates	A
	Accuracy/Bias[2]	Percent recoveries as follows: aldrin: 21-171 dieldrin: 22-173 endrin: 26-172 gamma-BHC: 23-163 heptachlor: 27-163 4,4'-DDT: 21-193	Matrix Spike/ Matrix Spike Duplicates	A
	Accuracy/Bias	No target analytes ≥ ½ QL	Instrument Blanks	A
	Accuracy/Bias	Percent breakdown of DDT and Endrin must be ≤ 20; combined percent breakdown must be ≤ 30	Endrin/DDT Breakdown Standard	A

QAPP Worksheet #12-4

Measurement Performance Criteria Table

Matrix	Soil/Sediment				
Analytical Group	Pesticides				
Concentration Level	Low				
Sampling Procedure	Soil: See Sections 9.2.1 and 9.2.2 Sediment: See Section 9.2.3				
Analytical Method/SOP[1]		Data Quality Indicators (DQIs)	Measurement Performance Criteria	QC Sample and/or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
		Accuracy/Bias[2]	Percent recoveries as follows: tetrachloro-m-xylene: 23-137 decachlorobiphenyl: 22-160	Surrogates	A
		Accuracy/Bias	Percent recoveries 40-140	Laboratory Control Sample	A
		Accuracy/Bias – Contamination	No target compounds ≥ QL	Equipment Blanks and Method Blanks	S & A
		Accuracy/Bias	Cooler temperature 4°C ± 2°C	Cooler Temperature Blank	S
		Data Completeness	Field 90%, Laboratory 95%	Data Completeness Check	S & A

[1] Reference number from QAPP Worksheet #23.
[2] Laboratory control limits are periodically updated. The latest control limits will be utilized at the time of sample analysis. All target pesticides will be evaluated; criteria for select pesticides representing the entire list are presented in this worksheet.

QAPP Worksheet #12-5

Measurement Performance Criteria Table

Matrix	Soil/Sediment/Tissue*
Analytical Group	Metals
Concentration Level	Low
Sampling Procedure	Soil: See Sections 9.2.1 and 9.2.2 Sediment: See Section 9.2.3 Tissue: See Section 9.2.4

Analytical Method/SOP[1]	Data Quality Indicators (DQIs)	Measurement Performance Criteria	QC Sample and/or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
L-5, L-8, L-13	Precision – Overall	*RPD ≤ 50 when positive results for both samples are ≥ 5x QL *Absolute difference < 4x QL when positive results for both samples are < 5x QL *RPD ≤ 50 when positive result for one sample is ≥ 5x QL and positive result for other sample is < 5x QL *No situations where one result is detected at ≥ 5x QL and other result is not detected.	Field Duplicates	S & A
	Precision – Laboratory	RPD ≤ 35 if results are ≥ 5x QL	Laboratory Duplicates	A
	Accuracy/Bias	L-5 and L-8: Percent recoveries 75 – 125% L-13: Percent recoveries 80 – 120%	Matrix Spikes	A
	Accuracy/Bias	L-5 and L-8: Within EPA or vendor control limits L-13: Percent recoveries 80 – 120%	Laboratory Control Sample	A
	Accuracy/Bias	± 10% of original result	Serial Dilution Analysis	A
	Accuracy/Bias	Percent recoveries 70 – 130%	Detection Limit Standard	A
	Accuracy/Bias	Percent recoveries 80 – 120%	Interference Check Sample	A
	Accuracy/Bias (ICP/MS only)	30-120% of IS in blank or calibration standard	Internal Standards	A
	Accuracy/Bias - Contamination	No target compounds ≥ QL	Initial Calibration Blanks, Continuing Calibration Blanks, Preparation Blanks, and Equipment Blanks	S & A

QAPP Worksheet #12-5

Measurement Performance Criteria Table

Matrix	Soil/Sediment/Tissue*				
Analytical Group	Metals				
Concentration Level	Low				
Sampling Procedure	Soil: See Sections 9.2.1 and 9.2.2 Sediment: See Section 9.2.3 Tissue: See Section 9.2.4				
Analytical Method/SOP[1]		Data Quality Indicators (DQIs)	Measurement Performance Criteria	QC Sample and/or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
		Accuracy/Bias	Cooler temperature 4°C ± 2°C	Cooler Temperature Blank	S
		Data Completeness	Field 90%, Laboratory 95%	Data Completeness Check	S & A

[1] Reference number from QAPP Worksheet #23.
*Aquatic vegetation, aquatic invertebrates, terrestrial invertebrates, earthworms

QAPP Worksheet #12-6

Measurement Performance Criteria Table

Matrix	Sediment				
Analytical Group	TOC				
Concentration Level	NA				
Sampling Procedure	See Section 9.2.3				
Analytical Method/SOP[1]		Data Quality Indicators (DQIs)	Measurement Performance Criteria	QC Sample and/or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Samphng (S), Analytical (A) or both (S&A)
L-6		Precision – Overall	*RPD ≤ 50 when positive results for both samples are ≥ 2x QL *RPD ≤ 50 when positive result for one sample is ≥ 2x QL and positive result for other sample is < 2x QL *No situations where one result is detected at ≥ 2x QL and other result is not detected.	Field Duplicates	S & A
		Precision – Laboratory	RPD ≤ 20	Laboratory Duplicate	A
		Accuracy/Bias	Percent recoveries 75-125%	Matrix Spike	A
		Accuracy/Bias	Percent recoveries 90-110%	Laboratory Control Sample	A
		Accuracy/Bias – Contamination	No target analytes > QL	Method Blanks	A
		Accuracy/Bias	Cooler temperature 4°C ± 2°C	Cooler Temperature Blank	S
		Data Completeness	Field 90%, Laboratory 95%	Data Completeness Check	S & A

[1] Reference number from QAPP Worksheet #23.

QAPP Worksheet #12-7

Measurement Performance Criteria Table

Matrix	Soil/Sediment				
Analytical Group	pH and ORP				
Concentration Level	NA				
Sampling Procedure	Soil: See Sections 9.2.1 and 9.2.2 Sediment: See Section 9.2.3				
Analytical Method/SOP[1]		Data Quality Indicators (DQIs)	Measurement Performance Criteria	QC Sample and/or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
L-9 and L-11		Precision – Overall	RPD ≤ 10	Field Duplicates	S & A
		Precision – Laboratory	RPD ≤ 5	Laboratory Duplicate	A
		Accuracy/Bias	Cooler temperature 4°C ± 2°C	Cooler Temperature Blank	S
		Data Completeness	Field 90%, Laboratory 95%	Data Completeness Check	S & A

[1] Reference number from QAPP Worksheet #23.

QAPP Worksheet #12-8

Measurement Performance Criteria Table

Matrix	Soil				
Analytical Group	Hexavalent Chromium				
Concentration Level	Low				
Sampling Procedure	See Sections 9.2.1 and 9.2.2				
Analytical Method/SOP[1]		Data Quality Indicators (DQIs)	Measurement Performance Criteria	QC Sample and/or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
L-10		Precision – Overall	*RPD ≤ 50 when positive results for both samples are ≥ 2x QL *RPD ≤ 50 when positive result for one sample is ≥ 2x QL and positive result for other sample is < 2x QL *No situations where one result is detected at ≥ 2x QL and other result is not detected.	Field Duplicates	S & A
		Precision – Laboratory	RPD ≤ 20	Laboratory Duplicate	A
		Accuracy/Bias	Percent recoveries 75-125%	Matrix Spike	A
		Accuracy/Bias	Percent recoveries 80-120%	Laboratory Control Sample	A
		Accuracy/Bias – Contamination	No target analytes > QL	Method Blanks and Equipment Blanks	S & A
		Accuracy/Bias	Cooler temperature 4°C ± 2°C	Cooler Temperature Blank	S
		Data Completeness	Field 90%, Laboratory 95%	Data Completeness Check	S & A

[1] Reference number from QAPP Worksheet #23.

QAPP Worksheet #12-9

Measurement Performance Criteria Table

Matrix	Surface Water
Analytical Group	VOCs
Concentration Level	Low
Sampling Procedure	See Section 9.2.3

Analytical Method/SOP[1]	Data Quality Indicators (DQIs)	Measurement Performance Criteria	QC Sample and/or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
L-1	Precision – Overall	*RPD ≤ 30 when positive results for both samples are ≥ 2x QL *RPD ≤ 30 when positive result for one sample is ≥ 2x QL and positive result for other sample is < 2x QL *No situations where one result is detected at ≥ 2x QL and other result is not detected.	Field Duplicates	S & A
	Precision – Laboratory[2]	RPDs as follows: 1,1-dichloroethene: 17 trichloroethene: 15 benzene: 13 toluene: 14 chlorobenzene: 12	Matrix Spike/ Matrix Spike Duplicates	A
	Accuracy/Bias[2]	Percent recoveries as follows: 1,1-dichloroethene: 41-144 trichloroethene: 53-141 benzene: 38-139 toluene: 44-141 chlorobenzene: 65-128	Matrix Spike/ Matrix Spike Duplicates	A
	Accuracy/Bias[2]	Percent recoveries as follows: dibromofluoromethane: 76-120 1,2-dichloroethane-d_4: 64-135 toluene- d_8: 76-117 bromofluorobenzene: 72-122	Surrogates	A
	Accuracy/Bias	Percent recoveries 70-130%	Laboratory Control Sample	A
	Accuracy/Bias – Contamination	No target compounds ≥ QL (except methylene chloride, acetone and 2-butanone < 2x QL)	Trip Blanks and Method Blanks	S & A

QAPP Worksheet #12-9

Measurement Performance Criteria Table

Matrix	Surface Water				
Analytical Group	VOCs				
Concentration Level	Low				
Sampling Procedure	See Section 9.2.3				
Analytical Method/SOP[1]		Data Quality Indicators (DQIs)	Measurement Performance Criteria	QC Sample and/or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
		Accuracy/Bias – Contamination	No target compounds ≥ QL	Instrument Blanks	A
		Accuracy/Bias	Cooler temperature 4°C ± 2°C	Cooler Temperature Blank	S
		Data Completeness	Field 90%; Laboratory 95%	Data Completeness Check	S & A

[1] Reference number from QAPP Worksheet #23.
[2] Laboratory control limits are periodically updated. The latest control limits will be utilized at the time of sample analysis. All target VOCs will be evaluated; criteria for select VOCs representing the entire list are presented in this worksheet.

QAPP Worksheet #12-10

Measurement Performance Criteria Table

Matrix	Surface Water
Analytical Group	Metals (Total and Dissolved)
Concentration Level	Low
Sampling Procedure	See Section 9.2.3

Analytical Method/SOP[1]	Data Quality Indicators (DQIs)	Measurement Performance Criteria	QC Sample and/or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
L-5 and L-8	Precision – Overall	*RPD ≤ 30 when positive results for both samples are ≥ 5x QL *Absolute difference < 2x QL when positive results for both samples are < 5x QL *RPD ≤ 30 when positive result for one sample is ≥ 5x QL and positive result for other sample is < 5x QL *No situations where one result is detected at ≥ 5x QL and other result is not detected.	Field Duplicates	S & A
	Precision – Laboratory	RPD ≤ 20 if results are ≥ 5 x QL	Laboratory Duplicates	A
	Accuracy/Bias	Percent recoveries 75 – 125%	Matrix Spikes	A
	Accuracy/Bias	Percent recoveries 80 – 120%	Laboratory Control Sample	A
	Accuracy/Bias	± 10% of original result	Serial Dilution Analysis	A
	Accuracy/Bias	Percent recoveries 80 – 120%	Interference Check Sample	A
	Accuracy/Bias (ICP/MS only)	30-120% of IS in blank or calibration standard	Internal Standards	A
	Accuracy/Bias - Contamination	No target compounds ≥ QL	Initial Calibration Blanks, Continuing Calibration Blanks, and Preparation Blanks	A
	Accuracy/Bias	Cooler temperature 4°C ± 2°C	Cooler Temperature Blank	S
	Data Completeness	Field 90%, Laboratory 95%	Data Completeness Check	S & A

[1] Reference number from QAPP Worksheet #23.

QAPP Worksheet #12-11

Measurement Performance Criteria Table

Matrix	Surface Water
Analytical Group	Total Hardness
Concentration Level	Low
Sampling Procedure	See Section 9.2.3

Analytical Method/SOP[1]	Data Quality Indicators (DQIs)	Measurement Performance Criteria	QC Sample and/or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
L-12	Precision – Overall	* RPD ≤ 30 when positive results for both samples are ≥ 5x QL * Absolute difference < 2x QL when positive results for both samples are < 5x QL * RPD ≤ 30 when positive result for one sample is ≥ 5x QL and positive result for other sample is < 5x QL * No situations where one result is detected at ≥ 5x QL and other result is not detected.	Field Duplicates	S & A
	Precision – Laboratory	RPD ≤ 20	Laboratory Duplicates	A
	Accuracy/Bias	Percent recoveries 75-125%	Matrix Spikes	A
	Accuracy/Bias	Percent recoveries 80-120%	Laboratory Control Sample	A
	Accuracy/Bias – Contamination	Target analytes must be ≤ QL	Method Blanks	A
	Accuracy/Bias	Cooler temperature 4°C ± 2°C	Cooler Temperature Blank	S
	Data Completeness	Field 90%, Laboratory 95%	Data Completeness Check	S & A

[1] Reference number from QAPP Worksheet #23.

QAPP Worksheet #12-12

Measurement Performance Criteria Table

Matrix	Surface Water				
Analytical Group	Hexavalent Chromium (total and dissolved)				
Concentration Level	Low				
Sampling Procedure	See Section 9.2.3				
Analytical Method/SOP[1]		Data Quality Indicators (DQIs)	Measurement Performance Criteria	QC Sample and/or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
L-10		Precision – Overall	*RPD ≤ 30 when positive results for both samples are ≥ 2x QL *RPD ≤ 30 when positive result for one sample is ≥ 2x QL and positive result for other sample is < 2x QL *No situations where one result is detected at ≥ 2x QL and other result is not detected.	Field Duplicates	S & A
		Precision – Laboratory	RPD ≤ 20	Laboratory Duplicate	A
		Accuracy/Bias	Percent recoveries 75-125%	Matrix Spike	A
		Accuracy/Bias	Percent recoveries 80-120%	Laboratory Control Sample	A
		Accuracy/Bias – Contamination	No target analytes > QL	Method Blanks	A
		Accuracy/Bias	Cooler temperature 4°C ± 2°C	Cooler Temperature Blank	S
		Data Completeness	Field 90%, Laboratory 95%	Data Completeness Check	S & A

[1] Reference number from QAPP Worksheet #23.

7.0 SECONDARY DATA EVALUATION

This section of the QAPP identifies the sources of previously collected data and information that will be used to make project decisions. These sources were used to design the sampling program. Worksheet #13 includes the non-direct measurement data/information that will be used for this project and the originating source.

QAPP Worksheet #13

Secondary Data

The scope of work for the Shieldalloy Metallurgical Site OU2 Supplemental RI and BERA was based on a review of existing data from 1990-1997, 2000 and 2009. The data were included in data packages and reports. Media sampled included surficial and subsurface soils, sediment and surface water. As per the Statement of Work for the OU2 Supplemental RI, existing data listed below were reviewed to identify possible data gaps or areas where data may require updating. The existing data forms the initial base to evaluate site conditions and further Supplemental RI and BERA activities will build on these data. The sources of the data are as follows:

NJDEP, 2001. Basin Closure, NJDEP letter, August 10, 2001.

Schoor DePalma, 1994. Environmental Report, Wetlands and State Open Waters Delineation, Shieldalloy Metallurgical Corporation, Newfield, New Jersey, Schoor DePalma, May 1994.

TRC, 1992. Remedial Investigation Technical Report, Shieldalloy Metallurgical Corporation, Newfield, New Jersey, TRC Environmental Corporation, April 1992.

TRC, 1993. Soil Sampling Results, Former Lagoons B9 and B10, Shieldalloy Metallurgical Corporation, Newfield, New Jersey, TRC Environmental Corporation, March 1993.

TRC, 1995. Closure Plan-Surface Impoundments B-1, B-2, B-3, B-5, B-11 and B-12, Shieldalloy Metallurgical Corporation, Newfield, New Jersey, TRC Environmental Corporation, August 1995.

TRC, 1996a. Draft Final Feasibility Study Report, Shieldalloy Metallurgical Corporation, Newfield, New Jersey, TRC Environmental Corporation, April 1996.

TRC, 1996b. Supplemental Wetland Sediment Sampling Letter Report, Shieldalloy Metallurgical Corporation, Newfield, New Jersey, TRC Environmental Corporation, May 1996.

TRC, 1999. Lagoon Closure Report, Shieldalloy Metallurgical Corporation, Newfield, New Jersey, TRC Environmental Corporation, December 1999.

TRC, 2000. Supplemental Soil Sampling Report, Former Lagoon B11, Shieldalloy Metallurgical Corporation, Newfield, New Jersey, TRC Environmental Corporation, October 2000.

TRC, 2001a. Final Supplemental Soil Sampling Report, Former Lagoons B6, B7 and B8, Shieldalloy Metallurgical Corporation, Newfield, New Jersey, TRC Environmental Corporation, February 2001.

TRC, 2001b. Final Supplemental Soil Sampling Report, Former Lagoons B1, B2, B3, B5, B11 and B12, Shieldalloy Metallurgical Corporation, Newfield, New Jersey, TRC Environmental Corporation, February 2001.

TRC, 2006. 2006 Sediment Sampling Work Plan, Shieldalloy Metallurgical Corporation, Newfield, New Jersey, TRC Environmental Corporation, August 2006.

TRC, 2008. Phase II Supplemental Offsite Ground Water Investigation Work Plan, Shieldalloy Metallurgical Corporation, Newfield, New Jersey, TRC Environmental Corporation, August 2008.

TRC, 2009. Supplemental Sediment Sampling Summary, Shieldalloy Metallurgical Corporation, Newfield, New Jersey, TRC Environmental Corporation, June 2009.

US Bankruptcy Court, 1997. Environmental Settlement Agreement (ESA) between SMC and USEPA/NJDEP. Incorporated into SMC's Plan of Reorganization Pursuant to Chapter 11 of the Bankruptcy Code, March 1997.

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8.0 PROJECT OVERVIEW AND SCHEDULE

This section provides a general overview of the activities that will be performed and how and when they will be performed based on Site background information, Site background data, and preplanning Site visits. A summary of these activities is presented on Worksheet #14, which follows. Specific details for individual project activities will be discussed in later sections of the QAPP. Additional details are presented in the companion RI and BERA Work Plans for this project.

8.1 Project Overview

The primary objectives of this RI are as follows:

- Define the nature and extent of contamination in soil, sediment and surface water;
- Develop a sufficient database to support the human health and ecological risk assessments;
- Address identified data gaps; and
- Collect sufficient data to support the revised Feasibility Study.

In addition the primary objectives of the BERA are as follows:

- To assess the bioavailability of the contaminants of potential ecological concern (COPECs);
- To develop an understanding of the relationship between the COPEC concentrations in the sediment and aquatic vegetation and aquatic invertebrates (i.e., bioaccumulation factors);
- To develop an understanding of the relationship between the COPEC concentrations in the surface soil and the terrestrial invertebrates (i.e., bioaccumulation factor); and
- To estimate COPEC exposure by the selected assessment endpoints (herbivorous and insectivorous birds and mammals).

Specific objectives are as follows:

1. Subsurface soil sampling will be conducted at the Former Manpro-Vibra Degreasing Unit in the Former Production Area in order to determine if a potential source of TCE contamination in groundwater exists in this area.

2. Surface and subsurface soil sampling will be conducted at Former Basins B9 and B10 in the Former Lagoons Area to provide data for risk assessments.

3. Surface soil sampling will be conducted north of the Eastern Storage Areas near the property line and along the southwestern property line of the Southern Area to delineate the horizontal extent of vanadium and hexavalent chromium exceeding risk standards.

4. Surface soil sampling will be conducted in the Former Thermal Pond Area in the Southern Area to delineate the horizontal extent of VOCs and metals exceeding risk standards.

5. Background soil samples will be collected in areas around the site that are not influenced by

releases for the risk assessment process.

6. Surface water samples will be collected along the Hudson Branch, in Bumt Mill Pond, and downstream of Bumt Mill Pond (Burnt Mill Branch) in order to evaluate the current water quality conditions.

7. Surface water and sediment samples will be collected upstream of Bumt Mill Pond in order to evaluate background surface water conditions.

8. Sediment samples will be collected from the Hudson Branch, Bumt Mill Pond, and Bumt Mill Branch in order to evaluate current sediment quality conditions.

9. Sediment samples will be collected from the on-site impoundment that discharges into the Hudson Branch to provide data for risk assessments.

10. Terrestrial invertebrate, aquatic invertebrate, aquatic vegetation, sediment and surface soil samples will be collected across a gradient of COPEC concentrations in order to develop site-specific plant: soil and invertebrate:soil bioaccumulation factors. Earthworms may be collected in lieu of terrestrial invertebrates; refer to Section 9.2.4 of this QAPP.

These objectives will be satisfied by the sampling and analysis program outlined in Worksheets #20-1 through 20-5 and 30.

8.1.1 Sampling Tasks

The sampling tasks are discussed in detail in the companion Work Plans and Section 9.0. The project calls for the sampling of soil, sediment, surface water, terrestrial invertebrates, aquatic invertebrates, and aquatic vegetation. This QAPP further defines the technical approach and provides the anticipated schedule of activities for this assignment. Sampling methods, sampling QC, sample handling and custody are discussed in other sections of this QAPP. Refer to Worksheets #20-1 through 20-5 for a summary of field and quality control samples which will be collected.

8.1.2 Analytical Tasks

The COCs and other target analytes have been identified based on the historical data. Worksheets #15-1 through 15-15 summarize the COCs, other target analytes, and project action limits for the program. Worksheet #30 summarizes the analytical parameters associated with each analysis, the concentration level and turnaround time required.

The goal of this investigation will be to obtain data of the highest quality for all matrices and to try and achieve the necessary risk standards. The achievement of the necessary risk standards is dependent on the limitations of the individual analytical methodologies and is discussed in more detail in Section 6.1.

All analyses listed above will be performed by a fixed laboratory. The data produced from these analyses will be used for definitive purposes. Field analyses during this investigation will include fiame ionization detector (FID)/photoionization detector (PID) screening for soil headspace readings and water quality parameters for surface water.

8.2 Project Schedule

An overview of the proposed schedule is shown in Worksheet #16. A detailed project schedule is presented in the companion Work Plan.

QAPP Worksheet #14

Summary of Project Tasks

Sampling Tasks: See Section 8.1.1. For a complete discussion, refer to Section 9.0.

Analysis Tasks: See Section 8.1.2. For a complete discussion, refer to Section 10.

Quality Control Tasks: For a complete discussion, refer to Section 12.

Secondary Data: For a complete discussion, refer to Section 7.

Data Management Tasks: For a complete discussion, refer to Section 13.

Documentation and Records: For a complete discussion, refer to Section 13.

Data Packages: For a complete discussion, refer to Section 13.

Assessment/Audit Tasks: One laboratory audit and one or more field audits may be scheduled for this investigation. Audits will be performed as described in Section 14.

Data Verification and Validation Tasks: Data will undergo a validation in accordance with Region 2 data validation and/or EPA National Functional Guidelines, as appropriate. For a complete discussion, refer to Section 16.

Data Usability Assessment Tasks: Each of the Project Quality Objectives listed in Worksheets #12-1 through 12-12 will be examined to determine if the objective was met. The examination will include a review of both laboratory and field data. Each analysis will be evaluated separately in terms of the major impacts observed from the Data Validation, Data Quality Indicators (PARCCS), and measurement performance criteria assessments. For a complete discussion, refer to Section 17.

QAPP Worksheet #15-1

Matrix: *Sediment*
Analytical Group: *Semivolatiles*
Concentration Level: *Low*

Contaminants of Concern and Other Target Analytes Table (Reference Limit and Evaluation Table)

Analyte	CAS Number	Project Action Limit (PAL) µg/Kg			Project Quantitation Limit µg/Kg	Achievable Laboratory Limits	
		1	2	3		MDLs µg/kg	QLs µg/kg
Benzaldehyde	100-52-7	NS	NS	10,000,000	140	6.6	140
Phenol*	108-95-2	NS	420	18,000,000	57	30	57
bis(2-Chloroethyl) ether	111-44-4	NS	NS	1000	57	8.6	57
2-Chlorophenol	95-57-8	NS	312	510,000	140	29	140
2-Methylphenol	95-48-7	NS	NS	3,100,000	57	33	57
2-2'-oxybis(1-Chloropropane)	108-60-1	NS	NS	22,000	57	8.5	57
Acetophenone	98-86-2	NS	NS	10,000,000	140	5.0	140
4-Methylphenol	106-44-5	NS	670	310,000	57	36	57
N-Nitroso-di-n-propylamine	621-64-7	NS	NS	250	57	7.0	57
Hexachloroethane	67-72-1	NS	1027	120,000	140	7.9	140
Nitrobenzene	98-95-3	NS	NS	24,000	57	8.3	57
Isophorone	78-59-1	NS	NS	1,800,000	57	7.7	57
2-Nitrophenol	88-75-5	NS	NS	NS	140	30	140
2,4-Dimethylphenol	105-67-9	NS	29	1,200,000	140	48	140
bis(2-Chloroethoxy)methane	111-91-1	NS	NS	180,000	57	12	57
2,4-Dichlorophenol	120-83-2	NS	117	180,000	140	46	140
Naphthalene*	91-20-3	160	176	18,000	29	7.8	29
4-Chloroaniline	106-47-8	NS	NS	8600	140	9.1	140
Hexachlorobutadiene	87-68-3	NS	NS	22,000	29	7.9	29
Caprolactam	105-60-2	NS	NS	31,000,000	57	9.0	57
4-Chloro-3-Methylphenol	59-50-7	NS	NS	6,200,000	140	29	140
2-Methylnaphthalene*	91-57-6	70	202	410,000	57	16	57
Hexachlorocyclopentadiene	77-47-4	NS	NS	370,000	570	29	570
2,4,6-Trichlorophenol	88-06-2	NS	213	160,000	140	27	140

QAPP Worksheet #15-1

Matrix: *Sediment*
Analytical Group: *Semivolatiles*
Concentration Level: *Low*

Contaminants of Concern and Other Target Analytes Table (Reference Limit and Evaluation Table)

Analyte	CAS Number	Project Action Limit (PAL) µg/Kg			Project Quantitation Limit µg/Kg	Achievable Laboratory Limits	
		1	2	3		MDLs µg/kg	QLs µg/kg
2,4,5-Trichlorophenol	95-95-4	NS	NS	6,200,000	140	33	140
1,1'-Biphenyl	92-52-4	NS	1220	21,000	57	3.3	57
2-Chloronaphthalene	91-58-7	NS	NS	8,200,000	57	8.9	57
2-Nitroaniline	88-74-4	NS	NS	600,000	140	13	140
Dimethylphthalate	131-11-3	NS	NS	NS	57	10	57
Acenaphthylene*	208-96-8	5.87	5.9	NS	29	9.1	29
2,6-Dinitrotoluene	606-20-2	NS	NS	62,000	57	11	57
3-Nitroaniline	99-09-2	NS	NS	NS	140	11	140
Acenaphthene*	83-32-9	6.71	6.7	3,300,000	29	8.3	29
2,4-Dinitrophenol	51-28-5	NS	NS	120,000	570	35	570
4-Nitrophenol	100-02-7	NS	NS	NS	290	48	290
Dibenzofuran	132-64-9	NS	415	NS	57	8.5	57
2,4-Dinitrotoluene	121-14-2	NS	41.6	5500	57	12	57
Diethylphthalate	84-66-2	NS	603	49,000,000	57	9.7	57
Fluorene*	86-73-7	190	774	2,200,000	29	9.4	29
4-Chlorophenyl-phenylether	7005-72-3	NS	NS	NS	57	8.6	57
4-Nitroaniline	100-01-6	NS	NS	86,000	140	11	140
4,6-Dinitro-2-Methylphenol	534-52-1	NS	NS	4900	570	35	570
N-nitrosodiphenylamine	86-30-6	NS	2680	350,000	140	17	140
4-Bromophenyl-phenylether	101-55-3	NS	1230	NS	57	10	57
1,2,4,5-Tetrachlorobenzene	95-94-3	NS	1090	18,000	140	8.8	140
Hexachlorobenzene	118-74-1	20	20	1100	57	9.3	57
Atrazine	1912-24-9	NS	6.62	7500	140	5.6	140
Pentachlorophenol*	87-86-5	NS	504	2700	290	49	290

QAPP Worksheet #15-1

Matrix: *Sediment*
Analytical Group: *Semivolatiles*
Concentration Level: *Low*

Contaminants of Concern and Other Target Analytes Table (Reference Limit and Evaluation Table)

Analyte	CAS Number	Project Action Limit (PAL) µg/Kg			Project Quantitation Limit µg/Kg	Achievable Laboratory Limits	
		1	2	3		MDLs µg/kg	QLs µg/kg
Phenanthrene*	85-01-8	NS	204	NS	29	13	29
Anthracene*	120-12-7	57.2	57.2	17,000,000	29	10	29
Carbazole	86-74-8	NS	NS	NS	57	13	57
Di-n-butylphthalate	84-74-2	NS	6470	6,200,000	57	6.3	57
Fluoranthene*	206-44-0	750	423	2,200,000	29	13	29
Pyrene*	129-00-0	490	195	1,700,000	29	11	29
Butylbenzylphthalate	85-68-7	NS	10,900	910,000	57	17	57
3,3'-Dichiorobenzidine	91-94-1	NS	**127**	3800	140	7.3	140
Benzo(a)anthracene*	56-55-3	320	108	2100	29	9.3	29
Chrysene*	218-01-9	340	166	210,000	29	9.7	29
Bis(2-Ethylhexyl) phthalate*	117-81-7	NS	180	120,000	57	25	57
Di-n-octylphthalate	117-84-0	NS	NS	NS	57	14	57
Benzo(b)fluoranthene*	205-99-2	NS	**27.2**	2100	29	9.5	29
Benzo(k)fluoranthene*	207-08-9	240	240	21,000	29	11	29
Benzo(a)pyrene*	50-32-8	370	150	210	29	8.7	29
Indeno(1,2,3-cd)pyrene*	193-39-5	200	**17**	2100	29	9.9	29
Dibenz(a,h)anthracene*	53-70-3	60	33	210	29	9.7	29
Benzo(g,h,i)perylene*	191-24-2	170	170	NS	29	11	29
2,3,4,6-Tetrachlorophenol	58-90-2	NS	284	1,800,000	140	29	140
Total PAHs	NA	4000	1610	NS	330	NA	330

* – Contaminant of Concern
1 – NJDEP Ecological Screening Criteria, Sediment, Freshwater Criteria, Lowest Effects Levels, 3/10/09.
2 – USEPA, 2006. EPA Region III BTAG, Freshwater Sediment Screening Benchmarks, August 2006.
3 – EPA Regional Screening Levels for Industrial Soil, June 201 L Concentrations based on non-carcinogenic health effects are adjusted using HQ=0.1.
Bold highlighted cells indicate project action limit will not be achieved.
NS – None specified.
NA – Not applicable.

QAPP Worksheet #15-2
Matrix: *Sediment*
Analytical Group: *Pesticides*
Concentration Level: *Low*

Contaminants of Concern and Other Target Analytes Table (Reference Limit and Evaluation Table)

Analyte	CAS Number	Project Action Limit (PAL) µg/kg			Project Quantitation Limit µg/kg	Achievable Laboratory Limits	
		1	2	3		MDLs µg/kg	QLs µg/kg
alpha-BHC	319-84-6	6	3	270	1.2	0.36	1.2
beta-BHC	319-85-7	5	3	960	1.2	0.57	1.2
delta-BHC	319-86-8	NS	3	NS	1.2	0.32	1.2
gamma-BHC (Lindane)	58-89-9	3	3	2100	1.2	0.36	1.2
Heptachlor	76-44-8	NS	68	380	1.2	0.53	1.2
Aldrin	309-00-2	2	2	110	1.2	0.53	1.2
Heptachlor epoxide	1024-57-3	5	2.47	190	1.2	0.45	1.2
Endosulfan I	959-98-8	NS	2.9	370,000[a]	1.2	0.40	1.2
Dieldrin	60-57-1	2	1.9	110	1.2	0.40	1.2
4,4'-DDE*	72-55-9	5	3.16	5100	1.2	0.41	1.2
Endrin	72-20-8	3	2.22	18,000	1.2	0.41	1.2
Endosulfan II	33213-65-9	NS	14	370,000[a]	1.2	0.45	1.2
4,4'-DDD*	72-54-8	8	4.88	7200	1.2	0.51	1.2
Endosulfan Sulfate	1031-07-8	NS	5.4	NS	1.2	0.45	1.2
4,4'-DDT*	50-29-3	7	4.16	7000	1.2	0.49	1.2

QAPP Worksheet #15-2
Matrix: *Sediment*
Analytical Group: *Pesticides*
Concentration Level: *Low*

Contaminants of Concern and Other Target Analytes Table (Reference Limit and Evaluation Table)

Analyte	CAS Number	Project Action Limit (PAL) µg/kg			Project Quantitation Limit µg/kg	Achievable Laboratory Limits	
		1	2	3		MDLs µg/kg	QLs µg/kg
Methoxychlor	72-43-5	NS	18.7	310,000	1.2	0.53	1.2
Endrin ketone	53494-70-5	NS	NS	NS	1.2	0.42	1.2
Endrin aldehyde	7421-93-4	NS	NS	NS	1.2	0.55	1.2
alpha-chlordane	5103-71-9	7[b]	3.24[b]	6500[b]	1.2	0.40	1.2
gamma-chlordane	5103-74-2	7[b]	3.24[b]	6500[b]	1.2	0.46	1.2
Toxaphene	8001-35-2	NS	0.1	1600	15	14	15

* – Contaminant of Concern
1 – NJDEP Ecological Screening Criteria, Sediment, Freshwater Criteria, Lowest Effects Levels, 3/10/09.
2 – USEPA, 2006. EPA Region III BTAG, Freshwater Sediment Screening Benchmarks, August 2006.
3 – EPA Regional Screening Levels for Industrial Soil, June 2011. Concentrations based on non-carcinogenic health effects are adjusted using HQ=0.1.
[a] – Used standard for endosulfan.
[b] – Used standard for Technical Chlordane
NS – None specified.

QAPP Worksheet #15-3

Matrix: *Sediment*
Analytical Group: *PCB Aroclors*
Concentration Level: *Low*

Contaminants of Concern and Other Target Analytes Table (Reference Limit and Evaluation Table)

Analyte	CAS Number	Project Action Limit (PAL) µg/kg			Project Quantitation Limit µg/kg	Achievable Laboratory Limits	
		1	2	3		MDLs µg/kg	QLs µg/kg
Aroclor 1016	12674-11-2	**7**	NS	21,000	30	11	30
Aroclor 1221	11104-28-2	70[a]	NS	540	30	20	30
Aroclor 1232	11141-16-5	70[a]	NS	540	30	9.5	30
Aroclor 1242	53469-21-9	70[a]	NS	740	30	11	30
Aroclor 1248*	12672-29-6	30	NS	740	30	5.9	30
Aroclor 1254*	11097-69-1	60	NS	740	30	7.4	30
Aroclor 1260*	11096-82-5	**5**	NS	740	30	11	30
Total PCBs	NA	70	59.8	NS	30	NA	30

*Contaminant of Concern
1 – NJDEP Ecological Screening Criteria, Sediment, Freshwater Criteria, Lowest Effects Levels, 3/10/09.
2 – USEPA, 2006. EPA Region III BTAG, Freshwater Sediment Screening Benchmarks, August 2006.
3 – EPA Regional Screening Levels for Industrial Soil, June 2011. Concentrations based on non-carcinogenic health effects are adjusted using HQ=0.1.
[a]Used standard for total PCBs
Bold highlighted cells indicate project action limit will not be achieved.
NA – Not applicable
NS – None specified

QAPP Worksheet #15-4

Matrix: *Sediment*
Analytical Group: *Metals*
Concentration Level: *Low*

Contaminants of Concern and Other Target Analytes Table (Reference Limit and Evaluation Table)

Analyte	CAS Number	Project Action Limit (PAL) mg/kg			Project Quantitation Limit mg/kg	Achievable Laboratory Limits	
		1	2	3		MDLs mg/kg	QLs mg/kg
Aluminum*	7429-90-5	NS	NS	99,000	20	0.743	20
Antimony*	7440-36-0	NS	2	41	2	0.125	2
Arsenic*	7440-38-2	6	9.8	1.6	2	0.275	2
Barium	7440-39-3	NS	NS	19,000	20	0.136	20
Beryllium	7440-41-7	NS	NS	200	0.2	0.015	0.2
Cadmium*	7440-43-9	0.6	0.99	80	0.5	0.034	0.5
Calcium	7440-70-2	NS	NS	NS	500	1.004	500
Chromium*	7440-47-3	26	43.4	150,000	1	0.062	1
Cobalt	7440-48-4	NS	50	30	5	0.031	5
Copper*	7440-50-8	16	31.6	4100	2.5	0.108	2.5
Iron	7439-89-6	NS	20,000	72,000	10	1.124	10
Lead*	7439-92-1	31	35.8	80	2	0.110	2
Magnesium	7439-95-4	NS	NS	NS	500	3.544	500
Manganese*	7439-96-5	NS	460	2300	1.5	0.031	1.5
Mercury*	7439-97-6	0.2	0.18	4.3	0.084	0.0098	0.084
Nickel*	7440-02-0	16	22.7	2000	4	0.065	4
Potassium	7440-09-7	NS	NS	NS	1000	3.376	1000
Selenium*	7782-49-2	NS	2	510	2	0.267	2
Silver	7440-22-4	1.0	1.0	510	0.5	0.069	0.5
Sodium	7440-23-5	NS	NS	NS	1000	1.482	1000
Thallium	7440-28-0	NS	NS	1.0	1	0.210	1

QAPP Worksheet #15-4

Matrix: *Sediment*
Analytical Group: *Metals*
Concentration Level: *Low*

Contaminants of Concern and Other Target Analytes Table (Reference Limit and Evaluation Table)

Analyte	CAS Number	Project Action Limit (PAL) mg/kg			Project Quantitation Limit mg/kg	Achievable Laboratory Limits	
		1	2	3		MDLs mg/kg	QLs mg/kg
Vanadium*	7440-62-2	NS	NS	520	5	0.064	5
Zinc*	7440-66-6	120	121	31,000	2	0.475	2

* – Contaminant of Concern
1 – NJDEP Ecological Screening Criteria, Sediment, Freshwater Criteria, Lowest Effects Levels, 3/10/09.
2 – USEPA, 2006. EPA Region III BTAG, Freshwater Sediment Screening Benchmarks, August 2006.
3 – EPA Regional Screening Levels for Industrial Soil, June 2011. Concentrations based on non-carcinogenic health effects are adjusted using HQ=0.1.
Bold highlighted cells indicate project action limit will not be achieved.
NS – None Specified

QAPP Worksheet #15-5

Matrix: *Sediment*
Analytical Group: *TOC*
Concentration Level: *NA*

Contaminants of Concern and Other Target Analytes Table (Reference Limit and Evaluation Table)

Analyte	CAS Number	Project Action Limit (PAL) mg/kg	Project Quantitation Limit mg/kg	Achievable Laboratory Limits	
				MDLs mg/kg	QLs mg/kg
TOC	NA	NA	1000	567	1000

NA – Not Applicable

QAPP Worksheet #15-6

Medium/Matrix: *Soil*
Analytical Group: *Volatiles*
Concentration Level: *High*

Contaminants of Concern and Other Target Analytes Table (Reference Limit and Evaluation Table)

Analyte	CAS Number	Project Action Limit (PAL) µg/kg		Project Quantitation Limit µg/kg	Achievable Laboratory Limits	
		1	2		MDLs µg/kg	QLs µg/kg
Dichlorodifluoromethane	75-71-8	230,000,000	40,000	500	95	500
Chloromethane	74-87-3	12,000	50,000	500	17	500
Vinyl chloride	75-01-4	2000	1700	500	18	500
Bromomethane	74-83-9	59,000	3200	500	40	500
Chloroethane	75-00-3	NS	6,100,000	500	100	500
Trichlorofluoromethane	75-69-4	340,000,000	340,000	500	23	500
1,1-Dichloroethene	75-35-4	150,000	110,000	500	66	500
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	NS	18,000,000	500	56	500
Acetone	67-64-1	NS	63,000,000	1000	220	1000
Carbon disulfide	75-15-0	110,000,000	370,000	500	31	500
Methyl acetate	79-20-9	NS	100,000,000	500	82	500
Methylene chloride	75-09-2	97,000	53,000	500	22	500
trans-1,2-Dichloroethene	156-60-5	720,000	69,000	500	45	500
Methyl tert-butyl ether	1634-04-4	320,000	220,000	100	28	100
1,1-Dichloroethane	75-34-3	24,000	17,000	500	14	500
cis-1,2-Dichloroethene	156-59-2	560,000	200,000	500	24	500
2-Butanone (MEK)	78-93-3	44,000,000	20,000,000	1000	200	1000
Bromochloromethane	74-97-5	NS	68,000	500	22	500
Chloroform	67-66-3	2000	1500	500	32	500
1,1,1-Trichloroethane	71-55-6	4,200,000	3,800,000	500	13	500

QAPP Worksheet #15-6

Medium/Matrix: *Soil*
Analytical Group: *Volatiles*
Concentration Level: *High*

Contaminants of Concern and Other Target Analytes Table (Reference Limit and Evaluation Table)

Analyte	CAS Number	Project Action Limit (PAL) µg/kg		Project Quantitation Limit µg/kg	Achievable Laboratory Limits	
		1	2		MDLs µg/kg	QLs µg/kg
Cyclohexane	110-82-7	NS	2,900,000	500	15	500
Carbon tetrachloride	56-23-5	2000	3000	500	56	500
Trichloroethene*	79-01-6	20,000	14,000	500	53	500
1,2-Dichloroethane	107-06-2	3000	2200	100	35	100
Benzene	71-43-2	5000	5400	100	34	100
Methyl cyclohexane	108-87-2	NS	NS	500	65	500
1,2 Dichloropropane	78-87-5	5000	4700	500	13	500
Bromodichloromethane	75-27-4	3000	1400	500	26	500
cis-1,3-Dichloropropene	10061-01-5	7000	8300	500	13	500
4-Methyl-2-pentanone	108-10-1	NS	5,300,000	500	81	500
Toluene	108-88-3	91,000,000	4,500,000	100	29	100
trans-1,3-Dichloropropene	10061-02-6	7000	8300	500	9.6	500
1,1,2-Trichloroethane	79-00-5	6000	5300	500	19	500
Tetrachloroethene	127-18-4	5000	2600	500	15	500
2-Hexanone	591-78-6	NS	140,000	500	96	500
Dibromochloromethane	124-48-1	8000	3300	500	11	500
Ethylene dibromide	106-93-4	40	170	100	14	100
Chlorobenzene	108-90-7	7,400,000	140,000	500	34	500
Ethylbenzene	100-41-4	110,000,000	27,000	100	37	100
Xylenes (total)	1330-20-7	170,000,000	270,000	200	47	200
Styrene	100-42-5	260,000	3,600,000	500	11	500

QAPP Worksheet #15-6

Medium/Matrix: *Soil*
Analytical Group: *Volatiles*
Concentration Level: *High*

Contaminants of Concern and Other Target Analytes Table (Reference Limit and Evaluation Table)

Analyte	CAS Number	Project Action Limit (PAL) µg/kg		Project Quantitation Limit µg/kg	Achievable Laboratory Limits	
		1	2		MDLs µg/kg	QLs µg/kg
Bromoform	75-25-2	280,000	220,000	500	15	500
Isopropylbenzene	98-82-8	NS	1,100,000	500	52	500
1,1,2,2-Tetrachloroethane	79-34-5	3000	2800	500	29	500
1,3-Dichlorobenzene	541-73-1	59,000,000	NS	500	28	500
1,4-Dichlorobenzene	106-46-7	13,000	12,000	500	34	500
1,2-Dichlorobenzene	95-50-1	59,000,000	980,000	500	27	500
1,2-Dibromo-3-chloropropane	96-12-8	**200**	**69**	1000	54	1000
1,2,4-Trichlorobenzene	120-82-1	820,000	99,000	500	35	500
1,2,3-Trichlorobenzene	87-61-6	NS	49,000	500	59	500
1,4-Dioxane	123-91-1	NS	17,000	13,000	8600	13,000

* – Contaminant of Concern
[1] – Soil Remediation Standards, NJDEP, Non-Residential Direct Contact, 11/4/09.
[2] – EPA Regional Screening Levels for Industrial Soil, June 2011. Concentrations based on non-carcinogenic health effects are adjusted using HQ=0.1.
NS – None Specified
Bold/highlighted cells indicate project action limit will not be achieved.

QAPP Worksheet #15-7

Matrix: *Soil*
Analytical Group: *Semivolatiles*
Concentration Level: *Low*

Contaminants of Concern and Other Target Analytes Table (Reference Limit and Evaluation Table)

Analyte	CAS Number	Project Action Limit (PAL) µg/kg		Project Quantitation Limit µg/kg	Achievable Laboratory Limits	
		1	2		MDLs µg/kg	QLs µg/kg
Benzaldehyde	100-52-7	68,000,000	10,000,000	140	6.6	140
Phenol*	108-95-2	210,000,000	18,000,000	57	30	57
bis(2-Chloroethyl) ether	111-44-4	2000	1000	57	8.6	57
2-Chlorophenol	95-57-8	2,200,000	510,000	140	29	140
2-Methylphenol	95-48-7	3,400,000	3,100,000	57	33	57
2-2'-oxybis(1-Chloropropane)	108-60-1	67,000	22,000	57	8.5	57
Acetophenone	98-86-2	5000	10,000,000	140	5.0	140
4-Methylphenol	106-44-5	340,000	310,000	57	36	57
N-Nitroso-di-n-propylamine	621-64-7	300	250	57	7.0	57
Hexachloroethane	67-72-1	140,000	120,000	140	7.9	140
Nitrobenzene	98-95-3	340,000	24,000	57	8.3	57
Isophorone	78-59-1	2,000,000	1,800,000	57	7.7	57
2-Nitrophenol	88-75-5	NS	NS	140	30	140
2,4-Dimethylphenol	105-67-9	14,000,000	1,200,000	140	48	140
bis(2-Chloroethoxy)methane	111-91-1	NS	180,000	57	12	57
2,4-Dichlorophenol	120-83-2	2,100,000	180,000	140	46	140
Naphthalene*	91-20-3	17,000	18,000	29	7.8	29
4-Chloroaniline	106-47-8	NS	8600	140	9.1	140
Hexachlorobutadiene	87-68-3	25,000	22,000	29	7.9	29
Caprolactam	105-60-2	340,000,000	31,000,000	57	9.0	57
4-Chloro-3-Methylphenol	59-50-7	NS	6,200,000	140	29	140
2-Methylnaphthalene*	91-57-6	2,400,000	410,000	57	16	57
Hexachlorocyclopentadiene	77-47-4	110,000	370,000	570	29	570

QAPP Worksheet #15-7

Matrix: *Soil*
Analytical Group: *Semivolatiles*
Concentration Level: *Low*

Contaminants of Concern and Other Target Analytes Table (Reference Limit and Evaluation Table)

Analyte	CAS Number	Project Action Limit (PAL) µg/kg		Project Quantitation Limit µg/kg	Achievable Laboratory Limits	
		1	2		MDLs µg/kg	QLs µg/kg
2,4,6-Trichlorophenol	88-06-2	74,000	160,000	140	27	140
2,4,5-Trichlorophenol	95-95-4	68,000,000	6,200,000	140	33	140
1,1[1]-Biphenyl	92-52-4	34,000,000	21,000	57	3.3	57
2-Chloronaphthalene	91-58-7	NS	8,200,000	57	8.9	57
2-Nitroaniline	88-74-4	23,000,000	600,000	140	13	140
Dimethylphthalate	131-11-3	NS	NS	57	10	57
Acenaphthylene*	208-96-8	300,000,000	NS	29	9.1	29
2,6-Dinitrotoluene	606-20-2	3000	62,000	57	11	57
3-Nitroaniline	99-09-2	NS	NS	140	11	140
Acenaphthene*	83-32-9	37,000,000	3,300,000	29	8.3	29
2,4-Dinitrophenol	51-28-5	1,400,000	120,000	570	35	570
4-Nitrophenol	100-02-7	NS	NS	290	48	290
Dibenzofuran	132-64-9	NS	NS	57	8.5	57
2,4-Dinitrotoluene	121-14-2	3000	5500	57	12	57
Diethylphthalate	84-66-2	550,000,000	49,000,000	57	9.7	57
Fluorene*	86-73-7	24,000,000	2,200,000	29	9.4	29
4-Chlorophenyl-phenylether	7005-72-3	NS	NS	57	8.6	57
4-Nitroaniline	100-01-6	NS	86,000	140	11	140
4,6-Dinitro-2-Methylphenol	534-52-1	68,000	4900	570	35	570
N-nitrosodiphenylamine	86-30-6	390,000	350,000	140	17	140
4-Bromophenyl-phenylether	101-55-3	NS	NS	57	10	57
1,2,4,5-Tetrachlorobenzene	95-94-3	NS	18,000	140	8.8	140
Hexachlorobenzene	118-74-1	1000	1100	57	9.3	57
Atrazine	1912-24-9	2,400,000	7500	140	5.6	140

QAPP Worksheet #15-7

Matrix: *Soil*
Analytical Group: *Semivolatiles*
Concentration Level: *Low*

Contaminants of Concern and Other Target Analytes Table (Reference Limit and Evaluation Table)

Analyte	CAS Number	Project Action Limit (PAL) µg/kg		Project Quantitation Limit µg/kg	Achievable Laboratory Limits	
		1	2		MDLs µg/kg	QLs µg/kg
Pentachlorophenol*	87-86-5	10,000	2700	290	49	290
Phenanthrene*	85-01-8	300,000,000	NS	29	13	29
Anthracene*	120-12-7	30,000,000	17,000,000	29	10	29
Carbazole	86-74-8	96,000	NS	57	13	57
Di-n-butylphthalate	84-74-2	68,000,000	6,200,000	57	6.3	57
Fluoranthene**	206-44-0	24,000,000	2,200,000	29	13	29
Pyrene*	129-00-0	18,000,000	1,700,000	29	11	29
Butylbenzylphthalate	85-68-7	14,000,000	910,000	57	17	57
3,3'-Dichlorobenzidine	91-94-1	4000	3800	140	7.3	140
Benzo(a)anthracene*	56-55-3	2000	2100	29	9.3	29
Chrysene*	218-01-9	230,000	210,000	29	9.7	29
Bis(2-Ethylhexyl) phthalate*	117-81-7	140,000	120,000	57	25	57
Di-n-octylphthalate	117-84-0	27,000,000	NS	57	14	57
Benzo(b)fluoranthene*	205-99-2	2000	2100	29	9.5	29
Benzo(k)fluoranthene*	207-08-9	23,000	21,000	29	11	29
Benzo(a)pyrene*	50-32-8	200	210	29	8.7	29
Indeno(1,2,3-cd)pyrene*	193-39-5	2000	2100	29	9.9	29
Dibenz(a,h)anthracene*	53-70-3	200	210	29	9.7	29
Benzo(g,h,i)perylene*	191-24-2	30,000,000	NS	29	11	29
2,3,4,6-Tetrachlorophenol	58-90-2	NS	1,800,000	140	29	140

* – Contaminant of Concern
[1] – Soil Remediation Standards, NJDEP, Non-Residential Direct Contact, 11/4/09.
[2] – EPA Regional Screening Levels for Industrial Soil, June 2011. Concentrations based on non-carcinogenic health effects are adjusted using HQ=0.1.
NS – None specified.

QAPP Worksheet #15-8

Matrix: *Soil*
Analytical Group: *Pesticides*
Concentration Level: *Low*

Contaminants of Concern and Other Target Analytes Table (Reference Limit and Evaluation Table)

Analyte	CAS Number	Project Action Limit (PAL) µg/kg		Project Quantitation Limit µg/kg	Achievable Laboratory Limits	
		1	2		MDLs µg/kg	QLs µg/kg
alpha-BHC	319-84-6	500	270	1.2	0.36	1.2
beta-BHC	319-85-7	2000	960	1.2	0.57	1.2
delta-BHC	319-86-8	NS	NS	1.2	0.32	1.2
gamma-BHC (Lindane)	58-89-9	2000	2100	1.2	0.36	1.2
Heptachlor	76-44-8	700	380	1.2	0.53	1.2
Aldrin	309-00-2	200	110	1.2	0.53	1.2
Heptachlor epoxide	1024-57-3	300	190	1.2	0.45	1.2
Endosulfan I	959-98-8	6,800,000	370,000[a]	1.2	0.40	1.2
Dieldrin	60-57-1	200	110	1.2	0.40	1.2
4,4'-DDE*	72-55-9	9000	5100	1.2	0.41	1.2
Endrin	72-20-8	340,000	18,000	1.2	0.41	1.2
Endosulfan II	33213-65-9	6,800,000	370,000[a]	1.2	0.45	1.2
4,4'-DDD*	72-54-8	13,000	7200	1.2	0.51	1.2
Endosulfan Sulfate	1031-07-8	6,800,000	NS	1.2	0.45	1.2
4,4'-DDT*	50-29-3	8000	7000	1.2	0.49	1.2
Methoxychlor	72-43-5	5,700,000	310,000	1.2	0.53	1.2

QAPP Worksheet #15-8

Matrix: *Soil*
Analytical Group: *Pesticides*
Concentration Level: *Low*

Contaminants of Concern and Other Target Analytes Table (Reference Limit and Evaluation Table)

Analyte	CAS Number	Project Action Limit (PAL) µg/kg		Project Quantitation Limit µg/kg	Achievable Laboratory Limits	
		1	2		MDLs µg/kg	QLs µg/kg
Endrin ketone	53494-70-5	NS	NS	1.2	0.42	1.2
Endrin aldehyde	7421-93-4	NS	NS	1.2	0.55	1.2
alpha-chlordane	5103-71-9	1000	6500[b]	1.2	0.40	1.2
gamma-chlordane	5103-74-2	1000	6500[b]	1.2	0.46	1.2
Toxaphene	8001-35-2	3000	1600	15	14	15

* – Contaminant of Concern
[1] – Soil Remediation Standards, NJDEP, Non-Residential Direct Contact, 11/4/09.
[2] – EPA Regional Screening Levels for Industrial Soil, June 2011. Concentrations based on non-carcinogenic health effects are adjusted using HQ=0.1.
[a] – Used standard for Endosulfan.
[b] – Used standard for Technical Chlordane.
NS – None specified.

QAPP Worksheet #15-9

Medium/Matrix: *Soil*
Analytical Group: *PCB Aroclors*
Concentration Level: *Low*

Contaminants of Concern and Other Target Analytes Table (Reference Limit and Evaluation Table)

Analyte	CAS Number	Project Action Limit (PAL) µg/kg		Project Quantitation Limit µg/kg	Achievable Laboratory Limits	
		1	2		MDLs µg/kg	QLs µg/kg
Aroclor 1016	12674-11-2	NS	21,000	30	11	30
Aroclor 1221	11104-28-2	NS	540	30	20	30
Aroclor 1232	11141-16-5	NS	540	30	9.5	30
Aroclor 1242	53469-21-9	NS	740	30	11	30
Aroclor 1248*	12672-29-6	NS	740	30	5.9	30
Aroclor 1254*	11097-69-1	NS	740	30	7.4	30
Aroclor 1260*	11096-82-5	1000	740	30	11	30

*Contaminant of Concern
[1] – Soil Remediation Standards, NJDEP, Non-Residential Direct Contact, 11/4/09.
[2] – EPA Regional Screening Levels for Industrial Soil, June 2011. Concentrations based on non-carcinogenic health effects are adjusted using HQ=0.1.
NS – None Specified

QAPP Worksheet #15-10
Matrix: *Soil*
Analytical Group: *Metals*
Concentration Level: *Low*

Contaminants of Concern and Other Target Analytes Table (Reference Limit and Evaluation Table)

Analyte	CAS Number	Project Action Limit (PAL) mg/kg		Project Quantitation Limit mg/kg	Achievable Laboratory Limits	
		1	2		MDLs mg/kg	QLs mg/kg
Aluminum	7429-90-5	NS	99,000	20	0.743	20
Antimony	7440-36-0	450	41	2	0.125	2
Arsenic	7440-38-2	19	1.6	2	0.275	2
Barium	7440-39-3	59,000	19,000	20	0.136	20
Beryllium	7440-41-7	140	200	0.2	0.015	0.2
Cadmium	7440-43-9	78	80	0.5	0.034	0.5
Calcium	7440-70-2	NS	NS	500	1.004	500
Chromium	7440-47-3	NS	150,000	1	0.062	1
Cobalt	7440-48-4	590	30	5	0.031	5
Copper	7440-50-8	45,000	4100	2.5	0.108	2.5
Iron	7439-89-6	NS	72,000	10	1.124	10
Lead	7439-92-1	800	80	2	0.110	2
Magnesium	7439-95-4	NS	NS	500	3.544	500
Manganese	7439-96-5	5900	2300	1.5	0.031	1.5
Mercury	7439-97-6	65	4.3	0.084	0.0098	0.084

QAPP Worksheet #15-10

Matrix: *Soil*
Analytical Group: *Metals*
Concentration Level: *Low*

Contaminants of Concern and Other Target Analytes Table (Reference Limit and Evaluation Table)

Analyte	CAS Number	Project Action Limit (PAL) mg/kg		Project Quantitation Limit mg/kg	Achievable Laboratory Limits	
		1	2		MDLs mg/kg	QLs mg/kg
Nickel	7440-02-0	23,000	2000	4	0.065	4
Potassium	7440-09-7	NS	NS	1000	3.376	1000
Selenium	7782-49-2	5700	510	2	0.267	2
Silver	7440-22-4	5700	510	0.5	0.069	0.5
Sodium	7440-23-5	NS	NS	1000	1.482	1000
Thallium	7440-28-0	79	1.0	1	0.210	1
Vanadium*	7440-62-2	1100	520	5	0.064	5
Zinc	7440-66-6	110,000	2300	2	0.475	2

*– Contaminant of Concern
[1] – Soil Remediation Standards, NJDEP, Non-Residential Direct Contact, 11/4/09.
[2] – EPA Regional Screening Levels for Industrial Soil, June 2011. Concentrations based on non-carcinogenic health effects are adjusted using HQ=0.1.
Bold highlighted cells indicate project action limit will not be achieved.
NS – None Specified

QAPP Worksheet #15-11

Matrix: *Soil*
Analytical Group: *Hexavalent Chromium*
Concentration Level: *Low*

Contaminants of Concern and Other Target Analytes Table (Reference Limit and Evaluation Table)

Analyte	CAS Number	Project Action Limit (PAL) mg/kg		Project Quantitation Limit mg/kg	Achievable Laboratory Limits	
		1	2		MDLs mg/kg	QLs mg/kg
Hexavalent Chromium*	18540-29-9	20	5.6	4	0.220	4

*– Contaminant of Concern
[1] – Soil Remediation Standards, NJDEP, Non-Residential Direct Contact, 11/4/09.
[2] – EPA Regional Screening Levels for Industrial Soil, June 2011.

QAPP Worksheet #15-12
Matrix: *Surface Water*
Analytical Group: *Volatiles*
Concentration Level: *Low*

Contaminants of Concern and Other Target Analytes Table (Reference Limit and Evaluation Table)

Analyte	CAS Number	Project Action Limit (PAL) µg/L				Project Quantitation Limit µg/L	Achievable Laboratory Limits	
		1		2	3		MDLs µg/L	QLs µg/L
		a	b					
Dichlorodifluoromethane	75-71-8	NS	NS	NS	NS	5.0	0.92	5.0
Chloromethane	74-87-3	NS	NS	NS	NS	1.0	0.29	1.0
Vinyl chloride	75-01-4	930	1.082	NS	930	1.0	0.44	1.0
Bromomethane	74-83-9	16	47	NS	NS	2.0	0.30	2.0
Chloroethane	75-00-3	NS	NS	NS	NS	1.0	0.37	1.0
Trichlorofluoromethane	75-69-4	NS	NS	NS	NS	5.0	0.54	5.0
1,1-Dichloroethene	75-35-4	65	4.7	NS	25	1.0	0.40	1.0
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	NS	NS	NS	NS	5.0	0.38	5.0
Acetone	67-64-1	NS	NS	NS	1500	10	2.9	10
Carbon disulfide	75-15-0	NS	NS	NS	1.92	2.0	0.74	2.0
Methyl acetate	79-20-9	NS	NS	NS	NS	5.0	1.5	5.0
Methylene chloride	75-09-2	940	2.5	NS	98.1	2.0	0.30	2.0
trans-1,2-Dichloroethene	156-60-5	970	590	NS	970	1.0	0.25	1.0
Methyl tert-butyl ether	1634-04-4	51,000	70	NS	11,070	1.0	0.23	1.0
1,1-Dichloroethane	75-34-3	NS	NS	NS	47	1.0	0.29	1.0
cis-1,2-Dichloroethene	156-59-2	NS	NS	NS	590[c]	1.0	0.22	1.0
2-Butanone (MEK)	78-93-3	NS	NS	NS	14,000	10	1.6	10
Bromochloromethane	74-97-5	NS	NS	NS	NS	5.0	0.33	5.0
Chloroform	67-66-3	140	68	NS	1.8	1.0	0.23	1.0
1,1,1-Trichloroethane	71-55-6	76	120	NS	11	1.0	0.26	1.0
Cyclohexane	110-82-7	NS	NS	NS	NS	5.0	1.9	5.0

QAPP Worksheet #15-12

Matrix: *Surface Water*
Analytical Group: *Volatiles*
Concentration Level: *Low*

Contaminants of Concern and Other Target Analytes Table (Reference Limit and Evaluation Table)

Analyte	CAS Number	Project Action Limit (PAL) µg/L				Project Quantitation Limit µg/L	Achievable Laboratory Limits	
		1		2	3		MDLs µg/L	QLs µg/L
		a	b					
Carbon tetrachloride	56-23-5	240	0.33	NS	13.3	1.0	0.26	1.0
Trichloroethene*	79-01-6	47	1.0	NS	21	1.0	0.24	1.0
1,2-Dichloroethane	107-06-2	910	0.29	NS	100	1.0	0.33	1.0
Benzene	71-43-2	114	0.150	NS	370	1.0	0.23	1.0
Methyl cyclohexane	108-87-2	NS	NS	NS	NS	5.0	0.35	5.0
1,2 Dichloropropane	78-87-5	360	0.50	NS	NS	1.0	0.27	1.0
Bromodichloromethane	75-27-4	NS	0.55	NS	NS	1.0	0.22	1.0
cis-1,3-Dichloropropene	10061-01-5	NS	0.34	NS	0.055	1.0	0.25	1.0
4-Methyl-2-pentanone	108-10-1	NS	NS	NS	170	5.0	0.86	5.0
Toluene	108-88-3	253	1300	NS	2	1.0	0.30	1.0
trans-1,3-Dichloropropene	10061-02-6	NS	0.34	NS	0.055	1.0	0.21	1.0
1,1,2-Trichloroethane	79-00-5	500	13	NS	1200	1.0	0.23	1.0
Tetrachloroethene	127-18-4	45	0.34	NS	111	1.0	0.27	1.0
2-Hexanone	591-78-6	NS	NS	NS	99	5.0	1.4	5.0
Dibromochloromethane	124-48-1	NS	0.40	NS	NS	1.0	0.22	1.0
Ethylene dibromide	106-93-4	NS	NS	NS	NS	2.0	0.39	2.0
Chlorobenzene	108-90-7	47	210	NS	1.3	1.0	0.39	1.0
Ethylbenzene	100-41-4	14	530	NS	90	1.0	0.27	1.0
Xylenes (total)	1330-20-7	27	NS	NS	13	1.0	0.25	1.0
Styrene	100-42-5	32	NS	NS	72	5.0	0.58	5.0
Bromoform	75-25-2	230	4.3	NS	320	4.0	0.23	4.0
Isopropylbenzene	98-82-8	NS	NS	NS	2.6	2.0	0.57	2.0
1,1,2,2-Tetrachloroethane	79-34-5	380	4.7	NS	610	1.0	0.24	1.0

QAPP Worksheet #15-12

Matrix: *Surface Water*
Analytical Group: *Volatiles*
Concentration Level: *Low*

Contaminants of Concern and Other Target Analytes Table (Reference Limit and Evaluation Table)

Analyte	CAS Number	Project Action Limit (PAL) µg/L				Project Quantitation Limit µg/L	Achievable Laboratory Limits	
		1		2	3		MDLs µg/L	QLs µg/L
		a	b					
1,3-Dichlorobenzene	541-73-1	38	2200	NS	150	1.0	0.25	1.0
1,4-Dichlorobenzene	106-46-7	9.4	550	NS	26	1.0	0.28	1.0
1,2-Dichlorobenzene	95-50-1	14	2000	NS	0.7	1.0	0.26	1.0
1,2-Dibromo-3-chloropropane	96-12-8	NS	NS	NS	NS	10	1.1	10
1,2,4-Trichlorobenzene	120-82-1	30	21	NS	24	5.0	056	5.0
1,2,3-Trichlorobenzene	87-61-6	NS	NS	NS	8	5.0	0.47	5.0
1,4-Dioxane	123-91-1	NS	NS	NS	NS	130	94	130

* – Contaminant of Concern
1 – NJDEP Ecological Screening Criteria, Surface Water, Freshwater Criteria, 3/10/09.
[a] – Aquatic/Chronic
[b] – Human Health
2 – USEPA National Recommended Water Quality Criteria, Freshwater CCC, Chronic Value, 2009.
3 – USEPA, 2006. EPA Region III BTAG, Freshwater Screening Benchmarks, July 2006.
[c] – Used standard for 1,2-Dichloroethene
NS – None Specified
Bold highlighted cells indicate project action limit will not be achieved.

QAPP Worksheet #15-13

Matrix: *Surface Water*
Analytical Group: *Metals (Total and Dissolved)*
Concentration Level: *Low*

Contaminants of Concern and Other Target Analytes Table (Reference Limit and Evaluation Table)

Analyte	CAS Number	Project Action Limit (PAL) µg/L				Project Quantitation Limit µg/L	Achievable Laboratory Limits	
		1					MDLs µg/L	QLs µg/L
		a	b	2	3			
Aluminum	7429-90-5	NS	NS	87	87	200+	7.18	200
Antimony	7440-36-0	80	5.6	NS	30	6.0	1.25	6.0
Arsenic*	7440-38-2	150	0.017	150	5	8.0	0.92	8.0
Barium	7440-39-3	220	2000	NS	4	200	0.44	200
Beryllium	7440-41-7	3.6	6.0	NS	0.66	1.0	0.24	1.0
Cadmium	7440-43-9	NS	3.4	0.25	0.25	3.0+	0.17	3.0
Calcium	7440-70-2	NS	NS	NS	116,000	5000	8.97	5000
Chromium*	7440-47-3	42	92	74	11	10	0.90	10
Cobalt	7440-48-4	24	NS	NS	74	50+	0.30	50
Copper	7440-50-8	NS	1300	9[a]	9	10+	0.85	10
Iron*	7439-89-6	NS	NS	1000	300	100	7.73	100
Lead*	7439-92-1	5.4	5	2.5	2.5	3.0	0.94	3.0
Magnesium	7439-95-4	NS	NS	NS	82,000	5000	16.8	5000
Manganese	7439-96-5	NS	NS	NS	120	15	0.18	15
Mercury	7439-97-6	0.77	0.050	0.77	0.026	0.2	0.088	0.2
Nickel	7440-02-0	NS	500	52	52	10	0.41	10
Potassium	7440-09-7	NS	NS	NS	53,000	10,000	15.7	10,000
Selenium	7782-49-2	5.0	170	5	1	10+	1.46	10
Silver	7440-22-4	0.12	170	NS	3.2	10	0.72	10
Sodium	7440-23-5	NS	NS	NS	680,000	10,000	13.5	10,000
Thallium	7440-28-0	10	0.24	NS	0.8	10	1.70	10
Vanadium*	7440-62-2	12	NS	NS	20	50+	0.43	50

QAPP Worksheet #15-13

Matrix: *Surface Water*
Analytical Group: *Metals (Total and Dissolved)*
Concentration Level: *Low*

Contaminants of Concern and Other Target Analytes Table (Reference Limit and Evaluation Table)

Analyte	CAS Number	Project Action Limit (PAL) µg/L				Project Quantitation Limit µg/L	Achievable Laboratory Limits	
		1		2	3		MDLs µg/L	QLs µg/L
		a	b					
Zinc	7440-66-6	NS	7400	120	120	20	4.52	20

* – Contaminant of Concern
1 – NJDEP Ecological Screening Criteria, Surface Water, Freshwater Criteria, 3/10/09.
[a] – Aquatic/Chronic
[b] – Human Health
2 – USEPA National Recommended Water Quality Criteria, Freshwater CCC, Chronic Value, 2009.
3 – USEPA, 2006. EPA Region III BTAG, Freshwater Screening Benchmarks, July 2006.
Bold highlighted cells indicate project action limit will not be achieved.
NS – None Specified
+Refer to Worksheet #15-13a for quantitation limits associated with the additional analysis to be performed for these metals (via ICP/MS) in order to achieve lower quantitation limits.

QAPP Worksheet #15-13a

Matrix: *Surface Water*
Analytical Group: *Metals (Total and Dissolved)*
Concentration Level: Low

Contaminants of Concern and Other Target Analytes Table (Reference Limit and Evaluation Table)

Analyte	CAS Number	Project Action Limit (PAL) µg/L				Project Quantitation Limit µg/L	Achievable Laboratory Limits	
		1					MDLs µg/L	QLs µg/L
		a	d	2	3			
Aluminum	7429-90-5	NS	NS	87	87	50	22	50
Cadmium	7440-43-9	NS	3.4	0.25	0.25	0.5	0.084	0.5
Cobalt	7440-48-4	24	NS	NS	74	0.2	0.023	0.2
Copper	7440-50-8	NS	1300	9	9	1	0.33	1
Selenium	7782-49-2	5.0	170	5	1	5	0.34	5
Vanadium*	7440-62-2	12	NS	NS	20	5	0.14	5

* – Contaminant of Concern
1 – NJDEP Ecological Screening Criteria, Surface Water, Freshwater Criteria, 3/10/09.
[a] – Aquatic/Chronic
[b] – Human Health
2 – USEPA National Recommended Water Quality Criteria, Freshwater CCC, Chronic Value, 2009.
3 – USEPA, 2006. EPA Region III BTAG, Freshwater Screening Benchmarks, July 2006.
Bold highlighted cells indicate project action limit will not be achieved.
NS – None Specified

QAPP Worksheet #15-14

Matrix: *Surface Water*
Analytical Group: *Hexavalent Chromium (total and dissolved)*
Concentration Level: Low

Contaminants of Concern and Other Target Analytes Table (Reference Limit and Evaluation Table)

Analyte	CAS Number	Project Action Limit (PAL) µg/L				Project Quantitation Limit µg/L	Achievable Laboratory Limits	
		1		2	3		MDLs µg/L	QLs µg/L
		a	b					
Hexavalent Chromium*	18540-29-9	10	NS	11	11	5	3.2	5

* – Contaminant of Concern
1 – NJDEP Ecological Screening Criteria, Surface Water, Freshwater Criteria, 3/10/09.
[a] – Aquatic/Chronic
[b] – Human Health
2 – USEPA National Recommended Water Quality Criteria, Freshwater CCC, Chronic Value, 2009.
3 – USEPA, 2006. EPA Region III BTAG, Freshwater Screening Benchmarks, July 2006.
NS – None Specified

QAPP Worksheet #15-15

Matrix: *Tissue (terrestrial invertebrates, aquatic invertebrates, aquatic vegetation, earthworms)*
Analytical Group: *Metals*
Concentration Level: *Low*

Contaminants of Concern and Other Target Analytes Table (Reference Limit and Evaluation Table)

Analyte	CAS Number	Project Action Limit (PAL)	Project Quantitation Limit mg/kg	Achievable Laboratory Limits	
				MDLs mg/kg	QLs mg/kg
Antimony*	7440-36-0	NA	0.05	0.005	0.05
Barium*	7440-39-3	NA	0.05	0.007	0.05
Chromium*	7440-47-3	NA	0.05	0.011	0.05
Copper*	7440-50-8	NA	0.05	0.011	0.05
Mercury*	7439-97-6	NA	0.012	0.003	0.012
Vanadium*	7440-62-2	NA	0.5	0.011	0.5

Note: Aquatic invertebrates analyzed for all of above-listed metals; terrestrial invertebrates and earthworms analyzed only for chromium and vanadium; aquatic vegetation analyzed only for chromium.

* – Contaminant of Concern
NA – Not applicable; data used to generate bioaccumulation factors and not compared to project action limits.

QAPP Worksheet #16

Project Schedule/Timeline Table

Activities	Organization	Dates (MM/DD/YY)		Deliverable	Deliverable Due Date[1]
		Anticipated Date(s) of Initiation	Anticipated Date of Completion		
Work Plan/FSP/QAPP/HASP Preparation	TRC	3/7/11	5/27/11	RI Work Plan Documents	5/27/11
Work Plan/FSP/QAPP/HASP Approval	EPA	5/27/11	9/30/11	NA	NA
Site Preparation	TRC	10/3/11	10/13/11	NA	NA
Sampling Program	TRC	10/13/11	4/20/12	NA	NA
Laboratory Analyses	Accutest Laboratories Alpha Analytical Laboratory	4/20/12	5/21/12	NA	NA
Data Validation/Usability Assessment	TRC	6/4/12	8/2/12	NA	6/26/12
Site Characterization Summary Report Preparation	TRC	8/2/12	9/17/12	Site Characterization Summary Report	8/9/12
Pathway Analysis Report	TRC	12/28/12	4/12/13	Pathway Analysis Report	3/15/13
Baseline Human Health Risk Assessment (BHHRA)	TRC	5/27/11	6/13/13	BHHRA Report	6/13/13
Screening Level Ecological Risk Assessment (SLERA)	TRC	5/27/11	7/19/11	SLERA Report	7/19/11
Baseline Ecological Risk Assessment Scope of Work, Sampling and BERA Report (if required)	TRC	12/20/12	4/4/13	BERA Report	4/4/13
RI Report Preparation	TRC	12/21/12	8/22/13	RI Report	7/17/13

[1]Deliverable due date for all activities except Work Plan preparation reflects resubmission of document after receipt/incorporation of EPA comments on original submittal.
NA – Not Applicable

9.0 SAMPLING TASKS

The details of the sampling rationale and locations are presented in this section. Worksheet #17 provides details on the sampling design and rationale. Worksheets #18-1 through 18-7 and 19 provide details on the sample matrices, parameters, applicable sampling procedures, containers and preservation requirements, and holding times.

QAPP Worksheet #17

Sampling Design and Rationale

Describe and provide a rationale for choosing the sampling approach (e.g., grid system, biased statistical approach):

Soil Sampling/RI:

Soil samples will be collected from several areas of the Site to address data gaps. Soil sample locations on Site are provided in Figure 15 of the RI Work Plan. Background soil sample locations are provided in Figure 16 of the RI Work Plan.

The soil sampling rationale is provided in detail in Sections 2 and 3 of the RI Work Plan and is summarized below:

Area of Site	# of Planned Samples	Rationale for Sampling
Former Production Area (Manpro-Vibra Degreasing Unit)	≥ 5 subsurface soil for VOCs	To determine source of VOC contamination in groundwater in this area. Sample with highest PID/FID reading or greatest impact (i.e., staining or sheens) submitted for analysis. If evidence of contamination exists, additional sample 2 to 3 feet below the first sample will be collected for vertical delineation. If no evidence of contamination exists, the one sample will be collected from 0.5 feet above the water table. Additional horizontal or vertical borings may be required, depending on sample results.
Former Lagoons Area (Former Basins B9 and B10)	2 surface soil for VOCs, Cr^{+6}, pH, ORP, chromium and vanadium (0.5-1.0' for VOCs and 0-1' for other parameters) ≥ 2 subsurface soil for VOCs, Cr^{+6}, pH, ORP and vanadium	Limited post-closure data available at these locations. Surface soil sampling performed to confirm previous post lagoon closure sample results. Subsurface soil sample with highest PID/FID reading or greatest impact (i.e., staining or sheens) submitted for analysis. If evidence of contamination exists, additional subsurface sample 2 to 3 feet below the first sample will be collected for vertical delineation. If no evidence of contamination exists, the one subsurface soil sample will be collected from 0.5 feet above the water table.
Eastern Storage Areas (north of this area and near property line)	2 surface soil (0-1') for vanadium and pH 1 surface soil (0-1') for Cr^{+6}, pH, and ORP	To delineate horizontal extent of vanadium and hexavalent chromium in this area. If results exceed project action limits, additional step out samples may be collected to accomplish the horizontal delineation.
Southern Area (southwestern property line)	2 surface soil (0-1') for vanadium and pH	To delineate horizontal extent of vanadium in this area. If results exceed project action limits, additional step out samples may be collected to accomplish the horizontal delineation.

QAPP Worksheet #17

Sampling Design and Rationale

Area of Site	# of Planned Samples	Rationale for Sampling
Southern Area (Former Thermal Pond Area)	6 surface soil samples for VOCs, Cr^{+6}, pH, ORP and TAL metals (0.5-1.0' for VOCs and 0-1' for other parameters)	No previous soil investigations were conducted in this area. To delineate horizontal extent of VOCs and metals exceeding risk standards. If results exceed project action limits, additional step out samples may be collected to accomplish the horizontal delineation.
Background Soil	13 surface soil (0-1') for TAL metals, Cr^{+6}, pH, and ORP	To address the data gap and to develop sufficient database to support the Revised Risk Assessment.
See Worksheet # **18-1** for sampling location and method details.		

Sediment Sampling/**RI:**

Sediment samples will be collected from the Hudson Branch, Burnt Mill Pond, Burnt Mill Branch and from the on-site impoundment that discharges into the Hudson Branch in order to evaluate current sediment conditions and to delineate the extent of sediment contamination in the Hudson Branch and Burnt Mill Pond. Sediment sample locations are provided in Figure 17 of the RI Work Plan.

Sediment samples will also be collected to evaluate background conditions. All sediment samples will be collected sequentially beginning at the most downstream location and ending with the upstream location to eliminate the potential for cross-contamination between sampling locations and to ensure sample quality.

The sediment sampling rationale is provided in detail in Sections 2 and 3 of the RI Work Plan and summarized below.

Sample Locations	# of Planned Samples	Rationale for Sampling
Hudson Branch (center of stream channel at transects on Hudson Branch) -4 transects just south of site -3 transects downstream of site	7 sediment samples (1.5-2') for TCL SVOCs, TCL Pesticides, TCL PCBs, TAL metals, TOC, particle grain size, and pH. 14 stream bank soil samples (0-1'; 2 per transect) for TCL SVOCs, TCL Pesticides, TCL PCBs, TAL metals, Cr^{+6} pH, and ORP.	To accomplish the vertical delineation and to evaluate current sediment quality conditions. Additional horizontal and/or vertical samples may be required, depending on sample results.
Sample Locations	# of Planned Samples	Rationale for Sampling
On-Site Impoundment (discharges into the Hudson Branch)	6 sediment samples (0-0.5') for TCL SVOCs, TCL Pesticides, TCL PCBs, TAL metals, TOC, particle grain size, and pH.	To evaluate sediment quality within the on-site impoundment.
Burnt Mill Pond	4 sediment samples (0-0.5') for TAL metals, TOC,	To accomplish the vertical delineation and to evaluate current

QAPP Worksheet #17

Sampling Design and Rationale

	particle grain size and pH	sediment quality conditions. Additional horizontal and/or vertical samples may be required, depending on sample results.
Burnt Mill Branch (downstream of Burnt Mill Pond)	2 sediment samples (0-0.5') for TAL metals, TOC, particle grain size and pH	To evaluate sediment conditions in Bumt Mill Branch, downstream of the Burnt Mill Pond. Additional horizontal and/or vertical samples may be required, depending on sample results.
Burnt Mill Branch (upstream of Burnt Mill Pond)	**8** sediment samples (0-0.5') for TCL SVOCs, TCL Pesticides, TCL PCBs, TAL metals, TOC, particle grain size and pH.	To evaluate background sediment conditions.

See Worksheet # **18-2** for sampling location and method details.

Surface Water Sampling/RI:

Surface water samples will be collected from the Hudson Branch, Burnt Mill Pond and Burnt Mill Branch in order to evaluate current surface water quality conditions and to identify and delineate potential environmental impacts in these water bodies. Surface water sample locations are provided in Figure 17 of the RI Work Plan.

Surface water samples will also be collected to evaluate background conditions. All surface water samples will be collected sequentially beginning at the most downstream location and ending with the upstream location to eliminate the potential for cross-contamination between sampling locations and to ensure sample quality.

The surface water sampling rationale is provided in detail in Sections 2 and 3 of the RI Work Plan and is summarized below.

Sample Locations	# of Planned Samples	Rationale for Sampling
Hudson Branch (center of stream channel at transects on Hudson Branch) -4 transects just south of site -3 transects downstream of site	7 samples for TAL metals (total and dissolved), Cr^{+6} (total and dissolved), TCL VOCs, and hardness	To evaluate current water quality conditions.
Burnt Mill Pond	4 samples for TAL metals (total and dissolved), Cr^{+6} (total and dissolved), hardness, and TCL VOCs	To evaluate current water quality conditions. VOCs will be placed on hold at laboratory. If VOCs exceed project action levels in Hudson Branch surface water samples, analysis of these samples for VOCs will be authorized.

QAPP Worksheet #17

Sampling Design and Rationale

Sample Locations	# of Planned Samples	Rationale for Sampling
Burnt Mill Branch (downstream of Burnt Mill Pond)	2 samples for TAL metals (total and dissolved), Cr^{+6} (total and dissolved), and hardness	To determine if contaminants have migrated downstream.
Burnt Mill Branch (upstream of Burnt Mill Pond)	**8** samples for TAL metals (total and dissolved), Cr^{+6} (total and dissolved), TCL VOCs, and hardness	To evaluate background surface water conditions.
See Worksheet # **18**-2 for sampling location and method details.		

Sediment, Surface Soil, Terrestrial Invertebrate, Aquatic Invertebrate, and Aquatic Vegetation Sampling for the BERA:

The screening-level ecological risk assessment concluded that sediment and/or surface soil concentrations of select metals warrant further evaluation to determine if there is a potential risk to insectivorous birds and mammals as well as herbivorous birds and mammals. These contaminants were retained as sediment and/or surface soil contaminants of potential ecological concern (COPECs) and recommended for further evaluation in a baseline ecological risk assessment. A field tissue residue study with terrestrial invertebrates, aquatic invertebrates, and aquatic vegetation is subsequently proposed to further evaluate the potential for these COPECs to adversely affect insectivorous and herbivorous birds and mammals. The purpose of the field tissue study is to assess the bioavailability of the COPECs by measuring COPEC concentrations in foods (vegetation and invertebrates) consumed by the assessment endpoints (insectivorous and herbivorous birds and mammals). Soil and sediment samples will be collected concurrently with the field tissue samples in order to develop an understanding of the relationship between the COPEC concentrations in the environmental medium and the organisms (i.e., bioaccumulation factor). Samples of terrestrial invertebrates, aquatic invertebrates, aquatic vegetation, sediment and surface soils will be collected across a gradient of COPEC concentrations (based on the previous surface soil and sediment sampling results) in order to develop site-specific plant:soil and invertebrate:soil bioaccumulation factors. These bioaccumulation factors will then be used in the baseline ecological risk assessment to estimate plant and invertebrate COPEC concentrations throughout the site and to estimate COPEC exposure by the selected assessment endpoints. It should be noted that earthworms may be collected in lieu of terrestrial invertebrates; refer to Section 9.2.4 of the QAPP for details. Refer to Figure C-1 in the BERA Work Plan for approximate sample locations.

See Worksheets # **18-3** through **18-7** for sampling location and method details.

QAPP Worksheet #18-1: RI Sampling: Soil

Matrix: Soil

Sampling Locations and Methods/SOP Requirements Table

Location	Sample ID	Depth Interval (inches)	Analytical Group	Concentration Level	Sample Collection Protocol[1]	Minimum # of Samples	Maximum # of Samples	Comment
Former Production Area (Manpro-Vibra Degreasing Unit)	SB-88	TBD	TCL VOCs	High	Samples will be collected from 0.5 feet interval with highest PID/FID reading or greatest impact. If no evidence of contamination exists, sample will be collected from 0.5 feet interval above the water table. If evidence of contamination exists, a contingency sample will be collected 2 to 3 feet below the first sample for vertical delineation.	1	2	Subsurface Soil Sample
	SB-89	TBD	TCL VOCs	High		1	2	Subsurface Soil Sample
	SB-90	TBD	TCL VOCs	High		1	2	Subsurface Soil Sample
	SB-91	TBD	TCL VOCs	High		1	2	Subsurface Soil Sample
	SB-92	TBD	TCL VOCs	High		1	2	Subsurface
Former Lagoons Area (Former Basins B9 and B10)	SB-93A	VOCs: 6-12 Other parameters: 0-12	TCL VOCs vanadium, chromium, hexavalent chromium, pH, ORP	VOCs: High Others: Low	Surface soil samples will be collected from exposed ground surface to 1 ft below ground.	1	1	Surface Soil Sample
	SB-94A	VOCs: 6-12 Other parameters: 0-12	TCL VOCs vanadium, chromium, hexavalent chromium, pH, ORP	VOCs: High Others: Low		1	1	Surface Soil Sample
	SB-93B	TBD	TCL VOCs vanadium, hexavalent chromium, pH, ORP	VOCs: High Others: Low	Subsurface soil samples will be collected from 0.5 feet interval with highest PID/FID	1	2	Subsurface Soil Sample

QAPP Worksheet #18-1: RI Sampling: Soil

Matrix: Soil

Sampling Locations and Methods/SOP Requirements Table

Location	Sample ID	Depth Interval (inches)	Analytical Group	Concentration Level	Sample Collection Protocol[1]	Minimum # of Samples	Maximum # of Samples	Comment
	SB-94B	TBD	TCL VOCs vanadium, hexavalent chromium, pH, ORP	VOCs: High Others: Low	reading or greatest impact. If no evidence of contamination exists, sample will be collected from 0.5 feet interval above the water table. If evidence of contamination exists, a contingency sample will be collected 2 to 3 feet below the first sample for vertical delineation.	1	2	Subsurface Soil Sample
Eastern Storage Areas	SB-95	0-12	hexavalent chromium, pH, ORP	Low	Surface soil samples will be collected from exposed ground surface to 1 ft below ground. If the surface soil sample results are above the EPA screening levels or NJDEP NRDCSRS, then the field team may be directed to step out and collect at least one sample to accomplish the horizontal delineation.	I	2	Surface Soil Sample
	SB-96	0-12	Vanadium, pH	Low		1	2	Surface Soil Sample
	SB-97	0-12	Vanadium, pH	Low		1	2	Surface Soil Sample

QAPP Worksheet #18-1: RI Sampling: Soil

Matrix: Soil

Sampling Locations and Methods/SOP Requirements Table

Location	Sample ID	Depth Interval (inches)	Analytical Group	Concentration Level	Sample Collection Protocol[1]	Minimum # of Samples	Maximum # of Samples	Comment
Southern Area (Former Thermal Pond Area)	SB-98	VOCs: 6-12 Other parameters: 0-12	TCL VOCs, TAL metals, hexavalent chromium, pH, ORP	VOCs: High Others: Low	Surface soil samples will be collected from exposed ground surface to 1 ft below ground. If the surface soil sample results are above the EPA screening levels or NJDEP NRDCSRS, then, the field team may be directed to step out and collect at least one sample to accomplish the horizontal delineation.	1	2	Surface Soil Sample
	SB-99	VOCs: 6-12 Other parameters: 0-12	TCL VOCs, TAL metals, hexavalent chromium, pH, ORP	VOCs: High Others: Low		1	2	Surface Soil Sample
	SB-100	VOCs: 6-12 Other parameters: 0-12	TCL VOCs TAL metals, hexavalent chromium, pH, ORP	VOCs: High Others: Low		1	2	Surface Soil Sample
	SB-101	VOCs: 6-12 Other parameters: 0-12	TCL VOCs TAL metals, hexavalent chromium, pH, ORP	VOCs: High Others: Low		1	2	Surface Soil Sample
	SB-102	VOCs: 6-12 Other parameters: 0-12	TCL VOCs TAL metals, hexavalent chromium, pH, ORP	VOCs: High Others: Low		1	2	Surface Soil Sample
	SB-103	VOCs: 6-12 Other parameters: 0-12	TCL VOCs TAL metals, hexavalent chromium, pH, ORP	VOCs: High Others: Low		1	2	Surface Soil Sample

QAPP Worksheet #18-1: RI Sampling: Soil

Matrix: Soil

Sampling Locations and Methods/SOP Requirements Table

Location	Sample ID	Depth Interval (inches)	Analytical Group	Concentration Level	Sample Collection Protocol[1]	Minimum # of Samples	Maximum # of Samples	Comment
Southern Area (Southwestern Property Line)	SB-104	0-12	Vanadium, pH	Low	Surface soil samples will be collected from exposed ground surface to 1 ft below ground. If the surface soil sample results are above the EPA screening levels or NJDEP NRDCSRS, then the field team may be directed to step out and collect at least one sample to accomplish the horizontal delineation.	1	2	Surface Soil Sample
	SB-105	0-12	Vanadium, pH	Low		1	2	Surface Soil Sample
Background Sampling	BG-1	0-12	TAL metals, hexavalent chromium, pH, ORP	Low	Surface soil samples will be collected from exposed ground surface to 1 ft below ground.	1	1	Surface Soil Sample
	BG-2	0-12	TAL metals, hexavalent chromium, pH, ORP	Low		1	1	Surface Soil Sample
	BG-3	0-12	TAL metals, hexavalent chromium, pH, ORP	Low		1	1	Surface Soil Sample
	BG-4	0-12	TAL metals, hexavalent chromium, pH, ORP	Low		1	1	Surface Soil Sample
	BG-5	0-12	TAL metals, hexavalent chromium, pH, ORP	Low		1	1	Surface Soil Sample

QAPP Worksheet #18-1: RI Sampling: Soil

Matrix: Soil

Sampling Locations and Methods/SOP Requirements Table

Location	Sample ID	Depth Interval (inches)	Analytical Group	Concentration Level	Sample Collection Protocol[1]	Minimum # of Samples	Maximum # of Samples	Comment
	BG-6	0-12	TAL metals, hexavalent chromium, pH, ORP	Low		1	1	Surface Soil Sample
	BG-7	0-12	TAL metals, hexavalent chromium, pH, ORP	Low		1	1	Surface Soil Sample
	BG-8	0-12	TAL metals, hexavalent chromium, pH, ORP	Low		1	1	Surface Soil Sample
	BG-9	0-12	TAL metals, hexavalent chromium, pH, ORP	Low		1	1	Surface Soil Sample
	BG-10	0-12	TAL metals, hexavalent chromium, pH, ORP	Low		1	1	Surface Soil Sample
	BG-11	0-12	TAL metals, hexavalent chromium, pH, ORP	Low		1	1	Surface Soil Sample
	BG-12	0-12	TAL metals, hexavalent chromium, pH, ORP	Low		1	1	Surface Soil Sample
	BG-13	0-12	TAL metals, hexavalent chromium, pH, ORP	Low		1	1	Surface Soil Sample

[1] Refer to Sections 9.2.1 and 9.2.2 of the QAPP for sampling procedures.
TBD – To Be Determined

Worksheet #18-2: RI Sampling: Sediment and Surface Water

Matrix: Sediment, Surface Water and Stream Bank Soil

Sampling Locations and Methods/SOP Requirements Table[1]

Location		Sample ID	Matrix	Analytical Group	Concentration Level	Depth Interval [1, 2] (feet)
Hudson Branch						
1	Quiescent, Low Energy Area	**SW-0i**	Surface Water	TCL VOCs, TAL Metals, Cr+6, Hardness, FP	Low	0.5 BAWI
2	Transect, Mid-Channel Sediment	**SD-01B**	Sediment	TCL Semi-VOCs and pesticides/PCBs, TAL Metals, TOC, PGS, pH	Low	1.5 - 2 BWSI
3	Transect, North Bank Soil	**SD-01N**	Stream Bank Soil	TCL Semi-VOCs and pesticides/PCBs, TAL Metals, Cr+6, pH, ORP	Low	0 - 1 BGS
4	Transect, South Bank Soil	**SD-01S**	Stream Bank Soil	TCL Semi-VOCs and pesticides/PCBs, TAL Metals, Cr+6, pH, ORP	Low	0 - 1 BGS
5	Quiescent, Low Energy Area	**SW-10**	Surface Water	TCL VOCs, TAL Metals, Cr+6, Hardness, FP	Low	0.5 BAWI
6	Transect, Mid-Channel Sediment	**SD-10B**	Sediment	TCL Semi-VOCs and pesticides/PCBs, TAL Metals, TOC, PGS, pH	Low	1.5 - 2 BWSI
7	Transect, North Bank Soil	**SD-10N**	Stream Bank Soil	TCL Semi-VOCs and pesticides/PCBs, TAL Metals, Cr+6, pH, ORP	Low	0 - 1 BGS
8	Transect, South Bank Soil	**SD-10S**	Stream Bank Soil	TCL Semi-VOCs and pesticides/PCBs, TAL Metals, Cr+6, pH, ORP	Low	0 - 1 BGS
9	Quiescent, Low Energy Area	**SW-13**	Surface Water	TCL VOCs, TAL Metals, Cr+6, Hardness, FP	Low	0.5 BAWI
10	Transect, Mid-Channel Sediment	**SD-13B**	Sediment	TCL Semi-VOCs and pesticides/PCBs, TAL Metals, TOC, PGS, pH	Low	1.5 - 2 BWSI
11	Transect, North Bank Soil	**SD-13N**	Stream Bank Soil	TCL Semi-VOCs and pesticides/PCBs, TAL Metals, Cr+6, pH, ORP	Low	0 - 1 BGS
12	Transect, South Bank Soil	**SD-13S**	Stream Bank Soil	TCL Semi-VOCs and pesticides/PCBs, TAL Metals, Cr+6, pH, ORP	Low	0 - 1 BGS
13	Quiescent, Low Energy Area	**SW-1S**	Surface Water	TCL VOCs, TAL Metals, Cr+6, Hardness, FP	Low	0.5 BAWI
14	Transect, Mid-Channel Sediment	**SD-15B**	Sediment	TCL Semi-VOCs and pesticides/PCBs, TAL Metals, TOC, PGS, pH	Low	1.5 - 2 BWSI
15	Transect, North Bank Soil	**SD-15N**	Stream Bank Soil	TCL Semi-VOCs and pesticides/PCBs, TAL Metals, Cr+6, pH, ORP	Low	0 - 1 BGS
16	Transect, South Bank Soil	**SD-15S**	Stream Bank Soil	TCL Semi-VOCs and pesticides/PCBs, TAL Metals, Cr+6, pH, ORP	Low	0 - 1 BGS
17	Quiescent, Low Energy Area	**SW-18**	Surface Water	TCL VOCs, TAL Metals, Cr+6, Hardness, FP	Low	0.5 BAWI

Worksheet #18-2: RI Sampling: Sediment and Surface Water

Matrix: Sediment, Surface Water and Stream Bank Soil

Sampling Locations and Methods/SOP Requirements Table[1]

Location		Sample ID	Matrix	Analytical Group	Concentration Level	Depth Interval [1, 2] (feet)
18	Transect, Mid-Channel Sediment	SD-18B	Sediment	TCL Semi-VOCs and pesticides/PCBs, TAL Metals, TOC, PGS, pH	Low	1.5 - 2 BWSI
19	Transect, North Bank Soil	SD-18N	Stream Bank Soil	TCL Semi-VOCs and pesticides/PCBs, TAL Metals, Cr+6, pH, ORP	Low	0 - 1 BGS
20	Transect, South Bank Soil	SD-18S	Stream Bank Soil	TCL Semi-VOCs and pesticides/PCBs, TAL Metals, Cr+6, pH, ORP	Low	0 - I BGS
21	Quiescent, Low Energy Area	SW-04	Surface Water	TCL VOCs, TAL Metals, Cr+6, Hardness, FP	Low	0.5 BAWI
22	Transect, Mid-Channel Sediment	SD-04B	Sediment	TCL Semi-VOCs and pesticides/PCBs, TAL Metals, TOC, PGS, pH	Low	1.5 - 2 BWSI
23	Transect, North Bank Soil	SD-04N	Stream Bank Soil	TCL Semi-VOCs and pesticides/PCBs, TAL Metals, Cr+6, pH, ORP	Low	0 - I BGS
24	Transect, South Bank Soil	SD-04S	Stream Bank Soil	TCL Semi-VOCs and pesticides/PCBs, TAL Metals, Cr+6, pH, ORP	Low	0 - I BGS
25	Quiescent, Low Energy Area	SW-23	Surface Water	TCL VOCs, TAL Metals, Cr+6, Hardness, FP	Low	0.5 BAWI
26	Transect, Mid-Channel Sediment	SD-23B	Sediment	TCL Semi-VOCs and pesticides/PCBs, TAL Metals, TOC, PGS, pH	Low	1.5 - 2 BWSI
27	Transect, North Bank Soil	SD-23N	Stream Bank Soil	TCL Semi-VOCs and pesticides/PCBs, TAL Metals, Cr+6, pH, ORP	Low	0 - I BGS
28	Transect, South Bank Soil	SD-23S	Stream Bank Soil	TCL Semi-VOCs and pesticides/PCBs, TAL Metals, Cr+6, pH, ORP	Low	0 - I BGS
29	On-Site Impoundment (Pond, Depositional Area)	SD-IMP1A	Sediment	TCL Semi-VOCs and pesticides/PCBs, TAL Metals, TOC, PGS, pH	Low	0 - 0.5 BWSI
30		SD-IMP2A	Sediment	TCL Semi-VOCs and pesticides/PCBs, TAL Metals, TOC, PGS, pH	Low	0 - 0.5 BWSI
31		SD-IMP3A	Sediment	TCL Semi-VOCs and pesticides/PCBs, TAL Metals, TOC, PGS, pH	Low	0 - 0.5 BWSI
32		SD-IMP4A	Sediment	TCL Semi-VOCs and pesticides/PCBs, TAL Metals, TOC, PGS, pH	Low	0 - 0.5 BWSI
33		SD-IMP5A	Sediment	TCL Semi-VOCs and pesticides/PCBs, TAL Metals, TOC, PGS, pH	Low	0 - 0.5 BWSI
34		SD-IMP6A	Sediment	TCL Semi-VOCs and pesticides/PCBs, TAL Metals, TOC, PGS, pH	Low	0 - 0.5 BWSI
Burnt Mill Pond						
35	Quiescent, Low Energy Area	SW-2S	Surface Water	TAL Metals, Cr+6, Hardness, FP, VOCs*	Low	0.5 BAWI
36	Pond, Depositional Area	SD-2SB	Sediment	TAL Metals, TOC, PGS, pH	Low	0 – 0.5 BWSI

Worksheet #18-2: RI Sampling: Sediment and Surface Water

Matrix: Sediment, Surface Water and Stream Bank Soil

Sampling Locations and Methods/SOP Requirements Table[1]

Location		Sample ID	Matrix	Analytical Group	Concentration Level	Depth Interval [1, 2] (feet)
37	Quiescent, Low Energy Area	SW-26	Surface Water	TAL Metals, Cr+6, Hardness, FP, VOCs*	Low	0.5 BAWI
38	Pond, Depositional Area	SD-26B	Sediment	TAL Metals, TOC, PGS, pH	Low	0 – 0.5 BWSI
39	Quiescent, Low Energy Area	SW-27	Surface Water	TAL Metals, Cr+6, Hardness, FP, VOCs*	Low	0.5 BAWI
40	Pond, Depositional Area	SD-27B	Sediment	TAL Metals, TOC, PGS, pH	Low	0 – 0.5 BWSI
41	Quiescent, Low Energy Area	SW-29	Surface Water	TAL Metals, Cr+6, Hardness, FP, VOCs*	Low	0.5 BAWI
42	Pond, Depositional Area	SD-29B	Sediment	TAL Metals, TOC, PGS, pH	Low	0 – 0.5 BWSI
Burnt Mill Branch						
43	Quiescent, Low Energy Area	SW-28	Surface Water	TAL Metals, Cr+6, Hardness, FP	Low	0.5 BAWI
44	Transect, Mid-Channel Sediment	SD-28A	Sediment	TAL Metals, TOC, PGS, pH	Low	0 - 0.5 BWSI
45	Quiescent, Low Energy Area	SW-38	Surface Water	TAL Metals, Cr+6, Hardness, FP	Low	0.5 BAWI
46	Transect, Mid-Channel Sediment	SD-38A	Sediment	TAL Metals, TOC, PGS, pH	Low	0 - 0.5 BWSI
Burnt Mill Branch (Background Locations)						
47	Quiescent, Low Energy Area	SW-30	Surface Water	TCL VOCs, TAL Metals, Cr+6, Hardness, FP	Low	0.5 BAWI
48	Transect, Mid-Channel Sediment	SD-30A	Sediment	TCL Semi-VOCs and pesticides/PCBs, TAL Metals, TOC, PGS, pH	Low	0 - 0.5 BWSI
49	Quiescent, Low Energy Area	SW-31	Surface Water	TCL VOCs, TAL Metals, Cr+6, Hardness, FP	Low	0.5 BAWI
50	Transect, Mid-Channel Sediment	SD-31A	Sediment	TCL Semi-VOCs and pesticides/PCBs, TAL Metals, TOC, PGS, pH	Low	0 - 0.5 BWSI
51	Quiescent, Low Energy Area	SW-32	Surface Water	TCL VOCs, TAL Metals, Cr+6, Hardness, FP	Low	0.5 BAWI
52	Transect, Mid-Channel Sediment	SD-32A	Sediment	TCL Semi-VOCs and pesticides/PCBs, TAL Metals, TOC, PGS, pH	Low	0 - 0.5 BWSI
53	Quiescent, Low Energy Area	SW-33	Surface Water	TCL VOCs, TAL Metals, Cr+6, Hardness, FP	Low	0.5 BAWI
54	Transect, Mid-Channel Sediment	SD-33A	Sediment	TCL Semi-VOCs and pesticides/PCBs, TAL Metals, TOC, PGS, pH	Low	0 - 0.5 BWSI
55	Quiescent, Low Energy Area	SW-34	Surface Water	TCL VOCs, TAL Metals, Cr+6, Hardness, FP	Low	0.5 BAWI
56	Transect, Mid-Channel Sediment	SD-34A	Sediment	TCL Semi-VOCs and pesticides/PCBs, TAL Metals, TOC, PGS, pH	Low	0 - 0.5 BWSI
57	Quiescent, Low Energy Area	SW-35	Surface Water	TCL VOCs, TAL Metals, Cr+6, Hardness, FP	Low	0.5 BAWI

Worksheet #18-2: RI Sampling: Sediment and Surface Water

Matrix: Sediment, Surface Water and Stream Bank Soil

Sampling Locations and Methods/SOP Requirements Table[1]

Location		Sample ID	Matrix	Analytical Group	Concentration Level	Depth Interval [1, 2] (feet)
58	Transect, Mid-Channel Sediment	SD-3SA	Sediment	TCL Semi-VOCs and pesticides/PCBs, TAL Metals, TOC, PGS, pH	Low	0 - 0.5 BWSI
59	Quiescent, Low Energy Area	SW-36	Surface Water	TCL VOCs, TAL Metals, Cr+6, Hardness, FP	Low	0.5 BAWI
60	Transect, Mid-Channel Sediment	SD-36A	Sediment	TCL Semi-VOCs and pesticides/PCBs, TAL Metals, TOC, PGS, pH	Low	0 - 0.5 BWSI
61	Quiescent, Low Energy Area	SW-37	Surface Water	TCL VOCs, TAL Metals, Cr+6, Hardness, FP	Low	0.5 BAWI
62	Transect, Mid-Channel Sediment	SD-37A	Sediment	TCL Semi-VOCs and pesticides/PCBs, TAL Metals, TOC, PGS, pH	Low	0 - 0.5 BWSI

[1]Refer to Section 9.2.3 of the QAPP for sampling procedures.

- For Surface Water, sample collection will be 0.5 feet below air-water interface (BAWI).
- For Sediment, sample collection depth intervals will be 0 – 0.5 feet and 1.5 – 2.0 feet below water-sediment interface (BWSI).
- For Soil, sample collection depth interval will be 0 – 0.5 feet below ground surface (bgs).

PGS – Particle grain size
FP – Field parameters
•Analysis of VOC samples will be dependent upon results of VOC analyses in Hudson Branch surface water samples; see Worksheet #17.

QAPP Worksheet #18-3: BERA Sampling:

Matrix: Surface Soil

Sampling Locations and Methods/SOP Requirements Table

Location	Sample ID[1]	Depth Interval (inches)	Analytical Group	Concentration Level	Sample Collection Protocol[2]	Minimum # of Samples	Maximum # of Samples
Hudson Branch	BERA-SS-01	0-12	Chromium, Vanadium	Low	Surface soil samples will be collected from exposed ground surface to 1 ft. below ground.	1	1
	BERA-SS-02	0-12	Chromium, Vanadium	Low		1	1
	BERA-SS-03	0-12	Chromium, Vanadium	Low		1	1
	BERA-SS-04	0-12	Chromium, Vanadium	Low		1	1
	BERA-SS-05	0-12	Chromium, Vanadium	Low		1	1
	BERA-SS-06	0-12	Chromium, Vanadium	Low		1	1
	BERA-SS-07	0-12	Chromium, Vanadium	Low		1	1
	BERA-SS-08	0-12	Chromium, Vanadium	Low		1	1
Eastern Storage Areas	BERA-SS-09	0-12	Chromium, Vanadium	Low	Surface soil samples will be collected from exposed ground surface to 1 ft. below ground.	1	1

QAPP Worksheet #18-3: BERA Sampling:

Matrix: Surface Soil

Sampling Locations and Methods/SOP Requirements Table

Location	Sample ID[1]	Depth Interval (inches)	Analytical Group	Concentration Level	Sample Collection Protocol[2]	Minimum # of Samples	Maximum # of Samples
	BERA-SS-10	0-12	Chromium, Vanadium	Low		1	1
	BERA-SS-11	0-12	Chromium, Vanadium	Low		1	1
	BERA-SS-12	0-12	Chromium, Vanadium	Low		1	1
	BERA-SS-13	0-12	Chromium, Vanadium	Low		1	1
	BERA-SS-14	0-12	Chromium, Vanadium	Low		1	1
Background	BERA-SS-15	0-12	Chromium, Vanadium	Low		1	1
	BERA-SS-16	0-12	Chromium, Vanadium	Low		1	1

[1] Refer to Figure C-1 in the BERA Work Plan for approximate sample locations; actual locations may be adjusted in the field based upon field observations.
[2] Refer to Section 9.2.1 of the QAPP for sampling procedures

QAPP Worksheet #18-4: BERA Sampling:

Matrix: Sediment

Sampling Locations and Methods/SOP Requirements Table

Location	Sample ID[1]	Depth Interval (inches)	Analytical Group	Concentration Level	Sample Collection Protocol[2]	Minimum # of Samples	Maximum # of Samples
Hudson Branch	BERA-SD-01	0-0.5 BWSI	Metals[3]	Low	Sediment samples will be collected 0.5 feet below water-sediment interface (BWSI).	1	1
	BERA-SD-02	0-0.5 BWSI	Metals[3]	Low		1	1
	BERA-SD-03	0-0.5 BWSI	Metals[3]	Low		1	1
	BERA-SD-04	0-0.5 BWSI	Metals[3]	Low		1	1
	BERA-SD-05	0-0.5 BWSI	Metals[3]	Low		1	1
	BERA-SD-06	0-0.5 BWSI	Metals[3]	Low		1	1
	BERA-SD-07	0-0.5 BWSI	Metals[3]	Low		1	1
	BERA-SD-08	0-0.5 BWSI	Metals[3]	Low		1	1
Background	BERA-SD-09	0-0.5 BWSI	Metals[3]	Low	Sediment samples will be collected 0.5 feet below water-sediment interface (BWSI).	1	1

QAPP Worksheet #18-4: BERA Sampling:

Matrix: Sediment

Sampling Locations and Methods/SOP Requirements Table

Location	Sample ID[1]	Depth Interval (inches)	Analytical Group	Concentration Level	Sample Collection Protocol[2]	Minimum # of Samples	Maximum # of Samples
	BERA-SD-10	0-0.5 BWSI	Metals[3]	Low		1	1

[1]Refer to Figure C-1 in the BERA Work Plan for approximate sample locations; actual locations may be adjusted in the field based upon field observations.
[2]Refer to Section 9.2.3 of the QAPP for sampling procedures
[3]Antimiony, barium, beryllium, chromium, copper, lead, mercury, nickel, selenium, vanadium, zinc
BWSI – below water-sediment interface

QAPP Worksheet #18-5: BERA Sampling:

Matrix: Aquatic Vegetation

Sampling Locations and Methods/SOP Requirements Table

Location	Sample ID[1]	Analytical Group	Concentration Level	Sample Collection Protocol[2]	Minimum # of Samples	Maximum # of Samples
Hudson Branch	BERA-AV-01	Chromium	Low		1	1
	BERA-AV-02	Chromium	Low		1	1
	BERA-AV-03	Chromium	Low		1	1
	BERA-AV-04	Chromium	Low		1	1
	BERA-AV-05	Chromium	Low		1	1
	BERA-AV-06	Chromium	Low		1	1
	BERA-AV-07	Chromium	Low		1	1
	BERA-AV-08	Chromium	Low		1	1
Background	BERA-AV-09	Chromium	Low		1	1

QAPP Worksheet #18-5: BERA Sampling:

Matrix: Aquatic Vegetation

Sampling Locations and Methods/SOP Requirements Table

Location	Sample ID[1]	Analytical Group	Concentration Level	Sample Collection Protocol[2]	Minimum # of Samples	Maximum # of Samples
	BERA-AV-10	Chromium	Low		1	1

[1]Refer to Figure C-1 in the BERA Work Plan for approximate sample locations; actual locations may be adjusted in the field based upon field observations.
[2]Refer to Section 9.2.4 of the QAPP for sampling procedures.

QAPP Worksheet #18-6: BERA Sampling:

Matrix: Aquatic Invertebrates

Sampling Locations and Methods/SOP Requirements Table

Location	Sample ID[1]	Analytical Group	Concentration Level	Sample Collection Protocol[2]	Minimum # of Samples	Maximum # of Samples
Hudson Branch	BERA-A1-01	Metals[3]	Low		1	1
	BERA-A1-02	Metals[3]	Low		1	1
	BERA-A1-03	Metals[3]	Low		1	1
	BERA-A1-04	Metals[3]	Low		1	1
	BERA-A1-05	Metals[3]	Low		1	1
	BERA-A1-06	Metals[3]	Low		1	1
	BERA-A1-07	Metals[3]	Low		1	1
	BERA-A1-08	Metals[3]	Low		1	1
Background	BERA-A1-09	Metals[3]	Low		1	1

QAPP Worksheet #18-6: BERA Sampling:

Matrix: Aquatic Invertebrates

Sampling Locations and Methods/SOP Requirements Table

Location	Sample ID[1]	Analytical Group	Concentration Level	Sample Collection Protocol[2]	Minimum # of Samples	Maximum # of Samples
	BERA-A1-10	Metals[3]	Low		1	1

[1]Refer to Figure C-1 in the BERA Work Plan for approximate sample locations; actual locations may be adjusted in the field based upon field observations.
[2]Refer to Section 9.2.4 of the QAPP for sampling procedures.
[3]Antimiony, barium, chromium, copper, mercury, vanadium

QAPP Worksheet #18-7: BERA Sampling:

Matrix: Terrestrial Invertebrates*

Sampling Locations and Methods/SOP Requirements Table

Location	Sample ID[1]	Analytical Group	Concentration Level	Sample Collection Protocol[2]	Minimum # of Samples	Maximum # of Samples
Hudson Branch	BERA-TI-01	Chromium, Vanadium	Low		1	1
	BERA-TI-02	Chromium, Vanadium	Low		1	1
	BERA-TI-03	Chromium, Vanadium	Low		1	1
	BERA-TI-04	Chromium, Vanadium	Low		1	1
	BERA-TI-05	Chromium, Vanadium	Low		1	1
	BERA-TI-06	Chromium, Vanadium	Low		1	1
	BERA-TI-07	Chromium, Vanadium	Low		1	1
	BERA-TI-08	Chromium, Vanadium	Low		1	1

QAPP Worksheet #18-7: BERA Sampling:

Matrix: Terrestrial Invertebrates*

Sampling Locations and Methods/SOP Requirements Table

Location	Sample ID[1]	Analytical Group	Concentration Level	Sample Collection Protocol[2]	Minimum # of Samples	Maximum # of Samples
Eastern Storage Areas	BERA-TI-09	Chromium, Vanadium	Low		1	1
	BERA-TI-10	Chromium, Vanadium	Low		1	1
	BERA-TI-11	Chromium, Vanadium	Low		1	1
	BERA-TI-12	Chromium, Vanadium	Low		1	1
	BERA-TI-13	Chromium, Vanadium	Low		1	1
	BERA-TI-14	Chromium, Vanadium	Low		1	1
Background	BERA-TI-15	Chromium, Vanadium	Low		1	1
	BERA-TI-16	Chromium, Vanadium	Low		1	1

[1]Refer to Figure C-1 in the BERA Work Plan for approximate sample locations; actual locations may be adjusted in the field based upon field observations.
[2]Refer to Section 9.2.4 of the QAPP for sampling procedures.
*Earthworms may be collected in lieu of terrestrial invertebrates; refer to Section 9.2.4 of the QAPP for details. If earthworms are collected, the sample ID scheme will utilize "EW" in place of "TI".

9.1 Sampling Procedures and Requirements

This section provides an overview of how samples will be collected. The selected sampling procedures will ensure that representative samples are collected in a consistent manner, that contamination is not introduced during collection, and all required sample media/matrices at proposed sample locations and properly preserved volumes are collected in order to meet PQOs.

9.2 Sampling Procedures

Details on sampling procedures which will be utilized during sampling are discussed below.

Sample locations (soil, sediment, and surface water samples) will be horizontally located in the field based on proposed sample locations using GPS procedures. Labeled stakes or pin flags will be placed in the ground to mark the sample locations.

In paved areas, the asphalt or concrete will be cored prior to advancing the sampling tools. If refusal is encountered during borehole advancement or insufficient volume is obtained, the field team will step out approximately 5 feet from the first borehole location to permit the collection of the samples from the desired intervals.

The sample locations, appropriate number, size, and type of sample containers to be used for collection of all field samples and field QC samples are detailed on Worksheets #18-1 through 18-7, and 19.

9.2.1 Surface Soil Sampling

Surficial soil samples will be collected across the Site at pre-determined locations based on historical data in order to address data gaps and develop a sufficient database to support the risk assessments. Depending on the sample location, the soil samples will be analyzed for VOCs, TAL metals, vanadium, total chromium, hexavalent chromium, pH, and/or ORP.

At each sample location, surface debris (e.g., leaves, vegetation, rocks) will be removed from the surface before sampling commences. Surface soil samples will be collected using decontaminated or dedicated sampling equipment (i.e., bucket augers or scoops) from the exposed ground surface to six inches below ground surface (bgs). If gross contamination is observed, photographs will be taken to document the nature of the identified contamination.

Once the bucket auger, split spoon or scoop (containing the soil sample) has been withdrawn from the subsurface, each sample will be screened with a properly calibrated PID (MiniRAE 2000 or equivalent). The probe will be positioned immediately above the exposed area to record PID measurements. Surface soils to be analyzed for VOCs will be collected from the undisturbed sample from the 0.5-1 ft interval. When soil samples are collected for VOC analysis, a split spoon, macro liner or similar coring device will be used. The soil sample will be collected from the 0 to 12-inch interval for TAL metals, vanadium, pH, ORP and/or hexavalent chromium analyses, depending on the location.

Following this, an EnCore® sampler (one-time-use volumetric sampling and storage device) will be used to collect the sample for VOC analysis. During sample collection, the EnCore® sampler will be removed from the resealable foil package and placed into the EnCore® T -shaped handle. Prior to sample collection, the sampler must confirm that the plunger bottom is flush with the bottom of the coring body. The EnCore® handle is then used to push the EnCore® sampler directly into the soil matrix (of the selected 0.5 ft interval) and locked once the sample has been collected. The EnCore® sampler will be removed from the handle, capped, and placed back into the foil package. The foil package will be labeled and placed in a cooler on ice for transport to the laboratory. The laboratory will extrude the soil sample from the EnCore® sampler and preserve it within 48 hours of sample collection. Following sample collection, the EnCore® T-handle will be decontaminated for reuse at the next sample location.

Soil from the 0-12 inch depth interval will be collected for TAL metals, vanadium, total chromium, pH, ORP and/or hexavalent chromium analyses and will be homogenized in a decontaminated stainless steel bowl with a decontaminated stainless steel spoon. Once the sample has been homogenized, the sample will be transferred directly into the sample containers. Once the sample has been transferred into the appropriate containers, the bottles will be capped and, if necessary, the outside of the bottle wiped with a clean paper towel to remove excess soil. The sample containers will be labeled and placed in a cooler on ice for transport to the laboratory. The soil sample analyses along the property lines (SB-95 thru SB-97, SB-104 and SB-105) will be performed on an expedited turnaround (3-5 days). Based on these results, the Project Manager, in conjunction with EPA, will determine if additional horizontal delineation is necessary and direct the sampling team accordingly. Flow Diagram A-1 summarizes the sample collection protocol for surface soil sampling.

The soil will be classified using a modified Burmeister Classification System. Soil logs will be completed after sample collection to minimize losses due to volatilization and potential cross contamination due to excessive handling of the soil. Disposable gloves will be changed between each sample location. Care will be taken to minimize contact of disposable gloves with soil to be sent for laboratory analysis.

The aforementioned sampling procedure is summarized into the following step-by-step guidance:

1. Locate the sample location via the pre-determined GPS coordinates. Mark the location with a pin flag or wooden stake painted with a high visibility color.

2. Clear surface debris from the sampling location.

3. Using a bucket auger, split spoon, macro liner or sampling scoop, collect a soil sample down to a depth of 6 inches.

4. Screen the soil with a PID. Record PID readings in the field logbook.

5. Prior to collecting the VOC sample from the 0.5-1 ft interval, hold the coring body of the EnCore® sampler, and push the plunger rod down until the small o-ring rests against the tabs. This will assure that the plunger moves freely.

6. Depress locking level on EnCore® T -handle. Place coring body - plunger end first - into open end of T -handle, aligning the two slots on the coring body with the two locking pins in the T-handle. Twist coring body clockwise to lock pins in slots. Double check that sampler is locked in place prior to use.

7. To collect soil sample, tum T-handle such that "T" is up and coring body is down. This positions plunger bottom flush with the bottom of the coring body; double check that plunger bottom is in position.

8. Using T-handle, push the EnCore® sampler into the soil until coring body is completely full. When full, the small o-ring will be centered in the T-handle viewing hole.

9. Remove sampler from soil. Wipe any excess soil from the exterior of the coring body.

10. Cap coring body while it is still on T-handle. Push cap over flat area of ridge. Push and twist cap to lock in place - cap must be seated over coring body ridges to seal sampler.

11. Remove capped EnCore® sampler by depressing the locking lever on the T-handle while twisting and pulling sampler from T-handle.

12. Lock plunger by rotating extended plunger rod fully counter-clockwise until wings rest firmly against tabs.

13. Attach a completed label (provided with the EnCore® sampler in the bag) to the cap on the coring body container. Place sampler in zipper bag provided, and seal bag.

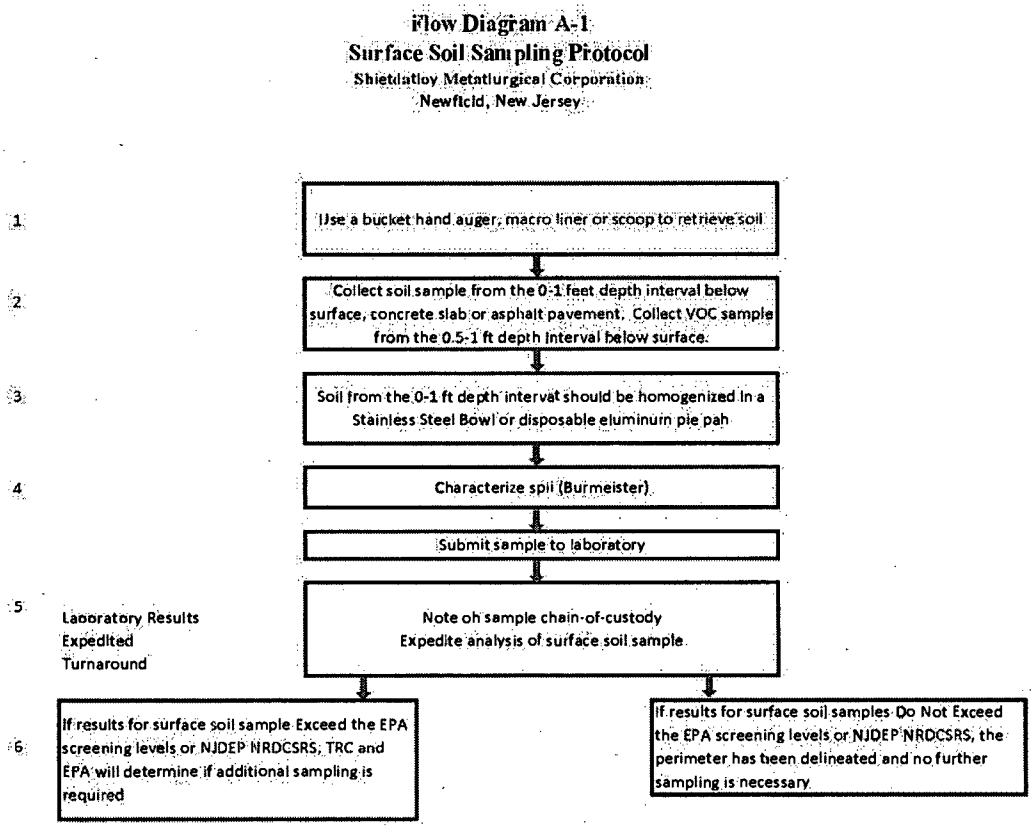
14. Place initialed custody seal(s) over the top of the closed EnCore® bag, in such a manner that the bag cannot be opened (even partially); two or more custody seals may be needed.

15. Attach a completed sample tag to the bag, using tape or other method, provided that the sample tag is securely fastened to the bag and will not become dislodged in transit.

16. Collect an additional aliquot of soil from each sample location in a separate jar, for percent moisture determination by the laboratory.

17. Soil from the 0 to 12 inches bgs depth interval will be homogenized in a decontaminated, stainless steel bowl or a disposable aluminum pie pan with a decontaminated stainless steel spoon. Once the sample has been homogenized, the sample will be transferred directly into the sample containers for TAL metals, vanadium, pH, ORP and/or hexavalent chromium analyses, depending on the location.

Flow Diagram A-1 Surface Soil Sampling Protocol



18. Classify soil using a modified Burmeister Classification System. Lithologic descriptions should be recorded in the field logbook.

19. Complete sampling labels on each container, cover label with clear packing tape, and place the samples in coolers for shipment and chill to 4°C.

20. Complete sample logs, custody seals, and chain-of-custody forms.

21. Soil sampling details should be recorded in a field logbook.

22. Initiate decontamination procedures on sampling equipment.

9.2.2 Subsurface Soil Sampling

Soil borings will be advanced at the former Manpro-Vibra Degreasing Unit and the former Basins B9 and B10 using a direct-push Geoprobe rig or hollow stem auger rig. Continuous soil samples will be collected from each boring from ground surface to the water table. Soil samples will be collected using decontaminated or dedicated sampling equipment (i.e., liners, split spoon sampler or equivalent soil coring tool).

Once the core sampler (containing the soil sample) has been withdrawn from the subsurface, the liner (or split spoon) will be placed on a table covered with plastic sheeting. Once the liner (or split spoon) is opened, each soil core will be screened with a properly calibrated PID (MiniRAE 2000 or equivalent) or FID (photovac MicroFID or equivalent). High humidity (or excess soil moisture) can interfere with the performance of a PID. Therefore, if these conditions are encountered, an FID should be used to conduct the soil screening. A decontaminated stainless steel spoon or knife will be used to make a longitudinal score deep along the length of the soil core to disturb the soil surface. The probe will be positioned immediately above the exposed, lateral scoring area to record PID/FID measurements in 6-inch intervals to determine the appropriate sample location. Based on the field screening with the PID/FID, the 6-inch depth interval of soil that displays the highest PID/FID readings or other evidence of impact (staining, sheens, etc.) will be selected for laboratory analysis within a given soil core depth interval. In the event that no PID/FID readings detected above background or other evidence of impact (staining, sheens, etc) are identified, the soil sample will be collected from the 6-inch interval above the water table. If evidence of contaminafion exists, an additional sample will be collected for vertical delineation. The subsurface soil samples from the Manpro-Vibra Degreasing Unit will be analyzed for TCL VOCs only and the subsurface soil samples from the Former Lagoons Area will be analyzed for TCL VOCs, vanadium, hexavalent chromium, pH, and/or ORP.

The analysis of VOCs for subsurface soil samples with evidence of contamination will be performed on an expedited turnaround (3-5 days) by the laboratory for the first depth interval. The expedited tumaround of sampling results will facilitate active decision-making in the field to rapidly delineate the horizontal and vertical extent of site contamination. Based on these expedited results, the Project Manager or Field Team Manager will direct the laboratory to either analyze or discard the soil samples temporarily archived. The Project Manager, in conjunction

with EPA, will also determine if additional horizontal or vertical delineation borings are necessary and direct the sampling team accordingly.

Flow Diagram A-2 summarizes the sample collection protocol for the subsurface soil sampling.

For simplicity, the aforementioned sampling procedure is summarized into the following step-by-step guidance:

1. Clear surface debris from the sampling location.

2. Collect continuous soil samples with liners, split spoon or coring device to the water table. Withdraw and carefully open liner or split spoon.

3. Score the soil with a knife longitudinally and screen the exposed soil with a PID/FID in 6-inch increments. PID/FID readings should be recorded in a field logbook.

4. Sample the 6-inch zone displaying the highest PID/FID reading (or soil displaying staining, sheens) for volatile organic analysis using an EnCore® sampler. If no PID/FID readings are observed or evidence of impact, the sample should be collected from the 0.5 foot interval above the water table. PID/FID readings should be recorded in a field logbook.

5. Prior to collecting the sample, hold the coring body of the EnCore® sampler, and push the plunger rod down until the small o-ring rests against the tabs. This will assure that the plunger moves freely.

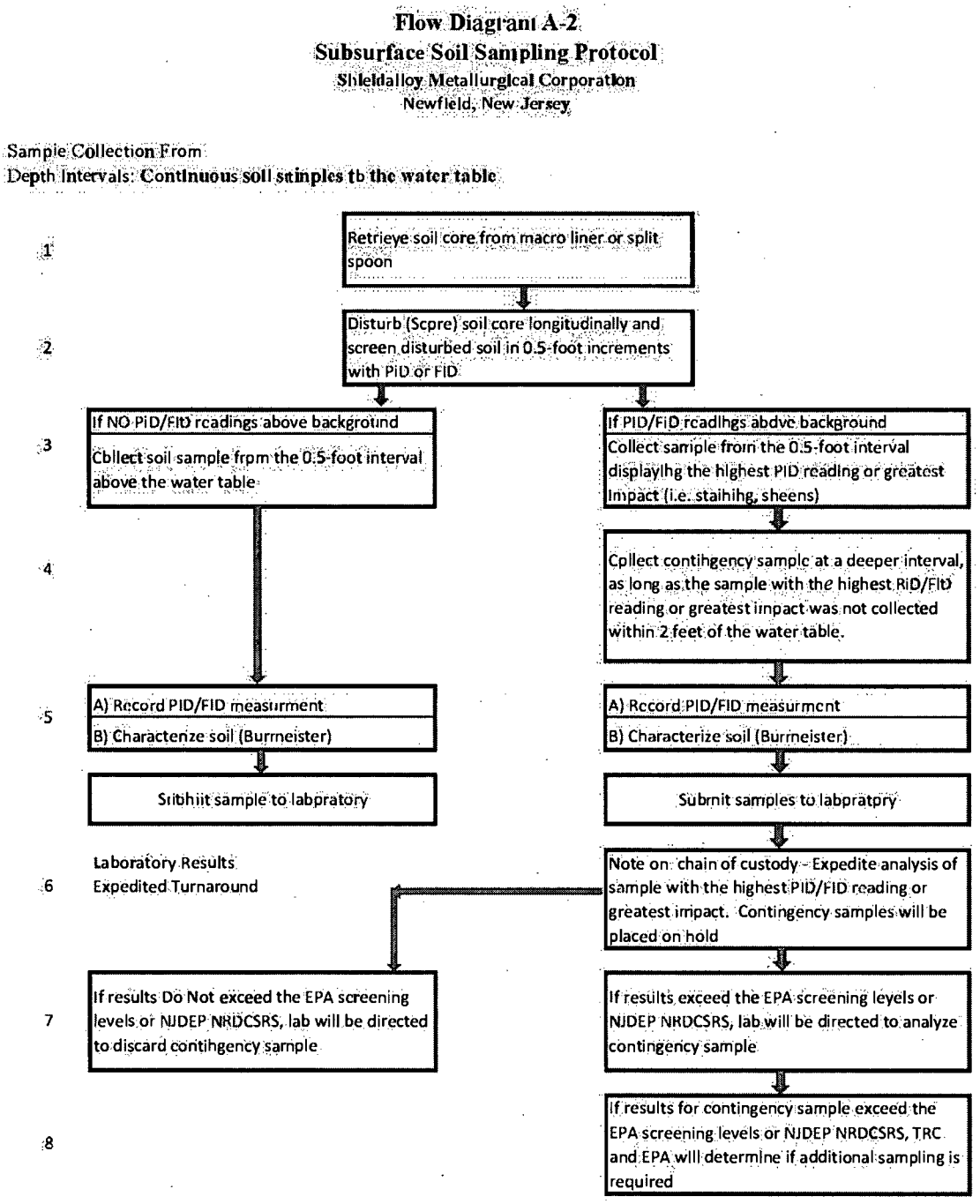
6. Depress locking level on EnCore® T -handle. Place coring body - plunger end first - into open end of T -handle, aligning the two slots on the coring body with the two locking pins in the T-handle. Twist coring body clockwise to lock pins in slots. Double check that sampler is locked in place prior to use.

7. To collect soil sample, turn T-handle such that "T" is up and coring body is down. This positions plunger bottom flush with the bottom of the coring body; double check that plunger bottom is in position.

8. Using T-handle, push the EnCore® sampler into the soil until coring body is completely full. When full, the small o-ring will be centered in the T-handle viewing hole.

9. Remove sampler from soil. Wipe any excess soil from the exterior of the coring body.

Flow Diagram A-2 Subsurface Soil Sampling Protocol



10. Cap coring body while it is still on T-handle. Push cap over flat area of ridge. Push and twist cap to lock in place - cap must be seated over coring body ridges to seal sampler.

11. Remove capped EnCore® sampler by depressing the locking lever on the T-handle while twisting and pulling sampler from T-handle.

12. Lock plunger by rotating extended plunger rod fully counter-clockwise until wings rest firmly against tabs.

13. Attach a completed label (provided with the EnCore® sampler in the bag) to the cap on the coring body container. Place sampler in zipper bag provided, and seal bag.

14. Place initialed custody seal(s) over the top of the closed EnCore® bag, in such a manner that the bag cannot be opened (even partially); two or more custody seals may be needed.

15. Attach a completed sample tag to the bag, using tape or other method, provided that the sample tag is securely fastened to the bag and will not become dislodged in transit.

16. Collect an additional aliquot of soil from each sample location in a separate jar, for percent moisture determination by the laboratory.

17. Classify soil using a modified Burmeister Classification System. Lithologic descriptions should be recorded in the field logbook.

18. The remaining soil in the liner or split spoon from the target interval should be homogenized in a decontaminated, stainless steel bowl or disposable aluminum pie pan. Once the sample has been homogenized, the sample will be transferred directly into the sample containers for vanadium, pH, ORP and/or hexavalent chromium analyses, depending on the location.

19. Complete sampling labels on each container and place the analytical samples in coolers for shipment and chill to 4°C.

20. Complete sample logs, custody seals, and chain of custody forms.

21. Record the soil sampling details in the field logbook.

22. Return excess soil material to the borehole and place wooden stake to mark the location.

23. Initiate decontamination procedures on sampling equipment.

9.2.3 Sediment and Surface Water Sampling

The objective of the sediment and surface water sampling program is to obtain a current representation of the aquatic environment conditions in the Hudson Branch, Bumt Mill Pond, Bumt Mill Branch, and in the on-site impoundment that discharges to the Hudson Branch. In addition, sediment and surface water sampling is being conducted to delineate the extent of contamination in the Hudson Branch and Burnt Mill Pond and to assess background conditions. Prior to sample collection, a GPS unit will be used to relocate sediment and surface water sample locations.

The samples will be collected sequentially beginning at the most downstream location and ending with the upstream location, to eliminate the potential for cross-contamination between sampling locations and ensure sample quality.

9.2.3.1 Sampling Locations

Sample locations are summarized on Worksheet #18-2. Sample locations are indicated in Figure 17 of the RI Work Plan. Dry weather conditions will be targeted for sediment sampling. Therefore, select surface water locations in the upper reaches of the Hudson Branch may be dry. If a surface water location is dry, a sample will not be collected.

9.2.3.2 Surface Water Sampling Procedure

At each location, the surface water will be collected first, followed by collection of the sediment samples. Surface water samples will be collected spatially and temporally with sediment samples. The sampling device (open mouth container) will be fully submerged (beneath the air-water interface) and located directly above the sediment bed, pointing the open mouth of the container upstream. Once the sample has been collected, the liquid sample will be transferred directly into the pre-preserved sample bottles. The pre-preserved sample containers will be labeled and placed in a cooler on ice to await transport to the laboratory. The surface water samples will be analyzed for TCL VOCs, TAL metals (total and dissolved), hexavalent chromium (total and dissolved), and total hardness. Water quality measurements (including temperature, pH, redox potential, turbidity, salinity, conductivity and dissolved oxygen) will be subsequently collected using field instrumentation (Horiba® water quality meter or equivalent). The sample location and field measurements will be recorded in a field logbook. A flow meter (global water flow probe or other equivalent digital water velocity meter) will also be utilized to measure the stream flow within the mid-point of the stream channel. Finally, the sample location will be photographed, flagged and the physical characteristics (width, depth, flow) of the stream sampling location will be recorded in the field logbook.

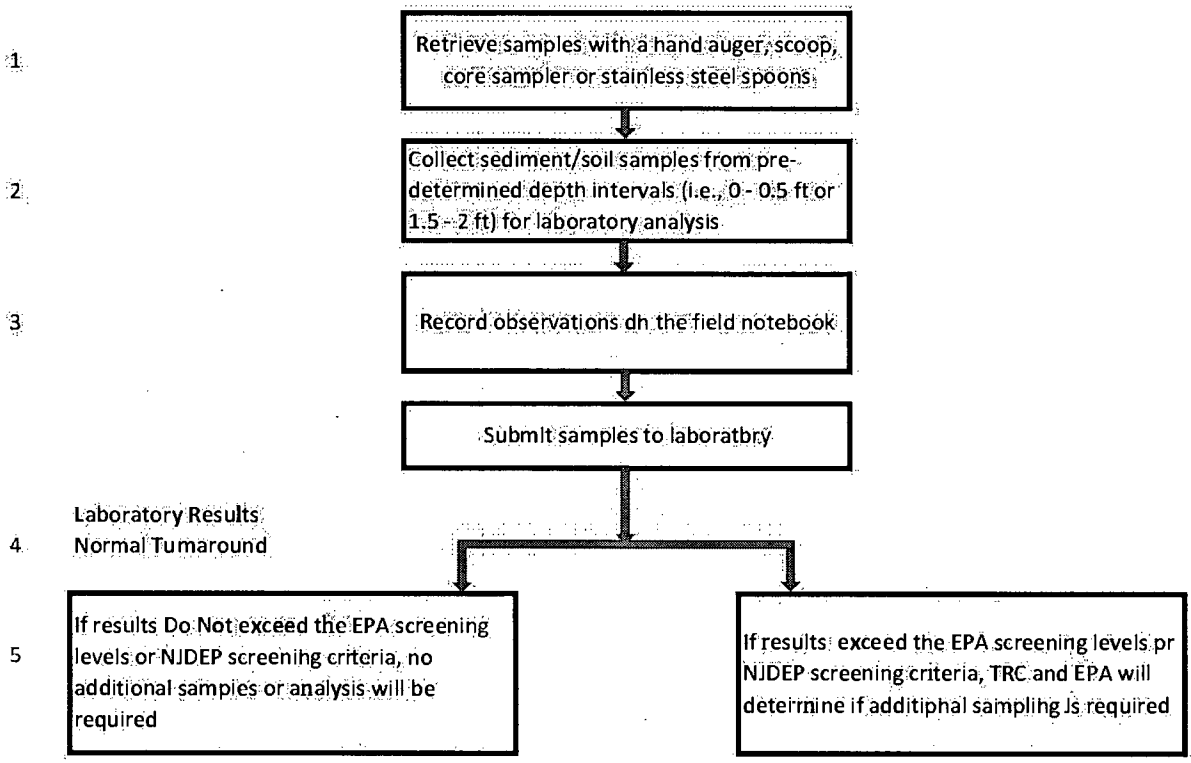
9.2.3.3 Sediment and Stream Bank Soil Sampling Procedure

The sediment samples will be retrieved using a decontaminated 4-inch diameter PVC pipe that will be driven into the sediment to a pre-determined depth based on Worksheet #18-2. At a

Flow Diagram A-3 **Sediment/Soil Sampling Protocol**

Flow Diagram A-3
Sediment/Soil Sampling Protocol
Shieldalloy Metallurgical Corporation
Newfield, New Jersey

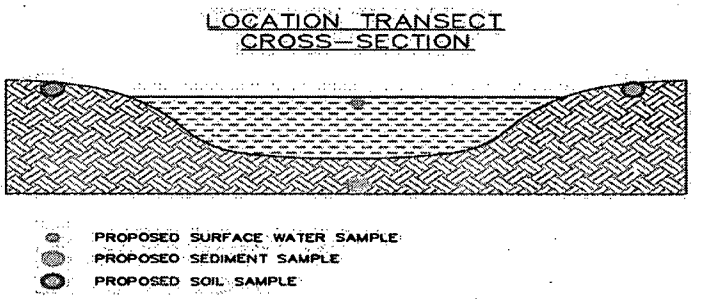
Sediment/Soil Sample Colleetion From
Pre-Determinated Depth Intervals: **0 - 0.5 ft or 1.5 - 2 ft**



minimum, the pipe will be driven 0.5-foot deeper than the deepest sample interval, if practicable. Prior to installation, the pre-determined depth will be marked on the outside of the PVC piping so as to provide a visual reference during installation. Note that this depth will be modified as necessary (e.g., increased) to account for standing water. Sediment samples will be collected within the pipe using decontaminated stainless steel hand augers or a sediment core sampler. The technique will allow for the collection of sediment samples with minimal collapse of the borehole, as the PVC pipe will impede the influx of water. Flow Diagram A-3 summarizes the sample collection protocol for the sediment sampling.

At locations for transects, stream bank samples will be collected from the 0.5-foot depth interval below surface. The stream bank samples will be collected using decontaminated or dedicated sampling equipment (i.e., hand augers, scoops, core samplers or stainless steel spoons).

A transect cross section for collection of surface water, sediment and soil samples is provided below.



Not to Scale

The contents from each auger, scoop, or stainless steel spoon will be placed into a dedicated stainless steel bowl or disposable aluminum pie pan and homogenized. The sediment samples will be geologically logged for grain size, color, texture, consistency and other physical parameters (e.g., stains, odors, etc.) and the observations will be recorded in the field logbook. Once homogenized, the sample will be transferred into the appropriate sample containers. Any excess liquid present with the sediment sample will be placed in the sample container. Decantation of excess liquids may promote the loss of water-soluble-compounds present in the sediment. If the sample is collected properly, any liquid that makes it into the bottle will be representative of the sediment conditions. The sample containers will be labeled and placed in a cooler on ice to await transport to the laboratory. The sediment samples will be analyzed for TCL SVOCs, TCL pesticides, PCB Aroclors, TAL metals, TOC, pH, and particle grain size distribution. TOC and particle grain size are included as indicators of contaminant bioavailability and the depositional nature of the sediments.

All analyses of sediment and stream bank soil samples will be performed on normal tumaround by the laboratory. Based on these results, the Project Manager, in conjunction with EPA, will

determine if additional horizontal and/or vertical delineation are necessary and direct the sampling team accordingly.

The field samplers will complete sample logs, labels, custody seals, and chain-of-custody forms and record all sampling details in the field logbook. The sediment sample locations are subject to field adjustment, based on site conditions and observations made at the time of sample collection. Decisions regarding final sample locations may be based on accessibility restrictions, discharge points, sediment depositional zones and other factors that may be encountered or observed during the field sampling.

The sediment sample locations will be photographed, flagged and the physical characteristics (width and depth, flow) of the stream sampling location will be recorded in the field logbook.

9.2.4 Aquatic Vegetation, Aquatic Invertebrate and Terrestrial Invertebrate Sampling: BERA

Invertebrate samples will be collected at each sampling location and will include representative species present. Each terrestrial invertebrate sample will be co-located with surface soil sampling locations. Each aquatic vegetation and aquatic invertebrate sample will be co-located with sediment sampling locations. Invertebrates and vegetation should be collected as close as possible to the surface soil or sediment sampling location initially with sampling extending radially from the soil/sediment sample until sufficient invertebrate mass is collected. An attempt will be made to get a minimum of 10 grams at each location. Terrestrial invertebrates can be collected by searching under rocks, debris and by sweeping vegetation with a heavy-duty sweep net. Any vegetation and terrestrial invertebrates retained for sampling should be free of loose soil, sediment and detritus. Samples should be placed into glass jars.

In the event that a sufficient mass of terrestrial invertebrate tissue cannot be collected at a particular area of concern, then a laboratory-based bioaccumulation study from soil to earthworms will be undertaken. The laboratory bioaccumulation study involves placing earthworms (***Eisenia foetida***) into soil samples collected from the Site for a period of 28 days. The earthworm bioaccumulation test will follow ASTM D1676-97 guidelines. After the exposure period is complete, earthworms are analyzed for the metals of concern. These results are then compared to the soil sampling results to determine appropriate site-specific bioaccumulation factors.

Each sample should be labeled with the sample location and date of collection. A field notebook should record invertebrate types collected at the sampling location and their relative percent contribution to the sample. Invertebrates should be identified in the field to the lowest practicable taxon. Samples should be placed on ice in a cooler.

9.2.5 Investigation Derived Waste Sampling

Investigation derived waste (IDW) residuals will be containerized and sampled to make a hazardous waste determination. Following generation, the IDW will be containerized and staged adjacent and south of the treatment plan to await characterization. Based on the sampling results

and consultation with the EPA Remedial Project Manager, a subsequent determination shall be made whether IDW can be placed on-site.

Personnel directly involved in equipment decontamination will wear appropriate protective clothing, as stated in the HASP. Used personal protective equipment (PPE) and any gross solids removed from the equipment during the physical removal process shall be stored in a drum. The soap and water liquid wastes will also be stored in an appropriate dmm or container. The diluted acid rinsate will be stored in an appropriate container or neutralized with a base and then placed in an appropriate drum. The solvent rinse wastewater shall be placed into an appropriate container or drum. The final rinse wastewater shall be emptied onto the ground.

All waste handling will be conducted in accordance with all applicable federal and state regulations. The containers used to store IDW will be new USDOT-approved dmms classified as 1A1/Y 340/S (or equivalent lined with a 6-millimeter liner).

9.3 Cleaning and Decontamination of Personnel, Equipment and Sample Containers

This section describes the procedures for the initial cleaning of sample equipment and subsequent decontamination procedures that will be followed during each sampling event. Cleaning/decontamination procedures apply to all equipment that come in contact with a sample.

Decontamination will be conducted in accordance with the NJDEP Field Sampling Procedures Manual (2005) and EPA's August 11, 1994 SOP No. 2006, "Sampling Equipment Decontamination". Proper decontamination is required for all personnel before leaving the site. A decontamination area shall be designated within the Contamination Reduction Zone prior to the implementation of field activities and shall be cordoned off to restrict unauthorized personnel. The decontamination will be accomplished through a systematic procedure of cleaning and removing PPE. Contaminants can adhere to the surface of PPE or permeate PPE material. It is important to avoid bodily contact with contaminated material, and to prevent contamination of the Support Zone. All contaminated material that becomes attached to clothing or equipment must be removed and/or neutralized in either the Exclusion Zone or the Contamination Reduction Zone. PPE decontamination will include the following: washing of boots (or the removal and disposal of boot covers); washing, removal and disposal of disposable coveralls (or protective suits); removal and disposal of outer and inner gloves and finally, washing of hands, arms and face prior to leaving the site. Disposable PPE will be carefully removed and placed in plastic bags and sealed. When reusable PPE is wom, it must be decontaminated on site. After cleaning, the reusable PPE will be sealed in plastic bags for return shipment.

All non-disposable equipment involved in field sampling activities will be decontaminated prior to and after sampling. Equipment leaving the Site will also be decontaminated. Alconox and water wash will be used to remove all visible particulate matter and residual oils and grease. This may be preceded by using high pressure water or steam to facilitate residual removals. All heavy equipment (e.g., backhoe) will be steam cleaned prior to and after use.

In general, soil sediment, and invertebrate/vegetation sampling equipment will be decontaminated using the following procedure:

- Laboratory grade glassware detergent plus tap water wash
- Generous tap water rinse
- Distilled deionized (ASTM Type II) water rinse
- 10% nitric acid rinse (trace metal or higher grade HNO_3 diluted with distilled and deionized [ASTM type II] H_2O)
- Distilled and deionized (ASTM Type II) water rinse
- Acetone (pesticide grade) rinse (if sample is analyzed for organics)
- Total air dry
- Distilled and deionized (ASTM Type II) water rinse

Pre-cleaned bottles will be used for all sampling procedures. These bottles will be supplied by an external vendor. The certificates of cleanliness will be kept in project files located at the TRC Environmental office in Philadelphia, PA.
The following table represents a complete list of all equipment that will come in contact with each sample for each medium/matrix.

Equipment	Matrices	
	Sediment[2]	Soil[3]
Stainless steel hand augers[1]	X	X
Stainless steel scoops[1]	X	X
Stainless steel spoon[1]	X	X
Encore® T-handle		X
Stainless steel bowl[1]	X	X
Aluminum pie pan	X	X
Bucket augers		X

[1] Plastic may be used instead of stainless steel if collecting samples for inorganics only.

[2] Equipment used for sediment samples will also be used for aquatic vegetation and aquatic invertebrates.

[3] Equipment used for surface soil samples will also be used for terrestrial invertebrates.

9.4 Field Equipment

9.4.1 Field Equipment Calibration

No field sampling equipment calibration is anticipated for this program.

9.4.2 Field Equipment, Maintenance, Testing, and Inspection Requirements

The field equipment preventative maintenance program is designed to ensure the effective completion of the sampling effort and to minimize equipment downtime. The maintenance responsibilities for field equipment will be assigned to the TRC Field Team Manager. Field personnel will be responsible for daily field checks and for reporting any problems with the equipment. The maintenance schedule will follow the manufacturer's recommendations. Field personnel will also be responsible for ensuring that critical parts are included with the field equipment. Critical spare parts will be immediately available to reduce potential downtime. The inventory will primarily contain parts that are subject to frequent failure, have limited useful lifetimes, and/or cannot be obtained in a timely manner. Backup equipment will be available within 1-day shipment to avoid delays in the field schedule.

9.5 Field Analytical Method Requirements

This section describes the analytical techniques that will be used in the field to generate screening data.

9.5.1 Field Analytical Methods and SOPs

Methods applicable to field analyses for this investigation are summarized in Worksheet #23.

9.5.2 Field Analytical Instrument Calibration

Worksheet #22 provides information relative to the calibration of all field instruments.

All materials, including standards or standard solutions, will be dated upon receipt, and will be identified by material name, lot number, purity or concentration, supplier, recipient's name, and expiration date. All materials must be National Institute of Standard and Technology (NIST)-traceable reference materials.

9.5.2.1 Organic Vapor Detecfion Instrument

An FID or PID will be used for VOC screening of soil samples. Prior to daily field operations, the instrument will be checked for electronic calibration and adjusted as necessary. A 100 ppmV methane standard (for the FID) and a 100 ppmV isobutylene standard (for the PID) will be used for establishing instrument settings. If non-compliant instrument performance is noted, the instrument will be checked following the manufacturer's troubleshooting procedures. Instrument-specific calibration and maintenance (if needed) and records will be stored by the TRC Field Team Manager.

9.5.2.2 pH/Conductivity/Temperature/DO/ORP/Trubidity/Salinity Measurements

A Horiba® water quality meter, or equivalent, equipped with an in-line flow-through cell for continuous monitoring, will be utilized to determine pH, temperature, conductivity, dissolved

oxygen (DO), salinity and ORP measurements in conjunction with water quality sample collection. The Lamotte 2020 Turbidimeter, or equivalent, will be used to determine turbidity in conjunction with water quality sample collection.

The instruments will be calibrated prior to each day's operation using NIST-traceable reference materials and when the instrument exhibits erratic readings. Calibration data including reference material and dates of reference material preparation and expiration, and the true value observed will be recorded in the field logbook.

If calibration verification standard recovery is determined to be outside the acceptance criteria, the specific probe will be reconditioned and recalibrated or replaced.

9.5.3 Field Analytical Instrument/Equipment Maintenance, Testing and Inspection Requirements

This section describes the procedures and documentation activities that will be performed to ensure that all field analytical instrumentation and equipment are available and in working order when needed. Worksheet #22 summarizes the field analytical instrument maintenance, testing, and inspection requirements. Instrument maintenance logs must be kept and instrumentation must be checked prior to use. The field instrument preventative maintenance program is designed to ensure the effective completion of the sampling effort and to minimize instrument downtime. The maintenance responsibilities for field instruments will be assigned to the TRC Field Team Manager. Field personnel will be responsible for daily field checks and calibrations and for reporting any problems with the instruments. The maintenance schedule will follow the manufacturer's recommendations. Field personnel will also be responsible for ensuring that critical parts are included with the field instruments. Critical spare parts will be immediately available to reduce potential downtime. The inventory will primarily contain parts that are subject to frequent failure, have limited useful lifetimes, and/or cannot be obtained in a timely manner.

Backup instruments and equipment will be available within 1-day shipment to avoid delays in the field schedule.

9.5.4 Field Analytical Inspection and Acceptance Requirements for Supplies/Sample Containers

Critical supplies and sample containers will be inspected in the following manner.

Critical Supplies and Consumables	Inspection Requirements and Acceptance Criteria	Responsible Individual
Sample bottles	Visually inspected upon receipt for cracks, breakage, cleanliness. Must be accompanied by certificate of analysis.	Field Team Manager
Chemicals and	Visually inspected for proper labeling, expiration	Field Team

Critical Supplies and Consumables	Inspection Requirements and Acceptance Criteria	Responsible Individual
reagents	dates, appropriate grade Record lot numbers of reagents used for calibration.	Manager

Supplies and consumables not meeting acceptance criteria will result in the initiation of the appropriate corrective action. Corrective measures may include notification of vendor and subsequent replacement of defective or inappropriate materials. All actions will be documented in the project files.

QAPP Worksheet #19

Analytical SOP Requirements Table

Matrix	Analytical Group	Conc. Level	Analytical and Preparation Method/ SOP Reference[1]	Sample Volume	Containers (Number, size and type)	Preservation Requirements (chemical, temperature, light protected)	Maximum Holding Time (preparation/ analysis)
Soil	TCL VOCs	High	L-1	2 x 5g	2 x 5g EnCore® samplers	Sealed in EnCore® bag; Cool, 4°C	48 hours to extract in 5 mL methanol; 14 days to analysis
Soil	TCL SVOCs	Low	L-2	1 x 4 oz	1 x 4 oz. glass bottle	Cool, 4°C	14 days to extraction; 40 days from extraction to analysis
Soil	TCL Pesticides	Low	L-3	1 x 4 oz	1 x 4 oz. glass bottle	Cool, 4°C	14 days to extraction; 40 days from extraction to analysis
Soil	PCB Aroclors	Low	L-4	1 x 4 oz	1 x 4 oz. glass bottle	Cool, 4°C	14 days to extraction; 40 days from extraction to analysis
Soil	TAL Metals	Low	L-5	1 x 4 oz	1 x 4 oz. glass bottle	Cool, 4°C	Mercury: 28 days to analysis Other metals: 180 days to analysis
Soil	Vanadium and Chromium	Low	L-5	1 x 4 oz	1 x 4 oz. glass bottle	Cool, 4°C	180 days to analysis
Soil	pH	NA	L-9	1 x 4 oz	1 x 4 oz. glass bottle	Cool, 4°C	48 hours to analysis
Soil	ORP	NA	L-11	1 x 4 oz	1 x 4 oz. glass bottle	Cool, 4°C	48 hours to analysis
Soil	Hexavalent Chromium	Low	L-10	1 x 4 oz	1 x 4 oz. glass bottle	Cool, 4°C	30 days to digestion; 7 days from digestion to analysis
Surface Water	TCL VOCs	Low	L-1	3 x 40 mL	3 x 40 mL VOA vials	HCl to pH <2; Cool, 4°C	14 days to analysis
Surface Water	TAL Metals (total and dissolved)	Low	L-5	1 x 500 mL	1 x 500 mL polyethylene bottle	HNO_3 to pH <2; Cool, 4°C	Mercury: 28 days to analysis Other Metals: 180 days to analysis

QAPP Worksheet #19

Analytical SOP Requirements Table

Matrix	Analytical Group	Conc. Level	Analytical and Preparation Method/ SOP Reference[1]	Sample Volume	Containers (Number, size and type)	Preservation Requirements (chemical, temperature, light protected)	Maximum Holding Time (preparation/ analysis)
Surface Water	Aluminum, Cadmium, Cobalt, Copper, Selenium, Vanadium (total and dissolved)	Low	L-8	1 x 500 mL	1 x 500 mL polyethylene bottle	HNO_3 to pH <2; Cool, 4°C	180 days to analysis
Surface Water	Hexavalent Chromium (total and dissolved)	Low	L-10	1 x 1 L	1 x 1 L polyethylene	pH > 12 with NaOH; Cool, 4°C	24 hours to analysis
Surface Water	Hardness	Low	L-12	1 x 500 mL	1 x 500 mL polyethylene bottle	HNO_3 to pH <2; Cool, 4°C	180 days to analysis
Sediment	TCL SVOCs	Low	L-2	1 x 4 oz	1 x 4 oz. glass bottle	Cool, 4°C	14 days to extraction; 40 days from extraction to analysis
Sediment	TCL Pesticides	Low	L-3	1 x 4 oz	1 x 4 oz. glass bottle	Cool, 4°C	14 days to extraction; 40 days from extraction to analysis
Sediment	PCB Aroclors	Low	L-4	1 x 4 oz	1 x 4 oz. glass bottle	Cool, 4°C	14 days to extraction; 40 days from extraction to analysis
Sediment	Total Organic Carbon	NA	L-6	1 x 4 oz	1 x 4 oz. glass bottle	Cool, 4°C	14 days to analysis
Sediment	TAL Metals	Low	L-5	1 x 4 oz	1 x 4 oz. glass bottle	Cool, 4°C	Mercury: 28 days to analysis Other metals: 180 days to analysis
Sediment	Grain Size	NA	L-7	1 x 8 oz.	1 x 8 oz. clear wide mouth glass	None	None
Sediment	pH	NA	L-9	1 x 4 oz	1 x 4 oz. glass bottle	Cool, 4°C	48 hours to analysis

QAPP Worksheet #19

Analytical SOP Requirements Table

Matrix	Analytical Group	Conc. Level	Analytical and Preparation Method/ SOP Reference[1]	Sample Volume	Containers (Number, size and type)	Preservation Requirements (chemical, temperature, light protected)	Maximum Holding Time (preparation/ analysis)
Tissue (aquatic vegetation, aquatic invertebrate, terrestrial invertebrate)	Metals	Low	L-8, L-13	1 x 4 oz	1 x 4 oz. glass bottle	Cool, 4°C	Mercury: 28 days to analysis Other metals: 180 days to analysis

NA – Not applicable
[1]Laboratory SOPs are included in Appendix E.

QAPP Worksheet #20-1: Soil: RI

Field and Quality Control Sample Summary Table

Matrix	Analytical Group	Cone. Level	Analytical Method/ SOP Reference	No. of Samples	No. of Field Duplicate Pairs	Organic		Inorganic		No. of Trip Blanks	No. of Bottle Blanks	No. of Equip. Blanks	No. of PE Samples	Total No. of Samples to Lab
						No. of MS	No. of MSD	No. of Duplicates	No. of MS					
Soil	TCL VOCs	High	L-1	15	2	2	2	0	0	0	0	0	0	21
Soil	TAL Metals	Low	L-5	19	1	0	0	2	2	0	0	1	0	25
Soil	pH	NA	L-9	28	2	0	0	2	0	0	0	0	0	32
Soil	Hexavalent Chromium	Low	L-10	24	1	0	0	1	1	0	0	1	0	28
Soil	Vanadium	Low	L-5	8	1	0	0	1	1	0	0	1	0	12
Soil	ORP	NA	L-11	24	1	0	0	1	0	0	0	0	0	26

QAPP Worksheet #20-2: Sediment: RI

Field and Quality Control Sample Summary Table

Matrix	Analytical Group	Cone. Level	Analytical Method/ SOP Reference	No. of Samples	No. of Field Duplicate Pairs	Organic		Inorganic		No. of Trip Blanks	No. of Bottle Blanks	No. of Equip. Blanks	No. of PE Samples	Total No. of Samples to Lab
						No. of MS	No. of MSD	No. of Duplicates	No. of MS					
Sediment	TCL SVOCs	Low	L-2	21	2	2	2	0	0	0	0	1	0	28
Sediment	TCL Pesticides	Low	L-3	21	2	2	2	0	0	0	0	1	0	28
Sediment	PCB Aroclors	Low	L-4	21	2	2	2	0	0	0	0	1	0	28
Sediment	TAL Metals	Low	L-5	27	2	0	0	2	2	0	0	2	0	35
Sediment	Total Organic Carbon	NA	L-6	27	2	0	0	2	2	0	0	0	0	33
Sediment	Grain Size	NA	L-7	27	2	0	0	0	0	0	0	0	0	29
Sediment	pH	NA	L-9	27	2	0	0	2	0	0	0	0	0	31

NA-Not applicable

QAPP Worksheet #20-3: Stream Bank Soil Samples: RI

Field and Quality Control Sample Summary Table

Matrix	Analytical Group	Conc. Level	Analytical Method/ SOP Reference	No. of Samples	No. of Field Duplicate Pairs	Organic		Inorganic		No. of Trip Blanks	No. of Bottle Blanks	No. of Equip. Blanks	No. of PE Samples	Total No. of Samples to Lab
						No. of MS	No. of MSD	No. of Duplicates	No. of MS					
Soil	TCL SVOCs	Low	L-2	14	1	1	1	0	0	0	0	1	0	18
Soil	TCL Pesticides	Low	L-3	14	1	1	1	0	0	0	0	1	0	18
Soil	PCB Aroclors	Low	L-4	14	1	1	1	0	0	0	0	1	0	18
Soil	TAL Metals	Low	L-5	14	1	0	0	1	1	0	0	1	0	18
Soil	pH	NA	L-9	14	1	0	0	1	0	0	0	0	0	16
Soil	Hexavalent Chromium	Low	L-10	14	1	0	0	1	1	0	0	1	0	18
Soil	ORP	NA	L-11	14	1	0	0	0	0	0	0	0	0	15

NA-Not applicable

QAPP Worksheet #20-4: Surface Water: RI

Field and Quality Control Sample Summary Table

Matrix	Analytical Group	Conc. Level	Analytical Method/ SOP Reference	No. of Samples	No. of Field Duplicate Pairs	Organic		Inorganic		No. of Trip Blanks	No. of Bottle Blanks	No. of Equip. Blanks	No. of PE Samples	Total No. of Samples to Lab
						No. of MS	No. of MSD	No. of Duplicates	No. of MS					
Surface Water	TCL VOCs	Low	L-1	19	1	1	1	0	0	3	0	0	0	25
Surface Water	TAL Metals-total	Low	L-5	21	2	0	0	2	2	0	0	0	0	27
Surface Water	TAL Metals-dissolved	Low	L-5	21	2	0	0	2	2	0	0	0	0	27
Surface Water	Aluminum, Cadmium, Cobalt, Copper, Selenium, Vanadium-total	Low	L-8	21	2	0	0	2	2	0	0	0	0	27
Surface Water	Aluminum, Cadmium, Cobalt, Copper, Selenium, Vanadium-dissolved	Low	L-8	21	2	0	0	2	2	0	0	0	0	27
Surface Water	Hardness	Low	L-12	21	2	0	0	2	2	0	0	0	0	27
Surface Water	Hexavalent chromium -total	Low	L-10	21	2	0	0	2	2	0	0	0	0	27
Surface Water	Hexavalent chromium-dissolved	Low	L-10	21	2	0	0	2	2	0	0	0	0	27

QAPP Worksheet #20-5: BERA Samples

Field and Quality Control Sample Summary Table

Matrix	Analytical Group	Cone. Level	Analytical Method/ SOP Reference	No. of Samples	No. of Field Duplicate Pairs	Organic		Inorganic		No. of Trip Blanks	No. of Bottle Blanks	No. of Equip. Blanks[1]	No. of PE Samples	Total No. of Samples to Lab
						No. of MS	No. of MSD	No. of Duplicates	No. of MS					
Surface Soil	Chromium, vanadium	Low	L-5	16	1	0	0	1	1	0	0	1	0	20
Sediment	Antimony, barium, beryllium, chromium, copper, lead, mercury, nickel, selenium, vanadium, zinc	Low	L-5	10	1	0	0	1	1	0	0	1	0	14
Aquatic Vegetation	Chromium	Low	L-8	10	0	0	0	1	1	0	0	0	0	12
Aquatic Invertebrates	Antimony, barium, chromium, copper, mercury, vanadium	Low	L-8, L-13	10	0	0	0	1	1	0	0	0	0	12
Terrestrial Invertebrates[2]	Chromium, vanadium	Low	L-8	16	0	0	0	1	1	0	0	0	0	18

[1]Equipment blanks are collected with the surface soil and sediment samples and also apply to the terrestrial invertebrates, aquatic invertebrates, and aquatic vegetation since the same equipment is used in the sampling procedures.
[2]Earthworms may be collected in lieu of terrestrial invertebrates. Refer to Section 9.2.4 of the QAPP for details.

QAPP Worksheet #22

Field Equipment Calibration, Maintenance, Testing and Inspection Table

Sampling Equipment/ Instrument	Calibration Activity	Maintenance Activity	Testing Activity	Inspection Activity	Frequency	Acceptance Criteria	Corrective Action	Responsible Person
PID	Calibrate with 100 ppmV isobutylene standard. Blank: zero air check	NA	NA	NA	Daily-before use Calibration check – every 4 hours, at end of day, or if instrument gives erratic results	± 10% of true value	Recalibrate or service; rerun affected sample.	Field Team Manager
	NA	Clean Detector	NA	NA	When unstable readings occur	+ 10% of true value of standard		
	NA	NA	QC Check	NA	See Calibration Frequency	See Calibration Acceptance Criteria		
	NA	NA	NA	Visual Inspection	Daily before use	No defective parts noted		
FID	Calibrate with 100 ppmV methane standard. Blank: zero air check	NA	NA	NA	Daily-before use Calibration check – every 4 hours, at end of day, or if instrument gives erratic results	± 10% of true value	Recalibrate or service; rerun affected sample.	Field Team Manager
	NA	Clean Detector	NA	NA	When unstable readings occur	+ 10% of true value of standard		
	NA	NA	QC Check	NA	See Calibration Frequency	See Calibration Acceptance Criteria		
	NA	NA	NA	Visual Inspection	Daily before use	No defective parts noted		

QAPP Worksheet #22

Field Equipment Calibration, Maintenance, Testing and Inspection Table

Sampling Equipment/ Instrument	Calibration Activity	Maintenance Activity	Testing Activity	Inspection Activity	Frequency	Acceptance Criteria	Corrective Action	Responsible Person
Horiba® pH Probe (or equivalent)	Calibrate probe with 3 temperature-equilibrated standards to bracket expected pH values	NA	NA	NA	Daily-before use Calibration check - if instmment gives erratic results	Stable readings ± 0.1 pH units within 3 minutes	If probe reading fails to stabilize, do not use. Check/replace membrane and recalibrate or service as necessary. Repeat analysis of affected samples or qualify data if analysis cannot be repeated.	Field Team Manager
	NA	Clean probe	NA	NA	When unstable readings occur	Stable after 3 minutes	Clear probe; and/or replace membrane, and/or replace or service other defective parts	
	NA	NA	QC Check	NA	See Calibration Frequency	See Calibration Acceptance Criteria		
	NA	NA	NA	Visual Inspection	Daily before use	No defective parts noted		
Horiba® Dissolved Oxygen Probe (or equivalent)	Calibrate with 2 standards – saturated DO standard and 0.0 mg/L DO standard	NA	NA	NA	Daily-before use Calibration check - if instrument gives erratic results	Stable readings ± 0.2 mg/L for 0.0	If DO reading exceeds criterion, then prepare new 0.0 mg/L DO standard, clean probe and/or change membrane. Recalibrate or service as necessary. Repeat analysis of affected samples or qualify data if analysis cannot be repeated.	Field Team Manager

QAPP Worksheet #22

Field Equipment Calibration, Maintenance, Testing and Inspection Table

Sampling Equipment/ Instrument	Calibration Activity	Maintenance Activity	Testing Activity	Inspection Activity	Frequency	Acceptance Criteria	Corrective Action	Responsible Person
Horiba® Dissolved Oxygen Probe (or equivalent) (continued)	NA	Clean probe, change KCI and Teflon® membrane	NA	NA	- When bubbles are visible under membrane - When significant deposits of dried electrolyte are visible on membrane or o-ring - When probe give unstable readings	NA	Clear probe; and/or change KCI and replace Teflon® membrane, and/or replace or service	
	NA	NA	QC Check	NA	See Calibration Frequency	See Calibration Acceptance Criteria		
	NA	NA	NA	Visual Inspection	Daily before use	No defective parts noted		
Horiba® Specific Conductance Electrode (or equivalent)	Calibrate electrode with 1 standard close to the expected sample values.	NA	NA	NA	Daily-before use Calibration check - if instrument gives erratic results	± 1 umho/cm of standard	If sp. Conductance electrode reading exceeds criterion, then clean probe or service as necessary and recalibrate. Repeat analysis of affected samples or qualify data if analysis cannot be repeated.	Field Team Manager

QAPP Worksheet #22

Field Equipment Calibration, Maintenance, Testing and Inspection Table

Sampling Equipment/ Instrument	Calibration Activity	Maintenance Activity	Testing Activity	Inspection Activity	Frequency	Acceptance Criteria	Corrective Action	Responsible Person
Horiba® Specific Conductance Electrode (or equivalent) (continued)	NA	Clear opening to conductivity probe	NA	NA	Prior to initial use	No dirty parts	Clear probe and/or replace or service	
	NA	NA	QC Check	NA	See Calibration Frequency	See Calibration Acceptance Criteria		
	NA	NA	NA	Visual Inspection	Daily before use	No defective parts noted		
Horiba® Temperature Sensor (or equivalent)	Calibrate against NIST-certified thermometer.	NA	NA	NA	Calibration check prior to onset of program	+ 0.15°C of NIST certified thermometer	If temperature sensor reading exceeds criterion, then clean probe, or service as necessary and recalibrate. Repeat analysis of affected samples or quality data if analysis cannot be repeated.	Field Team Manager
	NA	NA	QC Check	NA	See Calibration Frequency	See Calibration Acceptance Criteria	Replace or Service	
	NA	NA	NA	Visual Inspection	Daily before use	No defective parts noted		

QAPP Worksheet #22

Field Equipment Calibration, Maintenance, Testing and Inspection Table

Sampling Equipment/ Instrument	Calibration Activity	Maintenance Activity	Testing Activity	Inspection Activity	Frequency	Acceptance Criteria	Corrective Action	Responsible Person
Horiba® ORP/Eh Probe (or equivalent)	Calibrate against 1 Zobell solution.	NA	NA	NA	Daily-before use Calibration check - if instrument gives erratic results	+ 1 mv of standard	If ORP/Eh reading exceeds criterion, then have manufacturer recalibrate. Repeat analysis of affected samples or quality data if analysis cannot be repeated.	Field Team Manager
	NA	NA	QC Check	NA	See Calibration Frequency	See Calibration Acceptance Criteria	Manufacture must recalibrate	
	NA	NA	NA	Visual Inspection	Daily before use	No defective parts noted	Replace or service	
Horiba® Salinity Probe (or equivalent)	Performed by manufacturer	NA	NA	NA	Prior to use	NA	NA	Manufacturer
	NA	NA	NA	Visual Inspection	Daily before use	No defective parts noted	Replace or service	Field Team Manager
Turbidimeter	Calibrate with DI water and 1 other standard to bracket expected sample concentration range	NA	NA	NA	Daily-before use Calibration check - if instrument gives erratic results	± 5% per scale	If turbidity reading exceeds criterion, then calibrate or service as necessary. Repeat analysis of affected samples or quality data if analysis cannot be repeated.	Field Team Manager
	NA	NA	QC Check	NA	See Calibration Frequency	See Calibration Acceptance Criteria	Replace or Service	
	NA	NA	NA	Visual Inspection	Daily before use	No defective parts noted		

10.0 ANALYTICAL TASKS

This section of the QAPP describes the analytical techniques that will be used by the fixed laboratories to generate definitive data for the project. It documents the fixed laboratory analytical methods that will be used to meet measurement performance criteria and achieve the project-required quantitation limits for all contaminants of concern and other target compounds in the specific matrices as identified on Worksheets #15-1 through 15-15.

10.1 Fixed Laboratory Analytical Methods and SOPs

Worksheet #23 details the analytical methods that will be used in this investigation. The methods outline the maximum allowable holding times from sample collection to preparation and/or analysis. In addition, the methods detail the required QC checks and QC samples, the required frequencies, QC acceptance limits and required corrective actions. Copies of the laboratory QA manuals are provided in Appendix C of this QAPP.

10.2 Fixed Laboratory Analytical Method/SOP Modifications

In general, the methods will be followed as written. ASTM Method D1498-00, for the analysis of ORP in soil samples, will be modified to include preparation of a soil slurry in accordance with SW-846 Method 9045D.

10.3 Fixed Laboratory Instrument Calibration

Worksheets #24 and 25 detail the calibration procedures associated with all instruments. These calibration procedures ensure that the analytical methods and selected instrumentation meet project requirements for selectivity, sensitivity, accuracy and precision of quantitation. These calibration procedures are also discussed in the analytical methodologies. It should be noted that data used for definitive data require that the quantitation limit be equivalent to the lowest standard used in the initial calibration.

10.4 Fixed Laboratory Instrument/Equipment Maintenance, Testing and Inspection Requirements

This section describes the procedures and documentation activities that will be performed to ensure that all fixed laboratory instrumentation and equipment are available and in good working order when needed. Worksheets #24 and 25 also detail the fixed laboratory instrument maintenance, testing, and inspection requirements. Equipment maintenance logs must be kept and equipment must be checked prior to use.

The maintenance responsibilities for fixed laboratory instruments will be assigned to the Laboratory Section Managers. Laboratory analysts will be responsible for daily checks and calibrations and for reporting any problems with the instruments. The maintenance schedule will follow the manufacturer's recommendations. Laboratory personnel will also be responsible for ensuring that critical parts are kept with the fixed laboratory instruments. Critical spare parts will be immediately available to reduce potential downtime. The inventory will primarily

contain parts that are subject to frequent failure, have limited useful lifetimes, and/or cannot be obtained in a timely manner.

Annual preventative maintenance service visits will involve cleaning, adjusting, inspecting, and testing procedures designed to minimize product failure and/or extend the product's life. Between visits, laboratory analysts will be responsible for performing routine operator maintenance and cleaning in accordance with the manufacturer's specifications.

10.5 Fixed Analytical Inspection and Acceptance Requirements for Supplies/Sample Containers

Critical supplies and sample containers will be inspected in the following manner.

Critical Supplies and Consumables	Inspection Requirements and Acceptance Criteria	Responsible Individual
Sample bottles	Visually inspected upon receipt for cracks, breakage, cleanliness. Must be accompanied by certificate of analysis.	Sample Custodian
Chemicals and reagents	Visually inspected for proper labeling, expiration dates, appropriate grade Record lot numbers of reagents used for standard preparation.	Laboratory Analyst

Supplies and consumables not meeting acceptance criteria will result in the initiation of the appropriate corrective action. Corrective measures may include notification of vendor and subsequent replacement of defective or inappropriate materials. All actions will be documented in the project files.

The use of materials of known purity and quality will be utilized for the calibration of all instruments as part of this project. The laboratories will carefully monitor the use of all laboratory materials including solutions, standards and reagents through well documented procedures.

All solid chemicals and acids/bases used by the laboratories will be reagent grade or better. All gases will be high purity or better. All standards or standard solutions will be obtained from U.S. EPA-certified commercial sources.

All materials including standards or standard solutions will be dated upon receipt, and will be identified by material name, lot number, purity or concentration, supplier, receipt/preparation date, recipient/preparer's name, and expiration date.

Standards or standard solution concentrations will be validated prior to use. This validation may be restandardization for acids and bases, response factor comparison, standard curve response, comparison to other standards made at a different time and/or by a different analyst. All

standards and standard materials will be checked for signs of deterioration including unusual volume changes (solvent loss), discoloration, formation of precipitates or changes in analyte response. All standards and standard solutions will be properly stored and handled and will be labeled with all appropriate information including compound/solution name, concentration, solvent, expiration date, preparation date, and the initials of the preparer.

All solvent materials or materials used as part of a given procedure will also be checked. Each new lot of solvent will be analyzed to ensure the absence of interference.

QAPP Worksheet #23

Analytical SOP References Table

Reference Number	Title, Revision Date and/or Number[1]	Definitive or Screening Data	Analytical Group	Instrument	Organization Performing Analysis	Modified for Project Work Y or N
L-1	USEPA. Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry. SW846 Method 8260B, Revision 2. December 1996.	Definitive	VOCs	GC/MS	Accutest Laboratories	N
L-2	USEPA. Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry. SW846 Method 8270D, Revision 4. February 2007. Preparation method: Soil/Sediment: USEPA. Ultrasonic Extraction. SW846 Method 3550C, Revision 3, February 2007.	Definitive	SVOCs	GC/MS	Accutest Laboratories	N
L-3	USEPA. Organochiorine Pesticides by Gas Chromatography. SW846 Method 8081B, Revision 2, February 2007. Preparation method: Soil/Sediment: USEPA. Pressurized Fluid Extraction (PFE). SW846 Method 3545A, Revision 1, February 2007.	Definitive	Pesticides	GC/ECD	Accutest Laboratories	N
L-4	USEPA. Polychlorinated Biphenyls (PCB) by Gas Chromatography. SW846 Method 8082A, Revision 1, February 2007. Preparation method: Soil/Sediment: USEPA. Pressurized Fluid Extraction (PFE). SW846 Method 3545A, Revision 1, February 2007.	Definitive	PCB Aroclors	GC/ECD	Accutest Laboratories	N

QAPP Worksheet #23

Analytical SOP References Table

Reference Number	Title, Revision Date and/or Number[1]	Definitive or Screening Data	Analytical Group	Instrument	Organization Performing Analysis	Modified for Project Work Y or N
L-5	USEPA. Inductively Coupled Plasma-Atomic Emission Spectrometry. SW846 Method 6010C, Revision 3, February 2007. USEPA. Mercury in Solid or Semisolid Waste (Manual Cold-Vapor Technique). SW846 Method 7471B, Revision 2. February 2007. USEPA. Mercury in Liquid Waste (Manual Cold-Vapor Technique). SW846 Method 7470A, Revision 1. September 1994. Preparation methods: Surface Water: USEPA. Acid Digestion of Aqueous Samples and Extracts for Total Metals for Analysis by FLAA or ICP Spectroscopy. SW846 Method 3010A, Revision 1. July 1992. Soil/Sediment: USEPA. Acid Digestion of Sediments, Sludges, and Soils. SW846 Method 3050B, Revision 2. December 1996.	Definitive	Metals	ICP/AES, CVAA	Accutest Laboratories	N
L-6	USEPA. Total Organic Carbon. SW846 Method 9060A, Revision 1. November 2004.	Definitive	TOC	Elemental Analyzer	Accutest Laboratories	N
L-7	ASTM. Standard Test Method for Particle-Size Analysis of Soils, Method D422-63, 2002.	Definitive	Grain Size	NA	Accutest Laboratories	N

QAPP Worksheet #23

Analytical SOP References Table

Reference Number	Title, Revision Date and/or Number[1]	Definitive or Screening Data	Analytical Group	Instrument	Organization Performing Analysis	Modified for Project Work Y or N
L-8	USEPA. Inductively Coupled Plasma-Mass Spectrometry. SW846 Method 6020A. Revision 1, January 1998. Preparation method: Tissue: USEPA. Microwave Assisted Acid Digesfion of Sediments, Sludges, Soils, and Oils, SW846 Method 3051A, Revision 1, February 2007. Surface Water: USEPA. Acid Digestion of Aqueous Samples and Extracts for Total Metals for Analysis by GFAA Spectroscopy. SW846 Method 3020A, Revision 1. July 1992.	Definitive	Select Metals	ICP/MS	Alpha Analytical Laboratory	N
L-9	USEPA. Soil and Waste pH. SW846 Method 9045D, Revision 4. November 2004.	Definitive	pH	pH Meter	Accutest Laboratories	N
L-10	USEPA. Chromium, Hexavalent (Colorimetric). SW846 Method 7196A, Revision 1. July 1992. Preparation method: Surface water: Not applicable; included in SW846 Method 7196A Soil: USEPA. Alkaline Digestion for Hexavalent Chromium. SW846 Method 3060A, Revision 1. December 1996.	Definitive	Hexavalent Chromium	Spectrophotometer	Accutest Laboratories	N
L-11	ASTM. Standard Practice Oxidation-Reduction Potenfial of Water. ASTM D1498-00.	Definitive	ORP	ORP Probe	Accutest Laboratories	Y[2]
L-12	Standard Methods for the Examination of Water and Wastewater. 19th Edition. Method 2340C, Hardness as CaCO3 by Titration.	Definitive	Hardness	Titration	Accutest Laboratories	N

QAPP Worksheet #23

Analytical SOP References Table

Reference Number	Title, Revision Date and/or Number[1]	Definitive or Screening Data	Analytical Group	Instrument	Organization Performing Analysis	Modified for Project Work Y or N
L-13	Tissue: USEPA. Mercury in Sediment and Tissue Samples by Atomic Fluorescence Spectrometry. SW846 Method 7474, Revision 0. February 2007	Definitive	Mercury	Atomic Fluorescence Spectrometer	Alpha Analytical Laboratory	N
F-1	NJDEP Manual	Screening	VOCs	PID or FID	TRC Environmental	N
F-2	NJDEP Manual	Definitive	pH, DO, temperature, specific conductance, ORP, turbidity, salinity	Horiba U-22 (or equivalent)	TRC Environmental	N

[1]Laboratory SOPs and Field Screening Procedures are included in Appendix E.
[2]Modified to include preparation of soil slurry in accordance with SW-846 Method 9045D (L-9).
GC/MS – Gas Chromatograph/Mass Spectrometer; ICP/AES – Inductively Coupled Plasma/Atomic Emission Spectrometer; CVAA – Cold Vapor Atomic Absorption.
NA – Not Applicable

QAPP Worksheets #24 and 25

Analytical Instrument Calibration, Equipment Maintenance, Testing and Inspection Table

Instrument	Activity	List Maintenance, Testing and Inspection Activities	Frequency of Calibration	Acceptance Criteria	Corrective Action (CA)	Person Responsible for CA	Method/SOP Reference
GC/MS	VOC and SVOC Analysis (see L-1 and L-2)	Daily: Check connections, replace disposables, perform injection port maintenance, and clip column. Perform leak checks as needed	Initial: After instrument set up and when calibration verification fails; minimum 5 points	%RSD <30 for CCCs and minimum RF for SPCCs	Perform necessary equipment maintenance and check calibration standards	GC/MS Analysts: Accutest Laboratories	L-1, L-2
			Continuing: Daily prior to samples and every 12 hours	% D < 20 for CCCs and minimum RF for SPCCs	Perform necessary equipment maintenance and check calibration standards		
GC/ECD	Pesticide and PCB Aroclor Analysis (see L-3 and L-4)	Daily: Check connections, replace disposables, perform injection port maintenance, and clip column. Perform leak checks and clean detector as needed.	Initial: After instrument set up and when calibration verification fails; minimum 5 points or 6 points (non-linear)	%RSD < 20 or r $\geq$ 0.995	Perform necessary equipment maintenance and check calibration standards	GC/ECD Analysts: Accutest Laboratories	L-3, L-4
			Continuing: Daily prior to samples and after every 10 samples or every 12 hours, whichever is more frequent	%D $\leq$ 15;	Perform necessary equipment maintenance and check calibration standards		

QAPP Worksheets #24 and 25

Analytical Instrument Calibration, Equipment Maintenance, Testing and Inspection Table

Instrument	Activity	List Maintenance, Testing and Inspection Activities	Frequency of Calibration	Acceptance Criteria	Corrective Action (CA)	Person Responsible for CA	Method/SOP Reference
ICP-AES, CVAA, Atomic Fluorescence	Metals Analysis (see L-5 and L-13)	ICP: Check argon tank pressure, check tubing and nebulizer daily, clean plasma torch assembly as needed, clean filters as needed, check o-rings daily CVAA: Inspect pump windings daily, rotate and replace if necessary, check gases. Atomic Fluorescence: Inspect pump tubing for signs of wear daily and replace monthly or more frequently, if needed. Clean glass liquid separator when glass appears coated with yellow film. Replace dryer tube annually.	Initial Calibration: ICP: One standard and a blank; daily prior to samples CVAA: Daily prior to samples; 5 standards and blank Atomic Fluorescence: Daily prior to samples; 3 standards and blank	None for ICP CVAA and Atomic Fluorescence: $r \geq 0.995$	Perform necessary equipment maintenance and check calibration standards	Metals Analyst: L-5: Accutest Laboratories L-13: Alpha Analytical Laboratory	L-5, L-13
			Initial Calibration Verification: Daily prior to samples	90-110% of true value	Perform necessary equipment maintenance and check calibration standards		
			Continuing Calibration Verification: Every 10 samples or 2 hours, whichever is more frequent, and at end of analytical run	90-110% of true value for ICP and Atomic Fluorescence; 80-120% of true value for CVAA	Perform necessary equipment maintenance and check calibration standards		
Elemental Analyzer	TOC Analysis (see L-6)	Replace catalyst as needed. Check for leaks and replace o-rings as necessary. Replace injection needle as necessary.	Initial: Monthly; five standards and blank	$r \geq 0.995$	Perform necessary equipment maintenance and check calibration standards	TOC Analyst: Accutest Laboratories	L-6
			Continuing: Prior to sample analysis, every 10 samples or 2 hours, whichever is more frequent, and at the end of the sequence	$\pm$ 10% of true value	Perform necessary equipment maintenance and check calibration standards		

QAPP Worksheets #24 and 25

Analytical Instrument Calibration, Equipment Maintenance, Testing and Inspection Table

Instrument	Activity	List Maintenance, Testing and Inspection Activities	Frequency of Calibration	Acceptance Criteria	Corrective Action (CA)	Person Responsible for CA	Method/SOP Reference
ICP/MS	Metals Analysis (see L-8)	Clean nebulizer as needed, check pump tubing daily, replace disposables as needed, check torch alignment	Initial: Daily, every 24 hours or every time instrument is set up	$r \geq 0.995$	Perform necessary equipment maintenance and check calibration standards	ICP/MS Analyst: Alpha Analytical Laboratory	L-8
			Initial Calibration Verification: immediately after initial calibration	90-110% of true value	Perform necessary equipment maintenance and check calibration standards		
			Continuing Calibration Verification: after every 10 samples or every 2 hours, whichever is more frequent	90-110% of true value	Perform necessary equipment maintenance and check calibration standards		
pH Meter	pH	Condition probe when fluctuations occur.	Prior to sample analysis and every 10 samples, minimum of two points > 3 pH units or more apart	Within 0.2 pH units of the true value	Perfonn necessary equipment maintenance and check calibration standards	Wet Chemistry Analyst: Accutest Laboratories	L-9
Spectrophotometer	Hexavalent Chromium Analysis (see L-10)	Inspect outer and inner chamber for cleanliness daily, check tubing daily, check flow of reagents daily, calibrate by outside vendor annually.	Initial: Prior to sample analysis	$r \geq 0.995$	Perform necessary equipment maintenance and check calibration standards	Wet Chemistry Analyst: Accutest Laboratories	L-10
			Continuing Calibration: After every 10 samples and at end of analytical run	80-120% of true value	Perform necessary equipment maintenance and check calibration standards		

QAPP Worksheets #24 and 25

Analytical Instrument Calibration, Equipment Maintenance, Testing and Inspection Table

Instrument	Activity	List Maintenance, Testing and Inspection Activities	Frequency of Calibration	Acceptance Criteria	Corrective Action (CA)	Person Responsible for CA	Method/SOP Reference
ORP Probe	ORP	Condition probe when fluctuations occur.	Initial Calibration Verification:	90-110% of tme value	Perform necessary equipment maintenance and check calibration standards	Wet Chemistry Analyst: Accutest Laboratories	L-11
			Continuing Calibration Verification: after every 10 samples and at end of analytical mn	90-110% of true value	Perform necessary equipment maintenance and check calibration standards		

NA – Not Applicable

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11.0 SAMPLE COLLECTION DOCUMENTATION, HANDLING, TRACKING AND CUSTODY PROCEDURES

11.1 Sample Collection Documentation

This section of the QAPP describes field documentation procedures that will be followed for this project. Records of field data will be made throughout the project to document critical data that might be needed at a later time, such as during preparation of the report, or for use by other investigators who were not present when the data were collected.

Field data will be recorded on the following logs, forms, and/or notebooks.

- Daily Personnel Logs
- Field Notebooks
- Field Data Forms
- Photographs
- Equipment Calibration Logs
- Health and Safety Logs

The TRC Field Team Manager has the responsibility to maintain the various logs, forms, and notebooks that document daily field activities as discussed below. Individual responsibilities will be delegated to other field staff, as appropriate. Special emphasis will be placed on the completeness and accuracy of all information recorded in the field, and will contain statements that are legible, accurate, and include documentation of project activities. Because the logbooks, field data forms, and chain-of-custody forms provide the basis for future reports, they must contain accurate facts and observations. The language used in recording all field data will be objective, factual, and free of personal interpretations or other terminology that may prove inappropriate.

The following sections describe how data collected in the field will be documented, tracked, and controlled.

Daily Personnel Log

A log will be maintained to record the identities of all personnel who are on-site for the duration of the project. The log will record the following information.

- Names of field personnel
- Names of subcontractor personnel
- Names of visitors
- Affiliation of field personnel
- Time of entry and exit.

Field Logbooks

Field logbooks will provide the means of recording the chronology of data collection activities performed during the investigation. As such, entries will be described in as much detail as possible so that a particular situation could be reconstructed without reliance on memory.

Field logbooks will be bound field survey books or notebooks. Logbooks will be assigned to field personnel, but will be stored in the project files when not in use. Each logbook will be identified by the project-specific document number. All logbooks will be water resistant and have sequentially numbered pages.

The title page of each logbook will contain the following:

- Person to whom the logbook is assigned,
- The logbook number,
- Project name and number,
- Site name and location,
- Site location by longitude and latitude, if known,
- Project start date, and
- End date.

Entries into the logbook will contain a variety of information. At the beginning of each entry, the date, start time, weather, and names of all sampling team members present will be entered. Each page of the logbook will be signed and dated by the person making the entry. All entries will be made in permanent ink, signed, and dated and no erasures or obliterations will be made. If an incorrect entry is made, the information will be crossed out with a single strike mark which is signed and dated by the sampler. The correction shall be written adjacent to the error.

Field activities will be fully documented. Information included in the logbook will include, but may not be limited to,

- Chronology of activities, including entry and exit times,
- Names of all people involved in sampling activities and organizational affiliations,
- Level of personal protection used,
- Any changes made to planned protocol,
- Names of visitors to the site during sampling and reason for their visit,
- Sample location and identification,
- Weather conditions, including temperature and relative humidity,
- Dates (month/day/year) and times (military) of sample collection,
- Measurement equipment identification (model/manufacturer) and calibration information,
- Field screening results,
- Site observations,
- Sample collection methods and equipment,
- Sample collection date and time,
- Sample depths,
- Whether grab or composite sample collected,

- How sample composited, if applicable,
- Sample description (color, odor, texture, etc.),
- Sample identification code,
- Tests or analyses to be performed,
- Sample preservation and storage conditions,
- Equipment decontamination procedures,
- QC sample collection,
- Unusual observations,
- Record of photographs,
- Sketches or diagrams, and
- Signature of person recording the information

Field logbooks will be reviewed on a daily basis by the TRC Field Team Manager. Logbooks will be supported by standardized forms. Examples of the forms are presented in Appendix B.

Separate field logbooks may be issued for each field team or field task in order to preserve a contemporaneous streaming record of each field activity. Each field logbook will be numbered, and a log will be kept denoting the date each notebook was issued, and the field activity corresponding to each notebook.

Upon receipt of the field logbook for a particular activity, the designated person recording the notes will begin recording notes on a new page. The person recording the notes will indicate the date, time, and weather conditions, prior to recording information about the field activity. The field logbook will indicate whether any Field Data Forms are used and the serial numbers of all forms will be recorded for reference. When the designated person recording the notes either relinquishes the field logbook to another team member or turns the book in at the end of the day, the person relinquishing the field logbook will affix a signature and date to the bottom of the last page used. If the page is not complete, a diagonal line will be struck across the blank portion of the page.

Field Data Forms

Appendix B presents example forms that may be used to record basic information from certain common field activities. These forms were designed to minimize the potential for critical data loss from the field. Field personnel are instructed to utilize these forms to record critical data during the field activities for which each form was designed. A stockpile of sequentially numbered blank forms will be kept in the field. As forms are completed, they will be kept in a three-ring notebook in the field. When field work is completed, this notebook will be kept in the office.

As with the field logbooks, all documentation will be recorded in permanent ink. Corrections to errors in documentation or recorded calculations will be made by first striking out the error with a single line so as not to obliterate the original entry. Then the replacement entry or value will be inserted where appropriate. The person originating the change will initial and date each separate change. All revisions, deletions, and changes will be made in indelible ink.

Photographs

Field personnel will be instructed to photo-document field activifies where possible. Examples of items that may require photographic documentation include:

- General site topography
- Sampling locations
- Existing monitoring locations
- Physical appearance of soil, surface water, sediment, aquatic vegetation, aquatic invertebrates, terrestrial invertebrates, and earthworms

A field logbook entry or Photograph Log will be used to record the date and time of all photographs taken at the site.

Equipment Calibration Log

A field logbook entry or daily log will be used to record which instruments were calibrated each day (identified by manufacturer, model number and serial number), the individual who performed the calibration, and any notes regarding the maintenance of the instrument.

Health and Safety

Health and safety procedures and documentation will follow the OU1 and OU2 Health and Safety Plan. A field logbook entry or a Health and Safety Log will be used to record any Health and Safety issues that arise during field activities. Any injuries, illnesses, use of first aid supplies, use of personal protective equipment (for levels A, B or C only, if needed), or possible work-related symptoms will be recorded in the log together with the date, the name(s) of the affected individual(s), and a description of the incident.

11.2 Field Documentation Management System

The TRC Field Team Manager will maintain an inventory of all logbooks used during the program and will be responsible for ensuring that they are archived in the project files following the completion of the investigation.

Completed standardized forms will be maintained by the TRC Field Team Manager during the duration of the program and will be archived in the project files following completion of the sampling effort.

11.2.1 Sample Handling and Tracking System

This section documents the procedures that will be followed to identify and track samples collected in the field, samples delivered or shipped to a fixed laboratory for analysis, and sample transfer throughout the laboratory. Worksheet #26 summarizes these procedures.

11.2.2 Sample Identification and Labeling

The establishment of a standard sample designation/labeling protocol is essential to ensure adequate quality assurance/quality control and to allow tracking of each sample and the associated analytical data. Proper labeling allows for the tracking of samples beginning from the time of sample collection, through analysis, and following project completion should future data correlation be deemed necessary. The proper labeling of samples is also critical in ensuring that samples are analyzed within the required sample holding times.

All samples will be identified using a unique sample identification scheme suitable to the project and the sampling protocol. The numbering scheme to be used is presented in Worksheets #18-1 through 18-7. Samples labels will include the following information:

- Site name and designated project number;
- Sampling location;
- Sample matrix (media type);
- Sample identification number;
- Date and time the sample was collected;
- Sample preservation method;
- Sample pH (if appropriate);
- Analytical method requested; and
- Laboratory turnaround (standard or expedited)

The sample identification number will be recorded on the chain-of-custody forms accompanying each sample shipment submitted for analysis and will be recorded in the field logbooks.

11.3 Sample Preservation, Containerization, and Shipping

Summaries of sample containers, required sample volumes, preservation, and holding time requirements for all samples are presented in Worksheet #19.

Samples will be shipped to the laboratory via Federal Express within twenty-four to forty-eight hours of sample collection using the overnight delivery service with coolers under custody seal or via courier service. If analytical holding times are 24 hours-48 hours from time of sample collection or if samples need to be preserved at the laboratory, samples will be shipped or picked up within 24 hours of sample collection using the overnight service or courier service, respectively. Aqueous samples for hexavalent chromium analysis will be picked up using courier service within a few hours of being collected.

11.4 Sample Custody

Custody is one of several factors that are necessary for the admissibility of environmental data as evidence in a court of law. Custody procedures help to satisfy the two major requirements for admissibility: relevance and authenticity. Sample custody is addressed in three parts: field

sample collection, laboratory analysis, and final evidence files. Worksheet #27 summarizes sample custody requirements.

A sample or evidence file is considered to be under a person's custody if

- the item is in the actual possession of a person;
- the item is in the view of the person after being in actual possession of the person;
- the item was in the actual physical possession of the person but is locked up to prevent tampering; and
- the item is in a designated and identified secure area.

11.4.1 Field Sample Custody

Sample handling is an important part of the field investigation program since samples that are incorrectly handled can affect the quality of data. Sample handling begins at the collection of the samples and continues until the sample has been analyzed. An overriding consideration essential for the validation of environmental measurement data is the necessity to demonstrate that samples have been obtained from the locations stated and that they have reached the laboratory without alteration. Evidence of sample tracking from collection to shipment, laboratory receipt, and laboratory custody (until proper sample disposal and the introduction of field investigation results as evidence in legal proceedings when pertinent) must be documented.

Sample chain-of-custody and packaging procedures are summarized below. These procedures will ensure that the samples will arrive at the laboratory with the chain-of-custody intact. The TRC Field Team Manager (or designee) is responsible for overseeing and supervising the implementation of proper sample custody procedures in the field and up until the samples haye been transferred to a courier. The chain-of-custody procedures are initiated in the field immediately following sample collection. The procedures consist of: (1) preparing and attaching a unique sample label to each sample collected; (2) completing the chain-of-custody form; and (3) preparing and packing the samples for shipment, as described in more detail below.

- The field sampler is personally responsible for the care and custody of the samples until they are transferred or dispatched properly. Field procedures have been designed such that as few people as possible will handle the samples.

- All bottles will be identified by the use of pre-printed adhesive sample labels with site name and location, sample locations, date/time of collection, type of preservation, type of analysis, and sampler's initials. The sample numbering system is presented in Worksheets #18-1 through 18-7 of this QAPP. Figure 11-1 provides an example sample label.

- Sample labels will be completed for each sample using waterproof ink unless prohibited by weather conditions. For example, a logbook notation would explain that a pencil was used to fill out the sample label because the pen would not function in wet weather. In addition, with the exception of VOC vials, sample labels will be covered with clear tape to minimize water damage during transit.

- Samples will be transported in containers (coolers) which will maintain the refrigeration temperature for those parameters for which refrigeration is required.

- Samples will be accompanied by a properly completed chain-of-custody form. The sample numbers and locations will be listed on the chain-of-custody form. When transferring the possession of samples, the individuals relinquishing and receiving will sign, date, and note the time on the record. This record documents the transfer of custody of samples from the sampler to another person, to a mobile laboratory, to the permanent laboratory, or to/from a secure storage location.

- Chain-of-custody records are initiated by the samplers in the field. The field portion of the custody documentation should include: (1) the project name; (2) signatures of samplers; (3) the sample number, date and time of collection, and whether the sample is grab or composite; (4) signatures of individuals involved in sampling; (5) the designation of field duplicate, trip blank and equipment blank samples, and (6) if applicable, air bill or other shipping number.

- All shipments will be accompanied by the chain-of-custody record identifying the contents. The original record will accompany the shipment, and copies will be retained by the sampler and placed in the project files. An example chain-of-custody is included in Figure 11-2.

- Samples will be properly packaged for shipment and dispatched to the laboratory for analysis, with a separate signed custody record enclosed in and secured to the inside top of each sample box or cooler. Shipping containers will be secured for shipment to the laboratory. If an authorized laboratory courier does not pick up the samples from the project site, custody seals will be attached to the front right and back left of the cooler and covered with clear plastic tape after being signed by field personnel. An example of a cooler custody seal is provided in Figure 11-3. Subsequently, the cooler will be strapped shut with strapping tape in at least two locations.

- If the samples are sent by common carrier, the air bill will be used. Air bills will be retained by the laboratory as part of the permanent documentation. Commercial carriers are not required to sign off on the custody forms since the custody forms will be sealed inside the sample cooler and the custody seals will remain intact.

- Samples remain in the custody of the sampler until transfer of custody is completed. This consists of delivery of samples to the laboratory sample custodian, and signature of the laboratory sample custodian on the chain-of-custody document as receiving the samples and signature of sampler as relinquishing samples.

11.4.2 Laboratory Sample Custody

Samples will be received and logged in by a designated sample custodian or his/her designee. Upon sample receipt, the sample custodian will

- Examine the shipping containers to verify that the custody tape is intact,

- Examine all sample containers for damage,
- Determine if the temperature required for the requested testing program has been maintained during shipment and document the temperature on the chain-of-custody or sample login records,
- Compare samples received against those listed on the chain-of-custody,
- Verify that sample holding times have not been exceeded,
- Examine all shipping records for accuracy and completeness,
- Determine sample pH (if applicable) and record on chain-of-custody or sample login forms,
- Sign and date the chain-of-custody immediately (if shipment is accepted) and attach the air bill,
- Note any problems associated with the coolers and/or samples on the cooler receipt form and notify the Laboratory Project Manager, who will be responsible for contacting the TRC Project QA Manager,
- Attach laboratory sample container labels with unique laboratory identification and test, and
- Place the samples in the proper laboratory storage.

Following receipt, samples will be logged in according to the following procedure:

- The samples will be entered into the laboratory tracking system. At a minimum, the following information will be entered: project name or identification, unique sample numbers (both client and internal laboratory), type of sample, required tests, date and time of laboratory receipt of samples, and field identification provided by field personnel.
- The Laboratory Project Manager will be notified of sample arrival.
- The completed chain-of-custody, air bills, and any additional documentation will be placed in the final evidence file.

Figure 11-1 Sample Label

Figure 11-1

Sample Label

CLIENT/SOURCE	☐ GRAB ☐ COMPOSITE OTHER
SITE NAME	DATE
SAMPLE #	TIME
ANALYSIS	PRESERVATIVE
	COLL. BY

Figure 11-2 Chain-of-Custody

CNAIN OF CUSTODY/REQUEST FOR ANALYSIS

Site Name	Project Manager	Company TRC Raviv Associates, Inc.	Address S7 East Willow Street
Site Location	TRC Job No.	City: Millburn State: New Jersey	Phone: 973-564-6006 Fax: 973-564-6442

Sample Identification							Number of Preserved Bottles								Sample Analysis													
Lab ID Number (for Lab use only)	Sample Designation	Media (SOIL / GW / LEAC / DW / SED / SW / AIR)	Collection Date	Collection Time (military time)	Sampler's Initials	# of Bottles	None	HCL	NaOH	HNO3	H2SO4	NaHSO4	MEOH	ENCORE	PP+40	PHCs - (418.1)	VOCs+10 PPL (GW) - (8260)	VOCs+15 PPL (Soil) - (8260)	BNs+15 PPL - (8270)	ABN+25 PPL (8270) - (8270)	PAHs - (8270)	PP- Metals (6010B+7471 (GW) 7470(S))	PCBs - (8082)				Comments	Turnaround Time (days)

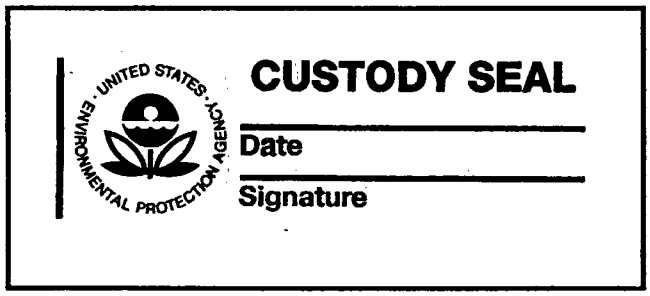
Special Instructions:	Deliverables: ☐ Full CLP (Level I) ☐ Full Non-CLP (Level II) ☐ NJDEP Electronic Format ☐ Reduced CLP (Level III) ☐ Reduced Non-CLP (Level IV) ☐ TRC Database Format
Project Manager Signature:	

Relinquished by 1)	Company	Date/Time	Received by 1)	Company	Date/Time
Relinquished by 2)	Company	Date/Time	Received by 2)	Company	Date/Time

Figure 11-3 Custody Seal

Figure 11-3

Custody Seal



QAPP Worksheet #26

Sample Handling System

SAMPLE COLLECTION, PACKAGING, AND SHIPMENT
Sample Collection (Personnel/Organization): Field Team Manager and Field Staff/TRC
Sample Packaging (Personnel/Organization): Field Team Manager and Field Staff/TRC
Coordination of Shipment (Personnel/Organization): Field Team Manager/TRC
Type of Shipment/Carrier: Federal Express/Courier Service
SAMPLE RECEIPT AND ANALYSIS
Sample Receipt (Personnel/Organization): Dave Hunkele/Accutest Laboratories, Dianne Janak/Alpha Analytical Laboratory
Sample Custody and Storage (Personnel/Organization): Dave Hunkele/Accutest Laboratories, Dianne Janak /Alpha Analytical Laboratory
Sample Preparation (Personnel/Organization): Laboratory Technicians/Accutest Laboratories, Alpha Analytical Laboratory
Sample Determinative Analysis (Personnel/Organization): Laboratory Analysts/Accutest Laboratories, Alpha Analytical Laboratory
SAMPLE ARCHIVING
Field Sample Storage (No. of days from sample collection): 60 days after delivery of data package
Sample Extract/Digestate Storage (No. of days from extraction/digestion): 60 days after delivery of data package
Biological Sample Storage (No. of days from sample collection): 60 days after delivery of data package
SAMPLE DISPOSAL
Personnel/Organization: Laboratory Technicians/Accutest Laboratories, Alpha Analytical Laboratory
Number of Days from Analysis: 60 days after delivery of data package

QAPP Worksheet #27

Sample Custody Requirements

Field Sample Custody Procedures (sample collection, packaging, shipment, and delivery to laboratory): Refer to Section 11.4.1
Laboratory Sample Custody Procedures (receipt of samples, archiving, disposal): Refer to Section 11.4.2 and Worksheet #26
Sample Identification Procedures: Refer to Section 11.2.2 and Worksheets #18-1 through 18-7.
Chain-of-Custody Procedures: Refer to Section 11.4

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12.0 QUALITY CONTROL SAMPLES

12.1 Sampling Quality Control

This section of the QAPP identifies the QC procedures, checks, and samples that will be used to monitor the quality of various aspects of the sampling event. Their required analysis frequency, acceptance limits and corrective actions are also documented in this section of the QAPP. Worksheets #12-1 through 12-12 summarize this information for each matrix, analytical parameter and sampling method. It should be noted that Bottle Blanks are not being submitted for analysis during this investigation. All bottles will be certified clean from the manufacturer and the certifications will be stored in the project file. Potential contaminants due to the sample containers will also be detected in the equipment blanks, as discussed below.

12.1.1 Equipment Blanks

Intemal quality control checks will include analysis of equipment blanks to check for procedural contamination at the site that may cause sample contamination. Equipment blanks will be prepared by routing deionized water through sampling equipment after equipment decontamination and before field sample collection. Equipment blanks will be submitted at a frequency of one per twenty samples per matrix and per parameter. It should be noted that equipment blanks will not be collected for the following parameters:

- VOCs in soil due to the lack of equipment used in collection (i.e., limited to EnCore® samplers).
- TOC, pH, and ORP in sediment and/or soil due to the nature of the analysis and intended use of the data.
- Geotechnical parameters associated with sediment samples (e.g., grain size).
- All parameters associated with surface water samples due to the lack of equipment used in collection (i.e., direct filling of sample bottles for each parameter).

12.1.2 Cooler Temperature Blanks

Cooler temperature blanks consist of a sample container filled with non-preserved water (potable or distilled) and are included in all coolers which contain samples which require temperature preservation. The laboratory uses these temperature blanks to ensure that proper preservation of the samples has been maintained during sample shipment. The temperature of these blanks must be 4 °C ±2° to demonstrate that proper preservation has been maintained. The laboratory records the results of the temperature blanks on the chain-of-custody or sample login form immediately upon receipt of the samples at the laboratory, prior to inventory and refrigeration.

12.1.3 Trip Blanks

For water samples, trip blank samples will be prepared by filling three 40-mL VOA vials with ASTM Type II or equivalent water and preserving the samples with HCl to a pH <2. Trip blank samples will be submitted to the laboratory with every cooler containing aqueous VOC samples

and will only be analyzed for VOCs. Trip blanks will be used to evaluate contamination introduced during shipment.

12.1.4 Field Duplicates

Field duplicates, or duplicate subsamples, are an additional aliquot of the same sample submitted for the same parameters as the original sample. Field duplicates will be used to assess the sampling and analytical reproducibility. Field duplicates will be collected by alternately filling sample bottles from the source being sampled. Field duplicates will be submitted at a frequency of one per twenty investigative samples, per matrix and analytical parameter. However, field duplicates will not be collected with the aquatic vegetation, aquatic invertebrate, terrestrial invertebrate, and earthworm samples.

12.2 Analytical Quality Control

This section identifies the QC procedures, checks, and samples, and their respective acceptance limits, that will be used during the project to monitor the quality of various preparatory and analytical steps. Worksheets #28-1 through 28-11 summarize this information for each matrix and analytical parameter where QC procedures are required.

12.2.1 Field Analytical QC

12.2.1.1 Instrument Blanks

Instrument blanks will be performed with the FID/PID monitoring using a zero air gas. VOCs must be below background. The instrument blank must be analyzed on each working day before sample analyses are conducted and when instrument contamination is suspected.

12.2.2 Fixed Laboratory QC

All required QC checks, QC samples and the associated QC acceptance limits are detailed in the associated analytical methods.

12.2.2.1 Method Blanks

Method blanks will be performed as part of each analytical batch for each methodology performed. Method blanks are used to evaluate contamination introduced during sample preparation and/or analysis by the laboratory.

12.2.2.2 Instrument Blanks

Instrument blanks are used to evaluate contamination resulting from the analytical reagents and the instrumentation. In addition, instrument blanks are sometimes used to assess potential carryover after the analysis of a highly contaminated sample. Instrument blanks are only required for select analytical parameters.

12.2.2.3 Matrix Spike Samples

The matrix spike samples are used to determine laboratory preparation and analysis bias for specific compounds in specific matrices (i.e., sample specific QC). Matrix spikes are typically performed at a frequency of one per twenty investigative samples.

12.2.2.4 Surrogate Spikes

Surrogate spikes are used to evaluate extraction efficiency or analytical bias on a sample by sample basis for organic parameters. Surrogate spikes are added to all samples for organic parameters. Surrogate spikes are another measure of sample-specific QC.

12.2.2.5 Laboratory Control Samples

Laboratory control samples (LCSs) are used to evaluate all parameters for the ability of the laboratory to accurately identify and quantitate target compounds in a reference matrix when spiked a known concentration using a secondary source standard. LCSs are typically performed as part of each analytical batch for each methodology. LCSs are also a self-check for the laboratory to ensure the method is in compliance.

12.2.2.6 Laboratory Duplicate

Laboratory duplicates are used to evaluate laboratory preparation and analysis precision. These analyses are typically performed for inorganic parameters only. Laboratory duplicates are typically performed at a frequency of one per twenty samples per matrix.

12.2.2.7 Matrix Spike Duplicate Samples

Matrix spike duplicates (MSDs) are used to evaluate laboratory preparation and analysis bias and precision for specific compounds in specific sample matrices (i.e., sample specific QC). MSDs are typically performed for organic parameters only.

12.2.2.8 Internal Standards

Internal standards are used to assess the analytical accuracy, precision, and stability. Internal standards are typically only used for organic analyses and ICP/MS analyses. Internal standards are spiked into all samples and are considered a sample-specific QC measure.

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QAPP Worksheet #28-1

QC Samples Table

Matrix	Soil					
Analytical Group	VOCs					
Concentration Level	High					
Analytical Method/ SOP Reference	L-1					
Sampler's Name	TBD					
Field Sampling Organization	TRC					
Laboratory Name	Accutest Laboratories					
No. of Sample Locations	15					
Laboratory QC:	Frequency/ Number	Method/SOP QC Acceptance Limits	Corrective Action (CA)	Person(s) Responsible for CA	Data Quality Indicator (DQI)	Measurement Performance Criteria
Method Blank	One every 12 hours after the continuing calibration standard	No target compounds ≥ QL (except methylene chloride and cyclohexane < 2.5x QL and acetone and 2-butanone < 5xQL)	Reclean, retest, reanalyze, and/or qualify data	Analyst and Data Validator	Accuracy/bias-Contamination	No target compounds ≥ QL (except methylene chloride and cyclohexane < 2.5x QL and acetone and 2-butanone < 5xQL)
Reagent Blank	NA	NA	NA	NA	NA	NA
Storage Blank	NA	NA	NA	NA	NA	NA
Instrument Blank	As needed to assess carryover from high concentration samples	No target compounds ≥ QL	Reclean, retest, reanalyze, and/or qualify data	Analyst and Data Validator	Accuracy/bias-Contamination	No target compounds ≥ QL
Matrix Spike	One per 20 samples	Percent recoveries as per Worksheet #12-1	Reanalyze and qualify data	Analyst and Data Validator	Accuracy/bias	Percent recoveries as per Worksheet #12-1
Matrix Spike Duplicates	One per 20 samples	Percent recoveries and RPDs as per Worksheet #12-1	Reanalyze and qualify data	Analyst and Data Validator	Accuracy/bias and Precision	Percent recoveries and RPDs as per Worksheet #12-1
LCS	One per extraction batch	Percent recoveries 70-130%	Determine cause of problem, reanalyze and/or qualify data	Analyst and Data Validator	Accuracy/bias	Percent recoveries 70-130%
Surrogates	3 per sample	Percent recoveries as per Worksheet #12-1	Determine cause of problem, reanalyze and/or qualify data	Analyst and Data Validator	Accuracy/bias	Percent recoveries as per Worksheet #12-1
Internal Standards (ISs)	3 per sample	Area counts: -50% ±100% of areas in associated continuing calibration standard Retention times: ± 30 seconds from retention times in associated continuing calibration standard	Reanalyze and qualify data	Analyst and Data Validator	Accuracy/bias and Precision	Area counts: -50% ±100% of areas in associated continuing calibration standard Retention times: ± 30 seconds from retention times in associated continuing calibration standard
Cooler Temperature Blank	One per cooler	Cooler temperature 4°C ± 2°	Contact client and qualify data.	Sample Receipt Personnel and Data Validator	Accuracy/bias	Cooler temperature 4°C ± 2°

NA = Not Applicable TBD = To Be Determined

QAPP Worksheet #28-2

QC Samples Table

Matrix	Soil/Sediment/Tissue					
Analytical Group	Metals					
Concentration Level	Low					
Analytical Method/ SOP Reference	L-5, L-8, L-13					
Sampler's Name	TBD					
Field Sampling Organization	TRC					
Laboratory Name	L-5 (soil/sediment): Accutest Laboratories L-8, L-13 (tissue): Alpha Analytical Laboratory					
No. of Sample Locations	58 soil; 37 sediment; 36 tissue					
Laboratory QC:	Frequency/ Number	Method/SOP QC Acceptance Limits	Corrective Action (CA)	Person(s) Responsible for CA	Data Quality Indicator (DQI)	Measurement Performance Criteria
Method Blank	One per preparation batch	No target compounds ≥ QL	Reclean, retest, reanalyze, and/or qualify data	Analyst and Data Validator	Accuracy/bias-Contamination	No target compounds ≥ QL
Reagent Blank**	ICB: immediately after ICV CCB: every 10 samples immediately after CCV	No target compounds ≥ QL	Reclean, retest, reanalyze, and/or qualify data	Analyst and Data Validator	Accuracy/bias-Contamination	No target compounds ≥ QL
Equipment Blank	One per 20 samples per soil and sediment	No target compounds ≥ QL	Qualify data	Data Validator	Accuracy/bias-Contamination	No target compounds ≥ QL
Instrument Blank	NA	NA	NA	NA	NA	NA
Laboratory Duplicate	One per 20 samples	RPD ≤ 35 if results ≥ 5x QL	Qualify data	Analyst and Data Validator	Precision	RPD ≤ 35 if results ≥ 5x QL
Matrix Spike	One per 20 samples	L-5, L-8: Percent recoveries 75-125% L-13: Percent recoveries 80-120%	Qualify data	Analyst and Data Validator	Accuracy/bias	L-5, L-8: Percent recoveries 75-125% L-13: Percent recoveries 80-120%
Matrix Spike Duplicates	NA	NA	NA	NA	NA	NA
LCS	One per batch	L-5, L-8: Within EPA or vendor control limits L-13: Percent recoveries 80-120%	Determine cause of problem, reprep, reanalyze, and/or qualify data	Analyst and Data Validator	Accuracy/bias	L-5, L-8: Within EPA or vendor control limits L-13: Percent recoveries 80-120%
Surrogates	NA	NA	NA	NA	NA	NA
Other: Interference Check Sample	Beginning of run or every 8 hours	Percent recoveries 80-120%	Recalibrate and reanalyze and/or qualify data	Analyst and Data Validator	Accuracy/bias	Percent recoveries 80-120%

QAPP Worksheet #28-2

QC Samples Table

Matrix	Soil/Sediment/Tissue					
Analytical Group	Metals					
Concentration Level	Low					
Analytical Method/ SOP Reference	L-5, L-8, L-13					
Sampler's Name	TBD					
Field Sampling Organization	TRC					
Laboratory Name	L-5 (soil/sediment): Accutest Laboratories L-8, L-13 (tissue): Alpha Analytical Laboratory					
No. of Sample Locations	58 soil; 37 sediment; 36 tissue					
Laboratory QC:	Frequency/ Number	Method/SOP QC Acceptance Limits	Corrective Action (CA)	Person(s) Responsible for CA	Data Quality Indicator (DQI)	Measurement Performance Criteria
Other: Serial Dilution	One per 20 samples	Within 10% of original determination	Qualify data	Analyst and Data Validator	Accuracy/bias	Within 10% of original detennination
Other: QL Check Standard	Beginning and end of analytical sequence	Percent recoveries 70-130% (50-150% for cobalt, manganese, and zinc)	Recalibrate and reanalyze and/or qualify data	Analyst and Data Validator	Sensitivity and Accuracy/bias	Percent recoveries 70-130% (50-150% for cobalt, manganese, and zinc)
Internal Standards (ISs) (ICP/MS only)	Every sample	30-120% of IS in calibration standard	Dilute sample 5x, add IS and reanalyze, and/or qualify data	Analyst and Data Validator	Accuracy/bias	30-120% of IS in calibration standard
Cooler Temperature Blank	One per cooler	Cooler temperature 4°C ± 2°	Contact client and qualify data.	Sample Receipt Personnel and Data Validator	Accuracy/bias	Cooler temperature 4°C ± 2°

** Also referred to as initial and continuing calibration blanks. NA = Not Applicable TBD = To Be Determined

QAPP Worksheet #28-3

QC Samples Table

Matrix	Soil/Sediment					
Analytical Group	SVOCs					
Concentration Level	Low					
Analytical Method/ SOP Reference	L-2					
Sampler's Name	TBD					
Field Sampling Organization	TRC					
Laboratory Name	Accutest Laboratories					
No. of Sample Locations	14 soil; 21 sediment					
Laboratory QC:	Frequency/ Number	Method/SOP QC Acceptance Limits	Corrective Action (CA)	Person(s) Responsible for CA	Data Quality Indicator (DQI)	Measurement Performance Criteria
Method Blank	One every extraction batch	No target compounds ≥ QL (except phthalates must be ≤ 5x QL)	Reclean, retest, re-extract, reanalyze, and/or qualify data	Analyst and Data Validator	Accuracy/bias-Contamination	No target compounds ≥ QL (except phthalates must be ≤ 5x QL)
Equipment Blank	One per 20 samples per soil and sediment	No target compounds ≥ QL (except phthalates must be ≤ 5x QL)	Qualify data	Data Validator	Accuracy/bias-Contamination	No target compounds ≥ QL (except phthalates must be ≤ 5x QL)
Storage Blank	NA	NA	NA	NA	NA	NA
Instrument Blank	As needed to assess carryover from high concentration samples	No target compounds ≥ QL (except phthalates must be ≤ 5x QL)	Reclean, retest, reanalyze, and/or qualify data	Analyst and Data Validator	Accuracy/bias-Contamination	No target compounds ≥ QL (except phthalates must be ≤ 5x QL)
Laboratory Duplicate	NA	NA	NA	NA	NA	NA
Matrix Spike	One per 20 samples	Percent recoveries as per Worksheet #12-2	Reanalyze and qualify data	Analyst and Data Validator	Accuracy/bias	Percent recoveries as per Worksheet #12-2
Matrix Spike Duplicates	One per 20 samples	Percent recoveries and RPDs as per Worksheet #12-2	Reanalyze and qualify data	Analyst and Data Validator	Accuracy/bias and Precision	Percent recoveries and RPDs as per Worksheet #12-2
Surrogates	6 per sample	Percent recoveries as per Worksheet #12-2	Re-extract and reanalyze as and qualify data	Analyst and Data Validator	Accuracy/bias	Percent recoveries as per Worksheet #12-2
LCS	One per extraction batch	Percent recoveries 40-140%	Determine cause of problem, re-extract, reanalyze and/or qualify data	Analyst and Data Validator	Accuracy/bias	Percent recoveries 40-140%
Internal Standards (ISs)	6 per sample	Area counts: -50% ±100% of areas in associated continuing calibration standard Retention times: ± 30 seconds from retention times in associated continuing calibration standard	Reanalyze and qualify data	Analyst and Data Validator	Accuracy/bias and Precision	Area counts: -50% ±100% of areas in associated continuing calibration standard Retention times: ± 30 seconds from retention times in associated continuing calibration standard
Cooler Temperature Blank	Cooler Temperature Blank	One per cooler	Cooler temperature 4°C ± 2°	Contact client and qualify data.	Sample Receipt Personnel and Data Validator	Cooler temperature 4°C ± 2°

NA = Not Applicable
TBD = To Be Determined

QAPP Worksheet #28-4

QC Samples Table

Matrix	Soil/Sediment					
Analytical Group	Pesticides					
Concentration Level	Low					
Analytical Method/ SOP Reference	L-3					
Sampler's Name	TBD					
Field Sampling Organization	TRC					
Laboratory Name	Accutest Laboratories					
No. of Sample Locations	14 soil; 21 sediment					
Laboratary QC:	Frequency/ Number	Method/SOP QC Acceptance Limits	Corrective Action (CA)	Person(s) Responsible for CA	Data Quality Indicator (DQI)	Measurement Performance Criteria
Method Blank	One every extraction batch	No target compounds ≥ QL	Reclean, retest, re-extract, reanalyze, and/or qualify data	Analyst and Data Validator	Accuracy/bias-Contamination	No target compounds ≥ QL
Equipment Blank	One per 20 samples per soil and sediment	No target compounds ≥ QL	Qualify data	Data Validator	Accuracy/bias-Contamination	No target compounds ≥ QL
Storage Blank	NA	NA	NA	NA	NA	NA
Instrument Blank	Every 12 hours after initial calibration or calibration verification	No target compounds ≥ ½ QL	Reclean, retest, reanalyze, and/or qualify data	Analyst and Data Validator	Accuracy/bias-Contamination	No target compounds ≥ ½ QL
Laboratory Duplicate	NA	NA	NA	NA	NA	NA
Matrix Spike	One per 20 samples	Percent recoveries as per Worksheet #12-4	Reanalyze and qualify data	Analyst and Data Validator	Accuracy/bias	Percent recoveries as per Worksheet #12-4
Matrix Spike Duplicates	One per 20 samples	Percent recoveries as per Worksheet #12-4	Reanalyze and qualify data	Analyst and Data Validator	Accuracy/bias and Precision	Percent recoveries as per Worksheet #12-4
LCS	One per extraction batch	Percent recoveries 40-140%	Determine cause of problem, re-extract, reanalyze and/or qualify data	Analyst and Data Validator	Accuracy/bias	Percent recoveries 40-140%
Surrogates	2 per sample	Percent recoveries as per Worksheet #12-4	As specified in method and qualify data	Analyst and Data Validator	Accuracy/bias	Percent recoveries as per Worksheet #12-4
Internal Standards (ISs)	NA	NA	NA	NA	NA	NA
Cooler Temperature Blank	One per cooler	Cooler temperature 4°C ± 2°	Contact client and qualify data.	Sample Receipt Personnel and Data Validator	Accuracy/bias	Cooler temperature 4°C ± 2°
Other: Endrin\DDT Breakdown	Every 12 hours	Percent breakdown ≤ 20 for each compound; combined breakdown ≤ 30	Perform injection port maintenance, retest, reanalyze and/or qualify data	Analyst and Data Validator	Accuracy/bias	Percent breakdown ≤ 20 for each compound; combined breakdown ≤ 30

NA = Not Applicable
TBD = To Be Determined

QAPP Worksheet #28-5

QC Samples Table

Matrix	Soil/Sediment					
Analytical Group	PCB Aroclors					
Concentration Level	Low					
Analytical Method/ SOP Reference	L-4					
Sampler's Name	TBD					
Field Sampling Organization	TRC					
Laboratory Name	Accutest Laboratories					
No. of Sample Locations	14 soil; 21 sediment					
Laboratory QC:	Frequency/ Number	Method/SOP QC Acceptance Limits	Corrective Action (CA)	Person(s) Responsible for CA	Data Quality Indicator (DQI)	Measurement Performance Criteria
Method Blank	One every extraction batch	No target compounds ≥ QL	Reclean, retest, re-extract, reanalyze, and/or qualify data	Analyst and Data Validator	Accuracy/bias-Contamination	No target compounds ≥ QL
Equipment Blank	One per 20 samples per soil and sediment	No target compounds ≥ QL	Qualify data	Data Validator	Accuracy/bias-Contamination	No target compounds ≥ QL
Storage Blank	NA	NA	NA	NA	NA	NA
Instrument Blank	Every 12 hours after initial calibration or calibration verification	No target compounds ≥ ½ QL	Reclean, retest, reanalyze, and/or qualify data	Analyst and Data Validator	Accuracy/bias-Contamination	No target compounds ≥ ½ QL
Laboratory Duplicate	NA	NA	NA	NA	NA	NA
Matrix Spike	One per 20 samples	Percent recoveries as per Worksheet #12-3	Reanalyze and qualify data	Analyst and Data Validator	Accuracy/bias	Percent recoveries as per Worksheet #12-3
Matrix Spike Duplicates	One per 20 samples	Percent recoveries as per Worksheet #12-3	Reanalyze and qualify data	Analyst and Data Validator	Accuracy/bias and Precision	Percent recoveries as per Worksheet #12-3
LCS	One per extraction batch	Percent recoveries 40-140%	Determine cause of problem, re-extract, reanalyze and/or qualify data	Analyst and Data Validator	Accuracy/bias	Percent recoveries 40-140%
Surrogates	2 per sample	Percent recoveries as per Worksheet #12-3	As specified in method and qualify data	Analyst and Data Validator	Accuracy/bias	Percent recoveries as per Worksheet #12-3
Internal Standards (ISs)	NA	NA	NA	NA	NA	NA
Cooler Temperature Blank	One per cooler	Cooler temperature 4°C ± 2°	Contact client and qualify data.	Sample Receipt Personnel and Data Validator	Accuracy/bias	Cooler temperature 4°C ± 2°

NA = Not Applicable
TBD = To Be Determined

QAPP Worksheet #28-6

QC Samples Table

Matrix	Soil/Sediment					
Analytical Group	TOC, pH, and ORP					
Concentration Level	NA					
Analytical Method/ SOP Reference	TOC: L-6 pH: L-9 ORP: L-11					
Sampler's Name	TBD					
Field Sampling Organization	TRC					
Laboratory Name	Accutest Laboratories					
No. of Sample Locations	Sediment: 27 Soil: 46					
Laboratory QC:	Frequency/ Number	Method/SOP QC Acceptance Limits	Corrective Action (CA)	Person(s) Responsible for CA	Data Quality Indicator (DQI)	Measurement Performance Criteria
Method Blank (TOC)	Prior to samples and one per 20 samples	TOC < QL	Reclean, retest, reanalyze, and/or qualify data	Analyst and Data Validator	Accuracy/bias-Contamination	TOC < QL
Storage Blank	NA	NA	NA	NA	NA	NA
Instrument Blank	NA	NA	NA	NA	NA	NA
Laboratory Duplicate	TOC: Every sample pH and ORP: One per 20 samples	TOC: RPD $\leq$ 20 pH and ORP: RPD $\leq$ 5	Reanalyze and qualify data	Analyst and Data Validator	Precision	TOC: RPD $\leq$ 20 pH and ORP: RPD $\leq$ 5
Matrix Spike (TOC)	One per 20 samples	Percent recoveries 75-125%	Reanalyze and qualify data	Analyst and Data Validator	Accuracy/bias	Percent recoveries 75-125%
Matrix Spike Duplicates	NA	NA	NA	NA	NA	NA
LCS (TOC)	One per batch	Percent recoveries 90-110%	Reanalyze and qualify data	Analyst and Data Validator	Accuracy/bias	Percent recoveries 90-110%
Surrogates	NA	NA	NA	NA	NA	NA
Cooler Temperature Blank	One per cooler	Cooler temperature 4°C $\pm$ 2°	Contact client and qualify data.	Sample Receipt Personnel and Data Validator	Accuracy/bias	Cooler temperature 4°C $\pm$ 2°

NA = Not Applicable
TBD = To Be Determined

QAPP Worksheet #28-7

QC Samples Table

Matrix	Soil					
Analytical Group	Hexavalent Chromium					
Concentration Level	Low					
Analytical Method/ SOP Reference	L-10					
Sampler's Name	TBD					
Field Sampling Organization	TRC					
Laboratory Name	Accutest Laboratories					
No. of Sample Locations	38					
Laboratory QC:	Frequency/ Number	Method/SOP QC Acceptance Limits	Corrective Action (CA)	Person(s) Responsible for CA	Data Quality Indicator (DQI)	Measurement Performance Criteria
Method Blank	Prior to samples and one per 20 samples	Hexavalent chromium < QL	Reclean, retest, reanalyze, and/or qualify data	Analyst and Data Validator	Accuracy/bias-Contamination	Hexavalent chromium < QL
Equipment Blank	One per 20 samples	Hexavalent chromium < QL	Qualify data	Data Validator	Accuracy/bias-Contamination	Hexavalent chromium < QL
Instrument Blank	NA	NA	NA	NA	NA	NA
Laboratory Duplicate	One per 20 samples	RPD ≤ 20	Reanalyze and qualify data	Analyst and Data Validator	Precision	RPD ≤ 20
Matrix Spike	One per 20 samples	Percent recoveries 75-125%	Reanalyze and qualify data	Analyst and Data Validator	Accuracy/bias	Percent recoveries 75-125%
Matrix Spike Duplicates	NA	NA	NA	NA	NA	NA
LCS	One per batch	Percent recoveries 80-120%	Reanalyze and qualify data	Analyst and Data Validator	Accuracy/bias	Percent recoveries 80-120%
Surrogates	NA	NA	NA	NA	NA	NA
Cooler Temperature Blank	One per cooler	Cooler temperature 4°C + 2°	Contact client and qualify data.	Sample Receipt Personnel and Data Validator	Accuracy/bias	Cooler temperature 4°C + 2°

NA = Not Applicable
TBD = To Be Determined

QAPP Worksheet #28-8

QC Samples Table

Matrix	Surface Water					
Analytical Group	Hexavalent Chromium (total and dissolved)					
Concentration Level	Low					
Analytical Method/ SOP Reference	L-10					
Sampler's Name	TBD					
Field Sampling Organization	TRC					
Laboratory Name	Accutest Laboratories					
No. of Sample Locations	21					
Laboratory QC:	Frequency/ Number	Method/SOP QC Acceptance Limits	Corrective Action (CA)	Person(s) Responsible for CA	Data Quality Indicator (DQI)	Measurement Performance Criteria
Method Blank	Prior to samples and one per 20 samples	Hexavalent chromium < QL	Reclean, retest, reanalyze, and/or qualify data	Analyst and Data Validator	Accuracy/bias-Contamination	Hexavalent chromium < QL
Storage Blank	NA	NA	NA	NA	NA	NA
Instrument Blank	NA	NA	NA	NA	NA	NA
Laboratory Duplicate	One per 20 samples	RPD ≤ 20	Reanalyze and qualify data	Analyst and Data Validator	Precision	RPD ≤ 20
Matrix Spike	One per 20 samples	Percent recoveries 75-125%	Reanalyze and qualify data	Analyst and Data Validator	Accuracy/bias	Percent recoveries 75-125%
Matrix Spike Duplicates	NA	NA	NA	NA	NA	NA
LCS	One per batch	Percent recoveries 80-120%	Reanalyze and qualify data	Analyst and Data Validator	Accuracy/bias	Percent recoveries 80-120%
Surrogates	NA	NA	NA	NA	NA	NA
Cooler Temperature Blank	One per cooler	Cooler temperature 4°C ± 2°	Contact client and qualify data.	Sample Receipt Personnel and Data Validator	Accuracy/bias	Cooler temperature 4°C ± 2°

NA = Not Applicable
TBD = To Be Determined

QAPP Worksheet #28-9

QC Samples Table

Matrix	Surface Water					
Analytical Group	VOCs					
Concentration Level	Low					
Analytical Method/ SOP Reference	L-I					
Sampler's Name	TBD					
Field Sampling Organization	TRC					
Laboratory Name	Accutest Laboratories					
No. of Sample Locations	19					
Laboratory QC:	Frequency/ Number	Method/SOP QC Acceptance Limits	Corrective Action (CA)	Person(s) Responsible for CA	Data Quality Indicator (DQI)	Measurement Performance Criteria
Method Blank	One every 12 hours before samples	No target compounds > QL (except methylene chloride and cyclohexane < 2.5x QL and acetone and 2-butanone < 5x QL)	Reclean, retest, reanalyze, and/or qualify data	Analyst and Data Validator	Accuracy/bias-Contamination	No target compounds > QL (except methylene chloride and cyclohexane < 2.5x QL and acetone and 2-butanone < 5x QL)
Trip Blank	One per cooler	No target compounds > QL (except methylene chloride and cyclohexane < 2.5x QL and acetone and 2-butanone < 5x QL)	Qualify data	Data Validator	Accuracy/bias-Contamination	No target compounds > QL (except methylene chloride and cyclohexane < 2.5x QL and acetone and 2-butanone < 5x QL)
Storage Blank	NA	NA	NA	NA	NA	NA
Instrument Blank	As needed to assess carryover from high concentration samples	No target compounds ≥ QL	Reclean, retest, reanalyze, and/or qualify data	Analyst and Data Validator	Accuracy/bias-Contamination	No target compounds ≥ QL
Laboratory Duplicate	NA	NA	NA	NA	NA	NA
Matrix Spike	One per 20 samples	Percent recoveries as per Worksheet #12-9	Reanalyze and qualify data	Analyst and Data Validator	Accuracy/bias	Percent recoveries as per Worksheet #12-9
Matrix Spike Duplicates	One per 20 samples	Percent recoveries and RPDs as per Worksheet #12-9	Reanalyze and qualify data	Analyst and Data Validator	Accuracy/bias and Precision	Percent recoveries and RPDs as per Worksheet #12-9
Surrogates	4 per sample	Percent recoveries as per Worksheet #12-9	Reanalyze and qualify data	Analyst and Data Validator	Accuracy/bias	Percent recoveries as per Worksheet #12-9
Internal Standards (ISs)	3 per sample	Area counts: -50% ±100% of areas in associated continuing calibration standard Retention times: ± 30 seconds from retention times in associated continuing calibration standard	Reanalyze and qualify data	Analyst and Data Validator	Accuracy/bias and Precision	Area counts: -50% ±100% of areas in associated continuing calibration standard Retention times: ± 30 seconds from retention times in associated continuing calibration standard

QAPP Worksheet #28-9

QC Samples Table

Matrix	Surface Water					
Analytical Group	VOCs					
Concentration Level	Low					
Analytical Method/ SOP Reference	L-I					
Sampler's Name	TBD					
Field Sampling Organization	TRC					
Laboratory Name	Accutest Laboratories					
No. of Sample Locations	19					
Laboratory QC:	Frequency/ Number	Method/SOP QC Acceptance Limits	Corrective Action (CA)	Person(s) Responsible for CA	Data Quality Indicator (DQI)	Measurement Performance Criteria
Laboratory Control Samples	One per day samples are analyzed	Percent recoveries 70-130%	Reanalyze and qualify data	Analyst and Data Validator	Accuracy/bias	Percent recoveries 70-130%
Cooler Temperature Blank	One per cooler	Cooler temperature 4°C ± 2°	Contact client and qualify data.	Sample Receipt Personnel and Data Validator	Accuracy/bias	Cooler temperature 4°C ± 2°

NA = Not Applicable
TBD = To Be Determined

QAPP Worksheet #28-10

QC Samples Table

Matrix	Surface Water					
Analytical Group	Metals (Total and Dissolved)					
Concentration Level	Low					
Analytical Method/ SOP Reference	L-5, L-8					
Sampler's Name	TBD					
Field Sampling Organization	TRC					
Laboratory Name	L-5: Accutest Laboratories L-8: Alpha Analytical Laboratory					
No. of Sample Locations	21					
Laboratory QC:	Frequency/ Number	Method/SOP QC Acceptance Limits	Corrective Action (CA)	Person(s) Responsible for CA	Data Quality Indicator (DQI)	Measurement Performance Criteria
Method Blank	One per preparation batch	No target compounds ≥ QL	Reclean, retest, reanalyze, and/or qualify data	Analyst and Data Validator	Accuracy/bias-Contamination	No target compounds ≥ QL
Reagent Blank**	ICB: immediately after ICV CCB: every 10 samples immediately after CCV	No target compounds ≥ QL	Reclean, retest, reanalyze, and/or qualify data	Analyst and Data Validator	Accuracy/bias-Contamination	No target compounds ≥ QL
Storage Blank	NA	NA	NA	NA	NA	NA
Instrument Blank	NA	NA	NA	NA	NA	NA
Laboratory Duplicate	One per 20 samples	RPD ≤ 20 if results ≥ 5x QL	Qualify data	Analyst and Data Validator	Precision	RPD ≤ 20 if results ≥ 5x QL
Matrix Spike	One per 20 samples	Percent recoveries 75-125%	Qualify data	Analyst and Data Validator	Accuracy/bias	Percent recoveries 75-125%
Matrix Spike Duplicates	NA	NA	NA	NA	NA	NA
LCS	One per batch	Percent recoveries 80-120%	Determine cause of problem, reanalyze, and/or qualify data	Analyst and Data Validator	Accuracy/bias	Percent recoveries 80-120%
Surrogates	NA	NA	NA	NA	NA	NA
Other: Serial Dilution	One per 20 samples	Within 10% of original determination	Qualify data	Analyst and Data Validator	Accuracy/bias	Within 10% of original determination
Other: QL Check Standard	Beginning and end of analytical sequence	Percent recoveries 70-130% (50-150% for cobalt, manganese, and zinc)	Recalibrate and reanalyze and/or qualify data	Analyst and Data Validator	Sensitivity and Accuracy/bias	Percent recoveries 70-130% (50-150% for cobalt, manganese, and zinc)
Other: Interference Check Sample	Beginning of run or every 8 hours	Percent recoveries 80-120%	Recalibrate and reanalyze and/or qualify data	Analyst and Data Validator	Accuracy/bias	Percent recoveries 80-120%

QAPP Worksheet #28-10

QC Samples Table

Matrix	Surface Water					
Analytical Group	Metals (Total and Dissolved)					
Concentration Level	Low					
Analytical Method/ SOP Reference	L-5, L-8					
Sampler's Name	TBD					
Field Sampling Organization	TRC					
Laboratory Name	L-5: Accutest Laboratories L-8: Alpha Analytical Laboratory					
No. of Sample Locations	21					
Laboratory QC:	**Frequency/ Number**	Method/SOP QC Acceptance Limits	**Corrective Action (CA)**	**Person(s) Responsible for CA**	**Data Quality Indicator (DQI)**	**Measurement Performance Criteria**
Internal Standards (ISs) (ICP/MS only)	Every sample	30-120% of IS in calibration standard	Dilute sample 5x, add IS and reanalyze, and/or qualify data	Analyst and Data Validator	Accuracy/bias	30-120% of IS in calibration standard
Cooler Temperature Blank	One per cooler	Cooler temperature 4°C ± 2°	Contact client and qualify data.	Sample Receipt Personnel and Data Validator	Accuracy/bias	Cooler temperature 4°C ± 2°

** Also referred to as initial and continuing calibration blanks.
NA = Not Applicable
TBD = To Be Determined

QAPP Worksheet #28-11

QC Samples Table

Matrix	Surface Water					
Analytical Group	Hardness					
Concentration Level	Low					
Analytical Method/ SOP Reference	L-12					
Sampler's Name	TBD					
Field Sampling Organization	TRC					
Laboratory Name	Accutest Laboratories					
No. of Sample Locations	21					
Laboratory QC:	Frequency/ Number	Method/SOP QC Acceptance Limits	Corrective Action (CA)	Person(s) Responsible for CA	Data Quality Indicator (DQI)	Measurement Performance Criteria
Method Blank	One per batch	Hardness < QL	Reclean, retest, reanalyze, and/or qualify data	Analyst and Data Validator	Accuracy/bias-Contamination	Hardness < QL
Reagent Blank	NA	NA	NA	NA	NA	NA
Storage Blank	NA	NA	NA	NA	NA	NA
Instrument Blank	NA	NA	NA	NA	NA	NA
Laboratory Duplicate	One per 20 samples	RPD ≤ 20	Reanalyze and qualify data	Analyst and Data Validator	Precision	RPD ≤ 20
Matrix Spike	One per 20 samples	Percent recoveries 75-125%	Qualify data	Analyst and Data Validator	Accuracy/bias	Percent recoveries 75-125%
Matrix Spike Duplicates	NA	NA	NA	NA	NA	NA
LFB	NA	NA	NA	NA	NA	NA
Surrogates	NA	NA	NA	NA	NA	NA
Other:						
Cooler Temperature Blank	One per cooler	Cooler temperature 4°C ± 2°	Contact client and qualify data.	Sample Receipt Personnel and Data Validator	Accuracy/bias	Cooler temperature 4°C ± 2°

NA = Not Applicable
TBD = To Be Determined

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13.0 DATA MANAGEMENT TASKS

This section of the QAPP describes how project data and information will be documented, tracked and managed from their generation in the field to final use and storage in a manner that ensures data integrity and defensibility.

13.1 Project Documentation and Records

A complete file of project-related documents will be maintained in the TRC Philadelphia, PA office. Worksheet #29 identifies the documents and records that will be generated and maintained for all aspects of the project.

13.2 Field Analysis Data Package Deliverables

For the field analyses associated with this program, which consist of the water quality parameters and FID/PID screening of soil samples, data packages are not required. All field and QC sample results, calibrations, and calibration verifications will be recorded in the field logbook, on field screening forms, and/or on equipment calibration forms to ensure proper verification of the sample results.

13.3 Fixed Laboratory Data Package Deliverables

At a minimum, the data packages from the analytical chemistry laboratories will include the following:

1. Case narrative

    - summary of analytical methods used
    - correlation of field sample identifications and laboratory sample identifications
    - data qualifier definitions
    - deviations from established QA/QC procedures with corrective action

2. Sample results

    - project name
    - field sample identification
    - batch number
    - collection/extraction/analysis dates
    - detection limits
    - dilution factors
    - percent moisture

3. Sample documentation

   - original chains-of-custody
   - shipping documents
   - cooler receipt forms

4. Quality Assurance/Quality Control

   - spike recoveries (surrogates, MS/MSDs, LCSs)
   - measures of precision (laboratory duplicates, MS/MSDs)
   - control limits for accuracy and precision

5. Raw data, including chromatograms, quantitation reports, and spectra

Results for all soil and sediment samples must be reported on a dry weight basis. The laboratories will report values detected between the method detection limit and quantitation limit and qualify these results as estimated. The laboratory will report tentatively identified compounds (TICs) for the VOC and/or SVOC analyses of surface water, soil and sediment samples. Up to 30 TICs for VOCs and 30 TICs for SVOCs will be reported in each sample, as applicable.

In general, deliverables for TCL VOC, TCL SVOC, TCL pesticide, PCB Aroclors, metals, and hexavalent chromium analyses of soil, sediment, surface water, and tissue will be in a format consistent with Contract Laboratory Program Statement of Work requirements. Laboratory reports and data packages will be submitted to TRC for validation, as outlined in Worksheet #36.

13.4 Data Reporting Formats

Project field data will be recorded in dedicated logbooks and on standardized forms. Documentation of field activities is described in Section 11.1.

Analytical data recording and reporting are described below.

All information related to analysis will be documented in controlled laboratory logbooks, instrument printouts, or other approved forms. All entries that are not generated by an automated data system will be made neatly and legibly in permanent, waterproof ink. Information will not be erased or obliterated. Corrections will be made by drawing a single line through the error and entering the correct information adjacent to the cross-out. All changes will be initialed, dated, and, if appropriate, accompanied by a brief explanation. Unused pages or portions of pages will be crossed out to prevent future data entry. Laboratory records will be reviewed by the Laboratory Section Leaders on a regular basis, and by the Laboratory QA Manager periodically, to verify adherence to documentation requirements.

13.5 Electronic Deliverables

Electronic data and hard copies of the laboratory data report will be submitted by the laboratory upon completion. Section 13.3 discusses details of the hardcopy laboratory data report.

Electronic Data Deliverables (EDDs) will be provided by the laboratory in the specific format required by USEPA Region 2. Chemistry EDDs include the following types of files: chemistry sample information (SMP), test/results (TRS), test/results with QC (TRSQC) (if required), and batch information (BAT) (if required). The test/results file is a subset of the test/result with QC file and only one of the two files should be submitted. If the test/result data has accompanying quality control data then the test/result with QC file should be submitted and not the test/result (TRS) file. If there is no quality control data accompanying the data, the test/result file should be submitted and not the test/result with QC file. The data tables including data fields and formats submitted by the laboratory will be consistent with the USEPA Region 2 requirements.

Prior to submittal to USEPA Region 2, the Electronic Data Processor (EDP) will be used to check EDD files. The EDP performs a series of formatting checks on the files and then identifies any records that have errors along with a description of the errors. If any errors are identified, the data will be corrected before sending the files to EPA Region 2. The EDD will be submitted to USEPA Region 2 by e-mail. The EDD will be accompanied by a cover letter that specifies the information about the Site, the contact for any EDD technical questions regarding file names, any exceptions to the EDD format, and any requests for additional valid values, etc.

In addition to the USEPA Region 2 EDDs, EDDs will also be submitted in a GISKey format which will allow the data to be easily imported into TRC's SQL Server database. All data will be stored in this database and this database will be used to tabulate and analyze project data for various needs, including risk assessment and preparation of figures. The use of this database ensures data integrity and accuracy for all future data needs. In addition to this, electronic pdf copies of all laboratory data packages will be submitted by the laboratories on CD and will be stored by TRC with the project files, in the event further data evaluation is needed at anytime.

13.6 Data Handling and Management

13.6.1 Data Entry and Verification

All data entry performed by TRC or its contractors will be proofed 100% for accuracy. Verification will be carried out either by proofing a printout against the original data or by duplicate entry and comparison of the two data sets to detect discrepancies.

13.6.2 Data Transformation and Reduction

Data generated through field activities, or by the laboratory operation, will be reduced and/or validated prior to reporting. Measurements and sample collection information will be transcribed directly into the field logbook or onto standardized forms. If errors are made, results will be legibly crossed out, initialed and dated by the person recording the data, and corrected in

a space adjacent to the original (erroneous) entry. Daily reviews of the field records by the TRC Field Team Manager will ensure that:

- Logbooks and standardized forms have been filled out completely and that the information recorded accurately reflects the activities that were performed.
- Records are legible and in accordance with good record keeping procedures: i.e., entries are signed and dated, data are not obliterated, changes are initialed, dated, and explained.
- Sample collection, handling, preservation, and storage procedures were conducted in accordance with the protocols described in the QAPP, and that any deviations were documented and approved by the appropriate personnel.
- Instruments were calibrated and operated in accordance with the procedures specified in the QAPP.

Data entered from the field records into the database must be reviewed and approved by the TRC Field Team Manager prior to release.

Laboratory data reduction procedures will be performed according to procedures in the laboratory's QA Manuals. These procedures are also summarized in Section 16.4.

13.6.3 Data Transfer and Transmittal

Hard copy data packages and EDDs from the laboratories will be transmitted to TRC upon completion of analysis. Copies of these transmittals will be forwarded to the TRC Project Manager for storage in the project files. Hard copy reports and EDDs will be logged in to TRC's validation tracking log. As the package proceeds through data validation, review, and data management, the status of the package will be recorded in the log. Completion of validation and final disposition of the package will also be documented.

13.6.4 Data Analysis and Reporting

Data reports will present summaries of validated data collected during the field investigation. Previously existing Excel spreadsheets will be updated with the results of this investigation. A quality assurance review of each sample result will be performed to ensure that the data in the Excel spreadsheet match the hard copy provided by the laboratory. After the data are validated, appropriate modifications to the Excel spreadsheet will be made to reflect the changes resuhing from data validation (if any). A second quality assurance review will be performed after the validated data are in the Excel spreadsheet.

13.7 Data Tracking and Control

Management of field data is described in Section 11.2. Laboratory data will be maintained as described in the laboratory's QA Manuals. TRC is the custodian of the project files and will maintain the contents of the files, including relevant records, reports, logs, field notebooks,

pictures, subcontractor reports, and data reviews in a secured, limited access area. TRC's policy is to retain all project files for a period of six years beyond project completion. All files will be stored with the TRC-Philadelphia, PA office.

QAPP Worksheet #29

Project Documents and Records Table

Sample Collection Documents and Records	On-site Analysis Documents and Records	Off-site Analysis Documents and Records	Data Assessment Documents and Records	Other
Field Notes/Logbooks	Sample Receipt, Custody and Tracking Records	Sample Receipt, Custody and Tracking Records	Field Sampling Audit Checklists (if applicable)	
Chain-of-Custody Records	Equipment Calibration Logs	Standard Traceability Logs	Fixed Lab Audit Checklist (if applicable)	
Air Bills	Equipment Maintenance, Testing and Inspection Logs	Equipment Calibration Logs	Data Validation Reports	
Custody Seals	Sample Disposal Records	Sample Preparation Logs	Corrective Action Forms	
Telephone Logs	Field Activity Forms	Run Logs	Telephone Logs	
Corrective Action Forms	Telephone Logs	Equipment Maintenance, Testing and Inspection Logs	Data Usability Assessment Report	
Field Forms	Corrective Action Forms	Corrective Action Forms	Site Characterization Summary Report	
Photographs	Reported Field Sample Results	QC Sample Results Reports		
Boring Logs	Decontamination Records	Instrument Printout (raw data) for field samples, standards, QC checks and QC samples		
	Sample Disposal Records	Sample Disposal Records		
		Telephone Logs		
		Reported Field Sample Results		
		Extraction/Clean-up records		
		Raw Data (stored on CD)		
		Electronic Data Deliverables		
		Project Database		

QAPP Worksheet #30

Analytical Services Table

Matrix	Analytical Group	Concentration Level	Analytical Method/SOP	Data Package Turnaround Time	Laboratory/Organization (Name and Address: Contact Person and Telephone Number)	Backup Laboratory/ Organization (Name and Address: Contact Person and Telephone Number)
Soil	VOCs, Metals, pH, Hexavalent Chromium, ORP	Low	L-1, L-5, L-9, L-10, L-11	14 days[1, 2]	Accutest Laboratories 2235 Route 130 Dayton, NJ 08810 Contact: Marie Meidhof (732) 329-0200	None
Surface Water	VOCs, Metals, Hexavalent Chromium, Hardness	Low	L-1, L-5, L-10, L-12	14 days	Accutest Laboratories 2235 Route 130 Dayton, NJ 08810 Contact: Marie Meidhof (732) 329-0200	None
Sediment	SVOCs, Pesticides, PCB Aroclors, Metals, TOC, Grain Size, pH	Low	L-2, L-3, L-4, L-5, L-6, L-7, L-9, L-10, L-11	14 days	Accutest Laboratories 2235 Route 130 Dayton, NJ 08810 Contact: Marie Meidhof (732) 329-0200	None
Surface Water	Select Metals (Aluminum, Cadmium, Cobalt, Copper, Selenium, Vanadium)	Low	L-8	14 days	Alpha Analytical Laboratory 320 Forbes Blvd., Mansfield, MA 02048 Contact: Mary Davis (508) 898-9220	None
Stream Bank Soil	SVOCs, Pesticides, PCB Aroclors, Metals, pH, Hexavalent Chromium, ORP	Low	L-2, L-3, L-4, L-5, L-9, L-10, L-11	14 days	Accutest Laboratories 2235 Route 130 Dayton, NJ 08810 Contact: Marie Meidhof (732) 329-0200	None
Tissue	Metals	Low	L-8, L-13	14 days	Alpha Analytical Laboratory 320 Forbes Blvd., Mansfield, MA 02048 Contact: Mary Davis (508) 898-9220	None

[1]Surface soil samples collected along the property lines (SB-95 thru SB-97, SB-104 and SB-105) will be analyzed on a 3-5 day tumaround time for all parameters.
[2]Subsurface soil samples collected from the Former Production Area (Manpro-Vibra Degreasing Unit) and the Former Lagoons Area will be analyzed on a 3-5 day tumaround time for VOCs.

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14.0 ASSESSMENTS AND RESPONSE ACTIONS

14.1 Planned Assessments

Worksheet #31 summarizes potential assessments during this investigation.

14.1.1 Internal Assessments

Technical system audits (TSAs) of both field and laboratory activities are conducted to verify that sampling and analysis are performed in accordance with the procedures established in the QAPP.

Field Sampling TSAs

A system audit of field activities, including sampling and field measurements, may be conducted and documented by the TRC Project QA Manager (or her designee) at the start of sampling. The purpose of this audit is to verify that established procedures are being followed as planned and documented and to allow for timely corrective action, reducing the impact of the nonconformance. The audit will ensure that personnel have read the QAPP and have signed Worksheet #4. The audit will cover field sampling records, field measurement results, field instrument operation and calibration records, sample collection, preservation, handling, and packaging procedures, adherence to QA procedures, personnel training, sampling procedures, decontamination procedures, review of sampling design versus the Work Plans, corrective action procedures, and chain-of-custody, etc. Follow-up surveillance will be conducted by the TRC Field Team Manager to verify that QA procedures are maintained throughout the investigation. An example of a field TSA checklist is included as Figure 14-1.

Upon completion of the audit, the TRC Project QA Manager will prepare a written audit report, which summarizes the audit findings, identifies deficiencies and recommends corrective actions. In addition, a verbal debriefing will also be given to the TRC Field Team Manager and TRC Project Manager at the time of the audit. The written report will be submitted to the TRC Project Manager, who will be responsible for ensuring that corrective measures are implemented.

Fixed Laboratory TSAs

Internal laboratory audits may be conducted by the TRC Project QA Manager (or her designee). The fixed laboratory TSA includes a review of the following areas:

- QA organization and procedures (including the Laboratory QA Plan),
- Personnel training and qualifications,
- Facility security
- Sample log-in procedures,
- Sample storage facilities,
- Analyst technique
- Adherence to EPA methods and the QAPP,
- Compliance with QA/QC objectives,

- Equipment, instrumentation and supplies kept on reserve,
- Instrument calibration and maintenance,
- Data recording, reduction, review, and reporting, and
- Cleanliness and housekeeping.

An example of a fixed laboratory TSA checklist is included as Figure 14-2. Preliminary results of the TSA will be discussed with the Laboratory Manager, Laboratory Project Manager, and Laboratory QA Manager during a verbal debriefing held at the facility. Assessment findings will be documented and reported as described in Section 14.2.

Data Validation TSA

An audit of the complete Data Validation Report will be conducted prior to submitting the report to EPA. This audit will include a review of the associated analytical data package deliverables for completeness and a review of the Data Validation Report to ensure that required components are present. This audit will also ensure that the most recent version of the EPA Region II data validation guidelines were followed and that measurement performance criteria were met.

14.1.2 External Assessments

External assessments will be the responsibility of the EPA Region 2 or NJDEP, and performed as needed.

14.2 Assessment Findings and Corrective Action Responses

The results of the field sampling and fixed laboratory TSAs will be documented in written reports; in addition, verbal debriefings will also be held at the conclusion of audits. The reports will be prepared by the auditor and will describe the scope of the TSA, summarize audit findings, and recommend corrective action. The report will be distributed to the appropriate personnel for response: the TRC Field Team Manager will be responsible for responding to the field sampling TSA report, and the Laboratory QA Manager will be responsible for addressing the fixed laboratory TSA report. Significant issues that are discovered during the TSA and which could potentially affect data quality or usability will be brought to the immediate attention of the TRC Project Manager.

The results of the Data Validation TSA will be noted on the Data Validation Report and/or documented in a written report. Data Validation Reports will be corrected based on the results of this audit prior to submittal to EPA.

Figure 14-1 Example of Field Sampling TSA Checklist

Project: Site Location: Auditor:	
1. Was project-specific training held?	
2. Are copies of project plan on site and available to personnel?	
3. Are samples being collected in accordance with the project plan?	
4. Do the numbers and locations of samples conform to the project plan?	
5. Are sample locations flagged, staked, or otherwise marked?	
6. Are samples labeled in accordance with the project plan?	
7. Is equipment decontamination in accordance with the project plan?	
8. Is field instrumentation being operated and calibrated in accordance with the project plan?	
9. Are samples being preserved and containerized in accordance with the project plan?	
10. Are QC samples in accordance with the types, collection procedures, and frequencies specified in the project plan?	
11. Are chain-of-custody procedures and documents in conformance with the project plan?	
12. Are field records complete, accurate, up-to-date, and in conformance to good record keeping procedures?	
13. Are modifications to the project plan being communicated, approved, and documented appropriately?	
Additional Comments:	
Auditor:	**Date:**

Figure 14-2 Example of Fixed Laboratory TSA Checklist

Project: **Facility Location:** **Auditor:**	
Is there a written QA Program Plan/Manual?	
Is there a designated QA Officer?	
Are facilities and equipment adequate to perform the analyses of interest?	
Review procedures and engineering controls for minimizing cross contamination.	
Review most recent interlaboratory PE sample results and recent Agency audits.	
Review SOP system. Review techniques for conformance to approved SOPs.	
Are personnel qualified and trained? Is there a formal training program and are records of training and proficiency maintained?	
Is there a designated sample custodian? Is there a sample inspection checklist? Are sample log-in procedures defined in an SOP?	
Is the laboratory area secure?	
Review internal chain-of-custody procedures.	
Are instruments operated and calibrated in accordance with the EPA methods or laboratory SOPs? Are records of calibration maintained?	
Is equipment maintained according to written protocols? Are routine and non-routine maintenance procedures documented?	
Are samples being analyzed in conformance to the EPA methods or laboratory SOPs?	
Are QC samples and checks being performed at the frequencies stated in the EPA methods or laboratory SOPs?	
Are records complete, accurate, up-to-date, and in conformance to good record keeping procedures?	
How are project-specific requirements communicated to the bench level?	
Review data reduction, review, and reporting processes.	
Review data archival process (paper and electronic).	
Review audit and corrective action program.	
Additional Comments:	
Auditor:	**Date:**

The response to the TSA reports will include a description of the corrective action(s) to be implemented, the identities of the personnel responsible for implementing the corrective action, and the schedule for implementation/completion. Responses must be completed within one week of issuing the TSA report. The response will be reviewed by the TRC Project QA Manager and, if issues have been addressed appropriately and in a timely manner, no further action will be required. In the event that the corrective action(s) are inadequate or inappropriate, follow-up activities, including additional audits, or discussions with the TRC Project Manager, will be conducted by the TRC Project QA Manager. The complete TSA report, including resolution of any deficiencies, will be included in the QA reports to management, as described in Section 15.0.

14.3 Additional QAPP Non-Conformances

14.3.1 Field Non-Conformances

Corrective action in the field may be needed when the sample network is changed (i.e., more/less samples, sampling locations other than those specified in the QAPP), or when sampling procedures and/or field analytical procedures require modification, etc. due to unexpected conditions. The field team may identify the need for corrective action. The TRC Field Team Manager will approve the corrective action and notify the TRC Project Manager. The TRC Project Manager, in consultation with the EPA Remedial Project Manager, if necessary, will approve the corrective measure. The TRC Field Team Manager will ensure that the corrective measure is implemented by the field team. Corrective actions will be implemented and documented in the field logbook. Documentation will include:

- A description of the circumstances that initiated the corrective action,
- The action taken in response,
- The final resolution, and
- Any necessary approvals.

No staff member will initiate corrective action without prior communication of findings through the proper channels. If necessary, a problem resolution audit will be conducted.

14.3.2 Laboratory Non-Conformances

Corrective action in the laboratory may occur prior to, during, and after initial analyses. A number of conditions such as broken sample containers, omissions or discrepancies with chain-of-custody documentation, low/high pH readings, and potentially high concentration samples may be identified during sample log-in or just prior to analysis. Following consultation with laboratory analysts and Laboratory Section Leaders, it may be necessary for the Laboratory QA Manager to approve the implementation of corrective action. The EPA methods, and laboratory 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 reinjection/reanalysis when certain QC criteria are not met, loss of sample through breakage or spillage, etc.

The analyst may identify the need for corrective action. The Laboratory Section Leader, in consultation with the staff, will approve the required corrective action to be implemented by the laboratory staff. The Laboratory QA Manager will ensure implementation and documentation of the corrective action. If the nonconformance causes project objectives not to be achieved, the TRC Project QA Manager will be notified. The TRC Project QA Manager will contact levels of project management for concurrence with the proposed 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 files, and the narrative data report sent from the laboratory to TRC. If the corrective action does not rectify the situation, the laboratory will contact the TRC Project QA Manager, who will determine the action to be taken and inform the appropriate personnel. If necessary, a problem resolution audit will be conducted.

14.4 Data Validation and Data Assessment Non-Conformances

The need for corrective action may be identified during either data validation or data assessment. Potential types of corrective action may include resampling by the field team or reinjection/reanalysis of samples by the laboratory. These actions are dependent upon the ability to mobilize the field team and whether the data to be collected are necessary to meet the required QA objectives. If the data validator or data assessor identifies a corrective action situation, the TRC Project Manager will be responsible for informing the appropriate personnel. Correcfive actions of this type will be documented by the TRC Project Manager and maintained in the project files.

QAPP Worksheet #31

Planned Project Assessments Table

Assessment Type	Frequency	Internal or External	Organization Performing Assessment	Person(s) Responsible for Performing Assessment (Title and Organizational Affiliation)	Person(s) Responsible for Responding to Assessment Findings(Title and Organizational Affiliation)	Person (s) Responsible for Identifying and Implementing Corrective Actions (CA) (Title and Organizational Affiliation)	Person (s) Responsible for Monitoring Effectiveness of CA (Title and Organizational Affiliation)
Field Sampling Technical System Audit (if required)	1/ at startup of sampling events	Internal	TRC Environmental	Elizabeth Denly/Project QA Manager, TRC Environmental	Field staff, TRC Environmental	TBD/Field Team Manager and Jorge Gomez/Project Manager, TRC Environmental	Elizabeth Denly/ Project QA Manager, TRC Environmental
Fixed Laboratory Technical Systems Audit (if required)	1/ at startup of sampling	External	TRC Environmental	Elizabeth Denly/ Project QA Manager, TRC Environmental	Laboratory QA Manager	Laboratory QA Manager	Laboratory QA Manager
Data Validation Technical Systems Audit	1 per data package	Internal	TRC Environmental	Elizabeth Denly/ Project QA Manager, TRC Environmental	Data Validator, TRC Environmental	Data Validator, TRC Environmental	Elizabeth Denly/ Project QA Manager, TRC Environmental
Data Package Technical Systems Audit	1 per data package	External	TRC Environmental	Data Validator, TRC Environmental	Laboratory QA Manager	Laboratory QA Manager	Data Validator, TRC Environmental

QAPP Worksheet #32

Assessment Findings and Corrective Action Responses

Assessment Type	Nature of Deficiencies Documentation	Individual(s) Notified of Findings (Name, Title, Organization)	Timeframe of Notification	Nature of Corrective Action Response Documentation	Individual(s) Receiving Corrective Acton Response (Name, Title, Org.)[1]	Timeframe for Response
Field Sampling TSA	Written Audit Report	TBD/Field Team Manager and Jorge Gomez/Project Manager, TRC Environmental	48 hours after audit	Letter	Elizabeth Denly/ Project QA Manager, TRC Environmental	48 hours after notification
Fixed Laboratory TSA	Written Audit Report	Laboratory QA Manager	3 days after audit	Letter	Elizabeth Denly/ Project QA Manager, TRC Environmental	1 week after notification
Data Validation TSA	Written Audit Report	Data Validator, TRC Environmental	2 weeks after data validation report received	Memorandum	Elizabeth Denly/ Project QA Manager, TRC Environmental	1 week after notification
Data Package TSA	Electronic Mail Notification	Laboratory Project Manager	2 weeks after data package received	Electronic Mail	Data Validator, TRC Environmental	3 days after notification

[1] As per Section 4.2 of the QAPP, The TRC Project Manager will notify the TRC Project Coordinator of any issues which may potentially affect the achievement of project objectives. The TRC Project Coordinator will in turn notify the EPA Remedial Project Manager of these issues. Therefore, regulatory agencies may not be notified of all corrective actions, only those that may affect the achievement of project objectives. If Field Sampling TSAs or Fixed Laboratory TSAs are performed, these will be performed at the onset of the program to ensure any potential corrective actions are in place as soon as possible.

15.0 QA MANAGEMENT REPORTS

QA reports will be submitted to the TRC Project Manager to ensure that any problems identified during the sampling and analysis programs are investigated and the proper corrective measures taken in response. Worksheet #33 summarizes QA management reports which may be submitted during this investigation. The QA reports may include:

- Results of field and laboratory audits,
- Problems noted during data validation and assessment,
- Significant QA/QC problems, recommended corrective actions, and the outcome of corrective actions,
- Data usability assessments, and
- The final project report.

QA reports will be prepared and submitted on an as-needed basis.

QAPP Worksheet #33

QA Management Reports Table

Type of Report	Frequency (daily, weekly monthly, quarterly, annually, etc.)	Projected Delivery Date(s)	Person(s) Responsible for Report Preparation (Title and Organizational Affiliation)	Report Recipients (Title and Organizational Affiliation)
Verbal Status Report	Daily	At the end of every day of field activities	TBD, Field Team Manager, TRC Environmental	Jorge Gomez, Project Manager, TRC Environmental
Verbal or Written Status Report	As necessary	As necessary	Jorge Gomez, Project Manager, TRC Environmental	Patrick Hansen, Project Coordinator, TRC Environmental
Corrective Action Report	As necessary	As necessary	Elizabeth Denly, Project QA Manager, TRC Environmental	Jorge Gomez, Project Manager, TRC Environmental
Field Sampling Technical Systems Audit Report (if applicable)	One/ at startup of sampling	Within 2-3 days of audit	Elizabeth Denly, Project QA Manager, TRC Environmental	Jorge Gomez, Project Manager, TRC Environmental
Off-site Laboratory Technical Systems Audit Report (if applicable)	One/prior to sampling startup	Within 2-3 days of audit	Elizabeth Denly, Project QA Manager, TRC Environmental	Laboratory QA Manager
Data Usability Assessment Report	One/ after data generated and validated	TBD	Elizabeth Denly, Project QA Manager, TRC Environmental	Jorge Gomez, Project Manager, TRC Environmental
Final Project Report	One/ after sampling and risk assessment completed	TBD	Jorge Gomez, Project Manager and Patrick Hansen, Project Coordinator, TRC Environmental	Sherrel Henry, Remedial Project Manager, EPA Donna Gaffigan, Case Manager, NJDEP

TBD: To Be Determined

16.0 DATA REVIEW STEPS

16.1 Step I: Verification and Step II: Validation

Data generated through field activities, or by the laboratory operation, will be reduced and validated prior to reporting. No data will be disseminated by TRC or its subcontractors until it has been subjected to the procedures summarized below.

Worksheets #34, 35, and 36 summarize the data verification processes for data generated during this investigation.

16.2 Field Sampling Data

Field sampling data will be verified daily by each person performing the tasks. These data will be verified for completeness and correctness. Field sampling data will also be independently reviewed daily by the TRC Field Team Manager to ensure that records are complete, accurate, and legible and verify that the sampling procedures are in accordance with the protocols specified in the QAPP. Personnel performing the verification tasks will sign the field notes after verification. Verification will include field logbook notes, field sampling forms, and COCs. Details of the review of field records are provided below.

Sample collection information will be transcribed directly into the field logbook or onto standardized forms. If errors are made, results will be legibly crossed out, initialed and dated by the person recording the data, and corrected in a space adjacent to the original (erroneous) entry. Each member of the field sampling team will be responsible for an internal verification of the transcribed information. Daily external verification of the field records by the TRC Field Team Manager will ensure that:

- Logbooks and standardized forms have been filled out completely and that the information recorded accurately reflects the activities that were performed.
- Records are legible and in accordance with good record keeping procedures: i.e., entries are signed and dated, data are not obliterated, changes are initialed, dated, and explained.
- Sample collection, handling, preservation, and storage procedures were conducted in accordance with the protocols described in the QAPP, and that any deviations were documented and approved by the appropriate personnel.

External verification of the chains-of-custody will be performed by the TRC Project QA Manager to ensure that appropriate samples were collected and submitted to the laboratory for the correct analyses.

16.3 Field Analysis Data

Each member of the sampling team performing field analysis tasks will verify their own data at the conclusion of each day for completeness and correctness. Field analysis data will also be independently verified by the TRC Field Team Manager or TRC Project QA Manager to ensure that records are complete, accurate, and legible and verify that the calibration procedures are in

accordance with the protocols specified in the QAPP. Personnel performing the verification tasks will sign the field notes after verification. Verification will include a review of field logbook notes and equipment calibration forms. Details of the review of field analysis records are provided below.

Field analysis information will be transcribed directly into the field logbook or onto standardized forms. If errors are made, results will be legibly crossed out, initialed and dated by the person recording the data, and corrected in a space adjacent to the original (erroneous) entry. Each member of the field sampling team will be responsible for an intemal verification of the transcribed information. Daily extemal verification of the field analysis records by the TRC Project QA Manager will ensure that:

- Logbooks and standardized forms have been filled out completely and that the information recorded accurately reflects the activities that were performed.
- Records are legible and in accordance with good record keeping procedures, i.e., entries are signed and dated, data are not obliterated, changes are initialed, dated, and explained.
- Calibration procedures were conducted in accordance with the protocols described in the QAPP, and that any deviations were documented and approved by the appropriate personnel.

16.4 Fixed Laboratory Data

Internal Reviews

Prior to the release of any data from the laboratory, the data will be verified and approved by laboratory personnel. This review will consist of a tiered review by the person performing the work, a qualified peer, and by supervisory personnel. Details of the review are provided below.

Prior to being released as final, laboratory data will proceed through a tiered review process. Data verification starts with the analyst or technician who performs a 100 percent review of the data to ensure the work was done correctly the first time. It is the responsibility of the analyst or technician to ensure that the verification of data in his or her area is complete. The data reduction and initial verification process must ensure that:

- Sample preparation and analysis information is correct and complete,
- Results are correct and complete,
- The appropriate EPA methods or laboratory SOPs have been followed and are identified in the project records,
- Proper documentation procedures have been followed,
- Nonconformances have been documented, and
- Project-specific requirements have been met.

Following the completion of the initial verification by the analyst or technician, a systematic check of the data will be performed by an experienced peer, Laboratory Section Leader, or designee. This check will be performed to ensure that initial review has been completed correctly and thoroughly. Included in this review will be an assessment of the acceptability of the data with respect to:

- Adherence of the procedure used to EPA methods and laboratory SOPs, and any project-specific methods and specific instructions,
- Correct interpretation of data (e.g., mass spectra, chromatographic interferences, etc.),
- Correctness of numerical input when computer programs are used (checked randomly) and numerical correctness of calculations and formulas (checked randomly),
- Acceptability of QC data,
- Documentation that instruments were operating according to method specifications (calibrations, performance checks, etc.),
- Documentation of dilution factors, standard concentrations, etc.,
- Sample holding time assessment,
- Nonconforming events have been addressed by corrective action as defined on a nonconformance memo.

A third-level review will be performed by the Laboratory Project Manager before results are submitted to the client. This review serves to verify the completeness of the data report and to ensure that project requirements are met for the analyses performed. The items to be reviewed will include:

- Results are present for samples in the analytical batch or reporting group,
- Parameters or target compounds requested are reported,
- The correct units and correct number of significant figures are utilized,
- Nonconformances, including holding time violations, and data evaluation statements that impact the data quality are accompanied by clearly expressed comments from the laboratory,
- The final report is legible, contains the supporting documentation required by the project, and is in either the standard format or in the client-required format.

A narrative to accompany the final report will be finalized by the Laboratory Project Manager. This narrative will include relevant comments, including data anomalies and nonconformances.

Independent Review

An independent review of fixed laboratory data will be performed in order to determine the quality of the analytical data. Project-specific procedures will be used to validate analytical laboratory data. The basis for the validation will be from the following documents:

- Validating Volatile Organic Compounds by SW-846 Method 8260B, HW-24, Revision 2, August 2008, Region 2.
- Validating Semivolatile Organic Compounds by SW-846 Method 8270, HW-22, Revision 4, August 2008, Region 2.
- Data Validation SOP of Organochiorine Pesficides by Gas Chromatography SW-846 Method 8081B, HW-44, Revision 1, October 2006, Region 2.
- Data Validation SOP of Organic Analysis of PCBs by Gas Chromatography SW-846 Method 8082A, HW-45, Revision 1, October 2006, Region 2.
- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, EPA 540-R-04-004, October 2004.

- Evaluation of Metals Data for the CLP Program, HW-2, Revision 13, September 2006, Region 2.

These documents will be modified to include method-specific criteria (i.e., measurement performance criteria detailed in this QAPP). Worksheets #12, 15, 19, 28, the EPA methods and the laboratory SOPs summarize the QC criteria and holding time requirements for analyses conducted under this program. These criteria will be used to evaluate and qualify the data during validation and will be substituted for the default validation criteria listed in the guidelines, when necessary.

Validation will be performed by TRC and will follow one or more of the validation guidelines listed above. Up to twenty-five percent of the soil, sediment, surface water, and/or tissue data for VOCs, SVOCs, pesticides, PCB Aroclor, metals, and hexavalent chromium analyses will be subjected to full validation, as per Region II data validation guidelines. A completeness check, an overall evaluation of data and potential usability issues, technical holding times and QC sample results (blanks, surrogate spikes, MS/MSDs, matrix duplicates, and LCSs) will be included in the review.

Validation procedures used by the TRC Project QA Manager on field parameters will include a review of the daily calibration checks performed on the instrumentation in the field in comparison to the QAPP requirements and a review of the results to ensure that results appear reasonable, as reported. Validation will not be performed for the TOC, pH and ORP analyses of soil and/or sediment samples. It should be noted that although only a percentage of the data will be subjected to validation that all data will undergo a usability assessment as outlined in Section 17.

Upon completion of the validation, a report will be prepared. These reports will be consistent with the EPA Region II validation guidelines. Qualifiers applied to the data during validation will be entered into the electronic data deliverables in the database. Validated data will be used to generate tables and figures.

QAPP Worksheet #34

Verification (Step I) Process Table

Verification Input	Description	Internal / External	Responsible for Verification (Name, Organization)
Chains-of-Custody and Shipping Forms	Chain-of-Custody forms and shipping documentation will be reviewed internally upon their completion and verified against the packed sample coolers for which they represent. When everything checks out, a copy of the chain-of-custody will be retained in the site file, and the original and remaining copies will be taped inside the cooler for shipment. See Section 11.0 for further details.	Internal	Field Team Manager, TRC Environmental Corporation
Field Notes	Field notes will be reviewed on a daily basis to ensure notes are accurate, all necessary calibration information has been documented, and notes are complete. Field notes will be placed in the site file and attached to the final report.	Internal	Field Team Manager, TRC Environmental Corporation
Audit Reports	Upon report completion, a copy of all audit reports will be placed in the project file. If corrective actions are required, a copy of the documented corrective action taken will be attached to the appropriate audit report in the site file. At the beginning of each week, and at the completion of the site work, project file audit reports will be reviewed internally to ensure that all appropriate corrective actions have been taken and that corrective action reports are attached. If corrective actions have not been taken, the Field Team Manager will be notified to ensure action is taken.	Internal	Jorge Gomez, TRC Environmental Corporation
QAPP	All aspects of the project (field sampling, laboratory analyses, data validation) will be continuously verified versus the EPA-approved QAPP.	Internal	Elizabeth Denly, TRC Environmental Corporation
Laboratory Data Packages	All laboratory data packages will be verified internally by the laboratory performing the work for completeness and technical accuracy prior to submittal.	Internal	Marie Meidhof, Accutest Laboratories Mary Davis, Alpha Analytical Laboratory
Laboratory Data Packages	All received data packages will be verified according to the data validation procedures specified in Worksheet #36.	Internal	Elizabeth Denly, TRC Environmental Corporation
Data Validation Reports	All data validation reports will be technically reviewed for accuracy and completeness.	Internal	Elizabeth Denly, TRC Environmental Corporation
Electronic Data Deliverables	EDDs will be used to import data into TRC's database. The imported data will be verified with the validated data for accuracy.	Internal	Elizabeth Denly, TRC Environmental Corporation

QAPP Worksheet #35

Validation (Steps IIa and IIb) Process Table

Step IIa/IIb	Validation Input	Description	Responsibility for Data Validations (Name, Organizational affiliation)
IIb	On-site Analytical Work	All on-site analytical work will be reviewed against QAPP requirements for completeness and accuracy based on the field calibration records.	Field Team Manager, TRC Environmental Corporation
IIa	Sampling Procedures	Ensure that all sampling procedures in Work Plans and QAPP were followed.	Field Team Manager, TRC Environmental Corporation
IIa	SOPs	Ensure that all analytical methods and SOPs were followed.	Elizabeth Denly, TRC Environmental Corporation
IIa	Documentation of Method QC Results	Establish that all method-required QC samples were run and met required limits.	Elizabeth Denly, TRC Environmental Corporation
IIb	Documentation of QAPP QC Sample Results	Establish that all QAPP-required QC samples were run and met required limits.	Elizabeth Denly, TRC Environmental Corporation
IIb	Project Quantitation Limits	Ensure that all sample results met the project quantitation limits specified in the QAPP.	Elizabeth Denly, TRC Environmental Corporation
IIa	Raw Data	Spot checks of raw data will be performed to confirm laboratory calculations.	Elizabeth Denly, TRC Environmental Corporation

QAPP Worksheet #36

Validation (Steps IIa and IIb) Summary Table*

Step IIa/IIb	Matrix	Analytical Group	Concentration Level	Validation Criteria	Data Validator (Name and Organizational Affiliation)
IIa	Soil	TCL VOCs	High	(1)	Elizabeth Denly, TRC
lib	Soil	TCL VOCs	High	Worksheets # 12-1, 15-6, 24, 25, 28-1	Elizabeth Denly, TRC
IIa	Soil	TAL Metals/Vanadium/Chromium	Low	(5), (6)	Elizabeth Denly, TRC
lib	Soil	TAL Metals/Vanadium/Chromium	Low	Worksheets # 12-5, 15-10, 24, 25, 28-2	Elizabeth Denly, TRC
IIa	Soil	pH and ORP	NA	NA	NA
lib	Soil	pH and ORP	NA	NA	NA
IIa	Soil	Hexavalent chromium	Low	(6)	Elizabeth Denly, TRC
lib	Soil	Hexavalent chromium	Low	12-8, 15-11, 24, 25, 28-7	Elizabeth Denly, TRC
IIa	Sediment	TCL SVOCs	Low	(2)	Elizabeth Denly, TRC
lib	Sediment	TCL SVOCs	Low	Worksheets # 12-2, 15-1, 24, 25, 28-3	Elizabeth Denly, TRC
IIa	Sediment	TCL Pesticides	Low	(3)	Elizabeth Denly, TRC
lib	Sediment	TCL Pesticides	Low	Worksheets # 12-4, 15-2, 24, 25, 28-4	Elizabeth Denly, TRC
lia	Sediment	PCB Aroclors	Low	(4)	Elizabeth Denly, TRC
lib	Sediment	PCB Aroclors	Low	Worksheets # 12-3, 15-3, 24, 25, 28-5	Elizabeth Denly, TRC
IIa	Sediment	Total Organic Carbon	NA	NA	NA
lib	Sediment	Total Organic Carbon	NA	NA	NA
IIa	Sediment	TAL Metals	Low	(5), (6)	Elizabeth Denly, TRC
lib	Sediment	TAL Metals	Low	Worksheets # 12-5, 15-4, 24, 25, 28-2	Elizabeth Denly, TRC
IIa	Sediment	Grain Size	NA	NA	NA
lib	Sediment	Grain Size	NA	NA	NA

QAPP Worksheet #36

Validation (Steps IIa and IIb) Summary Table*

Step IIa/IIb	Matrix	Analytical Group	Concentration Level	Validation Criteria	Data Validator (Name and Organizational Affiliation)
IIa	Sediment	pH	NA	NA	NA
IIb	Sediment	pH	NA	NA	NA
IIa	Stream Bank Soil	TCL SVOCs	Low	(2)	Elizabeth Denly, TRC
IIb	Stream Bank Soil	TCL SVOCs	Low	Worksheets # 12-2, 15-7, 24, 25, 28-3	Elizabeth Denly, TRC
IIa	Stream Bank Soil	TCL Pesticides	Low	(3)	Elizabeth Denly, TRC
IIb	Stream Bank Soil	TCL Pesticides	Low	Worksheets # 12-4, 15-8, 24, 25, 28-4	Elizabeth Denly, TRC
IIa	Stream Bank Soil	PCB Aroclors	Low	(4)	Elizabeth Denly, TRC
IIb	Stream Bank Soil	PCB Aroclors	Low	Worksheets # 12-3, 15-9, 24, 25, 28-5	Elizabeth Denly, TRC
IIa	Stream Bank Soil	TAL Metals	Low	(5), (6)	Elizabeth Denly, TRC
IIb	Stream Bank Soil	TAL Metals	Low	Worksheets # 12-5, 15-10, 24, 25, 28-2	Elizabeth Denly, TRC
IIa	Stream Bank Soil	pH and ORP	NA	NA	NA
IIb	Stream Bank Soil	pH and ORP	NA	NA	NA
IIa	Stream Bank Soil	Hexavalent Chromium	Low	(6)	Elizabeth Denly, TRC
IIb	Stream Bank Soil	Hexavalent Chromium	Low	Worksheets # 12-8, 15-11, 24, 25, 28-7	Elizabeth Denly, TRC
IIa	Surface Water	TCL VOCs	Low	(1)	Elizabeth Denly, TRC
IIb	Surface Water	TCL VOCs	Low	Worksheets # 12-9, 15-12, 24, 25, 28-9	Elizabeth Denly, TRC
IIa	Surface Water	TAL Metals/Hardness	Low	(5), (6)	Elizabeth Denly, TRC
IIb	Surface Water	TAL Metals/Hardness	Low	Worksheets # 12-10, 12-11, 15-13, 24, 25, 28-10, 28-11	Elizabeth Denly, TRC
IIa	Surface Water	Al, Cd, Co, Cu, Se, V	Low	(5), (6)	Elizabeth Denly, TRC
IIb	Surface Water	Al, Cd, Co, Cu, Se, V	Low	Worksheets # 12-10, 15-13a, 24, 25, 28-10	Elizabeth Denly, TRC

QAPP Worksheet #36

Validation (Steps IIa and IIb) Summary Table*

Step IIa/IIb	Matrix	Analytical Group	Concentration Level	Validation Criteria	Data Validator (Name and Organizational Affiliation)
IIa	Surface Water	Hexavalent Chromium	Low	(6)	Elizabeth Denly, TRC
IIb	Surface Water	Hexavalent Chromium	Low	Worksheets # 12-12, 15-14, 24, 25, 28-8	Elizabeth Denly, TRC
IIa	Tissue	Metals	Low	(5), (6)	Elizabeth Denly, TRC
IIb	Tissue	Metals	Low	Worksheets # 3 12-5, 15-15, 24, 25, 28-2	Elizabeth Denly, TRC

NA - Not applicable
(1) - Validating Volatile Organic Compounds by SW-846 Method 8260B, HW-24, Revision 2, August 2008, Region 2.
(2) - Validating Semivolatile Organic Compounds by SW-846 Method 8270, HW-22, Revision 4, August 2008, Region 2.
(3) - Data Validation SOP of Organochiorine Pesticides by Gas Chromatography SW-846 Method 8081B, HW-44, Revision 1, October 2006, Region 2.
(4) - Data Validation SOP of Organic Analysis of PCBs by Gas Chromatography SW-846 Method 8082A, HW-45, Revision 1, October 2006, Region 2.
(5) - Evaluation of Metals Data for the CLP Program, HW-2, Revision 13, September 2006, Region 2.
(6) - USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, EPA 540-R-04-004, October 2004.
* - Up to 25% of the soil, sediment, surface water, and/or tissue data will be subjected to validation.

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17.0 USABILITY ASSESSMENT

17.1 Data Usability

The purpose of this section is to indicate the methods by which it will be ensured that the validated laboratory data collected for this investigation are consistent with the project quality objectives established for the investigation, to ensure the quality of data was sufficient for its intended use, and to identify trends, relationships, and anomalies in the data. Conclusions based on the data, limitations on the use of the data, and the determination if data gaps exist will be included in the data usability assessment. The data usability assessment will be performed by the TRC Project Manager, in conjunction with the TRC Project QA Manager and will be performed after the data validation has been completed.

17.2 Precision

The RPD between the matrix spike and matrix spike duplicate in the case of organic parameters, or sample and sample duplicate in the case of all parameters, is calculated to compare to precision objectives. MS/MSDs and laboratory duplicates will be used to assess analytical precision and the field duplicates will be used to assess project precision. The RPD will be calculated according to the following formula:

$$RPD = \frac{(Amount\ in\ Sample\ 1 - Amount\ in\ Sample\ 2)}{0.5\ (Amount\ in\ Sample\ 1 + Amount\ in\ Sample\ 2)} x\,100$$

The impact of analytical imprecision, project imprecision, and overall imprecision (when both analytical and project precision tests show problems) on data usability will be assessed. If the precision results yield data which are not usable, the data usability assessment will identify how this problem will be resolved and the potential need for resampling will be discussed in the final project report.

17.3 Accuracy

If field or laboratory contamination exists, the impact on the data will be evaluated during the data usability assessment. The direction of bias for contamination will be identified.

In order to assure the accuracy of the analyfical procedures, matrix spike samples will be utilized. The increase in concentration of the analyte observed in the spiked sample, due to the addition of a known quantity of the analyte, compared to the reported value of the same analyte in the unspiked sample, determines percent recovery (%R).

Accuracy is similarly assessed by determining %Rs for surrogate compounds added to each field and QC sample to be analyzed for organic parameters. Accuracy for all analyses will be further assessed through determination of %Rs for LCSs and calibration results, etc. If the Data Validation Reports indicate contamination and/or analytical biases, the impact on the data will be assessed.

%R for MS/MSD resuhs will be determined according to the following equation:

$$\%R = \frac{(Amount\ in\ Spiked\ Sample - Amount\ in\ Sample)}{Known\ Amount\ Added} x\,100$$

%R for LCSs and surrogate compound results will be determined according to the following equation:

$$\%R = \frac{Experimental\ Concentration}{Known\ Amount\ Added} x\,100$$

Overall contamination and accuracy/bias will be reviewed for each matrix and analytical parameter. The data usability assessment will include any limitations on the use of the data, if it is limited to a particular matrix, data package, parameter, or laboratory. If the accuracy results yield data which are not usable, the data usability assessment will identify how this problem will be resolved and the potential need for resampling will be discussed in the final project report.

17.4 Representativeness

If field duplicates indicate spatial variability, the data usability assessment will evaluate the impact on the data. Overall sample representativeness will be evaluated for each matrix and analytical parameter by reviewing adherence to sampling procedures, QAPP requirements and audits, if performed. The data usability assessment will include any limitations on the use of the data, if limited to a particular matrix, data package, parameter, or laboratory. If the results of the evaluation of representativeness yield data which are not usable, the data usability assessment will identify how this problem will be resolved and the potential need for resampling will be discussed in the final project report.

17.5 Sensitivity and Quantitation Limits

Overall sensitivity will be reviewed for each matrix and analytical parameter. The impact on the lack of sensitivity or the reporting of higher quantitation limits by the laboratory will be assessed. The data usability assessment will include any limitations on the use of the data, if limited to a particular matrix, data package, parameter, or laboratory. If the results of the evaluation of sensitivity yield data which are not usable, the data usability assessment will identify how this problem will be resolved and the potential need for resampling will be discussed in the final project report.

17.6 Completeness

Completeness is the ratio of the number of valid sample results to the total number of samples analyzed or processed. Following completion of the testing, the percent completeness will be calculated by the following equation:

$$Completeness = \frac{(number\ of\ valid\ measurements)}{(number\ of\ measurements\ planned)} x\,100$$

Overall completeness will be reviewed for each matrix and analytical parameter. The goals for field and laboratory completeness are 90% and 95%, respectively. The data usability assessment will include any limitations on the use of the data, if limited to a particular matrix, data package, parameter, or laboratory. If the results of the evaluation of completeness yield data which are not usable, the data usability assessment will identify how this problem will be resolved and the potential need for resampling will be discussed in the final project report.

17.7 Data Limitations and Actions

The field and laboratory data collected during this investigation will be used to achieve the objectives identified in Sections 6.0 and 8.0 of this QAPP. The QC results associated with each analytical parameter for each matrix will be compared to the objectives presented in this QAPP. Data generated in association with QC results meeting the stated acceptance criteria (i.e., data determined to be valid) will be considered usable for decision-making purposes. Limitations on the use of the data will be stated and explained, if necessary.

In addition, the data obtained will be both qualitatively and quantitatively assessed on a project-wide, matrix-specific, and parameter-specific basis. Resuhs of the measurement error assessments will be applied against the site as a whole; any conclusions will be documented in the final report. Data generated in association with QC results not meeting the stated acceptance criteria may still be considered usable for decision-making purposes, depending on certain factors. This assessment will be performed by the TRC Project Manager, in conjunction with the TRC Project QA Manager, and the results presented and discussed in detail in the final report. Factors to be considered in this assessment of field and laboratory data will include, but not necessarily be limited to, the following.

- Conformance to the field methodologies and procedures proposed in the QAPP,
- Conformance to the EPA methods and laboratory SOPs cited in the QAPP,
- Adherence to proposed sampling strategy,
- Presence of elevated detection limits due to matrix interferences or contaminants present at high concentrations,
- Presence of analytes not expected to be present,
- Conformance to validation protocols included in the QAPP for both field and laboratory data,
- Unusable data sets (qualified as "R") based on the data validation results,
- Data sets identified as usable for limited purposes (qualified as "J") based on the data validation results,
- Effect of qualifiers applied as a result of data validation on the ability to achieve the project objectives,
- Status of all issues requiring corrective action, as presented in the QA reports to management,
- Effect of nonconformance (procedures or requirements) on project objectives,
- Adequacy of the data as a whole in meeting the project objectives, and

- Identification of any remaining data gaps and need to reevaluate data needs.

Every reasonable attempt will be made to eliminate any sources of sampling and analytical error as early as possible in the program. An ongoing data assessment program throughout the program will also assist in the early detection and correction of problems, thereby ensuring that project objectives are met.

Reconciliation with the project objectives will have been considered to have been met if the measurement performance criteria from Section 6.0 are met. If the data usability indicates that the project quality objectives in Section 8.0 have not been met, then the project management team will meet to determine if additional work needs to be performed.

APPENDIX A

RESUMES

TRC

PATRICK J. HANSEN, PE

EDUCATION
MSCE, Civil Engineering, Lehigh University, 1991
BSCE, Civil Engineering, Lehigh University, 1988

PROFESSIONAL REGISTRATIONS/CERTIFICATIONS
Professional Engineer, Pennsylvania, (#PE044649E), 1994
Professional Engineer, New Jersey, (#24GE03948000), 1995
Professional Engineer, Connecticut, (#18901), 1995
Professional Engineer, Maine, (#P11113), 2007

REPRESENTATIVE EXPERIENCE
As TRC's Director of Operations of the Philadelphia Metro region, Mr. Patrick J. Hansen, PE, has over 20 years of experience in environmental and engineering/construction disciplines, including; environmental programs, investigations and cleanups; permitting, due diligence, landfill closure, and regulatory negotiation. His work included many federal- and state-overseen projects, numerous Fortune 500 private clients; remedial design/planning and cost estimating, and cost recovery/litigation support, and construction.

Mr. Hansen exercised his entrepreneurial skills by opening and running his own firm for over 10 years where he applied his wide-base of skills to the full breadth of project needs associated with environmental projects. Work included sampling programs, regulatory negotiations/interaction, detailed due diligence, binding fixed-price remedial costing including multiple best case/worst case scenarios, cost-cap insurance management, trust fund reporting and equity distributions, remedial design, and construction oversight associated with multi-million dollar cleanups. The technical scope of projects included extensive earthmoving and construction management, landfill multi-media cap (including innovative geotextiles), wetland remediation and restoration, pump and treat scenarios, and industrial site soil capping.

Mr. Hansen has provided expert technical, managerial, and strategic guidance to many projects, including the following:

- Oversight of remediation at a major East Coast petroleum terminal and refinery. Project includes programmatic delineation of operation related impact including soils, ground- and surface-water, and free-product encompassing the 1,000 acres site. Responsibilities include review of design and decision documents, development of action recommendations, and report preparation.

- Development of RCRA Facility investigation Workplan for chemical manufacturing site located in EPA Region IV. The primary concerns were associated with PCB-laden soils with an estimated liability of $2 billion. Work included review of considerable amounts of historic documentation and site information, strategically focusing proposed investigations, and providing a remedial vision for the site.

- Complete construction oversight for design and remediation of metals impacted soil and groundwater is an estuary environment with NJDEP oversight. Work included the installation of interlocking sheeting immediate adjacent to an ongoing industrial operation building (including noise and vibration monitoring), gross contamination excavation and hazardous materials management, ground water controls, and construction of reinforced concrete facilities lined with geomembranes.

- Modernization of transit authority's passenger train maintenance shop in eastern Pennsylvania. Million-dollar project included temporary sheeting, caisson installation, dewatering, concrete foundations, and procurement and installation of truck and body hoists for married-pair train maintenance. Responsibilities included project management, field resource allocation, material/equipment acquisition, and construction management.

- New Jersey ISRA multi-million dollar cleanup of a former foundry in Cumberland County. This project was a fixed price liability transfer deal. Construction work included major earthwork and capping, gedsynthetics, and excavation several feet under a stream, requiring 24/7 pump-around and water management. Preliminary work included consolidating 10-years of investigative information; developing a strategic transfer and closure sfrategy; a focused soils and groundwater investigation to characterize the contaminants and significantly decrease client's liability; development of Remedial Action Workplan, Stream Encroachment Permit, Soil Erosion Permit.

- Remedial evaluation at multiple large-scale petroleum/ chemical sites under CERCLA, RCRA, or state regulatory programs. Services included program management of major claims. Work included extensive document review, development of site closure strategies, sampling approaches, and engineering cost estimates for various closure concepts. Developed detailed report discussing site conditions, remedial rationale, and justification of costs.

- Construction management activities at a CERCLA mandated, New Jersey DEP supervised 70-acre municipal landfill closure for a PRP group consisting of numerous major corporations. Multi-million dollar site activities included installation of multi-media cap; landfill gas system, and mechanical appurtenances; landfill leachate collection system; and surface-and storm-water controls.

- Remediation of inorganic-laden sediment site in New York. Construction work included sediment removal activities in an Army Corps designated water way, extensive water management, wetland reconstruction, and post-remedial confirmatory sampling.

- Remediation of inorganic-laden sediment and waste rock at a former 85-acres mine site, governed by the Corps of Engineers. Work included design oversight, and heavy construction including major excavation of waste material, wetland remediation in highly-challenging setting due to non-cohesive nature of waste sediments, and construction of a multi-media cap (geonets, geocomposite clay liner, etc.) over the island of waste rock. The site existed in an environmentally sensitive, ecologically-rich setting with active and positive public participation.

- Closure of a state Superfund site in western New York State. Provided complete remedial services at this 25-acre site to cap an industrial landfill containing waste china and to remediate adjacent wetlands impacted with lead. Services included pre-design investigations, complete remedial design including HDPE cap and fined lagoons, and construction management services. Conducted extensive negotiations to substantially reduce project costs. The entire project was fast-tracked in order to avoid the impending regulatory takeover of the project. Devised alternate regulatory protocols and deliverables to greatly accelerate the design schedule to meet client and regulatory objectives.

- Remediation of 3,000 orphan drums located in a New York operating facility. Work included work plan preparation, regulatory interaction, hazardous materials management/shipping/disposal, sampling/characterization, with daily EPA oversight.

- Design and construction management services for a high-profile, CERCLA mandated ground-water remediation system for an aquifer impacted by chlorinated solvents from a specialty chemical manufacturing operation in Massachusetts. The remediation included a ground-water extraction and ultra-violet (UV) oxidation treatment system. Work included advancing caissons/shoring proximate to a building. The system included 22 extraction wells, pneumatically operated extraction pumps, dual air compressors, dual UV-oxidation units, hydrogen peroxide addition unit, remote access telemetry, piping/valves, and mechanical appurtenances.

- Remediation of soil and ground water at a Fortune-500 client site in north Jersey. Project included sheeting/shoring issues, delineation, remedial options analysis and strategic input, preparation of design drawings and bid specifications for excavation and on-site ground water treatment, complete construction oversight, hazardous materials management, site permitting, and regulatory interaction.

- Remedial investigation at an inactive chemical manufacturing facility. The site soil was impacted with PCBs and metals and the ground water was impacted with VOCs and metals. Activities included soil/sediment and ground-water/surface-water sampling and analysis, site characterization, and remedial options evaluation. Responsibilities included data presentation, report preparation, remedial options evaluation/strategic input, regulatory approach, and cost estimates.

- Design for PCB site at former railyard Superfund site involving multiple quasi-governmental PRPs. Project included grading plans, stormwater plans and permits, complete design and specs.

- Complete site investigation resulting in client's release of liability and successful property and liability transfer. Activities at the site included collection and analysis of environmental samples strategic input to property transfer issues, aquifer use studies, tidal studies, report development, and supporting property transfer negotiations.

- Process- and storm sewer stabilization measures project for a Fortune 500 specialty-chemical manufacturing site under EPA oversight. Project included extensive delineation activities, evaluation of current process wastes and sewers, identification of available and appropriate industrial sewer rehabilitation measures, and selection and siting of optimal stabilization measures. The work was performed as an element of a RCRA Corrective Action Permit.

- Investigation, NIR, and work plan development of a Pennsylvania site involving a long industrial history and hazardous compounds in soils and groundwater. The complex site conditions and ongoing, complex site operations created a need for a strategic regulatory approach—dividing the site into better-defined AOCs, leading to efficient site closure.

- Development of regulatory dictated Closure Plan for active industrial waste landfill at an explosives-manufacturing facility in northern New Jersey. Closure included a cap; landfill gas venting; and erosion, surface- and storm-water piping, channels, and control structures.

- Construction of a wastewater treatment plant retrofit for a municipality in central New Jersey. Retrofit features included major excavation, a sequential batch reactor (SBR) treatment system consisting of CIP-concrete treatment tanks, aeration equipment, skimmers, sludge pumps and holding tanks, ultra-violet (UV) disinfection, low lift pump station, blowers, controls, telemetry, various large and small-diameter piping and valves, and mechanical appurtenances. Responsibilities included project management, field resource allocation, material/equipment acquisition, and construction management.

TRC
Results you can rely on

JORGE I. GOMEZ, CPG, LSRP

EDUCATION

B.S., Geology, The City University of New York, York College, 1988

PROFESSIONAL REGISTRATIONS/CERTIFICATIONS

Certified Professional Geologist, American Institute of Professional Geologists License CPG-09509
Professional Geologist - Commonwealth of PA, License No. PG-003185-G
NJDEP Subsurface Investigation, Underground Storage Tank (UST) License No. 0010902
NJDEP- LSRP

AREAS OF EXPERTISE

Mr. Jorge I. Gomez, CPG, LSRP has program management and technical experience in the following general areas:

- Environmental Assessments and Audits
- Underground Storage Tank Management
- Site Remediation Design and Implementation
- Groundwater Remediation
- Solid Waste Management
- Remedial investigations at State and Federal Superfund sites
- Design of ground-water monitoring and recovery systems
- Preparation of expert reports
- Ground-water exploration programs in unconsolidated and bedrock aquifers
- Interpretation and analysis of aquifer pumping test data
- Preparation of RI Workplans and RI Reports

REPRESENTATIVE EXPERIENCE

Mr. Gomez has over 20 years of experience environmental and groundwater supply consulting. He has managed numerous soil and ground water investigations projects at chemical plants, oil refineries, manufacturing facilities, and gas service stations in the Eastern United States, South America, the Caribbean, and Africa. His responsibilities include evaluation of technical documents and review of facility compliance, waste disposal issues, meeting with clients, attorneys and regulatory agencies, subcontractor hiring and scheduling, groundwater investigations in unconsolidated and bedrock formations, implementation of monitoring programs and data management, preparation of preliminary assessments, preparation of remedial investigation reports (RIR) and remedial action workplans (RAW), preparation of underground storage tank (UST) closure reports, and preparation of expert reports in support of the environmental litigation.

Soil and Groundwater Investigation/Remediation

Exxon Refinery, Soil and Groundwater Investigation - Bayway Refinery, New Jersey (Assistant Manager: 1990 – 1992)

Assisted with the preparation of a remedial investigation workplan (RIW) and coordinated the field activities, which included installation of numerous soil borings and monitoring wells to characterize the soil and ground water conditions at the site.

NJDEP Parks and Forestry, UST Closures and UST/AST installations - State Parks, Central and Northern New Jersey (Project Manager: 1998 – 2000)

Managed large-scale underground storage tank (UST) projects in the State of New Jersey. Tasks associated with these projects included preparation of bid specifications, construction management, preparation of air permits, contractor coordination and scheduling, UST removals, design and installation of UST and above ground storage tanks (AST), soil remediation, post-excavation sampling activities, and report preparation.

Ridgemont Shopping Center, Site and Remedial Investigation – Park Ridge, NJ (Project Manager: 2002 – 2005)

As a project manager, Mr. Gomez was responsible for investigation of chlorinated compounds that were detected in the borough's water supply wells. The site investigations included preparation of soil and groundwater investigation workplans, soil investigations and installation of monitoring wells in the unconsolidated and bedrock formations to evaluate the extent of the chlorinated volatile organic compounds (VOC) plume and groundwater flow direction. Mr. Gomez met with State representatives and coordinated the site and remedial investigation activities, and prepared the remedial investigation reports.

Former Forklift Manufacturer, Site Characterization and Remediation – Philadelphia, PA (Program Manager: 2006 – 2009)

Mr. Gomez was responsible for investigation and remediation of soils and groundwater impacted from a gasoline UST. Tasks associated with this project included UST removal, excavation and disposal of contaminated soils, groundwater pumping and treatment, installation of monitoring wells, groundwater sampling, preparation of progress reports, fate and transport model, and final characterization report.

New Jersey Transit, Soil and Groundwater Investigation – City of Trenton, NJ (Program Manager: 2006 – 2009)

Coordinated and managed remedial investigations and remedial actions at a former New Jersey Transit site. Prior to conducting the field activities, historical data and environmental reports were reviewed to evaluate the areas of concern (AOC) and contaminants present in those areas. The remedial investigations

and remedial actions conducted at the site included: closure of an oil/water separator system, soil remediation in two AOCs, recovery of impacted groundwater, monitoring well installation, quarterly groundwater sampling, and preparation of a remedial investigation and remedial action report. A classification exception area (CEA) as an institutional control was proposed as the remedial action for the groundwater at the site.

SMC, Exit Strategy – Newfield, NJ (Project Manager: 2010 – Present)
Mr. Gomez serves as Project Manager for multiple task exit strategy project and he is involved in a wide variety of assignments including preparation of cost estimates, coordination with subcontractors, soil and groundwater investigations, compliance with New Jersey Pollutant Discharge Elimination System (NJPDES) permit, evaluation of environmental report and data, and preparation of Field Sampling Plan (FSP).

Groundwater Exploration

Sun Oil Refinery, Well Redevelopment and Pumping Tests – Puerto Rico (Project Manager: 1988 – 1990)

Mr. Gomez assisted with the rehabilitation of water supply wells for an oil refinery in Puerto Rico. He was also responsible for conducting ground water exploration programs, data collection, supervision of test drilling, performance of step-drawdown and long term pumping tests and report preparation.

City of East Orange, Ground Water Exploration - East Orange, NJ (Project Manager: 1995 – 1998)

Mr. Gomez conducted an extensive ground water exploration in glacial deposits and bedrock formation. Tasks associated with the project included drilling of test wells, preparation of a hydrogeologic test proposal, borehole logging, mapping, performance of aquifer test, and data analysis, preparation of a water allocation permit, and preparation of a hydrogeologic report.

Warren County, Hydrogeologic Studies – Warren County, NJ (Project Manager: 2004)

Compiled hydrogeologic data to assist two townships in Warren County, New Jersey with the evaluation and management of the ground water resources and environmental issues.

SPECIALIZED TRAINING

- Forty-Hour OSHA Health and Safety Training, 1988
- Basic GIS Concepts, University College, Denver, Colorado. Spring 2004
- DOT/HM-126F HAZMAT Training 49CFR 172, subpart H, 2005
- Waste Management Employee Training Program 40 CFR 265.16, 2005

- EPA/AHERA/New Jersey Asbestos Contractor/Supervisor, August 2005
- EPA/AHERA/Pennsylvania Asbestos Building Inspector, November 2005
- Site Remediation Basics, December 2009

PROFESSIONAL AFFILIATIONS

- American Institute of Professional Geologist

SELECTED PUBLICATIONS AND PRESENTATIONS

Gomez, J. and Uhl, V.W., 1990. Quantifying Well Redevelopment Efforts: Paper presented at International Ground water Engineering Conference on Water Well Monitoring, Maintenance and Rehabilitation in Cranfield, U.K.

TRC

KAREN M. VETRANO, Ph.D.

EDUCATION

Ph.D., Toxicology, University of Connecticut, 1992
B.S., Toxicology, Northeastern University, 1986

AREAS OF EXPERTISE

Dr. Karen M. Vetrano has 19 years of experience encompassing:

- Expert Testimony and Litigation Support
- Human Exposure and Risk Assessment
- Ecological Hazard Characterization and Risk Assessment
- Environmental Fate and Transport
- Toxicological Evaluations
- TSCA PMN Submissions
- Exposure Assessments
- Odor Evaluation
- Indoor Air Quality Investigations

REPRESENTATIVE EXPERIENCE

Dr. Vetrano manages TRC's Risk Assessment and Toxicology Practice as well as the Odor Evaluation and Control Groups. She supervises and provides Senior Level support for projects that include human health and ecological risk assessments, toxicological evaluations, exposure assessments, labeling and preparation of material safety data sheets (MSDS), odor evaluation, indoor air quality and industrial hygiene program reviews. Dr. Vetrano also provides expert witness and litigation support services for risk assessment, odor and lead poisoning issues.

Dr. Vetrano provides management and technical support for the various components of human exposure and health risk assessments under such programs as Superfund, Resource Conservation and Recovery Act (RCRA), California Proposition 65, the Massachusetts Contingency Plan (MCP) (as well as other individual State programs) and EPA's Brownfield Program. The general components in these assessments include validation of data, modeling of environmental concentrations, identification of relevant land uses and activities, assessment of chemical intakes, evaluation of chemical toxicity and characterization of potential health risks from chemical exposures.

Expert Testimony and Litigation Support

Confidential Law Firm, Toxicological Support – NY (Project Manager and Toxicologist: 2005-2008)
Dr. Vetrano is providing toxicological support and Expert Witness services for a lawsuit in which plaintiff is contending his occupational exposure to metals caused his colon cancer. She reviewed corporate MSDSs, hazardous communications information, and internal documentation as well as plaintiff's

medical information. She has provided expert reports and provided testimony in a deposition.

Various Confidential Law Firms, Toxicological Support – NY (Toxicologist: 2005-Present)
Dr. Vetrano is providing toxicological support in a number of lead poisoning cases. She is representing defendants, by providing blood lead modeling to determine if living spaces are a source of lead poisoning or if altemative sources of lead are possible.

Confidential Client, Major Petrochemical Firm, Risk Assessment Support – TX (Project Manager and Lead Risk Assessor: 2004-Present)
Dr. Vetrano is providing risk assessment support in response to litigation. Community is suing firm as a result of 1955 gasoline spill which contaminated groundwater under the town. Risk assessment conducted showing no vapor intrusion into homes and thus no risk. Dr. Vetrano is providing expert testimony as needed.

Confidential Client, Consumer Product Manufacturer, Comparative Odor Evaluation – NJ (Project Manager: 1994)
Dr. Vetrano designed and performed comparative odor evaluation studies to evaluate the efficacy of consumer odor control product versus competing brand as part of a false advertising suit. She represented the client and provided testimony in deposition and court room.

<u>Human Exposure and Risk Assessment – Hazardous Waste Sites</u>

Confidential Client, Former Illegal Dump Site, Human Health Risk Assessment – NJ (Task Manager and Lead Risk Assessor: 2003-Present)
Dr. Vetrano is currently serving as Task Manager for a comprehensive baseline human health risk assessment for a Superfund site in New Jersey. The site is a former illegal dumping site at which PCBs are the primary contaminant of concern. A human health risk assessment to evaluate recreational exposures to surface water, soils, local game will be conducted. The results of the risk assessment will be used by the client to develop potential remedial solutions at the site.

Confidential Client, FAA, Human Exposure and Risk Assessment – NJ (Task Manager and Lead Risk Assessor: 1996-Present)
Dr. Vetrano is performing a qualitative and quantitative assessment of risks to human and ecological receptors potentially impacted by activities conducted at a federal facility site in New Jersey. She is providing technical support in the quantification of risks from multiple exposure pathways (dermal absorption following contact with soil and water, and ingestion of contaminated soils and drinking water sources) and current and future land use scenarios. She also conducted risk assessments at numerous AOCs on site.

Confidential Client, Former Landfill Site, Human Health Risk Assessment – NJ (Task Manager and Lead Risk Assessor: 2008-Present)
Dr. Vetrano is currently serving as Task Manager for a comprehensive baseline human health risk assessment for a Superfund site in New Jersey. The site is a former landfill at which low-level PAHs are the principal contaminants of concern. A human health risk assessment to evaluate recreational exposures to surface water, sediments, soils, and local game will be conducted. The results of the risk assessment will be used by the client to develop potential remedial solutions at the site.

Confidential Client, Phosphate Mine, Human Health Risk Assessment – Southeastern ID (Task Manager and Lead Risk Assessor: 1996-Present)
Dr. Vetrano completed a comprehensive baseline human health risk assessment for a former phosphate mine located near the Blackfoot River in southeast Idaho. Tailings from the mining operation resulted in the leaching of selenium into surface waters of a nearby stream. A human health risk assessment to evaluate recreational exposures to surface water, soils, local game was conducted. The results of the risk assessment are being used by the client to develop potential remedial solutions at the site.

Confidential Client, Railroad Yard, Human Health Risk Assessment – Iowa (Task Manager and Lead Risk Assessor: 2002-2008)
Dr. Vetrano served as Task Manager for a comprehensive baseline human health risk assessment for a railroad yard in Iowa, where chlorinated solvents are the primary contaminant of concern. A human health risk assessment to evaluate exposures to soils, sediments, surface water and ground water was conducted. An indoor air quality survey and risk assessment was conducted for the locomotive rebuild facility under which a plume of PCE is located. Results of the study indicated that there are no significant volatilization issues within the facilty.

Confidential Client, Former Refinery Site, Human Exposure and Risk Assessment – MT (Project Manager and Lead Risk Assessor: 1999-2009)
Dr. Vetrano conducted a human exposure and risk assessment pertaining to ground water contamination at a former refinery. Residential and school indoor air concentrations were directly measured and incorporated into a human health risk assessment. Dr. Vetrano represented the client in meetings with state regulatory agency as well as public meetings. She has also provided expert witness support during litigation.

Confidential Client, Former MGP Site, Human Exposure and Risk Assessment – Eastern MA (Task Manager and Lead Risk Assessor: 2001-2003)
Dr. Vetrano conducted a Method 3 risk assessment under the MCP at a former MGP site, which is to be the future site of a middle school. The general components in this assessment included validation of data, modeling of environmental concentrations, identification of relevant exposure scenarios,

assessment of chemical intakes, evaluation of chemical toxicity and characterization of potential health risks from chemical exposures. EPA's Johnson and Ettinger Model was used to evaluate the risks from indoor air from the volatilization of constituents into indoor air. The results of the risk assessment were used to assess whether a level of no significant risk existed with respect to the soil and ground water conditions present at the site.

Confidential Client, Former Tie Treating Facility, Human Exposure and Risk Assessment – NM (Task Manager and Lead Risk Assessor: 1996-2002)
Dr. Vetrano conducted a human exposure and risk assessment pertaining to soil and ground water contamination at a former tie treating facility. She provided technical support in the quantification of risks from multiple exposure pathways (dermal absorption following contact with soil and water, and ingestion of contaminated soils and drinking water sources, and inhalation of volatiles from soil and ground water using EPA's Johnson and Ettinger models) and current and future land use scenarios. Risk assessment provided risk-based clean up levels to be used in the feasibility study. Dr. Vetrano represented the client in meetings with state regulatory agency and EPA Region VI.

Confidential Client, Manufacturing Facility, Human Exposure and Risk Assessment – Southern CT (Task Manager and Lead Risk Assessor: 1998-1999)
Dr. Vetrano conducted a human exposure and risk assessment pertaining to ground water contamination at a manufacturing facility. Residential indoor air concentrations were modeled from the volatilization of VOCs from ground water and incorporated into a human health risk assessment using the Johnson and Ettinger model. Additionally, direct measurement of indoor air concentrations from the facility itself were also incorporated into the evaluation of risk to current workers.

Confidential Client, Brownfield Site, Human Exposure and Risk Assessment – Southern CT (Task Manager and Lead Risk Assessor: 1999-2000)
Dr. Vetrano conducted a human exposure and risk assessment pertaining to soil contamination at a former manufacturing facility. An immediate hazard evaluation was conducted due to presence of elevated soit contaminants on-site and the use of the site as a play area for nearby resident children. The results of the evaluation prompted the municipality to fence off the site to prohibit access to the site. Dr. Vetrano participated in public meeting to discuss risk assessment results.

U.S. Naval Education and Training Center (NETC), Human Health Risk Assessments – Newport, RI (Risk Assessor: 1992)
Dr. Vetrano performed multiple pathway health risk assessments on five Superfund sites at the NETC. She provided technical support in the quantification of risks from multiple exposure pathways (inhalation of fugitive dusts and volatile gases, dermal absorption following contact with soil, sediment and water, and ingestion of contaminated dusts, soils, sediments, shellfish, and drinking water sources) and current and future land use scenarios.

Naval Construction Battalion Center (NCBC), Health Risk Assessments – Davisville, RI (Risk Assessor: 1993)
Dr. Vetrano performed multiple pathway health risk assessments on Superfund sites at the NCBC. She provided technical support in the quantification of risks from multiple exposure pathways (inhalation of fugitive dusts and volatile gases, dermal absorption following contact with soil, sediment and water, and ingestion of contaminated dusts, soils, sediments, and drinking water sources) and current and future land use scenarios.

Confidential Client, Utility Site, Human Exposure and Risk Assessment – Eastern MA (Risk Assessor: 1998)
Dr. Vetrano conducted a Method 3 risk assessment under the MCP. The general components in this assessment included validation of data, modeling of environmental concentrations, identification of relevant exposure scenarios, assessment of chemical intakes, evaluation of chemical toxicity and characterization of potential health risks from chemical exposures. The results of the risk assessment were used to assess whether a level of no significant risk existed with respect to the soil and ground water conditions present at the site.

Confidential Client, Shooting Range, Human Exposure and Risk Assessment – Western MA (Risk Assessor: 1996-2002)
Dr. Vetrano conducted a Method 1 risk assessment under the MCP. The general components in this assessment included validation of data, modeling of environmental concentrations, and identification of relevant exposure scenarios pertaining to lead and PCB exppsure. The results of the risk assessment were used to assess whether a level of no significant risk existed with respect to the soil conditions present at the site.

Confidential Client, Trucking Facility, Human Exposure and Risk Assessment – Eastern MA (Risk Assessor: 1998-1999)
Dr. Vetrano conducted a Method 1 risk assessment under the MCP. The general components in this assessment included validation of data, modeling of environmental concentrations and identification of relevant exposure scenarios. The results of the risk assessment were used to assess whether a level of no significant risk existed with respect to the soil and ground water conditions present at the site.

Confidential Client, Trucking Facility, Human Exposure and Risk Assessment – Western MA (Risk Assessor: 1998-1999)
Dr. Vetrano conducted a Method 1 and Method 3 risk assessment under the MCP. The general components in this assessment included validation of data, modeling of environmental concentrations, identification of relevant exposure scenarios, assessment of chemical intakes, evaluation of chemical toxicity and characterization of potential health risks from chemical exposures. The results of the risk assessment were used to assess whether a level of no significant risk

existed with respect to the soil, ground water and indoor air conditions present at the site.

Human Exposure and Risk Assessment – Air Toxics

Confidential Client, Munitions Incinerator, Multipathway Human Health and Ecological Risk Assessments – NV (Project Manager and Lead Risk Assessor: 2006-Present)
Dr. Vetrano is currently providing technical expertise to assess the risks from the emissions from munitions incinerators located in Nevada. A protocol for the multiple pathway human health and ecological risk assessments, which follow current EPA and state guidance for hazardous waste incinerators/combustion emissions, has been submitted and approved by the appropriate regulatory agencies. Once the Trial Burn has been conducted, Dr. Vetrano will perform site-specific risk assessment modeling and provide technical expertise in the areas of identification and assessment of multiple routes of exposure, including inhalation, ingestion of locally produced foodstuffs (vegetables, beef and dairy) and locally caught fish.

Confidential Client, Specialty Chemicals Manufacturer, Multipathway Human Health and Ecological Risk Assessments – NY (Task Manager and Lead Risk Assessor: 1996-Present)
Dr. Vetrano is currently providing technical expertise to assess the risks from the emissions from a rotary kiln and a fixed box incinerator located in upper state New York. A protocol for the multiple pathway human health and ecological risk assessments, which follow current EPA and state guidance for hazardous waste incinerators/combustion emissions, was been prepared and submitted to the appropriate regulatory agencies. Upon approval, Dr. Vetrano prepared a site-specific risk assessment which included risk assessment modeling and provided technical expertise in the areas of identification and assessment of multiple routes of exposure, including inhalation, ingestion of locally produced foodstuffs (vegetables, beef and dairy) and locally caught fish. Constituents of potential concern included metals (including mercury), chlorine, volatile organic compounds, semivolatile organic compounds, PCBs and dioxins. She worked closely with the client to ensure a technically sound product suitable for EPA and state agency submission.

Confidential Client, Cement Plant, Toxicological Evaluation – Ravena, NY (Project Manager and Toxicologist: 2005)
Dr. Vetrano provided a toxicological evaluation of emissions from a cement plant that proposed to burn TDF as fuel. She represented the client during public meetings and responded to public comments as part of the successful permitting process.

Confidential Client, Human Exposure and Risk Assessment, 90 Church Street Site – New York, NY (Project Manager and Lead Risk Assessor: 2002-2003)

Dr. Vetrano conducted a human exposure and risk assessment pertaining to indoor environmental contamination as a result of the World Trade Center disaster. She evaluated indoor air and dust wipe sample data obtained from eight floors of the building. The data was incorporated into a site-specific human health risk assessment following EPA guidelines. The human health risk assessment was conducted to provide a site-specific evaluation of the current environmental conditions in the workspaces and common areas at 90 Church Street in order to support insurance claims for clean-up of the building interior. Dr. Vetrano evaluated and commented on contractor's proposed clean-up plans and clean-up levels.

Confidential Client, Human Exposure and Risk Assessment, One Liberty Plaza Site – New York, NY (Project Manager and Lead Risk Assessor: 2001-2002)

Dr. Vetrano served as Task Manager for a human exposure and risk assessment pertaining to indoor environmental contamination as a result of the World Trade Center disaster. She evaluated indoor air and dust wipe sample data obtained from eight floors of the building. The data was incorporated into a site-specific human health risk assessment following EPA guidelines. The human health risk assessment was conducted to provide a site-specific evaluation of the current environmental conditions in the workspaces and common areas at One Liberty Plaza in order to determine whether or not it was safe to re-occupy the workspace. Dr. Vetrano participated in employee public meetings to present findings of the human health risk assessment and answer concerned employee questions.

Confidential Client, Proposed Power Plants, Exposure Assessment and Multipathway Human Health Risk Assessments – Various Sites, NY (Lead Risk Assessor: 2000-2005)

Dr. Vetrano provided technical expertise to assess the risks from the emissions from proposed power plants to be located in New York State. She evaluated the proposed short-term and long-term air emissions as required under the Stipulations as part of the Article X submission to the state. As part of this evaluation, she has identified risk-based air concentration benchmarks required for the evaluation. If required, multiple pathway human health risk assessments, which follow current EPA and state guidance for hazardous waste incinerators/combustion emissions, were conducted. Dr. Vetrano performed site-specific risk assessment modeling and provided technical expertise in the areas of identification and assessment of multiple routes of exposure, including inhalation, ingestion of locally produced foodstuffs (vegetables, beef and dairy) and locally caught fish.

Confidential Client, Specialty Chemical Manufacturers, Multipathway Human Health Risk Assessments – Various Sites (Project Manager and Lead Risk Assessor: 1994-2002)

Dr. Vetrano served as a Task/Project Manager for ten separate projects, which assessed the risks from the emissions from hazardous waste incinerators located

around the United States. Specific locations included New York, Tennessee, Louisiana, Kansas, Missouri, and West Virginia. She prepared a Risk Assessment Protocol and conducted multiple pathway human health risk assessments which followed current EPA and state guidance for hazardous waste incinerators/combustion emissipns. Dr. Vetrano identified current and future land uses and activities in areas around the site through site visits and verbal/written contact with various state, county and local agencies. Recreational use of ponds and streams, beef and dairy farming and residential land use were among the local land uses and activities identified. Dr. Vetrano performed site specific risk assessment modeling and provided technical expertise in the areas of identification and assessment of multiple routes of exposure, including inhalation, ingestion of locally produced foodstuffs and locally caught fish, dermal exposure and ingestion of mother's milk. She worked closely with clients to ensure a technically sound product suitable for EPA and state agency submission.

Confidential Client, Alternative Fuel Burning Cement Kiln, Human Health Risk Assessment – NY (Risk Assessor: 1994)
Dr. Vetrano performed an assessment of the risks to human health from the emissions from a cement kiln, requested for compliance under RCRA. The multiple pathway human health risk assessment involved the quantitation of doses and risks from current and future acfivities based on a realistic maximum exposure scenario.

Human Exposure and Risk Assessment – Product Evaluations

New York City Department of Health and Mental Hygiene (NYCDOHMH), Human Exposure Evaluation, Literature Review of Crumb Rubber Infill – NY (Project Manager and Toxicologist: 2007-2008)
Dr. Vetrano managed and participated in a large literature review of the potential health and safety risks of synthetic turf crumb rubber infill which is manufactured from recycled tires. The review encompassed the chemical make-up of the infill material, including the constituents of potential concern, health risk information and potential safety issues. The NYCDOHMH published the report entitled "A Review of the Potential Health and Safety Risks from Synthetic Turf Fields Containing Crumb Rubber Infill" on their website.

New York City Department of Health and Mental Hygiene (NYCDOHMH), Air Sampling and Human Health Evaluation, Crumb Rubber Infill – NY (Project Manager and Toxicologist: 2008-2009)
Dr. Vetrano managed and provided toxicological support for an air quality survey conducted at two synthetic turf fields in New York City. This project was in response to the literature review study that identified data gaps in the knowledge base of crumb rubber, namely the lack of air data quantifying emissions over synthetic turf fields with crumb rubber infill. TRC conducted air sampling over a three day period at 2 synthetic turf fields. In addition, ambient air and surface

temperature readings were conducted. The concentrations of constituents of concern detected in the air samples were compared to background and New York air guidelines. No constituents were considered to be at a concentration considered to be a health concern and none exceeded background conditions. The NYCDOHMH published the report entitled "Air Quality Survey of Synthetic Turf Fields Containing Crumb Rubber Infill" on their website.

Confidential Client, City Agency –Human Health Evaluations, Crumb Rubber Infill - NY (Toxicologist: 2009)
Dr. Vetrano provided toxicological support to a City agency interested in the use of synthetic turf fields with crumb rubber infill. Dr. Vetrano reviewed installer specifications and assisted in the development of guidelines for the installers to insure the use of a safe product.

Confidential Client, Consumer Product Company, Human Exposure and Risk Assessment – NJ (Project Manager and Risk Assessor: Present)
Dr. Vetrano is conducting a human exposure assessment of a class of consumer products to support a Safe Use Determination under Proposition 65. She monitored for alpha-quartz exposure during the use of numerous brands of the product. She also calculated a time weighted exposure for dust and alpha-quartz exposures and evaluated the potential health risks resulting from alpha-quartz exposure during the use of this product.

Confidential Client, Trade Association, Human Exposure and Risk Assessment – Washington, DC (Project Manager and Risk Assessor: 1996-1998)
Dr. Vetrano conducted a human exposure assessment of a class of consumer products to support a Safe Use Determination under Proposition 65. She monitored for alpha-quartz exposure during the use of numerous brands of the product. Dr. Vetrano also calculated a time weighted exposure for dust and alpha-quartz exposures and evaluated the potential health risks resulting from alpha-quartz exposure during the use of this product.

Confidential Client, Product Evaluation, Human Exposure and Risk Assessment –CT (Project Manager and Risk Assessor: 1998)
Dr. Vetrano conducted a human exposure assessment for a consumer product to determine labeling requirements under Proposition 65. She monitored for alpha-quartz, carbon monoxide and polyaromatic hydrocarbon exposure during the use of this consumer product. Dr. Vetrano conducted a risk assessment under Proposition 65 to determine whether a level of no significant risk existed with the use of this product. She also calculated a time weighted exposure for alpha-quartz exposure and evaluated the potential health risks resulting from alpha-quartz exposure during the use of this product.

Confidential Client, Chemical Manufacturer, Human Exposure Studies to MTBE, Specialty – PA (Toxicologist: 1994-2000)
Dr. Vetrano assisted in the developrnent and management of human exposure studies to methyl tertiary butyl ether (MTBE) in conjunction with Yale University's Pierce Laboratory. Additional tasks involved in this project included the evaluation of risks to human subjects exposed to gasoline vapors in controlled exposure studies. An extensive literature search and evaluation of adverse effects reported from inhalation exposure to gasoline, C4C6 alkenes (olefins) and simple ethers were also conducted. While human data was emphasized, animal data was also used.

Ecological Hazard Characterizations and Risk Assessments

Confidential Client, Petroleum Refinery, Ecological Endangerment Assessment – WY (Risk Assessor: 1998-2002)
Dr. Vetrano performed a semi-quantitative evaluation of constituent levels in river sediments to assess the impact to aquatic receptors. The goal of this evaluation was to aid in the placement of a permanent impermeable barrier wall along the bank of the river as an Interim Measure to prevent residual contaminants in bank soils and sediments from adversely impacting the quality of the river.

Confidential Client, FAA, Ecological Risk Assessment – NJ (Risk Assessor: 1999)
Dr. Vetrano performed a qualitative and quantitative assessment of risks to ecological receptors potentially impacted by activities conducted at a federal facility site in New Jersey. She assisted in the selection of potential constituents of concern in surface soil, sediments and surface water. Potential impacts were evaluated for both aquatic and terrestrial receptors using a combination of chemical and toxicity data collected in the field and a food chain modeling approach to assess bioaccumulation potential of the constituents of concern.

Confidential Client, Industrial Facility, Ecological Risk Assessment – NJ (Risk Assessor: 1999)
Dr. Vetrano performed a qualitative and quantitative assessment of risks to ecological receptors potentially impacted by activities conducted at an industrial site in New Jersey. She assisted in the selection of potential constituents of concern in surface soil, sediments and surface water. Potential impacts were evaluated for both aquatic and terrestrial receptors using a combination of chemical and toxicity data collected in the field and a food chain modeling approach to assess bioaccumulation potential of the constituents of concern.

U.S. Naval Education and Training Center (NETC), Ecological Risk Assessments – Newport, RI (Risk Assessor: 1993)
Dr. Vetrano performed ecological risk assessments on five Superfund sites at the NETC. She provided technical support in the quantification of risks to aquatic

and terrestrial receptors using a combination of chemical and toxicity data collected in the field and food chain modeling.

Confidential Client, Alternative Fuel Burning Cement Kiln, Ecological Risk Assessment – NY (Risk Assessor: 1994)
Dr. Vetrano performed an assessment of the risks to ecological receptors from the emissions from a cement kiln, requested for compliance under RCRA. The ecological assessment involved a variety of inorganic and organic pollutants whose presence in water, air, soils and sediments was evaluated in relation to the at risk plant and animal (both aquatic and terrestrial) receptor species.

Confidential Client, Environmental Endangerment Assessment, Long Island Sound – CT (Risk Assessor: 1993)
Dr. Vetrano performed numerous water discharge assessments for Long Island Sound and tidal rivers, focusing upon the potential for drilling mud releases to damage benthic habitats. She evaluated the potential environmental endangerment by this drilling mud on the habitats, food sources and reproduction of the affected benthic organisms as well as subsequent re-colonization of the impacted areas by these species.

Toxicological Evaluations

Confidential Client, City Agency, Health Review, New York (Project Manager and Toxicologist: 2007-present)
Dr. Vetrano is currently performing an assessment of the physical and health risks of the use of crumb rubber from recycled tires in synthetic turf playing fields. Dr. Vetrano is conducting a comprehensive review of the literature to identify the hazards associated with the use of crumb rubber as well as the data gaps. A sampling protocol to address the data gaps will be developed subsequent to the development of a report to assist the City Agency in making recommendations on the use of crumb rubber.

Confidential Client, Toy Manufacturer, Art Materials Labeling Review – Colchester, CT (Project Manager and Toxicologist: 2/2006)
Dr. Vetrano performed an assessment of chronic risks associated with the ingredients of three paints used in children's art supplies. The assessment was conducted in accordance with ASTM Practice D-4236.

Confidential Client, Toy Manufacturer, Art Materials Labeling Review – Irwindale, CA (Project Manager and Toxicologist: 8/2003)
Dr. Vetrano performed an assessment of chronic risks associated with the ingredients of crayons used in children's art supplies. The assessment was conducted in accordance with ASTM Practice D-4236.

Confidential Client, Consumer Product Manufacturer, Toxicological Support and Preparation of Material Safety Data Sheets (MSDSs) – Cincinnati, OH (Project Manager and Toxicologist: 1994-1998)

Dr. Vetrano provided toxicological support to a nationwide consumer product manufacturer by reviewing toxicological study and chemical analysis reports for the review and revision of, or preparation of, product MSDSs for compliance with OSHA and SARA Title III.

The Chlorine Institute, Inc., Review of Toxicological Literature and Preparation of Health Effects Summary Document – Washington, DC (Project Manager and Toxicologist: 1997-1998)
Dr. Vetrano performed a comprehensive review of the toxicological literature for the health and environmental effects of molecular chlorine. She prepared a health effects summary document which has been published by the Chlorine Institute as Pamphlet 90: Molecular Chlorine: Health and Environmental Effects (November, 1998).

Center for Disease Control, Agency of Toxic Substances and Disease Registry Peer Review Services – Atlanta, GA (Toxicologist: 1994-1998)
Dr. Vetrano provided peer review expertise for the Center for Disease Control, Agency of Toxic Substances and Disease Registry (ATSDR) to meet the requirements of CERCLA Section 104(I)(13). She provided a review of grant proposals written by state health officials or university affiliated investigators and evaluated project strengths and weaknesses, the extent of feasibility and appropriateness of the proposed research plan, and demonstration that the results will add significant new information to the scientific community and have the potential for publication.

Center for Indoor Air Research, Peer Review Services – MD (Toxicologist: 1994-1998)
Dr. Vetrano provided peer review expertise for the Center for Indoor Air Research (CIAR). She provided a review of grant proposals written by state health officials or university affiliated investigators and evaluated project strengths and weaknesses, the extent of feasibility and appropriateness of the proposed research plan, and demonstration that the results will add significant new information to the scientific community and have the potential for publication.

Confidential Client, Specialty Chemicals Manufacturer, Review of Toxicological Literature and Studies and Preparation of Toxicological Profiles – WV (Toxicologist: 1994-1996)
Dr. Vetrano provided support to a nationwide specialty chemicals manufacturer by reviewing toxicological study protocols and reports, preparing health effects statements for pre-manufacturing notification for proposed products and toxicological summary reports for current products. Summary reports are based on a review of toxicological literature for each product and an evaluation of the results of recent toxicological studies. Reviews and revises the material safety data sheets (MSDSs) for products for compliance with OSHA and SARA Title III.

Silicones Environmental Health and Safety Council of North America (SEHSC), Critical Review of Data – Washington, DC (Study Manager and Toxicologist: 1994-1996)
Dr. Vetrano managed the extensive review and summary of the health and safety studies submitted on the 56 siloxanes covered in the TSCA Section 8(d) Reporting Rule. She assisted in the organization and summarization of environmental and toxicological data from the greater than 2000 reports that were submitted on these chemicals into data summaries, compiled by siloxane class, to provide overview infonnation. Dr. Vetrano provided succinct, accurate summarizations of health and environmental impacts of individual materials, and by class, prepared summary text, and reviewed the database used to track the thousands of studies/reports.

Confidential Client, Major Adhesives Manufacturer, Chemical Toxicity Review – CT (Project Manager and Toxicologist: 1994-1996)
Dr. Vetrano performed an annual review of the toxicity of more than 500 chemicals used in adhesive manufacturing. She utilized toxicological expertise in the evaluation and interpretation of the toxicological data for these chemicals.

Environmental Research Group (ERG)/EPA, Toxicological Literature Evaluation – Washington, DC (Toxicologist: 1992)
Dr. Vetrano performed a comprehensive review of the toxicological literature for contact-site carcinogens for ERG/EPA. She provided technical support by critically evaluating the existing toxicological literature for contact-site carcinogens and conducted literature searches using online computer toxicology databases.

EPA's Office of Air Quality Planning and Standards, Toxicological/ Pharmacokinetic Database Evaluation – Washington, DC (Toxicologist: 1992)
Dr. Vetrano assisted in developing a route-to-route extrapolation of cancer potency factors used in risk assessments. She provided technical support by critically evaluating toxicological and pharmacokinetic databases to determine the validity of extrapolating oral-based cancer potency estimates to the inhalation route. She focused on hazardous air pollutants listed in the Clean Air Act Amendments.

Confidential Client, Specialty Chemical Manufacturer, Toxicological Support Services – Newtown Square, PA (Project Manager and Toxicologist: 1993-1996)
Dr. Vetrano provided toxicological support services required to conduct an ethyl tertiary butyl ether (ETBE) testing program to acquire toxicology data in advance of its potential use as a fuel oxygenate. She assisted in the design of the testing program that was devised to screen for effects in standardized subchronic, reproductive, developmental, neurotoxicity, pharmacokinetic and mutagenicity studies. As part of the support services, Dr. Vetrano had been involved in

protocol development, study placement at toxicological facilities, project oversight, and data and report reviews.

TSCA PMN Submissions

Confidential Client, Specialty Materials Manufacturer, PMN Preparation Services, Rogers, CT (Project Manager and Toxicologist: 2000, 2005)
Dr. Vetrano provided PMN preparation services required to request a Low Volume Exemption (LVE) for their materials. Dr. Vetrano also applied to the Chemical Abstract Services (CAS) for assignment of a CAS Index name and number. The Client successfully obtained the LVEs from the EPA.

Odor Evaluation

Dr. Vetrano manages TRC's Olfactory Laboratory and serves as the panel moderator for TRC's volunteer sensory panel for evaluation of odorous emissions from a number of sources including manufacturing facilities, wastewater treatment and sludge composting facilities, waste disposal facilities, paper pulp mills and petroleum refineries. She is currently serving as Task Manager for an odor monitoring project for a local waste to energy plant. Dr. Vetrano has also conducted odor evaluation studies for the determination of dilution to threshold values for specific chemicals as well as comparative testing for odor control products.
Confidential Client, National Hog Producer, Odor Monitoring – MO (Project Manager: 2007-Present)
Dr. Vetrano serves as Project manager for the largest on-going odor monitoring project in the United States. The Project is staffed by over 40 trained odor monitors, who conduct ambient odor monitoring at fixed locations in support of the client in litigation proceedings. Odor readings are conducted every 15 minutes over daily odor monitoring periods using the Nasal Ranger™. The data has been used to successfully defend the client in a lawsuit regarding hog odors.

Confidential Client, Waste to Energy Plant, Odor Monitoring – CT (Task Manager: 1999-Present)
Dr. Vetrano serves as Task Manager for the maintenance of a 24-hour odor complaint hotline. As part of this task, Dr. Vetrano coordinates the hotline response team as well as responds to odor complaint calls from local citizens and deals with facility personnel. Additionally, Dr. Vetrano coordinated and served on the weekend odor monitoring team. TRC provided necessary trained personnel support intensive odor monitoring on weekend nights. The odor monitoring patrol followed a previously identified route map that was continually monitored during the course of each shift. The route was known to include locations of odor detection previously identified to the client during TRC's ongoing support of the odor complaint hotline and included towns and specific neighborhoods surrounding the facility. In addition to these locations, other odor sources were monitored during the course of the patrol shift.

Confidential Client, Waste Water Treatment Plant, Odorous Emissions Testing – Hartford, CT (Project Manager: 2000-Present)
Dr. Vetrano performs odor threshold studies on a municipal wastewater treatment plant. The program evaluates the significant sources of odor to determine potential contributions to local community odor levels. She conducts odor evaluations to evaluate the efficacy of online odor control systems.

Confidential Client, Waste Water Treatment Plants, Odorous Emissions Testing – Various (Project Manager: Present)
Dr. Vetrano performs odor threshold studies on municipal wastewater treatment plant facilities. Programs evaluate the significant sources of odor to determine potential contributions to local community odor levels. In some cases, emissions were known to contain reduced sulfur compounds, volatile organic compounds, semivolatile organic compounds, and ammonia. In some cases, a toxicological evaluation was conducted to assess the potential adverse effects to the odor panelists. Compound concentrations were compared to known standards (ceiling limits) and samples were diluted to yield concentrations below the ceiling limits, if appropriate.

Confidential Client, Engineering Firms, Odorous Emissions Testing – Various (Project Manager: Present)
Dr. Vetrano performs odor threshold studies for various environmental engineering firms. Samples are collected and sent to TRC's Olfactory Laboratory for odor evaluation.

Confidential Client, Specialty Chemical Company, Determination of Odor Thresholds – Belle, WV (Project Manager: 2006-Present)
Dr. Vetrano is designing odor threshold determination studies for Phenylacetic acid to be used as part of the health and safety plan of the manufacturer. Odor values to be used in industrial hygiene practices for potential early warning properties. She is working with analytical lab to overcome analytical challenges.

Confidential Client, Consumer Product Manufacturer, Odorous Emissions Testing – Jacksonville, IL (Project Manager: 2006)
Dr. Vetrano performed odor threshold studies on emissions from a consumer product manufacturer. She managed personnel in the conduct of neighborhood odor surveys and conduct of odor monitoring to assist facility in identification and source of odors and mapping of odorous events in the surrounding community.

Confidential Client, Municipal Landfill, Odorous Emissions Testing – MA (Project Manager: 2005-2006)
Dr. Vetrano performed community odor surveys in neighboring areas surrounding the municipal landfill, following complaints by the town. She conducted surveys and mapped areas of odor in the neighborhood.

Confidential Client, Paper Manufacturer, Odorous Emissions Testing – CT (Project Manager: 2002)
Dr. Vetrano performed odor threshold studies on emissions from a paper manufacturing facility. Programs evaluated the significant sources of odor to determine potential contributions to local community odor levels and evaluate the efficacy of online odor control systems.

Confidential Client, Corn Processing Facility, Odorous Emissions Testing – IL and Brazil (Task Manager: 1993-1994)
Dr. Vetrano performed odor threshold studies on emissions from various aspects of corn processing. The results from the two facilities will be compared and used to design emission control technologies for the Illinois plant.

Confidential Client, Medical Clinic, Anesthesiology Department, Determination of Odor Thresholds – Rochester, MN (Project Manager: 2001)
Dr. Vetrano conducted odor and recognition threshold studies on the common gaseous anesthetic, isoflurane. Due to the nature of the anesthetic, concentrations can build up in the operating suite as a result of off-gassing from a patient's exhalations. Odor values to be used in industrial hygiene practices for potential early warning properties.

American Petroleum Institute, Determination of Odor Thresholds – Washington, DC (Project Manager: 1993)
Dr. Vetrano conducted odor and taste threshold studies on the gasoline oxygenate tertiary amyl methyl ether (TAME) for the American Petroleum Institute (API). She conducted the project and served as the panel moderator for TRC's volunteer sensory evaluation panel. Dr. Vetrano performed an evaluation on aerosolized and aqueous samples to determine air and water odor detection and recognition threshold values. She conducted a taste test on the aqueous samples for the determination of an aqueous taste threshold. These studies focused on gasoline oxygenates mandated by the Clean Air Act Amendments and led to the design of odor threshold studies on oxygenated fuels.

American Petroleum Institute, Determination of Odor Thresholds – Washington, D.C. (Project Manager: 1994)
Dr. Vetrano conducted odor threshold studies for API to examine the effect of oxygenate addition on the odor of gasoline blends. Three blends of gasoline were evaluated for their odor detection and recognition in air. The gasolines were then combined with the gasoline oxygenates MTBE, ETBE and TAME to evaluate the effect of the oxygenates on the gasolines' odor detection and recognition thresholds (API Publication No. 4592, January, 1994).

Confidential Client, Chemical/Petroleum Corporation, Determination of Odor Thresholds – PA (Project Manager: 1993)
Dr. Vetrano performed odor and taste threshold studies on gasoline oxygenates for a major petrochemical company. She conducted the project and was the panel moderator for TRC's volunteer sensory evaluation panel. She performed

an odor evaluation on aerosolized and aqueous samples to determine air and water odor detection and recognition threshold values. Dr. Vetrano conducted a taste test on the aqueous samples for the determination of an aqueous taste threshold. These studies focused on a gasoline oxygenate mandated by the Clean Air Act Amendments, as well as possible substitutes for this oxygenate. These studies led to the design of comparative odor threshold studies on oxygenated fuels from the "lower 48" states and Alaska. She also conducted studies, in conjunction with the University of Alaska, on the effect of cold on the odor thresholds of oxygenated "lower 48" and Alaskan fuels.

Confidential Client, Specialty Chemical Firm, Determination of Odor Thresholds – CT (Project Manager: 1994)
Dr. Vetrano developed odor detection and recognition threshold values for various chemicals to be used as part of the health and safety plan of the manufacturer. Odor values used in industrial hygiene practices for potential early warning properties.

Confidential Client, Chemical/Petroleum Corporation, Determination of Odor Thresholds – TX (Project Manager: 1993)
Dr. Vetrano performed odor threshold studies on gasoline additives for a major petrochemical company. She performed comparative odor threshold studies on gasoline with and without the additives, to determine at which concentrations of the additives the odor of gasoline would be changed.

Comparative Product Testing

Confidential Client, Consumer Product Manufacturers, Comparative Product Testing – Various (Project Manager: 1994-1996)
Dr. Vetrano designed and performed comparative odor evaluation studies to evaluate the efficacy of consumer odor control product versus competing brands. Products evaluated included carpet fresheners, underarm deodorants, foot powders and cat litter. She provided litigation support for false advertising claims made by competitors.

Indoor Air Quality Investigations

Dr. Vetrano manages and conducts indoor air quality (IAQ) investigations of commercial and institutional buildings. IAQ surveys typically identify potential sources of indoor air pollutants, survey occupant health status, evaluate air handling system(s), and determine the types and levels of chemicals present in the indoor environment. Typical IAQ surveys include sampling for carbon dioxide, carbon monoxide, temperature and relative humidity, total dust, volatile organic chemicals, formaldehyde and mold/spores.

Confidential Client, Consumer Product Manufacturer, Industrial Hygiene Program Review – Stamford, CT (Project Manager and Toxicologist: 2001-Present)
Dr. Vetrano is currently serving as Project Manager for the review and revision of the industrial hygiene program for a major consumer product manufacturer. She provided toxicological expertise in evaluating raw materials for toxicity to workers to aid in the design of a personal protection equipment program.

SPECIALIZED TRAINING

- ITRC Vapor Intrusion Pathway: A Practical Guideline. 2-Day Classroom Training. Oklahoma City, Oklahoma. April 6 – April 7, 2009.
- Dose-Response Modeling for Occupational and Environmental Risk Assessment. Continuing Education Course. Society of Toxicology Annual Meeting. Seattle, WA. March 2008.
- Nanotoxicology: The Science of Developing a Safe Technology. Continuing Education Course. Society of Toxicology Annual Meeting. Seattle, WA. March 2008.
- Vapor Intrusion Attenuation Workshop - A Study of Observed Vapor Intrusion Attenuation. 14th Annual West Coast Conference on Soils, Sediments and Water, Marriott Mission Valley, San Diego, California. March 15-18, 2004
- Risk Assessment for Metals. Continuing Education Course. Society of Toxicology Annual Meeting, San Francisco, CA, March 2001
- Mid-America Toxicology Course. Kansas City, Missouri, May 2000
- Practical Issues in the Use of Probabilistic Risk Assessment. EPA and the University of Florida, Tampa, FL, April 2000
- OSHA 40-Hour HAZWOPER Training (29 CFR 1910.120)
- MSDS: Preparing for the Next Wave of Hazard Communication Requirements. Annapolis, MD, Nov. 9-10, 1998
- Overview of Uncertainty Analysis. Continuing Education Course. Society of Toxicology Annual Meeting, Seattle, WA, March 1998
- Risk Communication: Making Risk Management More Effective. Continuing Education Course. Society of Risk Analysis Annual Meeting, New Orleans, LA, December 1996
- International Harmonization: Update on Scientific and Regulatory Issues. Part II: Toxic Substances and Environmental Issues. Continuing Education Course. Society of Toxicology Annual Meeting, Dallas, Texas, March 1994
- Toxicokinetics: Study Design and Data Analysis. Continuing Education Course. Society of Toxicology Annual Meeting, Dallas, Texas, March 1994
- Risk: Science, Assessment and Management Mini-Course, Conducted by the Office of Continuing Education and the Center for Risk Analysis, Harvard School of Public Health, Boston, MA, 1993
- Risk Communication: Problems, Perceptions and Practice. Continuing Education Course. Society of Toxicology Annual Meeting, Dallas, Texas, February 1991

- Environmental Toxicology. Continuing Education Course. Society of Toxicology Annual Meeting, Dallas, Texas, February 1991.

PROFESSIONAL AFFILIATIONS

- Society of Toxicology
- Northeast Chapter of the Society of Toxicology, past Councilor, 1997-1999
- Society for Risk Analysis, New England Chapter, Secretary, 2000 - present
- Society for Risk Analysis

SELECTED PUBLICATIONS

Vetrano, K.M., "Molecular Chlorine: Health and Environmental Effects," *Reviews of Environmental Contamination and Toxicology*, 170:75-139, 2001.

Vetrano, K.M., "Pamphlet 90: Molecular Chlorine: Health and Environmental Effects," Prepared for the *Chlorine Institute*, Edition 2, November 1998.

Vetrano, K.M., "Odor Threshold Studies Performed with Gasoline and Gasoline-Combined with MTBE, ETBE, and TAME," Prepared for the *American Petroleum Institute*, Publication No. 84145920, 1994.

Vetrano, K.M., Morris, J.B. and Hubbard, A.K., "Silica Induced Inflammation and Fibrosis in Mice is Altered by Acute Exposure to Nitrogen Dioxide," *Journal of Toxicology and Environmental Health* 37:389406, 1992.

Vetrano, K.M., "The Modulation of Silica-Induced Pulmonary Inflammation and Fibrosis by Acute Nitrogen Dioxide Exposure in the C57Bl/6 Mouse," *University of Connecticut*, 1992.

Vetrano, K.M., and Hubbard, A.K., "The Modulation of Silica Induced Pulmonary Inflammation by Acute Exposure to Nitrogen Dioxide," *The Toxicologist*, 11:337, 1991.

Ginsberg, G.L., Hauchman, F.S., Vetrano, K.M., Bement, C.L., and Koch, W.H., "The Feasibility of Route-*to*-Route Extrapolation (RRE) of Cancer Potency Factors for Aniline, Dioxane, Isophorone and Benzyl Chloride," *The Toxicologist*, 11:903, 1991.

Wooten, V., Brown, D.R., Callahan, B., Vetrano, K.M., Schatz, R.A., Melia, J. and Mulligan, T., "Behavioral and Biochemical Alterations Following in Utero Exposure to Methylmercury," *Neurobehavioral Toxicology and Teratology*, 7(6): 767773, Nov. Dec. 1985.

SELECTED PRESENTATIONS

Vetrano, K.M., "Crystalline Silica Exposure Assessments," Sorptives *Mineral Institute's Annual Meeting*, May 1997.

Vetrano, K.M., "Odorous Emissions and Their Relationship to Human Health," New England Society for Risk Analysis, Boston, MA, September 1993.

Vetrano, K.M., "Odor Thresholds in Relation to Risk Assessment," New England Section and Connecticut Chapter Air and Waste Management Association, Hartford, CT, October 1993.

Ginsberg, G.L., Koch, W.H., Vetrano, K.M., Bement, C.L. and Hauchman, F., "Factors That Govern the Feasibility of Dose Route Extrapolation: An Analysis of 10 Clean Air Act Carcinogens," Society for Risk Analysis, Baltimore, MD, December 1991.

Vetrano, K.M., and Hubbard, A.K., "The Modulation of Silica Induced Pulmonary Inflammation by Acute Exposure to Nitrogen Dioxide," Society of Toxicology Annual Meeting, Dallas, TX, February 1991.

Ginsberg, G.L., Hauchman, F.S., Vetrano, K.M., Bement, C.L., and Koch, W.H., "The Feasibility of Route-to-Route Extrapolation (RRE) of Cancer Potency Factors For Aniline, Dioxane, Isophorone and Benzyl Chloride," Society of Toxicology Annual Meeting, Dallas, TX, February 1991.

Vetrano, K.M. and Hubbard, A.K., "Pulmonary Inflammatory Response of C57Bl/6 BG/BG (beige) Mice to Instilled Glass Fibers or Silica Crystals," World Conference on Lung Health, Boston, MA, May 1990. Also presented at the Northeast Chapter of the Society of Toxicology Meeting, Weston, MA, June 1990.

Hubbard, A.K., Lombard, K.M., Pokhrel, P.K. and Vetrano, K.M., "Mechanisms Underlying Outcome of Particle Induced Pulmonary Inflammation," Connecticut Lung Research Conference, Southbury, CT, April 1990.

Vetrano, K.M., Reece, K.D., Brown, D.R. and Smith, L.W., "An Industrial Example of a Health Hazard Determination Procedure," Northeast Chapter of the Society of Toxicology/ Autogenesis Association of New England Joint Meeting, Storrs, CT, October 1985.

Wooten, V., Brown, D.R., Callahan, B., Vetrano, K.M., Schatz, R.A., Melia, J. and Mulligan, T., "Behavioral and Biochemical Alterations Following in Utero Exposure to Methylmercury," The Symposium and Workshop Design Considerations in Screening for Behavioral Teratogens, Cincinnati, OH, September 1985.

TRC

SCOTT J. HEIM

EDUCATION

M.S., Wildlife Ecology, University of New Hampshire, 1988
B.S., Forest Biology, State University of New York - College of Environmental Science and Forestry, 1982
A.A.S., Pre-Professional Forestry, Paul Smith's College, 1979

PROFESSIONAL CERTIFICATIONS

Certified Associate Wildlife Biologist, The Wildlife Society, 1988
Certified – Principles and Techniques of Electrofishing, USFWS, 2002

AREAS OF EXPERTISE

Mr. Scott J. Heim has more than 26 years of experience encompassing:

- Ecological Risk Assessment
- Wetland Delineation, Functional Analysis, and Construction
- Aquatic/Terrestrial Ecology
- Rare Species Surveys and Impact Assessment
- Natural Resource Damage Assessment
- Environmental Permitting
- Environmental Assessments and Impact Reports

REPRESENTATIVE EXPERIENCE

Ecological Risk Assessment Experience

Mr. Heim has conducted qualitative and quantitative ecological risk assessments for both aquatic and terrestrial environments at hazardous waste sites under CERCLA and RCRA as well as state requirements (i.e., Massachusetts Contingency Plan). He has extensive experience at problem formulation at these sites by evaluating habitat characteristics of potentially contaminated areas and identifying receptor species, exposure pathways, and contaminants of ecological concern. Risk to ecological receptors has been assessed following ecological risk assessment guidance issued by the U.S. Environmental Protection Agency (USEPA) and other applicable agencies (i.e., agencies within the state where the site is located). Under an USEPA CERCLA contract, Mr. Heim has also provided third party review for ecological risk assessments submitted to USEPA.

Federal Aviation Administration Technical Center, Ecological Risk Assessment, Atlantic City International Airport – NJ
(Ecological Risk Assessor: 2002 – 2006)
Mr. Heim prepared work plans, conducted extensive biological sampling and prepared an ecological risk assessment in accordance with USEPA guidelines at the Area U Superfund Site which consists of a wetlands complex containing two large reservoirs, two perennial streams and extensive floodplain wetlands. Mr.

Heim conducted and/or managed the intensive sampling program that involved the collection of surface water, sediment, surface soil, aquatic and terrestrial macroinvertebrates, fish (large and small forage fish), phytoplankton, zooplankton, frogs, small mammals, bird eggs and bats as well as quality assurance/quality control procedures. The risk assessment investigated mercury impacts through the food chain. Mr. Heim prepared the ecological risk assessment for submittal to federal and state agencies for their review. The assessment focused on identifying risks through a weight-of-evidence approach as well as defining the ecological values provided by the habitats contained within Area U so that a balanced approach could be undertaken in the risk management process to evaluate remediation options.

Seaholm Power Plant and Substation, Ecological Risk Assessment – Austin, TX (Ecological Risk Assessor: 2002 – 2003)
Previous sampling had detected elevated concentrations of polychlorinated biphenyls (PCBs) within sediments of Shoal Creek, a perennial stream adjacent to an existing electric generating facility and substation. Mr. Heim prepared a Sampling and Analysis Plan (SAP) for performing a Tier 2 Screening-Level Ecological Risk Assessment in accordance with the Texas Risk Reduction Program and Risk Reduction Rule. The SAP presented an approach for assessing ecological risk within Shoal Creek and focused primarily on upper trophic level receptors that may be affected through biomagnification of PCBs within the food chain. The SAP was approved by the Texas Natural Resource Conservation Commission. Field sampling and laboratory analyses showed that PCB concentrations within the sediments did not pose an ecological risk.

Shieldalloy Metallurgical Corporation, Ecological Risk Assessment – Newfields, NJ (Ecological Risk Assessor: 1995 – 2006)
Mr. Heim conducted an ecological risk assessment for a facility that discharged metals into an adjacent stream, pond, and wetlands. Mr. Heim prepared a sampling strategy and collected sediment samples for chemical and laboratory toxicity testing as well as conducted a macroinvertebrate bioassessment. Aquatic hazards were characterized by Mr. Heim using the Triad approach (sediment chemistry, laboratory toxicity tests, and macroinvertebrate community assessment). Risks to food chain also evaluated by identifying receptor species, exposure pathways, and modeling exposure doses of contaminants to selected indicator species. Potential risks from metal contamination identified for piscivorous species and aquatic macroinvertebrates. Results of the risk assessment were used to determine areas requiring reinediation.

Phosphate Mine, Ecological Risk Assessment – Southeastern ID (Ecological Risk Assessor: 1998 – 2006)
Mr. Heim conducted a comprehensive baseline ecological risk assessment for a former phosphate mine located near the Blackfoot River in southeast Idaho. Tailings from the mining operation resulted in the leaching of selenium into surface waters of a nearby stream. Significant riparian and upland habitats of the

study area were characterized and aquatic arid terrestrial species that inhabit these areas identified. Representative indicator species were selected and sampling conducted of various components of their diets (i.e., vegetation, invertebrates, small mammals) to determine potential exposure. Risk to the aquatic environment was evaluated through the comparison of selenium (including selenate and selenite) concentrations with available criteria and interpreting the results of macroinvertebrate community sampling. The results of tissue bioassays were used to assess risk to the selected wildlife indicator species by modeling exposure doses of selenium. The risk assessment results indicate that there are potentially significant risks to avian receptors based on exposure to selenium detected in biota, surface soils and sediments within the study area. The results of the risk assessment including preliminary remediation goals were used by the client to develop potential remedial solutions at the site.

Phoenix-Goodyear Airport Superfund Site, Ecological Risk Assessment – Maricopa County, AZ (Ecological Risk Assessor: **2007 - 2008**)
Mr. Heim characterized ecological risks associated with exposure to cadmium and chromium where previous industrial operations resulted in contamination of surface and subsurface soils at five terrestrial areas. Mr. Heim conducted a site inspection to identify and characterize habitats, potential ecological receptors and complete exposure pathways. A screening–level ecological risk assessment (SLERA) was subsequently prepared by Mr. Heim using an innovative approach to assess risk to a variety of receptor groups though incorporation of ecological soil screening levels (eco-SSLs) and site-specific factors. The SLERA concluded that none of the areas investigated were likely to provide a significant risk to ecological receptors. Both the U.S. Environmental Protection Agency and Arizona Department of Environmental Management concurred with the findings of the SLERA.

Refinery Site, Ecological Risk Assessment – Casper, WY
(Ecological Risk Assessor: **1995 – 1998**)
Mr. Heim characterized ecological risks associated with exposure to contaminants at a former refinery where the industrial operations resulted in contamination of surface soils and wetland sediments. The adjacent North Platte River was also potentially impacted by petroleum hydrocarbons and lead. Risk to aquatic receptors was characterized by interpreting results of macrobenthic invertebrate sampling, toxicity testing and comparing chemical concentrations in surface water and sediments to criteria, guidelines, or toxicity-based benchmark values. In order to assess terrestrial risk from metals and petroleum hydrocarbons, small mammals were collected and analyzed. Mr. Heim estimated contaminant doses to wetland and terrestrial indicator species by modeling exposure from the ingestion of small mammals, plants, and invertebrates. The risk assessment determined that animals foraging in limited portions of the site may potentially be affected by the metal contamination detected in surface soils while petroleum hydrocarbons present in seepage areas adjacent to the river pose an environmental risk to receptor species present in these areas. The

quantitative ecological risk assessment supported the client's decision to remediate discrete areas of contamination.

Homestake Mining Company, Ecological Risk Evaluation – CA
(Ecological Risk Assessor: 2000 – 2001)
Mr. Heim conducted a post-closure ecological review for the McLaughlin Mine site in northern California. The ecological review evaluated risks to wildlife receptors that may utilize the habitats provided by the existing mine pits and a tailings pond. Data evaluated in the risk assessment included surface water sampling results (total and dissolved concentrations) as well as vegetation sampling results collected from a pilot test study conducted within the tailings pond. The risk assessment focuses on wildlife receptors documented at the site or likely to use the aquatic habitats at the site following closure of the mine. Indicator species were selected to estimate potential risk from surface water ingestion and consumption of vegetation or aquatic insects. Daily ingestion doses of metal contaminants were calculated for the indicator species and compared to reference toxicity values for metal contaminants.

Reynolds Metal, Ecological Risk Assessment – Massena, NY
(Ecological Risk Assessor: 1992)
Under an USEPA contract, Mr. Heim conducted a comprehensive baseline ecological risk assessment for an aluminum manufacturing facility (Superfund Site) situated between the St. Lawrence and Raquette rivers in upstate New York. Significant riverine, riparian, and wetland habitats of the Reynolds study area were characterized and aquatic and terrestrial species that inhabit these areas identified. Risk to the aquatic environment was evaluated through the comparison of contaminants of concern concentrations with available criteria and interpreting the results of macroinvertebrate community sampling. The results of target fish species bioassays were used to assess risk to piscivorous wildlife species by modeling exposure doses of PCBs to the selected indicator species. The risk assessment determined that there were significant risks to ecological receptors based on exposure to contaminants detected in sediments and fish within the St. Lawrence River. The results of the risk assessment were used by USEPA to support remedial decisions at the site that included sediment cleanup to prevent direct contact with fish and uptake of PCB-contaminated sediments.

Former Tie Treating Plant, Ecological Risk Assessment – Albuquergue, NM
(Ecological Risk Assessor: 2000 – 2001)
A former railroad tie treating plant resulted in contamination of surface soils at the Superfund site. Mr. Heim reviewed a screening ecological risk assessment prepared by the New Mexico Environment Department. Based on this review, revisions to the risk assessment were undertaken, contaminants of potential concern were selected and additional sampling proposed to reduce uncertainties in the screening assessment. Mr. Heim prepared a sampling plan to address bioaccumulation of polycyclic aromatic hydrocarbons (PAHs), dioxin and metals within plant, invertebrate, and small mammal tissues. The results of the sampling

program were incorporated into the ecological risk assessment prepared by Mr. Heim as part of the Remedial Investigation.

Massachusetts Military Reservation, Third Party Review – MA
(Ecological Risk Assessor: 1992 – 1998)
Under an USEPA contract, Mr. Heim provided expert technical oversight for ecological risk assessments conducted at the 22,000-acre Massachusetts Military Reservation (Superfund Site). More than 50 individual sites have been identified at the reservation that required ecological risk assessments to be performed. Mr. Heim provided third party review and evaluation of risk assessment methods for the USEPA for these risk assessments that included document review and attendance at meetings to support USEPA.

East Bennington Landfill, Ecological Risk Assessment – Bennington, VT
(Ecological Risk Assessor: 1994)
Mr. Heim prepared an ecological risk assessment that aided USEPA's risk management decisions to support an accelerated cleanup plan for the site. Identified sensitive environments and potential ecological receptors at the site and within the vicinity. Environmental sampling data from the surface water, sediment, and surface soil were evaluated and ecological contaminants of concern and potential exposure pathways identified. Risks to aquatic biota were evaluated through a comparison of surface water and sediment contaminant concentrations with applicable criteria/guidelines for aquatic life and interpreting the results of macrobenthic invertebrate sampling. Exposure doses to several semi-aquatic and terrestrial indicator species were modeled and compared with benchmark toxicity values. Hazards to upper trophic level species from PCB biomagnification were also modeled and evaluated. Risks to aquatic, semi-aquatic, and terrestrial species were greatest from the detected concentrations of PCBs within selected habitats at the landfill site. Remedial activities proposed at the site would result in alteration of wetlands. Proposed mitigation and monitoring programs for wetlands restoration/creation were reviewed and recommendations provided to USEPA

Revere Textiles Mill, Ecological Risk Assessment – Sterling, CT
(Ecological Risk Assessor: 1992)
Under an USEPA contract, Mr. Heim characterized ecological risk to the aquatic environment at a Superfund Site using several methods (equilibrium partitioning approach and results of sediment toxicity testing for two macroinvertebrates). Terrestrial risk evaluations involved the development of food chain models to estimate exposure doses. Estimated doses were compared to reference toxicity values to determine the risk to selected terrestrial indicator species. Results of the risk assessment were used by USEPA to remove the site from the list of active NPL sites.

Ecological Risk Evaluation – Honolulu Harbor, Honolulu, HI
(Ecological Risk Assessor: 2003)
A quantitative Screening Level Ecological Risk Evaluation (SCLERE) was conducted of the ecological impacts within Honolulu Harbor from the discharge of groundwater containing petroleum-related constituents of potential concern that are associated with various industrial facilities located adjacent to the harbor. A Site Conceptual Model was prepared that identified exposure pathways, potential receptors and fate and transport mechanisms. Risk was evaluated by comparing applicable ambient water quality criteria with the concentrations of groundwater constituents of potential concern. Fate and transport mechanisms that affect the concentrations of groundwater constituents of potential concern were also considered in the SCLERE. The results of the SCLERE demonstrated that the discharge of groundwater into the harbor does not pose an unacceptable risk to aquatic organisms inhabiting the harbor.

Former GE Site, North Reading, Environmental Risk Characterization – MA
(Ecological Risk Assessor: 2001 – 2003)
A Stage II Envirorimental Risk Characterization (ERC) was conducted by Mr. Heim under the Massachusetts Contingency Plan (MCP) for a large wetland area associated with two outfall discharge structures at a former industrial facility. A Scope of Work was prepared and submitted to the Massachusetts Department of Environmental Protection that proposed sampling of surface water, sediment, surface soil, vegetation and invertebrates for metal contaminants of concern that were associated with the two outfalls. In addition, earthworm toxicity testing was also conducted on wetland surface soils. Habitats, potential receptor species, and exposure pathways were identified by Mr. Heim during a site reconnaissance. Mr. Heim collected the samples and prepared the Stage II ERC. The Stage II ERC concluded that the vegetation and invertebrate community as well as mammalian insectivores within a limited area of the wetlands may be impacted by metal contamination (primarily copper and zinc). Limited remediation and wetlands restoration was subsequently proposed for addressing the metals contamination within the wetland.

Wetlands Experience

Mr. Heim has delineated wetlands on hundreds of sites located throughout the eastern United States ranging from less than one-half acre to more than 1,200 acres in size. Wetlands have typically been identified and delineated according to procedures established within the U.S. Army Corps of Engineers Wetland Delineation Manual (1987). Mr. Heim also has extensive experience with various state and local wetland definitions. Mr. Heim has also reviewed wetlands delineations conducted by other consultants and assessed impacts to wetlands from proposed development activities. Mr. Heim also performed numerous wetland functional analyses utilizing the Wetland Evaluation Technique (WET 2.0) developed by the U.S. Army Corps of Engineers and other accepted methodologies and has designed wetland restoration/ creation areas and

supervised actual construction efforts. Mr. Heim also has extensive experience with permitting projects through applicable wetland regulations.

Armenia Mountain Wind Energy Project – PA (Ecologist: 2007-2008)
A 186 MW wind energy farm was proposed within 11,000 acres of leased land located in northcentral Pennsylvania. Mr. Heim oversaw the delineation of wetland/stream resource areas located in the vicinity of the proposed wind turbine structures and their access roads as well as the proposed electrical transmission facilities. Mr. Heim prepared a Jurisdictional Determination (JD) report that was submitted, reviewed in the field, and approved by the U.S. Army Corps of Engineers (USACE). A detailed wetlands permit application was prepared by Mr. Heim and submitted to the USACE and the Pennsylvania Department of Environmental Protection (PADEP). The permit application discussed the 40 wetland/stream impact areas, a detailed alternative analysis, and appropriate mitigation for the unavoidable wetland impacts. An administratively complete letter was received from PADEP one day after the permit application submittal. The wetlands permit and authorization were subsequently obtained from the PADEP and USACE.

Lawrence Energy Center, Wetland Delineation – OH (Ecologist: 2000 – 2001)
A power generating facility was proposed at a 280 acre site located in Lawrence County in southeastern Ohio that contained significant areas of wetland (and prior converted croplands) adjacent to the Ohio River. Mr. Heim delineated and characterized wetland resources (including a functional assessment) present on the entire site and prepared a Jurisdictional Determination (JD) report that was submitted and approved by the U.S. Army Corps of Engineers.

Rochester Gas and Electric, Rochester Transmission 115 kV Project – NY (Ecologist: 2003)
Mr. Heim was tasked with identifying wetlands and terrestrial ecological habitats and authoring pertinent sections for the preparation of an Article VII application for 115 kV system reinforcements in Monroe and Wayne Counties, New York. The proposed route assessed by Mr. Heim included approximately 19 miles of rebuilt overhead 115 kV transmission lines as well as a new 115 kV substation. The Article VII application was prepared on a fast-track basis and filed approximately 12 weeks following Notice to Proceed. The Article VII Certificate was subsequently issued following negotiation of a Joint Proposal without adjudicatory hearings.

AES Red Oak – Sayreville, NJ (Ecologist: 1998 – 1999)
A power generating facility was proposed at a 63-acre site located in east-central New Jersey that contained significant areas of wetland. Mr. Heim delineated and characterized the wetlands on the site and subsequently filed a Letter of Interpretation (LOI) with the New Jersey Department of Environmental Protection (NJDEP) to confirm the wetlands boundary. After the wetlands delineation was

accepted by NJDEP, Mr. Heim assisted in obtaining wetland-related permits for the proposed project. In order to address concerns by the U.S. Fish and Wildlife Service (USFWS) regarding the potential presence of *Helonias bullata*, a threatened plant species, Mr. Heim conducted a quantitative vegetative survey of the parcel for the rare plant and potentially suitable habitat. The survey report and findings were submitted and subsequently approved by the USFWS.

KC Realty Trust, Wetland Restoration – Newburyport, MA
(Ecologist: **1999 – 2003**)
Mr. Heim prepared a wetland restoration plan for a 2.6 acre palustrine emergent wetland area located within an industrial park in Newburyport, Massachusetts. The design included preparing a plan that specified excavation depths, volume of material to be removed, a planting plan, and a post-cdnstruction monitoring protocol. The restoration plan was submitted to the U.S. Army Corps of Engineers, MA Department of Environmental Protection, and the Newburyport Conservation Commission for their approval. Mr. Heim oversaw the construction and seeding of the wetland restoration area and has conducted two years of post-construction monitoring. The monitoring has documented the successful restoration of the wetland in conformance with applicable performance standards and the approved restoration design.

U.S. Generating Company – CT (Ecologist: **1998**)
The siting of co-generation power plant facilities was being considered at three locations in Connecticut. Site inspections were undertaken and the presence and approximate locations of wetland resource areas (based on State of Connecticut and U.S. Army Corps of Engineers wetland definitions) determined at each of the three sites. Wetland permitting issues were evaluated as part of a Critical Flaw Analysis conducted for each of the three sites. The analysis concluded that wetlands permitting would be a major issue associated with the siting of one proposed facility while wetlands permitting at the remaining two proposed sites would not be expected to result in significant issues. This information was used by the client in prioritizing sites for proposed development.

SCS, Inc. Astoria – NY(Ecologist: **1999 – 2000**)
A power generating facility was proposed on a parcel of land located adjacent to the East River and Steinway Creek in New York City. Identified the wetland resource areas in the vicinity of the project site under the jurisdiction of the U.S. Army Corps of Engineers and/or New York State Department of Environmental Conservation. The project included a proposed electric transmission line interconnect over a portion of Steinway Creek (a tidal wetland resource area). Provided input to the interconnect design to ensure that the proposed crossing was conducted in accordance with all federal and state requirements. Potential impacts to a state-listed endangered bird species were also evaluated and discussed in the subsequent Article X application to the New York State Department of Public Service.

Shady Lane Landfill – Nashua, NH (Ecologist: 1995)
The City of Nashua as well as the general public was extremely concerned about the health risks associated with a former landfill located in close proximity to an existing elementary school. The landfill required final closure (i.e., capping) within a critical time schedule in order to allow the elementary school to reopen in time for the fast-approaching fall school year. The landfill is also immediately adjacent to Salmon Brook and associated wetlands - sensitive areas designated as "Prime Wetlands" by the State of New Hampshire and City of Nashua. Wetlands located within and adjacent to the landfill were identified and delineated by TRC using the wetland definition provided in the 1989 Federal Interagency Wetlands Delineation Manual. An assessment of wetland impacts from the proposed landfill closure was conducted by TRC and appropriate mitigation proposed within the permit application. TRC requested a pre-application meeting with the Nashua Conservation Commission to present the proposed closure plan and address concerns of the Commission. Support from the Nashua Conservation Commission was subsequently critical in TRC's public hearing before the State of New Hampshire Wetlands Board. TRC successfully obtained a permit from the Wetlands Board (and the Nashua Zoning Board of Appeals) within the minimum time frame allowing the landfill closure to proceed. In addition, TRC confirmed that the closure plan was acceptable to the U.S. Army Corps of Engineers as a general nationwide permit under Section 404 of the Clean Water Act. The landfill closure was subsequently initiated on schedule and the City of Nashua was able to successfully reopen the elementary school in time for fall classes. In addition, the City of Nashua benefited by the timely landfill closure as water quality was substantially improved within the adjacent "Prime Wetlands".

U.S. Post Office Facility – Stonington, CT (Ecologist: 1997 – 1998)
The limits of wetlands and presence of important features (pertaining to the natural environment) on the proposed site and two alternative sites for a new postal facility were identified by TRC. In addition, Mr. Heim evaluated the type of wetlands present on the sites (using the U.S. Fish and Wildlife Service classification method), evaluated impacts to the wetland from the proposed facility, and provided recommendations to mitigate unavoidable wetland impacts. The functions and values of the wetland (using the "Descriptive Approach" proposed by the New England Division of the U.S. Army Corps of Engineers) were also evaluated and the principal function(s)/value(s) identified. Lists of identified plant and wildlife species that may potentially use the wetland were provided by Mr. Heim. The wetland assessment included an analysis for the six types of impacts that are specified in the U.S. Postal Service protocol (Facilities Environmental Guide Handbook RE-6, December, 1997). Information concerning the presence of rare/endangered species on the site and the required federal permit(s) needed for placement of fill within the wetland were also provided by Mr. Heim. The report was used by the U.S. Postal Service in justifying their selection of the site for the new postal facility.

Reliant Energy – Conneaut Township, PA (Ecologist: 1999 – 2000)
A power generating facility was proposed on an 80-acre parcel of land located in northwestern Pennsylvania. Delineated and characterized the wetlands located on the parcel and prepared a Jurisdictional Determination report that was submitted to the U.S. Army Corps of Engineers (ACOE) and Pennsylvania Department of Environmental Protection (PADEP). The ACOE and PADEP conducted a joint site inspection and issued a JD that confirmed the wetlands delineation. An investigation was also conducted that evaluated the potential of the site wetlands to function as vernal pools and provide important amphibian breeding areas.

Toll Brothers, Inc. – Walpole, MA (Ecologist: 1995 – 1999)
Wetlands present within a 180-acre parcel of land where a controversial residential subdivision was proposed were delineated based on definitions provided in the Massachusetts Wetlands Protection Act and 1987 U.S. Army Corps of Engineers (ACOE) Wetland Delineation Manual. TRC prepared a Request for Determination of Applicability (RFDA) and Notice of Intent (NOI) under the Massachusetts Wetlands Protection Act and the Town of Walpole Wetlands Bylaw and represented the client at public hearings and site inspections. The project was successfully permitted through the Walpole Conservation Commission. Applications for Section 404 and Section 401 (Water Quality Certification) were prepared and submitted to the ACOE and Massachusetts Department of Environmental Protection, respectfully.

Mirant 750MW Bowline Generating Station – Haverstraw, NY
(Ecologist: 1999 –2001)
Mr. Heim was responsible for surveying and identifying wetlands and terrestrial plant communities on the Mirant Bowline Point facility located in Haverstraw, NY. The intent of the surveys was to identify wetland resource areas, characterize plant communities on the site and make assessments regarding the effects of disturbance on the compositional and structural attributes of the identified communities. This work was conducted in accordance with the requirements of an Article X application relative to the construction and operation of a 750 MW combined cycle combustion turbine electric generating plant. Mr. Heim also presented expert testimony at an adjudicatory hearing regarding identification and impacts associated with wetlands and terrestrial plant communities at the site. The Article X Certificate was issued in 2002. Mr. Heim also prepared a wetlands mitigation plan and supervised the construction of a 1.2 acre mitigation area to compensate for wetlands impacted by the project. The mitigation plan was subsequently approved by the U.S. Army Corps of Engineers and Mr. Heim has initiated monitoring of the constructed wetland.

Loral Microwave Frequency, Inc. – Chelmsford, MA (Ecologist: 1994)
A wetlands delineation was conducted on a 14-acre parcel potentially contaminated by ground water from an adjacent industrial site. In order to determine appropriate compensation, the future development potential of the 14-

acre parcel was evaluated by determining existing site development constraints (e.g., presence of wetlands). The delineation of wetlands was based on definitions presented in the Massachusetts Wetlands Protection Act regulations. A site wetlands map and report were prepared that described the site's characteristics (particularly the vegetation and soils of the site) as these features relate to wetland definitions provided in the Act. The methodology and delineation of wetland boundaries were successfully defended in an arbitration hearing to determine the appropriate level of compensation to the owner of the 14-acre parcel.

Retail Shopping Plaza – Woodbury, NY (Ecologist: 1994 – 1995)
A commercial development was proposed for a 68-acre parcel located in southeastern New York. The proposed project would result in the loss of approximately 2.3 acres of forested wetlands. Wetlands within the site were delineated based on the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual. A Jurisdictional Report (JD) establishing the wetlands boundary was submitted to and approved by the Army Corps. A pre-discharge notification (PDN) was also prepared and submitted to the Corps of Engineers. The PDN evaluated the functions and values of the wetlands present on the site as well as proposed mitigation in the form of wetland replacement areas for unavoidable wetland impacts. The Army Corps granted approval for the project within several weeks of receiving the PDN. An application for state water quality certification was also prepared and approved. Mr. Heim prepared a plan for a 4.7 acre forested wetland that was proposed as mitigation. Proposed elevations, plantings and seeding specifics were included in the plan. The mitigation plan was submitted and approved by the U.S. Army Corps of Engineers (ACOE) and NY Department of Environmental Conservation. The annual monitoring program overseen by Mr. Heim was completed and the final report presenting the results of the mitigation program was accepted by the ACOE.

Pace University – Mount Pleasant, NY (Ecologist: 1993)
In order to prepare an updated Master Plan for the University, the presence of existing resource areas and their values needed to be known. Wetlands present on the entire college campus were identified and delineated by Mr. Heim using local, state, and federal wetland definitions. A rare plant survey was also undertaken on the campus to identify state-listed rare species. A wetland assessment was then conducted that evaluated the functions and values provided by each of the 11 identified wetland areas. A report was subsequently prepared by Mr. Heim that discussed characteristics of each wetland area and how these features contributed to each of the functions/values evaluated. This information was subsequently used in preparing the Master Plan for the college campus and within an Environmental Impact Report submitted for the proposed infrastructure improvements.

Paul E. Tspngas Arena, Lowell Baseball Stadium and Riverwalk – Lowell, MA (Ecologist: 1996)
Mr. Heim delineated wetland resource areas including bordering vegetated wetlands, bank, land under a waterway, bordering land subject to flooding and riverfront area for an arena, stadium and walkway proposed along the Merrimack River in Lowell, Massachusetts. Mr. Heim prepared Notices of Intent for the proposed projects that were successfully permitted through the Lowell Conservation Commission resulting in Orders of Conditions under the Massachusetts Wetlands Protection Act. The Notices of Intent addressed various wetland issues including filling within floodplain and compensatory flood storage; wildlife habitat evaluations of bank, land under a waterway, and bordering land subject to flooding; and rare species impacts associated with the adjacent Merrimack River.

New Milford Energy Project – New Milford, CT (Ecologist: 1999)
An application was submitted to the New Milford Inland Wetlands Commission for a proposed 500- megawatt natural gas-fired generating facility. Due to the complexity of the proposed project, the Commission retained TRC to assist in the review of the project and provide comments conceming potential impacts and mitigation. Mr. Heim supported the Commission by conducting a thorough review of the project's potential affects on wetlands and watercourses, providing comments to the Commission, and attended public hearings concerning the project.

Pease Air Force Base – Newington, NH (Ecologist: 1992 – 1997)
A proposed wetlands mitigation plan was reviewed and recommendations provided to EPA to increase the probability of successful wetlands creation. Site monitoring was conducted and additional measures were subsequently recommended to EPA to increase the diversity of hydrological conditions (and diversity of vegetation) at the mitigation site.

Williams Communications Inc. – New York to MA (Ecologist: 1996)
Mr. Heim performed wetland delineations and obtained environmental permits for Williams Communications, Inc. for the installation of conduits and fiber optic cable from Albany, New York to Boston, Massachusetts and from New York, New York to Boston, Massachusetts. The routes were installed in existing utility, railroad or highway rights-of way and involved crossing major waterways, state-owned properties such as state forests, and federal lands such as interstate highways controlled by the respective state departments of transportation. Because the proposed routes covered four states (Connecticut, Massachusetts, Rhode Island, and New York), the scope of this program involved review of the applicability of a number of state, local, and federal wetland determination and delineation requirements. Mr. Heim conducted field surveys to delineate federal, state and local wetland jurisdictional boundaries and used Global Positioning System (GPS) equipment to obtain the approximate coordinate location of wetlands and watercourse features.

Natural Resource Damage Assessment Experience

Mr. Heim has experience in preparing, reviewing and interfacing with regulatory agencies regarding Natural Resource Damage Assessments (NRDAs) conducted by resource trustees after the release of hazardous constituents to the environment. Mr. Helm's expertise in ecological risk assessment is utilized in evaluating the validity and/or extent of claims (including monetary damages) stated in NRDAs.

Railway Switching Yard – Clovis, NM (Ecologist: 1999)
Mr. Heim prepared a natural resource damage assessment (NRDA) for a 25-acre playa lake that had been impacted by past operations at the railway facility. The NRDA methodology used a Habitat Equivalency Analysis (HEA) that calculated past damages to the environment and determined appropriate compensation to mitigate the damages. Reviewed available information pertaining to the playa lake and assessed the value lost by the damaged natural resources by determining the area of past damaged resources, relative percent of past damages (injury factor), and relative percent of damaged resources following site remediation. The NRDA prepared was used by the client to help negotiate a settlement with the federal and state trustees. Mr. Heim also implemented an innovative approach that combined the results of the NRDA with a wetland evaluation technique to evaluate a potential settlement agreement involving a land purchase adjacent to a U.S. Fish and Wildlife Service wildlife refuge.

Industrial Client – Stockton, CA (Ecologist: 2004)
Mr. Heim reviewed a NRDA conducted by the California Department of Fish and Game for an accidental caustic discharge from the client's outfall to a water diversion canal and river. The discharge resulted in significant impacts to the fisheries resource. Mr. Heim reviewed the assumptions in the NRDA used by the Department and conducted an independent assessment using a Habitat Equivalency Analysis (HEA). The revised assessment indicated that a significant reduction in the cost assessed under the Department's NRDA could be obtained with appropriate mitigation to enhance the habitat for the fishery resource within the canal.

Insurance Client – Northeastern U.S. (Ecologist: 1995)
Mr. Heim reviewed ten Natural Resource Damage Assessments conducted at former utility properties located throughout the northeastern U.S. The NRDAs were prepared by a consultant in support of a claim filed with the insurance company for the utility. Evaluated the assessment methodology and conclusions for a variety of resources including wetlands, habitat for endangered species, fisheries and groundwater supplies. Comments were used by the insurance company in settling the claim.

Shieldalloy Metallurgical Corporation Ecological Restoration – Hudson Branch, NJ (Ecologist: 1997)
Conducted an ecological risk assessment of an adjacent stream to an active industrial site. The results of the assessment were presented to federal/state regulatory review agencies and represented the client at subsequent agency meetings. A Natural Resource Damage Assessment was subsequently conducted by the state trustee. Mr. Heim reviewed the NRDA and helped prepare a natural resource restoration plan that was acceptable to the client and the resource trustees and involved the enhancement of upland areas adjacent to the stream by re-vegetating these areas with appropriate tree and shrub species.

Aquatic Ecology Experience

Mr. Heim has conducted aquatic assessments that required collection of important water quality chemistry variables and identification of aquatic plant, macroinvertebrate and fish species. Sampling programs were designed and conducted for water chemistry parameters as well as aquatic organisms including plankton, fishes and macrobenthic invertebrates. Results of laboratory bioassays and benthic community sampling data have been interpreted and related to potential contamination within aquatic habitats.

Federal Aviation Administration – Atlantic City, NJ (Ecologist: 2004 – 2005)
Mr. Heim conducted a fish community assessment that involved intensive sampling via a variety of methods to determine fish populations, growth rates, condition factors (Fulton and Relative Weight) and overall productivity within two reservoirs in southern New Jersey. Over 6,600 fishes representing 10 species were captured and processed during the study. Each fish was measured, weighed, and marked (Floy T-bar anchor tag or dorsal spine clip) with a representative sampling of fish scale samples collected for age and growth rate analysis. The results of the sampling and subsequent analyses were used by Mr. Heim to assess the relative health and productivity of the fish populations within the two reservoirs and to specifically evaluate the impacts (if any) on the fisheries from anthropogenic mercury inputs.
Montello Brownfields Site – Brockton, MA (Ecologist: 2004)
Mr. Heim conducted a Stage II Environmental Risk Characterization (ERC) at the Montello Brownfields Site in Brockton, Massachusetts. The Stage II ERC evaluated the ecological risk associated with several organic and inorganic contaminants detected within the surface waters and/or sediments of Trout Brook and associated wetland located adjacent to the Site. In addition to surface water and sediment sampling, Mr. Heim conducted biological sampling of the macroinvertebrate community present within reaches of Trout Brook adjacent to the Site, downstream of the Site, and upstream of the Site using Rapid Bioassessment Protocol (RBP) methodology. The three primary components of the RBP are: 1) physical and chemical measurements; 2) habitat assessment; and 3) biological survey. The results of the RBP analyses were used by Mr. Heim to evaluate whether ecological indicators within the stretch of Trout Brook on the

Site and downstream of the Site are consistent with ecological indicators present immediately upstream of the Site. Based on the observed results, remediation of Trout Brook was not deemed necessary.

Midwestern Gas Transmission Company, Eastern Extension Project – Sumner County, TN (Ecologist: 2006)
Mr. Heim conducted a biological survey for four rare darter species at 16 stream crossings by a proposed natural gas pipeline. The survey was conducted using a backpack elecfroshocking unit and captured fish were identified and released. Two of the four rare darter species were found to occur within a specific creek at three different locations. Findings and recommendations for minimizing impacts at the proposed stream crossing locations where the darters occur were provided to the Tennessee Wildlife Resources Agency.

Burlington Northern and Santa Fe Railway Facility – West Burlington, IA, (Ecologist: 2004)
Mr. Heim prepared a biological assessment to evaluate potential impacts associated with exposure by ecological receptors to contaminants identified in surface water and sediment sampies collected from a small perennial stream located adjacent to a railroad facility. The biological assessment quantitatively compared the reaches of the stream where contaminants were detected to upgradient reaches. The biological assessment was conducted in accordance with the current Rapid Bioassessment Protocol (RBP) developed by the USEPA for high gradient streams and the Iowa Department of Natural Resource (IDNR) stream biological integrity guidelines. The results of the detailed physicochemical, habitat and biological assessments indicate no adverse impacts to aquatic receptors associated with the presence of contaminants in surface water and sediment in the stream.

Terrestrial Ecology Experience

Mr. Heim conducted wildlife habitat evaluations utilizing a variety of methodologies (Habitat Evaluation Procedures, Golet method, and species-specific habitat assessments). He has extensive experience in preparing detailed wildlife species lists for habitat cover types and conducting wildlife sampling programs utilizing a variety of methodologies including transect surveys and variable-circular plots (avian species), live-trapping (small mammals), scent post surveys, and winter track count surveys. Impact studies from proposed development activities on listed rare species habitats have also been conducted by Mr. Heim. Habitat assessments have also been conducted using Habitat Evaluation Procedures (HEP) developed by the U.S. Fish and Wildlife Service to evaluate impacts associated with proposed developments. Vegetation has been

sampled utilizing random quadrants and plots within identified vegetative cover types. Detailed species lists have also been prepared for sampled habitats.

Federal Aviation Administration Technical Center, Cooper's Hawk Survey – Pleasantville, NJ (Ecologist: 2003)
A survey for active nest sites of the state-threatened Cooper's hawk was undertaken by Mr. Heim on a portion of the approximately 5,000-acre FAA William J. Hughes Technical located in the Pinelands National Reserve in southern New Jersey. TRC conducted the surveys using transects within areas of suitable habitat to detect Cooper's hawks through direct observation or vocalization. In addition, playback recordings were also conducted in an attempt to elicit vocal responses. One active Cooper hawk nest site was located and documented by Mr. Heim. The results of the study will be used to assess the impacts and propose mitigation measures to the breeding Cooper's hawks from groundwater remediation activities proposed in the vicinity.

Orange and Rockland Utilities, Rare Species Surveys, Line 60 Reconductoring Project – Rockland County, NY (Project Manager: 2006)
Mr. Heim was project manager for evaluating habitat and potential impacts to the bog turtle (*Clemmys muhlenbergii*), timber rattlesnake (*Crotalus horridus*), and Allegheny woodrat (*Neotoma magistei*) from a 10-mile transmission line reconductoring project. The bog turtle is a federal and state endangered species while the rattlesnake and woodrat are state-listed threatened and endangered species, respectively. A Phase 1 Bog Turtle Habitat Survey was conducted and submitted to the U.S. Fish and Wildlife Service. This survey concluded that potential bog turtle habitat was not present within the project area. A report summarizing rattlesnake/woodrat habitat survey results was also prepared. This report also provided appropriate recommendations to minimize impacts to these state-listed species.

Armenia Mountain Wind Energy Project – PA (Ecologist: 2007-2008)
A wind energy farm was proposed within 10,000 acres of leased land located in northcentral Pennsylvania. Mr. Heim oversaw a plant survey ior *Gaultheria hispidula*, a state-listed Species of Special Concern within the project area. Mr. Heim found two populations of *Gaultheria hispidula* and prepared a report detailing the survey methodology, results and anticipated effects to the rare plants from the proposed project. The Pennsylvania Department of Conservation and Natural Resources (DCNR) approved the report and requested monitoring of the populations for a period of five years. A monitoring program was subsequently submitted and approved by the DCNR.

KeySpan Energy, 250 MW Spagnoli Road Energy Center – Huntington, NY (Project Ecologist: 2001 – 2002)
Mr. Heim served as Project Ecologist for the preparation of natural resource sections of an Article X Preliminary Scoping Statement and an Article X Application for a 250 MW combined cycle power project to be constructed by

KeySpan Energy Development Corporation in the town of Huntington, Suffolk County, New York. Responsibilities included preparation of an ecological effects assessment regarding wetlands, vegetation and wildlife and presented expert testimony during the administrative hearings. The Article X Certificate was issued in 2003.

Atlantic City International Airport, Pilot Mitigation Program and Grassland Restoration – NJ (Project Manager: 2003 – 2006)
Mr. Heim was project manager for a grassland study at the Atlantic City Airport that provides valuable habitat fpr a number of rare avian (i.e. grasshopper sparrow and upland sandpiper) and lepidopteran species. The study characterized important vegetation and soil features within several reference grassland communities by identifying dominant grasses and herbs, tree and shrub seedlings, as well as depth and physical and chemical soil properties. The study assessed the driving mechanisms behind the reference grassland plant community and the important plant species in the community. The results of the characterization were analyzed to determine the optimum conditions for proposed grassland mitigation. Pilot mitigation plots were subsequently planted in several barren areas to evaluate the feasibility of re-establishing grassland habitat for both rare lepidopteran and avian species.

Islander East Proposed Gas Pipeline – Long Island, NY (Ecologist: 2003)
In response to NYSDEC concerns over impacts to four state-listed rare plant species potentially present within the pipeline right-of-way, Mr. Heim oversaw the preparation of a NYSDEC-approved quantitative rare plant survey methodology as well as the survey itself. A population of the endangered plant Carex bullata (button sedge) was identified by Mr. Heim during the field survey. The extent of this population was subsequently mapped in order to ensure that the construction of the proposed pipeline avoided impacts to this population.
University of Connecticut Landfill – Storrs, CT (Ecologist: 2001)
Mr. Heim conducted a site inspection of a former landfill facility to characterize habitats and conduct a survey for ecological receptors inhabiting three wetlands that were present adjacent to the landfill. Characterization of site wetland habitats included identifying dominant plant species and other important features that may allow or preclude wildlife use of the site. The site characterization focused on the wetlands' potential to provide important habitat requirements for wildlife as well as to identify wildlife usage of the site wetlands through visual observation, auditory detection, and sign (e.g., tracks, nests). Results of the site inspection concerning the habitat characterization and the presence of ecological receptors on the site were presented by Mr. Heim. A list of wildlife species and their respective foraging guild were presented as part of the report. The list was based on the identification of wildlife species noted during the site inspection as well as on site characteristics that may provide habitat for additional wildlife. A vernal pool providing potential habitat for an observed state-listed rare salamander species was identified within one of the adjacent wetlands.

Federal Aviation Administration William J. Hughes Technical Center, Forest Mitigation Bank Study and Management Plan – NJ (Project Manager: 2002)
Mr. Heim was project manager for a forest habitat characterization and management study that described existing forest mitigation sites, predicted future forest stand characteristics based on the composition of the existing community and developed habitat management goals to benefit the avian species of concern. Mr. Heim oversaw the collection of data to characterize dominant herbs, tree and shrub seedlings, and substrate cover type within four forest mitigation areas. The species composition of basal sprouts, discrete saplings, and mature shrubs were also assessed and predictions for the forest mitigation areas were developed. Mr. Heim identified a variety of appropriate habitat management strategies, including such silvicultural activities as selective thinning, to optimize forested habitat features for the avian species of concern.

SPECIALIZED TRAINING

- OSHA Hazardous Waste Site Training, 40 hours, 1992
- OSHA 8-Hour Refresher Course, 1993-2007
- OSHA 8-Hour HAZMAT/Supervisor, 1999
- USFWS Habitat Evaluation Procedures (HEP), 1986
- Soil Science Coursework (13 credit hours)

PROFESSIONAL AFFILIATIONS

- Society of Environmental Toxicology and Chemistry
- Society of Wetland Scientists
- Society for Conservation Biology

TRC

ELIZABETH A. DENLY

EDUCATION

B.A., Chemistry, University of New Hampshire, 1987

PROFESSIONAL REGISTRATIONS /CERTIFICATIONS

Licensed Site Professional Association, Massachusetts, Associate Member
American Chemical Society

AREAS OF EXPERTISE

Ms. Denly has 23 years of experience in:

- Quality Assurance/Quality Control
- Data Validation
- PCB Investigation and Remediation
- PCB Building Materials
- Remedial Investigation/Feasibility Studies
- Laboratory Audits
- Gas Chromatography: Field and Laboratory Analyses
- Gas Chromatography/Mass Spectrometry: Field and Laboratory Analyses

REPRESENTATIVE EXPERIENCE

Quality Assurance/Quality Control

As a QA chemist at TRC, Ms. Denly is responsible for providing QA/QC oversight in support of a variety of environmental investigations including contaminant ambient air monitoring, human health and ecological risk assessments, risk-based soil cleanups, remediation programs, and delineation. Ms. Denly has provided this oversight under different regulatory programs, including MADEP, NYSDEC, NJDEP, Region I, Region II, Region III, and Region V. In this role, she has been responsible for the preparation of the project-specific QAPP, coordination with the laboratory, selection of the appropriate analytical methodologies needed to achieve the desired state or regulatory standards, oversight and performance of the data validation process, and determination of the usability of the data in comparison to the overall project objectives.

In addition, Ms. Denly serves as the TRC Remediation Practice Quality Coordinator, responsible for the creation and implementation of the TRC Remediation Practice Quality Management Plan and SOPs.

Data Validation

Ms. Denly provides oversight and senior review on data validation performed for a variety of analytical parameters. She performs data validation for organic parameters including VOCs, SVOCs, Pesticides, PCB Aroclors, PCB homologues/congeners, dioxins, specialty analyses including GC/MS/SIM and various air analyses. Validation and reporting guidelines utilized include EPA

National Functional Guidelines, EPA Regions I through V, NYSDEC, and NJDEP. Ms. Denly developed internal protocols for the validation of the MA DEP EPH/VPH methodologies.

New York City School Construction Authority – New York, NY (Project QA Officer: 2010 – Present)
Ms. Denly assisted in the preparation of QA protocols for a comprehensive pilot study to evaluate the possible presence of PCB Caulk and preferred remedial remedies in select schools built between 1950 and 1978. QA protocols included sampling and analysis procedures for PCBs in several matrices (caulk, wipes, soil, air and bulk). Ms. Denly is responsible for reviewing field team documentation, providing oversight of the analytical laboratory and coordinating data validation for all parameters. She communicates frequently with the laboratories to ensure proper receipt of samples, proper utilization of project-specific analytical protocols in order to achieve necessary project action levels and to monitor the overall performance of the laboratories. She works with the laboratories to ensure proper cleanup procedures are performed on difficult bulk matrices from the school buildings to ensure the highest level of data defensibility.

City of New Bedford, Parker Street Waste Site – New Bedford, MA (Project QA Manager: 2006 – Present)
Ms. Denly serves as Project QA Manager and PCB chemistry expert for numerous investigations and remediations associated with historic PCB impacts from the Parker Street Waste Site. Investigation and remediation locations include residential properties, school building sites, and commercial sites within the footprint of the former waste site. Responsibilities include reviewing all field notes, performing data validation, preparing of data usability assessments and overseeing the analytical laboratories.

City of New Bedford, New Bedford High School Investigation and Remediation , New Bedford, MA (Project QA Manager: 2006 – Present)
Ms. Denly serves as Project QA Manager and PCB chemistry expert for the investigation and remediation of multiple PCB containing building materials. Responsibilities include reviewing all field notes, performing data validation, preparing of data usability assessments and overseeing the analytical laboratories.

Curtis Specialty Papers, Pre-Remedial Investigations and Early Removal Action – Milford, NJ (Project QA Officer: 2008 - 2009)
Ms. Denly was the Project QA Officer for pre-RI/FS activities and early removal actions for the removal of oil-filled electrical equipment at this newly-named Superfund site. She was responsible for preparing a QAPP using the UFP-QAPP guidelines in accordance with EPA Region 2 requirements. The investigation a pre-demolition hazardous materials survey, including asbestos sampling, lead-based paint sampling and characterization of other potentially

hazardous building materials and the removal and disposal of over 90 pieces of oil-filled electrical equipment, including PCB and PCB-contaminated transformers. Ms. Denly was responsible for providing oversight of the analytical laboratories and all data validation activities.

Crown Vantage Landfill, Remedial Investigations/Feasibility Studies – Alexandria Township, **NJ** (Project QA Officer: **2007 – 2010**)
Ms. Denly was the Project QA Officer for RI/FS activities at this Superfund site. She was responsible for preparing a QAPP using the UFP-QAPP guidelines in accordance with EPA Region 2 requirements. The remedial investigation including test pitting and soil, sediment, surface water and pore water sampling activities for several analytical parameters. Ms. Denly worked with the human health and ecological risk assessors to ensure the analytical methods selected for the program would achieve the necessary risk-based action levels. Ms. Denly was responsible for providing oversight of the analytical laboratories and all data validation activities.

Woodbrook Road Superfund Site – South Plainfield, **NJ** (Project QA Officer: **2006 – 2009**)
Ms. Denly developed QAPP for complex remedial investigation under EPA Region II oversight. Program involves use of the TRIAD approach for real-time PCB results and sampling and analysis of soil, sediment, groundwater, and surface water for all TCL/TAL parameters, dioxins/furans, PCB congeners, and a variety of wet chemistry parameters, most of which will be used in a human health/ecological risk assessment. Providing oversight of three analytical laboratories and responsible for coordination of data validation for all parameters. She communicates frequently with the laboratories to ensure proper receipt of samples, proper utilization of project-specific analytical protocols in order to achieve necessary project action levels and to monitor the overall performance of the laboratories. Ms. Denly is responsible for the oversight and performance of field and laboratory audits.

130 Liberty Street – **New** York, **NY** (Project QA Officer: **2005** – Present)
Ms. Denly developed QAPP for extensive ambient air monitoring program and waste management program under EPA Region II oversight. Provide oversight of six analytical laboratories and responsible for coordination and performance of data validation for asbestos, metals, dioxins/furans, PAHs, PCBs, and silica ambient air data as well as TCLP and metals waste stream data. Communicate frequently with the laboratories to ensure proper receipt of samples, proper utilization of project-specific analytical protocols and to monitor the overall performance of the laboratories. Responsible for the oversight and performance of field and laboratory audits. Review all data prior to web-site posting and submission to EPA.

FAA, Region II – Atlantic City, NJ (Project QA Officer: 2002 – Present)
Ms. Denly assisted in the preparation of QA protocols for the Supplemental RI and Ecological Risk Assessment Work Plan. She was responsible for providing QA support to field team. Interfaced with laboratories to ensure achievement of risk-based standards. Performed data validation and/or oversight for all data generated. Ms. Denly provided oversight for all validation performed on Remedial Investigation data.

Mattiace Petrochemical – Glen Cove , NY (Project QA Officer: 2004 – Present)
Ms. Denly prepared QAPP for Long Term Remedial Action under TRC's Exit Strategy program using Region II guidance. She provided QA oversight to field team. Ms. Denly performed data validation of data generated for demonstration of achievement of cleanup objectives. Responsible for performing assessment of data to determine overall usability.

Region I Auto Body Shop Air Monitoring – Lawrence, MA (Project QA Officer: 2006 – 2008)
Ms. Denly developed QAPP for air monitoring program for chemicals associated with spray painting operations under EPA Region I oversight. She provided oversight of analytical laboratories and responsible for data review of VOC and hexamethylene diisocyanate air data.

QWDC – Long Island City, NY (Project QA Officer: 2003 – Present)
Ms. Denly prepared QAPP for NYSDEC Voluntary Cleanup Program under TRC's Exit Strategy program. She provided QA oversight to field team. Ms. Denly performed data validation for the program. She was responsible for performing assessment of data to determine overall usability. Ms. Denly provided daily support to project team on chemistry, laboratory, and QA issues. She was responsible for ensuring project objectives are achieved by laboratory and for oversight of laboratory QA issues.

First Avenue – New York, NY (Project QA Officer: 2002 – Present)
Ms. Denly prepared a QAPP for Supplemental Soil Investigation and Voluntary Cleanup of four sites under TRC's Exit Strategy program. She provided QA oversight to field team. Perform data validation of select data points used for decision-making. Ms. Denly was responsible for performing assessment of data to determine overall usability for various Remedial Work Plans.

Region I Superfund RAC – MA (Lead Chemist: 2000 – Present)
Ms. Denly served as lead chemist for a variety of Superfund programs under the Region I Remedial Action Contract (RAC) as a subcontractor to Metcalf & Eddy. Her responsibilities include ongoing development of analytical specifications for laboratories to follow in order to achieve specific project objectives and development of QAPPs following the requirements of EPA Region I QAPP guidelines. She performs data validation and/or senior review of data validation

for a variety of analytical methodologies utilizing EPA Region I validation guidelines. Ms. Denly generates data usability assessments and/or split sample comparison reports in accordance with EPA Region I guidance, when required. She interacts with EPA Region I chemists in the selection of analytical methodologies and project objectives. Ms. Denly provides QA oversight of PRP's validation reports, sampling and analysis plans, and QAPPs. She is responsible for providing QA oversight to field team, performing daily reviews of COCs and traffic reports, acting as the main liaison between Metcalf & Eddy and the field team and with EPA.

Various Brownfields Programs – Throughout MA (Project QA Officer: **2000** –Present)
Ms. Denly serves as Project QA officer for a variety of Brownfields programs performed throughout Massachusetts. Her responsibilities include development and approval of QAPPs, selection and oversight of laboratories, and providing a final data usability assessment at the close of each project. Ms. Denly is responsible for providing QA oversight to field team and performing daily reviews of COCs.

Massachusetts Department of Environmental Protection – MA (QA Consultant: **1998** – Present)

2010-Present: VPH by GC/MS: Ms. Denly provides assistance to MassDEP in the development of a protocol for the analysis of VPH by GC/MS. Ms. Denly coordinates associated MassDEP Work Group meetings. Ms. Denly will be responsible for providing MassDEP with a draft version of this method.

2010-Present: Compendium of Analytical Methods (CAM) Q&A: Ms. Denly provides assistance to MassDEP on all questions received regarding the CAM. She is responsible for generating a response to each question and tracking all questions and answers for subsequent posting on the MassDEP web site.

2008-2010: CAM Revisions: In conjunction with MassDEP, Ms. Denly revised and updated the CAM documents that instruct laboratories on how to perform common analytical methods under the MCP. The CAM documents detail quality control procedures, acceptance criteria, corrective actions, and reporting requirements that laboratories must follow when performing analyses under the MCP. Ms. Denly is actively involved with the technical review and update of existing CAM documents, which includes analytical methods for VOCs, SVOCs, pesticides, PCBs, herbicides, explosives, EPH, VPH, metals, cyanide, and hexavalent chromium. Ms. Denly's responsibilities also included the creation of new CAM documents for MassDEP's air-phase petroleum hydrocarbons (APH) method and EPA method TO-15 analyses. When the revisions were finalized, Ms. Denly provided training for laboratories and LSPs on the new and revised CAM documents.

2006-2007: MassDEP Data Audit Project: Ms. Denly was responsible for performing review/evaluation of data packages for EPH/VPH analyses from laboratories selected by MassDEP as part of a Data Audit project to ensure compliance with the methods and CAM. All laboratory reports which were reviewed were randomly selected by MassDEP from different MCP sites. As part of the evaluation, she developed worksheets that can be used in the future by MassDEP auditors for EPH and VPH data. In addition, Ms. Denly provided MassDEP with a final report summarizing the results of the data audits.

2006-2007: Data Usability Work Group: Ms. Denly served as a member of the Data Usability Work Group led by MassDEP and assisted in the development of a policy for Representativeness Evaluations and Data Usability Assessments (REDUA) under the MCP for RAOs. Ms. Denly has extensive experience in generating data usability assessments in conformance with this policy as well as with a wide variety of data sets and scenarios.

2003-2004: Revisions & Updates to EPH/VPH Methods: Ms. Denly served as a member of the EPH/VPH Revisions Work Group led by MassDEP. The Work Group was responsible for updating the 1998 EPH/VPH methods based on laboratory's experiences with the methods since it was released. As a result of serving on this Work Group, Ms. Denly was subsequently contracted by MassDEP to provide final documents for the revised EPH/VPH methods.

2001-2004: Data Quality Enhancement Work Group: Ms. Denly served as a member of the Data Quality Enhancement Work Group led by MassDEP and assisted in the development of a policy for achieving consistency of data reported under the MCP. Ms. Denly was designated as the Organic Subcommittee Chairperson on this Work Group, responsible for generating the framework for QC parameters on organic analyses typically utilized under the MCP, method-specific performance standards for these QC parameters, minimum reporting requirements for the laboratories for each method, and a list of what laboratories need to keep on file for potential audits by the MassDEP. She was responsible for generating the final deliverable on all organic method requirements developed under this Work Group, providing significant input into the development of requirements for inorganic methods as well as field sampling QC requirements, and LSP data usability assessment requirements.

1998-2000: Development of the APH Method: Ms. Denly managed a program involving the development of an analytical approach for the analysis of volatile petroleum hydrocarbons in indoor air to support the MA DEP's risk-based approach to evaluating petroleum hydrocarbons in air. She developed a list of target analytes and a QAPP for the program. Ms. Denly performed method detection limit studies for individual target analytes and hydrocarbon ranges in SUMMA canisters. She conducted a precision and accuracy study for individual target analytes and hydrocarbon ranges using an outside source. Ms. Denly also evaluated the method with real-worid samples. As a result of the method

development, MassDEP issued the APH method for analysis of air-phase petroleum hydrocarbons in air samples.

Greenfields Energy Company, Ltd. – WV (QA Coordinator: **1999 – 2000)**
Ms. Denly served as QA coordinator for a Phase II Investigation at a former coal producing facility in West Virginia. She provided oversight to another consultant in the development of the QAPP. Interfaced with the laboratory to develop appropriate low level methodologies for groundwater samples in order to achieve West Virginia Groundwater Standards. Ms. Denly communicated daily with the laboratory to ensure samples received for proper analytical parameters. She also coordinated and performed data validation of all data for a complex mixture of organic and inorganic methodologies.

New Bedford Harbor – New Bedford, MA (Project QA Officer: **1998 – 2000)**
Ms. Denly provided oversight of a laboratory which served as a QA laboratory for baseline analyses of air, groundwater, and sediment samples at a Superfund site under USACE and EPA Region I oversight. She is responsible for coordination and performance of data validation. Ms. Denly developed project-specific worksheets for the validation of PCB congener analyses of PUF/XAD samples by HRGC/HRMS using EPA Region I guidelines. She communicated frequently with the laboratory to ensure proper receipt of samples and proper utilization of project-specific analytical protocols and to monitor the overall performance of the laboratory. Ms. Denly is responsible for the generation of Chemical Quality Assurance Reports, comparing the results of the QA laboratory with those of a primary laboratory. She communicated frequently with the USACE in regards to laboratory issues.

Allied Products – OH (QA Coordinator: **1999 – 2000)**
Ms. Denly served as QA coordinator for a Supplemental Phase II Investigation under the Ohio Voluntary Action Program. She developed project-specific QAPP. Provided support to the project manager including the confirmation of proper QA/QC utilized in the field and laboratory as well as coordinating and performing data validation. Ms. Denly interfaced with the laboratory to select appropriate methodologies for low-level analyses in order to achieve Ohio MCLs.

Union Camp – Dover, OH (QAPP Author: **1998 – 1999)**
Ms. Denly assisted in the development of a QAPP under Ohio EP/VRegion V in support of a Corrective Measures Study ecological risk assessment. She was responsible for working with contracted laboratories in the development of acceptable analytical methods with very low detection limits for the determination of VOCs, SVOCs, pesticides, and PCBs in complex matrices.

Eagle Picher, OH (Project QA Officer: **1998 – 2000)**
Ms. Denly assisted in the development of a QAPP under Ohio EP/VRegion V in support of a SACM program. She provided detailed protocols for XRF field screening in QAPP. Coordinated analytical requirements with laboratory. Ms.

Denly also provided oversight and performed data validation using EPA National Functional Guidelines.

Bay State Gas – Brockton and Taunton, MA (Project QA Officer: 1995 – 2000)
Ms. Denly served as quality assurance coordinator for Phase II investigations performed at various Bay State locations under Massachusetts Department of Environmental Protection regulations. She provided QA support to the field sampling team. Ms. Denly also coordinated and performed data validation and monitored laboratory performance. Interfaced with the laboratory to select appropriate analytical methodologies and sample cleanups in order to achieve low detection limits when samples exhibited high petroleum content.

Stanley Bostitch – East Greenwich, RI (QA Coordinator: 1995 – 2000)
Ms. Denly served as analytical coordinator for a large sampling program performed under Rhode Island Department of Environmental Management regulations. She provided QA support to the field sampling team. Ms. Denly coordinated and performed data validation and monitored laboratory performance.

BOC Gases – MA (QA Coordinator: 1997 – 1999)
Ms. Denly served as analytical coordinator for a Massachusetts Contingency Plan (MCP) Phase II investigation. She provided support to the project manager including the confirmation of proper QA/QC utilized in the field and laboratory as well as coordinating and performing data validation. Ms. Denly assisted project manager in the selection of appropriate analytical methodologies (GC/MS/SIM) in order to meet the MADEP GW-1 standards. She also assisted the laboratory in developing specific Q/VQC procedures to be utilized with the GC/MS/SIM analyses.

MADEP EPH/VPH Methodologies, Various Clients – MA (QA Consultant 1998 –2000)
Ms. Denly assisted several laboratories in the development and implementation of the recently published MADEP methodologies for the analysis of TPH. She performed intense review of laboratory data and convened with laboratory to discuss deficiencies and potential corrective action.

Field/Laboratory Analyses

Consolidated Edison Company, Electrical Power Generator – NY (Project Chemist: 1996)
Ms. Denly performed a method validation study to establish the applicability of an ASTM UV method for the measurement of dielectric fluids in soils. Detection limits, precision, accuracy, and comparability to laboratory analyses using MA DEP EPH methodology were investigated for each oil.

Consolidated Edison Company, Electrical Power Generator – NY (GC Analyst: 1995)
Ms. Denly prepared and analyzed soil samples for an RFI of the facility in Astoria, New York. She quantitatively identified samples for TPH by GC/FID. Ms. Denly performed qualitative identification of the soils based on analysis of several of categories of oils used at the facility, including fuel oil #2, fuel oil #6, transformer oil, gas condensate, and dielectric fluids.

Iron Horse Park, Bioremediation – Billerica, MA (Laboratory Analyst: 1995)
Ms. Denly developed extraction and analysis method to determine presence of low level petroleum hydrocarbons (C_{10}-C_{32} normal alkanes and total unresolved TPH) and low level PAHs with their alkylated homologues. She employed GC/FID and GC/MS selective ion monitoring technologies for the analyses. Ms. Denly monitored degree of microbial biodegradation in samples via the quantitative evaluation of hopane in the PAH analysis and the pristane/phytane ratio in the TPH analysis.

Cliffs Dow – Marquette, MI (Field GC/MS Chemist: 1995)
Ms. Denly provided on-site field analytical support during remediation of a site contaminated with wood tars. She utilized an aqueous extraction followed by analysis of headspace constituents for VOCs. Implemented a methylene chloride microextraction followed by GC/MS selective ion monitoring for PAH and phenolic compounds. Ms. Derily provided real-time information which was compared to site-specific clean-up criteria and used to guide the excavation and remediation process. Data correlated well with results from split samples sent to an off-site laboratory for analysis by CLP methodologies.

Allied Signal, Inc., Phenol and Acetone Manufacturer – PA (Field GC Chemist: 1994)
Ms. Denly provided on-site analytical support during a post-control emissions test under EPA's CAAA Early Reductions Program and Philadelphia Air Management Services (PAMS) Compliance Testing for a thermal oxidizer and catalytic oxidizer at the Frankford, Pennsylvania facility. She measured emissions of target Hazardous Air Pollutants (HAPs) in whole air samples using EPA Method 18. Ms. Denly provided on-site sample results as well as emission rates and removal efficiencies.

Compo Chemical Company, Former Adhesives Manufacturer – Mansfield, MA (Field Analytical Chemist: 1996)
Ms. Denly provided field analytical support during a Phase II investigation of a MA DEP listed site in Mansfield, Massachusetts which formerly manufactured adhesives. She analyzed soil samples on site using an aqueous extraction followed by a headspace analysis using a Photovac 10S plus portable GC, the results of which were used to delineate extent of contamination. Ms. Denly provided QA support and guidance during investigation. She prepared the QA

Plan and ensured the implementation of QA requirements including field quality control and data validation.

CRREL – Hanover, NH (Field Chemist: 1998)
Ms. Denly conducted a quantitative tracer gas study with helium during two in-situ air sparging and soil vapor extraction pilot tests at the Cold Regions Research and Engineering Laboratory in Hanover, New Hampshire. She was responsible for setup of all instrumentation, calibration of helium detector, calculations of flow rates, performance of a 100% recovery test, and measurement of helium detected over time.

Squibb Manufacturing, Pharmaceutical Company – Humacao, PR (Field GC Chemist: 1995)
Ms. Denly provided field analytical support for soil gas survey conducted as part of an RFI at the facility in Humacao, Puerto Rico. She analyzed soil gas samples in tedlar bags by direct injection, GC/FID techniques following the guidelines of EPA Method 18 for ten constituents of concern. Ms. Denly generated real-time data used to identify areas of release and select locations of soil remediation.

Sun Refining and Marketing Co., Oil Refinery – Yabucoa, PR (Field GC Chemist: 1994)
Ms. Denly organized and operated an on-site laboratory to support a fugitive emissions screening and bagging program of process equipment within ten process units at the facility in Yabucoa, Puerto Rico. She analyzed tedlar bag matrices following guidelines of EPA Method 18.

Malcolm Pirnie, Wastewater Treatment Facilities – New York City (Laboratory Analyst: 1992)
Ms. Denly refined, organized, and performed innovative analytical methodology used for a large scale program (over 800 samples) as part of a study of VOC air emissions from various wastewater treatment plants.

French Limited Superfund Site – Crosby, TX (GC/MS Analyst: 1987 – 1990)
Ms. Denly supported field bioremediation study work at a Superfund site in Crosby, Texas by analyzing tenax cartridge samples on perimeters of a contaminated lagoon. She conducted method development and analytical modifications to accommodate complex matrix effects resulting from flux chamber sampling techniques.

PUBLICATIONS AND PRESENTATIONS
Denly, E. Chapnick, S., "*Is Presumptive Certainty Generating Usable Data for Massachusetts Contingency Plan (MCP) Decisions?*" Paper presented at Twentieth Annual Conference on Contaminated Soils, Sediments and Waters, Amherst, MA. 2004.

Denly, E., Hoyt, M., Anastas, N., Fitzgerald, J., Hutcheson, M., McGrath, T., *"Massachusetts VPH Method Validation for Indoor Air Samples"*. Poster presented at Thirteenth Annual Conference on Contaminated Soils, Amherst, MA. 1998.

Denly, E. Hopper, D., *"Field Chemistry for PAHs and VOCs Applied to a Risk-Based Soil Cleanup at a Landfill"*, Paper presented at Fifth International Symposium on Field Analytical Methods for Hazardous Wastes and Toxic Chemicals, Las Vegas, NV. 1997.

Denly, E., Hoyt, M., Camp, W.H., Naughton, G., *"Method Validation Study for Field Screening of Dielectric Fluids in Soils"*, Paper presented at Twelfth Annual Conference on Contaminated Soils, Amherst, MA. 1997.

Denly, E., Wang, H., *"Preparation of Tedlar Bag Whole Air Standards with a SUMMA Canister for Field VOC Analysis"*, Poster presented at Fourth International Symposium on Field Screening Methods for Hazardous Waste and Toxic Chemicals, February 22-24, 1995, Las Vegas, NV.

SPECIALIZED TRAINING

- Data Evaluation for Vapor Intrusion Studies, 9/07
- Sediment Toxicity Testing: Methods to Achieve Strong Data Sets and Interpret Results, 6/07
- Assessing the Vapor Intrusion Pathway at Contaminated Sites, NHDES Waste Management Division, 4/05
- Perchlorate Webinar, US EPA, 2/05
- Improved Project Communication: Within and Outside of the Project Team, ASCE Continuing Education Program, 12/15/04
- Communicating with Tact and Skill for Managers and Supervisors, Rockhurst University Continuing Education Center, 2004
- Training Session for USACE-NAE/USEPA Region I Regional Implementation Manual, 10/7/04
- Training for Non-Trainers, US EPA, 9/04
- Overview of Statistical Data Quality Assessment, US EPA, 9/04
- Assessing Quality Systems, US EPA, 9/04
- Understanding and Evaluating Data Quality Assessments, US EPA, 9/28/04
- PowerPoint 2000 – Level 1, New Horizons Computer Learning Centers, 12/03
- EPA Forms II Lite Training Course, 9/23/03
- MA DEP: "Beyond TPH: Understanding and Using the New EPH/VPH Approach"
- Arthur D. Little: "Advanced Chemical Fingerprinting of Petroleum Contaminated Soils and Water"

- ACS Short Course: "How to Develop and Troubleshoot Capillary GC Methods"
- ORA/RSA Workshop: Optical Remote Sensing
- Finnigan MAT: "Basic Mass Spectral Interpretation"
- Finnigan MAT: "Advanced Environmental MS Interpretation"

APPENDIX B

FIELD DATA FORMS

TRC Environmental Corporation 57 E. Willow Street, Millburn, NJ 07041 (973) 564-6006	SOIL BORING LOG	BORING NUMBER
PROJECT NAME:	LOCATION:	
PROJECT NO.:	CONTRACTOR:	DATE DRILLED:
SAMPLER TYPE/DIA.:	DEPTH TO WATER:	DRILLER:
BOBING METHOD:	TOTAL DEPTH DRILLED:	LOGGED BY:

DEPTH FROM SURFACE (FEET)	BLOW COUNT PER 6 IN.	RECOVERY (INCHES)	PID (ppm)	SAMPLE DESIGNATION	UNIFIED	LITHOLOGIC CLASSIFICATION AND COMMENTS
0						
1						
2						
3						
4						
5						

APPENDIX C

LABORATORY QA MANUALS

ACCUTEST
LABORATORIES

Quality Systems Manual

Volume XII, Revision 0: February 2011

Effective Date: February 24, 2011

Document Control Number: 54

Vincent Pugliese, President

David Spcis, Laboratory Director

Phillip Worby, Director, Quality Assurance

Nancy Cole, Technical Director - Inorganics

Wen Wen Chi, Technical Director - Organics

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Introduction

The Accutest Laboratories Quality Assurance System, detailed in this plan, has been designed to meet the quality program requirements of the National Environmental Laboratory Accreditation Conference (NELAC), ISO Guide 17025, ISO Guide 17011, the Department of Defense Environmental Laboratory Approval Program (DOD ELAP) and other National environmental monitoring programs. The plan establishes the framework for documenting the requirements of the quality processes regularly practiced by the Laboratory. The Quality Assurance Director is responsible for changes to the Quality Assurance Program, which is appended to the Quality System Manual (QSM) during the annual program review. The plan is also reviewed annually for compliance purposes by the Company President and Laboratory Director and edited if necessary. Changes that are incorporated into the plan are itemized in a summary of changes following the introduction. Plan changes are communicated to the general staff in a meeting conducted by the Director of Quality Assurance following the plan's approval.

The Accutest plan is supported by standard operating procedures (SOPs), which provide specific operational instructions on the execution of each quality element and assure that compliance with the requirements of the plan are achieved. Accutest employees are responsible for knowing the requirements of the SOPs and applying them in the daily execution of their duties. These documents are updated as changes occur and the staff is trained to apply the changes.

At Accutest, we believe that satisfying client requirements and providing a product that meets or exceeds the standards of the industry is the key to a good business relationship. However, client satisfaction cannot be guaranteed unless there is a system that assures the product consistently meets its design requirements and is adequately documented to assure that all procedural steps are executed, properly documented and traceable.

This plan has been designed to assure that this goal is consistendy achieved and the Accutest product withstands the rigors of scrutiny that are routinely applied to analytical data and the processes that support its generation.

Summary of Changes
Accutest Laboratories Quality System Manual – February 2011

Section	Page	Description
---	---	Updated Volume Number, Revision Number and Date
2.4	8	Revised Accutest Laboratories Organization Chart
1.2	5	Added to the Policy Statement the following "…and the commitment to the continual improvement of the quality system."
2.1	6	Added to Organization Entity: Scott, Louisiana and Traverse City, Michigan
2.2	6	President/CEO - Changed "six to nine". Added "…Louisiana and Michigan."
2.3	7	Chain of Command – Added Phillip Worby, Director, Corporate Quality Assurance.
7.4	27-28	Change header to Assignment of Reagent, Bulk Chemical and Standard Expiration Dates. Added "Neat materials, bulk chemicals such as solvents, acids…" Added "An expiration date of five (5) years from the date of receipt shall be established."
8.9	31	Method Reporting Limit – Removed "…or equal to…" Added – "The reporting limit established for both organic and inorganic analysis is above the calculated method detection limit where applicable."
Appendix II, III & IV	---	Revisions Applied as Appropriate

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1.0 QUALITY POLICY

1.1 *Accutest Mission*:

Accutest Laboratories provides anaiytical services to commercial and govemment clients in support of environmental monitoring and remedial activities as requested. The Laboratory's mission is dedicated to providing reliable data that satisfies client's requirements as explained in the following:

"Provide easy access, high quality, analytical support to commercial and government clients which meets or exceeds data quality objectives and provides them with the data needed to satisfy regulatory requirements and/or make confident decisions on the effectiveness of remedial activities."

These serviees are provided impartially and are not influenced by undue commercial or financial pressures which might impact the staff's technical judgment. Coincidentiy, Accutest does not engage in activities that endanger the tmst in our independent judgment and integrity in relation to the testing activities performed.

1.2 *Policy Statement*:

The management and staff of Accutest Laboratories share the responsibility for product quality and the commitment to the continual improvement of the quality system. Accordingly, Accutest's quality assurance program is designed to assure that all processes and procedures, which are components of environmental data production, meet established industry requirements, are adequately documented from a procedural and data traceability perspective, and are consistently executed by the staff. It also assures that analytical data of known quality, meeting the quality objectives of the analytical method in use and the data user's requirements, is consistently produced in the laboratory. This assurance enables the data user to make rational, confident, cost-effective decisions on the assessment and resolution of environmental issues.

The laboratory Quality System also provides the management staff with data quality and operational feedback information. This enables them to determine if the laboratory is achieving the established quality and operational standards, which are dictated by the client or established by regulation. The information provided to management, through the QA program, is used to assess operational performance from a quality perspective and to perform corrective action as necessary.

All employees of Accutest Laboratories participating in environmental testing receive quality system training and are responsible for knowing and complying with the system requirements. The entire staff shares Accutest's commitment to good professional practice.

Vincent J. Pugliese, President

February 11, 2011
Date

2.0 ORGANIZATION

2.1 ***Organizational Entity***. Accutest Laboratories is a privately held, independent testing laboratory founded in 1956 and registered as a New Jersey Corporation. The headquarters are located in Dayton, New Jersey where it has conducted business since 1987. Satellite laboratories are maintained in Marlborough, Massachusetts; Orlando, Florida, Houston, Texas, San Jose, California, Wheat Ridge, Colorado, Scott, Louisiana and Traverse City, Michigan.

2.2 ***Management Responsibilities***

Requirement. Each laboratory facility has an established chain of coinmand. The duties and responsibilities of the management staff are linked to the President/CEO of Accutest Laboratories who establishes the agenda for all company activities.

President/CEO. Primary responsibility for all operations and business activities. Delegates authority to laboratory directors, general managers, and the quality assurance director to conduct day to day operations and execute quality assurance duties. Each of the nine operational entities (New Jersey, Florida, Massachusetts, Texas (2), California, Colorado, Louisiana and Michigan) report to the President/CEO.

Vice President Operations/Laboratory Director. Executes day to day responsibility for laboratory operations including technical aspects of production activities and associated logistical procedures. Reports direcdy to the President/CEO.

Quality Assurance Director. Design, oversight, and facilitation responsibility for all Quality System elements identified in the Quality Program. Reports direcdy to the President/CEO.

Technical Directors (Organics/Inorganic). Responsible for day to day operations and activities of the organics and inorganics laboratories including scheduling, production and data quality. Reports direcdy to the Laboratory Director.

Department Managers. Executes day to day responsibility for specific laboratory areas including technical aspects of production activities and associated logistical procedures. Direct report to the laboratory director.

Section Supervisors. Executes day to day responsibility for specific laboratory units including technical aspects of production activities and associated logistical procedures. Direct report to the Department Manager.

2.3 *Chain of Command*

The responsibility for managing all aspects of the Company's operation is delegated to specific individuals, who have been assigned the authority to act in the absence of the senior staff. These individuals are identified in the following Chain of Command:

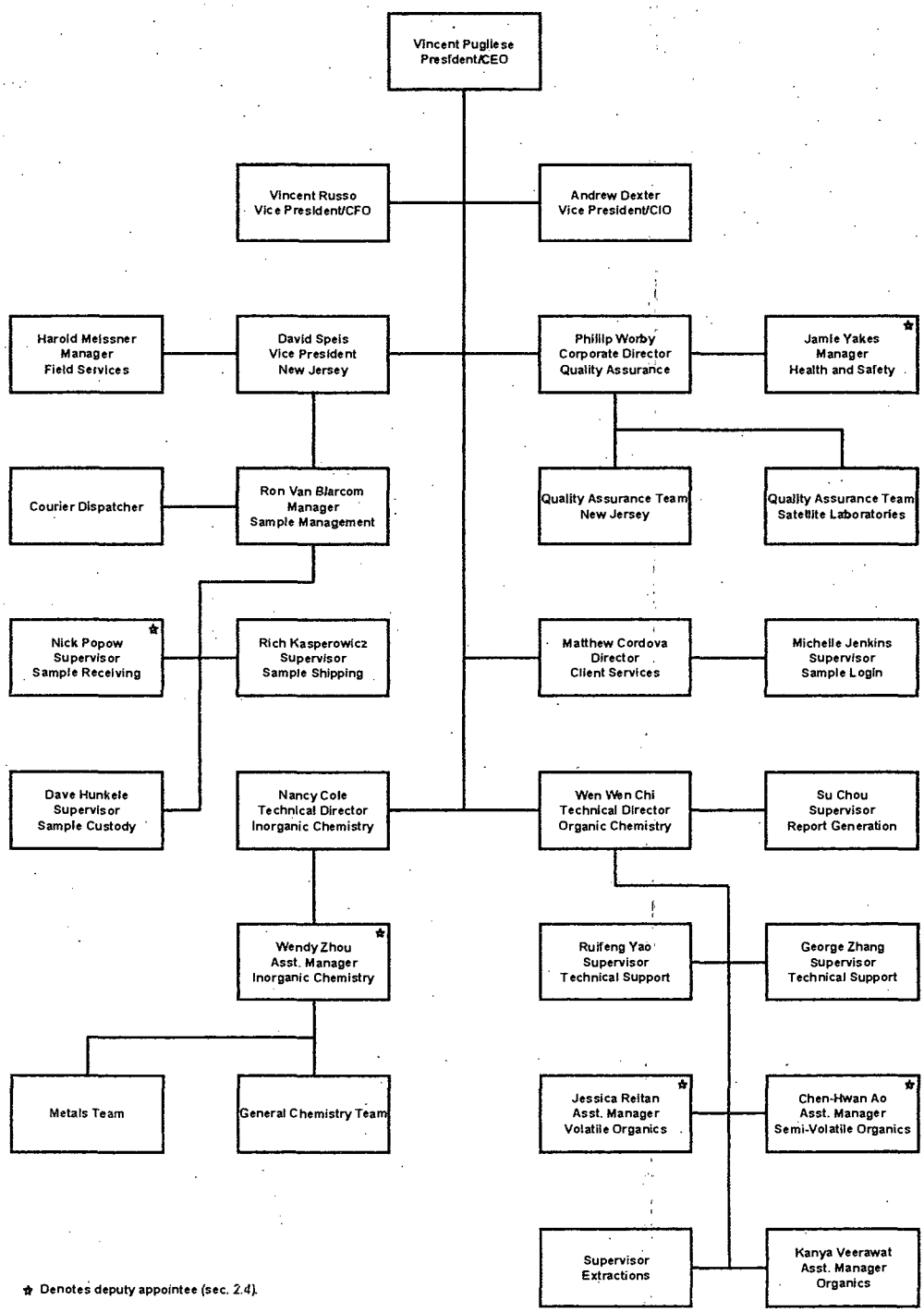
Vince Pugliese; President and Chief Executive Officer
Vince Russo; Chief Financial Officer
David Speis; Vice President Laboratory Operations & Laboratory Director
Phillip Worby, Director, Corporate Quality Assurance
Matt Cordova, Director, Client Services

2.4 *Organization Chart*

The hierarchy of the Company's operational control and oversight is illustrated in the Accutest Laboratories Organization Chart. Employees listed with an asterisk would be considered to be the appointed deputy in the event that the technical director or corporate quality assurance director are absent from their respective position for a period of time exceeding fifteen (15) consecutive calendar days. If this absence exceeds thirty-five (35) consecutive calendar days the laboratory shall notify the NJDEP-Office of Quality Assurance in writing.

Should this absence exceed sixty-five consecutive calendar days the DOD ELAP Accrediting Body shall be notified in writing.

Accutest Laboratories Mid-Atlantic Organization Chart



★ Denotes deputy appointee (sec. 2.4).

3.0 QUALITY RESPONSIBILITIES OF THE MANAGEMENT TEAM

3.1 ***Requirement*** Each member of the management team has a defined responsibility for the Quality System. System implementation and operation is designated as an operational management responsibility. System design and implementation is designated as a Quality Assurance Responsibility.

President/CEO. Primary responsibility for all quality activities. Delegates program responsibility to the Quality Assurance Director. Has the ultimate responsibility for implementation of the Quality System.

Vice President Operations/Laboratory Director. Responsible for implementing and operating the Quality System in all laboratory areas. Responsible for the design and implementation of corrective action for defective processes. Has the authority to delegate Quality System implementation responsibilities.

Quality Assurance Director. Responsible for design, implementation support, training, and monitoring of the quality system. Identifies product, process, or operational defects using statistical monitoring tools and processes audits for elimination via corrective action. Empowered with the authority to halt production if quality issues warrant immediate action. Monitors implemented corrective actions for compliance.

Technical Directors. Responsible for overseeing the technical aspects of the quality assurance system as they are integrated into method applications and employed to assess analytical control on a daily basis. The Technical directors review and acknowledge the technical feasibility of proposed QA systems involving technical applications of applied methodology.

Department Managers. Responsible for applying the requirements of the Quality System in their section and assuring subordinate supervisors and staff apply all system requirements. Initiates, designs, documents, and implements corrective action for quality deficiencies.

Section Supervisors & Team Leaders. Responsible for applying the requirements of the Quality System to their operation and assuring the staff applies all system requirements. Initiates, designs, documents, and implements corrective action for quality deficiencies.

Quality Assurance Officers. Responsible for design support, implementation support, training, and monitoring support for the quality system. Conducts audits and product reviews to identify product, process, or operational defects using statistical monitoring tools and processes audits for elimination via corrective action. Provides monitors support for implemented corrective actions for compliance. Serves as the primary alternate in the absence of the Quality Assurance Director.

Bench Analysts. Responsible for applying the requirements of the Quality System to the analyses they perform, evaluating QC data and initiating corrective action for quality control deficiencies within their control. Implements global corrective action as directed by superiors.

3.2 ***Program Authority*** Authority for program implementation originates with the President/CEO who bears the ultimate responsibility for system design, implementation, and enforcement of requirements. This authority and responsibility is delegated to the Director of Quality Assurance who performs quality functions independentiy without the encumbrances or biases associated with operational or production responsibilities to ensure an honest, independent assessment of quality issues.

3.3 ***Data Integrity Policy*** The Accutest Data Integrity Policy reflects a comprehensive, systematic approach for assuring that data produced by the laboratory accurately reflects the outcome of the tests performed on field samples and has been produced in a bias free environment by ethical professionals. The policy includes a commitment to technical ethics, staff training in ethics and data integrity, an individual attestation to data integrity and procedures for evaluating data integrity. Senior management assumes the responsibility for assuring compliance with all technical ethics elements and operation of all data integrity procedures. The staff is responsible for compliance with the ethical code of conduct and for practicing data integrity procedures.

The Accutest Data Integrity Policy is as follows:

"Accutest Laboratories is committed to producing data that meets the data integrity requirements of the environmental regulatory community. This commitment is demonstrated through the application of a comprehensive data integrity program that includes ethics and data integrity training, data integrity evaluation procedures, staff participation and management oversight. Adherence to the specifications of the program assures that data provided to our clients is of the highest possible integrity and can be used for decision making processes with high confidence."

Data Integrity Responsibilities

Management. Senior management retains oversight responsibility for the data integrity program and retains ultimate responsibility for execution of the data integrity program elements. Senior management is responsible for providing the resources required to conduct ethics training and operate data integrity evaluation procedures. They also include responsibility for creating an environment of trust among the staff and being the lead advocate for promoting the data integrity policy and the importance of technical ethics. The Quality Assurance Director is the designated ethics officer for the Company.

Staff. The staff is responsible for adhering to the company ethics policy as they perform their duties and responsibilities associated with sample analysis and reporting. By executing this responsibility, data produced by Accutest Laboratories retains its high integrity characteristics and withstands the rigors of all data integrity checks.

The staff is also responsible for adhering to all laboratory requirements pertaining to manual data edits, data transcription and data traceability. These include the application of approved manual peak integration and documentation procedures. It also includes establishing traceabiliry for all manual results calculations and data edits.

Ethics Statement. The Accutest ethics statement reflects the standards that are expected for businesses that provide environmental services to regulated entities and regulatory agencies on a commercial basis. The Ethics Policy is comprised of key elements that are essential to organizations that perform chemical analysis for a fee. As such, it focuses on elements related to personal, technical and business activities.

Accutest Laboratories provides analytical chemistry services on environmental matters to the regulated community. The data the company produces provides the foundation for determining the risk presented by a chemical pollutant to human health and the environment. The environmental industry is dependent upon the accurate portrayal of environmental chemistry data. This process is reliant upon a high level of scientific and personal ethics.

It is essential to the Company that each employee understands the ethical and quality standards required to work in this industry. Accordingly, Accutest has adopted a code of ethics, which each employee is expected to adhere to as follows:

- Perform chemical and microbiological analysis using accepted scientific practices and principles.
- Perform tasks in an honest, principled and incorruptible manner inspiring peers & subordinates.
- Maintain professional integrity as an individual.
- Provide services in a confidential, honest, and forthright manner.
- Produce results that are accurate and defensible.
- Report data without any considerations of self-interest.
- Comply with all pertinent laws and regulations associated with assigned tasks and responsibilities.

Data Integrity Procedures. Four key elements comprise the Accutest data integrity system. Procedures have been implemented for conducting data integrity training and for documenting that employees conform to the Accutest Data Integrity and Ethics policy.

The data integrity program consists of routine data integrity evaluation and documentation procedures to periodically monitor and document data integrity. These procedures are documented as SOPs. SOPs are approved and reviewed annually following the procedures employed for all Accutest SOPs. Documentation associated with data integrity evaluations is maintained on file and is available for review.

Data Integrity Training. Accutest employees receive technical ethics training during new employee orientation. Employees are also required to refresh their ethical conduct agreement

annually, which verifies their understanding of Accutest's ethics policy and their ethical responsibilities. A brochure summarizing the details of the Accutest Data Integrity Policy is distributed to all employees with the Ethical Conduct Agreement. The refreshed agreement is appended to each individual's training file.

The training focuses on the reasons for technical ethics training, explains the impact of data fraud on human health and the environment, and illustrates the consequences of criminal fraud on businesses and individual careers. Accutest's ethics policy and code of ethics are reviewed and explained for each new employee.

Training on data integrity procedures are conducted by individual departments for groups involved in data operations. These include procedures for manual chromatographic peak integration, traceability for manual calculations and data transcription.

Data Integrity Training Documentation. Records of all data integrity training are maintained in individual training folders. Attendance at all training sessions is documented and maintained in the training archive.

Accutest Data Integrity and Ethical Conduct Agreement. All employees are required to sign a Data Integrity and Ethical Conduct Agreement annually. This document is archived in individual training files, which are retained for duration of employment.

The Data Integrity and Ethical Conduct Agreement is as follows:

I. I understand the high ethical standards required of me with regard to the duties I perform and the data I report in connection with my employment at Accutest Laboratories.

II. I have received formal instruction on the code of ethics that has been adapted by Accutest Laboratories during my orientation and agree to comply with these requirements.

III. I have received formal instruction on the elements of Accutest Laboratories' Data Integrity Policy and have been informed of the following specific procedures:

a. Formal procedures for the confidential reporting of data integrity issues are available, which can be used by any employee,

b. A data integrity investigation is conducted when data issues are identified that may negatively impact data integrity.

c. Routine data integrity monitoring is conducted on sample data, which may include an evaluation of the data I produce,

IV. I have read the brochure detailing Accutest Laboratories Data Integrity and Ethics Program as required.

V. I am aware that data fraud is a punishable crime that may include fines and/or imprisonment upon conviction.

VI. I also agree to the following:

a. *I shall not intentionally report data values, which are not the actual values observed or measured.*

b. *I shall not intentionally modify data values unless the modification can be technically justified through a measurable analytical process.*

c. *I shall not intentionally report dates and times of data analysis that are not the true and actual times the data analysis was conducted.*

d. *I shall not condone any accidental or intentional reporting of inauthentic data by other employees and immediately report it's occurrence to my superiors.*

e. I *shall immediately report any accidental reporting of inauthentic data by myself to my superiors.*

Data Integrity Monitoring. Documented procedures are employed for performing data integrity monitoring. These include regular data review procedures by supervisory and management staff (Section 12.7), supervisory review and approval of manual integrations and periodic reviews of GALP audit trails from the LIMS and all computer controlled analysis.

Data Review. All data produced by the laboratory undergoes several levels of review, which includes two levels of management review. Detected data anomalies that appear to be related to data integrity issues are isolated for further investigation. The investigation is conducted following the procedures described in this section.

Manual Peak Integration Review and Approval. Routine data review procedures for all chromatographic processes includes a review of all manual chromatographic peak integrations. This review is performed by the management staff and consists of a review of the machine integration compared to the manual integration. Manual integrations, which have been performed in accordance with Accutest's manual peak integration procedures, are approved for further processing and release. Identification of samples and analytes in which manual integration had been necessary may be recorded in a report case narrative specific to a particular client and project requirement.

Manual integrations which are not performed to Accutest's specifications are set aside for corrective action, which may include analyst retraining or further investigation as necessary.

GALP Audit Trail Review. Good Automated Laboratory Practice (GALP) audits are comprehensive data package audits that include a review of raw data, process logbooks, processed data reports and GALP audit trails from individual instruments and LIMS. GALP audit tralls, which record all electronic data activities, are available for the majority of computerized methodology and the laboratory information management system (LIMS). These audit trails are periodically reviewed to determine if interventions performed by technical staff constitute an appropriate action. The review is performed on a recently completed job and includes interviews with the staff who performed the analysis. Findings

indicative of inappropriate interventions or data integrity issues are investigated to determine the cause and the extent of the anomaly.

Confidential Reporting of Data Integrity Issues. Data integrity concerns may be raised by any individual to their supervisor. Employees with data integrity concerns should always discuss those concerns with their immediate supervisors as a first step unless the employee is concerned with the confidentiality of disclosing data integrity issues or is uncomfortable discussing the issue with their immediate supervisors. The supervisor makes an initial assessment of the situation to determine if the concern is related to a data integrity violation. Those issues that appear to be violations are documented by the supervisor and referred to the Director of Quality Assurance for investigation.

Documented procedures for the confidential reporting of data integrity issues in the laboratory are part of the data integrity policy. These procedures assure that laboratory staff can privately discuss ethical issues or report items of ethical concern without fears of repercussions with senior staff.

Employees with data integrity concerns that they consider to be confidential are directed to the Corporate Human Resources Manager in Dayton, New Jersey. The HR Manager acts as a conduit to arrange a private discussion between the employee and the Corporate QA Director or a local QA Officer.

During the employee - QA discussion, the QA representative evaluates the situation presented by the employee to determine if the issue is a data integrity concern or a legitimate practice. If the practice is legitimate, the QA representative clarifies the process for the employee to assure understanding. If the situation appears to be a data integrity concern, the QA representative initiates a Data Integrity Investigation following the procedures specified in SOP EQA059.

Data Integrity Investigations. Follow-up investigations are conducted for all reported instances of ethical concern related to data integrity. Investigations are performed in a confidential manner by senior management according to a documented procedure. The outcome of the investigation is documented and reported to the company president who has the ultimate responsibility for determining the final course of action in the matter. Investigation documentation includes corrective action records, client notification information and disciplinary action outcomes, which is archived for a period of five years.

The investigations are conducted by the senior staff and supervisory personnel from the affected area. The investigations team includes the Laboratory Director and the Quality Assurance Director. Investigations are conducted in a confidential manner until it is completed and resolved.

The investigation includes a review of the primary information in question by the investigations team. The team performs a review of associated data and similar historical data to determine if patterns exist. Interviews are conducted with key staff to determine the reasons for the observed practices.

Following data compllation, the investigations team reviews all information to formulate a consensus conclusion. The investigation results are documented along with the recommended course of action.

Corrective Action, Client Notification & Discipline. Investigations that reveal systematic data integrity issues will be referred for corrective action, resolution and disposition (Section 13). If the investigation indicates that an impact to data has occurred and the defective data has been released to cllents, cllent notification procedures will be initiated following the steps in Section 17.6.

In all cases of data integrity violations, some level of disciplinary action will be conducted on the responsible individual. The level of discipline will be consistent with the violation and may range from retraining and/or verbal reprimand to termination. A zero tolerance pollcy is in effect for unethical actions.

4.0 JOB DESCRIPTIONS OF KEY STAFF

4.1 ***Requirement***: Descriptions of key positions within the organization are defined to ensure that clients and staff understand duties and the responsibliities of the management staff and the reporting relationships between positions.

President/Chief Executive Officer. Responsible for all laboratory operations and business activities. Establishes the company mission and objectives in response to business needs. Direct supervision of the Vice President of Operations, each laboratory director, client services, management information systems, quality assurance and health and safety.

Vice President, Operations/Laboratory Director. Reports to the company president. Establishes laboratory operations strategy. Direct supervision of organic chemistry, inorganic chemistry, field services, and sample management. Maintains operational responsibility for the designated regional laboratories as defined in the Accutest Laboratories Organization Chart. Mid-Adantic Vice President Operations assumes the responsibilities of the CEO in his absence.

Vice President, Chief Information Officer. Reports to the company president. Develops the IT software and hardware agenda. Provides system strategies to compliment company objectives. Maintains all software and hardware used for data handling.

Director, Quality Assurance. Reports to the company president and functions independentiy from laboratory operations. Establishes the company quality agenda, develops quality procedures, provides assistance to operations on quality procedure implementation, coordinates all quality control activities, monitors the quality system, provides quality system feedback to management to be used for process improvement and oversees health and safety. Assumes the responsibilities of the CEO in the absence of the CEO and the Vice President Operations.

Director Client Services. Reports to the company president. Establishes and maintains communications between clients and the laboratory pertaining to client requirements which are related to sample analysis and data deliverables. Initiates client orders and supervises sample login operations.

Manager, Organics (Organics Technical Director). Reports to the laboratory director. Directs the operations of the organics group, consisting of organics preparation and instrumental analysis. Establishes daliy work schedule. Supervises method implementation, application, and data production. Responsible for foliowing Quality System requirements. Maintains laboratory instrumentation in an operable condition. Assumes the responsibilities of the Vice President Operations in his absence.

Manager, Inorganics (Inorganics Technical Director). Reports to the laboratory director. Directs the operations of the inorganics group, consisting of wet chemistry and the metals laboratories. Establishes daily work schedule. Supervises method implementation, application, and data production. Responsible for following Quality System requirements. Maintains laboratory instrumentation in an operable condition. Assumes the responsibilities of the Vice President Operations in his absence.

Manager, Field Services. Reports to the laboratory director. Conducts field sampling and analysis of "analyze immediately" parameters in support of ongoing field projects. Responsible for proper collection, preservation, documentation and shipment of field samples. Maintains field sampling and field instrumentation required to perform primary responsibilities.

Manager, Sample Management. Reports to the laboratory director. Develops, maintains and executes all procedures required for receipt of samples, verification of preservation, and chain of custody documentation. Responsible for maintaining and documenting secure storage, delivery of samples to laboratory units on request and courier services.

Health & Safety Officer. Reports to the Vice President Operations and Quality Assurance Director. Responsible for developing company safety program and chemical hygiene plan. Reviews and updates these plans annually. Responsible for employee training on relevant health and safety topics. Documents employee training. Manages laboratory waste management program.

Supervisor, Wet Chemistry. Reports to the inorganics manager. Executes daily analysis schedule. Supervises the analysis of samples for wet chemistry parameters using valid, documented methodology. Maintains instrumentation in an operable condition. Reviews data for compliance to quality and methodological requirements. Assumes the responsibilities of the Inorganics Manager in his absence.

Supervisor, Metals. Reports to the inorganics manager. Executes daily analysis schedule. Supervises the analysis of samples for metallic elements using valid, documented methodology. Documents all procedures and data production activities. Maintains instrumentation in an operable condition. Reviews data for compliance to quality and methodological requirements.

Supervisor, Organic Preparation. Reports to the organics manager. Executes the daily sample preparation schedule. Performs the extract of multi-media samples for organic constituents using valid, documented methodology. Prepares documentation for extracted samples. Assumes custody until transfer for analysis.

Technical Support Supervisor, Organics. Reports to the organic manager. Oversees all instrument maintenance and new equipment installation. Conducts method development and implementation tasks.

Assistant Manager, Organics. Reports to the organics manager. Expedites the analysis of samples and sample extracts. Executes daily analysis schedule. Supervises the analysis of samples for organic parameters using valid, documented methodology. Documents all data and data production activities. Maintains instrumentation in an operable condition. Reviews data for compliance to quality and methodological requirements. Assumes the responsibilities of the Organics Manager in his absence.

Supervisor, Report Generation. Reports to the organics manager. Compiles raw and processed sample data and assembles into client-ready reports. Initiates report scanning for archiving purposes. Maintains raw batch data in accessible storage. Mails completed reports to clients according to specified report turnaround schedule.

Quality Assurance Officers. Reports to the Director, Quality Assurance. Performs quality control data review for trend monitoring purposes. Conducts internal audits and prepares reports for management review. Oversees proficiency testing program. Process quality control data for statistical purposes. Assumes the responsibilities of the Quality Assurance Director in his absence.

4.2 *Employee Screening, Orientation, and Training*

All potential laboratory employees are screened and interviewed by human resources and technical staff prior to their hire. The pre-screen process includes a review of their qualifications including education, training and work experience to verify that they have adequate skills to perform the tasks of the job.

Newly hired employees receive orientation training beginning the first day of employment by the Company. Orientation training consists of initial health and safety training including general laboratory safety, personal protection and building evacuation. Orientation also includes quality assurance program training, data integrity training, and an overview of the Company's goals, objectives, mission, and vision.

All technical staff receives training to develop and demonstrate proficiency for the methods they perform. New analysts work under supervision until the supervisory staff is satisfied that a thorough understanding of the method is apparent and method proficiency has been demonstrated, through a precision and accuracy study that has been documented, reviewed and approved by the QA Staff Data from the study is compared to method acceptance limits. If the data is unacceptable, additional training is required. The analyst may also demonstrate proficiency by producing acceptable data through the analysis of an independently prepared proficiency sample.

Individual proficiency is demonstrated annually for each method performed. Data from initial and continuing proficiency demonstrations are archived in the individual's training folder.

4.3 *Training Documentation*. The human resources department prepares a training file for every new employee. All information related to qualifications, experience, external training

courses, and education are placed into the file. Verification documentation for orientation, health & safety, quality assurance, and ethics training is also included in the file.

Additional training documentation is added to the file as it is developed. This includes documentation of SOP understanding, data for initial and continuing demonstrations of proficiency, performance evaluation study data and notes and attendance lists from group training sessions.

The Quality Assurance Department maintains the employee training database. This database is a comprehensive inventory of training documentation for each individual employee. The database enables supervisors to obtain current status information on training data for individual employees on a job specific basis. It also enables the management staff to identify training documentation in need of completion.

Employee specific database records are created by human resources on the date of hire. Data base fields for job specific requirements such as SOP documentation of understanding and annual demonstration of analytical capability are automatically generated when the supervisor assigns a job responsibility. Employees acknowledge that their SOP responsibilities have been satisfied using a secure electronic process which updates the database record. Reports are produced which summarize the qualifications of individual employees or departments.

5.0 SIGNATORY APPROVALS

Requirement: Procedures have been developed for establishing the traceability of data and documents. The procedure consists of a signature hierarchy, indicating levels of authorization for signature approvals of data and information within the organization. Signature authority is granted for approval of specific actions based on positional hierarchy within the organization and knowledge of the operation that requires signamre approval. A log of signatures and initials of ali employees is maintained by the HR Staff for cross-referencing purposes.

5.1 *Signature Hierarchy*.

President/Chief Executive Officer. Authorization for contracts and binding agreements with outside parries. Approval of final reports, quality assurance policy, SOPs, project specific QAPs, data review and approval in lieu of technical managers. Note: Contract signature authority resides with Company officers only, which include the President/CEO, Chief Financial Officer and Vice President Administration.

Vice President, Operations/Laboratory Director. Approval of final reports and quality assurance policy in the absence of the President. Approval of SOPs, project specific QAPs, data review and approval in lieu of technical managers. Establishes and implements technical policy.

Vice President, Chief Information Officer. Department specific supplies purchase. MIS policy.

Director, Quality Assurance. Approval of final reports and quality assurance policy in the absence of the President. Approval of SOPs, project specific QAPs, data review and approval in lieu of technical managers.

Director, Client Services. QAP and sampling and analysis plan approval. Project specific contracts, pricing, and price modification agreements. Approval and acceptance of incoming work, Client services policy.

Managers, Technical Departments. Methodology and department specific QAPs. Data review and approval, department specific supplies purchase. Technical approval of SOPs.

Manager, Sample Management. Initiation of laboratory sample custody and acceptance of ali samples. Approval of department policies and procedures. Department specific supplies purchase.

Manager, Health & Safety. Approval of health and safety policy in the absence of the President and QA Director. Approval of health and safety SOPs. Waste manifesting and approval.

Assistant Managers: Technical Departments. Data review approval, purchasing of expendable supplies.

Supervisor, Field Services. Sampling plan design and approval. Data review for field parameters. State form certification. Department policies and procedures. Department specific supplies purchase.

Supervisors, Technical Departments. Data review approval, purchasing of expendable supplies.

5.2 ***Signature Requirements***. Ali laboratory activities related to sample custody and generation or release of data must be approved using either initials, signatures or electronic, password protected procedures. The individual, who applies his signature initial or password to an activity or document, is authorized to do so within the limits assigned to them by their supervisor. All written signatures and initials must be applied in a readable format that can be cross-referenced to the signatures and initials log if necessary.

5.3 ***Signature and Initials Log***. The HR group maintains a signamre and initials log. New employee signamres and initials are appended to the log on the first day of employment. Signature of individuals no longer employed by dhe company are retalned, but annotated with dheir date of termination.

6.0 DOCUMENTATION & DOCUMENT CONTROL

Requirement. Document control policies have been established which specify that any document used as an information source or for recording analytical or quality control information must be managed using defined document control procedures. Accordingly, policies and procedures required for the control, protection, and storage of any information related to the production of analytical data and the operation of the quality system to assure its integrity and traceability have been established and implemented in the laboratory. The system contains sufficient controls for managing, archiving and reconstructing ali process steps which contributed to the generation of an analytical test result. Using dis system, an audit trali for reported data can be produced, establishing complete traceability for the result.

6.1 ***Administrative Records.*** Administrative (non-analytical) records are managed by the quality assurance department. These records consist of electronic documents which are retained in a limited access electronic directory or paper documents, which are released to the technical staff upon specific request.

Form Generation, Modification & Control. The quality assurance group approves and manages ali forms used as either stand-alone documents or in logbooks to ensure their traceability. Forms are generated as computer flies only and are maintained in a limited access master directory. The QA staff also manages and approves modifications to existing forms. Obsolete editions of modified forms are retained for seven years.

Approved forms are assigned a 5-character alphanumeric code. The first two alpha characters designate the department that uses the form; the next three digits are sequentially assigned number.

New forms must include the name Accutest Laboratories and appropriate spaces for signatures of approval and dates. Further design specifications are the responsibility of the originating department.

The technical staff is required to complete ali forms to the maxlinum extent possible. If information for a specific item is unavaliable, the analyst is required to "Z" the information block. The staff is also required to "Z" the uncompleted portions of a logbook or logbook form if the day's analysis does not flil the entire page of the form.

Logbook Control. Ali laboratory logbooks are controlled documents that are comprised of approved forms used to document specific processes. New logs are numbered and issued to a specific individual who is assigned responsibility for the log. Old logs are returned to QA for entry into the document archive system where they are retained for seven (7) years. Laboratory staff may hold a maximum of two consecutively dated logbooks of the same type in the laboratory including the most recentiy issued book to simplify review of recentiy completed analysis.

Controlled Documents. Key laboratory documents that are distributed internally and externally are numbered for tracking purposes. Individuals receiving documents, who must be

informed when changes occur, receive controlled copies of those documents. Controlled status simplifies document updates and retrieval of outdated documents. Control is maintained through a document numbering procedure and document control logbook which identifies the individual receiving the controlled document and the date of receipt. Key documents are also distributed as uncontrolled documents if the recipient does not require updated copies when changes occur. Key documents in uncontrolled status are numbered and tracked using the same procedures as controlled documents.

Quality Systems Manual **(QSM).** All QSMs are assigned a number prior to distribution. The number, date of distribution, and identity of the individual receiving the document are recorded in the document control logbook. The numbering system is restarted with each new volume, which corresponds to the annual revision of the QSM. Electronic versions are distributed as read only files that are password protected.

Standard **O**perating Procedures **(SOPs).** SOPs are maintained by pre-designating the numbers of official copies of documents that are placed into circulation within the laboratory. Official documents are copied to green paper and placed into the appropriate laboratory section as follows:

Administrative: One master copy for the administrative file.

Sample Management: One controlled green copy for the sample management file.

Organics Laboratories: Two controlled green copies, one for the affected laboratory area, and one for the organics laboratory file.

Inorganics Laboratories: Two controlled green copies, one for the affected laboratory area, and one for the inorganics laboratory file.

Field Services: One controlled green copy for each field sampling team (generally a single field technician).

The original, signed copy of the SOP is maintained in the master SOP binder by the QA staff The QA staff collects outdated versions of SOPs as they are replaced and archived for a period of seven (7) years in the QA archives. Electronic versions of outdated SOPs are moved from the active SOP directory to the inactive directory.

6.2 ***Technical Records***. All records related to the analysis of samples and the production of an analytical result are archived in secure document storage or on electronic media and contain sufficient detail to produce an audit trail which re-creates the analytical result. These records include information related to the original client request, bottle order, sample login and custody, storage, sample preparation, analysis, data review and data reporting.

Each department involved in this process maintains controlled documents which enable them to maintain records of critical information relevant to their department's process.

6.3 ***Quality Control Support Data & Records***. All information and data related to the quality system is stored in a restricted access directory on the network server. Information on this directory is backed-up daily. Users of the quality assurance information and data have "read-only" access to the files contained in the directory. The QA staff and the laboratory director have write capability in this directory.

This directory contains all current and archived quality system manuals, SOPs, control limits, MDL studies, precision and accuracy data, official forms, internal audit reports, proficiency test scores and metrics calibration information.

The following information is retained in the directory:

Quality System Manuals
Standard Operating Procedures
ASTM & NIST Methods
Botdeware & Preservative QC Data
Certification Documentation
Change Management Data
External Audit Reports
Internal Audit Reports
Corrective Action Database
Laboratory Forms Directory
Health & Safety Manuals
Inactive Standard Operating Procedures
Method Detection Limit Data
Metrics Inventory & Calibration Data
Microbiology Reagent Data
Performance Limits
Proficiency Test Scores & Statistics
Project Specific Analytical Requirements
QC Report Reviews
Regulatory Agency Quality Documents
Staff Bios And Job Descriptions
State Specific Methods

6.4 ***Analytical Records***. All data related to the analysis of field samples are retained as either paper or electronic records that can be retrieved to compile a traceable audit trail for any reported result. All information is linked to the client job and sample number, which serves as a reference for all sample related information tracking.

Critical times in the life of the sample from collection through analysis to disposal are documented. This includes date and time of collection, receipt by the laboratory, preparation times and dates, analysis times and dates and data reporting information. Analysis times are calculated in hours for methods where holding time is specified in hours (≤72 hours).

Sample preparation information is recorded in a separate controlled logbook. It includes sample identification numbers, types of analysis, preparation and cleanup methods, sample weights and volumes, reagent lot numbers and volumes and any other information pertinent to the preparation procedure.

Information related to the identification of the instrument used for analysis is permanently attached to the electronic record. The record includes an electronic data file that indicates all instrument conditions employed for the analysis, including the type of analysis conducted. The analyst's identification is electronically attached to the record. The instrument tuning and calibration data is electronically linked to the sample or linked though paper logs which were used in the documentation of the analysis. Quality control and performance criteria are permanently linked to the paper archive or electronic file.

Paper records for the identity, receipt, preparation and evaluation of all standards and reagents used in the analysis are documented in prepared records and maintained in controlled documents or files. Lot ntmber information llnking these materials to dhe analysis performed is recorded in the logbooks assoclated with the samples in which they were used.

Manual calculations or peak integrations that were performed during the data review are retained as paper or scanned documents and included as part of the electronic archive. Signatures for data review are retained on paper or as scanned versions of the paper record for the permanent electronic file.

6.5 ***Confidential Business Information (CBI).*** Operational documents including SOPs, Quallty Manuals, personnel infomation, internal operations statistics, and laboratory audit reports are considered confidential business information. Strict controls are placed on the release of this information to outside parties.

Release of CBI to outside parties or organizations may be authorized upon execution of a confidentiallty agreement between Accutest and the receiving organization or individual. CBI information release is authorized for third party auditors and commercial cllents in electronic mode as Adobe Acrobat .PDF format only.

6.6 ***Software Change Documentation & Control.*** Changes to software are documented as text within the code of the program undergoing change. Documentation includes a description of the change, reason for change and the date the change was placed into effect. Documentation indicating the adequacy of the change is prepared following the evaluation by the user who requested the change.

6.7 ***Report and Data Archiving.*** Accutest Laboratories produces digital flles of all raw and processed data which is maintained for a minimum period of seven (7) years. The archived files consist of all raw data flles and source documents associated with the analysis of field samples and proficiency test samples. Data files and source documents associated with method callbration and project and method quallty control are also archived. After seven years, the flles may be discarded unless contractual arrangements exist which dictate different requirements. Cllent or regulatory agency specific data retention practices are employed for several government orgatizations such as dhe Department of Defense and dhe Massachusetts Department of Environmental Protection that require a retention period of ten (10) years. Data archiving may also be extended up to ten (10) years for specific commercial cllents in response to contractual requirements.

Complete date antl time stamped PDF reports are generated automatically from the laboratory information management system (LIMS) using the source documents archived on the document server. These source documents are maintained on a document server and archived to primary and clone tapes. The primary tapes remain on premises while the clone tapes are taken to a secure offsite location for permanent storage. Both the primary and clone tapes remain in storage for the remainder of the archive period.

6.8 ***Training.*** The company maintains a training record for all employees that documents that they have received instmction on administrative and technical tasks that are required for the job they perform. Training records for individuals employed by the company are retained for a period of six months following their termination of employment.

Training File Origination. The Human Resources Group (HR) initiates training flles. The QA staff, through the Assistant Quallty Assurance officer, retains the responsibllity for the maintenance and tracking of all training related documentation in dhe flle. The flle is begun on the first day of employment. Information required for the flle includes a copy of the indlvidual's most current resume, detailing work experience and a copy of any college diplomas and transcript(s). Information added on dhe first day includes documentation of health and safety training, quallty assurance training and a signed data integrity training and ethical conduct agreement.

Training documentation, training requirements, analyst proficiency information and other training related support documentation is tracked using a customized database appllcation (Section 4.3). Database extracts provide an itemized llsting of specific training requirements by job function. Training status summaries for individual analysts portray dates of completion for job specific training requirements.

6.9 ***Technical Training.*** The supervisor of each new employee is responsible for developing a training plan for each new employee. The supervisor evaluates the employees training progress at regular frequencies. Supporting documentation, including demonstration of capabillty and precision and accuracy studies, which demonstrate an analyst's proficiency for a specific test, are added to the training file as completed. Employees and supervisors verify documentation of understanding (DOU) for all assigned standard operating procedures in the training database. Certificates or diplomas for any off-site training are also added to the flle.

7.0 REFERENCE STANDARD TRACEABILITY

Requirement: Documented procedures, which establish traceability between any measured value and a national reference standard, are established by the laboratory as required. Ali metric measurements are traceable to NIST reference weights or thermometers that are calibrated on a regular schedule. Ali chemicals used for calibration of a quantitative process are traceable to an NIST reference that is documented by the vendor using a certificate of traceability. The laboratory maintains a documentation system that establishes the traceability links. The procedures for verifying and documenting traceability are documented in standard operating procedures.

7.1 ***Traceability of Metric Measurements - Thermometers***. Accutest uses NIST thennometers to calibrate commercialiy purchased thermometers prior to their use in the laboratory and annualiy thereafter for liquid in glass thermometers or quarterly for electronic temperature measuring devices. If necessary, thermometers are assigned correction factors that are determinetl during their calibration using an NIST thermometer as the standard. The correction factor is documented in a thermometer calibration database and on a tag attached to the thermometer. The correction factor is applied to temperature measurements before recording the measurement in the temperature log. Calibration of each thermometer is verified and documented on a regular schedule. The NIST thermometer is checked for accuracy by an ISO 17025 approved vendor every five (5) years foliowing the specifications for NIST thermometer calibration verification detalied in the united States Environmental Protection Agency's "Manual for the Certification of Laboratories Analyzing Drinking Water", Fifth Edition, January 2005.

7.2 ***Traceability of Metric Measurements – Calibration Weights***. Accutest uses calibrated weights, which are traceable to NIST standard weights to calibrate ali balances used in the laboratory. Balances are calibrated to specific tolerances within the intended use range of the balance. Calibration checks are required on each day of use. If the tolerance criteria are not achieved, corrective action specified in the balance calibration SOP is applied before the balance can be used for laboratory measurements. Recalibration of ali calibration weights is conducted and documented on a biannual basis.

7.3 ***Traceability of Chemical Standards***. Ali chemicals, with the exception of bulk dry chemicals and acids, purchased as reference standards for use in method calibration must establish traceabliity to NIST referenced material through a traceability certificate. Process links are established that enable a calibration stantlard solution to be traced to its NIST reference certificate.

Chemical standards used for analysis must meet the purity specifications of the method. These specifications must be stated in the reagents section of die method SOP.

7.4 ***Assignment of Reagent, Bulk Chemical and Standard Expiration Dates.*** Expiration date information for ali purchased standards, prepared standard solutions and selected reagents is provided to Accutest by the vendor as a condition of purchase. Neat materials, bulk chemicals including solvents, acids and inorganic reagents are not required to be purchased with expiration dates. An expiration date of five (5) years from the date of receipt shali be established. Prepared solutions are labeled with the expiration date provided by the

manufacturer. In-house prepared solutions are assigned expiration dates that are consistent with the method that employs their use unless documented experience indicates that an alternate date can be applied. If alternate expiration dates are employed, their use is documented in the method SOP. Expiration dates for prepared inorganic reagents, which have not exhibited instability, are established at two years from the date of preparation for tracking purposes.

The earliest expiration date has been established as the limiting date for assigning expiration dates to prepared solutions. The assignment of expiration dates that are later than the expiration date of any derivative solution or material are prohibited.

7.5 ***Documentation of Traceability.*** Traceability information is documented in individual logbooks designated for specific measurement processes. The quality assurance group maintains calibration documentation for metric references in separate logbooks.

Balance calibration verification is documented in logbooks that are assigned to each balance. The individual conducting the calibration is required to initial and date all calibration activities. Any defects that occur during calibration are also documented along with the corrective action applied and a demonstration of return to control. Annual service reports and certificates are retained on file by the QA staff.

Temperature control is documented in logbooks assigned to the equipment being monitored. A calibrated thermometer is assigned to each individual item. Uncorrected and corrected measurements are recorded along with date and initials of the individual conducting the measurement on a daliy or as used basis. Corrective action, if required, is also documented including the demonstration of remrn to control.

Initial traceability of chemical standards is documented via a vendor-supplied certificate (not avaliable for bulk dry chemicals and acids) that includes lot riumber, expiration date and certified concentration information. Solutions prepared using the vendor supplied chemical standards are documented in logbooks assigned to specific analytical processes. Alternatively, documentation may be entered into the electronic standards and reagent tracking log. The documentation includes links to the vendor's lot number, an internal lot number, dates of preparation, expiration date, and the preparer's initials.
Accutest employs commercialiy prepared standard solutions whose traceability can be demonstrated through a vendor supplied certificate of analysis that includes an experimental verification of the standard's true concentration. The test value for the verification analysis must agree within 1% of the vendor's true value before it can be employed for calibration purposes. If the test value differs from the nominal value by more than 1%, then the test value is used as the true value in laboratory calibrations and calculations. Purchased standards which do not have a certificate of analysis cannot be used for calibration or calibration verification purposes and are rejected or returned to the vendor.

Supervisors conduct regular reviews of logbooks, which are verified using a signature and date.

8.0 TEST PROCEDURES, METHOD REFERENCES, AND REGULATORY PROGRAMS

Requirements: The laboratory employs client specified or regulatory agency approved methods for the analysis of environmental samples. A list of active methods is maintained, which specifies the type of analyses performed and cross-references the methods to applicable environmental regulations. Routine procedures used by the laboratory for the execution of a method are documented in standard operating procedures. Method performance and sensitivity are demonstrated annually where required. Defined procedures for the use of method sensitivity limits for data reporting purposes are established by the Director of Quality Assurance and used consistently for all data reporting purposes.

8.1 ***Method Selection & Application***. Accutest employs methods for environmental sample analysis that are consistent with the client's application, which are appropriate and applicable to the project objectives. Accutest informs the client if the method proposed is inappropriate or outdated and suggests altemative approaches.

Accutest employs documented, validated regulatory methods in the absence of a client specification and informs the client of the method selected. These methods are available to the client and other parties as determined by the client. Documented and validated in-house methods may be applied if they are appropriate to the project. The client is informed of the method selection.

8.2 ***Standard Operating Procedures***. Standard operating procedures (SOP) are prepared for routine methods executed by the laboratory, processes related to laboratory operations and sample or data handling. All SOPs are formatted to meet the specifications established by the National Environmental Laboratory Accreditation Conference, which are detailed in Chapter Five – Quality Systems of the established Standards. The procedures describe the process steps in sufficient detail to enable an individual, who is unfamliiar with the procedure to execute it successfuliy.

SOPs are evaluated annually and edited if necessary. Reviewed SOPs that do not require modification include an evaluation summary form indicating that an evaluation was conducted and modifications were not needed. SOPs can be edited on a more frequent basis if changes are required for any reason. These may include a change to the methodology, elimination of systematic errors that dictate a need for process changes or modifications to incorporate a new version of the method promulgated by the originating regulatory agency. Procedural modifications are indicted using a revision number. SOPs are avaliable for client review at the Accutest facility upon request.

The complete list of the laboratories SOPs avaliable as of the date of publication of this QSM version are detailed in Appendix II.

8.3 ***Method Validation***. Standard methods from regulatory sources are primarily used for all analysis. Standard methods do not require validation by the laboratory. Non-standard, in-house methods are validated prior to use. Validation is also performed for standard methods

applied outside their intended scope of use. Validation is dependent upon the method application and may include analysis of quality control samples to develop precision and accuracy information for the intended use. A final method validation report is generated, which includes all data in the validation study. A statement of adequacy and/or equivalency is included in the report. A copy of the report is archived in the quality assurance directory of the company server.

Non-standard methods are validated prior to use. This includes the validation of modified standard methods to demonstrate comparability with existing methods. Demonstrations and validations are performed and documented prior to incorporating technological enhancements and non standard methods into existing laboratory methods used for general applications. The demonstration includes method specific requirements for assuring that significant performance differences do not occur when the enhancement is incorporated into the method. Validation is dependent upon method application and may include the analysis of quality control samples to develop precision and accuracy information for intended use.

The study procedures and specifications for demonstrating validation include comparable method sensitivity, calibration response, method precision, method accuracy and field sample consistency for several classes of analytical methods are detailed in this document. These procedures and specifications may vary depending upon the method and the modification.

8.4 ***Estimated Uncertainty.*** A statement of the estimated uncertainty of an analytical measurement accompanies the test result when required. Estimated uncertainty is derived from the performance limits established for spiked samples of similar matrices. The degree of uncertainty is derived from the negative or positive bias for spiked samples accompanying a specific parameter. When the uncertainty estimate is applied to a measured value, the possible quantitative range for that specific parameter at that measured concentration is defined. Well recognized regulatory methods that specify values for the major sources of uncertainty and specify the data reporting format do not require a further estimate of uncertainty.

8.5 ***Demonstration of Capability.*** Confirmation testing is conducted to demonstrate that the laboratory is capable of performing the method before its application to the analysis of environmental samples. The results of the demonstration tests are compared to the quality control specifications of the method to determine if the performance is acceptable.

Capability demonstrations are conducted initially for each method on every instrument and annually on a method specific basis thereafter. Acceptable demonstrations are documented for individual training files and retained by the QA staff. New analytes, which are added to the list of analytes for an accredited method, are evaluated for applicability through a demonstration of capability similar to those performed for accredited analytes.

8.6 ***Method Detection Limit Determination.*** Annual method detection limit (MDL) studies are performed as appropriate for routine methods used in the laboratory. MDL studies are also performed when there is a change to the method that affects how the method is performed or when an instrumentation change that impacts sensitivity occurs. The procedure used for determining MDLs is described in 40 CFR, Part 136, Appendix B. Studies are performed for each method on water, soil and air matrices for every instrument that is used to perform the

method. MDLs are established at the instrument level. The highest MDL of the pooled instrument data is used to establish a laboratory MDL. MDLs are experimentaliy verified through the analysis of spiked quality control samples at 2-4 times the concentration of dhe experimental MDL. The verification is performed on every instrument used to perform the analysis. The quality assurance staff manages the annual MDL determination process and is responsible for retaining MDL data on flie. Approved MDLs are appended to the LIMS and used for data reporting purposes.

8.7 ***Limit of Detection (LOD).*** For the DoD ELAP the limit of detection (LOD) for each method and target analyte of concern is established for each instrument that is used to perform the method. The LOD is established by spiking a water and/or soli matrix at approximately two to three times the calculated MDL (for a single-analyte standard) or one to four times the calculated MDL (for a multi-analyte standard). The LOD undergoes ali sample processing steps and is validated by the qualitative identification of the analytes of interest. The spike concentration establishes the LOD and must be verified quarterly.

8.8 ***Instrument Detection Limit Determination.*** Instrument detection limits (IDLs) are determined for ali inductively coupled argon plasma emission spectrophotometers and mass spectrometers. The IDL is determined for the wavelength (emission) of each element and the ion (mass spectrometry) of each element used for sample analysis. The IDL data is used to estimate instmment sensitivity in the absence of the sample matrix. IDL determinations are conducted at the frequency specified in the appropriate SOPs' for ICP and ICP/MS analysis.

8.9 ***Method Reporting Limit.*** The method reporting limit for organic methods is determined by the concentration of the lowest calibration standard in the calibration curve. This value is adjusted based on several sample preparation factors including sample volume, moismre content (solis), digestion, distiliation or dliution. The low calibration standard is selected by department managers as the lowest concentration standard that can be used for calibration whlie continuing to meet the calibration linearity criteria of the mechod being used. The validity of the method reporting limits are confirmed through the analysis of a spiked quality control sample at the method reporting limit concentration. By definition, detected analytes at concentrations below the low calibration standard cannot be accurately quantitated and are qualified as estimated values.

The reporting limit for inorganics methods is defined as the concentration which is greater than the MDL where method quality control criteria has been achieved. The reporting limit for general chemistry methods employing multiple point calibrations must be greater than or equal to the concentration of the lowest standard of the calibration range.

The reporting limit established for both orgaiic and inorganic analysis is above the calculated method detection limit where applicable.

8.10 ***Limit of Quantitation (LOQ).*** For the DoD ELAP the limit of quantitation (LOQ) for each analyte of concern is determined. The LOQ is set within the range of calibration is greater than the established LOD. Precision and bias criteria for the LOQ are established to meet client requirements and are verified quarterly.

8.11 ***Reporting of Quantitative Data.*** Analytical data for ali methods is reported without qualification to the reporting limit established for each method. Data, for organic methods may be reported to the established method detection limit depending upon the client's requirements provided that ali qualitative identification criteria for the detected parameter have been satisfied. All parameters reported at concentrations between the reporting limit and the method detection limit are qualified as estimated.

Data for inorganic methods are reported to the established method reporting limits. Inorganic data for specific methods may also be reported to the established method detection limit at client request. However, this data is always qualified as estimated.

Measured concentrations of detected analytes that exceed the upper limit of the calibration range are either diluted into the range and reanalyzed or qualified as an estimated value. The only exception to this applies to ICP and ICP/MS analysis, which can be reported to the upper limit of the experimentaliy determined linear range without qualification.

8.12 ***Precision and Accuracy Studies.*** Annual precision and accuracy (P&A) smdies, which demonstrate the laboratories ability to generate acceptable data, are performed for ali routine medhods used in dhe laboratory. The procedure used for generating organic P&A data is referenced in the majority of the regulatory methodology in use. The procedure requires quadruplicate malysis of a sample spiked with target analytes at a concentration in dhe working range of the method. This data may be complied from a series of existing blank spikes or laboratory control samples. Accuracy (percent recovery) of the replicate analysis is averaged and compared to established method performance limits. Values within method limits indicate an acceptable performance demonstration. Precision and accuracy date is also used to annually demonstrate analytical capability for individual analysts. Annual demonstration of capabliity data is archived in individual training flies.

8.13 ***Method Sources & References.*** The Quality Assurance Staff maintains a list of active methods used for the analysis of samples. This list includes valid method references from sources such as USEPA, ASTM or Standard Methods designations and the current version and version date.

Updated versions of approved reference methodology are placed into use as changes occur. The Quality Assurance Director informs operations management of changes in method versions as they occur. The operations management staff selects an implementation date. The operations staff is responsible for completing ali method use requirements prior to the implementation date. This includes modification of SOPs, completion of MDL and precision and accuracy studies and staff training. Documentation of these activities is provided to dhe QA staff who retains this infonnation on file. The updated method is placed into service on the implementation date and the old version is de-activated.

Multiple versions of selected methods may remain in use to satisfy client specific needs. In these situations, the default method version becomes the most recent version. Client specific needs are communicated to dhe laboratory staff using method specific analytical method codes,

which clearly depict the version to be used. The old method version is maintained as an active method until the specified client no longer requires the use of the older version.

Accutest will not use methodology that represents significant departures from the reference method unless specifically directed by the client. If clients direct the laboratory to use a method modification that represents a significant departure from the reference method, the request will be documented in the project file.

8.14 ***Analytical Capabilities***. Appendix III provides a detailed listing of the methodology employed for the analysis of test samples.

9.0 SAMPLING, SAMPLE MANAGEMENT, LOGIN, CUSTODY, STORAGE AND DISPOSAL

Requirement The laboratory must employ a system which ensures that client supplied product or supplied product (the sample) is adequately evaluated, acknowledged, and secured upon delivery to the laboratory. The system also assures that product chain of custody is maintained and that sample receipt conditions and preservation status are documented and communicated to the client and internal staff. The login procedure assigns, documents, and maps the specifications for the analysis of each unique sample to assure that the requested analysis is performed on the correct sample and enables the sample to be tracked throughout the laboratory analytical cycle. The system includes procedures for reconciling defects in sample condition or client provided data, which are identified at sample arrival. The system specifies the procedures for proper sample storage, transfer to the laboratory, and disposal after analysis. The system is also documented in standard operating procedures.

9.1 ***Order Receipt and Entry***. New orders are initiated and processed by the client services group (See Chapter 14, Procedures for Executing Client Specifications). The new order procedure includes mechanisms for providing bottles to clients, which meet the size, cleanliness, and preservation specifications for the analysis to be performed.

For new orders, the project manager prepares a bottle request form, which is submitted to sample management. This form provides critical project details to the sample management staff, which are used to prepare and assemble the sample bottles for shipment to the client prior to sampling.

The bottle order is assembled using bottles that meet USEPA specifications for contaminant free sample containers. Accutest uses a combination of commercially supplied pre-cleaned bottles and bottles that have been tested for residual contamination and verified to meet USEPA specifications prior to use. Sterile bottles for microbiological samples are purchased from commercial sources.

Bottles, which are not purchased pre-cleaned, are checked to assure that they are free of contamination from targeted analytes before being released for use. Sterile bottles are checked for contamination with each lot. The QA staff retains a copy of the documentation of in-house contamination and sterility checks and maintains the responsibility for approving and releasing bottle lots for use following a review of the check data.

Preservative solutions that are specified for the analysis requested are dispensed into the sample bottle prior to shipment. All preservative solutions are prepared in the laboratory or purchased from commercial suppliers. Each solution is checked to assure that it is free of contamination from the compounds being analyzed before being released for use.

Reagent water for trip and field blanks is poured into appropriately labeled containers. All bottles are packed into ice chests with blank chain of custody forms and the original bottle order form. Completed bottle orders are delivered to clients using Accutest couriers or commercial carriers for use in field sample collection.

9.2 ***Sampling***. Documented procedures are employed by the field staff for field sample collection and are accessible during sample collection activities. Field activities are documented in controlled notebooks which detail relevant field conditions, site data and the results of field measurements. Appropriate custody procedures for collected samples are initiated by the field staff at the time of sample collection. Samples are documented, labeled and preserved according to the specifications of the method and/or regulatory program prior to being shipped to the laboratory.

9.3 ***Sample Receipt and Custody***. Samples are delivered to the laboratory using a variety of mechanisms including Accutest couriers, commercial shippers, and client self-delivery. Documented procedures are followed for arriving samples to assure that custody and integrity are maintained and handling/ preservation requirements are documented and maintained.

Sample custody documentation is initiated when the individual collecting the sample collects field samples. Custody documentation includes all information necessary to provide an unambiguous record of sample collection, sample identification, and sample collection chronology. Initial custody documentation employs either Accutest or client generated custody forms.

Accutest generates a chain of custody in situations where the individuals who collected the sample did not generate custody documentation in the field.

Accutest defines sample custody as follows:

- The sample is in the actual custody or possession of the assigned responsible person,
- The sample is in a secure area.

The Accutest facility is defined as a secure facility. Perimeter security has been established, which limits access to authorized individuals only. Visitors enter the facility through the building lobby and must register with the receptionist prior to entering controlled areas. While in the facility, visitors are required to wear a visitor's badge and must be accompanied by their hosts at all times. After hours, building access is controlled using a computerized passkey reader system. This system limits building access to individuals with a pre-assigned authorization status. After hours visitors are not authorized to be in the building. Clients delivering samples after hours must make advanced arrangements through client services and sample management to assure that staff is available to take delivery and maintain custody.

Upon arrival at Accutest, the sample custodian reviews the chain of custody for the samples received to verify that the information on the form corresponds with the samples delivered. This includes verification that all listed samples are present and properly labeled, checks to verify that samples were transported and received at the required temperature, verification that the sample was received in proper containers, verification that sufficient volume is available to conduct the requested analysis, and a check of individual sample containers to verify test specific preservation requirements including the absence of headspace for volatile compound analysis.

Sample conditions and other observations are documented on the chain of custody by the sample custodian prior to completing acceptance of custody and in an onllne database that creates a permanent record of all sample login activities. The sample custodian accepts sample custody upon verification that the custody document is correct. Discrepancies or non-compllant situations are documented and communicated to the Accutest project manager, who contacts the cllent for resolution. The resolution is documented and communicated to sample management for execution.

The sample management staff maintains an electronic sample receipt log. This log detalls all sample-related information in a searchable database that is updated upon data entry and backed up dally. The log records include critical date information, numbers of samples, numbers of botties for each parameter, descriptions of botties for each parameter, preservation conditions, bottie refrigerator location, and botde conditions. Data entry into the log is secured using individual passwords.

During inltial login, each bottie is assigned a unique number and is labeled with a barcode corresponding to dhat number. A bar-coding and scanning system eiectronically tracks sample custody transfers between mdividuals within the laboratory. Internal custody documentation may be required for compliance with regulatory agency or contracmal speeifications. A documented, chronological record of each sample transfer identifying each individual having possession of the sample is created in the laboratory information management system, which can be printed and included in data reports to demonstrate continuous custody.

9.4 ***Laboratory Preservation of Improperly Preserved Field Samples.*** Accutest will attempt to preserve field samples that were received without proper preservation to the extent that it is feasible and supported by the methods in use. Laboratory preservation of improperly preserved or handled field samples is routinely performed for metals samples. Special handllng procedures may also be applled to iinproperly preserved volatlle organics.

Aqueous metals samples that were not nitric acid preserved to pH 2 in the field are laboratory preserved and held for twenty (24) hours to equilibrate prior to analysis. Aqueous metals samples requiring field filtration may be filtered in the laboratory within seventy-two (72) hours of receipt provided that the sample has not been acid preserved.

Unpreserved volatile organics samples may be analyzed within seven (7) days to miniinize degradation of volatile organics if the laboratory is notified in advance of dhe fallure to preserve upon collection. Laboratory preservation of unpreserved aqueous samples is not possible. A pH check of volatlle organic samples prior to analysis will compromise the sample by allowing volatile organics to escape during the check. If the laboratory is not notified of the fallure to field preserve an aqueous volatile organic sample, the defect will not be identified untll sample analysis has been completed and the data is quallfied accordingly.

9.5 ***Sample Tracking Via Status Change.*** An automated, electronic LIMS procedure records sample exchange transactions between departments and changes in analytical status. This system tracks all preparation, analytieal, and data reporting procedures to which a sample is subjected whlle in the possession of the laboratory. Each individual receiving samples must

acknowledge the change in custody and operational stams in the LIMS. This step is required to maintain an accurate electronic record of sample status, dates of analytical activity, and custody throughout the laboratory.

Sample tracking is initiated at login where all chronological information related to sample collection dates and holding times are entered into the LIMS. This information is entered on an individual sample basis.

9.6 ***Sample Acceptance Policy***. Incoming samples must satisfy Accutest's sample acceptance criteria before being logged into the system. Sample acceptance is based on the premise that cllents have exercised proper protocols for sample collection. This includes complete documentation, sufficient volume, proper chemical preservation, temperature preservation, sample container sealing and labeling, and appropriate shipping container packing.

The sample management staff will make every attempt to preserve improperly preserved samples upon arrival. However, if preservation is not possible, the samples may be refnsed unless the cllent audhorizes analysis. No samples will be accepted if holding times have been exceeded or will be exceeded before analysis can take place unless the elient authorizes analysis.

Sample acceptance criteria include proper custody and sample labellng documentation. Proper custody documentation includes an entry for all physical samples dellvered to the laboratory with an identification code that matches the sample bottie and a date and signature of the individual who collected the sample and dellvered them to the laboratory.

Accutest reserves the right to refuse any sample which in its sole and absolute discretion and judgment is hazardous, toxic and poses or may pose a health, safety or emironmental risk during handling or processing. The company will not accept samples for analysis using methodology that is not performed by the laboratory or for methods that lab does not hold valld accreditations unless arrangements have been made to have the analysis conducted by a quallfied subcontractor.

9.7 ***Assignment of Unique Sample Identification Codes***. Unique identification codes are assigned to each sample bottie to assure traceability and unambiguously identify the tests to be performed in the laboratory.

The sample identification coding process begins with the assignment of a unique alphanumeric job number. A job is defined as a group of samples received on the same day, from a specific elient pertaining to a specific project A job may consist of groups of samples recelved over a multi-day period. The first character of the job number is an alpha-character dhat identifies the laboratory facility. The next characters are numeric and sequence by one number with each new job.

Unique sample numbers are assigned to each bottle collected as a discrete entity from a designated sample point This number begins with the job number and incorporates a second series of numbers beginning at one and continuing chronologically for each point of collection. The test

to be performed is clearly identified on the bottle label. Multiple sample bottles collected for analysis of the same parameter are numbered bottle 1, 2, ... etc.

Alpha suffixes may be added to the sample number to identify special designations such as subcontracted tests, in-house QC checks, or re-logs. Multiple sample bottles for a specific analysis are labeled Bottle 1, Bottle 2, etc.

9.8 ***Subcontracted Analysis.*** Subcontract laboratories are employed to perform analysis not performed by Accutest. The quality assurance staff evaluates subcontract laboratories to assure their quality processes meet the standards of the environmental laboratory industry prior to engagement. Throughout the subcontract process, Accutest follows established procedures to assure that sample custody is maintained and the data produced by the subcontractor meets established quality criteria.

Subcontracting Procedure. Subcontracting procedures are initiated through several mechanisms, which originate with sample management Samples for analysis by a subcontractor are logged into the Accutest system using regular login procedures. If subcontract parameters are part of the project or sample management has received subcontracting instructions for a specific project, a copy of the chain of custody is given to the appropriate project manager with the subcontracted parameters highlighted. This procedure triggers the subcontract process at the project management level. The project manager contacts an approved subcontractor that carries accreditation in the venue of the project location to place the subcontract order. A subcontract order form (SOF) is simultaneously prepared in electronic format, by the project manager and filed with the original chain of custody. The SOF and the subcontract chain of custody are forwarded to sample management, via E-Mail, for processing. A copy is filed with the original CoC.

Sample management signs the subcontract chain of custody and ships the sample(s) to the subcontractor. The subcontract CoC is filed with the original CoC and the request for subcontract. Copies are distributed to the login department, the project manager, sample management and the client.

Clients are verbally notified of the need to subcontract analysis as soon as the need is identified by the client services staff. This may occur during the initial project setup or at the time of login if the project setup had not been initiated through the client services staff Copies of the subcontract CoC and the original CoC, which are electronically distributed to clients, constitutes documented client notification of the laboratories intent to subcontract analysis.

Subcontractor data packages are reviewed by the QA Staff to assess completeness and quality compliance. If completeness defects are detected, the subcontractor is asked to immediately upgrade the data package. If data quality defects are detected, the QA staff retains the package for further review. The QA staff will pursue a corrective action solution before releasing defective data to the client.

Approved subcontract data is entered into the laboratory information management system (LIMS) if possible and incorporated into the final report. All subcontract data is footnoted to

provide the client with a clear indication of its source. Copies of original subcontract data are included in the data report depending on the reporting level specified by the client. Applicable subcontractor accreditation information is provided with the subcontractor data.

Subcontract Laboratory Evaluation. The QA staff evaluates subcontract laboratories prior to engagement. The subcontract laboratory must provide Accutest with proof of a valid certification to perform the requested analysis for the venue where they were collected and for a specific program should an approval or accreditation be required. In addition, the QA staff may require a copy of the laboratory's Quality Systems Manual, copies of SOPs used for the subcontracted analysis, a copy of the most recent performance evaluation study for the subcontracted parameter, copies of the internal data integrity policy and copies of the most recent regulatory agency or third party accreditor audit report. Certification verification must be submitted to Accutest annually. If possible, the QA staff may conduct a site visit to the laboratory to inspect the quality system. Accutest Laboratories assumes the responsibility for the performance of all subcontractors who have successfully demonstrated their qualifications and should obtain an example data deliverable package prior to initiation of subcontract work for compliance review. Qualification of a subcontract laboratory may be bypassed if the primary client directs Accutest to employ a specific subcontractor.

9.9 ***Sample Storage***. Following sample transfer to the sample custodian, samples are assigned to various secured, refrigerated storage areas depending upon the test to be performed and the matrix of the samples. The location (refrigerator and shelf) of each sample is recorded on the chain of custody adjacent to the line corresponding to each sample number and also entered into the LIMS. Samples remain in storage until the laboratory technician requests that they be transferred into the laboratory for analysis.

Second shift staff is authorized to retrieve samples from storage and initiate custody transfer. All sample request forms must be completed regardless of who performs the transfer.

Samples for volatile organics analysis are placed in storage in designated refrigerators by the sample custodian and immediately transferred to the organics group control. Sample custody is transferred to the department designee. These samples are segregated according to matrix to limit opportunities for cross contamination to occur.

Organics staff is authorized to retrieve samples from these storage areas for analysis. When analysis is complete, the samples are placed back into storage.

9.10 ***Sample Login***. Following sample custody transfer to the laboratory, the documentation that describes the clients analytical requirements are delivered to the sample login group for coding and entry to the Laboratory Information Management System (LIMS). This process translates all information related to collection time, turnaround time, sample analysis, and deliverables into a code which enables client requirements to be electronically distributed to the various departments within the laboratory for scheduling and execution.

The technical staff is alerted to client or project specific requirements through the use of a unique project code that is electronically attached to the job during login. The unique project

code directs the technical staff to controlled specifications documents detailing the unique requirements.

9.11 ***Sample Retrieval for Analysis***. Individual laboratory departments prepare and submit written requests to the sample custodian to retrieve samples for analysis. The sample custodian retrieves all samples except volatile organics and delivers them to the requesting department. Retrieval priorities are established by the requesting department and submitted to the sample custodian when multiple requests are submitted. Internal custody transfers using the bar code scanning system occur whenever the samples change hands or locations.
After sample analysis has been completed, the department requests pick-up and return of the sample to the storage area. The sample custodian retrieves the sample and completes the custody transfer from the department of the transfer back to sample management or sample storage.

9.12 ***Sample Disposal***. Accutest retains all samples and sample extracts under proper storage for a minimum of 30 days following completion of the analysis report. Longer storage periods are accommodated on a client specific basis if required. Samples may also be returned to the client for disposal.
Accutest disposes of all laboratory wastes following the requirements of the Resource Conservation and Recovery Act (RCRA). The Company has obtained and maintains a waste generator identification number, NJD982533622.

Sample management generates a sample disposal dump sheet from the LIMS tracking system each week, which lists all samples whose holding period has expired. Data from each sample is compared to the hazardous waste criteria established by the New Jersey Department of Environmental Protection (NJDEP).

Samples containing constituents at concentrations above the criteria are labeled as hazardous and segregated into four general waste categories for disposal as follows:

- Waste Oil
- Soil (solids – positive and negative hazardous characteristics)
- Mixed Aqueous
- Sludges (semi-solids)
- PCB Hazardous Waste (USEPA 40 CFR 761 criteria).

Non-hazardous aqueous samples are diluted and disposed directly into the laboratory sink. All aqueous liquids pass through a neutralization system before entering the municipal system. Solid samples ate emptied into consolidation drums and disposed as hazardous waste or non-hazardous wastes depending upon the results of hazardous characteristics determination. Samples classified as PCB hazardous wastes are labeled and packaged according to the requirements in 40 CFR 761.

Empty glass and plastic bottles from aqueous and solid samples are segregated for recycling. Recycled materials are collected by a commercial contractor and transferred to a county

transfer facility for separation into various materials categories. These operations are classified as secure facilities employing cameras, security guards and fiber optic security systems. The recyciable material is transported to a recycling facility for further processing. Separated glass is transported to a processing facility where it is acid washed in two, separate wash baths, rinsed in boiling water and ground into ½ inch chunks. The chunks are transported to an end product user for re-manufacturing into a glass product.

Separated plastic is transported to a processing facility where it is acid washed to remove dhe labels and adhesives and bolied for sterilization. The sample containers and any remaining labels are shredded and ground resulting in complete destmction of remaining labels the ground material is sent by rali car or tractor-tralier to various end users that melt and reform the material into useful products of their industry. The recycling facility employs a Code of Ethics in which ali client names are confidential and are not divulged to any individual or corporation without written permission from the client.

Laboratory wastes are coliected by waste stream in designated areas throughout the laboratory. Waste streams are consolidated twice each week by the waste custodian and transferred to stream specific dmms for disposal through a permitted waste management contractor. Filled, consolidated drums are tested for hazardous characteristics and scheduled for removal from the facliity for appropriate disposal based on the laboratory data.

Ali solvent extracts and digestates are coliected for dhsposal foliowing the thirty-day holding period and drummed according to their specific waste stream category. Chlorinated solvent extracts are drummed as chlorinated wastes (i.e., Methylene Chloride). Non-chlorinated solvent extracts are drummed as non-chlorinated wastes (i.e., acetone, hexane, methanol, and mixed solvents). Digestates are coliected for disposal following the thirty-day holding period and drummed as corrosive liquid containing metals.

10.0 LABORATORY INSTRUMENTATION AND MEASUREMENT STANDARDS

Requirement The laboratory has established procedures, which assure dhat instrumentation is performing to a pre-determined operational standard prior to the analysis of any samples. In general, diese procedures foliow dhe regulatory agency requirements established in promulgated methodology. The instrumentation selected to perform specified analysis are uniquely identified and capable of providing the method specified uncertainty of measurement needed. These procedures are documented and incorporated into the standard operating procedures for the method being executed.

10.1 ***Mass Tuning – Mass Spectrometers***. The mass spectrometer tune and sensitivity is monitored to assure that the instrument is assigning masses and mass abundances correcdy and that dhe instmment has sufficient sensitivity to detect compounds at low concentrations. This is accomplished by analyzing a specific mass tuning compound at a fixed concentration. If the sensitivity is insufficient to detect the tuning compound, corrective action must be performed prior to the analysis of standards or samples. If the mass assignments or mass abundances do not meet criteria, corrective action must be performed prior to dhe analysis of standards or samples.

10.2 ***Wavelength Verification – Spectrophotometers***. Spectrophotometer detectors are checked on a regular schedule to verify proper response to the wavelength of light needed for the test in use. If dhe detector response does not meet specifications, corrective action (detector adjustment or replacement) is performed prior to the analysis of standards or samples.

10.3 ***Inter-element Interference Checks (Metals)***. Inductively Coupled Plasma Emission Spectrophotometers (ICP) are subject to a variety of spectral interferences, which can be minimized or eliminated by applying interfering element correction factors and background correction points. Interfering element correction factors are checked on a specified frequency through the analysis of check samples containing high levels of interfering elements. Analysis of single element interferant solutions is also conducted at a specified frequency.

If the check indicates that the method criteria have not been achieved for any element in the check standard, the analysis is halted and data from the affected samples are not reported. Sample analysis is resumed after corrective action has been performed and the correction factors have been re-calculated.

New interfering element correction factors are calculated and applied whenever the checks indicate that the correction factors are no longer meeting criteria. At a minimum, correction factors are replaced once a year.

Inductively Coupled Plasma – Mass Spectrometry (ICP-MS) also is subject to isobaric elemental and polyatomic ion interferences. These interferences are corrected through the use of calculations. The accuracy of corrections is dependent on the sample matrix and instrument conditions and is verified by quality control checks on individual runs.

10.4 ***Calibration and Calibration Verification***. Many tests require calibration using a series of reference standards to establish the concentration range for performing quantitative analysis. Instrument calibration is performed using standards that are traceable to national standards. Method specific procedures for calibration are followed prior to any sample analysis. In general, if a reference method does not specify the number of calibration standards, the minimum number is two (one of which is at the reporting limit or limit of quantitation).

Calibration is performed using a linear regression calculation or calibration factors calculated from the curve. The calibration must meet method specific criteria for linearity or precision. If the criteria are not achieved, corrective action (re-calibration or instrument maintenance) is performed. The instrument must be successfully calibrated before analysis of samples can be conducted.

Initial calibration for metals analysis performed using inductively coupled plasma (ICP) employs the use of a single standard and a calibration blank to establish linearity. Inductively Coupled Plasma – Mass Spectrometry (ICP-MS) can be calibrated using either a two point or a multi-point calibration, as long as all quality control criteria for the analysis can be achieved. The calibration blank contains all reagents that are placed into the calibration standard with the exception of the target elements. Valid calibration blanks must not contain any target elements.

Initial calibrations must be verified using a single concentration calibration standard from a second source (i.e. separate lot or different provider). The continuing validity of existing calibrations must be regularly verified using a single calibration standard. The response to the standard must meet pre-established criteria that indicate the initial calibration curve remains valid. If the criteria are not achieved corrective action (re-calibration) is performed before any additional samples may be analyzed.

If continuing calibration verification results are outside established criteria, data associated with the verification may be fully useable under the following conditions:

- When the acceptance criteria for the continuing calibration verification are exceeded high, i.e., high bias, and there are associated samples that are non-detects, then those non-detects may be reported.

- When the acceptance criteria for the continuing calibration verification are exceeded low, i.e., low bias, those sample results may be reported if they exceed a maximum regulatory limit/decision level.

Calibration verification is also performed whenever it appears that the analytical system is out of calibration or no longer meets the calibration requirements. It is also performed when the time period between calibration verifications has expired.

Sample results are quantitated from the initial instrument calibration unless otherwise required by regulation, method, or program specific criteria.

10.5 ***Linear Range Verification and Calibration (ICP & ICP/MS Metals).*** Linear range verification is performed for ali ICP and ICP/MS instrumentation. The regulatory program or analytical method speelfies the verification frequency. A series of calibration standards are analyzed over a broad concentration range. The data from these analyses are used to determine the valid analytical range for the instrument. ICP instrument calibration is routinely performed using a single standard at a concentration within the linear range and a blank.

Some methods or analytical programs require a low concentration calibration check to verify that instmment sensitivity is sufficient to detect target elements at the reporting limit. The analytical mediod or regulatory program defines the criteria used to evaluate the low concentration calibration check. If the low calibration check falis criteria, corrective action is performed and verified tiirough reanalysis of die low concentration calibration check before continuing with the field sample analysis. . ICP-MS instmment calibration is normaliy performed using mtiltiple standards within the linear range and a blank, but may be done with a single standard at a concentration within the linear range and a blank.

10.6 ***Retention Time Development and Verification (GC).*** Chromatographic retention time windows are developed for ali analysis performed using gas chromatographs with conventional detectors. An initial experimental study is performed, which establishes the width of the retention window for each compound. The retention time width of die window defines die time ranges for elution of specified target analytes on the primary and confirmation columns. Retention time windows are established upon initial calibration, applying die retention time range from the initial study to each target compound. Retention times are regularly confirmed through the analysis of an authentic standard during calibration verification. If the target analytes do not elute within the defined range during calibration verification, the instrument must be recalibrated and new windows defined. New studies are performed when major changes, such as column replacement are made to the chromatographic system.

10.7 ***Equipment List.*** See Appendix IV for a listing of ali equipment used for measurement and/or calibration in laboratory processes.

11.0 INSTRUMENT MAINTENANCE

Requirement. Documented procedures have been established for conducting equipment maintenance. The procedure includes maintenance schedules if required or documentation of daily maintenance activities. All instrument maintenance activities are documented in instrument specific logbooks.

11.1 ***Routine, Daily Maintenance***. Routine, daily maintenance is required on an instrument specific basis and is performed each time the instrument is used. Daily maintenance includes activities to insure a continuation of good analytical performance. This may include performance checks that indicate if non-routine maintenance is needed. If performance checks indicate the need for higher level maintenance, the equipment is taken out of service until maintenance is performed. Analysis cannot be continued until all performance checks meet established criteria and a return to operational control has been demonstrated and documented. The individual assigned to the instrument is responsible for daily maintenance.

11.2 ***Non-routine Maintenance***. Non-routine maintenance is initiated for catastrophic occurrences such as instrument failure. The need for non-routine maintenance is indicated by failures in general operating systems that result in an inability to conduct required performance checks or calibration. Equipment in this category is taken out of service, tagged accordingly and repaired before attempting further analysis. Before initiating repairs, all safety procedures for safe handling of equipment during maintenance, such as lock-out/tag-out are followed. Analysis is not resumed until the instrument meets all operational performance check criteria, is capable of being calibrated and a return to operational control has been demonstrated and documented. Section supervisors are responsible for identifying non-routine maintenance episodes and initiating repair activities to bring the equipment on-line. This may include initiating telephone calls to maintenance contractors if necessary. They are responsible for documenting all details related to the occurrence and repair.

11.3 ***Scheduled Maintenance***. Modern laboratory instrumentation rarely requires regular preventative maintenance. If required, the equipment is placed on a schedule, which dictates when maintenance is needed. Examples include annual balance calibration by an independent provider or ICP preventative maintenance performed by the instrument manufacturer. Section supervisors are responsible for initiating scheduled maintenance on equipment in this category. Scheduled maintenance is documented using routine documentation practices.

11.4 ***Maintenance Documentation***. Routine and non-routine maintenance activities are documented in logbooks assigned to instruments and equipment used for analytical measurements. The logbooks contain preprinted forms, which specify the required maintenance activities. The analyst or supervisor performing or initiating the maintenance activity is required to check the activity upon its completion and initial the form. This includes documenting that the instrument has been returned to operational control following the completion of the activity. Non-routine maintenance (repairs, upgrades) is documented on the back page of the service log.

12.0 QUALITY CONTROL PARAMETERS, PROCEDURES, AND CORRECTIVE ACTION

Requirement. Ali procedures used for test methods incorporate quality control parameters to monitor clements that are critical to method performance. Each quality parameter includes acceptance criteria that have been established by regulatory agencies for the methods in use. Criteria may also be established through client dictates or through the accumulation and statistical evaluation of internal performance data. Data obtained for these parameters during routine analysis must be evaluated by the analyst, and compared to the method criteria in use. If the criteria are not aclieved, the procedures must specify corrective action and conformation of control before proceeding with sample analysis. QC parameters, procedures, and corrective action must be documented within the standard operating procedures for each method. In the absence of client specific objectives the laboratory must define qualitative objectives for completeness and representativeness of data.

12.1 ***Procedure***. Bench analysts are responsible for methodological quality control and sample speclfic quality control. Each method specifies the control parameters to be employed for the method in use and the specific procedures for incorporating them into the analysis. Tiese control parameters are analyzed and evaluated with every designated sample group (batch).

The data from each parameter provides the analyst with critical decision making information on method performance. The information is used to determine if corrective action is needed to bring the method or the analysis of a specific sample into compliance. These evaluations are conducted throughout the course of the analysis. Each control parameter is indicative of a critical control feature. Faliure of a methodological control parameter is indicative of either instrument or batch faliure. Faliure of a sample control parameter is indicative of control difficulties with a specific sample or samples.

Sample Batch. Ali samples analyzed in the laboratory are assigned to a designated sample batch, which contains ali required quality control samples and a defmed maximum number of field samples that are prepared and/or analyzed over a defmed time period. The maximum number of field samples in the batch is 20. Accutest has incorporated the NELAP batching policy as the sample-batching standard. This policy incorporates the requirement for blanks and spiked blanks as a time based function as defined by NELAP. Accordingly, the specified time period for a sample batch is 24 hours. Matrix spike/matrix spike duplicate, matrix spikes and duplicates are defined as sample frequency based functions and may be applied to several batches until the frequency requirement has been reached. A matrix spike/matrix spike duplicate, matrix spikes and/or duplicate is required every 20 samples.

Client criteria that defines a batch as a time based function which includes a matrix spike/matrix spike duplicates as a contractual specification wili be honored. The typical batch contains a blank and a laboratory control sample (LCS or spiked blank). Batch documentation includes lot specifications for ali reagents and standards used during preparation of the batch.

12.2 ***Methodological Control Parameters and Corrective Action***. Prior to the analysis of ficld samples the analyst must determine that the method is functioning properly. Specific control

parameters indicate whether critical processes meet specified requirements before continuing with the analysis. Method specific control parameters must meet criteria before sample analysis can be conducted. Each of these parameters is related to processes that are under the control of the laboratory and can be adjusted if out of control.

Method Blank. A method blank is analyzed during the analysis of any field sample. The method blank is defined as a sample. It contains the same standards (internal standards, surrogates, matrix modifiers, etc.) and reagents that are added to the field sample during analysis, with the exception of the sample itself If the method blank contains target analytes(s) at concentrations that exceed method detection limit concentrations (organics) or reporting limit concentrations (inorganics), the source of contamination is investigated and eliminated before proceeding with sample analysis. Target analyte(s) in method blanks at concentrations no greater than one-half of the reporting linlit concentrations (metals) may be requested on a client or project specific basis. Systematic contamination is documented for corrective action and resolved following the established corrective action procedures.

Laboratory Control Samples (LCS or Spiked Blanks). A laboratory control sample (spiked blank or commercially prepared performance evaluation sample) is analyzed along with field samples to demonstrate that method accuracy is within acceptable limits. These spike solutions may be from different sources than the sources of the solutions used for method calibration depending upon the method requirements. All target components are included in the spike mixture over a two year period. The performance limits are derived from published method specifications or from statistical data generated from the analysis of laboratory method performance samples. Spiked blanks are blank matrices (reagent water or clean sand) spiked with target parameters and analyzed using the same methods used for samples. Accuracy data is compared to laboratory derived limits to determine if the method is in control. Laboratory control samples (LCS) are commercially prepared spiked samples in an inert matrix. Performance criteria for recovery of spiked analytes are pre-established by the commercial entity preparing the sample. The sample is analyzed in the laboratory as an external reference.

Accuracy data is compared to the applicable performance limits. If the spike accuracy exceeds the performance limits, corrective action, as specified in the SOP for the method is performed and verified before continuing with a field sample analysis. In some cases, decisions are made to continue with sample analysis if performance limits are exceeded, provided the unacceptable result has no negative impact on the sample data.

Blanks and spikes are routinely evaluated before samples are analyzed. However, in situations where sample analysis is performed using an autosampler, they may be evaluated after sample analysis has occurred. If the blanks and spikes do not meet criteria, sample analysis is repeated.

Proficiency Testing. Proficiency test samples (PTs) are single or double blind spikes, introduced to the laboratory to assess method performance. PTs may be introduced as double blinds submitted by commercial clients, single or double blinds from regulatory agencies, or internal blinds submitted by the QA group.

A minimum of two single blind studies must be perfonned each year for every parameter in aqueous and solid matrices for each field of testing for which the laboratory maintains accreditation. Proficiency samples must be purchased as blinds from an A2LA accredited vendor. Data from these studies are provided to the laboratory by the vendor and reported to accrediting agencies. If unsatisfactory performance is noted, corrective action is performed to identify and eliminate any sources of error. A new single blind must be analyzed if required to demonstrate continuing proficiency.

PT samples performed for accrediting agencies or clients, which do not meet performance specifications, require a written summary that documents the corrective action investigation, findings, and corrective action implementation. A copy of this summary shali be submitted to the NELAC Primary Accrediting Authority, NJDEP Office of Quality Assurance for review.

Single or double blind proficiency test samples may be employed for self-evaluation purposes. Data from these analyses are compared to established performance linuts. If the data does not meet performance specifications, the system is evaluated for sources of acute or systematic error. If required, corrective action is performed and verified before initiating or continuing sample analysis.

Trend Analysis for Control Parameters. The quality assurance staff is responsible for continuous analytical improvement through quality control data trend analysis. Accuracy data for spiked parameters in the spiked blank are statisticaliy evaluated daliy for trends indicative of systematic problems. Data from LCS parameters and surrogates are pooled on a method, matrix, and instrument basis. This data is evaluated by comparison to existing control and warning limits. Trend analysis is performed automaticaliy as foliows:

- Any point outside the control limit
- Any three consecutive points between the warning and control limits
- Any eight consecutive points on the same side of the mean.
- Any six consecutive points increasing or decreasing

The results of the trend analysis are transmitted as .PDF flies for supervisory evaluation prior to sample analysis. Trends that indicate the potential loss of statistical control are further evaluated to determine the impact on data quality and to determine if corrective action is necessary. If corrective action is indicated, the supervisor informs the analysts of the corrective actions to be performed. Return to control is demonstrated before analysis resumes.

12.3 ***Sample Control Parameters and Corrective Action***. The analysis of samples can be initiated foliowing a successful demonstration dhat the method is operating within established controls. Additional controls are incorporated into the analysis of each sample to determine if the method is functioning within established specifications for each individual sample. Sample QC data is evaluated and compared to established performance criteria. If the criteria are not achieved the method or the SOP specifies the corrective action required to continue sample analysis. In many cases, faliure to meet QC criteria is a function of sample matrix and cannot be remedied. Each parameter is designed to provide quality feedback on a defined aspect of the sampling and analysis episode.

Duplicates. Duplicate sample analysis is used to measure analytical precision. This can also be equated to laboratory precision for homogenous samples. Precision criteria are method dependent. If precision criteria are not achieved, corrective action or additional action may be required. Recommended action must be completed before sample data can be reported.

Laboratory Spikes & Spiked Duplicates. Spikes and spiked duplicates are used to measure analytical precision and accuracy for the sample matrix selected. Precision and accuracy criteria are method dependent. If precision and accuracy criteria are not achieved, corrective action or additional action may be required. Recommended action must be completed before reporting sample data. All target components are included in the spike mixture over a two year period.

Serial Dilution (Metals). Serial dilutions of metals samples are analyzed to determine if analytical matrix effects may have impacted the reported data. If the value of the serially diluted samples does not agree with the undiluted value within a method-specified range, the sample matrix may be causing interferences, which may lead to either a high or low bias. If the serial dilution criterion is not achieved, it must be flagged to indicate possible bias from matrix effects.

Post Digestion Spikes. Digested samples are spiked and analyzed to determine if matrix interferences are biasing the results when the pre-digestion spike (matrix spike) recovery falls outside the control limits. It may also be used to determine potential interferences per client's specification. The sample is spiked at the concentration specified in the method SOP. No action is necessary if the post digestion spike is outside of the method criteria, unless a preparation problem is suspected with the spike, in which case the post digestion spike should be re-prepared and reanalyzed.

Surrogate Spikes (Organics). Surrogate spikes are organic compounds that are similar in behavior to the target analytes but unlikely to be found in nature. They are added to all quality control and field samples to measure method performance for each individual sample. Surrogate accuracy limits are derived from published method specifications or from the statistical evaluation of laboratory generated surrogate accuracy data. Accuracy data is compared to the applicable performance limits. If the surrogate accuracy exceeds performance limits, corrective action, as specified in the method or SOP is performed before sample data can be reported.

Internal Standards (Organic Methods). Internal standards are retention time and instrument response markers added to every sample to be used as references for quantitation. Their response is compared to reference standards and used to evaluate instrument sensitivity on a sample specific basis. Internal standard retention time is also compared to reference standards to assure that target analytes are capable of being located by their individual relative retention time.

If internal standard response criteria are not achieved, corrective action or additional action may be required. The recommended action must be completed before sample data can be reported.

If the internal standard retention time criteria are not achieved corrective action or additional action may be required. This may include re-calibration and re-analysis. Additional action must be completed before sample data is reported.

Internal Standards (ICP and ICP/MS Metals). Internal standards are used on ICP instruments to compensate for variations in response caused by differences in sample matrices. Multiple internal standards are used for each sample on ICP/MS instrnments to compensate for variations in response caused by differences in sample matrices. This adjustment is performed automaticaliy during sample analysis. The internal standard response of replicated sample analysis is monitored to detect potential analytical problems. If analytical problems are suspected, then the field samples may be reanalyzed or reanalyzed upon dliution to minimize the interferences. A different internal standard may be employed for quantitation in situations where the field sample contains the element typicaliy used as the internal standard.

12.4 ***Laboratory Derived Quality Control Criteria.*** Control criteria for in-house methods and client specific modifications that exceed the scope of published methodology are defined and documented prior to the use of the method. The Quality Assurance Director is responsible for identifying additional control criteria needs. Control parameters and criteria, based on best technical judgment are established using input provided by thc operations staff These control parameters and criteria are documented and incorporated into the method.

The laboratory-derived criteria are evaluated for technical soundness on spiked samples prior to the use of the method on field samples. The technical evaluation is documented and archived by the Quality Assurance Staff

When sufficient data from the laboratory developed control parameter is accumulated, the data is statisticaliy processed and the experimentaliy derived control limits are incorporated into the method.

12.5 ***Bench Review & Corrective Action***. The bench chenusts are responsible for ali QC parameters. Before proceeding with sample analysis, they are required to successfuliy meet all instrumental QC criteria. They have the authority to perform any necessary corrective action before proceeding with sample analysis. Their authority includes the responsibility for assuring that departures from documented policies and procedures do not occur.

The bench chemists are also responsible for ali sample QC parameters. If the sample QC criteria are not achieved, they are authorized and required to perform the method specified corrective action before reporting sample data.

12.6 ***Data Qualifiers***. An alpha character coding system is employed for defining use limitations for reported data. These limitations are applied to analytical data by the analyst to clarify the usefulness of the reported data for data user. Common data qualifiers and tiieir definitions are as foliows:

Organics.

J: Indicates an estimated value. Applied to calculated concentrations for tentatively identified compounds and qualitatively identified compounds whose concentration is below the reporting limit, but above the MDL.

N: Indicates qualitative evidence of a tentatively identified compound whose identification is based on a mass spectral library search and is applied to ali TIC results.

C: Applied to pesticide data that has been qualitatively confirmed by GC/MS.

B: Used for analytes detected in the sample and its associated method blank.

E: Applied to compounds whose concentration exceeds the upper limit of dhe calibration range.

Metals and Inorganics.

B: Applied if the reported concentration value was less than the reporting limit but greater than dhe MDL.

U: Applied if the reading is less than the MDL (or IDL if IDL reporting is being used).

E: Estimated concentration caused by the presence of interferences, normaliy applied when the serial dliution is out.

N: Spike sample recovery not within control limits.

*: Duplicate or matrix spike duplicate analysis not within control limits.

12.7 ***QA Monitoring***. The QA staff conducts a spot review of completed data packages prior to client release for specified projects. This review includes an examination of QC data for compliance and trends indicative of systematic difficulties. If non-conformances are detected, the QA staff places an immediate stop on the release of the data and initiates corrective action to rectify the situation. The data package is released when the package becomes compliant with ali quality requirements. If compliance is not possible, the data is qualified and an appropriate case narrative is generated for inclusion in the data package.

If the review reveals trends indicative of systematic problems, QA initiates an investigation to determine the cause. If process defects are detected, a corrective action is implemented and monitored for effectiveness.

Performance Limits. The Quality Assurance Director is responsible for compilation and maintenance of ali precision and accuracy data used for performance limits. Quality control data for ali test methods are accumulated and stored in the laboratory information management system (LIMS). Parameter specific QC data is extracted amualiy and staticaliy processed to develop laboratory specific warning limits and control limits. The new limits are reviewed and approved by the supervisory staff prior to their use for data assessment. The new limits are used to evaluate QC data for compliance with method requirements for a period of one year. Laboratory generated limits appear on all data reports.

12.8 ***Data Package Review.*** Accutest employs multiple levels of data review to assure that reported data has satisfied all quality control criteria and that client specifications and requirements have been met. Each production department has developed specific data review procedures, which must be completed before data is released to the client.

Analytical **Review.** The analyst conducts the primary review of all data. This review begins with a check of all instrument and method quality control and progresses through sample quality control, concluding with a check to assure that the client's requirements have been executed. Analyst checks focus on a review of qualitative determinations and checks of precision and accuracy data to verify that existing laboratory criteria have been achieved. Checks at this level may include comparisons with project specific criteria if applicable. The analyst has the authority and responsibility to perform corrective action for any out-of-control parameter or nonconformance at this stage of review.

Analysts who have met the qualification criteria for the method in use perform secondary, peer level data reviews. Analyst qualification requirements include a valid demonstration of capability and demonstrated understanding of the method SOP. Section supervisors may perform secondary review in-lieu of a peer review. Supervisors review 100% of the data produced by their department. It includes a check of all manual calculations; an accuracy check of manually transcribed data from bench sheets to the LIMS, a check of calibration and continuing calibration, all QC criteria and a comparison of the data package to client specified requirements. Also included are checks to assure the appropriate methodology was applied and that all anomalous information was properly flagged for communication in the case narrative. Supervisors have the authority to reject data and initiate re-analysis, corrective action, or reprocessing.

All laboratory data requiring manual entry into LIMS system is double-checked by the analysts performing initial data entry and the section supervisor. Verification of supervisory review is indicated on the raw data summary by the supervisor's initials and date.

Electronic data that is manually edited at the bench by the primary analyst is automatically flagged by the instrument data system indicating an override by the analyst. All manual overrides must be verified and approved by a supervisor who initials and dates all manual changes.

Hard copies of manually integrated chromatographic peaks are printed that clearly depict the manually drawn baseline. The hard copy is reviewed and approved by the section supervisor (initialed and dated) and included in the data package of all full tier reports or the archived batch records of commercial report packages.

Edits to electronic data that have already been committed to the LIMS database are controlled through the use of the Master Edit function in LIMS. Permission to access this program is limited to those approved by the upper levels of laboratory management and is controlled by the Information Technology staff. A GALP electronic audit record trail is maintained for all changes that are made and is automatically appended to the record.

The group manager performs a tertiary review on a spot check basis. This review includes an evaluation of QC data against acceptance criteria and a check of the data package contents to assure that ali analytical requirements and specifications were executed.

Report Generation Review. The report generation group reviews ali data and supporting information delivered by the laboratory for completeness and compliance with client specifications. Missing deliverables are identified and obtained from the laboratory. The group also reviews the completed package to verify that the delivered product complies with ali client specifications. Non-analytical defects are corrected before the package is sent to the client.

Project Management/Quality Control Review. Spot-check data package reviews are performed by dhe project management staff Project management reviews focus on project specifications. If the project manager identifies defects in the product prior to release, he initiates immediate corrective action to rectify the situation.

The QA staff performs a post-delivery check of completed data packages to verify completeness and compliance with established quality control procedures. Approximately 10% of Fuli-Deliverables data packages are reviewed. A formal checklist is used to assess data report completeness and accuracy. Detected deficiencies are documented on the checklist and corrective actions initiated as necessary. Data review checklists are electronic documents, which are archived in the QA Directory of the network server.

The QA review focuses on ali elements of the deliverable including the client's specifications and requirements, analytical quality control, sample custody documentation and sample identification. QA reviews at this step in the production process are geared towards systematic process defects, which require procedural changes to effect a corrective action. However, if defects are identified that have an adverse affect on data, the client is immediately informed foliowing standard notification procedures. QA data review is not used in lieu of a peer level review or a supervisory review.

Data **Reporting.** Analytical data is released to clients foliowing a secondary review by the group supervisor. Data release at this stage of the process is limited to electronic information, which is released to clients tinrough a secure, encrypted, password protected, Internet connection. Hard copy support data is complied by the report generation group and assembled into the final report. The report is sent to the client foliowing reviews by the report generation staff

All data reports include specified information, which is required to identify the report and its contents. This information includes a tide, name and address of the laboratory, a unique report number, total number of pages in the report, clients name and address, analytical method identification, arriving sample condition, sample and analysis dates, test results with units of measurement, authorized signature of data release, statement of applicability, report reproduction restrictions and NELAC requirements certification. Data reports for the Department of Defense ELAP also include the tiine of preparation and analysis.

12.9 ***Electronic Data Reduction.*** Raw data from sample analysis is entered into the laboratory information management system (LIMS) using automated processes or manual entry. Final data processing is performed by the LIMS using procedures developed by the Company.

All LIMS programs are tested and validated prior to use to assure that they consistendy produce correct results. The Information Technology Staff performs software validation testing. The testing procedures are documented in an SOP. Software programs are not approved for use untll they have demonstrated that they are capable of performing the required calculations.

12.10 ***Representativeness.*** Data representativeness is based on the premise that quallitative and quantitative information developed for field samples is characteristic of the sample that was collected by the client and analyzed in the laboratory. The laboratory objective for representativeness defmes data as representative if the criteria for all quallty parameters associated with the analysis of the sample are achieved.

12.11 ***Comparability.*** Analytical data is defined as comparable when data from a sample set analyzed by the laboratory is representatively equivalent to other sample sets analyzed separately regardless of the analytical logistics. The laboratory will achieve 100% comparabillty for all sample data which meets the criteria for the quallty parameters associated with its analysis using the method requested by the client.

13.0 CORRECTIVE ACTION SYSTEM

Requirement. The laboratory employs polices and procedures for correcting defective processes, systematic errors, and quality defects enabling the staff to systematicaliy improve product quality. The system ineludes procedures for communicating items requiting corrective action to responsible individuals, corrective action tracking procedures, corrective action documentation, monitoring of effectiveness, and reports to management. The system is fuliy documented in a standard operating procedure. Individual corrective actions and responses are documented in a dedicated database.

13.1 ***Procedure.*** Corrective action is the step that foliows the identification of a process defect. The type of defect detemines the level of documentation, communication, and training necessary to prevent re-occurrence of the defect or non-conformance. The formal system is maintained by the quality assurance department. Operations management is responsible for working within the system to resolve identified deficiencies.

Routine Corrective Action. Routine corrective action is defined as the procedures used to return out of control analytical systems back to control. This level of corrective action applies to ali analytical quality control parameters or analytical system specifications.

Bench analysts have fuli responsibility and authority for performing routine corrective action. The resolution of defects at this level does not require a procedural change or staff re-training. The analyst is free to continue work once corrective action is complete and the analytical system has been returned to control. Documentation of routine corrective actions is limited to logbook comments for the analysis being performed.

Process Changes. Corrective actions in this category require procedural modifications. They may be the result of systematic defects identified during audits, the investigation of client inquiries, failed proficiency tests, product defects identified during data review, or method updates. Resolution of defects of this magnitude requires formal identification of the defect, development and documentation of a corrective action plan, and staff training to communicate the procedural change.

Technical Corrective Action. Technical corrective action encompasses routine corrective action performed by bench analysts for out of control systems and corrective actions performed for data produced using out of control systems. Technical corrective action for routine situations is conducted using the procedures detalied above.

Non-routine corrective actions apply to situations where the bench analysts falied to perform routine corrective action before continuing analysis. Supervisors and Departnent Managers perform corrective action in these situations. Documentation of ali non-routine corrective actions is performed using the corrective action system.

Sample re-analysis is conducted if sufficient sample and holding time remain to repeat the analysis using an in-control system. If insufficient sample or holding time remains, the data is processed and qualifiers applied that describe the out of control situation. The occurrence is

further documented in the case narrative and in the corrective action response. The corrective action must include provisions for retraining the analysts who falied to perform routine corrective action.

13.2 ***Documentation & Communication***. Routine corrective actions are documented as part of the analytical record. Notations are made in dhe comments section of the analytical chronicle or data sheet detailing the nonconformance and corrective action. Continuation of the analysis indicates that retum to control was successful.

Corrective actions for process changes are documented, tracked and monitored for effectiveness. Supervisors or senior staff members may initiate corrective actions by generating a corrective action using the corrective action database application.

The corrective action database is an Access application. The initiator generates the corrective action investigation form, which is documented, tracked, distributed to responsible parties and archived through the application. The application assigns a tracking number, initiation data and due date to each action and copies the corrective action form to the database. E-mail message containing the form is automaticaliy distributed to the responsible parties for resolution.

The responsible party identifies the root cause of the defect, initiates the immediate fix and develops and implements the procedural change. Existing documentation such as SOPs are edited to reflect the change. The affected staff is informed of the procedural change through a formal training session. The training is documented and copies are placed into individual training flies. The corrective action form is completed by the responsible party and returned to the QA staff via e-mali using the database application.

Initial and completed corrective action forms are maintained in the corrective action database. This entire database is backed up and archived daily. The corrective action tracking form is maintained as an active report in tne database.

Monitoring. The QA Staff monitors the implemented corrective action untli it is evident that the action has been effective and the defect has been eliminated. The corrective action database is updated by QA to reflect closure of the corrective action. The QA staff assigns an error code to the corrective action for classification of the type of errors being committed. Additional monitoring of the corrective action is conducted during routine laboratory audits.

Additional monitoring of the corrective action is conducted by adding the corrective action to a verification list by the QA staff at closure. Verification is performed by the QA Staff to assure that the corrective action has remained in effect is scheduled for six (6) monds from the initial closure date.

If QA determines that the corrective action response has not effectively remedied the deficiency, the process continues with a re-initiation of the corrective action. Corrective action continues untli the defect is eliminated. If another procedural change is required, it is treated as a new corrective action, which is documented and monitored using established procedures.

Client Notification. Defective processes, systematic errors, and quality defects, detected during routine audits may have negative impacts on data quality. In some cases, data that has been released to clients may be affected. If defective data has been released for use, Accutest will notify the affected clients of the defect and provide specific details regarding the magnitude of the impact to their data.

14.0 PROCEDURES FOR EXECUTING CLIENT SPECIFICATIONS

Requirement. Systems have been established for evaluating and processing client specifications for routine and non-routine analytical services. The systems enable the client services staff to identify, evaluate, and document the requested specifications to determine if adequate resources are available to perform the analysis. The system includes procedures for communicating the specifications to the laboratory staff for execution and procedures for verifying the specifications have been executed.

14.1 ***Client Specific Requirements.*** The project manager is the primary contact for clients requesting laboratory services. Client specifications are communicated using several mechanisms. The primary sources of information are the client's quality assurance project plan (QAPjP) and the analytical services contract both of which detail the analytical, quality control and data reporting specifications for the project. In the absence of a QAPjP, projects specifications can also be communicated using contracts, letters of authorization, or letters of agreement, which may be limited to a brief discussion of the analytical requirements and the terms and conditions for the work. These documents may also include pricing information, liabilities and scope of work, in addition to the analytical requirements. QAPjPs include detailed analytical requirements and data quality objectives, which supersede those found in the referenced methods. This information is essential to successful project completion.

The client services staff provides additional assistance to clients who are unsure of the specifications they need to execute the sampling and analysis requirements of their project. They provide additional support to clients who require assistance in results interpretation as needed, provided they possess the expertise required to render an opinion.

The project manager is responsible for obtaining project documents, which specify the analytical requirements. Following project management review, copies are distributed to the QA Director and the appropriate departmental managers for review and comment. The original QAPjP is filed in a secure location.

14.2 ***Requirements for Non-Standard Analytical Specifications.*** Client requirements that specify departures from documented policies, procedures, or standard specifications must be submitted to Accutest in writing. These requirements are reviewed and approved by the technical staff before the project is accepted. Once accepted, the non-standard requirements become analytical specifications, which follow the routine procedure for communicating client specifications. Departures from documented policies, procedures, or standard specifications that do not follow this procedure are not permitted.

14.3 ***Evaluation of Resources.*** A resource evaluation is completed prior to accepting projects submitted by clients. The evaluation is initiated by the client services staff who prepares a brief synopsis that includes the logistical requirements of the project. Logistical specifications for new projects are summarized in writing for evaluation by the affected departments. The specifications are evaluated by the department manager from a scheduling and hardware resources perspective. The project is not accepted unless the department managers have the necessary resources to execute the project according to client specifications.

14.4 ***Documentation***. New projects are initiated using a project set up form, which is completed prior to the start of the project. This form details all of the information needed to correctly enter the specifications for each client sample into the laboratory information management system (LIMS). The form includes data reporting requirements, billing information, data turnaround times, QA level, state of origin, and comments for detailing project specific requirements. The project manager is responsible for obtaining this information from the client and completing the form prior to sample arrival and login.

Sample receipt triggers project creation and the login process. The information on the set-up form is entered into the LIMS immediately prior to logging in the first sample. The set up form may be accompanied by a quotation, which details the analytical product codes and sample matrices. These details are also entered into the LIMS during login.

Special information is distributed to the laboratory supervisors and login department in electronic or hardcopy format upon project setup. All, project specific information is retained by the project manager in a secure file. The project manager maintains a personal telephone log, which details conversations with the client regarding the project.

Department managers prepare summary sheets that detail client specific analytical requirements for each test. Bench analysts use these sheets to obtain information regarding client specific analytical requirements before analyzing samples. A program code is established for each client that links the client specifications to a client project. This code is attached to a project by the project manager at login and listed on the work list for each work group conducting analysis for clients with standing requirements.

14.5 ***Communication***. A pre-project meeting is held between client services and the operations managers to discuss the specifications described in the QAPjP, contract and/or related documents. Project logistics are discussed and finalized and procedures are developed to assure proper execution of the client's analytical specifications and requirements. Questions, raised in the review meeting, are discussed with the client for resolution. Exceptions to any requirements, if accepted by the client, are documented and incorporated into the QAPjP or project documentation records.

Non-standard specifications for individual clients are documented in the LIMS at the client account level or program level. Simple specifications are documented as comments for each project. Once entered into the LIMS, these specifications become memorialized for all projects related to the client account. Complex specifications are assigned program codes that link the specification to detailed analytical specifications.

Upon sample arrival, these specifications are accessed through a terminal or printed as a hard copy and stored in a binder for individuals who require access to the specification. Specifications that are not entered into the LIMS are prohibited unless documented in an interdepartmental memo, which clearly identifies the project, client and effective duration of the specification.

14.6 ***Operational Execution***. A work schedule is prepared for each analytical department on a daliy basis. Analytical specifications or program codes from recentiy arrived samples have now been entered into the LIMS database. The database is sorted by analytical due date and holding time, into product specific groups. Samples are scheduled for analysis by due date and holding time. The completed schedule, which is now defined as a work list, is printed. The list contains the client requested product codes, program codes and specifications required for the selected sample(s). Special requirements are communicated to the analyst using the comments section or relayed through verbal instructions provided by die supervisor. The bench analyst assumes fuli responsibility for performing the analysis according to the specifications printed on the work sheet.

14.7 ***Verification***. Prior to the release of data to the client, laboratory section managers and the report generation staff review the report and compare the completed product to the client specifications documentation to assure that ali requirements have been met. Project managers perform a spot check of projects with unique requirements to assure that the work was executed according to specifications.

15.0 CLIENT COMPLAINT RESOLUTION PROCEDURE

Requirement. The laboratory follows a formal system for managing and reconciling client complaints. The system includes procedures for documenting the complaint and communicating it to the appropriate department for resolution. The system also includes a quality assurance evaluation to determine if the complaint is related to systematic defects requiring corrective action and process changes.

15.1 ***Procedure***. Client complaints are communicated to client services representatives, quality assurance staff, or senior management staff for resolution. The individual receiving the complaint retains the responsibility for doeumentation and communicating the nature of the complaint to the responsible department(s) for resolution. The responsible party addresses the complaint. The resolution is communicated to quality assurance (QA) and the originator for communication to the client. QA reviews the complaint and resolution to determine if systematic defects exist. If systematic defects are present, QA initiates a corrective action for the responsible party who develops and implements a response that eliminates the defect. If systematic defects are not present and the resolution is satisfactory, the QA Staff wlil close dhe complaint/inquiry with a no further action is necessary tag.

15.2 ***Documentation***. Client's complaints are documented by the individual receiving the complaint using the Data Query and Corrective Action Inquiry Process. This process generates an E-Mali message that contains detalied information essential to the complaint resolution. A record of the telephone conversation is maintained by client services. The message is distributed to the QA staff and the party bearing responsibility for resolution by E-Mali. The complaint resolution is documented on the message by the responsible party and returned to the originator. A copy is sent to QA for review and database archiving.

15.3 ***Corrective Action***. Responses to data queries are required from the responsible party. At a mirimum, the response addresses the query and provides an explanation to the complaint. Formal corrective action may focus on the single issue expressed in the complaint. Corrective action may include reprocessing of data, editing of the initial report, and re-issue to the client. If the QA review indicates a systematic error, process modification is required. The defective process at the root of the complaint is changed. SOPs are either created or modified to reflect the change. The party responsible for the process implements process changes.

15.4 ***QA Monitoring***. Process changes, implemented to resolve systematic defects, are monitored for effectiveness by QA. If monitoring indicates that the process change has not resolved the defect, QA works with the department management to develop and implement an effective process. If monitoring indicates that the defect has been resolved, monitoring is slowly discontinued and the corrective action is closed. Continued momtoring is incorporated as an element of the annual system audit.

16.0 CONTROL OF NONCONFORMING PRODUCT

Requirement: Policies and procedures have been developed and implemented that describe the procedures employed by the laboratory when any aspect of sample analysis or data reporting do not conform to established procedures or client specifications. These procedures include steps to ensure that process defects are corrected and affected work is evaluated to assess its impact to the client.

Procedure. Nonconforming product is identified through routine internal review and audit practices or through client inquiry. The individuals who identify the nonconformance or receiving a nonconformance inquiry immediately inform the Laboratory Director and the Quality Assurance Director. The Laboratory Director initiates an evaluation of the nonconformance through the Quality Assurance Department and takes full responsibility for managing the process and identifying the course of action to take, initiating corrective action and mitigating the impact of the nonconformance to the client.

16.1 ***Corrective Action.*** The outcome of the evaluation dictates the course of action. This includes client notification when the quality of data reported has been impacted and may also include corrective action if applicable. Immediate corrective action is performed using the procedures specified in Accutest SOP EQA011. However, additional action may be required including cessation of analysis and withholding and or recalling data reports. If the evaluation indicates that nonconforming data may have been issued to clients, the client is immediately notified and data may be recalled following the procedures specified in SOP EQA011. If work has been stopped because of a nonconformance, the Laboratory Director is the only individual authorized to direct a resumption of analysis.

Nonconformances caused by systematic process defects require retraining of the personnel involved as an element of the corrective action solution.

17.0 CONFIDENTIALITY PROTECTION PROCEDURES

Requirements: Policies and procedures have been developed to protect client data from release to unauthorized parties or accidental release of database infonnation through accidental electronic transmission or illegal intmsion. These policles have been communicated to clients and staff Electronic systems are regularly evaluated for effectiveness.

17.1 ***Client Anonymity***. Information related to the Company's clients is granted to employees on a "need to know" basis. An individual's position within the organization defines his "need to know". Individuals with "need to know" status are given password access to systems dhat contain client identity information and access to documents and document storage areas containing client reports and information. Access to client information by individuals outside of the Company is limited to the client and individuals authorized by the client.

Individuals outside of the Company may obtain client information through subpoena issued by a court of valid jurisdiction. Clients are informed when subpoenas are received ordering the release of their information.

Client information may be released direcdy to regulatory agencies without recclving client authorization under specified circumstances. These circumstances require that the regulatory agency have statutory authority under the regulations for laboratory certification and that Accutest's operations fali under the purview of the regulation. In these situations, Accutest wili inform the client of the regulatory agencies request for information pertaining to his data and proceed with the delivery of the information to the regulatory agency.

17.2 ***Documents***. Access to client documents is restricted to employees in need to know positions. Copies of ali client reports are stored in secure electronic archives with restricted access. Reports and report copies are distributed to individuals who have been authorized by the client to receive them. Data reports or data are not released to third parties without verbaliy expressed or written permission from the client.

17.3 ***Electronic Data***.

Database Intrusion. Direct database entry is authorized for employees of Accutest only on a need to know basis. Entry to the database is restricted through a user specific multiple password entry system. Direct access to the database outside of the facility is possible through a dial-up connection. A unique password is required for access to the local area network. A second unique password is required to gain access to the database. The staff receives read or write level authorization on a hierarchical privilege basis.

Internet Access. Access to client information is through an HTTP Web application only. It does not contain a mechanism that aliows direct access to the database. Clients can gain access to their data only using a series of Accutest assigned client and user specific passwords. The viewable data, wlich is encrypted during transmission, consists of an extraction of database information only.

Client Accessibility. Accessibillty to cllent data dellvered via electronic means follows strict protocols to insure confidentiallty. Cllents accessing electronic data are assigned a company account. The account profile, which is establlshed by the MIS staff, grants explicit access to specific information pertaining to the cllent's project activity. Passwords are assigned on an individual basis within a ciient account. These accounts can be activated or deactivated by the MIS staff only.

17.4 ***Information Requests***. Cllent specific data or information is not released to dhird parties without verbally expressed or written permission from the cllent. Written permission is required from third parties, who contact dhe Company direcdy for the release of information. Verbal requests wlll be honored only if they are received direcdy from the cllent. These requests must be documented in a record of communication maintained by the authorized recipient.

17.5 ***Transfer of Records***. Archived data, which has previously been reported and transmitted to cllents, is the exclusive property of Accutest Laboratories. In the event of a cessation of business actlvities due to business fallure or sale, The Company's legal staff will be directed to arrange for the final disposition of archived data.

The final disposition of archived data will be accompllshed using the approach detailed in the following sequence:

1. All data will be transferred to the new owners for the duration of the required archive period as a condition of sale.

2. If the new owners will not accept the data or the business has falled, letters will be sent to cllents llsted on the most recent active account roster offering them the option to obtain specific reports (identified by Accutest Job Number) at their own expense.

3. A letter will be sent to the NELAC accrediting authority with orgarizational jurisdiction over the company offering them the option to obtain all unclaimed reports at their own expense.

4. All remaining archived data will be recycled using dhe most expedient means possible.

18.0 QUALITY AUDITS AND SYSTEM REVIEWS

Requirement The quality assurance group conducts regularly scheduled audits of the laboratory to assess compliance with quality system requirements, technical requirements of applied methodology, and adherence to documentation procedures. The information gathered during these audits is used to provide feedback to senior management and perform corrective action where needed for quality improvement purposes.

18.1 ***Quality System Reviews***. Quality system reviews are performed annually by the Quality Assurance Director for the Company President In this review, the laboratory is evaluated for compliance with the laboratory Quality Systems Manual (QSM) and the quality system standards of the National Environmental Laboratory Accreditation Conference. Findings, which indicate non-compliance or deviation from the QSM, are flagged for corrective action. Corrective actions require either a return to compliance or a plan change to reflect an improved quality process. The Quality Assurance Director is responsible for making and documenting changes to the QSM. These changes are reviewed by the Company President and The Laboratory Director prior to the approval of the revised system.

18.2 ***Quality System Audits.*** Quality system audits are conducted to evaluate the effectiveness and laboratory compliance with individual quality system elements. These audits are conducted on an established schedule. Audit findings are documented and communicated to the management staff and entered into the corrective action system for resolution. If necessary, retraining is conducted to assure complete understanding of the system requirements.

18.3 ***Test Method Assessments.*** Test Method Assessments are performed throughout the year following an established schedule. Selected analytical procedures are evaluated for compliance with standard operating procedures (SOPs) and method requirements. If non-conformances exist, the published method serves as the standard for compliance. SOPs are edited for compliance if the document does not reflect method requirements. Analysts are trained to the new requirements and the process is monitored by quality assurance. Analysts are retrained in method procedures if an evaluation of bench practices indicates non-compliance with SOP requirements.

18.4 ***Documentation Audits***. Documentation audits are conducted monthly. This audit includes a check of measurement processes that require manual documentation. It also includes checks of data archiving systems and a search to find and remove any inactive versions of SOPs that may still be present in the laboratory and being accessed by the analysts. Non-conformances are corrected on the spot. Procedural modifications are implemented if the evaluation indicates a systematic defect.

18.5 ***Corrective Action Monitoring***. Defects or non-conformances that are identified during client or internal audits are documented in the corrective action systems and corrected through process modifications and/or retraining. Once a corrective action has been designed and implemented, it is monitored for compliance on a regular basis by the QA staff Spot

corrections are performed if the staff is not following the new procedure.. Monitoring of the corrective action continues until satisfactory implementation has been verified.

18.6 ***Preventive Action.*** Laboratory systems or processes, which may be faulty and pose the potential for nonconformances, errors, eonfnsing reports or difficulties establishing traceability may be identified during internal audits. These items are highlighted for systematic change using the corrective action system and managed to resolution using the procedures for corrective action identified in EQA011.

18.7 ***Client Notification.*** Defective processes, systematic errors, and quality defects, detected during routine audits may have negative impacts on data quality. In some cases, data that has been released to clients may be affected. If defective data has been released for use, Accutest wlil iinmediately notify the affected clients of the defect and provide specific detalis regarding the magnitude of the impact to their data.

18.8 ***Management Reports.*** Formal reports of ali audit and proficiency testing activity are prepared for the management staff and presented as they occur. Additional reports may be presented orally at regularly scheduled staff meetings

Management reports may also address dhe following topics:

- Status and results of internal and external audits,
- Status and results of internal and external proficiency testing,
- Identification of quality control problems in the laboratory,
- Discussion of corrective action program issues,
- Status of external certifications and approvals,
- Status of staff training and qualifications,
- Discussion of new quality system initiatives.
- Recommendations for furdher action on listed items are included in dhe report.

19.0 HEALTH AND SAFETY

Requirement. The company operates a formal health and safety program that complies with the requirements of the Occupational Health and Safety Administration. The program consists of key policies and practices that are essential to safe laboratory operation. All employees are required to receive training on the program elements. Job specific training is conducted to assure safe practices for specific tasks. All employees are required to participate in the program, receive initial and annual training, and comply with the program requirements. All plan and program requirements are detailed in the Health and Safety Program Manual.

19.1 Policy. Accutest Laboratories will provide a safe and healthy working environment for its employees and clients while protecting the public and preserving the Company's assets and property. The company will comply with all applicable government regulations pertaining to safety and health in the laboratory and the workplace.

The objective of the Accutest Health and Safety Program is to promote safe work practices that minimize the occurrence of injuries and illness to the staff through proper health and safety training, correct laboratory technique application and the use of engineering controls.

19.2 Responsibilities. The Health and Safety Program assists managers, supervisors and non-supervisory employees in control of hazards and risks to minimize the potential for employee and client injuries, damage to client's property and damage or destruction to Accutest's facility.

The Health, Safety and Facilities Manager is responsible for implementing the Program's elements and updating its contents as necessary. He also conducts periodic audits to monitor compliance and assess the program's effectiveness. The Health, Safety and Facilities Manager is also responsible for creating and administering safety training for all new and existing employees.

The employee is responsible for following all safety rules established for their protection, the protection of others and the proper use of protective devices provided by the Company. The employee is also expected to comply with the requirements of the program at all times. Department Managers and Supervisors are responsible for ensuring the requirements of the Safety Program are practiced daily. The Company President retains the ultimate responsibility for the program design and implementation.

19.3 Program Elements. The Accutest Health and Safety Program consists of key program elements that compliment the company's health and safety objective. These elements form the essence of the health and safety policy and assure that the objectives of the program are achieved.

Safety Education and Training and Communication. Training is conducted to increase the staff's awareness of laboratory hazards and their knowledge of the safety practices and procedures required to protect them from those hazards. It is also used to communicate general safety procedures required for safe operation in a chemical laboratory.

Initial health and safety training for new employees is conducted during orientation. The training focuses on the Accutest Safety and Health Program and includes specific training for the hazards that may be associated with the employees duties. Training is also conducted for all program elements focusing on general, acceptable, laboratory safety procedures. Targeted training is conducted to address hazards or safety procedures that are specific to individual employee's work assignments. All training activities are documented and archived in individual training folders, A health and safety training inventory is maintained in the training database.

Safety Committee. The safety committee provides the employee with an opportunity to express their views and concerns on safety issues in a fomm where those concerns will be addressed. This committee meets monthly to assure that the interests of the company and the well being of the employee are protected. They also serve as a catalyst for elevating the level of safety awareness among their peers.

Hazard Identification and Communication. The hazard communication program enables employees to readlly identify laboratory hazards and the procedures to protect themscives from those hazards. This program complies with OSHA's Hazard Communication Standard, Title 29 Code of Federal Regulations 1910.1200 that requires the company to adopt and adhere to the following key elements:

- Material Safety Data Sheets (MSDS) must be available to any employee wishing to view them,
- The Company must maintain a Hazardous Chemicals Inventory (by location), which is updated on an annual basis,
- Containers are properly labeled,
- All employees must be provided with annual Hazard Communication and Right to Know training,

The hazard communication program also complies with the requirements of the New Jersey Worker and Community Right to Know Law, NJAC 8:95.

Identification of Workplace Hazards. The workplace hazard identification procedures have been designed to assure that hazards that have the potential to cause personnel injury or destruction of property are identified, managed and/or systematically eliminated from the operation. This system eliminates hazards, limits the potential for injury and increases the overall safety of the work environment.

Employee Exposure Assessment Employee exposure assessment is performed to identify and evaluate potential exposure hazards associated with the employees work station. The exposure assessment data is used to determine if changes or modifications to the work station are needed to limit exposure to laboratory conditions that could negatively affect an employee's existing medical conditions.

Bloodborne Pathogens. Accutest has implemented the OSHA Bloodborne Pathogen Standard, 29CFR1910.1030 to reduce occupational exposure to Hepatitis B Vims (HBV), Human Immunodeficiency Virus (HIV) and other bloodborne pathogens that employees may encounter in their workplace.

Respiratory Protection Plan. The respiratory protection plan assures that Accutest employees are protected from exposure to respiratory hazards. This program is used in situations where engineering controls and/or safe work practices do not completely control the identified hazards. In these situations, respirators and other protective equipment are used. Supplemental respiratory protection procedures are applied to specified maintenance personnel, employees who handle hazardous wastes in the hazardous waste storage area, and any employee that voluntarily elects to wear a respirator.

Chemical Hygiene Plan. The Chemical Hygiene Plan complies with the requirements of the Occupational Safety and Health Administration's Occupational Exposure to Hazardous Chemicals in the Laboratory Standard, 29 CFR 1910.1450. This plan establishes procedures, identifies safety equipment, personal protective equipment, and work practices that protect employees from the potential health hazards presented by hazardous chemicals in the laboratory if properly used and/or applied.

Chemical Spill Response Plan. The chemical spill response plan has been designed to minimize the risks from a chemical spill or accidental chemical release in the laboratory. Risk minimization is accomplished through a planned response that follows a defined procedure. The staff has been trained to execute spill response procedures according to the specifications of the plan, which identifies the appropriate action to be taken based on the size of the spill.

Emergency Action & Evacuation Plan. The Emergency Action and Evacuation Plan details the procedures used to protect and safeguard Accutest's employees and property during emergencies. Emergencies are defined as fires or explosions, gas leaks, building collapse, hazardous material spills, emergencies that immediately threaten life and health, bomb threats and natural disasters such as floods, hurricanes or tornadoes, terrorism or terrorist actions. The plan identifies and assigns responsibility for executing specific roles in situations requiring emergency action. It also describes the building security actions coinciding with the "Alert Condition", designated by the Department of Homeland Security.

Lockout/Tagout Plan. Lockout/tagout procedures have been established to assure that laboratory employees and outside contractors take steps to render equipment inoperable and/or safe before conducting maintenance activities. The plan details the procedures for conducting maintenance on equipment that has the potential to unexpectedly energize, start up, or release energy or can be operated unexpectedly or accidentally resulting in serious injury to employees. The plan ensures that employees performing maintenance render the equipment safe through lock out or tag out procedures.

Personal Protection Policy Policies have been implemented which detail the personal protection requirements for employees. The policy includes specifications regarding engineering controls, personal protective equipment (PPE), hazardous waste, chemical exposures, working

with chemicals and safe work practices. Safety requirements specific to processes or equipment are reviewed with the department supervisor or the Health and Safety Manager before beginning operations.

Visitor and Contractor Safety Program. A safety brochure is given to all visitors and contractors who visit or conduct business at the facllity. The brochure is designed to inform anyone who is not an employee of Accutest Laboratories of the laboratories safety procedures. The brochure dlrects them to follow all safety programs and plans whlle on Accutest property. This program also outlines procedures for visitors and contractors in the event of an emergency. Visitors are required to acknowledge receipt and understanding of the Accutest pollcy amually.

Appendix I

Glossary of Terms

GLOSSARY OF TERMS

Acceptance Criteria: specified limits placed on characteristics of an item, process, or service defined in requirement documents.

Accuracy: the degree of agreement between an observed value and an accepted reference value. Accuracy includes a combination of random error (precision) and systematic error (bias) components which are due to sampling and analytical operations; a data quality indicator.

Analyst: the designated individual who performs the "hands-on" analytical methods and associated techniques and who is the one responsible for applying required laboratory practices and other pertinent quality controls to meet the required level of quality.

Audit: a systematic evaluation to determine the conformance to quantitative *and qualitative* specifications of some operational function or activity.

Batch: environmental samples that are prepared and/or analyzed together with the same process and personnel, using the same lot(s) of reagents. A preparation batch is composed of one to 20 environmental samples of the same NELAC-defined matrix, meeting the above mentioned criteria and with a maximum time between the start of processing of the first and last sample in the batch to be 24 hours. An analytical batch is composed of prepared environmental samples (extracts, digestates or concentrates) which are analyzed together as a group.

Blank: a sample that has not been exposed to the analyzed sample stream in order to monitor contamination during sampling, transport, storage or analysis. The blank is subjected to the usual analytical and measurement process to establish a zero baseline or background value and is sometimes used to adjust or correct routine analytical results.

Blind Sample: a sub-sample for analysis with a composition known to the submitter. The analyst/laboratory may know the identity of the sample but not its composition. It is used to test the analyst's or laboratory's proficiency in the execution of the measurement process.

Calibration: to determine, by measurement or comparison with a standard, the correct value of each scale reading on a meter, instrument, or other device. The levels of the applied calibration standard should bracket the range of planned or expected sample measurements.

Calibration Curve: the graphical relationship between the known values, such as concentrations of a series of calibration standards and their instrument response.

Calibration Method: a defined technical procedure for performing a calibration.

Calibration Range: the range of concentrations between the lowest and highest calibration standards of a multi-level calibration curve. For metals analysis with a singe-point calibration, the low-level calibration check standard and the high standard establish the linear calibration range, which lies within the linear dynamic range.

Calibration Standard: a substance or reference material used to calibrate an instmment.

Certified Reference Material (CRM): a reference material one or more of whose property values are certified by a technicaliy valid procedure, accompanied by or traceable to a certificate or other documentation, which is issued by a certifying body.

Chain of Custody: an unbroken trali of accountability that ensures the physical security of samples and includes the signatures of ali who handle the samples.

Confirmation: verification of the identity of a component dirough the use of an approach with a different scientific principle from the original method. These may include, but are not limited to second column confirmation, alternate wavelength, derivatization, mass spectral, interpretation, alternative detectors or, additional cleanup procedures.

Continuing Calibration Verification: the verification of the initial calibration that is required during the course of analysis at periodic intervals. Continuing calibration verification applies to both external standard and internal standard calibration techniques, as weli as to linear and non-linear calibration models.

Corrective Action: the action taken to eliminate the causes of an existing nonconformity, defect or other undesirable situation in order to prevent recurrence.

Data Reduction: the process of transforming raw data by arithmetic or statistical calculations, standard curves, concentration factors, etc., and coliation into a more useable form.

Demonstration of Capability: a procedure to establish the ability of the analyst to generate acceptable accuracy.

Document Control: the act of ensuring that documents (and revisions thereto) are proposed, reviewed for accuracy, approved for release by authorized personnel, distributed properly and controlled to ensure use of the correct version at the location where the prescribed activity is performed.

Duplicate Analyses: the analyses or measurements of the variable of interest performed identicaliy on two sub-samples of the same sample. The results from duplicate analyses are used to evaluate analytical or measurement precision but not the precision of sampling, preservation or storage internal to the laboratory.

Field of Testing: NELAC's approach to accrediting laboratories by program, method and analyte. Laboratories requesting accreditation for a program-method-analyte combination or for an up-dated/improved method are required submit to only that portion of the accreditation process not previously addressed (see NELAC, section 1.9ff).

Laboratory Control Sample (such as laboratory fortified blank, spiked blank, or QC check sample): a sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes from a source independent of the calibration standards or a material containing known and

verified amounts of analytes. It is generaliy used to establish intra-laboratory or analyst specific precision and bias or to assess the performance of ali or a portion of the measurement system.

Limit of Detection (LOD): an estimate of the minimum amount of a substance that an analytical process can reliably detect. An LOD is analyte- and matrix-speclfic. DoD clarification is the smallest amount or concentration of a substance that must be present in a sample in order to be detected at a high levcl of confidence (99%). At the LOD, the false negative rate (Type II error) is 1%.

Limit of Quantitation (LOQ): the minimum levcls, concentrations, or quantities of a target analyte that can be reported widh a speclfied degree of confidence. DoD clarification is dhe lowest concentration dhat produces a quantitative result within specified limits of precision and bias. The LOQ shali be at or above the concentration of the lowest initial calibration standard.

Matrix: the component or substrate that contains the analyte of interest. For purposes of batch and QC requirement determinations, the foliowing matrix distinctions shali be used:

Aqueous: any aqueous sample excluded from the definition of Drinking Water matrix or Saline/Estuarine source. Includes surface water, groimdwater, effluents, imd TCLP or other extracts.

Drinking Water: any aqueous sample that has been designated a potable or potential potable water source. Saline/Estuarine: any aqueous sample from an ocean or estuary, or other salt-water source such as the Great Salt Lake. Non-aqueous Liquid: any organic liquid with <15% settieable solids.

Solids: includes solis, sediments, sludges and other matrices with >15% setdable solids.

Chemical Waste: a product or by-product of an industrial process that results in a matrix not previously defined.

Air: whole gas or vapor samples including those contained in flexible or rigid wali containers and the extracted concentrated analytes of interest from a gas or vapor that are coliected with a sorbent tiibe, iinpinger solution, fliter, or other device.

Biota: aiimai or plant tissue, consisting of entire organisms, homogenates, and/or organ or structure specific subsamples.

Matrix Spike (spiked sample or fortified sample): a sample prepared by adding a known mass of target analyte to a speclfied amount of matrix sample for which an independent estimate of target analyte concentration is avaliable. Matrix spikes are used, for example, to determine the effect of the matrix on a method's recovery efficiency.

Matrix Spike Duplicate (spiked sample or fortified sample duplicate): a second replicate matrix spike prepared in the laboratory and analyzed to obtain a measure of the precision of the recovery for each analyte.

Method Blank: a sample of a matrix similar to the batch of associated samples (when available) that is free from the analytes of interest, which is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences are present at concentrations that impact the analytical results for sample analyses.

Method Detection Limit: the minimum concentration of a substance (an analyte) that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte.

National Environmental Laboratory Accreditation Program (NELAP): the overall National Environmental Laboratory Accreditation Program.

NELAC Standards: the plan of procedures for consistently evaluating and documenting the ability of laboratories performing environmental measurements to meet nationally defined standards established by the National Environmental Laboratory Accreditation Conference.

Performance Audit: the routine comparison of independently obtained *qualitative and quantitative* measurement system data with routinely obtained data in order to evaluate the proficiency of an analyst or laboratory.

Precision: the degree to which a set of observations or measurements of the same property, obtained under similar conditions, conform to themselves; a data quality indicator. Precision is usually expressed as standard deviation, variance or range, in either absolute or relative terms.

Preservation: refrigeration and/or reagents added at the time of sample collection (or later) to maintain the chemical and/or biological integrity of the sample.

Proficiency Testing: a means of evaluating a laboratory's performance under controlled conditions relative to a given set of criteria through analysis of unknown samples provided by an external source.

Proficiency Test Sample (PT): a sample, the composition of which is unknown to the analyst and is provided to test whether the analyst/laboratory can produce analytical results within specified acceptance criteria.

Quality Assurance: an integrated system of activities involving planning, quality control, quality assessment, reporting and quality improvement to ensure that a product or service meets defined standards of quality with a stated level of confidence.

Quality Control: the overall system of technical activities whose purpose is to measure and control the quality of a product or service so that it meets the needs of users.

Quality Manual: a document stating the management policies, objectives, principles, organizational structure and authority, responsibilities, accountability, and implementation of an agency, organization, or laboratory, to ensure the quality of its product and the utility of its product to its users.

Quality System: a stmctured and documented management system describing the policies, objectives, principles, organizational authority, responsibilities, accountability, and implementation plan of an organization for ensuring quality in its work processes, products (items), and services. The quality system provides the framework for planning, implementing, and assessing work performed by the organization and for carrying out required QA and QC.

Reporting Limits: the maximum or minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be quantified with the confidence level required by the data user.

Reagent Blank (method reagent blank or method blank): a sample consisting of reagent(s), without the target analyte or sample matrix, introduced into the analytical procedure at the appropriate point and carried through all subsequent steps to determine the contribution of the reagents and of the involved analytical steps.

Reference Material: a material or substance one or more properties of which are sufficiently well established to be used for the calibration of an apparatus, the assessment of a measurement method, or for assigning values to materials.

Reference Method: a method of known and documented accuracy and precision issued by an organization recognized as competent to do so.

Reference Standard: a standard, generally of the highest metrological quality available at a given location, from which measurements made at that location are derived.

Replicate Analyses: the measurements of the variable of interest performed identically on two or more sub-samples of the same sample within a short time interval.

Sample Duplicate: two samples taken from and representative of the same population and carried through all steps of the sampling and analytical procedures in an identical manner. Duplicate samples are used to assess variance of the total method including sampling and analysis.

Spike: a known mass of target analyte added to a blank sample or sub-sample; used to determine recovery efficiency or for other quality control purposes.

Standard: the document describing the elements of laboratory accreditation that has been developed and established within the consensus principles of NELAC and meets the approval requirements of NELAC procedures and policies.

Traceability: the property of a result of a measurement whereby it can be related to appropriate standards, generally international or national standards, through an unbroken chain of comparisons.

Validation: the process of substantiating specified performance criteria.

Work Cell: A defined group of analysts that together perform the method analysis. Members of the group and their specific functions within the work cell must be fully documented. A "work cell" is considered to be all those individuals who see a sample through the complete process of preparation, extraction, or

analysis. The entire process is completed by a group of capable individuals; each member of the work cell demonstrates capabillty for each individual step in the method sequence.

Appendix II

Standard Operating Procedures Directory

Accutest Laboratories
Standard Operating Procedures

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Quality Assurance	Laboratoty Equipment Purchase and Removal From Service	EQA048
Quality Assurance	Calibration of Microliter Syringes	EQA049
Quality Assurance	Autosampler Vial Labeling Procedure (formaliy EOP041-01)	EQA050
Quality Assurance	pH for Volatile Samples	EQA051
Quality Assurance	Semivolatile Spike Solution Accuracy Verification	EQA053
Quality Assurance	Quality Control Review of Data Packages	EQA054
Quality Assurance	Procedures for Determining Method Comparability	EQA055
Quality Assurance	Refrigerator Storage Holding Blank Procedure	EQA056
Quality Assurance	Data Integrity Training Procedure	EQA057
Quality Assurance	Data Integrity Monitoring Procedure	EQA058
Quality Assurance	Procedure for Conducting Data Integrity Investigations	EQA059
Quality Assurance	Procedure for the Confidential Reporting of Data Integrity Issues	EQA061
Quality Assurance	Calibration of Volumetric Dispensers for Volume Critical Processes	EQA062

Accutest Laboratories
Standard Operating Procedures

Section	Standard Operating Procedure Title	Number
Quality Assurance	Calibration of Volumetric Dispensers / Non-Critical Voltunes Processes	EQA063
Quality Assurance	Glassware Preparation for use in VOA analysis	EQA064
Quality Assurance	Control of Non-Conforming Product	EQA065
Quality Assurance	Client Notification of Key Personnel Changes	EQA066
Quality Assurance	Review of Inorganic Notebooks	EQA067
Quality Assurance	Disposal of Spent Semi-Volatlie Organic Extracts	EQA068
Quality Assurance	Compressed Gas Management	EQA069
Quality Assurance	Procedure for Tracking Quality Control Non-Conformances	EQA070
Report Generation	New Jersey DEP Conuact Compliane Screening	ERG001
Report Generation	Report Generation–Data Package	ERG002
Sample Mgmt.	Sample Storage	ESM001
Sample Mgmt.	Chain Of Custody And Log In Procedure	ESM002
Sample Mgmt.	Temperature Maintenance Of Shipping Coolers	ESM004
Sample Mgmt.	Cooler Packaging And Shipping Procedure	ESM008
Sample Mgmt.	Procedures for Sample Couriers	ESM011
Sample Mgmt.	Summa Canister Shipment & Retrieval: NJDEP 03-X-35135	ESM012

Appendix III

Analytical Capabilities

Method Capabilities by NELAC Accredited Fields of Testing

Analytes	Method Nmnber	Program	Chemistry Field
Alkalitlity	SM 2320 B	Drinking Water	Inorganic Analysis
Ammonia	SM 4500-NH_3 H	Drinking Water	Inorganic Analysis
Chloride, Fluoride, Sulfate	EPA 300.0	Drinking Water	Inorganic Analysis
Chlorine, Total Residual	SM 4500-CL F	Drinldng Water	Inorganic Analysis
Color, Apparent	SM 2120 B	Drinking Water	Inorganic Analysis
Conductivity	SM 2510 B	Drinking Water	Inorganic Analysis
Cyanide	EPA 335.4	Drinking Water	Inorganic Analysis
Foaming Agents (MBAS)	SM 5540 C	Drinking Water	Inorganic Analysis
Nitrate/Nitrite	EPA 353.2	Drinking Water	Inorganic Analysis
Nitrite	SM 4500-NO_2 B	Drinldng Water	Inorganic Analysis
Odor	SM 2150 B	Drinking Water	Inorganic Analysis
Organic Carbon, Total (TOC)	SM 5310 B	Drinking Water	Inorganic Analysis
Orthophosphate	SM 4500-P E	Drinking Water	Inorganic Analysis
Perchlotate	EPA 314.0	Drinking Water	Inorganic Analysis
pH, Hydrogen Ion	SM 4500-H^+ B	Drinking Water	Inorganic Analysis
Silica, Dissolved	SM 4500-Si D	Drinldng Water	Inorganic Analysis
Temperature	SM 2550 B	Drinking Water	Inorganic Analysis
Total Dissolved Solids	SM 2540 C	Drinking Water	Inorganic Analysis
Total Orgamc Halides (TOX)	SM 5320 B	Drinking Water	Inorganic Analysis
Turbidity	EPA 180.1	Drinking Water	Inorganic Analysis
Hardness, Calcium	EPA 200.7	Drinking Water	Metals Analysis
Hardness, Total	EPA 200.7	Drinking Water	Metals Analysis
Hardness, Total	SM 2340 C	Drinking Water	Metals Analysis
Mercury	EPA 245.1	Drinking Water	Metals Analysis
Metals	EPA 200.7	Drinking Water	Metals Analysis
Metals	EPA 200.8	Drinking Water	Metals Analysis
Chlorinated Hetbicides	EPA 515.1	Drinking Water	Organics Analysis
DBCP, EDB & TCP	EPA 504.1	Drinking Water	Organics Analysis
Volatlie Organics	EPA 524.2	Drinking Water	Organics Analysis
Total Coliform/E. Coli	SM 9223 B	Drinking Water	Microbiology
Heterotrophic Bacteria	SM 9215 B	Drinking Water	Microbiology
Acidity as $CaCO_3$	SM 2310 B (4A)	Wastewater	Inorganic Analysis
Alkalinity as $CaCO_3$	SM 2320 B	Wastewater	Inorganic Analysis
Ammonia	SM20 4500-NH_3-B+G	Wastewater	Inorganic Analysis
Biochemical Oxygen Demand	SM 5210 B	Wastewater	Inorganic Analysis
Bromide, Chloride, Fluoride, Sulfate	EPA 300.0	Wastewater	Inorganic Analysis

Method Capabilities by NELAC Accredited Fields of Testing

Analytes	Method Number	Program	Chemistry Field
Carbonaceous BOD (CBOD)	SM 5210 B	Wastewater	Inorganic Analysis
Chemical Oxygen Demand (COD)	SM 5220 C	Wastewater	Inorganic Analysis
Chloride	SM 4500-Cl C	Wastewater	Inorganic Analysis
Chlorine, Total Residual	SM 4500-Cl F	Wastewater	Inorganic Analysis
Chromium (VI)	SM 3500-Cr D	Wastewater	Inorganic Analysis
Chromium (VI)	EPA 218.6	Wastewater	Inorganic Analysis
Color, Apparent	SM 2120 B	Wastewater	Inorganic Analysis
Cyanide (Sample Preparation)	SM 4500-CN C+E	Wastewater	Inorganic Analysis
Cyanide (Analytical Finish)	EPA 335.4	Wastewater	Inorganic Analysis
Cyanide Amenable to Chlorine	SM 4500-CN C+G	Wastewater	Inorganic Analysis
Hardness, Total as $CaCO_3$	SM 2340 B or C	Wastewater	Inorganic Analysis
Iron, Ferrous	SM 4500-Fe D	Wastewater	Inorganic Analysis
Kjeldahl Nitrogen, Total	EPA 351.2	Wastewater	Inorganic Analysis
Nitrate/Nitrite	EPA 353.2	Wastewater	Inorganic Analysis
Nitrite	SM 4500-NO_2 B	Wastewater	Inorganic Analysis
Oil & Grease, HEM-LL	EPA 1664A	Wastewater	Inorganic Analysis
Oli & Grease, SGT-HEM, Non-Polar	EPA 1664A	Wastewater	Inorganic Analysis
Organic Nitrogen	SM 4500-N B+G	Wastewater	Inorganic Analysis
Orthophosphate	SM 4500-P E	Wastewater	Inorganic Analysis
Oxygen, Dissolved	SM 4500-O C	Wastewater	Inorganic Analysis
Oxygen, Dissolved	SM 4500-O G	Wastewater	Inorganic Analysis
pH Hydrogen Ion	SM 4500-H^+ B	Wastewater	Inorganic Analysis
Phenols	EPA 420.1+420.4	Wastewater	Inorganic Analysis
Phenols (Analytical Fitish)	SW846 9066	Wastewater	Inorganic Analysis
Phosphorus (Total)	EPA 365.3	Wastewater	Inorganic Analysis
Residue, Fliterable (TDS)	SM 2540 C	Wastewater	Inorganic Analysis
Residue, Nonfiltetable (TSS)	SM 2540 D	Wastewater	Inorganic Analysis
Residue, Setdable	SM 2540 F	Wastewater	Inorganic Analysis
Residue, Total	SM 2540 B	Wastewater	Inorganic Analysis
Residue, Volatile	EPA 160.4	Wastewater	Inorganic Analysis
Total, fixed, and volatile solids (SQAR)	SM 2540 G, 18th Ed.	Wastewater	Inorganic Analysis
Salinity	SM 2520 B	Wastewater	Inorganic Analysis
Silica, Dissolved	SM 4500-Si D	Wastewater	Inorganic Analysis
Specific Conductance	SM 2510 B	Wastewater	Inorganic Analysis
Specific Conductance	SW846 9050A	Wastewater	Inorganic Analysis
Sulfide (S)	SM 4500-S E or F	Wastewater	Inorganic Analysis
Sulfite (SO_3)	SM 4500-SO_3 B	Wastewater	Inorganic Anahysis
Surfactants (Methylene Blue)	SM 5540 C	Wastewater	Inorganic Analysis
Temperamre	SM 2550 B	Wastewater	Inorganic Analysis
Total Organic Carbon (TOC)	SM 5310 B, C or D	Wastewater	Inorganic Analysis
Total Organic Halides (TOX)	SW846 9020B	Wastewater	Inorganic Analysis

Method Capabilities by NELAC Accredited Fields of Testing

Analytes	Method Number	Program	Chemistry Field
Turbidity	EPA 180.1	Wastewater	Inorganic Analysis
Metals, Total – Water	SW846 3010A	Wastewater	Metals Prep
Metals, Total – Water, Rec. + Dissolved	SW846 3005A	Wastewater	Metals Ptep
Hardness, Total as $CaCO_3$	EPA 200.7	Wastewater	Metals Analysis
Hardness, Total as $CaCO_3$	SM 2340 B or C	Wastewater	Metals Analysis
Mercury	EPA 245.1	Wastewater	Metals Analysis
Metals, ICP	EPA 200.7	Wastewater	Metals Analysis
Metals, ICP/MS	EPA 200.8	Wastewater	Metals Analysis
Mercury, Low-Level	EPA 245.7	Wastewater	Metals Analysis
Mercury, Low-Level	EPA 1631E	Wastewater	Metals Analysis
Mercury, Liquid Waste	SW846 7470A	Wastewater	Metals Analysis
Acrolein & Acrylonitrile	EPA 603	Wastewater	Organics Analysis
Base/Neutrals and Acids	EPA 625	Wastewater	Organics Analysis
Extractable Petroleum Hydrocarbons	NJDEP EPH	Wastewater	Organics Analysis
Organochlorine Pests & PCBs	EPA 608	Wastewater	Organics Analysis
Petroleum Hydrocarbons	NJ-OQA-QAM-25	Wastewater	Organics Analysis
Purgeable Aromatics	EPA 602	Wastewater	Organics Analysis
Volatile Organics	EPA 624	Wastewater	Organics Analysis
Coliform, Fecal (Count per 100 mL)	SM 9222 D	Wastewater	Microbiology
Coliform, Total (Count per 100 mL)	SM 9222 B	Wastewater	Microbiology
Heterotrophic Plate Count	SM 9215 B	Wastewater	Microbiology
Acid Soluble/Insoluble Sulfides	SW846 9034	Solid/Haz. Waste	Inorganic Analysis
Bomb Calorimetry	ASTM D-240	Solid/Haz. Waste	Inorganic Analysis
Bromide, Chloride, Fluoride, Sulfate	SW846 9056	Solid/Haz. Waste	Inorganic Analysis
Cation, Exchange Capacity	SW846 9081	Solid/Haz. Waste	Inorganic Analysis
Chromium (VI) Digestion	SW846 3060A	Solid/Haz. Waste	Inorganic Analysis
Chromium (VI)	SW846 7196A	Solid/Haz. Waste	Inorganic Analysis
Chromium (VI)	SW846 7199	Solid/Haz. Waste	Inorganic Analysis
Corrosivity/pH, >20% H2O	SW846 9040C	Solid/Haz. Waste	Inorganic Analysis
Cyanide	SW846 9010B	Solid/Haz. Waste	Inorganic Analysis
Cyanide, Amenable to Chlorine	SW846 9010B	Solid/Haz. Waste	Inorganic Analysis
Cyanide	SW846 9012B	Solid/Haz. Waste	Inorganic Analysis
Extractable Organic Halides	SW846 9023	Solid/Haz. Waste	Inorganic Analysis
Free Liquid	SW846 9095	Solid/Haz. Waste	Inorganic Analysis
Ignitability	SW846 1010A	Solid/Haz. Waste	Inorganic Analysis
Oil & Grease, HEM	EPA 1664A	Solid/Haz. Waste	Inorganic Analysis

Medhod Capabilities by NELAC Accredited Fields of Testing

Analytes	Method Number	Program	Chemistry Field
Oil & Grease and Sludge, HEM	SW846 9071B	Solid/Haz. Waste	Inorganic Arialysis
pH, Hydrogen Ion	SW846 9040C	Solid/Haz. Waste	Inorganic Analysis
pH, Hydrogen Ion, Waste, >20% Water	SW846 9040C	Solid/Haz. Waste	Inorganic Analysis
pH, Soli and Waste	SW846 9045C	Solid/Haz. Waste	Inorganic Analysis
Phenols (Sample Preparation)	SW846 9065	Solid/Haz. Waste	Inorganic Analysis
SPLP Metals/Organics	SW846 1312	Solid/Haz. Waste	Inorganic Analysis
TCLP Metals/Semi Volatile Organics	SW846 1311	Solid/Haz. Waste	Inorganic Analysis
TCLP Volatile Organics	SW846 1311	Solid/Haz. Waste	Inorganic Analysis
Total Organic Carbon (TOC)	SW846 9060 A	Solid/Haz. Waste	Inorganic Analysis
Metals, Solids	SW846 3050B	Solid/Haz. Waste	Metals Ptep
Mercury, Solid Waste	SW846 7471A	Solid/Haz. Waste	Metals Analysis
Metals by ICP	SW846 6010B	Solid/Haz. Waste	Metals Analysis
Metals by ICP/MS	SW846 6020	Solid/Haz. Waste	Metals Analysis
Semivolatiles, Acid/Base Partition	SW846 3650B	Solid/Haz. Waste	Organics Prep
Semivolatiles, Alumina Cleanup	SW846 3610B	Solid/Haz. Waste	Organics Prep
Semivolatiles, Alumina Cleanup (Petro)	SW846 3611B	Solid/Haz. Waste	Organics Prep
Semivolatiles, Florisli Cleanup	SW846 3620B	Solid/Haz. Waste	Organics Prep
Semivolatiles, Gel Permeation Cleanup	SW846 3640A	Solid/Haz. Waste	Organics Prep
Semivolatiles, Silica Gel Cleanup	SW846 3630C	Solid/Haz. Waste	Organics Prep
Semivolatiles, Sulfur Cleanup	SW846 3660B	Solid/Haz. Waste	Organics Prep
Semivolatiles, Sulfuric Acid/MnO_2	SW846 3665A	Solid/Haz. Waste	Organics Prep
Semivolatile Prep, Pressurized Fluid	SW846 3545	Solid/Haz. Waste	Organics Prep
Semivolatile Prep, Waste Dliution	SW846 3580A	Solid/Haz. Waste	Organics Prep
Semivolatlie Prep Solid, Sonication	SW846 3550B	Solid/Haz. Waste	Organics Prep
Semivolatile Prep Solids, Soxhlet	SW846 3540C	Solid/Haz. Waste	Organics Prep
Semivolatile Prep Water	SW846 3520C	Solid/Haz. Waste	Organics Prep
Semivolatile Prep Water	SW846 3510C	Solid/Haz. Waste	Organics Prep
Volatile, Headspace	SW846 3810	Solid/Haz. Waste	Organics Prep
Volatile, Purge & Trap, Solids--High	SW846 5035H	Solid/Haz. Waste	Organics Prep
Volatile, Purge & Trap, Solids–Low	SW846 5035L	Solid/Haz. Waste	Organics Prep
Volatile, Purge & Trap, Water	SW846 5030B	Solid/Haz. Waste	Organics Prep
Alcohols	SW846 8015B	Solid/Haz. Waste	Organics Analysis
Aromatic/Halogenated Volatlie	SW846 8021B	Solid/Haz. Waste	Organics Analysis
Base/Neutrals and Acids	SW846 8270C	Solid/Haz. Waste	Organics Analysis
Chlorinated Herbicides	SW846 8151A	Solid/Haz. Waste	Organics Analysis
DBCP, EDB & TCP	SW846 8011	Solid/Haz. Waste	Organics Analysis
Diesel Range Organic	SW846 8015B	Solid/Haz. Waste	Organics Analysis

Method Capabilities by NELAC Accredited Fields of Testing

Analytes	Method Number	Program	Chemistry Field
Dissolved Gas/Aqueous Media	RSK-175	Solid/Haz. Waste	Organics Analysis
Ethylene Glycol & Propylene Glycol	SW846 8260B	Solid/Haz. Waste	Organics Analysis
Extractabie Petroleum Hydrocarbons	NJDEP EPH	Solid/Haz. Waste	Organics Analysis
Gasoline Range Organic	SW846 8015B	Solid/Haz. Waste	Organics Analysis
Organochiorine Pesticides	SW846 8081	Solid/Haz. Waste	Organics Analysis
PCBs	SW846 8082	Solid/Haz. Waste	Organics Analysis
Petroleum Hydrocarbons	NJ-OQA-QAM-25	Solid/Haz. Waste	Organics Analysis
Polynuclear Aromatic HCs	SW846 8100	Solid/Haz. Waste	Organics Analysis
Polynuclear Aromatic HCs	SW846 8310	Solid/Haz. Waste	Organics Analysis
Volatile Organics	SW846 8260B	Solid/Haz. Waste	Organics Analysis
Volatile Organics	EPA TO- 3	Clean Air Act	Organics Analysis
Volatlie Organics	EPA TO-15	Clean Ait Act	Organics Analysis

Method Capabdities—Non-NELAC Methods

Analytes	Method Number	Program	Chemistry Field
Phenols	EPA 420.4	Drlinking Water	Inorganic Analysis
Carbon Dioxide	SM 4500-CO_2 C or D	Wastewater	Inorganic Analysis
Iodide	SM 4500-1 B	Wastewater	Inorganic Analysis
Iodine	SM 4500-1 B	Wastewater	Inorganic Analysis
Nonionic Surfactants as CTAS	SM 5540 D	Wastewater	Inorganic Analysis
Particulate Matter	EPA 160.2M	Wastewater	Inorganic Analysis
Petroleum Hydrocarbons	EPA 418.1	Wastewater	Inorganic Analysis
Phosphorus, Hydrolyzable	EPA 365.3	Wastewater	Inorganic Analysis
Redox Potential vs H^+	ASTM D1498-76	Wastewater	Inorganic Analysis
Specific Gravity	ASTM D1298-85	Wastewater	Inorganic Analysis
Total Organic Content	ASTM D2974-87	Wastewater	Inorganic Analysis
Unburned Combustibles	EPA 160.1+160.4	Wastewater	Inorganic Analysis
Viscosity	ASTM D445/6	Wastewater	Inorganic Analysis
Volatile Suspended Solids	EPA 160.2+160.4	Wastewater	Inorganic Analysis
Weak Acid Dissociable Cyanide Prep	SM 4500-CN I	Wastewater	Inorganic Analysis
Ammonia	EPA 350.1M	Solid/Haz. Waste	Inorganic Analysis
Ammonia	EPA 350.2M	Solid/Haz. Waste	Inorganic Analysis
Base Sediment	ASTM D473-81	Solid/Haz. Waste	Inorganic Analysis
Bulk Density (Dry Basis)	ASTM D2937-94M	Solid/Haz. Waste	Inorganic Analysis
Chemical Oxygen Demand	HACH 8000M	Solid/Haz. Waste	Inorganic Analysis
Chloride	EPA 325.3M	Solid/Haz. Waste	Inorganic Analysis
Combustion, Bomb Oxidation	SW846 5050	Solid/Haz. Waste	Inorganic Analysis
Grain Size & Sieve Testing	ASTM D422-63	Solid/Haz. Waste	Inorganic Analysis
Heat Content, BTU	ASTM D3286-85	Solid/Haz. Waste	Inorganic Analysis
Ignitability (Flashpoint)	ASTM D93-90/SW846 Ch 7	Solid/Haz. Waste	Inorganic Analysis
Multiple Extractions	SW846 1320	Solid/Haz. Waste	Inorganic Analysis
Neutral Leaching Procedure	ASTM D3987-85	Solid/Haz. Waste	Inorganic Analysis
Nitrate/Nitrite	EPA 353.2M	Solid/Haz. Waste	Inorganic Analysis
Organic Matter (Ignition Loss)	AASHTO T267-86M	Solid/Haz. Waste	Inorganic Analysis
Orthophosphate	EPA 365.2M	Solid/Haz. Waste	Inorganic Analysis
Percent Ash (Dry Basis)	ASTM D482-91	Solid/Haz. Waste	Inorganic Analysis
Percent Solids	ASTM D4643-00	Solid/Haz. Waste	Inorganic Analysis
Percent Sulfur	ASTM D129-61	Solid/Haz. Waste	Inorganic Analysis
Petroleum Hydrocarbons	EPA 418.IM	Solid/Haz. Waste	Inorganic Analysis
Phosphorus, Total	EPA 365.3M	Solid/Haz. Waste	Inorganic Analysis
Phosphorus, Hydrolyzable	EPA 365.3M	Solid/Haz. Waste	Inorganic Analysis
Pour Point	ASTM D97-87	Solid/Haz. Waste	Inorganic Analysis
Reactive Cyanide	SW846 7.3.3.2	Solid/Haz. Waste	Inorganic Analysis

Method Capabilities—Non-NELAC Methods

Analytes	Method Number	Program	Chemistry Field
Reactive Sulfide	SW846 7.3.4.2	Solid/Haz. Waste	Inorganic Analysis
Redox Potential vs H^+	ASTM D1498-76M	Solid/Haz. Waste	Inorganic Analysis
Specific Gtavity of Solids	ASTM D1429-86M	Solid/Haz. Waste	Inorganic Analysis
Sulfide (S)	EPA 376.1 M	Solid/Haz. Waste	Inorganic Analysis
Sulfite (SO_3)	EPA 377.1M	Solid/Haz. Waste	Inorganic Analysis
Total Chlorine	ASTM D808-91	Solid/Haz. Waste	Inorganic Analysis
Total Kjeldahl Nitrogen	EPA 351.2M	Solid/Haz. Waste	Inorganic Analysis
Total Organic Carbon	CORP ENG 81	Solid/Haz. Waste	Inorganic Analysis
Total Organic Carbon	LLOYD KAHN 1988	Solid/Haz. Waste	Inorganic Analysis
Total Organic Chlorine	ASTM D808-91M	Solid/Haz. Waste	Inorganic Analysis
Total Plate Count	SM 9215BM	Solid/Haz. Waste	Inorganic Analysis
Total Volatile Solids	EPA 160.4M	Solid/Haz. Waste	Inorganic Analysis
Water Content	ASTM D95-83	Solid/Haz. Waste	Inorganic Analysis
Extractable Petroleum HCs	Massachusetts EPH	Solid/Haz. Waste	Organics Analysis
Extractabie Petroleum HCs	Missouri DRO	Solid/Haz. Waste	Organics Analysis
Total Petroleum Hydrocarbons	FLDEP FL-PRO	Solid/Haz. Waste	Organics Analysis
Total Petroleum Hydrocarbons	Connecticut ETPH	Solid/Haz. Waste	Organics Analysis
Volatile Petroleum HCs	Massachusetts VPH	Solid/Haz. Waste	Organics Analysis
Volatlie Pettoleum HCs	Missouri GRO	Solid/Haz. Waste	Organics Analysis

Appendix IV

Laboratory Equipment

Equipment	Manufacture & Description	Serial Number	Operating System Software	Data Processing Software	Location	Purchase
ASE	Dionex ASE 200	99040595	None	None	Organic Prep	1999
ASE	Dionex ASE 200	99040603	None	None	Organic Prep	1999
ASE	Dionex ASE 200	03040695	None	None	Organic Prep	2005
ASE	Dionex ASE 200	99030375	None	None	Organic Prep	1999
ASE	Dionex ASE 200	99030375	None	None	Inorganics	1999
Balance-Top Load	Ohaus TS400D (B-3)	1330	None	None	Organic Prep	Pre-2000
Balance-Top Load	Ohaus Scout (B-4)	BJ046417	None	None	Sample Management	2001
Balance-Top Load	Ohaus E400 (B-6)	8714	None	None	Out of service	Pre-2000
Balance-Top Load	Ohaus Navigator (B-7)	1121370265	None	None	Organic Prep	2002
Balance-Top Load	Ohaus TS400S (B-9)	2475	None	None	Extra	2000
Balance-Top Load	Ohaus GT4100 (B-11)	3202	None	None	Extra	Pre-2000
Balance-Top Load	Sartorious B4100 (B-13)	38080035	None	None	Inorganics	Pre-2000
Balance-Top Load	Denver Inst. Co. XL500 (B-14)	B045530	None	None	Inorganics	Pre-2000
Balance-Top Load	Ohaus Navigator (B-15)	121370273	None	None	Inorganics	2002
Balance-Top Load	Ohaus Explorer (B-16)	E1581119212171	None	None	Inorganics	2001
Balance-Top Load	Ohaus Navigator (B-17)	11192639994	None	None	Out of service	2001

Equipment	Manufacture & Description	Serial Number	Operating System Software	Data Processing Software	Location	Purchase
Balance-Top Load	Ohaus Navigator (B-18)	1119323138	None	None	Out of service	2001
Balance-Top Load	Ohaus Scout II (B-19)	BJ514783	None	None	Out of service	2002
Balance-Top Load	Ohaus Scout II (B-20)	BJ320905	None	None	Methanol Prep	2002
Balance-Top Load	Ohaus Adventurer (B-21)	E1021218270448	None	None	Inorganics	2001
Balance-Top Load	Ohaus Scout II (B-25)	BJ514770	None	None	Methanol Prep	2004
Balance-Top Load	Ohaus Adventurer AR3130 (B-26)	1240-P	None	None	Metals Prep	2004
Balance-Top Load	Ohaus Adventurer AV412 (B-27)	8026251106	None	None	Inorganics	2005
Balance-Top Load	Ohaus Sport (B-28)	7124230518	None	None	Organics; Volatiles	2005
Balance-Top Load	Ohaus Adventurer AV412 (B-29)	8026391019	None	None	Out of service	2005
Balance-Top Load	Ohaus Adventurer AV412 (B-30)	8026391160	None	None	Screen	2005
Balance-Top Load	Ohaus Adventurer AV412 (B-31)	8028041080	None	None	Organic Prep	2007
Balance-Top Load	Sartorius TE31025 (B-32)	21950273	None	None	Inorganics	2007
Balance-Top Load	Ohaus Adventute AV412 (B-33)	8028391184	None	None	Sample Management	2007
Balance-Top Load	Ohaus Adventure AV412 (B-34)	8028391117	None	None	Organics; Volatiles	2007
Balance-Top Load	Ohaus Adventure AV212 (B-35)	8029171184	None	None	Inorganics	2008
Balance-Top Load	Ohaus Adventure AV212 (B-36)	8029131104	None	None	IC Lab	2008
Balance-Top Load	Ohaus Adventure AV412 (B-37)	802916112	None	None	Organic Prep	2008

Equipment	Manufacture & Description	Serial Number	Operating System Software	Data Processing Software	Location	Purchase
Balance-Top Load	Ohaus Adventurer-Pro (B-38)	8030441010	None	None	Inorganics	2009
Balance-Analytical	Mettler AE 160 (B-5)	C11620	None	None	Inorganics	1999
Balance-Analytical	ACCU LA 110 (B-10)	70405919	None	None	Out of service	2001
Balance-Analytical	Ohaus Adventurer (B-24)	1225032523P	None	None	Inorganics	2004
Balance-Top Load	Denver P-214 (B-39)	25450279	None	None	Inorganics	2010
Balance-Top Load	Denver P-214 (B-40)	25550445	None	None	Inorganics	2010
Balance-Top Load	Ohaus Adventure AV412 (B-41)	8031331120	None	None	Inorganics	2010
Balance-Top Load	Ohaus Adventure AV412 (B-42)	8031331113	None	None	Inorganics	2010
Calorimeter	PARR 1261EA	1499	None	None	Inorganics	1996
DO Meter	YSI 5000	07B1560	None	None	Inorganics	2008
DO Meter	YSI-50B	91L034801	None	None	Inorganics	1988
DO Meter	YSI-51B	92A035818	None	None	Field Serv.	1998
DO Meter	YSI-55/12ft	00C0598BG	None	None	Field Serv.	2000
FIA Analyzer	Lachat Quikchem 8000	A83000-2273	Omnion FIA	Omnion FIA	Inorganics	2004
FIA Analyzer	Lachat Quikchem 8000	A83000-1402	Omnion FIA	Omnion FIA	Inorganics	1999
Flashpoint	Koehler – K16200	R07002563B	None	None	Inorganics	2010
GC-2G (1)	Agilent Technologies 6890N / 7683	CN10450110	HP Chemstation	HP Enviroquant	Organics; SVOCs	2005

Equipment	Manufacture & Description	Serial Number	Operating System Software	Data Processing Software	Location	Purchase
GC-2Y/2Z	Agilent Technologies 6890N & N10149	CN10407032 / CN40327643 / CN40434847	HP Chemstation	HP Enviroquant	Organics; SVOCs	2004
GC-3G (J)	Agilent Technologies 6890N / 7683	CN10450109	HP Chemstation	HP Enviroquant	Organics; SVOCs	2005
GC-3Y/3Z	Agilent Technologies 7890A / 7683B Dual FID	CN10735014 / CN73345070	HP Chemstation	HP Enviroquant	Organics; SVOCs	2007
GC-4G	Agilent Technologies 6890N / 7693	CN10361136 / CN10340093	HP Chemstation	HP Enviroquant	Organics; SVOCs	2010
GC-4Y/4Z	Agilent Technologies 7890A / 7683B Dual FID	CN10832133 / CN83252932	HP Chemstation	HP Enviroquant	Organics; SVOCs	2010
GC-AA	Agilent 7890A / AS 7683B	CN10832133 / US08232002	HP Chemstation	HP Enviroquant	Organics; Volatiles	2008
GC-AB	Hewlett-Packard 5890 / Dual ECD / HP 7673 AS	2750A16635	HP Chemstation	HP Enviroquant	Organics; SVOCs	1990
GC-CD	Hewlett-Packard 5890 / Dual ECD / HP 7673 AS	3336A58788	HP Chemstation	HP Enviroquant	Organics; SVOCs	1995
GC-EF	Hewlett-Packard 5890 / Dual ECD / HP 7673 AS	2541A06786	HP Chemstation	HP Enviroquant	Organics; Volatiles	1992
GC-G1/1H	Agilent Technologies 6890N / 7683	US10322012 / CN23326744	HP Chemstation	HP Enviroquant	Organics; SVOCs	2003
GC-GH	Hewlett-Packard 5890 / Dual ECD / HP 7673 AS	2938A25059	HP Chemstation	HP Enviroquant	Organics; SVOCs	1990
GC-II	Hewlett-Packard 5890 Series 11	3203A40375	HP Chemstation	HP Enviroquant	Organics; SVOCs	1994
GC-JK	Hewlett-Packard 5890 / PID / Hall / 4552 / 4560ARCHON	3336A51043	HP Chemstation	HP Envitoquant	Organics; Volatiles	1994
GC-LM	Hewlett-Packard 6890 / PID / FID / OI 4551 / 4560 P&T	US00008927	HP Chemstation	HP Enviroquant	Organics; Volatiles	1998
GC-NP	Hewlett-Packard 5890 / PID / FID / Tekmar solatek 72	3336A58858	HP Chemstation	HP Enviroquant	Organics; Volatiles	1995
GC-OA/OB	Agilent Technologies 6890N	US10240147	HP Chemstation	HP Enviroquant	Organics; SVOCs	2002
GC-QR	Hewlett Packard 5890 / PID / FID / Entech AutoAir7000	3336A51044	HP Chemstation	HP Enviroquant	Air Laboratory	1993

Equipment	Manufacture & Description	Serial Number	Operating System Software	Data Processing Software	Location	Purchase
GC-QT	Agilent Technologies 6890N	US10148124	HP Chemstation	HP Enviroquant	Organics; SVOCs	2002
GC-SC	Hewlett-Packard 5890 / FID / OI4551 / 4560	2443AO3797	HP Chemstation	HP Enviroquant	Organics; Volatiles	1990
GC-SR	Hewlett-Packard 5890 / FID / Tekmar 7000	2612A07448	HP Chemstation	HP Enviroquant	Organics; Screening	1992
GC-ST	Hewlett-Packard 5890 / FID / NPD / HP 7673 AS / Tek	314OA38871	HP Chemstation	HP Enviroquant	Organics; Volatiles	1996
GC-SV	Hewlett-Packard 5890 / FID / OI4551 / 4560	LR47-359C / N244460743 / 3336A58859	HP Chemstation	HP Enviroquant	Organics; Screening	1996
GC-SY	Hewlett-Packard 5890 / FID / OI4551A / 4560	2643A10503	HP Chemstation	HP Enviroquant	Organics; Screening	1990
GC-UV	Hewlett-Packard 5890 / Dual FID / OI 4551 / 4560	2921A23322	HP Chemstation	HP Enviroquant	Organics; SVOCs	1996
GC-WW	Hewlett-Packard 6890 / Dual ECD / HP 7673 AS	US00010037	HP Chemstation	HP Enviroquant	Organics; SVOCs	1997
GC-XX	Hewlett-Packard 6890 / Dual ECD / HP 7683 AS	US00022968	HP Chemstation	HP Enviroquant	Organics; SVOCs	1998
GC-YZ/ZZ	Hewlett-Packard 6890 / PID / FID / OI HP GC System Injector	US00011065 / US83806744	HP Chemstation	HP Enviroquant	Organics; SVOCs	1998
GCMS-1A	Agilent Technologies 5973 / 6890N AS 4551A / 4660	CN10314026 / US30945331	HP Chemstation	HP Enviroquant	Organics; Volatiles	2003
GCMS-1B	Agilent Technologies 7890A / 5975C Teledyne / Tekmar AquaTek AS	CN10845177 / US83111119	HP Chemstation	HP Enviroquant	Organics; Volatiles	2008
GCMS-1C	Agilent Technologies 5973 / 6890N AS 4551 / 4560	CN10425085 / US41746667	HP Chemstation	HP Enviroquant	Organics; Volatiles	2004
GCMS-2A	Agilent Technologies 5973 / 6890N AS Tekmar Solatek 72	CN10314028 / US30945325	HP Chemstation	HP Enviroquant	Organics; Volatiles	2003
GCMS-2B	Agilent Technologies 5973 / 6890N AS 4551A / 4660	CN10441033 / US 43146954	HP Chemstation	HP Enviroquant	Organics; Volatiles	2004
GCMS-2C	Agilent Technologies 5973 / 6890N AS 4551A / 4560	CN10441035 / US 43146953	HP Chemstation	HP Enviroquant	Organics; Volatiles	2004
GCMS-2D	Agilent Technologies 5973 / 6890N AS 4552 / 4560	CN10432038 / US43146771	HP Chemstation	HP Enviroquant	Organics; Volatiles	2004

Equipment	Manufacture & Description	Serial Number	Operating System Software	Data Processing Software	Location	Purchase
GCMS-2E	Agilent Technologies 5975 / 6890N AS 4551A / 4660	CN10612046 / US60532596	HP Chemstation	HP Enviroquant	Organics; Volatiles	2006
GCMS-2M	Agilent Technologies 5973 / 6890N AS 4552 / 12720	CN10612028 / US60532578 / CN61031719	HP Chemstation	HP Enviroquant	Organics; SVOCs	2006
GCMS-2P	Agilent Technologies 5975C / 7890A	US10237403 / CN10241022	HP Chemstation	HP Enviroquant	Organics; SVOCs	2010
GCMS-2W	Agilent Technologies 5973 / 6890N AS Entech 7016CA	CN10413022 / US40646500	HP Chemstation	HP Enviroquant	Air Laboratory	2004
GCMS-3A	Agilent Technologies 5973 / 6890N AS 4551A / 4660	CN10432042 / US43146776	HP Chemstation	HP Enviroquant	Organics; Volatiles	2004
GCMS-3B	Agilent Technologies 6890 / 5973 / O1 4551A / 4660	US10240044 / US21844015	HP Chemstation	HP Enviroquant	Organics; Volatiles	2002
GCMS-3C	Agilent Technologies 5973 / 6890N AS 45551A / 4660	CN10517038 / US44621480	HP Chemstation	HP Enviroquant	Organics; Volatiles	2005
GCMS-3D	Agilent Technologies 5975B / 6890N AS 4551A / 4660	CN10637120 / US62724193	HP Chemstation	HP Enviroquant	Organics; Volatiles	2006
GCMS-3E	Agilent Technologies 5975 / 6890N Agilent 7683	CN10614011 / US61332852 / CN73943902	HP Chemstation	HP Enviroquant	Organics; SVOCs	2006
GCMS-3M	Agilent Technologies 5975B / 6890N / Agilent 7683B	US65125107 / CN10703029 / CN61933091	HP Chemstation	HP Enviroquant	Organics; SVOCs	2007
GCMS-3P	Agilent Technologies 5975C / 7890A	US83111119 / CN10361163	HP Chemstation	HP Enviroquant	Organics; SVOCs	2010
GCMS-3W	Agilent Technologies 5973 / 6890N Entech 7016A	CN10425086 / US41746669 / 1351	HP Chemstation	HP Enviroquant	Air Laboratory	2007
GCMS-4B	Agilent Technologies 5975C / 7890A	US10323601 / CN10361158	HP Chemstation	HP Enviroquant	Organics; Volatiles	2010
GCMS-4D	Agilent Technologies 5975C / 7890A	US10237301 / CN10241019	HP Chemstation	HP Enviroquant	Organics; Volatiles	2010
GCMS-4M	Agilent Technologies 5975C / 7890A Agilent 7683B	US73317574 / CN1074251 / US94209706	HP Chemstation	HP Enviroquant	Organics; SVOCs	2007
GCMS-A	Hewlett-Packard 6890 / 5973 MSD / O1 4552 / 4560 ARCHON	US00033272 / US94212183	HP Chemstation	HP Enviroquant	Organics; Volatiles	2000
GCMS-B	Hewlett-Packard 5890II+ / 5972 MSD / Agilent 7673	3336A61054 / 3524A03106	HP Chemstation	HP Enviroquant	Organics; SVOCs	1996

Equipment	Manufacture & Description	Serial Number	Operating System Software	Data Processing Software	Location	Purchase
GCMS-C	Hewlett-Packard 5890 / 5970 MSD / HP OI 4552 / 4560	2643A122671 / 2807A1146	HP Chemstation	HP Enviroquant	Organics; Volatiles	1990
GCMS-D	Hewlett-Packard 6890 / 5973 MSD / OI 4551 / 4560 P&T	US00030551 / US93122843	HP Chemstation	HP Enviroquant	Organics; Volatiles	2001
GCMS-E	Hewlett-Packard 6890 / 5973 MSD / OI 4551 / 4560 P&T	US00031161 / US93112044	HP Chemstation	HP Enviroquant	Organics; Volatiles	2001
GCMS-F	Hewlett-Packard 6890 / 5973 MSD / HP 7683 AS	US00034179 / US84202752 / US01140200	HP Chemstation	HP Enviroquant	Organics; SVOCs	1998
GCMS-G	Hewlett-Packard 5890II / 5970 MSD / OI 4552 / 4660	2919A22540 / 2807A11004	HP Chemstation	HP Enviroquant	Organics; Volatiles	1989
GCMS-H	Hewlett-Packard 5890II+ / 5972 MSD / HP 7673 AS	3336A58190 / 3501A02356	HP Chemstation	HP Enviroquant	Organics; SVOCs	1995
GCMS-I	Hewlett-Packard 5890 / 5970 MSD / OI 4551 / 4560	2623A08318 / 2637A01687	HP Chemstation	HP Enviroquant	Organics; Volatiles	1986
GCMS-J	Hewlett-Packard 5890 / 5970 MSD / OI 4552 / 4560 P&T	2643A11557 / 3034A12779	HP Chemstation	HP Enviroquant	Organics; Volatiles	1990
GCMS-K	Hewlett-Packard 5890II / 5970 MSD / OI 4551 / 4560 P&T	2750A116838 / 2905A11628	HP Chemstation	HP Enviroquant	Organics; Volatiles	1990
GCMS-L	Hewlett-Packard 5890 / 5970 MSD / OI 4551 / 4560 P&T	2921A22898 / 2623A01291	HP Chemstation	HP Enviroquant	Organics; Volatiles	1992
GCMS-M	Hewlett-Packard 6890 / 5973 MSD / HP 7683 AS	US00021813 / US802111003 / US81501001	HP Chemstation	HP Enviroquant	Organics; SVOCs	1999
GCMS-N	Hewlett-Packard 5890 / 5970 MSD / Tekmar 2000 / 2032 P&T	2750A17088 / 2716A10218	HP Chemstation	HP Enviroquant	Organics; Volatiles	1988
GCMS-P	Agilent Technologies 5973 / 6890N AS 4552 / 4560	US10251064 / US21844596 / CN24828486	HP Chemstation	HP Enviroquant	Organics; SVOCs	2003
GCMS-Q	Hewlett-Packard 5890II / 5971 MSD / Entech Air Samp 7000	3033A31092 / 3188A02934	HP Chemstation	HP Enviroquant	Air Laboratory	1993
GCMS-R	Hewlett-Packard 6890 / 5973 MSD / HP 7683 AS	US00021820 / US81211033 / CN40334835	HP Chemstation	HP Enviroquant	Organics; SVOCs	1998
GCMS-S	Hewlett-Packard 6890 / 5973 MSD / OI 4552 / 4660 ARCHON	US00024322 / US82311313	HP Chemstation	HP Enviroquant	Organics; Volatiles	2000
GCMS-T	Hewlett-Packard 6890 / 5973 MSD / OI 4551A / 4660 P&T	US00024323 / US82311482	HP Chemstation	HP Enviroquant	Organics; Volatiles	2000

Equipment	Manufacture & Description	Serial Number	Operating System Software	Data Processing Software	Location	Purchase
GCMS-U	Hewlett-Packard 6890 / 5973 MSD / HP 4551A / 4660	US00032623 / US94212203	HP Chemstation	HP Enviroquant	Organics; Volatiles	1999
GCMS-V	Agilent Technologies 5973 / 6890N AS 4552 / 4560	US10149085 / US10441917	HP Chemstation	HP Enviroquant	Organics; Volatiles	2002
GCMS-W	Agilent Technologies 5973 / 6890N AS Entech 7016CA	US44621451 / CN10517032 / 1119	HP Chemstation	HP Enviroquant	Air Laboratory	2005
GCMS-X	Agilent Technologies 5973 / 6890N AS 4552 / 4660	US21843889 / US10239071	HP Chemstation	HP Enviroquant	Organics; Volatiles	2002
GCMS-Y	Agilent Technologies 5973 / 6890N AS 4552 / 4560	US10240013 / US21844012	HP Chemstation	HP Enviroquant	Organics; Volatiles	2002
GCMS-Z	Agilent Technologies 5973 / 6890N AS 4552 / 4560	US10251028 / US21844586 / CN24828485	HP Chemstation	HP Enviroquant	Organics; SVOCs	2003
GPC4	Waters 717	717-000152	None	None	Organic Prep	1992
Hg Analyzer	Leeman Mercury Analyzer HYDRAA	HA-3011	WIN Hg Runner	WIN Hg Runner	Inorganics	2003
Hg Analyzer	Leeman Mercury Analyzer PS200II	Hg6037	WIN Hg Runner	WIN Hg Runner	Inorganics	1999
Hg Analyzer	Leeman Mercury Analyzer HYDRAAF Gold+	9003	WIN Hg Runner	WIN Hg Runner	Inorganics	2010
HPLC-1	Agilent Technologies 1100 Series G1321A / G1315B / G1316A / G1379A	DE33205279; DE33219455 ; DE33234553; JP13210348	HP Chemstation	HP Enviroquant	Organics; SVOCs	2003
IC	Dionex DX500	99040750	Dionex Peak Net Run	Dionex Peak Net Run	Inorganics	1999
IC	Dionex ICS2000	02090737	Dionex Chrom. Client	Dionex Chrom. Client	Inorganics	2004
IC	Dionex ICS2000	02110028	Dionex Chrom. Client	Dionex Chrom. Client	Inorganics	2004
IC	Dionex ICS2000	04060060	Dionex Chrom. Client	Dionex Chrom. Client	Inorganics	2004
IC	Dionex ICS3000	06040160	Dionex Chrom. Client	Dionex Chrom. Client	Inorganics	2006
IC	Metrohm-Peak IC	1844012003147	MagIC Net	MagIC Net	Inorganics	2007

Equipment	Manufacture & Description	Serial Number	Operating System Software	Data Processing Software	Location	Purchase
ICP	Thermo Trace 61E Purge	10970	Thermo ICP Manager	Thermo ICP Manager	Metals Analysis	2000
ICP	Thermo ICP 6500 Duo	ICP-20072601	ITEVA	ITEVA	Metals Analysis	2007
ICP	Thermo ICP 6500 Duo	ICP-20074909	ITEVA	ITEVA	Metals Analysis	2007
ICP-MS	Thermo Elemental X-Series ICP-MS	X0180	Thermo PlasmaLab	Thermo PlasmaLab	Metals Analysis	2003
ICP-MS	Agilent 7700 Series	JP10340551	MassHunter Workstation	MassHunter Workstation	Metals Analysis	2010
IR Spec.	Buck Scientific HC-404	687	None	None	Inorganics	1997
PH Meter-4	Orion 710A	3978	None	None	Inorganics	1996
PH Meter-9	Orion 250A	O18019	None	None	Field Serv.	2007
PH Meter-10	YSI	JC02538	None	None	Field Serv.	2007
PH Meter-11	YSI	JC02540	None	None	Field Serv.	2010
PH Meter-12	Thermo Orion 310	14011	None	None	Inorganics	2003
PH Meter-13	VWR IS B20	5942	None	None	Sample Managament	2010
PH-EH Meter-22	Thermo Orion 4 Star	SN00742	None	None	Inorganics	2008
PH Meter-23	Thermo Orion Model 310	SN013786	None	None	Inorganics	2008
PH Meter-26	Thomas Scientific TS 625	06390411	None	None	Inorganics	2007
PH Meter-46	Thermo Orion 4 Star	B10299	None	None	Inorganics	2008
PH Meter-47	Thermo Orion 4 Star	B04869	None	None	Inorganics	2008

Equipment	Manufacture & Description	Serial Number	Operating System Software	Data Processing Software	Location	Purchase
PH Meter-48	Thermo-Orion 4 Star	B05968	None	None	Inorganics	2008
PH Meter-49	Orion Star Series	B27588	None	None	Inorganics	2010
PH Meter-50	Orion Star Series	B27564	None	None	Inorganics	2010
SCON Meter	YSI-30	J0I83	None	None	Field Serv.	2004
SCON Meter	Amber Science 1056	01020851056-101	None	None	Inorganics	2001
SCON Meter	Orion 145+	78035	None	None	Inorganics	2004
SCON Meter	Oakton 4003	78643	None	None	Inorganics	2004
Solvent Extractor	Horizon SPE-DEX 3000XL	09-1031	None	None	Inorganics	2010
Solvent Evaporator	Horizon SPEED VAP 111	09-0739	None	None	Inorganics	2010
Sonicator	Sonics Vibracell VC 750	31800A	None	None	Organic Prep	2000
Sonicator	TEKMAR Sonicator	6916	None	None	Organic Prep	1997
TOC Analyzer	Shimadzu 5000 Series A/S system	30825274	Shimadzu TOC Control	Shimadzu TOC Control	Inorganics	2000
TOC Analyzer	Shimadzu 5000 Series A/S system	35517409	Shimadzu TOC Control	Shimadzu TOC Control	Inorganics	1998
TOC Analyzer	Shimadzu TOC-V CSH	H51104435198 CS	Shimadzu TOC Control	Shimadzu TOC Control	Inorganics	2007
TOX Analyzer	Mitsubishi TOX-10E	75R04185	None	None	Inorganics	1996
TOX Analyzer	Mitsubishi TOX-100	A7M 42997	None	None	Inorganics	2008
Turbidimeter	HF Scientific DRT 100B	21141	None	None	Inorganics	1987

Equipment	Manufacture & Description	Serial Number	Operating System Software	Data Processing Software	Location	Purchase
UVVIS Spec C	Spectronix 20 Genesys	3SGA122034	None	None	Inorganics	2000
UVVIS Spec D	Spectronix 20 Genesys	3SGF170020	None	None	Inorganics	2007
UVVIS Spec E	Spectronix 20 Genesys	3SGD.352011	None	None	Inorganics	2007
UVVIS Spec F	Spectronix 20 Genesys	356329906	None	None	Inorganics	2007
UVVIS Spec G	Thermo Electron Corp. Genesys 20	3SGJ238001	None	None	Inorganics	2007
UVVIS Spec H	Thermo Electron Corp. Genesys 20	3SGJ306016	None	None	Inorganics	2007
UVVIS Spec I	Thermo Electron Corp. Genesys 10VIS	2D5L110005	None	None	Inorganics	2009

Quality Systems Manual

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D/B/A

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Laporatory Director / Tech Director Mansfield: Joseph Watkins 508-844-4125
Technical Director / Air /Mansfield: Andy Rezendes 508-844-4181

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1 Mission Statement

The mission of Alpha Analytical is quite simply to provide our clients with the greatest value in analytical service available. For the 'greatest value' is not only found in the data that is delivered, it is also found in the services provided.

- Data must be of the highest integrity, accuracy and precision.
- Consultation and educational services must be provided to suppprt the customer in establishing data quality objectives and interpretation of the final data package.
- Support services such as sample containers, courier service and electronic data deliverables must be available to the client.

Alpha's mission continues with an established commitment to our community and environment. We must ensure that we do not produce any additional contamination to our environment or harm our neighbors and community in any way.

The value of Alpha's product is in the honesty and integrity with which each chemist, courier, login staff member, or office staff member performs their tasks. The client or employee must always feel satisfied that they received the greatest value in their lab experience at Alpha.

Alpha Analytical Labs will vigorously pursue its mission into the next millennium.

Mark Woelfel
President

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1.1 Signature Page

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1.2 Management Authorization

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President

Signature: Mark Woelfel Date: 2/1/11

Name: Mark Woelfel

Quality Assurance Officer

Signature: James Todaro Date: 1-13-2011

Name: James Todaro

Laboratory Director / Technical Director (Westboro)

Signature: Christopher Wakefield Date: 1/13/11

Name: Christopher Wakefield

Laboratory Director / Technical Director (Mansfield)

Signature: Joseph Watkins Date: 1/20/11

Name: Joseph Watkins

Technical Director / Air (Mansfield)

Signature: Andy Rezendes Date: 1/24/11

Name: Andy Rezendes

The above signed understand and acknowledge that Alpha Analytical is required to be continually in compliance with the National Environmental Laboratory Accreditation Conference (NELAC) standards

ISSUE AMENDMENTS

Edited name of Lab/Technical Director – Mansfield

Section 14.1: Samples needing special reports when subcontracting (i.e. MCL)

Section 13, Item 18: Reports indentify analytes certified and non certified and certification identifications.

Section 13, Item 19: Reports indicating inclusion of MCLs

Section 17, 18: Updated Organizational Charts and List of Personnel

Appendix J: Added Standard Operating Procedures

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3 Introduction

The Quality Systems Manual (QSM) of Alpha Analytical describes the quality program in use at the laboratory for both Westboro and Mansfield facilities. This Quality Systems Manual provides employees, clients and accrediting agencies with the necessary information to become familiar with how the quality system operates within Alpha Analytical. The quality program includes quality assurance, quality control, and the laboratory systems including feedback mechanisms for the automated continuous improvement of the laboratory operations to meet client needs.

Implementation of the laboratory operations is by documenting procedures, training personnel and reviewing operations for improvement. Written procedures are maintained as Standard Operating Procedures (SOPs). The SOPs are available to the staff as an uncontrolled, electronic, secure copy. The provisions of the QSM are binding on all temporary and permanent personnel assigned responsibilities. All laboratory personnel must adhere strictly to the QSM and SOPs.

All policies and procedures have been structured in accordance with the National Environmental Laboratory Accreditation Conference (NELAC) standards, applicable EPA requirements, applicable Department of Defense (DOD) Quality Systems Manual Rev 4.1 standards and for the Mansfield facility, the Louisiana Administrative Code & Regulatory Requirements according to Title 33, Part 1, Office of the Secretary, Subpart 3, Laboratory Accrediation.

Fifteen (15) sections comprise the QSM. Related quality documentation including the listing of SOPs, forms, floor plan, equipment, personnel and laboratory qualifications are available. The QSM sections provide overview descriptions of objectives, policies, services and operations.

3.1 Scope

The QSM describes the requirements of the Laboratory to demonstrate competency in the operations for performing environmental tests for inorganic, organic, air and microbiological testing. The basis for the environmental tests is the methods found in documents published by the United States Environmental Protection Agency (EPA), ASTM, AOAC, APHA/AWWA/WEF, Standard Methods, DOD QSM 4.1, and other procedures and techniques supplied by clients.

The QSM includes requirements and information for assessing competence and determining compliance by the laboratory to the quality system. When more stringent standards or requirements are included in a mandated test method, by regulation, or specified in a project plan the laboratory demonstrates achievement of the client specified requirements through its documented processes.

The QSM is for use by Alpha Analytical for developing and implementing the quality system. Accrediting authorities and clients use the QSM for assessing the competence of Alpha Analytical. Alpha Analytical is committed to continually improving the quality system. Meeting customer needs, operating within regulatory requirements and adhering to Alpha's Data Integrity and Ethics policy are several of the mechanism used to continually improve the quality system.

3.2 Policy Statement

This Quality Systems Manual summarizes the policies, responsibilities and operational procedures associated with Alpha Analytical. This manual applies to all associates of the laboratory and is intended for use in the on-going operations at Alpha Analytical. Specific protocols for sample handling and storage, chain-of-custody, laboratory analyses, data reduction, corrective action, and reporting are described. All policies and procedures have been structured in accordance with the National Environmental Laboratory Accreditation Conference (NELAC)

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standards, applicable EPA requirements, regulations, guidance, and technical standards and DOD QSM 4.1 standards. This Quality Systems Manual, laboratory Standard Operating Procedures (SOPs), and related documentation describe the quality systems, policies and procedures for Alpha Analytical.

Alpha Analytical performs chemical analyses for inorganic and organic constituents in water, seawater, soil, sediment, oil, tissue and air matrices. Alpha Analytical's goal is to produce data that is scientifically valid, technically defensible, and of known and documented quality in accordance with standards developed by NELAC and any applicable state or EPA regulations or requirements. It is the commitment of the President, Operation Director, Laboratory/Technical Director and Quality Assurance Officer to work towards continuous improvement of the operation, and towards meeting our client's needs, requirements, and intended data usage. This continued commitment is built into every activity of the laboratory. It is the responsibility of Senior Management and the Department Managers to ensure that all associates familiarize themselves with, and comply at all times with, the quality systems, procedures and policies set forth in this manual, laboratory SOPs, and related documentation.

Alpha Analytical analyzes Proficiency Test (PT) samples, in accordance with NELAC and other regulatory programs, from a National Institute of Standards and Technology (NIST)-approved PT provider for the analytes established by EPA for water samples, and for other analytes and matrices. The specific analytes and matrices analyzed are based on the current scope of the laboratory services as documented in the laboratory SOPs and state certifications.

The technical and service requirements of all requests to provide analyses are thoroughly evaluated before commitments are made to accept the work. This includes a review of facilities and instrumentation, staffing, and any special QC or reporting requirements to ensure that analyses can be performed correctly and within the expected schedule. All measurements are made using published reference methods or methods developed by Alpha Analytical. Competence with all methods is demonstrated according to the procedure described in SOP/ 08-12 prior to use.

Alpha Analytical has developed a proactive program for prevention and detection of improper, unethical or illegal actions. Components of this program include: internal proficiency testing (single and/or double blind); electronic data audits and post-analysis data review by the QA Officer; a program to improve employee vigilance and co-monitoring; and Ethics Training program identifying appropriate and inappropriate laboratory practices, instrument manipulation practices and consequences. Additionally, all associates are required to sign the Alpha Analytical Ethics Agreement form upon commencement of employment and each year following. This form clearly outlines the possible consequences of unethical or improper behavior, or data misrepresentation.

It is the policy of the laboratory to discourage and reject all influence or inducements (whether commercial, financial or personal) offered either by customers or suppliers, which might adversely affect results or otherwise compromise the judgment or impartiality of the staff. It is the responsibility of the Operations Director and Laboratory/Technical Director to inform customers and suppliers of this policy when necessary.

In the event that any such influences or inducements are encountered, the staff is instructed to inform management immediately. It is the responsibility of the Operations Director and the Laboratory/Technical Director to take appropriate action to prevent recurrence.

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3.3 References

An electronic register of external documents or books is available on the company intranet for staff to determine the latest edition or version of the reference methods, regulations or national standards. The Quality Assurance Department maintains the register. Management purchases automated update services, where available, to provide the laboratory with the latest hardcopy edition, where electronic means is not available.

3.4 Definitions

Appendix A lists the definitions as adopted by the laboratory. The definitions are from the standard approved in June, 2005, by the National Environmental Laboratory Accreditation Conference (NELAC). The definitions in Appendix A are updated, as necessary, after publication of the NELAC adopted Glossary.

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4 Organization and Management

4.1 Legal Definition of Laboratory

Alpha Analytical is a full service analytical laboratory. Testing services include Drinking Water, Waste Water, Ground Water, Waste material and Air. Alpha Analytical is a privately held corporation incorporated in the state of Massachusetts. Alpha Analytical, Inc. does business as (D/B/A) Alpha Analytical.

Alpha Analytical has been in business since 1985. The types of businesses served include:

Consulting firms,
Engineering firms,
Waste Management Companies,
Industrial sites,
Municipal agencies and
Other commercial businesses.

4.2 Organization

The laboratory operates a quality system approach to management in order to produce data of known quality. The laboratory organization provides effective communication and lines of authority to produce analytical data meeting client specifications. The organizational design provides open communication while ensuring that pressures and day to day operating circumstances do not compromise the integrity of the reporting of the final data.

The President is responsible for directing all areas of the company. The following job functions report to the President:

Operations Managprs
Quality Assurance Officer
Client Services Manager
Marketing / Business Development / Sales
Financial Services
Human Resources

The Operations Manager is responsible for directing all laboratory operational areas of the company. The following job functions report to the Operations Manager:

- Laboratory/ Technical Director(s)
- Department Managers

The Laboratory/Technical Director(s) is responsible for the laboratory data generated by the organics testing, inorganics testing and metals testing areas and the Air Technical Director is responsible for laboratory data generated by air analyses.

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The Departmental Managers (Supervisors) have the following responsibilities:

The organics managers direct personnel in the organics extraction and instrumental laboratories.

The wet chemistry manager directs personnel and team leaders in the wet chemistry and/or microbiological testing areas.

The metals manager directs personnel and team leaders in the metals sample preparation and instrumental laboratories.

The Quality Assurance Officer is a member of the staff reports directly to the President and has defined responsibility and authority for ensuring that the quality system is implemented and adhered to at all times. The Quality Assurance (QA) Officer is responsible for interacting and communicating certification requirements, implementing the Quality Systems Manual and reporting to the Laboratory Director and Senior Management the status of the quality program. The QAO oversees the Quality Systems Specialists and is responsible for oversight and/or review of quality control data and function independently from laboratory operations.

The Client Services Manager is responsible for client interactions, project coordination and laboratory personnel notification of project requirements. Also the Client Services Manager is responsible for the areas of sample container preparation and transportation of containers and samples to and from the laboratory.

The Marketing, Business Development and Sales personnel are responsible for increasing the volume of work from current clients and adding new clients to the base business of Alpha Analytical. The Marketing and Business Development personnel review all new work with the Laboratory Director, Operations Manager, President and/or Quality Assurance Officer before contractual commitment.

The Controller is responsible for maintaining and reporting on the financial status of the company. The Controller directs financial personnel on proper accounting procedures and maintaining the list of approved suppliers and subcontractors. The Controller reports directly to the President.

The Human Resource Director is responsible for personnel recruitment, hiring, performance reviews.

Personnel job descriptions define the operational function duties and responsibilities. Administration and Laboratory personnel assignments may include cross-functional training and work performance in multiple areas of the operations. Multiple function training ensures laboratory back up personnel during peak work loads.

During the absence of any staff member, assignment of alternative personnel occurs by memo or e-mail. The Manager or Supervisor authorizes the assignment. The naming of alternative personnel assures the continuing performance of critical tasks during the primary person's absence and ensures that lines of communication remain open for continued decision making. The deputy for the Laboratory Director is the Quality Assurance (QA) Officer. The deputies for the Quality Assurance (QA) Officer are the Quality Systems Specialists.

For the purposes of NELAC Accreditation and DOD QSM 4.1, the Lead Laboratory Technical Director is the Laboratory Director. The deputies for the Lead Technical Director are the Quality Assurance (QA) Officer, and the Departmental Managers. The Laboratory/Technical Director meets the requirements specified in the Section 4.1.1.1 of the NELAC standards. If the Technical Director is absent for a period of time exceeding 15 consecutive calendar days, a full-time staff member meeting the qualifications of Technical Director will be designated to temporarily perform this function. The primary Accrediting Body shall be notified in writing if the Technical Director's absence exceeds 65 consecutive calendar days.

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4.3 Business Practices

Alpha maintains certification for the programs and analytes required by regulatory programs. The listing of qualifications from the various certifications, registrations and accreditation programs are available upon request. Alpha Analytical operates Monday to Friday from 7:30 a.m. to 5:30 p.m. Management prepares and posts the holiday schedule for the year indicating closed operations. Sample delivery occurs during normal operating hours unless arranged in advance.

Alpha's reputation depends upon timely reporting and quality data. The standard turnaround time for engineering and consulting firms is five business days from time of sample receipt. Standard turnaround for all other clients is ten business days from time of sample receipt. The time of sample receipt is when the verification of the chain of custody and samples meets the laboratory sample acceptance policy. Laboratory management must approve any special arrangements for rush or expedited turnaround time. The basis for data quality depends on client, regulation and method performance criteria. Accuracy, precision, sensitivity and comparability are expressions of method performance criteria.

All work is performed in the strictest confidence. New and contract employees must review corporate policy and practice requirements for protecting client confidentiality and proprietary rights. The review occurs during orientation and ethics training. It is the policy of the laboratory to release data to the client authorized contact. Personnel assigned the duties of interacting with clients review project files and discuss data related only to the project. Personnel whose duties do not include routine client contact must check with the client service manager before discussing data with regulators or third parties.

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5 Quality System

Establishment, Audits, Essential Quality Controls and Data Verification

5.1 Establishment

The Mission Statement presents the policy and objectives for Alpha Analytical. The Quality Systems Manual provides the framework for the processes and operations to implement the Mission. The Quality Systems Manual and documentation controlled by the laboratory system detail the management authorized operations for achieving the objectives of the company.

The laboratory operates a quality system approach to management in order to produce data of known quality. Alpha Analytical is a full service laboratory designed to provide its clients with accurate, precise and reliable data within the best turn-around time and at the most reasonable prices. Alpha employs chemists of the highest training, ethics and caliber in the field of analytical chemistry. This and state-of-the-art instrumentation and automation combine to insure data of known and documented quality.

5.2 Quality Systems Manual

The QA Officer is responsible for the publication and distribution of the Quality Systems Manual. Management reviews and authorizes the manual. Implementation of major changes in the quality system occurs after revision of the appropriate Quality Systems Manual section and authorization by management.

The authorization signatures found on the signature page of the manual signify management review and approval of the Quality Systems Manual. The Signature section must be kept current and reflect any organizational changes affecting the authorizing positions. Updates of this manual occur at any time throughout the year. The issue number and date are changed to denote the latest revision date. The revision date for the signature section must be the most recent, indicating that all revisions have undergone management review.

Document control procedures (SOP/08-01) apply to the distribution of the Quality Systems Manual. Distribution of controlled copies of the manual is only to an individual within the laboratory. Persons or organizations outside of Alpha Analytical may receive uncontrolled copies. Copies are distinctly marked "Uncontrolled Documents". A distribution list is maintained for all controlled copies of the Quality Systems Manual. All parties listed on the controlled distribution list receive document updates. Copies marked as uncontrolled copies are not subject to updates.

5.3 Audits

Laboratory audits, both internal and external, review and examine the operations performed in the laboratory. Internal audits are condcted by qualified QA Specialist and external audits are reviews by external organizations to evaluate the ability of the laboratory to meet regulatory or project requirements.

A QA designee schedules internal process audits to ensure the completion of the annual audit of each operational area. The process audits are a more detailed review of the operations. Personnel from areas other than the one audited perform process audits.

The internal system audit is a review of the implementation of the documented quality system. The system audit includes sample tracking from receipt to disposal, a data audit of a completed report, and all operations not audited during the process audit.

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The purpose of the internal system audit is:

Verification that adequate written instructions are available for use;

Analytical practices performed in the laboratory are consistent with SOPs;

The quality control practices are applied during production;

Corrective actions are applied as necessary;

Deviations from approved protocols are occurring only with proper authorization and documentation;

Reported data is correct and acceptable for reporting;

SOPs, quality records, analytical records, electronic data files are maintained properly; and

Personnel training files and records are satisfactory and current.

Before a scheduled audit, the assigned auditor reviews checklists and/or the SOP specific to the area. The checklist may be from an external source or prepared by the auditor. The checklist must include all references to the documented quality system or referenced requirements document. After the audit, the auditor submits a summary or notes from the audit to the Laboratory Director or QAO as part of the audit report. The summary identifies discrepancies found during the audit. A copy of the summary form is presented to the person responsible for implementation or resolving the problem. The checklist, notes and summary comprise the audit report.

Technical personnel are responsible for the inspection and monitoring of in-process and final data. Personnel independent of those having direct responsibility for the work performed audit the quality system and processes.

Representatives sent by clients and government or accrediting agencies often perform external audits. These audits are most often announced inspections, but sometimes are not announced. The Quality Assurance Officer, Laboratory Director or assigned deputy, or appropriate Department Manager accompanies the external audit team through the laboratory. The auditors receive a brief overview of company objectives, activities, and facilities. Interviews with essential supervisory staff and technical staff are arranged, along with retrieval of any documentation pertinent to the audit. Auditors usually provide a report on their findings shortly after the audit. The QA Officer receives the audit report and copies are provided to laboratory personnel for review. Corrective actions are identified and distributed to responsible parties for implementation in response to any cited deficiencies.

5.4 Audit Review

Management reviews internal and external audit reports to evaluate system effectiveness at the annual management review meeting. Tracking of the audit findings occurs through the nonconformance action process. The management and staff work together to establish a time line for resolving the audit findings. The Quality Assurance team tracks the time line and reports to the Laboratory Director on any outstanding audit findings.

5.5 Performance Audits

Alpha Analytical participates in inter-laboratory comparisons and proficiency test programs required by clients and certifying agencies. The performance audits provide information on the data comparability of results generated by the laboratory. Test samples received by the laboratory are handled following routine laboratory procedures. Proficiency test samples are

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unpacked, checked against the packing slip and examined for damage. Reporting requirements and deviations to routine practices are noted as would be required for any project.

Analysts demonstrate proticiency by analyzing either an external proticiency test sample, an internally prepared blind test sample or Initial Demonstration of Capability (IDC) before independent operation of a test method and at least once per year per analyst. The results of performance audits serve several purposes. The QA Ofticer may use performance audits for evaluating analyst proticiency, laboratory performance in a specitied area to facilitate laboratory improvement efforts, and/or to provide information to an accrediting agency on correction of past performance of an external performance audit.

5.6 Corrective Actions/Preventative Actions (CAPA)

The corrective action process at Alpha Analytical is detailed in SOP/08-09. The corrective action program at Alpha Analytical uses the Nonconformance Report form to document and follow through the corrective action/preventative action process for three main areas: nonconformance's within the laboratory, client complaints and failed PT studies. The mechanism for recording, reviewing and acting upon all quality problems is self-explanatory as the form is completed. The process ensures continuous improvement of company performance by preventing the recurrence of quality problems.

Nonconformance forms are tracked for closure date and the type. Reports to management include the listing of open nonconformance reports and the frequency of the type of nonconformance occurring. A QA designee records the forms and monitors the completeness of the forms, as well as verities the actions are complete and acceptable.

Clients will be notitied within 5 days of any question(s) regarding validity of results.

For Louisiana ELAP (LELAP) certified parameters, any PT results that are "unacceptable" for a specitic analyte must be investigated and likely cause(s) for the results determined. Any problems must be resolved and reported to LELAP, along with the submittal of corrective action PT sample test results.

5.7 Managerial Review

The management review occurs at least once per year as part of the strategic planning process. Documentation of the management review meeting is by recording the meeting minutes and listing the attendees. The focus of the quality management review is the frequency of the type of nonconformance, closure status, audit progress and other quality assurance actions. Meetings include discussion and progress on quality system initiatives since the last meeting.

Priqr to the meeting, an agenda is distributed to all personnel expected to be in attendance. The meeting is chaired by the Quality Assurance Officer. Minutes are taken and distributed at the conclusion of the meeting by a QA designee. If action is necessary on any issue, a Summary Report is generated and distributed to responsible parties for implementation. Actions are monitored by the QAO or designee until completion.

5.8 Essential Quality Control Procedures

The following general quality control principles apply to all tests. The manner implemented is dependent on the type of test performed. The laboratory SOP presents the specitic quality control checks undertaken to ensure precision, accuracy and sensitivity of each test method.

Alpha Analytical uses quality control samples to evaluate the following:

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1. Adequate positive and negative controls to monitor blanks, spikes, reference toxicants, zero blanks;
2. Adequate tests to define the variability and/or reproducibility of labpratory results;
3. Measures to ensure the accuracy of the test data including sufficient calibration and/or continuing calibrations, use of certified reference materials, proficiency test samples;
4. Measures to evaluate test performance, such as method detection limits and quantitation limits or range of applicability such as linearity;
5. Selection of appropriate formulae to reduce raw data to final results such as linear regression, internal standards, or statistical packages;
6. Selection and use of reagents and standards of appropriate quality;
7. Measures to assure the selectivity of the test for its intended purpose;
8. Measures to assure constant and consistent test conditions for the method such as temperature, humidity, light, or specific instrument conditions.

All quality control measures are assessed and evaluated on an on-going basis, and quality control acceptance limits are used to determine the usability of the data. Control charts and/or calculated control limits monitor the long-term method performance by analyte, by instrument for water matrices. Routine evaluation and reporting of the control chart performance provides supervisors and management with additional performance measures to ensure data comparability. Control limits are recalculated when trends are observed.

Where no reference method or regulatory criteria exist, the laboratory specifies the acceptance/rejection criteria in the SOP. The test SOP specifies the QC samples performed per batch of samples. The quality control samples are categorized into the following, as appropriate to the method

Method Blank
Laboratory Duplicate
Laboratory Control Sample (LCS)
Laboratory Control Sample Duplicate (LCSD)
Matrix Spike (MS)
Matrix Spike Duplicate (MSD)

The frequency is dependent on the reference method and test protocol. The following is the default requirement for quality control checks in lieu of any other guidance. The frequency for each quality control sample is generally one (1) per every 20 samples.

5.9 Data Reduction

After completion of the test procedure, the data reduction process begins.

Chromatography data may require the manual integration of peak areas or heights before reporting of results. The analyst must perform manual integration when software does not properly integrate or identify the peak. Manual integration must not occur for the purpose of achieving acceptable quality control or calibration. The analyst and reviewer sign and date the hardcopy of all manual integration. The analyst notes the rationale for performing the manual integration on the hardcopy printout and ensures the "TIC" marks from the software represent the integration area used for reporting the results. The analyst must minimize and avoid manual integration. The establishment of the proper integration parameters in the software reduces the number of manual integration occurrences.

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The SOP for each test presents the formulas used for the specific test method. The formulas for the data calculations used throughout the laboratory are the following:

% Recovery (LCS)

$$\frac{MV}{TV} * 100 = \%R_{LCS}$$

where: *MV* = Measured Value
TV = True Value

% Recovery (MS or MSD)

$$\frac{MV - SV}{TV} * 100 = \%R_{MS}$$

where: *MV* = Measured Value
TV = True Value
SV = Amount found in sample

Average ($\overline{X}$)

$$\sum_{i-1}^{n} X_i \Big/ n = \overline{X}$$

where: $\overline{X}$ = Average of all values
X = Result of each measurement
n = Number of values

Relative Percent Difference (%RPD)

$$\frac{R_1 - R_2}{(R_1 + R_2)/2} * 100 = \%RPD$$

where: R_1 = Larger of two observed values
R_2 = Smaller of two observed values

%Difference (%D)

$$\frac{X - \overline{X}}{\overline{X}} * 100 = \%D$$

where: $\overline{X}$ = Average of all values
X = Result of measurement

Standard Deviation of the sample (S_x)

$$\sqrt{\frac{\sum(X - \overline{X})^2}{n-1}} = S_x$$

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where: $\overline{X}$ = Average of all values
X = Result of each measurement
n = Number of values

Relative Standard Deviation (%RSD)

$$\frac{S_x}{\overline{X}} * 100 = \%RSD$$

where: $\overline{X}$ = Average of all values
Sx = Standard Deviation (n - 1)

Range of Logs (for microbiological enumeration analysis)

10% of routine samples are analyzed in duplicate and the range of logs is determined.

MDL (See 40CFR Part 136 for details)

$$\left[\sqrt{\frac{\sum_{i=1}^{n} x_i^2 - \left(\sum_{i=1}^{n} x_i\right)^2 / n}{n-1}}\right] t_{0.99} = MDL$$

where: *MDL* = The method detection limit
X = Result of each measurement
n = Number of values
t(n-1,1 = .99) = The students' t value appropriate for a 99% contidence level and a standard deviation estimate with n-1 degrees of freedom. (See Students t Test Table)

Reporting Limit (RL)

Lowest calibration standard or greater
At least 3 times the calculated MDL

Reportable Detection Limit (RDL)

Lowest calibration standard or greater adjusted for sample/matrix

Control Limits

Upper Control Limit: $\overline{X} + 3 * S_x = UCL$
Lower Control Limit: $\overline{X} - 3 * S_x = LCL$

Warning Limits

Upper Warning Limit: $\overline{X} + 2 * S_x = UWL$
Lower Warning Limit: $\overline{X} - 2 * S_x = UWL$

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Method of Standard Additions (MSA): (See EPA 7000A for details)

The simplest version pf this technique is the single-addition method, in which two identical aliquots of the sampie solution, each of volume Vx, are taken. To the tirst (labeled A) is added a known volume Vs of a standard analyte solution of concentration Cs. To the second aliquot (labeled B) is added the same volume Vs of the solvent. The analytical signals of A arid B are measured and corrected for non-analyte signals. The unknown sample concentration Cx is calculated:

$$C_x = \frac{SB\ V_S\ C_s}{(SA - SB)\ V_X}$$

where SA and SB are the analytical signals (corrected for the blank) of solutions A and B, respectively. V_S and C_s should be chosen so that SA is roughly twice SB on the average, avoiding excess dilution of the sample. If a separation or concentration step is used, the additions are best made tirst and carried through the entire procedure.

Improved results can be obtained by employing a series of standard additions. To equal volumes of the sample are added a series of standard solutions containing different known quantities of the analyte, and all solutions are diluted to the same tinal volume.

For example, addition 1 should be prepared so that the resulting concentration is approximately 50 percent of the expected absorbance from the endogenous analyte in the sample. Additions 2 and 3 shpuld be prepared so that the concentrations are approximately 100 and 150 percent of the expected endogenous sample absorbance.

The absorbance of each solution is determined and then plotted on the vertical axis of a graph, with the concentrations of the known standards plotted on the horizontal axis. When the resulting line is extrapolated to zero absorbance, the point of interception of the abscissa is the endogenous concentration of the analyte in the sample. The abscissa on the left of the ordinate is scalea the same as on the right side, but in the opposite direction from the ordinate. A linear regression program may be used to obtain the intercept concentration.

5.10 Document Control

The Document Control Procedures (Westboro SOP/08-01 and Manstield SOP/G016) describe the process for controlled and uncontrolled documents. The use of the issue number allows for the retentipn of a previous document for historical information purposes.

Every document is assigned a unique identitication number, which is present on each page of the document. A master list of documents includes the unique identitication. Each controlled copy includes the issue number, issue date, effective date and page number.

Eull document control includes the status of each document: active, inactive or superceded/archived. Inactive documents are procedures not currently requested, but may be in the future. Archived documents are procedures replaced with a later revision. Authorized personnel must review and approve each document and any subsequent revisions before use in the laboratory. Personnel authorized to review and approve a document have access to all necessary information on which to base their review and approval. The amendment section of the signature page of any SOP includes a brief description of the nature of the document change.

Standard Operating Procedures (SOPs) are instructions for repetitive or standard operations performed by the laboratory. The SOP author is the person familiar with the topic. The standard format for writing SOPs is set-up as a template for administration and technical SOPs. Each SOP is peer reviewed, authorized by management, and the Laboratory Director or QAO before tinal

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distribution and implementation. Authorized signatories for controlled documentation include one or more of the following personnel: Company President, Quality Assurance Officer, Laboratory/Technical Director, Department Manager, Department Team Leader. Personnel acknowledge approved documents as read, understood and agreed to by personnel through signed attestation forms or training records.

SOPs must receive evaluation and input by laboratory supervisors and key technical personnel. The content of each SOP must conform to applicable requirements of analytical methods and certification agencies. Within these constraints, the content of a SOP meets the needs of a particular area of the laboratory. A new or revised SOP is needed when regulatory programs update or add methods, or the scope of the existing method is extended or when activities are being performed without adequate documentation.

Updating, modifying and changing SOPs, forms and the contents of this QSM are prompt and part of the routine practices. The prompt modification of these documents ensures the documents reflect the current practices and operations of the laboratory. Implementation of modifications required before issue of an updated SOP is authorized by the Departmental Manager on the SOP Review Form. The record of the SOP change authorization by management, QA and other analysts is placed on the nonconformance form. A copy of the approved nonconformance form is retained with the SOP. During annual review of a document (including but not limited to: SOPs, Ethics Policy, Quality Systems Manual), requested changes are reviewed and the document reissued using the information from the nonconformance forms.

The laboratory maintains control over the possession and distribution of all documents that directly affect the quality of data. This includes, but is not limited to, documents such as the Quality Systems Manual, Standard Operating Procedures, client instructions, Laboratory Work Instructions, data sheets, check lists and forms.

5.11 Detection Limits

Method Detection Limits (MDLs) are determined for all analytes as specified in the NELAC and other standards. MDLs are determined for all new instrumentation, whenever there is a change in the test method or instrumentation that affects performance or sensitivity of the analysis. From these, detection limits, practical quantitation limits (PQLs), or Reporting Limits (RLs), are established. The PQL is the minimum concentration of an analyte that can be identified and quantified within specified limits of precision and bias during routine and analytical operating conditions.

Laboratory reporting limits lie within the calibration range, at or above the PQL. For methods that require only one standard, the reporting limit is no lower than the low-level check standard, which is designed to verify the integrity of the curve at lower levels. If reporting limits are required below the lower level of the calibration curve, PQL, or low-level check standard, method modifications are required. Refer to MDL/LOD/LOQ SOP/08-05.

5.12 LOD/LOQ Studies

A. LOD (Limit of Detection) Verification

1. LOD (Limit of Detection) verification is required annually for each target analyte in which test results are to be reported below the lowest calibration standard ("J" values) for each instrument, matrix and prep procedure.
   a. Quarterly LOD Verification is required for DOD projects.

2. All sample-processing steps of the analytical method shall be included in the determination of the LOD.

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3. The validity of the LOD shall be confirmed by ***qualitative*** identification of the analyte(s) in a QC sample in each quality system matrix containing the analyte at no more than 2-3X the LOD for single analyte tests and 1-4X the LOD for multiple analyte tests. This verification must be performed on every instrument that is to be used for analysis of samples and reporting of data.

4. An LOD study is not required for any component for which spiking solutions or quality control samples are not available such as temperature. Where an LOD study is not performed, the laboratory may not report a value below the limit of quantitation.

B. LOQ (Limit of Quantitation) Verification

1. LOQ (Limit of Quantitation) verification is required annually for each target analyte that is not reported below the lowest calibration standard for each matrix and prep procedure. LOQ is not required if an annual LOD verification is performed.

2. The validity of the LOQ shall be confirmed by successful analysis of a QC sample containing the analytes of concern in each quality system matrix 1-2 times the claimed LOQ. A successful analysis is one where the recovery of each analyte is within the established test method acceptance criteria for accuracy.

The LOQ study is not required for any component or property for which spiking solutions or quality control samples are not commercially available or otherwise inappropriate (e.g., pH).

The LOQ acceptance criteria is based on the established acceptance criteria for Laboratory Control Samples.

Refer to MDL/LOD/LOQ SOP/08-05.

5.13 Range of Logs - Precision of Quantitative Methods - Microbiology

A. Precision of duplicate analyses is calculated for samples examined by enumerative microbiological methods according to the following procedure:

   a. Perform duplicate analyses on first 15 positive samples.

   b. Record duplicate analyses as D1 and D2 and calculate the logarithm of each result.

   c. If either of a set of duplicate results is <1, add 1 to both values before calculating the logarithms.

   d. Calculate the range (R) for each pair of transformed duplicates as the mean of these ranges.

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6 Personnel

6.1 Laboratory Management Responsibilities

Management is responsible for communicating the requirements of the quality system, client specifications and regulatory needs to all personnel. Management job descriptions detail the responsibilities of each position.

H.R. Director has job descriptions for all positions in the laboratory defining the level of qualificafions, training, and experience and laboratory skills. During initial training, management provides documented operations procedures, observes personnel performance, and evaluates personnel proficiency. Management documents technical laboratory staff s proficiency initially and on a continuing basis through use of laboratory control samples and purchased proficiency evaluation standards. Management requires successful proficiency demonstration before allowing independent production testing.

Management is responsible for verification of proper sample management and all aspects of data reporting. The communication of the operating practices of the laboratory is through the document control and attestation process.

Either the Quality Assurance Officer, Operations Director and/or Technical Directors have the authority to stop work due to non-conformances and have the authority to resume work after it has been stopped.

6.2 Laboratory Staff Requirements

Recruitment is the responsibility of the Operations Manager and HR Department, with input from other personnel as required. The Training Program procedure SOP/15-01 details the process for completing requirements and training to ensure personnel have adequate skills and competence for the job function.

A job description details the necessary requirements for each job and includes position title, minimum educational requirements, skills, responsibilities and reporting relationships and any supervisory responsibility.

Initial training of new employees and contract staff includes laboratory ethics and quality policies, as well as execution of an Ethics Agreement. Any employee found to knowingly violate the Ethics Policy Agreement, report data values, that are not actual values obtained or improperly manipulatea, or intentionally report dates and times of data analyses that are not the actual dates and times of analysis, will lead to disciplinary action, including termination, as outlined in Section K of the Employee Handbook. Each employee must report personally or anomously to the Laboratory Director, QA Officer and/or Ethics Team Member any accidental or suspected intentional reporting of non-authentic data by others for follow up action. The review of the laboratory ethics policy occurs annually with all personnel. The annual review includes annual renewals of the Ethics Agreement.

The Ethics program consists of the following key components:

- Ethics Policy /Agreement (Appendix F)
- Initial and annual ethics training
- Internal audits conducted annually

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- Adherence to Manual Integration SOP/08-03
- Ethical or Data integrity issues reported to Lab Managers, QAO or HR Director
- Anonymous reporting to HR Director
- "No-fault" policy encouraging reporting of incidences without fear of retribution
- Electronic tracking and audit trails through LIMs and instruments enable where available.

6.3 Training

The Quality Systems Manual and related documentation is available to all employees. Cross training, supervisory training and other related training takes place on a scheduled and as-needed basis. Training ensures the communication and understanding of all personnel in the laboratory-documented procedures and practices.

All personnel undertake orientation-training sessions upon initial employmenL Orientation training includes laboratory business practices, employment specifications, Ethies Policy, Quality Systems Manual, Chemical Hygiene Plan, and all SOPs requirea for the job function.

Managers ensure the training for new employees and review the continuing training for current employees. Training includes on-site and off-site programs presented by staff members, contractors, equipment manufacturers, and institutions of higher leaming.

Training of new personnel to any job assignment takes place on-site according to the Training Program procedure. Laboratory personnel may perform their assigned methods/protocols without supervision only after documentation of acceptable proficiency. Training records lists the current training status.

On-the-job training includes demonsfration of skills during job performance, initial demonstration of proficiency, and review of SOPs. Safety and health training takes place on an annual basis with careful introduction to new principles. Personnel have access to the Chemical Hygiene Plan and Material Safety Data Sheets. On-site training includes side-by-side hands-on training, formal classroom type instruetion on the SOP or a meeting to discuss procedural changes or to address questions related to the laboratory operation. All training is documented via the Training Attestation Form, which is signed by all in attendance that they understood and will implement what was presented to them.

Training is an on-going opportunity to evaluate the laboratory operations. The updating of SOPs, Quality Systems Manual and other related information documents all changes to the quality system. In all cases, training is documented via the Training Attestation Form.

Off-site training takes place on an as-needed basis. Recommendations and suggestions regarding educational programs come from all levels of staff. It is the employee's responsibility to present a copy of any certificates or attendance information to the HR Director. The information is added to the individual's training record.

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6.4 Records

The QA Department is responsible for maintaining training records. Attestation forms, certificates, demonstration of capability forms and other records of training are placed in the individual's training file.

The Quality Assurance Officer or designee notifies appropriate personnel when a revision is complete for the controlled version of a document. Laboratory staff must implement the change as of the effective date. The manager of the area determines when a change is significant to require training.

Job descriptions are included in the training record files. The Human Resources Department reviews the job descriptions, resumes and training records to ensure up-to-date information on the job descriptions and resumes. The Human Resources Department and the individual update the resume on an as needed basis. Resumes and/or biosketches are kept on file with the Human Resources Department and the QA Department.

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7 Physical Facilities – Accommodation and Environment

This laboratory facility has a total area of 25,000 square feet in both the Westboro and Mansfield Facilities

The laboratory functional areas include:

- Administration and offices
- Sample receiving
- Sample management
- Microbiological (Westboro Facility only)
- General analytical chemistry
- Metals sample preparation
- Organic sample preparation
- Metals analysis
- Volatiles gas chromatography (GC)
- Volatiles gas chromatography/mass spectrometry (GC/MS)
- Volatiles air analysis (Mansfield Facility only)
- Semivolatiles gas chromatography/mass spectrometry (GC/MS)
- Semivoiafiles gas chromatography (GC)
- Miscellaneous facility mechanical and storage areas.

All chemicals are stored in appropriate cabinets and properiy disposed of as required. All flammable solvents are stored in OSHA and NFPA approved cabinets. Acids are stored in OSHA acid cabinets. Separate waste areas housps the sample and chemical waste before pickup by a licensed waste hauler.

7.1 Environment

Lighting, noise, humidity, heating, ventilation and air conditioning satisfy the needs of the testing performed on the premises. The laboratory building design ensures regulated temperature control for analytical equipment. Air-handling systems minimize airborne contaminants that may jeopardize sample integrity or analytical performance.

The analytical instrumentation is in separate rooms from laboratory activities that involve the use of large quantities of organic solvents or inorganic acids. A separate room, in the Westboro facility, provides the facilities for the microbiological testing.

Standards and other materials requiring below 0°C storage temperatures are placed in freezers and separated from samples or potential contaminating materials. Refrigerators provide cooling needs for samples and materials with temperature requirements of below room temperature and greater than freezing. Sample and standard storage areas are monitored and controlled for temperature. Sample storage areas for volatiles are separated from other samples and monitored for any effects due to cross contamination.

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Bulk hazardous waste containers are located away from the testing activities. Waste disposal uses lab pack procedures and those designated by the regulatory authorities. The Chemical Hygiene Plan and the Waste Management and Disposal SOPs (Westboro: SOP/14-01 and Mansfield SOP/G-006)) include the procedures for handling and disposing of chemicals used in the laboratory.

The working and storage environments are maintained in a safe and appropriate manner. A Chemical Hygiene Plan details the requirements for safety and chemical handling. Safety measures that protect property and personnel from injury or illness include: fume hoods, fire extinguishers, fire blankets, alarm systems, safety training, protective clothing, emergency showers, eyewashes, and spill control kits.

7.2 Work Areas

Good housekeeping is the responsibility of all personnel. Each person is responsible for assuring clean and uncluttered work areas. The job descriptions list specific housekeeping duties. Records, samples and waste materials are the common cause for clutter in the laboratory.

Management does not allow accumulation of boxed records in the laboratory operating area. Removal of administration and laboratory records to the record storage araa occurs to reduce clutter and ensure traceability. The individual filling the laboratory record box, labels the box with a number, the contents, date and laboratory area. Authorized personnel assign and record into a permanent record the box number, discard date and box contents. Authorized personnel review the box label for number, discard date and contents. Boxes are stored on site and off-site for the record retention period identified in the NELAC and EPA regulations, whichever is more stringent.

Sample management personnel remove samples to the sample storage area after all data is correct and complete. Sample coolers are removed to a designated storage area for recycling. Samples are stored in the designated process storage areas until testing is complete. Sample removal from the process storage occurs after mailing of the final report. The sample management staff places the samples in the archive storage area for thirty days after report release. The archive sample storage area is not controlled or monitored. Based on client specifications, samples are properly disposed or returned to the client.

Waste materials, expired reagents, expired standards and materials are disposed of and not stored in the laboratory. Hazardous waste labeled accumulation containers in the laboratory collect designated waste streams for later bulk disposal. Laboratory personnel remove the less than five-gallon accumulation containers when full from the laboratory and place the containers in the bulk hazardous waste area. Refer to the Waste Management and Disposal SOPS for Westboro: SOP/14-01 and Mansfield SOP/G006. Personnel identifying out of date reagents and standards remove the materials to the proper disposal area.

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7.3 Security

Alpha Analytical provides a secure environment for our employees, guests, clients, samples and analytical data. Security procedures require that all exterior doors remain locked unless manned. Access to the laboratory is limited to employees and contractors. Visitors not under signed contract are required to sign the Visitors Log and must be accompanied by a laboratory employee at all times within the testing areas.

The defined high security area is the sample management area. Identification card locks on the internal doors control entry into the laboratory area.

All doors are locked after hours and require a key for entry. The security alarm continuously monitors for smoke and fire related heat. When the alarm is activated, the appropriate emergency response officers are notified. The local emergency offices have the emergency contact list for the laboratory.

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8 Equipment and Reference Materials

8.1 Maintenance

The laboratory has a proactive equipment maintenance program. The laboratory maintains service contracts for major equipment, which include routine preventative maintenance visits by the service provider. Technical personnel perform manufacturer's specified maintenance on a routine basis to ensure equipment operates at peak performance.

Procedures and schedules for preventive maintenance are available in the test method SOPs. A brief summary of some common preventive maintenance procedures is provided in Appendix E. All instrument preventative and corrective maintenance is recorded in the maintenance logbook assigned to the equipment. After maintenance or repair, the instrument must successfully calibrate following the method SOP. Laboratory personnel must demonstrate quality control performance before sample analysis.

The laboratory maintains a stock of spare parts and consumables for analytical equipment. Backup instrumentation for some analytical equipment is available on site for use in case of major equipment failure. The person discovering or suspecting an equipment maintenance problem or failure tags the equipment with 'out of service' tag. If routine maintenance measures do not eliminate the problem, the Laboratory Director or Operations Director is notified and the appropriate equipment service provider is contacted.

All major laboratory equipment has individual and traceable maintenance logbooks in which to document manufacturer's recommended maintenance procedures, specific cleaning procedures, comments on calibration, replacement of small worn or damaged parts, and any work by outside contractors. The person performing routine or non-routine maintenance signs and dates the maintenance logbook. If an instrument is down for maintenance, a complete record of all steps taken to put it back into service is recorded including reference to the new calibration and quality control checks. Any equipment service providers working on the equipment are recorded in the logbook.

Record repetitive or on-going equipment problems other than normal maintenance requirements on nonconformance action forms. Tbe nonconformance action form notifies management and the Quality Assurance Officer of a problem affecting the performance and data quality.

The laboratory groups some equipment into a single laboratory equipment maintenance logbook. Examples include: autopipets, thermometer calibration. The identity of each item is by serial number or a laboratory-designated item number. The same data recorded for major equipment applies to this documentation.

The maintenance records shall include:

- Equipment name;
- Manufacturer's name, type identification, serial number or other unique identification;
- Date received, date put into service, condition when received;
- Current location;
- Details of past maintenance and future schedule;
- A history of any damage, malfunction, modification or repair;
- Dates and results of calibration or verification.

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The maintenance logbook may include the reference to the location of the equipment operational and maintenance manuals. The logbook may include the reference to laboratory run logbook or data files for the calibration and quality checks of daily or frequent calibrations.

The Courier Supervisor ensures that maintenance and records for transportation vehicles are complete. The purchasing process is used for ordering garage maintenance, the garage work order is reviewed, and the vehicle checked for condition. The Controller receives all paperwork for completion of the maintenance process.

8.1.1 Microbiology General Equipment Maintenance

Optics of the Quebec colony counter and microscope are cleaned prior to each use. The stage of the microscope is also cleaned and the microscope is kept covered when not in use.

Glassware is checked for residual alkaline or acid residue utilizing bromthymol blue (BTB) on each day of media preparation.

8.2 Equipment Listing

A listing of the major equipment used for testing is available upon request. The equipment list details the unique identification number, equipment location, serial number, model number, and purchase date. The unique identification number is attached to the piece of equipment.

The laboratory performs analyses using state of the art equipment. In addition to the major equipment, the most common equipment used in the laboratory are: thermometers, balances, autopipets, water baths, hot plates, autoclaves, pH meters, conductivity meters and a variety of labware. The SOPs list the calibration and verification requirements for all laboratory equipment used in measurements.

8.3 Laboratory Water

Laboratory water is purified from central DI water systems and piped to all laboratory areas. In Westboro, the QA Department samples the laboratory grade water and submits the samples for analysis by the lab to document the water meets the drinking water certification criteria. The Laboratory Water Logbook lists the daily conductivity checks and acceptance criteria for the laboratory water. The laboratory documents the daily, monthly and annual water quality checks. Please refer to Table 8-1 for tested parameters, monitoring frequency and control limits for each parameter (SOP/08-11). Additional parameters may be tested for at the laboratory's discretion.

When additional treatment occurs in the test area, that test area records the water quality checks from the most frequently used tap. At a minimum the quality of the laboratory grade water is monitored daily by conductivity measurements. Records of the daily checks are found in the Laboratory Water Logbook. If out of specification results occur, a nonconformance action form is submitted.

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TABLE 8-1 (Westboro Water)

Parameter	Monitoring Frequency	Control Limits
Conductivity	Daily	<2 µmhos/cm @ 25°C
pH	Daily	5.5 - 7.5
Total Organic Carbon	Monthly	< 1.0 mg/L
Total Residual Chlorine	Monthly	< detection limit
Ammonia Nitrogen	Monthly	< 0.1 mg/L
Metals: Cd, Cr, Cu, Pb, Ni and Zn	Monthly (Required Annually)	< 0.05 mg/L
Total Metals	Monthly (Required Annually)	< 0.1 mg/L
Heterotrophic Plate Count Westboro only	Monthly	< 500 CFU/mL
Water Quality Test (Biosuitability) Westboro only	Annually	0.8 – 3.0 ratio

8.4 Reference Materials

Reference materials include: Class 1 weights, NIST thermometers and reference standards. Logbooks record the reference materials used for calibration and verification. The Department Manager maintains any certificates received with the reference materials. Laboratory personnel record in the standards logbook the reference standards date received, unique identificafion number, expiration date and number of containers. Each laboratory area, records the unique identifier on the reference stanaard certificate and the Department Manager maintains the certificate. The identifier allows traceability from the certificate to the analytical data.

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9 Measurement Traceability and Calibration

9.1 General Requirements

All measuring operations and testing equipment having an effect on the accuracy or validity of tests are calibrated and/or verified before put into service and on a continuing basis. The results are recorded in the instrument specific logbook. The laboratory has a program for the calibration and verification of its measuring and test equipment. The program includes all major equipment and minor equipment such as balances, thermometers and control standards. The Quality Systems Manual and method SOP describe the calibration records, frequency and personnel responsibilities.

9.2 Traceability of Calibration

The program of calibration and/or verification and validation of equipment is such that measurements are traceable to national standards, where available. Calibration certificates indicate the traceability to national standards, provide the results, and associated uncertainty of measurement and/or a statement of compliance with identified metrological specifications. A body that provides traceability to a national standard calibrates reference standards. The laboratory maintains a permanent file of all such certifications.

9.3 Reference Standards and Materials

Alpha Analytical has a program for calibration and verification of reference standards. The results and program are recorded in the appropriate instrument logbook. Required in-service checks between calibrations and verifications are described in method SOPs and are recorded in the appropriate instrument logbook.

Calibration standards are maintained within the area of consumption. A logbook of use is maintained and use is limited strictly to method required calibrations. Each calibration standard is identified as to test method used, date received, date opened, and expiration date. Calibrations are verified by using a second source or lot number of the calibration standard. Calibration check procedures are stated in applicable test method SOPs.

Reference standards of measurement in the laboratory's possession (such as calibration weights or traceable thermometers) are used for calibration only and for no other purpose.

9.4 Calibration General Requirements

Each calibration record is dated and labeled with method, instrument, analysis date, analyst(s) and each analyte name, concentration and response. For electronic processing systems that compute the calibration curve, the equation for the curve and the correlation coefficient are recorded in the appropriate instrument logbook. This is also true for manually prepared curves.

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Initial calibration requires a standard curve that brackets the expected sample concentration. Initial calibration generally uses three to five standards depending on the equipment and reference method specifications. Before the start of each analytical sequence, initial calibration is verified by using a continuing calibration standard. Calibration verification or continuing calibration uses a standard from a second source or lot number than that used for initial calibration. The acceptance criteria for the continuing calibration standard must meet acceptance criteria before analysis of any samples. When the acceptance criteria is not within limits, review maintenance protocols and perform any necessary maintenance before starting the initial calibration sequence.

9.5 Equipment Calibration

The SOP used for the analysis defines the instrument and equipment calibretion required. The following defines the general practices for equipment calibrafion of selected equipment.

9.5.1 Gas Chromatography/Mass Spectrometry (GC/MS)

The GC/MS is hardware tuned before performing the initial and continuing calibrations. Results must meet the peak ratio specificafions of the analytical methods. For volatiles analyses, bromofluorobenzene (BFB) is used, and for semivolatiles analyses, decafluorotriphenylphosphine (DFTPP) is used for instrument tuning..

The mass spectrometer response is calibrated by analyzing a set of five or more initial calibration solutions, as appropriate, for each GC/MS method. Each solution is analyzed once, unless the method or the client requires multiple analyses. The relative response factor for each analyte is calculated for internal standard calibration. The calibration factor for external standard calibration is calculated using the expressions found in the laboratory method SOP. Calibration is acceptable when all acceptance criteria are within control limits.

The initial calibration is verified through the analysis of a continuing calibration standard every 12 hours. The concentration of the continuing calibration standard is dependent on the requirements of the specific method. The relative response factors for all analytes of interest are calculated and verified against the inifial calibration mean relative response factors. The percent difference (%D) for each analyte is calculated and must be less than the acceptance criteria stated in the method.

An acceptable continuing calibration run must have measured percent differences for the analytes within method specified ranges. If any criteria for an acceptable calibration are not met, either instrument maintenance must be performed until the continuing calibration analysis meets all criteria or a new initial calibration is established before any samples are analyzed. No samples may be analyzed unless the acceptance criteria are met for the initial and continuing calibration.

Additional quality control samples are part of the GC/MS analysis. These include internal standards, surrogates, method blanks, instrument blanks, laboratory control samples, matrix spikes, and matrix spike duplicates. The frequency and control criteria are defined in the laboratory SOP.

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9.5.2 Gas Chromatography (GC)

Internal standard calibration or external standard calibration is utilized for analysis by GC. The method-specified number of calibration standards is used. Each solution is analyzed once and the analyte relative response factors or calibration factors are calculated. The mean relative response factor for each analyte is then obtained by using the expression in the formula listed in the SOP. Integrated areas are utilized for these expressions.

For multiple response pesticides, PCBs or hydrocarbons the quantitation consists of the average of selected peaks or the integration of the area defined by a reference standard. The SOP details the integration criteria for each compound.

The initial calibration is verified through the analysis of a continuing calibration standard every 12 hours or 20 samples. The concentration of the continuing calibration standard is dependent on the requirements of the specific method. The relative response factors for all analytes of interest are calculated and verified against the initial calibration mean relative response factors. The percent difference (%D) for each analyte is calculated. The percent drift (%d) may be calculated when calibration factors are used for quantitation.

An acceptable continuing calibration must have measured percent differences or percent drift for the analytes within method specified ranges. Should any criteria for an acceptable calibration not be met, either instrument maintenance is performed until the continuing calibration analysis meets all criteria, or a new calibration is established before any samples are analyzed. No samples may be analyzed unless the acceptance criteria are met for the inifial and continuing calibration.

Other standard checks may be required for a specified reference method. Instrument performance checks specified in the reference method must be performed and be within the acceptance limits stated in the reference method. Additional quality control samples are part of the GC analysis. These include internal standards, surrogates, method blanks, instrument bianks, laboratory control samples, matrix spikes and matrix spike duplicates. The frequency and control criteria are defined in the laboratory SOP.

9.5.3 Cold Vapor Atomic Absorption Spectrophotometry (CVAA)

An initial calibration is performed daily with freshly prepared working standards that bracket the expected concentration range of the sample. A minimum of a three-point calibration curve is acquired which must have a correlation coefficient of 0.995 or better. The initial calibration is verified every 10 samples. The continuing calibration is required to be within method-defined criteria, depending on the analytical method employed. Continuing calibration blanks are run at the same frequency. Analysis of samples cannot begin until an iriitial calibration verification has been performed and is found to be within ± 10% of the true value.

9.5.4 Inductively Coupled Plasma Emission Spectrophotometry-Mass Spectrometry (ICP-MS)

Initial calibrafion and instrument tune is performed daily, not to exceed 24 hours, and confinuing calibrations are performed every 10 samples. Initial calibration consists of a minimum of three standards and a Blank that bracket the expected concentration range of the samples. Analysis of samples cannot begin until an initial calibration verification has been performed and is found to be within method-defined criteria. The continuing calibration is required to be within method-defined criteria. Interference check standards are performed at the beginning of the sequence. Acceptance criteria are stated in the SOP.

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9.5.5 Inductively Coupled Plasma Emission Spectrophotometry (ICP)

Initial calibration is performed daily, not to exceed 24 hours, and continuing calibrations are performed every 10 samples. Initial calibration consists of one standard and a Blank that bracket the expected concentration range of the samples. Analysis of samples cannot begin until an initial calibration verification has been performed and is found to be within 5% of the true value. The continuing calibration is required to be within 10% of the true value. Interference check standards are performed at the beginning and end of the sequence. Acceptance criteria are stated in the SOP.

9.5.6 Thermometers

Laboratory thermometers are checked annually for accuracy against certified, NIST traceable thermometers. Correction factors derived from the annual calibrations are applied to temperature readings where applicable. The analyst records the corrected temperature for all observations.

NIST traceable thermometers are calibrated professionally and re-certified every year. Records of thermometer calibrations are retained by the QA Department. All thermometers are tagged with the ID number, correction factor to be applied and the expiration of the calibration check.

NOTE: Electronic-based thermometers are calibrated on a quarteriy basis by an outside instrument service company. Thermometers are tagged with calibration informafion by the vendor, including the ID number, correction factor to be applied and the expiration of the calibration check. Certificates are kept on file in the QA Department.

Thermometers are not used past the calibration expiration date or if the thermometer is not reading properiy. Replacement thermometers are calibrated and the maintenance logbook is updated when a change in the thermometer is required due to breakage, damage or expired calibration.

9.5.7 Balances

Calibration checks are performed for each day of use, for each balance. The calibration consists of a minimum of two weights, which bracket the weight to be measured. Additional calibration check procedures are performed on balances utilized in Microbiology laboratory. This additional procedure consists of a defleetion test, which is performed to ensure that 100mg is detectable at a weight of 150 grams.

The balance logbodk lists the acceptance criteria and performance criteria for the various balances used in the laboratory. Calibration weight measurements must meet the acceptance criteria listed on the record form.

Each balance is serviced and calibrated by a professional semi-annually. Balances are labeled with the balance number, date of service and the expiration date for the annual service check. The balance number used for any measurements requiring traceability is recorded with measurement data. Balances are not used past the expiration date or when the weight check is not within acceptable criteria. The accuracy of the calibration weights used by Alpha Analytical is verified annually by an accredited calibration service.

9.5.8 Automatic Pipettes

Delivery volumes for the automatic pipettes are checked and recorded gravimetrically before use and on a quarteriy basis. The verificafion is performed at the volume of use or bracketing the volume range of use. The check must be within the criteria stated in the laboratory logbook.

Autopipette calibration is also performed once per year. Each pipette is checked throughout the volume range of use by measuring seven replicate volumes and weighing. Acceptance criteria for

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continued use is 5% RSD and between 95.0-105 % recovery. Pipettes failing acceptance criteria are tagged and removed from service until repaired and the criteria are met, or discarded and replaced. Automatic pipettes are labeled with a unique ID number, volumes verified and expiration date.

9.5.9 Ion Chromatography

The ion chromatograph calibration is by analyzing a set of five or more initial calibration solutions, with concentrations of analytes appropriate to the analytical methods. The concentrations must bracket the expected concentration range of the samples analyzed. Procedures for verifying the calibration curve are method specific. The initial calibration is performed at the start of each day. The calibration curve is verified at least after every 20 samples.

9.5.10 pH Meters

pH meters are calibrated prior to use for each day of use. The meter is calibrated following the procedure for pH analysis. The records of the calibration are recorded in an instrument logbook or in the raw data for the analysis being performed. At least two buffer solutions that bracket the measurement range for the analysis are used for calibration. A second source check standard is used at the end of a run to verify meter stability. Buffer solutions used for calibration are NIST certified. Standard buffer solutions are not retained or re-used. The lot number of the buffer solufions is recorded in the data record to ensure traceability of the measurement to NIST.

9.5.11 Conductivity Meters

Three calibration standards of potassium chloride (KCL) solutions are analyzed annually on each instrument range. The calibration standards are used to verify instrument performance. The acceptance criteria are defined in the test SOP. If unacceptable performance is found, the cell is cleaned and rechecked. The cell is not used until satisfactory performance is achieved.

A single KCL standard solution is used to calibrate each range of the instrument. A second standard is used to check the calibration each day the meter is used. The check standard is near the measurement range for the samples to be analyzed. The acceptance criteria is ± 20% of the true value. The meter is labeled with expiration date for the annual calibration. A check standard that is NIST traceable is used to allow traceability. The check standard is performed at the end of the analysis run or at least after every 20 samples.

9.5.12 Autoclave

The date, contents, sterilization time and temperature, total cycle time and analyst's initials are recorded each time the autoclave is used. Autoclave cycles must be completed within 45 minutes when a 15 minute sterilization time is used. Autoclave timing mechanisms are checked quarterly with a stopwatch to verify timing controls. A maximum temperature thermometer is used with each cycle to ensure the sterilization temperature is reached.

Spore strips or ampoules are used weekly to confirm sterilization. BTSure ampoules are utilized as follows: An indicator ampoule is placed in most challenging area of sterilizer. Load is processed according to standard operating instructions. Remove from sterilizer and allow to cool for a minimum of 10 minutes. (Chemical indicator on label changes from green to black when processed.) Place the autoclaved indicator and un-autoclaved control indicator in an upright position in the plastic crusher provided. Gently squeeze crusher to break glass ampoules. Incubate both indicators at 55-60°C for 48 hours. Examine appearance for color change. Yellow color indicates bacterial growth. No color change indicates adequate sterilization.

Calibration is conducted and certified annually by an outside service provider and recorded. Certificates are kept on file. Routine maintenance includes cleaning the autoclave seal to ensure

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freedom of caramelized media and cleaning drain screens to remove any debris buildup. For the efficient operation of the unit, overcrowding is avoided.

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10 Test Methods and Standard Operating Procedures

10.1 Methods Documentation

Analysis consists of setting up proper instrument operating conditions, executing acceptable calibrations, monitoring instrument performance tests, analyzing prepared samples, and collecting data from the analyses. The test method SOP describes the instrumental analysis procedures, quality control frequencies and acceptance criteria. EPA accepted methods, national recognized methods or client-specified methods are the basis for performance criteria, instrument conditions and the steps of the procedure. The method performance requirements of the published methods are followed unless otherwise specified by the client.

The reference methods define the instrument operating conditions. In many of the reference methods, a range or general guidance on the operating conditions is defined. Documented modifications to the operating conditions clarify the reference methods or improve the quality of the results. In all cases where the method modifications are adopted, the performance criteria from the reference method must be met. Modifications to the operating conditions are stated in the SOP. Changes in the operating conditions made at the time of the analysis are documented in the appropriate laboratory or sequence log. A revision to the SOP takes place, when a day to day change in the operating condition improves performance for all matrices.

The laboratory SOPs include the operation of measurement equipment. The SOPs contain the following information, as applicable:

- The equipment used in the procedure, including equipment type
- Equipment calibration and process for obtaining the measurement from the calibration
- The step by step instructions to perform the measurement
- Acceptance criteria for the calibrations
- Corrective action for failed acceptance criteria, including assessment of previous calibration results
- The basis used for the calibration standards such as traceability to NIST or EPA or demonstration of comparability
- Frequency at which the equipment will be calibrated, adjusted and checked
- The records maintained to document the calibration and use of measurement equipment
- The calibration status for the equipment
- The environmental conditions necessary before measurement equipment may be calibrated or used for measurement
- Allowed adjustments to measurement equipment, including software, which will not invalidate the laboratory analysis
- Maintenance of the equipment and record keeping to track performance before and after maintenance is completed
- Define the standards, reagents and sample handling, interferences, preservation, and storage in order to assure measurement performance

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10.2 Standard Operating Procedures (SOPs)

Alpha Analytical maintains SOPs that accurately reflect all phases of current laboratory activities such as assessing data integrity, nonconformance actions, handling customer complaints, sample receipt and storage, purchasing of all materials, and all test methods. These documents include equipment manuals provided by the manufacturer, internally written documents, and published methods with documented changes or modifications.

Copies of all SOPs are accessible to all personnel in either electronic or written form. The SOPs are organized in a standard format with the signatures of the approving authorities. Each SOP clearly indicates the effective date of the document and the issue number.

10.3 Laboratory Method Manual (s)

All SOPs are posted as secure documents on the Alpha Intranet. Directories are available for each laboratory and administrative area. Each SOP includes or references where applicable:

1) identification of the test method arid where applicable;
2) applicable matrix or matrices;
3) method detection limit;
4) scope and application;
5) summary of method;
6) definitions;
7) interferences;
8) safety;
9) equipment and supplies;
10) reagents and standards
11) sample collection, preservation, shipment and storage;
12) quality control;
13) calibration and standardization;
14) procedure;
15) calculations;
16) method performance;
17) pollution prevention;
18) data assessment and acceptance criteria for quality control measurements;
19) corrective actions for out-of-control data;
20) contingencies for handling out-of-control or unacceptable data;
21) waste management;
22) references; and
23) any tables, diagrams, flowcharts and validation data.

In cases where modifications to the published method have been made by the laboratory or where the referenced method is ambiguous or provides insufficient detail, these changes or clarifications are clearly described in the SOP.

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10.4 Test Methods

The laboratory uses appropriate methods and procedures for all tests and related activities within its responsibility (including sampling, handling, transport and storage, preparation of items, estimation of uncertainty of measurement and analysis of test data). The method and procedures are consistent with the accuracy required, and with any standard specification relevant to the calibrations or tests concerned. When the use of mandated methods for a sample matrix is required, only those methods are used. Where methods are employed that are not required, the methods are fully documented and validated and are available to the client and other recipients of the relevant reports.

The client requests the reference method for sample analysis usually based on the regulatory program. The client services staff may assist the client with method selection when the client specifies the regulatory program, but is unsure of the correct method required. The Laboratory Director or Quality Assurance Officer recommends methods for non-regulatory programs. In all cases, recommendation of methods is based on client-defined method performance criteria. Client services may recommend a procedure that meets the client method performance criteria.

10.5 Method Validation/Initial Demonstration of Method Performance

Before acceptance and use of any method, satisfactory initial demonstration of method performance is required. In all cases, appropriate forms are completed and retained by the laboratory and made available upon request. All associated supporting data necessary to reproduce the analytical results is retained. Initial demonstration of method performance is completed each time there is a significant change in instrument type, personnel or method..

10.6 Sample Aliquots

The aliquot sampling process from a submitted sample is part of a test method. The laboratory uses documented and appropriate procedures and techniques to obtain representative sub-samples. Sample aliquots removed for analysis are homogenized and representative portions removed from the sample container. Personnel record observations made during aliquot sampling in the test method logbooks.

10.7 Data Verification

Calculations and data transfers are subject to appropriate checks. A second person recalculates all manual calculations. An independent qualified analyst also reviews the data. A Client Services representative reviews data for project and method performance requirements where applicable. A QA representative reviews data for project and method performance requirements when requested by a Client. Final report review is performed by an authorized company signatory.

For drinking water suppliers, every effort is made to notify the Client within 24-hours of obtaining valid data of any results that exceed any established maximum contaminant level or reportable concentration. Analyst or Department Supervisor notifies the Client Services Department of the sample number(s), Client name, analysis and sample results (preliminary or confirmed). The Client Services Department notifies the client.

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The laboratory Report Generation and Approval SOP describes the practices to ensure that the reported data is free of transcription errors and calculation errors. Manually entered data into the LIMS is dual entered and checked by the LIMS to minimize transcription errors. The laboratory test method SOP describes the quality control measures used to assure method performance before reporting data.

10.8 Labeling of Standards and Reagents

The purchase, receipt and storage of consumable materials used for the technical operations of the laboratory include the following:

a) The laboratory retains records of manufacturer's statement of purity, of the origin, purity and traceability of all chemical and physical standards.

b) Original reagent containers are labeled with the date opened and the expiration date.

c) Detailed records are maintained on reagent and standards preparation. These records indicate traceability to purchased stocks or neat compounds and include the date of preparation and preparer's initials.

d) Where calibrations do not include the generation of a calibration curve, records show the calibration date and type of calibration standard used.

e) All prepared reagents and standards are uniquely identified and the contents are clearly identified with preparation date, concentration and preparer's initials.

10.9 Computers and Electronic Data Related Requirements

Computers or automated equipment are used for the capture, processing, manipulation, recording, reporting, storage or retrieval of test data. The laboratory ensures that computer software is documented and adequate. The goals of the software development methodology, existing system validations and the change control system are to ensure that:

the software systems perform the required functions accurately,

the users understand how to use the system, and

auditors can assure themselves of the validity of the analytical data.

The computer systems used at Alpha Analytical are purchased. A coordinated effort is made with the supplier to assure the computer operations meet the laboratory requirements for data integrity. Alpha Analytical has a formal validation program of its computer systems. The validation program is a comprehensive program to ensure data transmitted, reported or manipulated by electronic means is correct and free of errors. The validation and verification approach is separated into three areas.

1. New software is developed and validated using test data. Records of validation include the test data report, date and initials. Where formulas are part of the program, documentation includes manual verification of the final calculated values. New software includes the development of macros for spreadsheets and other tools using commercial software packages.

2. Reasons for changes to software are identified through flaws in existing documentation or the need to improve system processes and are documented on the Nonconformance Report. Final implementation of the change is documented on the nonconformance action form. The tracking and timelines of making the change is readily available. This process also provides the complete documentation of all software and electronic data reporting problems.

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3. Verification of system integrity is through routine maintenance, protection from unauthorized access and electronic verification programs. Routine maintenance including system backups are performed on a scheduled basis. The backup process and password and access protections are defined in the Computer System Backup Control SOP/11-01 and Computer Security SOP/11-02. Electronic verification may be used to assure the commercially purchased software is performing at its original specifications. This includes virus checking of all network operation at least once per week. Documentation of all verification and maintenance operations is retained.

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11 Sample Handling, Sample Acceptance Policy and Sample Receipt

The Sample Login and Custody procedures define the process for sample management from sample receipt through analysis and to disposal. These procedures detail the process for sample receipt, records and storage pending analysis.

Clients or Alpha's Couriers deliver samples to the laboratory during normal business hours. Sample receiving occurs in the sample management area.

Client service personnel place bottle orders. The orders are filled following the bottle order instruction form. Blanks are prepared as needed with minimal storage. All glass containers are packed to minimize or prevent breakage. The containers are placed in plastic coolers or shipping packages and Chain-of Custody forms, seals (if requested) and labels enclosed. The bottle order is shipped by third party, picked up by the client or client representative or delivered by Alpha courier to the client.

11.1 Sampling Supplies

11.1.1 Sample Containers

Sample containers provided by Alpha Analytical include labels, preservatives and a blank chain of custody form. Preservatives and containers are lot controlled and verified as appropriate for the indicated type of analysis.

Each lot of containers used for the collection of samples for microbiological analysis is checked for sterility prior to distribution. Sterility checks are performed by Microbiology staff and results recorded in Microbiology Sample Container Sterility Log.

11.1.2 Chain of Custody

Chain of custody forms must accompany all samples received by Alpha personnel. The chain of custody form indicates the sample origin and arrival at the laboratory and identifies the analyses requested.

11.1.3 Reagent Water

Alpha Analytical supplies laboratory pure water for field QC blanks. Water used for volatile organics must be free of volatile compounds below the method detection limit. The quality of the laboratory water is monitored for conductivity once per day. Additional water quality criteria may be monitored based on client specific requests. The water quality in the laboratory is monitored for chemical parameters as required by the EPA certification manual for drinking water (Water Quality Monitoring SOP/08-11).

11.2 Sample Tracking

Alpha Analytical uses an internal chain-of-custody in LIMs for sample tracking control purposes. When requested or required by regulation a legal custody program is used in addition to the routine laboratory practices. Legal custody practices must be arranged at the time of contractual commitment.

For legal custody the process must include complete and continuous records of the physical possession, storage, and disposal of sample containers, collected samples, sample aliquots, and sample extracts or digestates. For legal custody a sample is in someone's custody if:

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1. It is in one's actual physical possession;
2. It is in one's view, after being in one's physical possession;
3. It is in one's physical possession and then locked up so that no one can tamper with it;
4. It is kept in a secured area, restricted to authorized personnel only.

The routine sample handling and tracking process includes unique identification of all sample containers, initials of the person removing the sample from the sample management area and documentation of the date of sample removal for disposal.

Samples are assigned a unique identification number from the LIMS program. Each sample container label includes a unique identifier for the container. The person handling the sample is recorded along with the unique identifier in the container tracking records in LIMS.

ALPHA ANALYTICAL utilizes a custom designed Laboratory Information Management System (LIMS) to uniquely identify and track samples and analytical data throughout the facility. The LIMS log-in, is initiated by the Sample Custodian when the following information is entered into the computer:

- Quote number (unique to the project if requested)
- Project name or description
- Analyses requested (per matrices received)
- Sample number (unique to this sample)
- Sample descriptions (client ID, including number of received containers)
- Date received
- Date(s) and time(s) collected
- Date analyfical results are due
- Client's name and address
- Notation of special handling instructions
- Additional comments or instruction for the laboratory
- Purchase order number(s), if applicable

Alpha Job Numbers (Process for assigning numbers)

Alpha Job Numbers are unique #'s automatically designated by our LIMS computer system for every individual client project.

There are 3 parts to this number:

- All numbers start with the letter "L"
- The next two numbers are the last two numbers of the current year.
- The last five numbers are pulled sequentially by the LIMS as each Login personnel requests a new number for a job.

For example.... L0904165 ---- Year 2009 and 4,165th job to be logged in this year.

The Alpha Job Number then may contain as many extensions as there are individual samples in a job. L0904165-01 is the first sample, L0904165-02 is the second and so on. Each sample may contain as many as 26 containers as the containers are designated with the letters of the Alphabet, and each container receives it's own bar-coded label. For example, L0904165-09A is the first container of the 9th sample listed on a client's Chain of Custody.

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Each container is labeled with a unique identifier, a label with a unique identifier number is placed on each sample container. Once labeled, the sample containers are placed in the appropriate storage area.

11.3 Sample Acceptance Policy

The sample management personnel check for proper sample labeling, preservation and handling at the time of arrival at the laboratory. The client and client services manager specifies the proper sample preservation, containers, cooling and other criteria on the project review form and in the LIMS. Sample management staff record all observations and immediate notify client services of any discrepancies or questions arising during sample receipt.

It is possible for samples or sample containers to be lost, damaged, or determined to be unsuitable, for whatever reason, after initial receipt at Alpha Analytical. The problem is brought to the attention of a client services manager who reports it to the client. Plans for disposition of the affected samples or container are agreed upon with the client, carried out, and recorded in the project records.

11.4 Sample Receipt Protocols

The sample management staff receives all samples. A unique job number is assigned to each shipment of samples received from a client, The in-house records for the incoming job, including the internal Chain-of -Custody, are initiated with a Sample Delivery Group (SDG) form. The client, and Alpha courier and/or the sample management personnel sign the sample custody form at the time of receipt at the laboratory. Samples received via overnight courier are signed on the bill of lading. The bill of lading, SDG form and the sample custody form are completed for external courier delivered samples.

The sample management staff examines the shipping containers, their contents, and accompanying client documentation. Information about the sample identification, the location, date and time of collection, collector's name, preservation type, sample type, presence and condition of custody seals, the state of preservation of the samples and other required information is noted on the SDG form. Any discrepancies in documentation or problems with sample condition such as appropriate sample containers, thermal preservation variation, holding times and adequate sample volumes are noted and brought to the attention of the client via the nonconformance action form. The Client Services Manager provides clarification or further instruction to the sample management staff on the processing of the samples that are incomplete or missing required information.

The sample management staff logs the samples in the LIMs and a durable label for each container is printed. The custodian attaches each label to the appropriate sample container The following information is recorded for tracking internal custody: laboratory sample ID, client sample ID, sample matrix and storage location. Sample receipt and log-in specifically requires: date and time of laboratory receipt of sample(s); sample collection date; unique laboratory ID code; field ID code supplied by sample submitter; requested analyses; signature or initials of data logger; comments from inspection for sample acceptance or rejection and in some cases, sample bottle codes.

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11.5 Storage Conditions

Alpha Analytical stores samples under proper environmental conditions to ensure their integrity and security. Samples are stored at temperatures that meet specifications of the methodology, regulatory agencies and client directives. Refrigerators are monitored and controlled to be within 4 ± 2°C. Chemical, temperature, holding times and container storage requirements are listed in the LIMS project database.

Client Quality Assurance Project Plans may list preservation requirements differing from the laboratory. The sample management staff reviews project information for projects specific handling. Addition of chemical preservative to sample containers normally is done in the field at the time of sampling. Chemical preservation and temperature preservation checks at the time of receipt are recorded except for volatile organic compounds, bacteria, sulfite, and dissolved oxygen preservation. Any differences from laboratory or client specific requirements are recorded on nonconformance action forms and contact made with the client by the Client Services Manager or designee.

Sample storage facilities are located within the sample management area, which is secured by locked doors. Internal chain-of-custody procedures and documentation pertaining to sample possession, removal from storage, and transfer are outlined in the sample custody procedure. Samples are returned to the sample management area after the sample portion is removed for analysis. Extracts and digestates are tracked and follow the same internal custody operation. Extracts and digestates are removed to the waste disposal area after analysis for proper disposal.

Sample storage precautions are used to ensure that cross contamination does not occur during sample storage. Refrigerator storage blanks are monitored for volatile compounds as necessary. The storage blank information allows the assessment of potential cross contamination in the sample storage refrigerator.

Temperatures of cold storage areas are monitored and recorded daily. Corrective action is done as necessary when temperatures are not within the control criteria. In the Westboro and Mansfield facilities, automated Data loggers are linked to thermocouples in custody refrigerators and freezers in the Sample Storage area as well as department standards/storage refrigerators and freezers. The Data logger is calibrated and certified by an outside vendor on a quarterly basis. Refrigerators and/or freezers not connected to the Data Logger system have temperatures measured with NIST traceable thermometers. Temperature records indicate the thermometer or sensor (Data logger) used for obtaining the measurement.

11.6 Sample Disposal

Samples are held for thirty days after the report is released to the client. Upon written client request samples are held for up to six months in an uncontrolled area. Requests for controlled sample storage must be arranged at the time of contractual commitment

An authorized waste carrier is contracted to pick up waste as needed and dispose of it, in accordance with all regulatory requirements. Post-analysis disposition of samples is dependent upon project specific requests. Remaining sample material may be returned to the client, safely discarded, or archived for a specific time prior to disposal. The waste disposal SOP defines the specific requirements for sample disposal and other waste disposal operations.

The sample management staff are responsible for the archival and disposal of raw samples, extracts and digestates. Raw and prepared samples may not be archived or disposed until all of the designated analyses are complete and resultant analytical data is sent to clients. Samples in storage are retained a minimum of 30 days after reporting the results to the client. Any samples requiring more than 30 days are archived.

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When a client has requested the return of samples, the sample management staff prepares and ships the samples according to the same custody procedures in which the samples were received and following any client specified requirements. Protection of the samples during delivery is ensured by the implementation of special packaging procedures. Packages are delivered by a commercial carrier whose procedures for protecting the samples are not within the control of this laboratory. Clients are informed that a commercial carrier will deliver their samples if required.

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12 Records

Alpha Analytical has a record system that produces accurate records, which document all laboratory activities. The laboratory retains records of all original observations, calculations and derived data, calibration records and a copy of the test for ten years minimum. The system retains records longer than the minimum upon the request of authorized clients, agencies or another regulator.

12.1 Record Keeping System and Design

The record keeping system allows reconstruction of laboratory processes that produced the analytical data of the sample.

a) The records include the names of personnel involved in sampling, preparation, calibration or testing.

b) Information relating to laboratory facilities equipment, analytical methods, and activities such as sample receipt, preparation, or data verification are documented.

c) The record keeping system provides retrieval of working files and archived records for inspection and verification purposes.

d) Documentation entries are signed or initialed by responsible staff.

e) Generated data requiring operator logging on appropriate logsheets or logbooks are recorded directly and legibly in permanent ink

f) Entries in records are not obliterated by any method. Corrections to errors are made by one line marked through the error. The person making the correction signs and dates the correction.

g) Data entry is minimized by electronic data transfer and ensuring the number of manual data transcriptions is reduced.

12.2 Records Management and Storage

1. Records including calibration and test equipment, certificates and reports are safely stored, held secure and in confidence to the client.
2. The laboratory maintains hardware and software necessary for reconstruction of data.
3. Records that are stored or generated by computers have hard copy or write-protected backup copies.
4. Alpha Analytical has established a record management system, for control of hard copy laboratory notebooks.
5. Access to archived information is carefully controlled and is limited to authorized personnel. These records are protected against fire, theft, loss, environmental deterioration, vermin, and in the case of electronic records, electronic or magnetic sources.
6. In the event that Alpha Analytical transfers ownership or goes out of business, there is a plan to ensure that the records are maintained or transferred according to the client's instructions. A plan will be developed to maintain continuity of our record keeping systems as requested and/or required by both state and federal laws.

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Alpha Analytical retains all original hard copy or electronic raw data for calibrations, samples, and quality control measures for ten years, including:

1. Analysts work sheets and data output records,
2. Reference to the specific method,
3. Calculation steps including definition of symbols to reduce observations to a reportable value,
4. Copies of all final reports
5. Archived SOPs,
6. Correspondence relating to laboratory activities for a specific project,
7. All nonconformance action reports, audits and audit responses,
8. Proficiency test results and raw data,
9. Data review and cross checking.

The basic information to tie together analysis and peripherals such as strip charts, printouts, computer files, analytical notebooks and run logs for Alpha Analytical includes:

1. Unique ID code for each Laboratory sample or QC sample;
2. Date of analysis;
3. Instrument identification and operating conditions;
4. SOP reference and version;
5. Calculations;
6. Analyst or operators initials/signature.

In addition, Alpha Analytical maintains records of:

1. Personnel qualifications, experience and training
2. Initial and continuing demonstration of proficiency for each analyst
3. A log of names, initials and signatures for all individuals who are responsible for signing or initialing any laboratory records.

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12.3 Laboratory Sample Tracking

A record of all procedures to which a sample is subjected while in the possession of the laboratory is maintained. These include but are not limited to records pertaining to:

a) Sample preservation including appropriate sample container and compliance with holding time requirement; If the time of the sample collection is not provided, the laboratory must assume the most conservative time of day (i.e., earliest).

b) Sample identification, receipt, acceptance or rejection and log-in;

c) Sample storage and tracking including shipping receipts, transmittal forms, and internal routing and assignment records; this includes interlaboratory transfers of samples, extracts and digestates.

d) Sample preparation including cleanup and separation protocols, ID codes, volumes, weights, instrument printouts, meter readings, calculations, reagents;

e) Sample analysis;

f) Standard and reagent origin, receipt, preparation, and use;

g) Equipment receipt, use, specification, operating conditions and preventative maintenance;

h) Calibration criteria, frequency and acceptance criteria;

i) Data and statistical calculations, review, confirmation, interpretation, assessment and reporting conventions;

j) Method performance criteria including expected quality control requirements;

k) Quality control protocols and assessment;

l) Electronic data security, software documentation and verification, software and hardware audits, backups, and records of any changes to automated data entries;

m) Automated sample handling systems;

n) Records storage and retention; and

o) Disposal of hazardous samples including the date of sample or sub-sample disposal and the name of the responsible person.

p) The COC records account for all time periods associated with the samples.

q) The COC records include signatures of all individuals who had access to individual samples. Signatures (written or electronic) of all personnel who physically handle the samples. Time of day and calendar date of each transfer or handling procedure

r) Common carrier documents.

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13 Laboratory Report Format and Contents

The Process Planning and Control Procedure details the recording and reporting of data as required by the client and in accordance with relevant environmental regulations.

Clients specify the report delivery and deliverables required for the work submitted. Report delivery includes standard turnaround and rush tumaround. Clients specify the delivery address or multiple addresses and method of delivery such as U.S. Mail, facsimile or electronic at the start of the project. Alpha Analytical provides data deliverables in hardcopy or electronic format. At the start of any project, the electronic deliverable formats required must be received before sample arrival.

Reporting packages are available for routine regulatory reporting requirements. Regulatory reporting packages include only the information requested by the regulatory agency. In addition to regulatory report packages, Alpha Analytical prepares a standard report format. The standard report format includes:

1. Titie: "Certification of Analysis"
2. Name and address of the laboratory
3. Laboratory Job Number, page number and total number of pages included in the report.
4. Name and address of the client
5. Alpha sample number, Client identification, Sample location
6. Samples identified that do not meet the sample acceptance requirements for project.
7. Date of sample receipt, sample collection, analysis date and time, report date and analyst
8. Identification of data reported by subcontractors
9. Test name and EPA reference method number
10. Delivery method and sampling procedures when collected by lab personnel
11. Deviations or modifications that affect data quality
12. Statement that results relate only to the sample tested
13. Statement that report must be copied in full unless the laboratory provides written permission for partial copies
14. Glossary, References and limits of liability
15. Units of measure and reporting detection limit
16. Quality control data for: % Recovery surrogates, % Recovery of LCS, % RPD of LCSD, Blank analysis, % Recovery Matrix Spike, %RPD of Laboratory Duplicates, as applicable
17. Signature, titie and date of report
18. A "Certificate/Approval Program Summary" page is included at the end of the report that identifies analytes for which Alpha Analytical holds certification and for those analytes reported that it does not. This summary also includes the certification numbers for either NELAP certified states, State certifications (e.g. Massachusetts laboratory certification identification number) and DoD certification identifications.

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19. Alpha Analytical does not accept samples from private residents for drinking water analysis and therefore maximum contaminant levels are not necessary. If Alpha were to change it's policy and report drinking water samples, MCLs would be included with the report.

Results transmitted by facsimile or other electronic means include a statement of confidentiality and return of the materials at the laboratory's expense.

The laboratory notifies the client in writing of any circumstance that causes doubt on the validity of the results. The amended or modified report lists the change, reason for the change, affected page numbers, date of the amendment and authorized signature.

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14 Outside Support Services and Supplies

When Alpha Analytical purchases outside services and supplies in support of tests, the laboratory uses only those outside services and supplies that are of adequate quality to maintain confidence in the tests.

The Purchasing SOP/13-01 describes approval and monitoring of all suppliers and subcontractors used by the laboratory. Where no independent assurance of the quality of outside support services or supplies is available, the laboratory ensures that purchased equipment, materials, and services comply with specifications by evaluating method performance before routine use.

The laboratory checks shipments upon receipt as complying with purchase specifications. The use of purchased equipment and consumables is only after the evaluation and compliance to the specifications is complete. The Purchasing SOP/13-01 describes the details for receipt and inspection of purchased product.

The Purchasing SOP describes the process for raising, review and placement of purchase orders. It is company policy to purchase from third party certified suppliers and subcontractors wherever possible. Purchases must be from suppliers approved by the Laboratory. Laboratory or sampling subcontractors specified by the client are noted as "Trial" on the purchase order. This identifies the subcontractor as a non-approved subcontractor.

The laboratory maintains list of approved vendors (Form 13-01) and subcontractors from whom it obtains support services or supplies required for tests.

14.1 Subcontracting Analytical Samples

Clients are advised, verbally and/or in writing, if any analyses will be subcontracted to another laboratory. Any testing covered under NELAC that requires subcontracting, will be subcontracted to another NELAC accredited laboratory for the tests to be performed. Any testing covered under the DOD QSM that requires subcontracting, will be subcontracted to another accredited DOD laboratory and must be project-specific approved from the DOD client before analysis begins. These requirements for DOD projects pertain to both Westboro and Mansfield facilities. Any subcontractors used for data to be submitted to the Louisiana Department of Environmental Quality must also be certified by Louisiana LELAP. The laboratory approves testing and sampling subcontractors by review of current state, national or other external parties' certifications or approvals. This document must indicate current approval for the subcontracted work. Any sample(s) needing special reports (*i.e.*, MCL exceedence) will be identified on the chain of custody when the laboratory subcontracts with another laboratory.

The Sample Receipt and Login Procedure describes the process for sample handling when subcontracting samples. The quotation form lists the subcontractor in order to notify the client of any subcontracted work. Client notification of subcontracted work is in writing before releasing samples to the subcontractor.

The review of subcontractor documents for completeness and meeting the specifications defined for the project follows the laboratory process for reporting and verification of process data. The person responsible for receiving the order reviews the information supplied by the subcontractor instead of the Department Supervisor.

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15 Client Relations

15.1 Client Service

The majority of the client services occur from personnel in the administration, sample receiving and sampling areas. Client service involves inquiries into services offered, technical consulting, placing orders, and receiving orders, providing updates on the status of orders and completing orders. Personnel interacting with clients must document and review client specific project requirements. Call Tracker is used to document communications with clients (SOP/10-02). Personnel must document client interactions following the appropriate laboratory procedures. Each person must communicate deviations, modifications and client requests following the laboratory defined procedures.

15.2 Project Management

During staff meefings the laboratory management reviews requests for new work. The Operations Director and/or Laboratory Director addresses all capacity and capability issues. Where conflicts in workload arise, client notification is immediate. The Project Communication Form (PCF) contains the documentation of all project information. Cooperation between laboratory and client services staff allows direct communication and scheduling. Management arranges complex scheduling and coordination between departmental areas.

15.3 Complaint Processing

The laboratory staff documents all clients or other parties' complaints or concerns regarding the data quality or laboratory operations. The Nonconformance Report records complaints, correcting the concern, and resolving the concern with the client or other party. The process uses the same form and process as the nonconformance action process. Where repetitive corrective actions indicate a problem, an audit of the area, Customer Inquiriy and Complaint SOP/10-01 is immediate to ensure the corrective actibn has effectively solved the concern.

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16 Appendix A – Definitions/References

The following definitions are from Appendix A of the 2003 NELAC Standard. The laboratory adopts these definitions for all work performed in the laboratory.

Acceptance Criteria: specified limits placed on characteristics of an item, process, or service defined in requirement documents. (ASQC)

Accreditation: the process by which an agency or organization evaluates and recognizes a laboratory as meeting certain predetermined qualifications or standards, thereby accrediting the laboratory. In the context of the National Environmental Laboratory Accreditation Program (NELAP), this process is a voluntary one. (NELAC)

Accrediting Authority: the Territorial, State or Federal agency having responsibility and accountability for environmental laboratory accreditation and which grants accreditation. (NELAC)[1.4.2.3]

Accrediting Authority Review Board (AARB): five voting members from Federal and State Accrediting Authorities and one-non-voting member from USEPA, appointed by the NELAP Director, in consultation with the NELAC Board of Directors, for the purposes stated in 1.4.7.e (NELAC)[1.4.7]

Accuracy: the degree of agreement between an observed value and an accepted reference value. Accuracy includes a combination of random error (precision) and systematic error (bias) components which are due to sampling and analytical operations; a data quality indicator. (QAMS).

Aliquot: A discrete, measured, representative portion of a sample taken for analysis. (DoD; EPA QAD glossary)

Assessor Body: the organization that actually executes the accreditation process, i.e., receives and reviews accreditation applications, reviews QA documents, reviews proficiency testing results, performs on-site assessments, etc., whether EPA, the State, or contracted private party. (NELAC)

Analyst: the designated individual who performs the "hands-on" analytical methods and associated techniques and who is the one responsible for applying required laboratory practices and other pertinent quality controls to meet the required level of quality. (NELAC)

Analyte: The specific chemicals or components for which a sample is analyzed; it may be a group of chemicals that belong to the same chemical family, and which are analyzed together. (EPA Risk Assessment Guide for Superfund; OSHA Glossary)

Applicant Laboratory or Applicant: the laboratory or organization applying for NELAP

Assessment: the evaluation process used to measure or establish the performance, effectiveness, and conformance of an organization and/or its systems to defined criteria (to the standards and requirements of NELAC). (NELAC)

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Assessment (Clarification): The evaluation process used to measure the performance or effectiveness of a system and its elements against specific criteria.

Assessment Criteria: the measures established by NELAC and applied in establishing the extent to which an applicant is in conformance with NELAC requirements. (NELAC)

Assessment Team: the group of people authorized to perform the on-site inspection and proficiency testing data evaluation required to establish whether an applicant meets the criteria for NELAP accreditation. (NELAC)

Assessor: one who performs on-site assessments of accrediting authorities and laboratories' capability and capacity for meeting NELAC requirements by examining the records and other physical evidence for each one of the tests for which accreditation has been requested. (NELAC)

Audit: a systematic evaluation to determine the conformance to quantitative and qualitative specifications of some operational function or activity. (EPA-QAD)

Batch: environmental samples, which are prepared and/or analyzed together with the same process and personnel, using the same lot(s) of reagents. A preparation batch is composed of one to 20 environmental samples of the same NELAC-defined matrix, meeting the above mentioned criteria and with a maximum time between the start of processing of the first and last sample in the batch to be 24 hours. An analytical batch is composed of prepared environmental samples (extracts, digestates or concentrates), which are analyzed together as a group. An analytical batch can include prepared samples originating from various environmental matrices and can exceed 20 samples. (NELAC Quality Systems Committee)

Blank: a sample that has not been exposed to the analyzed sample stream in order to monitor contamination during sampling, transport, storage or analysis. The blank is subjected to the usual analytical and measurement process to establish a zero baseline or background value and is sometimes used to adjust or correct routine analytical results. Blanks include:

Equipment Blank: a sample of analyte-free media, which has been used to rinse common sampling equipment to check effectiveness of decontamination procedures. (NELAC)

Field Blank: blank prepared in the field by filling a clean container with pure de-ionized water and appropriate preservative, if any, for the specific sampling activity being undertaken. (EPA OSWER)

Instrument Blank: a clean sample (e.g. distilled water) processed through the instrumental steps of the measurement process; used to determine instrument contamination. (EPA-QAD)

Method Blank; a sample of a matrix similar to the batch of associated samples (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences are present at concentrations that impact the analytical results for sample analyses, (NELAC)

Reagent Blank: (method reagent blank): a sample consisting of reagent(s), without the target analyte or sample matrix, introduced into the analytical procedure at the appropriate point and carried through all subsequent steps to determine the contribution of the reagents and of the involved analytical steps. (QAMS)

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Blind Sample: a sub-sample for analysis with a composition known to the submitter. The analyst/laboratory may know the identity of the sample but not its composition. It is used to test the analyst or laboratory's proficiency in the execufion of the measurement process. (NELAC)

Calibration: set of operations which establish, under specified conditions, the relationship between values of quantities indicated by a measuring instrument or measuring system, or values represented by a material measure or a reference material, and the corresponding values realized by standards. (VIM: 6.11)

1) In calibration of support equipment the values realized by standards are established through the use of Reference Standards that are traceable to the International System of Units (SI).

2) In calibration according to test methods, the values realized by standards are typically established through the use of Reference Materials that are either purchased by the Laboratory with a certificate of analysis or purity, or prepared by the Laboratory using support equipment that has been calibrated verified to meet specifications.

Calibration Range: The range of values (concentrations) between the lowest and highest calibration standards of a multi-level calibration curve. For metals analysis with a single-point calibration, the lowlevel calibration check standard and the high standard establish the linear calibration range, which lies within the linear dynamic range.

Calibration Curve: the graphical relationship between the known values, such as concentrations, of a series of calibration standards and their instrument response. (NELAC)

Calibration Method: a defined technical procedure for performing a calibration. (NELAC)

Calibration Standard: a substance or reference material used to calibrate an instrument. (QAMS)

Certified Reference Material (CRM): a reference material one or more of whose property values are certified by a technically valid procedure, accompanied by or traceable to a certificate or other documentation which is issued by a certifying body. (ISO Guide 30 - 2.2)

Chain of Custody Form: record that documents the possession of the samples from the time of collection to receipt in the laboratory. This record generally includes: the number and types of containers; the mode of collection; collector; time of collection; preservation; and requested analyses. (NELAC)

Clean Air Act: the enabling legislation in 42 U.S.C. 7401 *et* seq., Public Law 91-604, 84 Stat. 1676 Pub.L. 95-95, 91 Stat., 685 and Pub. L. 95-190, 91 Stat., 1399, as amended, empowering EPA to promulgate air quality standards, monitor and to enforce them. (NELAC)

Client: Any individual or organization for whom items or services are furnished or work performed in response to defined requirements and expectations. (ANSI/ASQ E4-2004)

Congener: A member of a class of related chemical compounds (e.g., PCBs, PCDDs)

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Comprehensive Environmental Response, Compensation and Liability Act (CERCLA/Superfund): the enabling legislation in 42 U.S.C. 9601-9675 et seq., as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), 42 U.S.C. 9601 et seq., to eliminate the health and environmental threats posed by hazardous waste sites. (NELAC)

Confidential Business Information (CBI): information that an organization designates as having the potential of providing a competitor with inappropriate insight into its management, operation or products. NELAC and its representatives agree to safeguarding identified CBI and to maintain all information identified as such in full confidentiality.

Confirmation: verification of the identity of a component through the use of an approach with a different scientific principle from the original method. These may include, but are not limited to:

Second column confirmation
Alternate wavelength
Dervitization
Mass spectral interpretation
Alternative detectors or
Additional cleanup procedures.
(NELAC)

Conformance: an affirmative indication or judgment that a product or service has met the requirements of the relevant specifications, contract, or regulation; also the state of meeting the requirements. (ANSI/ASQC E4-1994)

Consensus Standard: A standard established by a group representing a cross-section of a particular industry or trade, or a part thereof. (ANSI/ASQ ANSI/ASQ E4-2004)

Continuing calibration verification: The verification of the initial calibration that is required during the course of analysis at periodic intervals. Continuing calibration verification applies to both external standard and internal standard calibration techniques, as well as to linear and non-linear calibration models. (IDQTF)

Contributor: a participant in NELAC who is not a Voting Member. Contributors include representatives of laboratories, manufacturers, industry, business, consumers, academia, laboratory associations, laboratory accreditation associations, counties, municipalities, and other political subdivisions, other federal and state officials not engaged in environmental activities, and other persons who are interested in the objectives and activities of NELAC.

Corrective Action: the action taken to eliminate the causes of an existing nonconformity, defect or other undesirable situation in order to prevent recurrence. (ISO 8402)

Critical Finding: a finding or a combination of findings that results in a significant negative effect on data quality or defensibility, if not corrected. (NELAC)

Data Audit: a qualitative and quantitative evaluation of the documentation and procedures associated with environmental measurements to verify that the resulting data are of acceptable quality (i.e., that they meet specified acceptance criteria.) (NELAC)

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Data Reduction: the process of transforming raw data by arithmetic or statistical calculations, standard curves, concentration factors, etc., and collation into a more useable form. (EPA-QAD)

Deficiency: See Finding and Critical Finding

Definitive Data: Analytical data of known quality, concentration, and level of uncertainty. The levels of quality and uncertainty of the analytical data are consistent with the requirements for the decision to be made. Suitable for final decision-making. (UFP-QAPP)

Delegate: any environmental official of the States or the Federal government not sitting in the House of Representatives, who is eligible to vote in the House of Delegates. (NELAC)

Demonstration of Capability: a procedure to establish the ability of the analyst to generate acceptable accuracy. (NELALC)

Denial: to refuse to accredit in total or in part a laboratory applying for initial accreditation or resubmission of initial application. (NELAC) [4.4.1]

Detection Limit: the lowest concentration or amount of the target analyte that can be identified, measured, and reported with confidence that the analyte concentration is not a false positive value. See Method Detection Limit. (NELAC) Detection Limit (DL) (Clarification): The smallest analyte concentration that can be demonstrated to be different from zero or a blank concentration at the 99% level of confidence. At the DL, the false positive rate (Type I error) is 1%.

Document Control: the act of ensuring that documents (and revisions thereto) are proposed, reviewed for accuracy, approved for release by authorized personnel, distributed properly and controlled to ensure use of the correct version at the location where the prescribed activity is performed. (ASQC)

Environmental Data: Any measurements or information that describe environmental processes, locations, or conditions; ecological or health effects and consequences; or the performance of environmental technology. (ANSI/ASQ E4-2004)

Environmental Laboratory Advisory Board (ELAB): a Federal Advisory Committee, with members appointed by EPA and composed of a balance of non-state, non-federal representatives, from the environmental laboratory community, and chaired by an ELAB member. (NELAC)

Environmental Monitoring Management Council (EMMC): an EPA Committee consisting of EPA managers and scientists, organized into a Policy Council, a Steering Group, ad *hoc* Panels, and work groups addressing specific objectives, established to address EPA-wide monitoring issues. (NELAC)

False Negative: An analyte incorrectly reported as absent from the sample, resulting in potential risks from their presence.

False Positive: An item incorrectly identified as present in the sample, resulting in a high reporting value for the analyte of concern.

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Federal Insecticide, Fungicide and Rodenticide Act (FIFRA): the enabling legislation under 7 U.S.C. 135 ef seq., as amended, that empowers the EPA to register insecticides, fungicides, and rodenticides. (NELAC)

Federal Water Pollution Control Act (Clean Water Act, CWA): the enabling legislation under 33 U.S.C 1251 et seq., Public Law 92-50086 Stat. 8.16, that empowers EPA to set discharge limitations, write discharge permits, monitor, and bring enforcement action for non-compliance. (NELAC)

Field Measurement: The determination of physical, biological, or radiological properties, or chemical constituents; that are measured on-site; close in time and space to the matrices being sampled/measured, following accepted test methods. This testing is performed in the field outside of a fixed-laboratory or outside of an enclosed structure that meets the requirements of a mobile laboratory.

Field of Accreditation: (previously Field of Testing) NELAC's approach to accrediting laboratories by matrix, technology/method and analyte/analyte group. Laboratories requesting accreditation for a matrix-technology/method-analyte/analyte group combination or for an updated/improved method are required to submit only that portion of the accreditation process not previously addressed. (NELAC)

Field of Proficiency Testing: NELAC's approach to offering proficiency testing by matrix, technology, and analyte/analyte group.

Finding: an assessment conclusion, referenced to a NELAC Standard and supported by objective evidence that identifies a deviation from a NELAC requirement. See Critical Finding.

Finding (Clarification): An assessment conclusion that identifies a condition having a significant effect on an item or activity. An assessment finding may be positive or negative and is normally accompanied by specific examples of the observed condition (ANSI/ASQ E4-2004).

Governmental Laboratory: as used in these standards, a laboratory owned by a Federal, state or tribal government; includes government-owned contractor-operated laboratories. (NELAC)

Holding Times (Maximum Allowable Holding Times): the maximum times that samples may be held prior to analysis and still be considered valid or not compromised. (40 CFR part 136) Holding Times (DoD Clarification): The time elapsed from the time of sampling lo the time of extraction or analysis, or from extraction to analysis, as appropriate.

Inspection: an activity such as measuring, examining, testing, or gauging one or more characteristics of an entity and comparing the results with specified requirements in order to establish whether conformance is achieved for each characteristic. (ANSI/ASQC E4-1994)

Interim Accreditation: temporary accreditation status for a laboratory that has met all accreditation criteria except for a pending on-site assessment which has been delayed for reasons beyond the control of the laboratory. (NELAC)

Internal Standard: a known amount of standard added to a test portion of a sample as a reference for evaluating and controlling the precision and bias of the applied analytical method. (NELAC)

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Isomer: One of two or more compounds, radicals, or ions that contain the same number of atoms of the same elements but differ in stmctural arrangement and properties. For example, hexane (C6H14) could be n-hexane, 2-methylpentane, 3-methylpentane, 2,3-dimethylbutane, 2,2-dimethylbutane.

Laboratory: Body that calibrates and/or tests. (ISO 25)

Laboratory Control Sample (however named, such as laboratory fortified blank , spiked blank or QC check sample): a sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes. It is generally used to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system. (NELAC).

Laboratory Duplicate: aliquots of a sample taken from the same container under laboratory conditions and processed and analyzed independently. (NELAC)

Legal Chain of Custody Protocols: procedures employed to record the possession of samples from the time of sampling until analysis and are performed at the special request of the client. These protocols include the use of a Chain of Custody Form that documents the collection, transport, and receipt of compliance samples by the laboratory. In addition, these protocols document all handling of the samples within the laboratory. (NELAC)

Limit of Detection (LOD): An estimate of the minimum amount of a substance that an analytical process can reliably detect. A LOD is analyte-and-matrix-specific and may be laboratory-dependent.

Limit of Detection (Clarification): The smallest amount or concentration of a substance that must be present in a sample in order to be detected at a high level of confidence (99%). At the LOD, the false negative rate (Type II error) is 1%.

Limits of Quantitation (LOQ): The minimum levels, concentrations, or quantities of a target variable (e.g. target analyte) that can be reported with a specified degree of confidence.

Limit of Quantitation (Clarification): The lowest concentration that produces a quantitative result within specified limits of precision and bias. For DoD projects, the LOQ shall be set at or above the concentration of the lowest initial calibration standard.

Manager (however named): the individual designated as being responsible for the overall operation, all personnel, and the physical plant of the environmental laboratory. A supervisor may report to the manager. In some cases, the supervisor and the manager may be the same individual. (NELAC)

Management: Those individuals directiy responsible and accountable for planning, implementing, and assessing work. (ANSI/ASQ E4-2004)

Management System: System to establish policy and objectives and to achieve those objectives (ISO 9000)

Matrix: the substrate of a test sample.

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Field of Accreditation Matrix: these matrix definitions shall be used when accrediting a laboratory (see Field of Accreditation).

Drinking water: Any aqueous sample that has been designated a potable or potential potable water source.

Non-Potable Water: Any aqueous sample excluded from the definition of a drinking water matrix. Includes surface water, groundwater, effluents, water treatment chemicals, and TCLP or other extracts.

Solid and Chemical Materials: includes soils, sediments, sludges, products and by-products of an industrial process that results in a matrix not previously defined.

Biological Tissue: Any sample of a biological origin such as fish tissue, shellfish, or plant material. Such samples shall be grouped according to origin.

Air and Emissions: whole gas or vapor samples including those contained in flexible or rigid wall containers and the extracted concentrated analytes of interest from a gas or vapor that are collected with a sorbent tube, impinger solution, filter or other device. (NELAC)

Quality System Matrix: These matrix definitions are an expansion of the field of accreditation matrices and shall be used for purposes of batch and quality control requirements (see Appendix D of Chapter 5). These matrix distinctions shall be used:

Aqueous: any aqueous sample excluded from the definition of Drinking Water matrix or Saline/Estuarine source. Includes surface water, groundwater, effluents, and TCLP or other extracts.

Drinking water: Any aqueous sample that has been designated a potable or potential potable water source.

Saline/Estuarine: Any aqueous sample from an ocean or estuary, or other salt water source such as the Great Salt Lake.

Non-aqueous liquid: Any organic liquid with <15% settleable solids.

Biological Tissue: Any sample of a biological origin such as fish tissue, shellfish, or plant material. Such samples shall be grouped according to origin.

Solids: Includes soils, sediments, sludges and other matrices with >15% settleable solids.

Chemical Waste: A product or by-product of an industrial process that results in a matrix not previously defined.

Air and Emissions: whole gas or vapor samples including those contained in flexible or rigid wall containers and the extracted concentrated analytes of interest from a gas or vapor that are collected with a sorbent tube, impinger solution, filter or other device. (NELAC)

Matrix Spike (spiked sample, fortified sample): a sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of Target analyte concentration is available. Matrix spikes are used, for example, to determine the effect of the matrix on a method's recovery efficiency. (QAMS).

Matrix Spike Duplicate (spiked sample or fortified sample duplicate): a second replicate matrix spike prepared in the laboratory and analyzed to obtain a measure of the precision of the recovery for each analyte. (QAMS).

May: denoted permitted action, but not required action. (NELAC)

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Measurement Quality Objectives (MQOs): the desired sensitivity, range, precision, and bias of a measurement.

Measurement System: a test method, as implemented at a particular laboratory, and which includes the equipment used to perform the test and the operator(s).

Method: 1. See Test Method. 2. Logical sequence of operations, described generically, used in the performance of measurements. (VIM 2.4)

Method Detection Limit :one way to establish a Limit of Detection, defined as the minimum concentration of a substance (an analyte) that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte.

Method Detection Limit (MDL) (Clarification): The MDL is one way to establish a Detection Limit, not a Limit of Detection.

Method of Standard Additions: A set of procedures adding one or more increments of a standard solution to sample aliquots of the same size in order to overcome inherent matrix effects. The procedures encompass the extrapolation back to obtain the sample concentration. (This process is often called spiking the sample.) (Modified Skoog, Holler, and Nieman. Principles of Instmmental Analysis. 1998)

Mobile Laboratory: A portable enclosed structure with necessary and appropriate accommodation and environmental conditions as described in Chapter 5, within which testing is performed by analysts. Examples include but are not limited to trailers, vans and skid-mounted stmctures configured to house testing equipment and personnel.

Must: denotes a requirement that must be met. (Random House College Dictionary)

National Accreditation Database: the publicly accessible database listing the accreditation status of all laboratories participating in NELAP. (NELAC)

National Institute of Standards and Technology (NIST): an agency of the US Department of Commerce's Technology Administration that is working with EPA, States, NELAC, and other public and commercial entities to establish a system under which private sector companies and interested States can be accredited by NIST to provide NIST-traceable proficiency testing (PT) to those laboratories testing drinking water and wastewater. (NIST)

National Environmental Laboratory Accreditation Conference (NELAC): a voluntary organization of State and Federal environmental officials and interest groups purposed primarily to establish mutually acceptable standards fpr accrediting environmental laboratories. A subset of NELAP. (NELAC)

National Environmental Laboratory Accreditation Program (NELAP): the overall National Environmental Laboratory Accreditation Program of which NELAC is a part. (NELAC)

National Voluntary Laboratory Accreditation Program (NVLAP): a program administered by NIST that is used by providers of proficiency testing to gain accreditation for all compound/matrices for which NVLAP accreditation is available, and for which the provider intends to provide NELAP PT samples. (NELAC)

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Negative Control: measures taken to ensure that a test, its components, or the environment do not cause undesired effects, or produce incorrect test results. (NELAC)

NELAC Standards: the plan of procedures for consistently evaluating and documenting the ability of laboratories performing environmental measurements to meet nationally defined standards established by the National Environmental Laboratory Accreditation Conference. (NELAC)

NELAP Recognition: the determination by the NELAP Director that an accrediting authority meets the requirements of the NELAP and is authorized to grant NELAP accreditation to laboratories. (NELAC)

Performance Audit: the routine comparison of independently obtained qualitative and quantitative measurement system data with routinely obtained data in order to evaluate the proficiency of an analyst or laboratory. (NELAC)

Positive Control: measures taken to ensure that a test and/or its components are working properly and producing correct or expected results from positive test subjects. (NELAC)

Precision: the degree to which a set of observations or measurements of the same property, obtained under similar conditions, conform to themselves; a data quality indicator. Precision is usually expressed as standard deviation, variance or range, in either absolute or relative terms. (NELAC).

Preservation: refrigeration and/or reagents added at the time of sample collection (or later) to maintain the chemical and/or biological integrity of the sample. (NELAC)

Primary Accrediting Authority: the agency or department designated at the Territory, State or Federal level as the recognized authority with responsibility and accountability for granting NELAC accreditation for a specified field of testing. (NELAC)

Procedure: Specified way to carry out an activity or a process. Procedures can be documented or not. (ISO 9000: 2000 and Note 1)

Proficiency Testing: a means of evaluating a laboratory's performance under controlled conditions relative to a given set of criteria through analysis of unknown samples provided by an external source. (NELAC) [2.1]

Proficiency Testing Oversight Body/Proficiency Testing Provider Accreditor (PTOB/PTPA): an organization with technical expertise, administrative capacity and financial resources sufficient to implement and operate a national program of PT provider evaluation and oversight that meets the responsibilities and requirements established by the NELAC Standards. (NELAC)

Proficiency Testing Program: the aggregate of providing rigorously controlled and standardized environmental samples to a laboratory for analysis, reporting of results, statistical evaluation of the results and the collective demographics and results summary of all participating laboratories.

Proficiency Testing Study Provider: any person, private party, or government entity that meets stringent criteria to produce and distribute NELAC PT samples, evaluate study results against published performance criteria and report the results to the laboratories, primary accrediting authorities, PTOB/PTPA and NELAP. (NELAC)

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Proficiency Test Sample (PT): a sample, the composition of which is unknown to the analyst and is provided to test whether the analyst/laboratory can produce analytical results within specified acceptance criteria . (QAMS).

Protocol: a detailed written procedure for field and/or laboratory operation (e.g., sampling, analysis) which must be strictly followed. (EPA-QAD)

Quality Assurance: an integrated system of activities involving planning, quality control, quality assessment, reporting and quality improvement to ensure that a product or service meets defined standards of quality with a stated level of confidence. (QAMS).

Quality Assurance [Project] Plan (QAPP): a formal document describing the detailed quality control procedures by which the quality requirements defined for the data and decisions pertaining to a specific project are to be achieved. (EPA-QAD)

Quality Control: the overall system of technical activities whose purpose is to measure and control the quality of a product or service so that it meets the needs of users. (QAMS).

Quality Control Sample: a sample used to assess the performance of all or a portion of the measurement system. QC samples may be Certified Reference Materials, a quality system matrix fortified by spiking, or actual samples fortified by spiking.

Quality Systems Manual: A document stating the management policies, objectives, principles, organizational stmcture and authority, responsibilities, accountability, and implementation of an agency, organization, or laboratory, the ensure the quality of its product and the utility of its product to the users.

Quantitation Range: The range of values in a calibration curve between the LOQ and the highest successfully analyzed initial calibration standard. The quantitation range lies within the calibration range.

Quality System: a structured and documented management system describing the policies, objectives, principles, organizational authority, responsibilities, accountability, and implementation plan of an organization for ensuring quality in its work processes, products (items), and services. The quality system provides the framework for planning, implementing, and assessing work performed by the organization and for carrying out required QA and QC. (ANSI/ASQC E-41994)

Raw Data: any original factual information from a measurement activity or study recorded in a laboratory notebook, worksheets, records, memoranda, notes, or exact copies thereof that are necessary for the reconstruction and evaluation of the report of the activity or study. Raw data may include photography, microfilm or microfiche copies, computer printouts, magnetic media, including dictated observations, and recorded data from automated instruments. If exact copies of raw data have been prepared (e.g., tapes which have been transcribed verbatim, data and verified accurate by signature), the exact copy or exact transcript may be submitted. (EPA–QAD)

Recognition: previously known as reciprocity. The mutual agreement of two or more parties (i.e. States) to accept each other's findings regarding the ability of environmental testing laboratories in meeting NELAC standards. (NELAC)

Reference Material: a material or substance one or more properties of which are sufficiently well established to be used for the calibration of an apparatus, the assessment of a measurement method, or for assigning values to materials. (ISO Guide 30 - 2.1)

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Reference Standard: a standard, generally of the highest metrological quality available at a given location, from which measurements made at that locatipn are derived. (VIM - 6.08)

Reference Toxicant: the toxicant used in performing toxicity tests to indicate the sensitivity of a test organism and to demonstrate the laboratory's ability to perform the test correctly and obtain consistent results (see Chapter 5, Appendix D, Section 2.1f). (NELAC)

Replicate Analyses: the measurements of the variable of interest performed identically on two or more sub-samples of the same sample within a short time intervat (NELAC)

Requirement: Denotes a mandatory specification; often designated by the term "shall". (NELAC)

Resource Conservation and **R**ecovery Act (**RCRA**): the enabling legislation under 42 USC 321 et seq. (1976), that gives EPA the authority to control hazardous waste from the "cradle-to-grave", including its generation, transportation, treatment, storage and disposal. (NEt.AC)

Revocation: the total or partial withdrawal of a laboratory's accreditation by the accrediting authority. (NELAC) [4.4.3]

Safe Drinking **W**ater Act (**SDWA**): the enabling legislation, 42 USC 300f *et seq.* (1974), (Public Law 93-523), that requires the EPA to protect the quality of drinking water in the U.S. by setting maximum allowable contaminant levels, monitoring, and enforcing violations.

Sample **T**racking: procedures employed to record the possession of the samples from the time of sampling until analysis, reporting and archiving. These procedures include the use of a Chain of Custody Form that documents the collection, transport, and receipt of compliance samples to the laboratory. In addition, access to the laboratory is limited and controlled to protect the integrity of the samples. (NELAC)

Secondary Accrediting **A**uthority: the Territorial, State or federal agency that grants NELAC accreditation to laboratories, based upon their accreditation by a NELAP-recognized Primary Accrediting Authority. See also **R**ecognition and Primary Accrediting **A**uthority. (NELCA)

Second source calibration verification (**ICV**): A standard obtained or prepared from a source independent of the source of standards for the initial calibration. Its concentration should be at or near the middle of the calibration range. It is done after the initial calibration.

Selectivity: (Analytical chemistry) the capability of a test method or instrument to respond to a target substance or constituent in the presence of non-target substances. (EPA-QAD)

Sensitivity: the capability of a test method or instrument to discriminate between measurement responses representing different levels (e.g., concentrations) of a variable of interest. (NELAC)

Shall: denotes a requirement that is mandatory whenever the criterion for conformance with the specification requires that there be no deviation. This does not prohibit the use of alternative approaches or methods for implementing the specification so long as the requirement is fulfilled. (ANSI)

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Signal to Noise Ratio: The signal carries information about the analyte, while noise is made up of extraneous information that is unwanted because it degrades the accuracy and precision of an analysis and also places a lower limit on the amount of analyte that can be detected. In most measurements, the average strength of the noise is constant and independent of the magnitude of the signal. Thus, the effect of noise on the relative error of a measurement becomes greater and greater as the quantity being measured (producing the signal) decreases in magnitude. (Skoog, Holler, and Nieman. Principles of Instmmental Analysis. 1998)

Should: denotes a guideline or recommendation whenever noncompliance with the specification is permissible. (ANSI).

Standard Operating Procedures (SOPs): a written document which details the method of an operation, analysis or action whose techniques and procedures are thoroughly prescribed and which is accepted as the method for performing certain routine or repetitive tasks. (Glossary of Quality Assurance Terms, QAMS, 8/31/92).

Spike: a known mass of target analyte added to a blank sample or sub-sample; used to determine recovery efficiency or for other quality control purposes. (NELAC)

Standard: the document describing the elements of laboratory accreditation that has been developed and established within the consensus principles of NELAC and meets the approval requirements of NELAC procedures and policies. (ASQC)

Standard Operating Procedures (SOPs): a written document which details the method of an operation, analysis or action whose techniques and procedures are thoroughly prescribed and which is accepted as the method for performing certain routine or repetitive tasks. (QAMS)

Standard Method: a test method issued by an organization generally recognized as competent to do so.

Standardized Reference Material (SRM): a certified reference material produced by the U.S. National Institute of Standards and Technology or other equivalent organization and characterized for absolute content, independent of analytical method.

Statistical Minimum Significant Difference (SMSD): the minimum difference between the control and a test concentration that is statistically significant; a measure of test sensitivity or power. The power of a test depends in part of the number of replicates per concentration, the significance level selected, e.g. 0.05, and the type of statistical analysis. If the variability remains constant, the sensitivity of the test increases as the number of replicates is increased. (NELAC)

Supervisor (however named): the individual(s) designated as being responsible for a particular area or category of scientific analysis. This responsibility includes direct day-to-day supervision of technical employees, supply and instrument adequacy and upkeep, quality assurance/quality control duties and ascertaining that technical employees have the required balance of education, training and experience to perform the required analyses. (NELAC)

Surrogate: a substance with properties that mimic the analyte of interest. It is unlikely to be found in environment samples and is added to them for quality control purposes. (QAMS).

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Suspension: temporary removal of a laboratory's accreditation for a defined period of time, which shall not exceed six months, to allow the laboratory time to correct deficiencies or area of non-compliance with the NELAC standards. (NELAC) [4.4.2]

Target Analytes: Analytes specifically named by a client (also called project-specific analytes). Technical Director: Individual(s) who has overall responsibility for the technical operation of the environmental testing laboratory. (NELAC)

Technical Director: individual(s) who has overall responsibility for the technical operation of the environmental testing laboratory. (NELAC).

Technology: a specific arrangement of analytical instmments, detection systems, and/or preparation techniques.

Test: a technical operation that consists of the determination of one or more characteristics or performance of a given product, material, equipment, organism, physical phenomenon, process or service according to a specified procedure. The result of a test is normally recorded in a document sometimes called a test report or a test certificate. (ISO/IEC Guide 2 - 12.1, amended)

Test Method: an adoption of a scientific technique for performing a specific measurement, as documented in a laboratory SOP er as published by a recognized authority.

Testing Laboratory: laboratory that performs tests. (ISO/IEC Guide 2 - 12.4)

Testing Sensitivity/Power: the minimum significant difference (MSD) between the control and test concentration that is statistically significant. It is dependent on the number of replicates per concentration, the selected significance level, and the type of statistical analysis (see Chapter 5, Appendix D, Section 2.4.a). (NELAC)

Tolerance Chart: A chart in which the plotted quality control data is assessed via a tolerance level (e.g. +/- 10% of a mean) based on the precision level judged acceptable to meet overall quality/data use requirements instead of a statistical acceptance criteria (e.g. +/- 3 sigma). (applies to radiobioassay laboratories). (ANSI)

Toxic Substances Control Act (TSCA): the enabling legislation in 15 USC 2601 et seq. (1976), the provides for testing, regulating, and screening all chemicals produced or imported into the United States for possible toxic effects prior to commercial manufacture. (NELAC)

Traceability: the property of a result of a measurement whereby it can be related to appropriate standards, generally international or national standards, through an unbroken chain of comparisons. (VIM - 6.12)

Tuning: A check and/or adjustment of instmment performance for mass spectrometry as required by the method.

United States Environmental Protection Agency (EPA): the federal governmental agency with responsibility for protecting public health and safeguarding and improving the natural environment (i.e. the air, water and land) upon which human life depends. (US-EPA)

Validation: the confirmation by examination and provision of objective evidence that the particular requirements for a specific intended use are fulfilled.

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Verification: confirmation by examination and provision of evidence that specified requirements have been met. (NELAC)

NOTE - In connection with the management of measuring equipment, verification provides a means for checking that the deviations between values indicated by a measuring instrument and corresponding known values of a measured quantity are consistently smaller than the maximum allowable error defined in a standard, regulation or specification peculiar to the management of the measuring equipment.

The result of verification leads to a decision either to restore in service, to perform adjustments, or to repair, or to downgrade, or to declare obsolete. In all cases, it is required that a written trace of the verification performed shall be kept on the measuring instrument's individual record.

Voting Member: Officials in the employ of the Government of the United States, and the States, the Territories, the Possessions of the United States, or the District of Columbia and who are actively engaged in environmental regulatory programs or accreditation of environmental laboratories. (NELAC)

Work Cell: a well-defined group of analysts that together perform the method analysis. The members of the group and their specific functions within the work cell must be fully documented. (NELAC)

Working Range: the difference between the Limit of Quantitation and the upper limit of measurement system calibration.

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ISO. 1991. Guidelines for auditing quality systems - Part 3: Management of audit programmes. ISO 10011-3.

ISO. 1992. Quality assurance requirements for measuring equipment - Part 1: Metrological confirmation for measuring equipment. ISO 10012-1.

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ISO. 1996. Microbiology of food and animal feeding stuffs - General Guidance for Microbiological Examinations. ISO 7218.

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ISO. 1997. Proficiency testing by interlaboratory comparisons - Part 1: Development and operation of proficiency testing schemes. ISO/IEC Guide 43-1.

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ISO. 1997. Quality management and quality assurance standards - Part 3: Guidelines for the
application of ISO 9001:1994 to the development, supply, installation and maintenance of computer software. ISO 9000-3.

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bodies performing inspection. ISO 17020.

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ISO. 2000. General requirements for the competence of reference material producers. ISO/IEC Guide 34.

ISO. 2000. Uses of certified reference materials. ISO/IEC Guide 33.

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U.S. EPA. 1991. Ecological Assessment of Hazardous Waste Sites: A Field and Laboratory Reference Document. Office of Research and Development. EPA/600/3-89/013.

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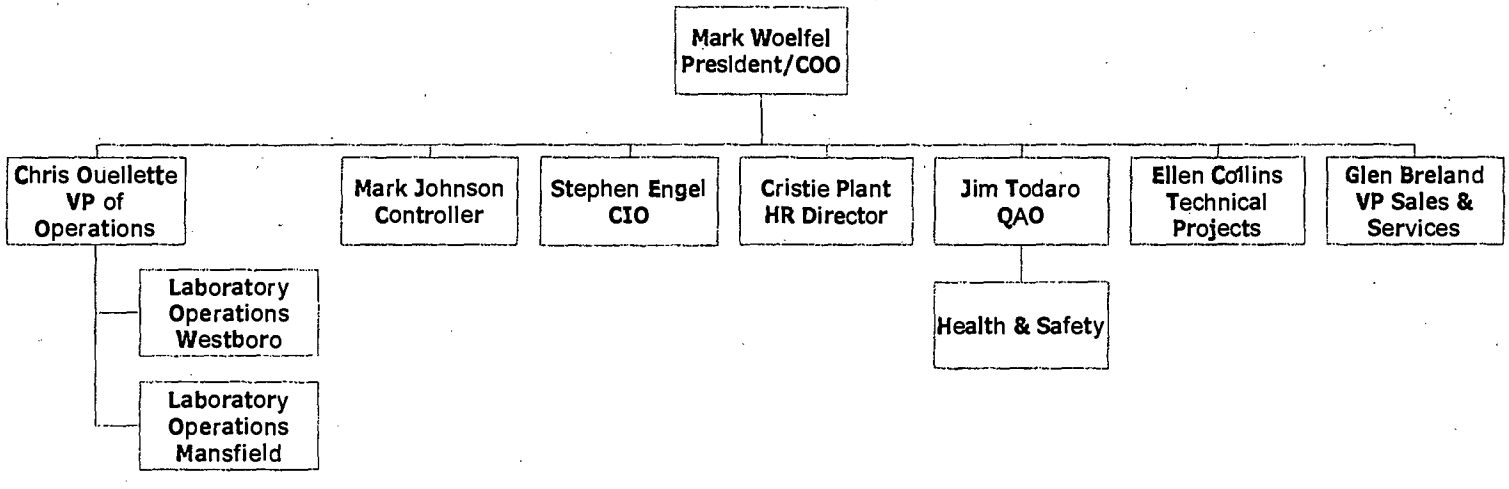
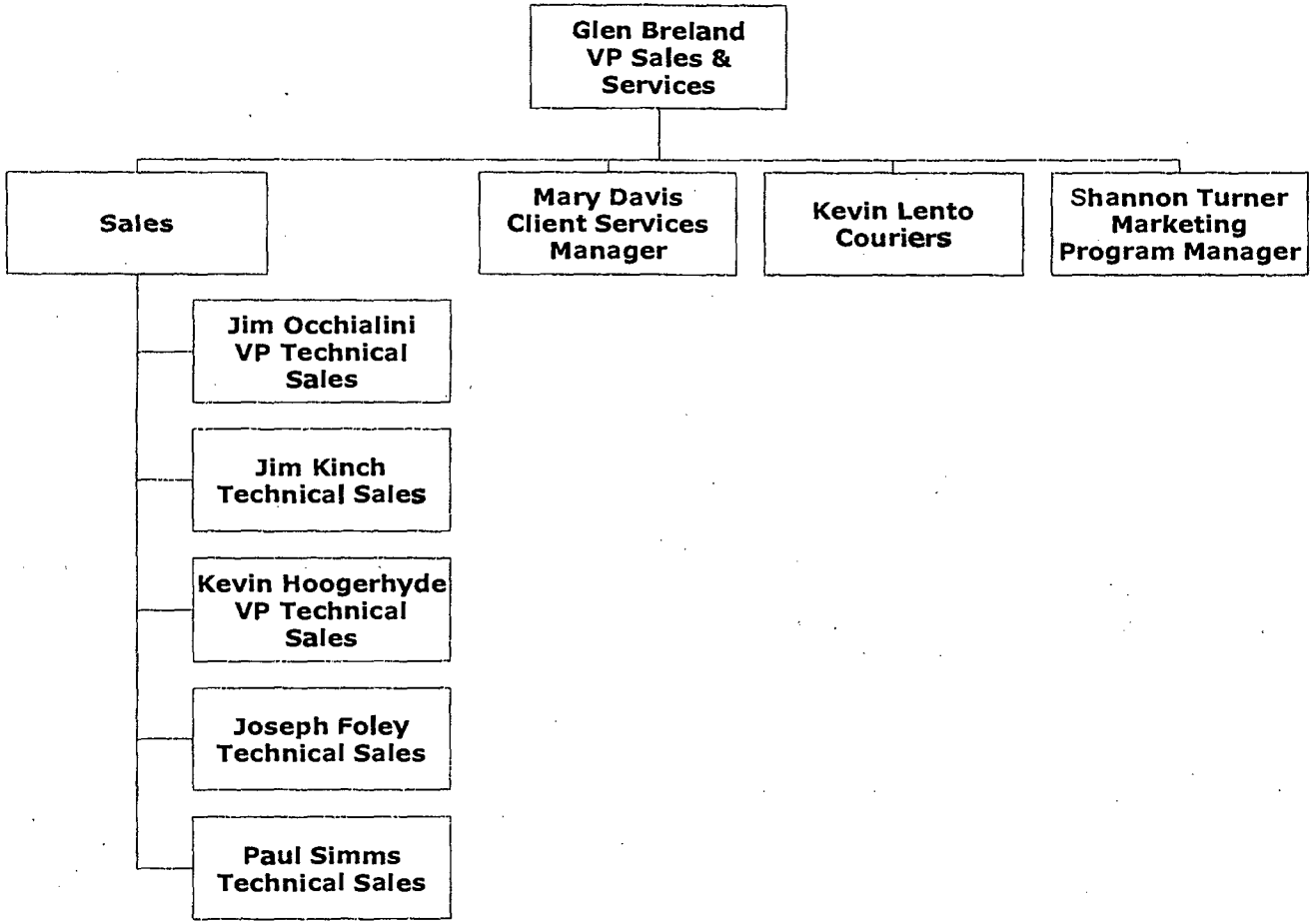
17 Appendix B – Organization Charts

The following charts provide an overview of the organizational structure of Alpha Analytical. The chart also identifies the key personnel responsible for the listed positions. For the various laboratory areas, the individual departmental supervisors are noted. For a listing of all current key personnel, please refer to Section 18, Appendix C.

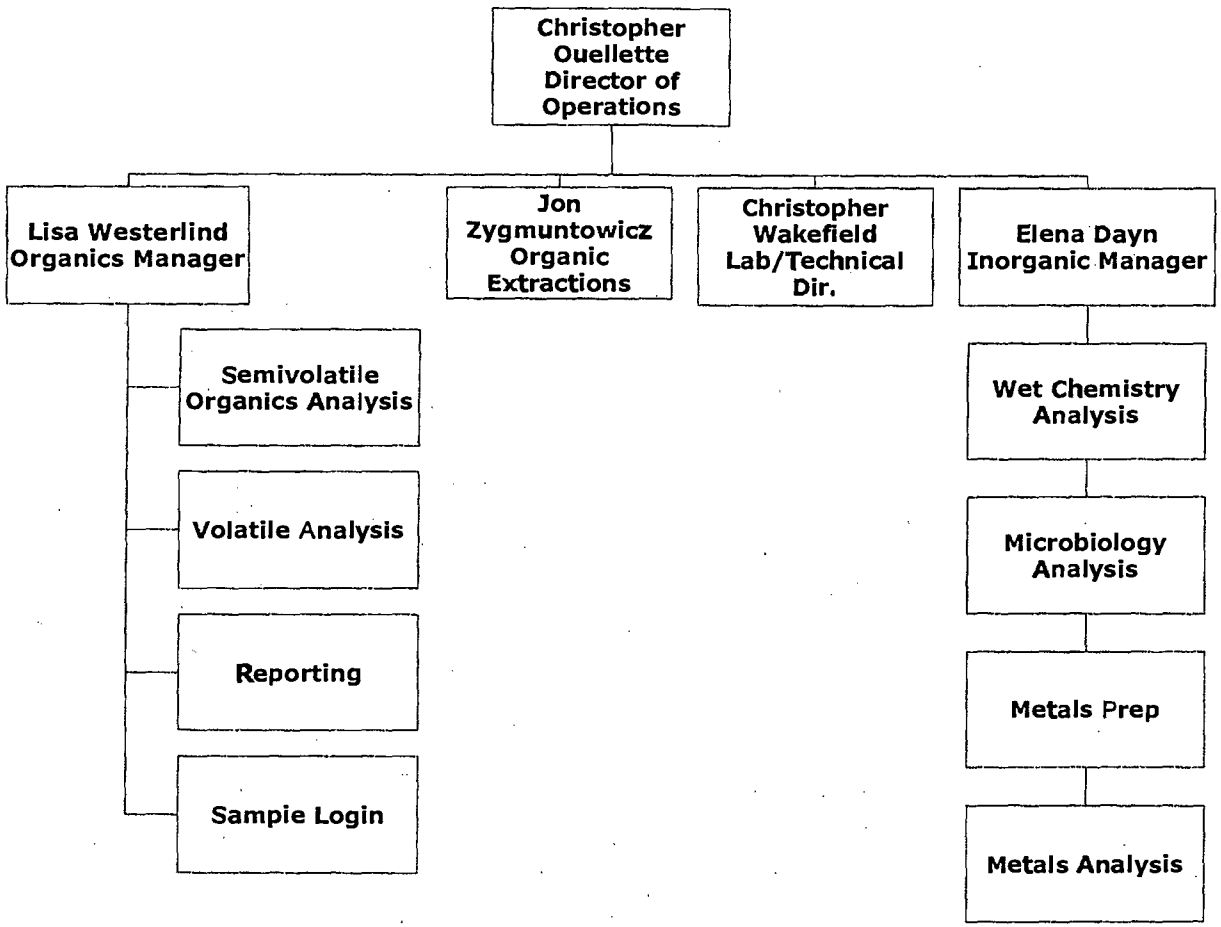
Alpha Analytical
Company Organizational Chart



Alpha Analytical
Sales and Services

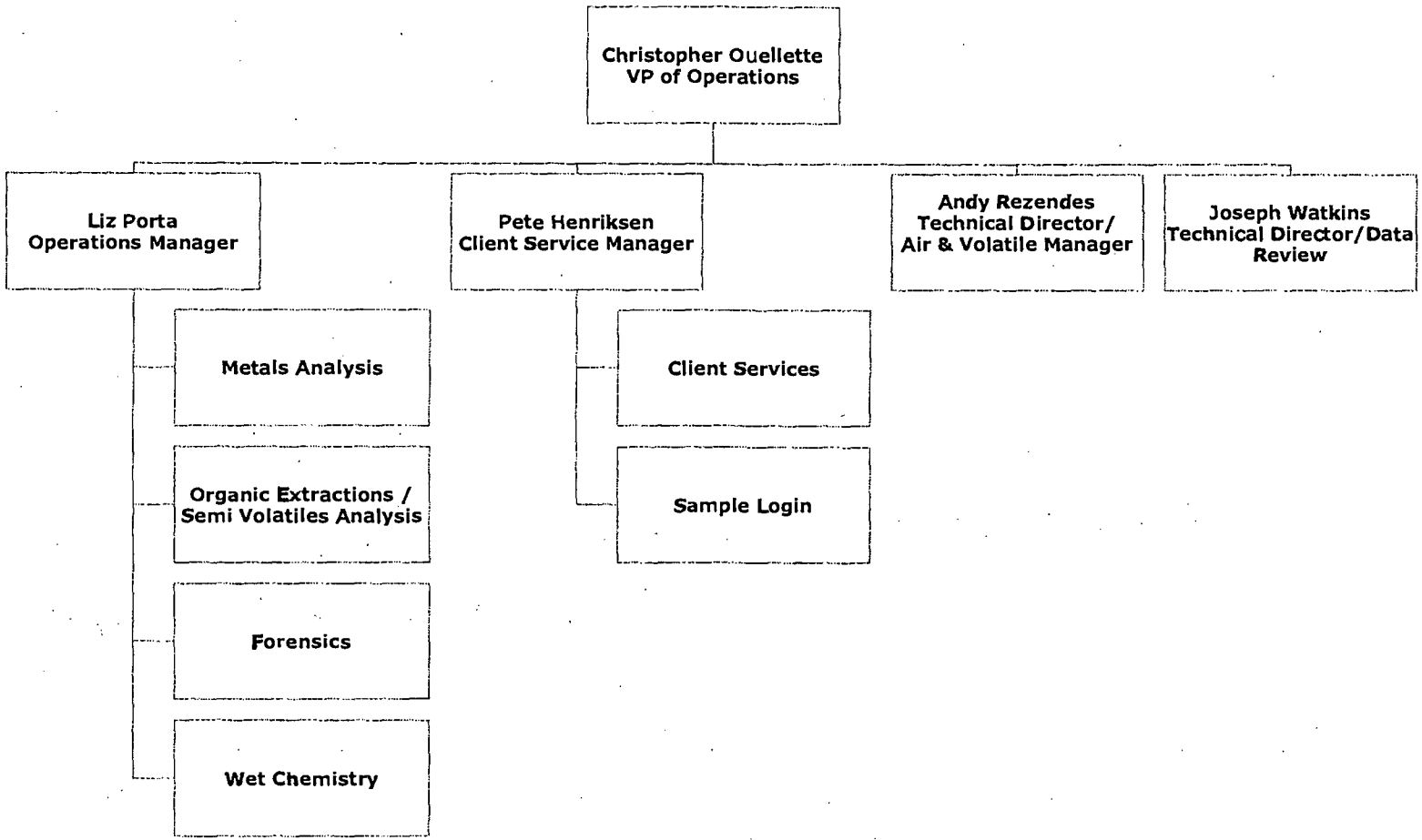


Alpha Analytical
Laboratory Organizational Chart
WESTBOROUGH



Alpha Analytical
Laboratory Organizational Chart

MANSFIELD



18 Appendix C – List of Key Personnel

The following is a listing of all current key personnel. If role is specific to a facility it is denoted by either Westboro or Mansfield following the position title. Updated 07/19/2010

President / Sales Manager: Mark Woelfel

Director of Operations: Christopher Ouellette

Laboratory Director / Technical Director, Westboro: Christopher Wakefield

Laboratory Director / Technical Director, Mansfield: Joseph Watkins

Quality Assurance Officer: James C. Todaro

Quality Systems Specialists: Amy Rice, Rene Bennett

VP, Technical Projects: Ellen Collins

Human Resources Director: Cristie Plant

Vice Presidents, Technical Sales: Glen Breland, James Occhialini

Technical Sales Reps: Jim Kinch, Kevin Hoogerhide; Paul Simms; Joe Foley

Controller: Mark Johnson

A/P, Purchasing: Jennifer Walters

Credit & Collections Supervisor: Holly Palmer

Chief Information Technology Officer: Stephen Engel

Information Technology: Glenn Fitzgibbons

VP, Sales and Services: Glen Breland

Client Services Manager, Westboro: Mary Davis

Client Services Manager, Mansfield: Peter Henriksen

Inorganics Department Manager, Westboro: Elena Dayn

Organics Department Manager, Login Manager, Westboro Lisa Westerlind

Organic Extractions Supervisor, Westboro: John Zygmuntowicz

Organic Technical Specialists: Scott Enright (Westboro), Cindy McQueen (Mansfield)

Air Technical Director/Volatiles Manager, Mansfield: Andy Rezendes

Operations Director, Mansfield: Elizabeth Porta

Data Review & Reporting Manager: Elizabeth Simmons

Equipment Maintenance: Gordon Tripp

Environmental Health & Safety Coordinator: Jeanette Soucy

Courier Manager: Kevin Lento

Hazardous Materials Consultant: Triumvirate

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19 Appendix D – Preventive Maintenance Procedures

Optimized Service-Calibration Intervals		
Equipment	**Frequency**	**Type of Calibration or Maintenance**
Balances	semiannually daily	cleaning & operations check by service technician (external) calibration verification using Class S-1 certified weights
COD Reactor	annually annually	complete operations check by service technician (external) reaction temperature verification
Conductivity Bridge	annually each use	verification of cell constant complete operations check by service technician (external) calibration verification
DI Water System	as needed monthly annually daily	complete operations check by service technician (external) Residual Chlorine check Biosuitability testing (external) pH and Conductivity check
DO Meter	annually each use	complete operations check by service technician (external) calibration against air as specified by manufacturer
Emergency/Safety Equipment	annually monthly	fire extinguishers and emergency exit lighting check eye washes, showers, fire blanket and first aid kits checked
Freezers	daily	temperature verification
Gas Chromatographs	as needed as needed beginning and end of batch and 10 to 20 samples as per method	injection port preparation; cleaning of detectors initial multi-point calibration continuing calibration verification (CCV) against initial calibration
ICP	Every other day Daily Annually Annually As needed	Change pump tubing Calibration, profile Complete operations check by service technician (external), linear Dynamic Range determination Clean torch, clean nebulizer, clean spray chamber
Lachat analyzer	Daily As needed	Calibration, clean lines Change tubing, change O-rings
Mass Spectrometers (GC & ICP)	bi-annually as needed 12 hour or daily	change of mechanical pump oil by service technician (external) cleaning of source BFB, DFTPP or ICP-MS tune analysis followed by ICAL or CCV
Mercury Analyzer	monthly each use	clean cell and change pump windings calibration using multi-point curve
Auto-pipettes	Monthly Annually	verification of accuracy verification of precision
Microwave	Quarterly Annualy	power and temperature verification RPM verification
Ovens	annually daily	complete operations check by service technician (external) temperature verification
pH Meters	annually each use	complete operations check by service technician (external) calibration using certified buffers
Refrigerators (General Use)	daily	temperature verification
Refrigerators (Sample Management)	daily	temperature verification
Spectrophotometer	Semi-annually Semi-annually dally	cleaning & operations check by service technician (external) wavelength verification (external) continuing calibration verification (CCV) against initial calibration
TCLP Rotator	annually	RPM verification
Thermometers (Mercury/Alcohol)	annually	calibration against NIST traceable thermometer (internal)
Thermometers (digital)	Quarterly	calibration against NIST traceable thermometer (external)
Thermometer (NIST Traceable)	annually	calibration and certification of conformance (external)
Turbidity meter	annually each use	cleaning & operations check by service technician (external) calibration using formazin
Weights (Class S-1)	annually	service/calibration and certification of conformance (external)

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20 Appendix E – List of Analytical Methods

Certificate/Approval Program Summary

Last revised July 19, 2010 - Westboro Facility

The following list includes only those analytes/methods for which certification/approval is currently held. For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

Connecticut Department of Public Health Certificate/Lab ID: PH-0574. *NELAP Accredited Solid Waste/Soil.*

Drinking Water (Inorganic Parameters: Color, pH, Turbidity, Conductivity, Alkalinity, Chloride, Free Residual Chlorine, Fluoride, Calcium Hardness, Sulfate, Nitrate, Nitrite, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc, Total Dissolved Solids, Total Organic Carbon, Total Cyanide, Perchlorate. Organic Parameters: Volatile Organics 524.2, Total Trihalomethanes 524.2, 1,2-Dibromo-3-chloropropane (DBCP), Ethylene Dibromide (EDB), 1,4-Dioxane (Mod 8270). Microbiology Parameters: Total Coliform-MF mEndo (SM9222B), Total Coliform – Colilert (SM9223 P/A), E. Coli. – Colilert (SM9223 P/A), HPC – Pour Plate (SM9215B), Fecal Coliform – MF m-FC (SM9222D))
Wastewater/Non-Potable Water (Inorganic Parameters: Color, pH, Conductivity, Acidity, Alkalinity, Chloride, Total Residual Chlorine, Fluoride, Total Hardness, Silica, Sulfate, Sulfide, Ammonia, Kjeldahl Nitrogen, Nitrate, Nitrite, O-Phosphate, Total Phosphorus, Aluminum, Antimpny, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Titanium, Vanadium, Zinc, Total Residue (Solids), Total Dissolved Solids, Total Suspended Solids (non-filterable), BOD, CBOD, COD, TOC, Total Cyanide, Phenolics, Foaming Agents (MBAS), Bromide, Oil and Grease. Organic Parameters: PCBs, Organochiorine Pesticides, Technical Chlordane, Toxaphene, 2,4-D, 2,4,5-T, 2,4,5-TP(Silvex), Acid Extractables (Phenols), Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, Polynuclear Aromatic Hydrocarbons, Haloethers, Chlorinated Hydrocarbons, Volatile Organics, TPH (HEM/SGT), Extractabie Petroleum Hydrocarbons (ETPH), MA-EPH, MA-VPH. Microbiology Parameters: Total Coliform – MF mEndo (SM9222B), Total Coliform – MTF (SM9221B), HPC – Pour Plate (SM9215B), Fecal Coliform – MF m-FC (SM9222D), Fecal Coliform – A-1 Broth (SM9221E).)
Solid Waste/Soil (Inorganic Parameters: pH, Sulfide, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Tin, Vanadium, Zinc, Total Cyanide, Ignitability, Phenolics, Corrosivity, TCLP Leach (1311), SPLP Leach (1312 metals only), Reactivity. Organic Parameters: PCBs, PCBs in Oil, Organochiorine Pesticides, Technical Chlordane, Toxaphene, Extractabie Petroleum Hydrocarbons (ETPH), MA-EPH, MA-VPH, Dicamba, 2,4-D, 2,4,5-T, 2,4,5-TP(Silvex), Volatile Organics, Acid Extractables (Phenols), 3.3'-Dichlorobenzidine, Phthalates, Nitrosamines, Nitroaromatics & Cyclic Ketones, PAHs, Haloethers, Chlorinated Hydrocarbons.)

Maine Department of Human Services Certificate/Lab ID: 2009024.
Drinking Water (Inorganic Parameters: SM9215B, 9222D, 9223B, EPA 180.1, 300.0, 353.2, SM2130B, 2320B, 4500Cl-D, 4500CN-C, 4500CN-E, 4500F-C, 4500H+B, 4500NO3-F, EPA 200.7, EPA 200.8, 245.1, EPA 300.0. Organic Parameters: 504.1, 524.2.)
Wastewater/Non-Potable Water (Inorganic Parameters: EPA 120.1, 1664A, 350.1, 351.1, 353.2, 410.4, 420.1, Lachat 10-107-06-1-B, SM2320B, 2340B, 2510B, 2540C, 2540D, 426C, 4500Cl-D, 4500Ci-E, 4500CN-C, 4500CN-E, 4500F-B, 4500F-C, 4500H+B, 4500Norg-B, 4500Norg-C, 4500NH3-B, 4500NH3-G, 4500NH3-H, 4500NO3-F, 4500P-B.5, 4500P-E, 5210B, 5220D, 5310C, EPA 200.7, 200.8, 245.1.

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Organic Parameters: 608, 624, ME DRO, ME GRO, MA EPH, MA VPH.)
Solid Waste/Soil (Organic Parameters: ME DRO, ME GRO, MA EPH, MA VPH.)

Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA086.
Drinking Water
Inorganic Parameters: (EPA 200.8 for: Sb,As,Ba,Be,Cd,Cr,Cu,Pb,Ni,Se,Tl)
(EPA 200.7 for: Ba,Be,Ca,Cd,Cr,Cu,Na,Ni) 245.1, (300.0 for: Nitrate-N, Fluoride, Sulfate)
353.2 for: Nitrate-N, Nitrite-N; SM4500NO3-F, 4500F-C, 4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, 2320B, SM2540C, SM4500H-B.
Organic Parameters: (EPA 524.2 for: Trihalomethanes, Volatile Qrganics)
(504.1 for: 1,2-Dibromoethane, 1,2-Dibromo-3-Chloropropane), 314.0, 332.
Microbiology Parameters: SM9215B; ENZ. SUB. SM9223; MF-SM9222D
Non-Potable Water
Inorganic Parameters:, (EPA 200.8 for: Al,Sb,As,Be,Cd,Cr,Cu,Pb,Mn,Ni,Se,Ag,Tl,Zn)
(EPA 200.7 for: Al,Sb,As,Be,Cd,Cr,Co,Cu,Fe,Pb,Mn,Mo,Ni,Se,Ag,Sr,Ti,Tl, V,Zn,Ca,Mg,Na,K)
245.1, SM4500H,B, EPA 120.1, SM2510B, 2540C, 2540B, 2340B, 2320B, 4500Cl-E, 4500F-BC, 426C, SM4500NH3-BH, (EPA 350.1 for: Ammonia-N), LACHAT 10-107-06-1-B for Ammonia-N, SM4500NO3-F, 353.2 for Nitrate-N, SM4500NH3-B,C-Titr, SM4500NH3-BC-NES, EPA 351.1, SM4500P-E, 4500P-B,E, 5220D, EPA 410.4, SM 5210B, 5310C, 4500CL-D, EPA 1664, SM14 510AC, EPA 420, SM4500-CN-CE, SM2540D.
Organic Parameters: (EPA 624 for Volatile Halocarbons, Volatile Aromatics)
(608 for: Chlordane, Aldrin, Dieldrin, DDD, DDE, DDT, Heptachlor, Heptachlor Epoxide, PCBs-Water), EPA 625 for SVOC Acid Extractables and SVOC Base/Neutral Extractables, 600/4-81-045-PCB-Oil.

New Hampshire Department of Environmental Services Certificate/Lab ID: 200307. *NELAP Accredited.*
Drinking Water (Inorganic Parameters: SM6215B, 9222B, 9223B Colilert, EPA 200.7, 200.8, 245.2, 120.1, 300.0, 314.0, SM4500CN-E, 4500H+B, 4500NO3-F, 2320B, 2510B, 2540C, 4500F-C, 5310C, 2120B, EPA 331.0. Organic Parameters: 504.1, 524.2, SM6251B.)
Non-Potable Water (Inorganic Parameters: SM9222D, 9221B, 9222B, 9221E-EC, EPA 200.7, 200.8, 245.1, 245.2, SW-846 6010B, 6020, 7196A, 7470A, SM3500-CR-D, EPA 120.1, 300.0, 350.1, 351.1, 353.2, 420.1, 1664A, SW-846 9010, 9030, 9040B, SM426C, SM2310B, 2540B, 2540D, 4500H+B, 4500NH3-H, 4500NH3-E, 4500NO2-B, 4500P-E, 4500-S2-D, 5210B, 2320B, 2540C, 4500F-C, 5310C, 5540C, LACHAT 10-117-07-1-B, LACHAT 10-107-06-1-B, LACHAT 10-107-04-1-C, LACHAT 10-107-04-1-J, LACHAT 10-117-07-1-A, SM4500CL-E, LACHAT 10-204-00-1-A, LACHAT 10-107-06-2-D. Organic Parameters: SW-846 3005A, 3015A, 3510C, 5030B, 8021B, 8260B, 8270C, 8330, EPA 624, 625, 608, SW-846 8082, 8081A.)
Solid & Chemical Materials (Inorganic Parameters: SW-846 6010B, 7196A, 7471A, 7.3.3.2, 7.3.4.2, 1010, 1030, 9010, 9012A, 9014, 9030B, 9040, 9045C, 9050C, 1311, 3005A, 3050B, 3051A. Organic Parameters: SW-846 3540C, 3545, 3580A, 5030B, 5035, 8021B, 8260B, 8270C, 8330, 8151A, 8082, 8081A.)

New Jersey Department of Environmental Protection Certificate/Lab ID: MA935. *NELAP Accredited.*
Drinking Water (Inorganic Parameters: SM9222B, 9221E, 9223B, 9215B, 4500NO3-F, 4500F-C, EPA 300.0, 200.7, 2540C, 2320B, 314.0, SM2120B, 2510B, 5310C, SM4500H-B, EPA 200.8, 245.2. Organic Parameters: 504.1, SM6251B, 524.2.)
Non-Potable Water (Inorganic Parameters: SM5210B, EPA 410.4, SM5220D, 4500Cl-D, EPA 300.0, SM2120B, SM4500F-BC, EPA 200.7, 351.1, LACHAT 10-107-06-2-D, EPA 353.2, SM4500NO3-F, 4500NO2-B, EPA 1664A, SM5310B, C or D, 4500-PE, EPA 420.1, SM4500P-B5+E, 2540B, 2540C, 2540D, EPA 120.1, SM2510B, SM15 426C, SM9221CE, 9222D, 9221B, 9222B, 9215B, 2310B, 2320B, 4500NH3-H, 4500-S D, EPA 350.1, SM5210B, SW-846 3015, 6020, 7470A, 5540C, 4500H-B, EPA 200.8, SM3500Cr-D, EPA 245.1, 245.2, SW-846 9040B, 3005A, EPA 6010B, 7196A, SW-846 9010B, 9030B. Organic Parameters: SW-846 8260B, 8270C, 3510C, EPA 608, 624, 625, SW-846 5030B, 8021B, 8081A, 8082, 8151A, 8330, NJ OQA-QAM-025 Rev.7.)
Solid & Chemical Materials (Inorganic Parameters: SW-846 9040B, 3005A, 6010B, 7196A, 5030B,

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9010B, 9030B, 1030, 1311, 3050B, 3051, 7471A, 9014, 9012A, 9045C, 9050A, 9065. Organic Parameters: SW-846 8021B, 8081A, 8082, 8151A, 8330, 8260B, 8270C, 1311, 1312, 3540C, 3545, 3550B, 3580A, 5035L, 5035H, NJ OQA-QAM-025 Rev.7.)

New York Department of Health Certificate/Lab ID: 11148. *NELAP Accredited.*
Drinking Water (Inorganic Parameters: SM9223B, 9222B, 9215B, EPA 200.8, 200.7, 245.2, SM5310C, EPA 314.0, 332.0, SM2320B, EPA 300.0, SM2120B, 4500CN-E, 4500F-C, 4500H-B, 4500NO3-F, 2540C, EPA 120.1, SM 2510B. Organic Parameters: EPA 524.2, 504.1.)
Non-Potable Water (Inorganic Parameters: SM9221E, 9222D, 9221B, 9222B, 9215B, 5210B, EPA 410.4, SM5220D, 2310B-4a, 2320B, EPA 200.7, 300.0, LACHAT 10-117-07-1A or B, SM4500Cl-E, 4500F-C, SM15 426C, EPA 350.1, LACHAT 10-107-06-1-B, SM4500NH3-H, EPA 351.1, LACHAT 10-107-06-2, EPA 353.2, LACHAT 10-107-041-C, SM4500-NO3-F, 4500-NO2-B, 4500P-E, 2540C, 2540B, 2540D, EPA 200.8, EPA 6010B, 6020, EPA 7196A, S\M3500Cr-D, EPA 245.1, 245.2, 7470A, SM2120B, SM4500-CN-E LACHAT 10-204-00-1-A, EPA 9040B, SM4500-HB, EPA 1664A, SM5310C, EPA 420.1, SM14 510C, EPA 120.1, SM2510B, SM4500S-D, SM5540C, EPA 3005A, 3015. Organic Parameters: EPA 624, 8260B, 8270C, 625, 608, 8081A, 8151A, 8330, 8082, EPA 3510C, 5030B, 9010B, 9030B.)
Solid & Hazardous Waste (Inorganic Parameters: 1010, 1030, SW-846 ch 7 Sec 7.3, EPA 6010B, 7196A, 7471A, 9012A, 9014, 9040B, 9045C, 9065, 9050, EPA 1311, 1312, 3005A, 3050B, 9010B, 9030B. Organic Parameters: EPA 8260B, 8270C, 8081A, 8151A, 8330, 8082, 3540C, 3545, 3546, 3580, 5030B, 5035.)

North Carolina Department of the Environment and Natural Resources Certificate/Lab ID : 666.
Organic Parameters: MA-EPH, MA-VPH.

Pennsylvania Department of Environmental Protection Certificate/Lab ID : 68-03671. *NELAP Accredited.*
Non-Potable Water (Organic Parameters: EPA 3510C, 5030B, 625, 624. 608, 8081A, 8082, 8151A, 8260B, 8270C, 8330)
Solid & Hazardous Waste (Inorganic Parameters: EPA 1010, 1030, 1311, 3050B, 3051, 6010B, EPA 7.3.3.2, EPA 7.3.4.2, 7196A, 7471A, 9010B, 9012A, 9014, 9040B, 9045C, 9050, 9065. Organic Parameters: 3540C, 3545, 3580A, 5035, 8021B, 8081A, 8082, 8151A, 8260B, 8270C, 8330)

Rhode Island Department of Health Certificate/Lab ID: LAO00065. *NELAP Accredited via NY-DOH.*
Refer to MA-DEP Certificate for Potable and Non-Potable Water.
Refer to NY-DOH Certificate for Potable and Non-Potable Water.

Texas Commisson on Environmental Quality Certificate/Lab ID: T104704476-09-1. *NELAP Accredited.*
Non-Potable Water (Inorganic Parameters: EPA 120.1, 1664, 200.7, 200.8, 245.1, 245.2, 300.0, 350.1, 351.1, 353.2, 376.2, 410.4, 420.1, 6010, 6020, 7196, 7470, 9040, SM 2120B, 2310B, 2320B, 2510B, 2540B, 2540C, 2540D, 426C, 4500CL-E, 4500CN-E, 4500F-C, 4500H+B, 4500NH3-H, 4500NO2B, 4500P-E, 4500S2-D, 510C, 5210B, 5220D, 5310C, 5540C. Organic Parameters: EPA 608, 624, 625, 8081, 8082, 8151, 8260, 8270, 8330.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1311, 1312, 9012, 9014, 9040, 9045, 9050, 9065.)

Department of Defense Certificate/Lab ID: L2217.
Drinking Water (Inorganic Parameters: SM 4500H-B. Organic Parameters: EPA 524.2, 504.1.)

Non-Potable Water (Inorganic Parameters: EPA 200.7, 200.8, 6010B, 6020, 245.1, 245.2, 7470A, 9040B, 300.0, 9251, 9038, 350.1, 353.2, 351.1, 120.1, 9050A , 410.4, 9060, 1664, 420.1, LACHAT 10-107-06-1-B, SM 4500CN-E, 4500H-B, 4500CL-E, 4500F-BC, 4500SO4-E, 426C, 4500NH3-B, 4500NH3-H, 4500NO3-F, 4500NO2-B, 4500Norg-C, 4500PE, 2510B, 5540C, 5220D, 5310C, 2540B, 2540C, 2540D, 510C, 4500S2-AD, 3005A, 3015, 9010B, 9030B. Organic Parameters: EPA 8260B, 8270C, 8330, 625, 8082, 8151A, 8081A, 3510C, 5030B, MassDEP EPH, MassDEP VPH.)

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Solid & Hazardous Waste (Inorganic Parameters: EPA 200.7, 6010B, 7471A, 9040B, 9045C, 9065, 420.1, 9012A, 6860, 1311, 1312, 3050B, 9030B, 3051, 9010B, 3540C, SM 510ABC, 4500CN-CE, 2540G, SW-846 7.3, Organic Parameters: EPA 8260B, 8270C, 8330, 8082, 8081A, 8151A, 3545, 3546, 3580, 5035, MassDEP EPH, MassDEP VPH.)

Analytes Not Accredited by NELAP
Certification is not available by NELAP for the following analytes: EPA 8260B: Freon-113, 1,2,4,5-Tetramethylbenzene, 4-Ethyltoluene. EPA 8330A: PETN, Picric Acid, Nitroglycerine, 2,6-DANT, 2,4-DANT. EPA 8270C: Methyl naphthalene, Dimethyl naphthalene, Total Methylnapthalenes, Total Dimethylnaphthalenes, 1,4-Diphenylhydrazine (Azobenzene). EPA 625: 4-Chloroaniline. EPA 350.1 for Ammonia in a Soil matrix.

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Certificate/Approval Program Summary
Last revised July 19, 2010 – Mansfield Facility

The following list includes only those analytes/methods for which certification/approval is currently held. For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

Connecticut Department of Public Health Certificate/Lab ID: PH-0141.

Wastewater/Non-Potable Water (Inorganic Parameters: pH, Turbidity, Conductivity, Alkalinity, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Vanadium, Zinc, Total Residue (Solids), Total Suspended Solids (non-filterable), Total Cyanide. Organic Parameters: PCBs, Organochiorine Pesticides, Technical Chlordane, Toxaphene, Acid Extractables, Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, PAHs, Haloethers, Chlorinated Hydrocarbons, Volatile Organics.)

Solid Waste/Soil (Inorganic Parameters: pH, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc, Total Organic Carbon, Total Cyanide, Corrosivity, TCLP 1311. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Volatile Organics, Acid Extractables, Benzidines, Phthalates, Nitrosamines, Nitroaromatics & Cyclic Ketones, PAHs, Haloethers, Chlorinated Hydrocarbons.)

Florida Department of Health Certificate/Lab ID: E87814. *NELAP Accredited.*

Non-Potable Water (Inorganic Parameters: SM2320B, EPA 120.1, SM2510B, EPA 245.1, EPA 150.1, EPA 160.2, SM2540D, EPA 335.2, SM2540G, EPA 180.1. Organic Parameters: EPA 625, 608.)

Solid & Chemical Materials (Inorganic Parameters: 6020, 7470, 7471, 9045, 9014. Organic Parameters: EPA 8260, 8270, 8082, 8081.)

Air & Emissions (EPA TO-15.)

Louisiana Department of Environmental Quality Certificate/Lab ID: 03090. *NELAP Accredited.*

Non-Potable Water (Inoroanic Parameters: EPA 120.1, 150.1, 160.2, 180.1, 200.8, 245.1, 310.1, 335.2, 608, 625, 1631, 3010, 3015, 3020, 6020, 9010, 9014, 9040, SM2320B, 2510B, 2540D, 2540G, 4500CN-E, 4500H-B, Organic Parameters: EPA 3510, 3580, 3630, 3640, 3660, 3665, 5030, 8015 (mod), 3570, 8081, 8082, 8260, 8270,)

Solid & Chemical Materials (Inorganic Parameters: 6020, 7196, 7470, 7471, 7474, 9010, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015 (mod), EPA 3570, 1311, 3050, 3051, 3060, 3580, 3630, 3640, 3660, 3665, 5035, 8081, 8082, 8260, 8270.)

Biological Tissue (Inorganic Parameters: EPA 6020. Organic Parameters: EPA 3570, 3510, 3610, 3630, 3640, 8270.)

Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA030.

Non-Potable Water (Inorganic Parameters: SM4500H+B. Organic Parameters: EPA 624.)

New Hampshire Department of Environmental Services Certificate/Lab ID: 2206. *NELAP Accredited.*

Non-Potable Water (Inorganic Parameters: EPA 200.8, 245.1, 1631E, 120.1, 150.1, 180.1, 310.1, 335.2, 160.2, SM2540D, 2540G, 4500CN-E, 4500H+B, 2320B, 2510B. Organic Parameters: EPA 625, 608.)

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New Jersey Department of Environmental Protection Certificate/Lab ID: MA015. NELAP Accredited.

Non-Potable Water (Inorganic Parameters: SW-846 1312, 3010, 3020A, 3015, 6020, SM2320B, EPA 200.8, SM2540C, 2540D, 2540G, EPA 120.1, SM2510B, EPA 180.1, 245.1, 1631E, SW-846 9040B, 6020, 9010B, 9014 Organic Parameters: EPA 608, 625, SW-846 3510C, 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082 8260B, 8270C)

Solid & Chemical Materials (Inorganic Parameters: SW-846 6020, 9010B, 9014, 1311, 1312, 3050B, 3051, 3060A, 7196A, 7470A, 7471A, 9045C, 9060. Organic Parameters: SW-846 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082, 8260B, 8270C, 3570, 8015B.)

Atmospheric Organic Parameters (EPA TO-15)

Biological Tissue (Inorganic Parameters: SW-846 6020 Organic Parameters: SW-846 8270C, 3510C, 3570, 3B10B, 3630C, 3B40A)

New York Department of Health Certificate/Lab ID: 11627. NELAP Accredited.

Non-Potable Water (Inorganic Parameters: EPA 310.1, SM2320B, EPA 365.2, 160.1, EPA 160.2, SM2540D, EPA 200.8, 6020, 1631E, 245.1, 335.2, 9014, 150.1, 9040B, 120.1, SM2510B, EPA 376.2, 180.1, 9010B. Organic Parameters: EPA 624, 8260B, 8270C, 608, 8081A, 625, 8082, 3510C, 3511, 5030B.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 9040B, 9045C, SW-846 Ch7 Sec 7.3, EPA 6020, 7196A, 7471A, 7474, 9014, 9040B, 9045C, 9010B. Organic Parameters: EPA 8260B, 8270C, 8081A, DRO 8015B, 8082, 1311, 3050B, 3580, 3050B, 3035, 3570, 3051, 5035, 5030B.)

Air & Emissions (EPA TO-15.)

Rhode Island Department of Health Certificate/Lab ID: LAO00299. NELAP Accredited via LA-DEQ.

Refer to MA-DEP Certificate for Non-Potable Water.

Refer to LA-DEQ Certificate for Non-Potable Water.

Texas Commission of Environmental Quality Certificate/Lab ID: T104704419-08-TX. NELAP Accredited.

Solid & Chemical Materials (Inorganic Parameters: EPA 6020, 7470, 7471, 1311, 7196, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015, 8270, 8260, 8081, 8082.)

Air (Organic Parameters: EPA TO-15)

U.S. Army Corps of Engineers

Department of Defense Certificate/Lab ID: L2217.01.

Solid & Hazardous Waste (Inorganic Parameters: EPA 1311, 1312,3051, 6020, 747A, 7474, 9045C,9060, SM 2540G, ASTM D422-63. Organic Parameters: EPA 3580, 3570, 3540C, 5035, 8260B, 8270C, 8270 Alk-PAH, 8082, 8081A, 8015 (SHC), 8015 (DRO).

Air & Emissions (EPA TO-15.)

Analytes Not Accredited by NELAP
Certification is not available by NELAP for the following analytes: 8270C: Biphenyl.

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21 Appendix F – Alpha Code of Ethics Agreement

Alpha Analytical, Inc.
Ethical Conduct and Data Integrity Agreement

A. ***Personal Pledge:*** I understand that I am charged with meeting the highest degree of ethical standards in performing all of my duties and responsibilities and pledge to only report data, test results and conclusions that are accurate, precise and of the highest quality.

B. ***Protocol Pledges:*** I agree to adhere to the following protocols and principles of ethical conduct in fulfilling my work assignments at Alpha:

1. All work assigned to me will be performed using Standard Operating Procedures (SOPs) that are based on EPA approved methods or Alpha methods.
2. I will only report results or data that match the actual results observed or measured.
3. I will not intentionally nor improperly manipulate or falsify data in any manner, including both sample and QC data. Furthermore, I will not modify data values unless the modification can be technically justified through a measurable analytical process or method acceptable to Alpha. All such modifications will be clearly and thoroughly documented in the appropriate laboratory notebooks and raw data and include my initials or signature and date.
4. I will not intentionally report dates and times of analyses that are not the actual dates and times the analyses were conducted.
5. I will not intentionally represent another individual's work as my own or represent my work as someone else's.
6. I will not make false statements to, or seek to otherwise deceive Alpha staff, leaders or clients. I will not, through acts of commission, omission, erasure or destruction, improperly report measurements, standards results, data, test results or conclusions.

C. ***Guardian Pledge:***

1. I will not condone any accidental or intentional reporting of unauthentic data by other Alpha staff and will immediately report such occurrences to my supervisor, the QA Officer, the Laboratory Director or corporate leadership. I understand that failure to report such occurrences may subject me to immediate discipline, including termination.
2. If a supervisor or other member of the Alpha leadership group requests me to engage in, or perform an activity that I feel is compromising data validity or quality, I have the right to not comply with the request and appeal this action through Alpha's QA Officer, senior leadership or corporate officers, including the President of the company.
3. I understand that, if my job includes supervisory responsibilities, then I will not instruct, request or direct any subordinate to perform any laboratory practice that is unethical or improper. Also, I will not discourage, intimidate or inhibit a staff member who may

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choose to appropriately appeal my supervisory instruction, request or directive that may be perceived to be improper, nor retaliate against those who do so.

D. ***Agreement Signature:*** I have read and fully understand all provisions of the *Alpha Analytical Ethical Conduct* and *Data Integrity Agreement*. I further realize and acknowledge my responsibility as an Alpha staff member to follow these standards. I clearly understand that adherence to these standards is a requirement of continued employment at Alpha.

_____
Employee Signature

_____
Printed Name

_____
Date

Review Requirements
The *Ethical* Conduct and Data *Integrity Agreement* must be signed at the time of hire (or within 2 weeks of a staff member's receipt of this policy). Furthermore, each staff member will be required to review and sign this agreement every year. Such signature is a condition of continued employment at Alpha. Failure to comply with these requirements will result in immediate discharge from Alpha employment. This agreement is not an employment contract and does not

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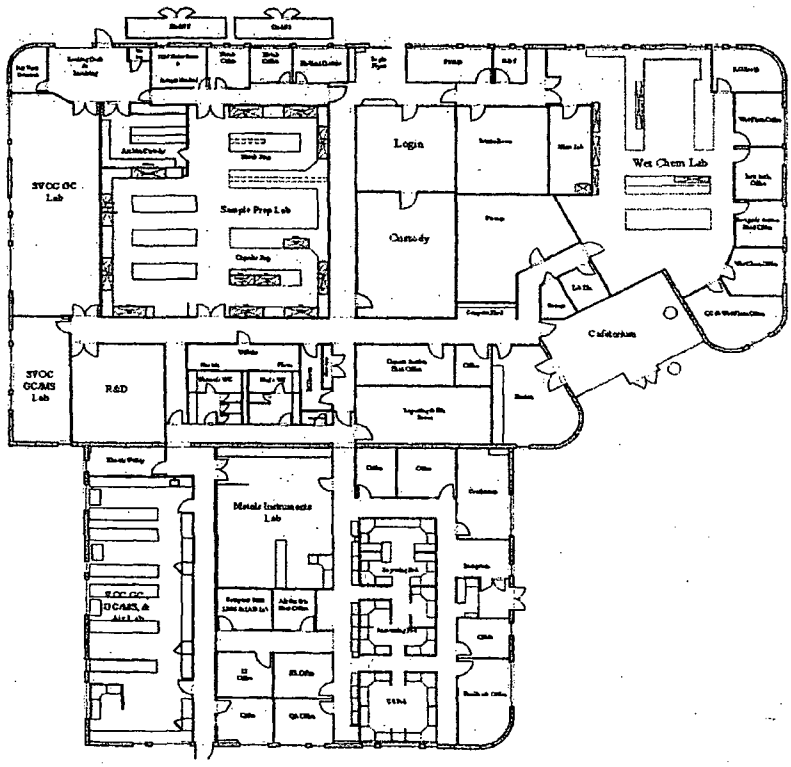
22 Appendix G – Floor Plan Westboro Facility

Alpha Woods Hole Labs

FIGURE 1f
FLOOR PLAN



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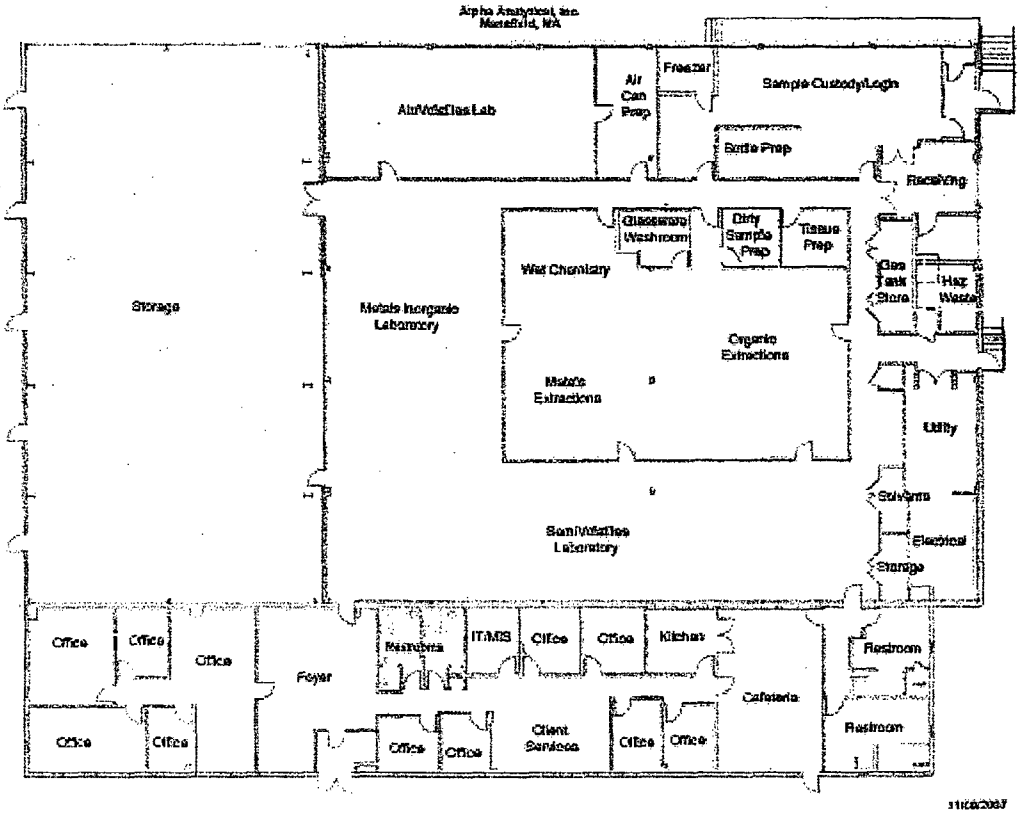
23 Appendix H– Floor Plan Mansfield Facility



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24 Appendix i – Job Titles and Requirements

TITLE*	REQUIRED EDUCATION**	MINIMUM REQUIRED ENVIRONMENTAL LAB EXRERIENCE	MIMMUM REQUIRED SKILLS***
Technical Manager (Director) Organic Laboratory	BS or BA in Chemical, Environmental, or Biological Science; including minimum 24 credit hours in Chemistry. Masters or Doctoral degree in one of above disciplines may be susbsituted for 1 year of experience.	Two (2) years with the analysis of organic analytes in an environmental laboratory	1. Advanced technical knowledge of all analytical methods performed by the lab 2. Advanced technical instrumentation/lab systems knowledge 3. Knowledge of safe laboratory practices, OSHA regs and emergency protocols 4. Experiance with and understanding of LIMS 5. Experience with method development and implementation 6. Experience monitoring standards of performance in Quality Control and Quality Assurance
Technical Manager (Director) Inorganic Laboratory	BS or BA in Chemical, Environmental, or Biological Science; including minimum 16 credit hours in Chemistry. Masters or Doctoral degree in one of above disciplines may be susbsituted for 1 year of experience.	Two (2) years with the analysis of inorganic analytes in an environmental laboratory	1. Advanced technical knowledge of all analytical methods performed by the lab 2. Advanced technical instrumentation/lab systems knowledge 3. Knowledge of safe laboratory practices, OSHA regs and emergency protocols 4. Experience with and understanding of LIMS 5. Experience with method development and implementation 6. Experience monitoring standards of performance in Quality Control and Quality Assurance
Technical Manager (Director) Microbiology Laboratory	BS or BA in Chemical, Environmental, or Biological Science; including minimum 16 credit hours in the Biological Sciences, including at least one course having microbiology as a major component. Masters or Doctoral degree in one of above disciplines may be susbsituted for 1 year of experience.	Two (2) years with the analysis of microbiological analytes in an environmental laboratory	1. Advanced technical knowledge of all analytical methods performed by the lab 2. Advanced technical instrumentation/lab systems knowledge 3. Knowledge of safe laboratory practices, OSHA regs and emergency protocols 4. Experience with and understanding of LIMS 5. Experience with method development and implementation 6. Experience monitoring standards of performance in Quality Control and Quality Assurance
Quality Assurance Director	BS/BA in Chemistry, Biology, Environmental or related Science	Two (2) years Environmental Laboratory Experience	1. Advanced technical knowledge of all analytical methods performed by the lab 2. Knowledgeable in Federal, State and DOD Programs (NELAC, etc.) 3. Able to develop QA/QC policies and certification requirements 4. Able to develop training programs for quality procedures 5. Documented training and/or experience in QA and QA procedures 6. Knowledge of safe laboratory practices and emergency protocols

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TITLE*	REQUIRED EDUCATION**	MIMMUM REQUIRED ENVIRONMENTAL LAB EXPERIENCE	MIMMUM REQUIRED SKILLS***
Laboratory Coordinator	High School Diploma; Associates or BS/BA in Chemistry, Biology or Environmental or related Science preferred	1 year +	1. Knowledge of safe laboratory practices and emergency protocols 2. Proficient in all methods and SOPs within their department 3. Experience with and understanding of LIMS 4. Proven ability to meet TAT (turnaround times)
Quality Systems Specialist	BS/BA Chemistry	2 years +	1. General knowledge of laboratory methods 2. Experience with and understanding of LIMS 3. Strong attention to detail 4. Strong oral/written communication and organizational skills 5. Knowledge of QA/QC policies and certification requirements
EH&S Coordinator	High School or Equivalent	2 years +	1. General knowledge of lab operations 2. Detailed knowledge of safe lab practices and emergency protocols 3. Hazardous Waste Management and RCRA Regulation Training 4. DOT Hazardous Materials Regulations Training 5. OSHA Compliance Training 6. Able to develop and deliver new hire and ongoing safety training programs
Lab Technician I	HS or Equivalent	0-1 years. 1+ years preferred.	1. Knowledge of safe laboratory practices 2. Able to follow direction and Standard Operating Procedures (SOP's) 3. Familiarity with standard and reagent preparation 4. Knowledgeable in using volumetric pipettes and glassware 5. Strong oral/written communication and organizational skills
Lab Technician II	HS or Equivalent	2-4 years	1. All skills of Lab Technician I 2. Trained in majority of technician skills relative to department
Lab Technician III	HS or Equivalent	5 years +	1. All skills of Lab Technician II 2. Experienced in training staff
Lab Technician/Chemist I	BS/BA in Chemistry, Biology, Environmental or related Science	0-1 years	1. Knowledge of safe laboratory practices 2. Able to follow direction and Standard Operating Procedures (SOP's) 3. Familiarity with standard and reagent preparation 4. Knowledgeable in using volumetric pipettes and glassware 5. Strong oral/written communication and organizational skills
Lab Technician/Chemist II	BS/BA in Chemistry, Biology, Environmental or related Science	2-4 years	1. All skills of Chemist I 2. Trained in majority of department methods

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TITLE*	REQUIRED EDUCATION**	MINIMUM REQUIRED ENVIRONMENTAL LAB EXPERIENCE	MIMMUM REQUIRED SKILLS***
Lab Technician/Chemist III	BS/BA in Chemistry, Biology, Environmental or related Science	5 years +	1. All skills of Chemist II 2. Experienced in training staff
Analyst I	HS or Equivalent	0-1 years	1. Knowledge of safe laboratory practices 2. Able to follow direction and Standard Operating Procedures (SOP's) 3. Experienced with sample handling, preparation and/or extraction
Analyst II	HS or Equivalent	2-4 years	1. All skills of Analyst I 2. Experienced in machine operation, maintenance and troubleshooting
Analyst III	HS or Equivalent	5 years +	1. All skills of Analyst II 2. Experienced in data review and reporting 3. Experienced in training staff
Analytical Chemist I	BS/BA in Chemistry, Biology, Environmental or related Science	6 mos-1 year	1. Knowledge of safe laboratory practices 2. Able to follow direction and Standard Operating Procedures (SOP's) 3. Experienced with sample handling, preparation and/or extraction
Analytical Chemist II	BS/BA in Chemistry, Biology, Environmental or related Science	2-4 years	1. All skills of Analytical Chemist I 2. Experienced in machine operation, maintenance and troubleshooting
Analytical Chemist III	BS/BA in Chemistry, Biology, or Environmental or related Science	5 years	1. All skills of Analytical Chemist II 2. Experienced in data review and reporting 3. Experienced in training staff
Data Deliverable Specialist I	HS Diploma, BS/BA or Associates preferred	0-1 years	1. Introductory knowledge of laboratory methods 2.Able to follow direction and Standard Operating Procedures (SOP's) 3. Working knowledge of Adobe Acrobat, Microsoft Workd, Excel 4. Good writing and typing skills
Data Deliverable Specialist II	HS Diploma, BS/BA or Associates preferred	2-4 years	1. All skills of Data Deliverable Specialist I 2. General knowledge of laboratory methods 3. Understanding of data review/ data reporting process 4. Experience with and understanding of LIMS and electronic data deliverables

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TITLE*	REQUIRED EDUCATION**	MINIMUM REQUIRED ENVIRONMENTAL LAB EXPERIENCE	MINIMUM REQUIRED SKILLS***
Data Deliverable Specialist III	HS Diploma, BS/BA or Associates preferred	5 years +	1. All skills of Data Deliverable Specialist II 2. Intermediate/advanced knowledge of lahpratory methods 3. Able to perform report review 4. Experience with and understanding of LIMS and electronic data deliverables 5. Able to initiate re-work where necessary
Laboratory Intern	2 Semesters of Chemistry, Biology or Environmental Science	None; Lab work study experience preferred	1. Knowledge of safe laboratory practices 2. Able to follow direction and Standard Operating Procedures

KEY

* Internal terms only. Full title would have "Environmental Laboratory" and specific department preceeding it.

** Substitutions: Equivalent knowledge may be substituted for a degree in some instances.

*** Not meant to be an exhaustive list of skill requirements. For full list of skills consult the "Laboratory Skills" list. Actual Job Duties and Responsibilities can be found within job descriptions for each position.

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25 Appendix J – Standard Operating Procedures

WESTBORO SOP #	Title
02-02	Separatory Funnel Liquid-Liquid Extraction – EPA 3510C
02-03	Organic Extraction Glassware Cleaning & Handling
02-04	Soxhlet Extraction – EPA 3540C
02-09	Sulfur Cleanup – EPA 3660A
02-10	Oil and Waste Dilution – EPA 3580A
02-12	Microwave Extraction – EPA 3546
03-01	Volatile Organic Compounds – EPA 624
03-02	Volatile Organic Compounds – EPA 524.2
03-03	Volatile Organic Compounds – EPA 8260B
03-04	Polynuclear Aromatic Hydrocarbons (PAHs) by SIM – EPA 8270C (modified)
03-05	Semivolatile Organics by GC/MS – EPA 625
03-06	Semivolatile Organics by GC/MS – EPA 8270C
03-12	TCLP Extraction – Volatile Organics SW-846 Method 1311
04-02	EDB & DBCP in Water by Microextraction & Gas Chromatography – EPA 504.1
04-05	Organochiorine Pesticides by Capillary Column GC – EPA 8081
04-07	Extractabie Petroleum Hydrocarbons
04-08	Volatile Petroleum Hydrocarbons
04-09	Organochiorine Pesticides & PCBs by Capillary Column GC – EPA 608
04-10	Polychlorinated Biphenyls in Oil – EPA 600/4-81-045
04-12	TPH-Diesel Range Organics, Maine 4.1.25, EPA 8015B (Modified)
04-13	TPH- Gasoline Range Organics, Maine 4.2.17, EPA 8015B (Modified)
04-14	CT-ETPH
04-16	Herbicides by 8151A
04-17	PCBs by Capillary Column Gas Chromatography - EPA 8082
04-20	New Jersey Method OQA-QAM-025 Rev. 7
04-21	New Jersey EPH Method
05-02	Microwave Assisted Acid Digestion of Aqueous Samples & Extracts – EPA 3015
05-03	TCLP Extraction Metals and Semi-Volatile Organics – SW-846 Method 1311

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05-05	Hot Block Digestion for Aqueous Samples - EPA 3005A
05-07	Hot Plate Digestion of Sediments, Sludges and Soils, EPA 3050B
06-01	Metals by Inductively Coupled Plasma – EPA 6010B
06-02	Mercury in Liquid Waste by Cold-Vapor Atomic Absorption – EPA 7470A
06-03	Mercury in Soil or Solid Waste by Cold-Vapor AA – EPA 7471A
06-04	Metals by Inductively Coupled Plasma – EPA 200.7
06-06	Mercury in Water by Automated Cold-Vapor Atomic Absorption – EPA 245.1
06-10	Metals by Inductively Coupled Plasma-Mass Spectrometry – EPA 6020
06-11	Metals by Inductively Coupled Plasma-Mass Spectrometry – EPA 200.8
07-01	Enterococcus by Multiple Tube Technique – SM 9230B
07-02	Fecal Coliform by Membrane Filtration – SM 9222D
07-03	Fecal Coliform by Multiple Tube Fermentation – SM 9221E
07-04	Fecal Streptococcus by Multiple Tube Technique – SM 9230B
07-05	Heterotrophic Plate Count – SM 9215B
07-07	Total Coliform/E.Coli – Presence/Absence (Colilert) – SM 9223B
07-08	Total Coliform by Membrane Filtration – SM 9222B
07-09	Total Coliform by Multiple Tube Fermentation – SM 9221B
07-10	pH, Liquid Samples – EPA 9040B, SM 4500H+B
07-11	pH, Soil & Waste Samples – EPA 9045C
07-12	Hexavalent Chromium – EPA 7196A, SM 3500Cr-D
07-13	Biological Oxygen Demand – SM 5210B
07-14	Ammonia Nitrogen – SM 4500NH_3-BH, Lachat 10-107-06-1-A
07-15	Total Kjeldahl Nitrogen – EPA 351.1, SM 4500Norg-C, Lachat 10-107-06-2-D
07-16	Chemical Oxygen Demand – SM 5220D
07-17	Oil & Grease by n-Hexane Extraction Method & Gravimetry – EPA 1664
07-18	Cyanide, Total – EPA 9010B, SM 4500CN-CE
07-19	Phenol, Total - EPA 420.1, EPA 9065, SM 510AC
07-21	Sulfate, Turbidimetric Method – EPA 9038, SM 426C, SM 4500SO_4-E
07-22	Alkalinity, Titration Method – SM 2320B
07-23	Determination of inorganic Anions by Ion Chromatography – EPA 300.0
07-24	Total Organic Carbon/Dissolved Organic Carbon – EPA 9060, SM 5310C
07-25	Chloride – SM 4500Cl-E, EPA 9251
07-26	Nitrate, Nitrite and Nitrate/Nitrite Nitrogen – EPA 353.2, SM 4500NO_3-F
07-27	Total Solids (Dried @ 103-105°) and TVS – SM 2540B, SM 2540E

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07-28	Total Dissolved Solids – SM 2540C
07-29	Total Suspended Solids – SM 2540D
07-30	Total Sulfide – EPA 376.2, SM 4500S2-AD, EPA 9030B
07-31	MBAS, Anionic Surfactants – EPA 425.1, SM 5540C
07-32	Fluorfde, Electrode Method – EPA 340.2, SM 4500F-BC
07-33	Turbidity, Nephelometric Method – EPA 180.1, SM 2130B
07-34	Orthophosphate, Colorimetric Single Reagent Method – SM 4500P-E
07-35	Total Phosphorous, Colorimetric Single Reagent Method – SM 4500P-E
07-36	Ignitability – EPA 1010
07-37	Reactivity – EPA Chapter 7.3
07-38	Total Solids (Dried @ 103-105°) – SM 2540G
07-39	Chlorophyll A – SM 10200H
07-41	E. Coli – Membrane Filtration
07-42	Chlorophyll A – EPA 446
07-43	Specific Conductance
07-44	True and Apparent Color, Visual Comparison Methpd
07-45	Acidity, Titration Method
07-46	Air Density Monitoring
07-48	Inhibitory Residue Test
07-51	Determination of Formaldehyde by HPLC EPA 8315A
07-52	Enterococcus – MF
07-54	Sulfite, Iodometric
07-55	Ferrous Iron
07-56	Residual Chlorine
07-57	ORP
07-60	Ignitability of Solids EPA 1030
07-61	USP Total Organic Carbon Combustion Oxidation Method
07-63	Physiologically Available Cyanide (PAC)
07-64	Total Settleable Solids SM 2540 F
07-65	Fixed and Volatile Solids in Solid and Semisolid Samples – SM 2540G
07-66	Tannin & Lignin
07-69	Nitrite – Manual Colorimetric Method
07-70	Paint Filter Liquids Test
07-71	Total Coliform, E.Coli & Enterococcus by Quantification Methods (Quanti Tray)

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07-72	Odor, Threshold Odor Test
07-73	Dissolved Oxygen
08-02	Balance Calibration Check
08-04	KD Tube Calibration Verification
08-06	Thermometer Calibration
08-08	Analytical Guidelines for Method Validation
08-10	Inorganics Glassware Cleaning and Handling
08-11	Water Quality Monitoring
08-18	Reagent, Solvent and Standard Control
10-02	Customer Service
10-03	Quote/Contract Procedure
10-04	Data Validation Package Generation
10-05	Project Communication Form Generation
13-02	Accounts Payable Invoice Processing
14-01	Waste Management and Disposal
18-01	Nitroaromatics and Nitramines by HPLC, EPA 8330A,B
18-03	Perchlorate by IC/MS/MS
MANSFIELD SOP #	Title
Chemistry	
M-001	Inductively Coupled Plasma – Mass Spectrometry by Method 6020
M-005	Mercury Determination by Cold Vapor AAS 245.1, 7470A
M-006	Mercury Determination by Cold Vapor SSA, 7471B
M-008	Acid Volatile Sulfides and Simultaneously Extracted Metals in Sediments
M-011	Hydride Generation ICP-MS
M-013	Mercury in Aqueous Samples by Cold Vapor Atomic Fluorescence Technique, 1631E/245.7/7474
M-014	Mercury in Tissue and Soil Samples by Cold Vapor Atomic Fluorescence Technique, 1631E/245.7/7474/7471A
M-015	Methylmercury in Tissue and Sediment Samples by HPLC CVAF
MP-001	Metals Soil/Sediment Digestion – ICP Method 3050:1T
MP-003	Microwave Assisted Acid Digestion of Sediments, Soils, Tissues and Waters, 3051/3015A
MP-004	Acid Digestion of Aqueous Samples for Metals Analysis, 3010A/3020A

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MP-006	Seawater Extraction Procedure for Trace Metals
MP-007	Toxicity Characteristic Leaching Procedure, SW-846 Method 1311
O-004	Volatile Organic Compounds by GC/MS, Method 8260B and 624
O-006	Method 8270C – Semivolatile Organic Compounds by GC/MS
O-007	Analysis of PAH by GC/MS–SIM
O-011	Method 8081B-Organochlorine Pesticides by GC-ECD
O-012	Method 8082-PCBs as Aroclors or Congeners by GC-ECD
O-015	Determination of PCB Homologs, Individual Congeners, and Pesticides by GC/MS - SIM
O-016	1,4-Dioxane by GC/MS-SIM with Isotope Dilution Modification
OP-001	Extraction of Liquid Samples by Separatory Funnel- Method 3510C
OP-003	Tissue Preparation and Homogenization
OP-006	Gel Permeation Chromatography (GPC)
OP-007	Sulfur Cleanup with Copper – Method 3660B
OP-010	Sulfuric Acid Cleanup – Method 3665A
OP-014	Silica Fractionation Cleanup by HPLC
OP-015	Percent Lipid Determination
OP-016	Microscale Solvent Extraction (MSE)
OP-019	Soxhlet Extraction EPA 3540C
OP-020	Soxhlet Extraction of PUF Cartridges
W-001	Percent Solids Determination
W-002	Specific Conductance, Method SM2510B
W-003	pH in Water
W-004	pH in Soil and Waste
W-006	Total Suspended Solids (TSS) – Non-filterable Residue
W-007	Turbidity, Method 180.1
W-009	Alkalinity, Method 2320B
W-024	Hexavalent Chromium, SM 3500Cr-D/ 7196A
W-028	Total Organic Carbon in Soil, Sediment and Water
W-029	Particle Size Analysis
W-032	Particulates in Air Method PM-10
W-033	Volatile Solids in Solid and Semisolid Samples
G-002	Laboratory Glassware Cleaning
G-003	Balance Calibration and Maintenance

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G-004	Gravimetric Testing of Pipettes
G-006	Hazardous Waste & Sample Disposal
G-008	Reagent, Solvent and Standard Control
A-001	Determination of VOCs in Ambient Air GC/MS- Method TO-15
A-002	Analysis of Air Samples for Helium via GC/TCD
A-003	APH
A-004	Air PIANO Volatiles
A-005	Dissolved Gases
A-007	Can Cleaning
A-008	Fixed Gases new system
A-009	TO-11A
MANSFIELD Forensics SOP #	SOP Title
O-003	Total Petroleum Hydrocarbons and Saturated Hydrocarbons by GC-FID
O-008	Analysis of Parent and Alkylated PAH by Selected Heterocyclic Compounds by GC/MS-SIM
O-018	Organic Lead by GC/MS SIM
O-019	PIANO Volatilles by GC/MS
O-020	Ethanol in Oil by GC/MS
O-021	Whole Oil Analysis by GC/MS and FID
O-022	Density Determination of Oils
OP-009	Alumina Column Cleanup of Organic Extracts
OP-013	Shaker Table Extraction
OP-017	Gravimetric Determination
OP-018	Tissue Extraction
OP-021	Organic Waste Dilution
CORPORATE SOP #	Title
01-01	Sample Receipt & Login
01-02	Sample Custody and Tracking
01-03	Bottle Order Preparation
05-06	SPLP Extraction Inorganics and Semivolatile Organics, EPA 1312
08-01	Document Control

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08-03	Manual Integration
08-05	MDL LOD LOQ
08-07	Control Limit Generation
08-09	Corrective and Preventative Actions
08-12	Demonstration of Capability (DOC) Generation
08-13	Internal Audit Procedure
08-14	Data Review – Organics
08-15	Calculating Measurement Uncertainty
08-16	Annual Management Review
08-17	Sample Compositing Procedure
08-19	Nonconformance Planning/Procedures
09-01	Report Generation and Approval
09-02	Organics Data Deliverable Package Review
10-01	Customer Inquiry and Complaint Procedures
11-01	Computer System Backup/Control
11-02	Computer and Network Security
11-03	Software Validation and Control
13-01	Purchasing Procedure
15-01	Training Program

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APPENDIX D

COPIES OF LABORATORY CERTIFICATIONS

State of New Jersey
Department of Environmental Protection

Certifies That

Accutest Laboratories

Laboratory Certification ID # 12129

is hereby approved as a

Nationally Accredited Environmental Laboratory

to perform the analyses as indicated on the Annual Certified Parameter List which must accompany this certificate to be valid

having duly met the requirements of the

Regulations Governing The Certification Of Laboratories And Environmental Measurements N.J.A.C. 7:18 et. seq.

and

having been found compliant with the standards approved hy the

The NELAC Institute

Expiration Date June 30, 2011

Joseph F. Aiello, Chief
Office of Quality Assurance

NJDEP is a NELAP Recognized Accreditation Body

This certificate is lo be conspicuously displayed at the laboratory wilh the annual certified parameter list in a location on the premises visible to the public. Consumers are urged to verify the laboratory's current accreditation status with the Stale of NJ, NELAP.

New Jersey Department of Environmental Protection

National Environmental Laboratory Accreditation Program

ANNUAL CERTIFIED PARAMETER LIST AND CURRENT STATUS

Effective as of 02/24/2011 until 06/30/2011

Laboratory Name: ACCUTEST LABORATORIES Laboratory Number: 12129 Activity ID: NLC100009
2235 RT 130
BLDG B
Dayton, NJ 08810

Category: CAP03 -- Atmospheric Organic Parameters

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	CAP03.00180	AE	GC/MS, Canisters	[EPA TO-15]	Acetaldehyde
Certified	Yes	NJ	CAP03.00184	AE	GC/MS, Canisters	[EPA TO-15]	Acetone
Certified	Yes	NJ	CAP03.00190	AE	GC/MS, Canisters	[EPA TO-15]	Acetophenone
Certified	Yes	NJ	CAP03.00195	AE	GC/MS, Canisters	[EPA TO-15]	Acrolein
Certified	Yes	NJ	CAP03.00200	AE	GC/MS, Canisters	[EPA TO-15]	Acrylamide
Certified	Yes	NJ	CAP03.0020S	AE	GC/MS, Canisters	[EPA TO-15]	Acrylic acid
Certified	Yes	NJ	CAP03.00215	AE	GC/MS, Canisters	[EPA TO-15]	Allyl chloride
Certified	Yes	NJ	CAP03.00225	AE	GC/MS, Canisters	[EPA TO-15]	Benzene
Certified	Yes	NJ	CAP03.00230	AE	GC/MS, Canisters	[EPA TO-15]	Benzyl chloride
Certified	Yes	NJ	CAP03.00235	AE	GC/MS, Canisters	[EPA TO-15]	Propiolactone (beta-)
Certified	Yes	NJ	CAP03.00240	AE	GC/MS, Canisters	[EPA TO-15]	Bis (2-chloroethyl) ether
Certified	Yes	NJ	CAP03.00245	AE	GC/MS, Canisters	[EPA TO-15]	Bis (chloromethyl) ether
Certified	Yes	NJ	CAP03.00250	AE	GC/MS, Canisters	[EPA TO-15]	Bromodichioromethaoe
Certified	Yes	NJ	CAP03.00255	AE	GC/MS, Canisters	[EPA TO-15]	Bromoform
Certified	Yes	NJ	CAP03.00260	AE	GC/MS, Canisters	[EPA TO-15]	Bromomethane
Certified	Yes	NJ	CAP03.00265	AE	GC/MS, Canisters	[EPA TO-15]	Butadiene (1,3-)
Certified	Yes	NJ	CAP03.00270	AE	GC/MS, Canisters	[BPA TO-15]	Carbon disulfide
Certified	Yes	NJ	CAP03.00275	AE	GC/MS, Canisters	[EPA TO-15]	Carbon tetrachloride
Certified	Yes	NJ	CAP03.00280	AE	GC/MS, Canisters	[EPA TO-15]	Carbon oxysullide (Carbonyi sulfide)
Certified	Yes	NJ	CAP03.00285	AE	GC/MS, Canisters	[EPA TO-15]	Catecliol
Certified	Yes	NJ	CAP03.00290	AE	GC/MS, Canisters	[EPA TO-15]	Butadiene (2-chloro-1,3-)
Certified	Yes	NJ	CAP03.00295	AE	GC/MS, Canisters	[EPA TO-15]	Chloroacetic acid
Certified	Yes	NJ	CAP03.00300	AB	GC/MS, Canisters	[EPA TO-15]	Chlorobenzene
Certified	Yes	NJ	CAP03.00305	AE	GC/MS, Canisters	[EPA TO-15]	Chloroethane
Certified	Yes	NJ	CAP03.00310	AE	GC/MS, Canisters	[EPA TO-15]	Chloroform
Certified	Yes	NJ	CAP03.00315	AE	GC/MS, Canisters	[EPA TO-15]	Chloromethane
Certified	Yes	NJ	CAP03.00320	AE	GC/MS, Canisters	[EPA TO-15]	Chloromethyl methyl ether
Certified	Yes	NJ	CAP03.00325	AE	GC/MS, Canisters	[EPA TO-15]	Chlorotoluene (2-)
Certified	Yes	NJ	CAP03.00330	AE	GC/MS, Canisters	[EPA TO-15]	Cresols/Cresylic acid
Certified	Yes	NJ	CAP03.00333	AE	GC/MS, Canisters	[EPA TO-15]	Cyclohexane
Certified	Yes	NJ	CAP03.00340	AE	GC/MS, Canisters	[EPA TO-15]	Diazomethane

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New Jersey Department of Environmental Protection

National Environmental Laboratory Accreditation Program

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Effective as of 02/24/2011 until 06/30/2011

Laboratory Name: ACCUTEST LABORATORIES Laboratory Number: 12129 Activity ID: NLC100009
2235 RT 130
BLDG B
Dayton, NJ 08810

Category: CAP03 – Atmospheric Organic Parameters

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	CAP03.00342	AE	GC/MS, Canisters	[EPA TO-15]	Dibromochloromethane
Certified	Yes	NJ	CAP03.00345	AE	GC/MS, Canisters	[EPA TO-15]	Dibromo-3-chloropropane (1,2-)
Certified	Yes	NJ	CAP03.00350	AE	GC/MS, Canisters	[EPA TO-15]	Dibromoethane (1,2-) (EDB)
Certified	Yes	NJ	CAP03.00355	AE	GC/MS, Canisters	[EPA TO-15]	Dichlorobenzene (1,2-)
Certified	Yes	NJ	CAP03.00360	AE	GC/MS, Canisters	[EPA TO-15]	Dichlorobenzene (1,3-)
Certified	Yes	NJ	CAP03.00365	AE	GC/MS, Canisters	[EPA TO-15]	Dichlorobenzene (1,4-)
Certified	Yes	NJ	CAP03.00368	AE	GC MS, Canisters	[EPA TO-15]	Dichlorodifluoromethane
Certified	Yes	NJ	CAP03.00370	AE	GC/MS, Canisters	[EPA TO-15]	Dichloroethane (1,1-)
Certified	Yes	NJ	CAP03.00375	AE	GC/MS, Canisters	[EPA TO-15]	Dichloroethane (1,2-)
Certified	Yes	NJ	CAP03.00380	AE	GC/MS, Canisters	[EPA TO-15]	Dichloroethene (1,1-)
Certified	Yes	NJ	CAP03.00384	AE	GC/MS, Canisters	[EPA TO-15]	Dichloroethene (cis-1,2-)
Certified	Yes	NJ	CAP03.00385	AE	GC/MS, Canisters	[EPA TO-15]	Dichloroethene (trans-1,2-)
Certified	Yes	NJ	CAP03.00390	AE	GC/MS, Canisters	[EPA TO-15]	Dichlorofluoromethane
Certified	Yes	NJ	CAP03.00395	AE	GC/MS, Canisters	[EPA TO-15]	Dichloropropane (1,2-)
Certified	Yes	NJ	CAP03.00400	AE	GC/MS, Canisters	[EPA TO-15]	Dichloropropene (cis-1,3-)
Certified	Yes	NJ	CAP03.00401	AE	GC/MS, Canisters	[EPA TO-15]	Dichloropropene (trans-1,3-)
Certified	Yes	NJ	CAP03.00405	AE	GC/MS, Canisters	[EPA TO-15]	Dichlorotetrafluoroethane (1,2-)
Certified	Yes	NJ	CAP03.00410	AE	GC/MS, Canisters	[EPA TO-15]	Diethyl sulfite
Certified	Yes	NJ	CAP03.00415	AE	GC/MS, Canisters	[EPA TO-15]	Dimethyl sulfate
Certified	Yes	NJ	CAP03.00425	AE	GC/MS, Canisters	[EPA TO-15]	Dimethylcarbamoyl chloride
Certified	Yes	NJ	CAP03.00430	AE	GC/MS, Canisters	[EPA TO-15]	Dimethyl formamide (N, N-)
Certified	Yes	NJ	CAP03.00440	AE	GC MS, Canisters	[EPA TO-15]	Dioxane (1,4-)
Certified	Yes	NJ	CAP03.00445	AE	GC/MS, Canisters	[EPA TO-15]	Epichlorohydrin
Certified	Yes	NJ	CAP03.00450	AE	GC/MS, Canisters	[EPA TO-15]	Epoxybutane (1,2-)
Certified	Yes	NJ	CAP03.00451	AE	GC/MS, Canisters	[EPA TO-15]	Ethanol
Certified	Yes	NJ	CAP03.00452	AE	GC/MS, Canisters	[EPA TO-15]	Ethyl acetate
Certified	Yes	NJ	CAP03.00455	AE	GC/MS, Canisters	[EPA TO-15]	Ethyl acrylate
Certified	Yes	NJ	CAP03.00460	AE	GC/MS, Canisters	[EPA TO-15]	Ethyl carbamate (Urethane)
Certified	Yes	NJ	CAP03.00465	AE	GC/MS, Canisters	[EPA TO-15]	Ethylbenzene
Certified	Yes	NJ	CAP03.00470	AE	GC/MS, Canisters	[EPA TO-13]	Ethylene Oxide
Certified	Yes	NJ	CAP03.00480	AE	GC/MS, Canisters	[EPA TO-13]	Ethyltoluene (4-)
Certified	Yes	NJ	CAP03.00485	AE	GC/MS, Canisters	[EPA TO-15]	Formaldehyde

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Laboratory Name: ACCUTEST LABORATORIES Laboratory Number: 12129 Activity ID: NLC100009
2235 RT 130
BLDG B
Dayton, NJ 08810

Category: CAP03 -- Atmospheric Organic Parameters

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	CAP03.00490	AB	GC/MS, Canisters	[EPA TO-15]	Hexachlorobutadiene (1,3-)
Certified	Yes	NJ	CAP03.00495	AE	GC/MS, Canisters	[EPA TO-15]	Hexachloroethane
Certified	Yes	NJ	CAP03.00498	AE	GC/MS, Canisters	[EPA TO-15]	Hexanone (2-)
Certified	Yes	NJ	CAP03.00500	AE	GC/MS, Canisters	[EPA TO-15]	Heptane (n-)
Certified	Yes	NJ	CAP03.00505	AE	GC/MS, Canisters	[EPA TO-15]	Hexane (n-)
Certified	Yes	NJ	CAP03.00510	AE	GC/MS, Canisters	[EPA TO-15]	Isophorone
Certified	Yes	NJ	CAP03.00511	AE	GC/MS, Canisters	[EPA TO-15]	Isopropanol
Certified	Yes	NJ	CAP03.00515	AE	GC/MS, Canisters	[EPA TO-15]	Isopropylbenzene
Certified	Yes	NJ	CAP03.00520	AE	GC/MS, Canisters	[EPA TO-15]	Methyl alcohol (Methanol)
Certified	Yes	NJ	CAP03.00525	AE	GC/MS, Canisters	[EPA TO-15]	Methyl ethyl ketone
Certified	Yes	NJ	CAP03.00530	AE	GC/MS, Canisters	[EPA TO-15]	Methyl iodide
Certified	Yes	NJ	CAP03.00535	AE	GC/MS, Canisters	[EPA TO-15]	Methyl isobutyl ketone (MIBK)
Certified	Yes	NJ	CAP03.00540	AE	GC/MS, Canisters	[EPA TO-15]	Methyl isocyanate
Certified	Yes	NJ	CAP03.00545	AE	GC/MS, Canisters	[EPA TO-15]	Methyl methacrylate
Certified	Yes	NJ	CAP03.00550	AE	GC/MS, Canisters	[EPA TO-15]	Methyl tert-butyl ether
Certified	Yes	NJ	CAP03.00555	AE	GC/MS, Canisters	[EPA TO-15]	Methylene chloride (Dichloromethane)
Certified	Yes	NJ	CAP03.00565	AE	GC/MS, Canisters	[EPA TO-15]	Methylphenol (2-)
Certified	Yes	NJ	CAP03.00567	AE	GC/MS, Canisters	[EPA TO-15]	Naphthalene
Certified	Yes	NJ	CAP03.00570	AE	GC/MS, Canisters	[EPA TO-15]	Nitrobenzene
Certified	Yes	NJ	CAP03.00575	AE	GC/MS, Canisters	[EPA TO-15]	Nitropropane (2-)
Certified	Yes	NJ	CAP03.00580	AE	GC/MS, Canisters	[EPA TO-15]	N-Nitrosodimethylamine
Certified	Yes	NJ	CAP03.00585	AE	GC/MS, Canisters	[EPA TO-15]	N-Nitrosomorpholiae
Certified	Yes	NJ	CAP03.00590	AE	GC/MS, Canisters	[EPA TO-15]	N-Nitroso-N-methylurea
Certified	Yes	NJ	CAP03.00595	AE	GC/MS, Canisters	[EPA TO-15]	Phenol
Certified	Yes	NJ	CAP03.00600	AE	GC/MS, Canisters	[EPA TO-15]	Phosgene
Certified	Yes	NJ	CAP03.00605	AE	GC/MS, Canisters	[EPA TO-15]	Propionaldehyde
Certified	Yes	NJ	CAP03.00612	AE	GC/MS, Canisters	[EPA TO-15]	Propylene
Certified	Yes	NJ	CAP03.00615	AE	GC/MS, Canisters	[EPA TO-15]	Propylene oxide
Certified	Yes	NJ	CAP03.00620	AE	GC/MS, Caniaters	[EPA TO-15]	Propane sultone (1,3-)
Certified	Yes	NJ	CAP03.00625	AE	GC/MS, Canisters	[EPA TO-15]	Styrene
Certified	Yes	NJ	CAP03.00630	AE	GC/MS, Canisters	[EPA TO-15]	Styrene oxide
Certified	Yes	NJ	CAP03.00635	AE	GC/MS, Canisters	[EPA TO-15]	Trichlorobenzene (1,2,4-)

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Laboratory Name: ACCUTEST LABORATORIES Laboratory Number: 12129 Activity ID: NLC100009
2235 RT 130
BLDG B
Dayton, NJ 08810

Category: CAP03 -- Atmospheric Organic Parameters

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	CAP03.00640	AE	GC/MS, Canisters	[EPA TO-15]	Trimethylbenzene (1,3,5-)
Certified	Yes	NJ	CAP03.00645	AE	GC/MS, Canisters	[EPA TO-15]	Trimethylbenzene (1,2,4-)
Certified	Yes	NJ	CAP03.00650	AE	GC/MS, Canisters	[EPA TO-1S]	Trimelhylpentano (2,2,4-)
Certified	Yes	NJ	CAP03.00652	AE	GC/MS, Canisters	[EPA TO-15]	Tert-butyl alcohol
Certified	Yes	NJ	CAP03.00655	AE	GC MS, Canisters	[EPA TO-1S]	Tetrachloroethane (1,1,2,2-)
Certified	Yes	NJ	CAP03.00660	AE	GC/MS, Canisters	[EPA TO-15]	Tetrachloroethene
Certified	Yes	NJ	CAP03.00662	AE	GC/MS, Canisters	[EPA TO-1S]	Tetrahydrofuran
Certified	Yes	NJ	CAP03.00665	AE	GC/MS, Canisters	[EPA TO-15]	Toluene
Certified	Yes	NJ	CAP03.00670	AE	GC/MS, Canisters	[EPA TO-15]	Trichloroethane (1,1,1-)
Certified	Yes	NJ	CAP03.00675	AE	GC/MS, Canisters	[EPA TO-15]	Trichloroethane (1,1,2-)
Certified	Yes	NJ	CAP03.00680	AE	GC/MS, Canisters	[EPA TO-1S]	Trichloroethene
Certified	Yes	NJ	CAP03.00684	AE	GC/MS, Canisters	[EPA TO-15]	Trichlorofluoromethane
Certified	Yes	NJ	CAP03.00685	AE	GC/MS, Canisters	[EPA TO-15]	Trichloro (1,1,2-) trifluoroethaue (1,2,2-)
Certified	Yes	NJ	CAP03.00695	AE	GC/MS, Canisters	[EPA TO-1S]	Trifiuoromethane
Certified	Yes	NJ	CAP03.00700	AE	GC/MS, Canisters	[EPA TO-15]	Vinyl acetate
Certified	Yes	NJ	CAP03.00705	AE	GC/MS, Canisters	[EPA TO-1S]	Vinyl bromide
Certified	Yes	NJ	CAP03.00710	AE	GC/MS, Canisters	[EPA TO-15]	Vinyl chloride
Certified	Yes	NJ	CAP03.00715	AE	GC/MS, Canisters	[EPA TO-15]	Xylene (m-)
Certified	Yes	NJ	CAP03.00720	AE	GC/MS, Canisters	[EPA TO-15]	Xylene (o-)
Certified	Yes	NJ	CAP03.00725	AE	GC/MS, Canisters	[EPA TO-15]	Xylene (p-)
Certified	Yes	NJ	CAP03.00730	AE	GC/MS, Canisters	[EPA TO-15]	Xylenes (total)
Certified	Yes	NJ	CAP03.02450	AE	GC, FID and/or ECD, Cryogenic Preconcentration	[EPA TO-3]	Benzene
Certified	Yes	NJ	CAP03.02482	AE	GC, FID and/or ECD, Cryogenic Preconcentration	[EPA TO-3]	Ethyiboozene
Certified	Yes	NJ	CAP03.02483	AE	GC, FID and/or ECD, Cryogenic Preconcentration	[EPA TO-3]	Isopropylbenzene
Certified	Yes	NJ	CAP03.02485	AE	GC, FID and/or ECD, Cryogenic Preconcentration	[EPA TO-3]	Methane
Certified	Yes	NJ	CAP03.02486	AE	GC, FID and/or ECD, Cryogenic Preobncentration	[EPA TO-3]	Methyl tert-butyl ether
Certified	Yes	NJ	CAP03.02488	AE	GC, FID and/or ECD, Cryogenic Preconcentration	[EPA TO-3]	Tert-butyl alcohol

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Effecfive as of 02/24/2011 until 06/30/2011

Laboratory Name: ACCUTEST LABORATORIES Laboratory Number: 12129 Activity ID: NLC100009
223S RT 130
BLDG B
Dayton, NJ 08810

Category: CAP03 – Atmospheric Organic Parameters

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	CAP03.02489	AE	GC, FID and/or ECD, Cryogenic Preconcentration	[EPA TO-3]	Toluene
Certified	Yes	NJ	CAP03.02515	AE	GC, FID and/or ECD, Cryogenic Preconcentration	[EPA TO-3]	Xylenes (total)
Applied	No	NJ	CAP03.06850	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Acetone
Applied	No	NJ	CAP03.06852	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Allyl chloride
Applied	No	NJ	CAP03.06854	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Benzene
Applied	No	NJ	CAP03.06856	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Bromodichloromethane
Applied	No	NJ	CAP03.06858	AB	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Bromoform
Applied	No	NJ	CAP03.06860	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Bromomethane
Applied	No	NJ	CAP03.06862	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Butadiene (1,3-)
Applied	No	NJ	CAP03.06864	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Carbon disulfide
Applied	No	NJ	CAP03.06866	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Carbon tetrachloride
Applied	No	NJ	CAP03.06868	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Chlorobenzene
Applied	No	NJ	CAP03.06870	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Chloroethane
Applied	No	NJ	CAP03.06872	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Chloroform
Applied	No	NJ	CAP03.06874	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Chloromethane
Applied	No	NJ	CAP03.06876	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Chlorotoluene (2-)
Applied	No	NJ	CAP03.06878	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Cyclohexane
Applied	No	NJ	CAP03.06880	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Dibromochloromethane
Applied	No	NJ	CAP03.06882	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Dibromoethane (1,2-) (EDB)
Applied	No	NJ	CAP03.06884	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Dichlorobenzene (1,2-)
Applied	No	NJ	CAP03.06886	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Dichlorobenzene (1,3-)
Applied	No	NJ	CAP03.06888	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Dichlorobenzene (1,4-)
Applied	No	NJ	CAP03.06890	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Dichlorodifluoromethane
Applied	No	NJ	CAP03.06892	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Dichloroethane (1,1-)
Applied	No	NJ	CAP03.06894	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Dichloroethane (1,2-)
Applied	No	NJ	CAP03.06896	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Dichloroethene (1,1-)
Applied	No	NJ	CAP03.06898	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Dichloroethene (cis-1,2-)
Applied	No	NJ	CAP03.06900	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Dichloroethene (trans-1,2-)
Applied	No	NJ	CAP03.06902	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Dichloropropane (1,2-)
Applied	No	NJ	CAP03.06904	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Dichloropropene (cis-1,3-)

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New Jersey Department of Environmental Protection

National Environmental Laboratory Accreditation Program

ANNUAL CERTIFIED PARAMETER LIST AND CURRENT STATUS

Effective as of 02/24/2011 until 06/30/2011

Laboratory Name: ACCUTEST LABORATORIES Laboratory Number: 12129 Activity ID: NLC100009
2235 RT 130
BLDG B
Dayton, NJ 08810

Category: CAP03 – Atmospheric Organic Parameters

Status	Eligibie to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Applied	No	NJ	CAP03.06906	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Dichloropropene (trans-1,3-)
Applied	No	NJ	CAP03.06908	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Dichlorotetrafluoroethane (1,2-)
Applied	No	NJ	CAP03.06910	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Dioxane (1,4-)
Applied	No	NJ	CAP03.06912	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Ethanol
Applied	No	NJ	CAP03.06914	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Ethylbenzene
Applied	No	NJ	CAP03.06916	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Ethyltoluene (4-)
Applied	No	NJ	CAP03.06918	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Heptane (n-)
Applied	No	NJ	CAP03.06920	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Hexachlorobutadiene (1,3-)
Applied	No	NJ	CAP03.06922	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Hexane (n-)
Applied	No	NJ	CAP03.06924	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Isopropanol
Applied	No	NJ	CAP03.06926	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Methylene chloride (Dichloromethane)
Applied	No	NJ	CAP03.06928	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Methyl ethyl ketone
Applied	No	NJ	CAP03.06930	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Methyl isobutyl ketone (MIBK)
Applied	No	NJ	CAP03.06932	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Methyl methacrylate
Applied	No	NJ	CAP03.06934	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Methyl tert-butyl ether
Applied	No	NJ	CAP03.06936	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Styrene
Applied	No	NJ	CAP03.06938	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Tert-butyl alcohol
Applied	No	NJ	CAP03.06940	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Tetrachloroethane (1,1,2,2-)
Applied	No	NJ	CAP03.06942	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Tetrachloroethene
Applied	No	NJ	CAP03.06944	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Tetrahydrofuran
Applied	No	NJ	CAP03.06946	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Toluene
Applied	No	NJ	CAP03.06948	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Trichlorobenzene (1,2,4-)
Applied	No	NJ	CAP03.06950	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-13-3/2007]	Trichloroethane (1,1,1-)
Applied	No	NJ	CAP03.06952	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Trichloroethane (1,1,2-)
Applied	No	NJ	CAP03.06954	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Trichloroethene
Applied	No	NJ	CAP03.06956	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Trichlorofluoromethane
Applied	No	NJ	CAP03.06958	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Trichloro (1,1,2-) trifluoroethane (1,2,2-)
Applied	No	NJ	CAP03.06960	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Trimethylbenzene (1,2,4-)
Applied	No	NJ	CAP03.06962	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Trimethylbenzene (1,3,5-)
Applied	No	NJ	CAP03.06964	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Trimethylpentane (2,2,4-)
Applied	No	NJ	CAP03.06966	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Vinyl bromide
Applied	No	NJ	CAP03.06968	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Vinyl chloride

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ANNUAL CERTIFIED PARAMETER LIST AND CURRENT STATUS

Effective as of 02/24/2011 until 06/30/2011

Laboratory Name: ACCUTEST LABORATORIES Laboratory Number: 12129 Activity ID: NLC100009
2235 RT 130
BLDG B
Dayton, NJ 08810

Category: CAP03 – Atmospheric Organic Parameters

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Applied	No	NJ	CAP03.06970	AE	GC/MS, Canistera	[OTHER NJDEP-LLTO-15-3/2007]	Xylene (m- + p-)
Applied	No	NJ	CAP03.06972	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2007]	Xylene (o-)

Category: SDW01 -- Microbiological Parameters

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	SDW01.05000	DW	ONPG-MUG (Autoanalysis Colilert System) (P-A)	[SM 9223B]	Total coliform / E. coli
Certified	Yes	NJ	SDW01.14000	DW	Pour Plate	[SM 9215 B]	Heterotrophic bacteria

Category: SDW02 -- Inorganic Parameters Including Na + Ca

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	SDW02.01000	DW	Nephelometric	[EPA 180.1]	Turbidity
Certified	Yes	NJ	SDW02.02000	DW	Automated Cadmium Reduction	[EPA 353.2]	Nitrate
Certified	Yes	NJ	SDW02.09000	DW	Spectropbotometric	[SM 4500-NO2 B]	Nitrite
Certified	Yes	NJ	SDW02.14000	DW	Ion Chromatography	[EPA 300.0]	Fluoride
Certified	Yes	NJ	SDW02.15200	DW	Spectrophotometric, Distill, Semi Automated	[EPA 335.4]	Cyanide
Certified	Yes	NJ	SDW02.19000	DW	Ion Chromatography	[EPA 300.0]	Sulfate
Certified	Yes	NJ	SDW02.20000	DW	ICP	[EPA 200.7]	Sodium
Certified	Yes	NJ	SDW02.24000	DW	Gravimetric At 180	[SM 2540 C]	Total dissolved solids (TDS)
Certified	Yes	NJ	SDW02.27000	DW	ICP	[EPA 200.7]	Calcium
Certified	Yes	NJ	SDW02.27200	DW	Ca as Carbonate	[EPA 200.7]	Calcium-hardness
Certified	Yes	NJ	SDW02.27300	DW	Hardness By Calculation	[EPA 200.7]	Total hardness
Certified	Yes	NJ	SDW02.27400	DW	Titrimetric, EDTA	[SM 2340 C]	Total hardness
Certified	Yes	NJ	SDW02.29000	DW	Electrometric Titrafion	[SM 2320 B]	Alkalinity
Certified	Yes	NJ	SDW02.29310	DW	Automated Phenate	[SM 4500-NH3 G]	Ammonia
Certified	Yes	NJ	SDW02.31000	DW	Ion Chromatography	[EPA 300.0]	Chloride
Certified	Yes	NJ	SDW02.31120	DW	Ion Chromatography	[EPA 314.0]	Perchlorate
Certified	Yes	NJ	SDW02.32000	DW	Platinum-Cobalt	[SM 2120 B]	Color

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National Environmental Laboratory Accreditation Program

ANNUAL CERTIFIED PARAMETER LIST AND CURRENT STATUS

Effective as of 02/24/2011 uotil 06/30/20I1

Laboratory Name: ACCUTEST LABORATORIES Laboratory Number: 12129 Activity ID: NLC100009
2235 RT 130
BLDG B
Dayton, NJ 08810

Category: SDW02 – Inorganic Parameters Including Na + Ca

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	SDW02.33000	DW	Methylene Blue	[SM 5540 C]	Foaming agents
Certified	Yes	NJ	SDW02.34000	DW	Consistent Series	[SM 2150 B]	Odor
Certified	Yes	NJ	SDW02.35000	DW	Conductance	[SM 2510 B]	Conductivity
Certified	Yes	NJ	SDW02.36i00	DW	Molybdosilicate	[SM 4500-Si D (18/19th ed)]	Silica
Certified	Yes	NJ	SDW02.36400	DW	ICP	[EPA 200.7]	Silica
Certified	Yes	NJ	SDW02.37000	DW	Colorimetric	[SM 4500-P B]	Orthophosphate
Certified	Yes	NJ	SDW02.39600	DW	High Temp. Combustion	[SM 5310 B]	Total orgonic carbon (TOC)
Certified	Yes	NJ	SDW02.40000	DW	Pyrolysis, Tilrimehic	[SM 5320 B]	Total organic halides (TOX)

Category: SDW03 – Analyze-Immediatcly Inorganic Parameter

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	SDW03.00002	DW	All Categories Sample Handling Procedures	[OTHER NJAC 7:18-6 & 9]	PWTA Sampling Parameters
Certified	Yes	NJ	SDW03.02000	DW	DPD, Ferrous Titrimetric	[SM 4S00-Cl F]	Chiorine - residual
Certified	Yes	NJ	SDW03.08000	DW	Electrometric	[SM 4500-H B]	pH
Certified	Yes	NJ	SDW03.09000	DW	Thermometric	[SM 2550 B]	Temperature

Category: SDW04 – Inorganic Parameters, Metals

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	SDW04.03000	DW	ICP	[EPA 200.7]	Aluminum
Certified	Yes	NJ	SDW04.03100	DW	ICP/MS	[EPA 200.8]	Aluminum
Certified	Yes	NJ	SDW04.07000	DW	ICP/MS	[EPA 200.8]	Antimony
Certified	Yes	NJ	SDW04.12000	DW	ICP/MS	[EPA 200.8]	Arsenic
Certified	Yes	NJ	SDW04.16000	DW	ICP	[EPA 200.7]	Barium
Certified	Yes	NJ	SDW04.17000	DW	ICP/MS	[EPA 200.8]	Barium
Certified	Yes	NJ	SDW04.20000	DW	ICP	[EPA 200.7]	Beryllium
Certified	Yes	NJ	SDW04.21000	DW	ICP/MS	[EPA 200.8]	Beryllium
Certified	Yes	NJ	SDW04.24000	DW	ICP	[EPA 200.7]	Cadmium

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2235 RT 130
BLDG B
Dayton, NJ 08810

Category: SDW04 – Inorganic Parameters, Metals

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	SDW04.25000	DW	ICP/MS	[EPA 200.8]	Cadmium
Certified	Yes	NJ	SDW04.28000	DW	ICP	[EPA 200.7]	Chromimu
Certified	Yes	NJ	SDW04.29000	DW	ICP/MS	[EPA 200.8]	Chromium
Certified	Yes	NJ	SDW04.33000	DW	ICP	[EPA 200.7]	Copper
Certified	Yes	NJ	SDW04.34000	DW	ICP/MS	[EPA 200.8]	Copper
Certified	Yes	NJ	SDW04.37000	DW	ICP	[EPA 200.7]	Iron
Certified	Yes	NJ	SDW04.40000	DW	ICP/MS	[EPA 200.8]	Lead
Certified	Yes	NJ	SDW04.41100	DW	ICP	[EPA 200.7]	Magnesium
Certified	Yes	NJ	SDW04.44000	DW	ICP	[EPA 200.7]	Manganese
Certified	Yes	NJ	SDW04.45000	DW	ICP/MS	[EPA 200.8]	Manganese
Certified	Yes	NJ	SDW04.46000	DW	Manual Cold Vapor	[EPA 245.1]	Mercury
Certified	Yes	NI	SDW04.52000	DW	ICP	[EPA 200.7]	Nickel
Certified	Yes	NJ	SDW04.53000	DW	ICP/MS	[EPA 200.8]	Nickel
Certified	Yes	NJ	SDW04.57000	DW	ICP/MS	[EPA 200.8]	Selenium
Certified	Yes	NJ	SDW04.62000	DW	ICP	[EPA 200.7]	Silver
Certified	Yes	NJ	SDW04.63000	DW	ICP/MS	[EPA 200.8]	Silver
Certified	Yes	NJ	SDW04.65000	DW	ICP/MS	[EPA 200.8]	Thallium
Certified	Yes	NJ	SDW04.67000	DW	ICP	[EPA 200.7]	Zinc
Certified	Yes	NJ	SDW04.68000	DW	ICP/MS	[EPA 200.8]	Zinc

Category: SDW0S – Organic Parameters, Chromatography

Status	Eligible ta Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	SDW05.12010	DW	Solvent Extract, GC	[EPA 504.1]	Dibromocthane (1,2-) (EDB)
Certified	Yes	NJ	SDW05.12020	DW	Solvent Extract, GC	[EPA 504.1]	Dibromo-3-chloropropane (1,2-)
Certified	Yes	NJ	SDW05.12030	DW	Solvent Extract, GC	[EPA 504.1]	Tnchloropropane (1,2,3-)

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Laboratory Name: ACCUTEST LABORATORIES Laboratory Number: 12129 Activity ID: NLC100009
2235 RT 130
BLDG B
Dayton, NJ 08810

Category: SDW06 – Organic Parameters, Chromatography/MS

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	SDW06.01010	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Bromoform
Certified	Yes	NJ	SDW06.01020	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Chloroform
Certified	Yes	NJ	SDW06.01030	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Dibromochloromethane
Certified	Yes	NJ	SDW06.01040	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Bromodichloromethane
Certified	Yes	NJ	SDW06.02010	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Benzene
Certified	Yes	NJ	SDW06.02020	DW	GC/MS, P & T or Direct Injection, Capillaty	[EPA 524.2]	Carbon tetrachloride
Certified	Yes	NJ	SDW06.02030	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Chlorobenzene
Certified	Yes	NJ	SDW06.02040	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Dichlorobenzene (1,2-)
Certified	Yes	NJ	SDW06.02050	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Dichlorobenzene (1,3-)
Certified	Yes	NJ	SDW06.02060	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Dichlorobenzene (1,4-)
Certified	Yes	NJ	SDW06.02070	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Dichloroethane (1,1-)
Certified	Yes	NJ	SDW06.02080	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Dichloroethane (1,2-)
Certified	Yes	NJ	SDW06.02090	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Dichloroethene (cis-1,2-)
Certified	Yes	NJ	SDW06.02100	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Dichloroethene (trans-1,2-)
Certified	Yes	NJ	SDW06.02110	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Methylene chloride (Dichloromethane)
Certified	Yes	NJ	SDW06.02120	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Dichloropropane (1,2-)
Certified	Yes	NJ	SDW06.02130	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Ethylbenzene
Certified	Yes	NJ	SDW06.02140	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Methyl tert-butyl ether
Certified	Yes	NJ	SDW06.02150	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Naphthalene
Certified	Yes	NJ	SDW06.02160	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Styrene
Certified	Yes	NJ	SDW06.02170	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Tetiachloroethane (1,1,2,2-)
Certified	Yes	NJ	SDW06.02180	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Tetrachloroethene
Certified	Yes	NJ	SDW06.02190	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Trichloroethane (1,1,1-)
Certified	Yes	NJ	SDW06.02200	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Trichloroethene
Certified	Yes	NJ	SDW06.02210	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Toluene
Certified	Yes	NJ	SDW06.02220	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Trichlorobenzene (1,2,4-)
Certified	Yes	NJ	SDW06.02230	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Dichloroethene (1,1-)
Certified	Yes	NJ	SDW06.02240	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Trichloroethane (1,1,2-)
Certified	Yes	NJ	SDW06.02250	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2)	Vinyl chloride
Certified	Yes	NJ	SDW06.02260	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Xylenes (total)
Certified	Yes	NJ	SDW06.03010	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Bromobenzene
Certified	Yes	NJ	SDW06.03020	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Bromochloromethane

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2235 RT 130
BLDG B
Dayton, NJ 08810

Category: SDW06 -- Organic Parameters, Chromatography/MS

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	SDW06.03030	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Bromomethane
Certified	Yes	NJ	SDW06.03040	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Butyl benzene (n-)
Certified	Yes	NJ	SDW06.03050	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Sec-butylbenzene
Certified	Yes	NJ	SDW06.03060	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Tert-butylbenzene
Certified	Yes	NJ	SDW06.03070	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Chloroethane
Certified	Yes	NJ	SDW06.03080	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Chloromethane
Certified	Yes	NJ	SDW06.03090	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Chlorotoluene (2-)
Certified	Yes	NJ	SDW06.03100	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Chlorotoluene (4-)
Certified	Yes	NJ	SDW06.03110	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Dibromo-3-chloropropane (1,2-)
Certified	Yes	NJ	SDW06.03120	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Dibromoethane (1,2-) (EDB)
Certified	Yes	NJ	SDW06.03130	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Dibromomethane
Certified	Yes	NJ	SDW06.03140	DW	GC/MS, P & T or Dhect Injection, Capillary	[EPA 524.2]	Dichlorodifluoromethane
Certified	Yes	NJ	SDW06.03150	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Dichloropropane (1,3-)
Certified	Yes	NJ	SDW06.03160	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Dichloropropane (2,2-)
Certified	Yes	NJ	SDW06.03170	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Dichloropropene (1,1-)
Certified	Yes	NJ	SDW06.03180	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Dichloropropene (cis-1,3-)
Certified	Yes	NJ	SDW06.03190	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Dichloropropene (trans-1,3-)
Certified	Yes	NJ	SDW06.03200	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Hexachlorobutadiene (1,3-)
Certified	Yes	NJ	SDW06.03210	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Isopropylbenzene
Certified	Yes	NJ	SDW06.03220	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Isopropyltpluene (4-)
Certified	Yes	NJ	SDW06.03230	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Propylbenzene (n-)
Certified	Yes	NJ	SDW06.03240	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Tehachloroetiiane (1,1,1,2-)
Certified	Yes	NJ	SDW06.03250	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 324.2]	Trichlorobenzene (1,2,3-)
Certified	Yes	NJ	SDW06.03260	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Trichlorofluoromethane
Certified	Yes	NJ	SDW06.03270	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Triohloropropane (1,2,3-)
Certified	Yes	NJ	SDW06.03280	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Trimethylbenzene (1,2,4-)
Certified	Yes	NJ	SDW06.03300	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Trimethylbenzene (1,3,5-)
Certified	Yes	NJ	SDW06.03310	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Nitrobenzene
Certified	Yes	NJ	SDW06.03410	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Acetone
Certified	Yes	NJ	SDW06.03420	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Acrylonitrile
Certified	Yes	NJ	SDW06.03430	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Allyl chloride
Certified	Yes	NJ	SDW06.03440	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Butanone (2-)

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New Jersey Department of Environmental Protection

National Environmental Laboratory Accreditation Program

ANNUAL CERTIFIED PARAMETER LIST AND CURRENT STATUS

Effective as of 02/24/2011 uatil 06/30/2011

Laboratory Name: ACCUTEST LABORATORIES Laboratory Number: 12129 Activity ID: NLC100009
2235 RT 130
BLDG B
Dayton, NJ 08810

Category: SDW06 – Organic Parameters, Chromatography/MS

Status	Ellgible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	SDW06.03450	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Carbon disulfide
Certified	Yes	NJ	SDW06.03460	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Chloroacetonitrile
Certified	Yes	NJ	SDW06.03470	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Chlorobutane (1-)
Certified	Yes	NJ	SDW06.03480	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Dichloro-2-butene (trans-1,4-)
Certified	Yes	NJ	SDW06.03490	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Dichloropropanone (1,1-)
Certified	Yes	NJ	SDW06.03500	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Diethyl ether (Ethyl ether)
Certified	Yes	NJ	SDW06.03510	DW	GC/MS, P & T or Direct hjection, Capillary	[EPA 524.2]	Ethyl metiiacrylate
Applied	No	NJ	SDW06.03515	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Hexane (n-)
Certified	Yes	NJ	SDW06.03520	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Hexachloroethane
Certified	Yes	NJ	SDW06.03530	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Hexanone (2-)
Certified	Yes	NJ	SDW06.03540	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Methacrylonitrile
Certified	Yes	NJ	SDW06.03550	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Methyl acrylate
Certified	Yes	NJ	SDW06.03560	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Methyl iodide
Certified	Yes	NJ	SDW06.03570	DW	GC/MS, P & T or Direct injection, Capillary	[EPA 524.2]	Methyl methacrylate
Certified	Yes	NJ	SDW06.03580	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Pentanone (4-methyl-2-) (MIBK)
Certified	Yes	NJ	SDW06.03590	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Nitropropane (2-)
Certified	Yes	NJ	SDW06.03600	DW	GC/MS, P & T or Direct hjection, Capillary	[EPA 524.2]	Pentachloroethane
Certified	Yes	NJ	SDW06.03610	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Propionitrile
Certified	Yes	NJ	SDW06.03615	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Tert-butyl alcohol
Certified	Yes	NJ	SDW06.03620	DW	GC/MS, P & T or Direct Injection, Capillary	[EPA 524.2]	Tetrahydrofuran

Category: SHW03 – Analyze-Immediately Parameters

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Descriptloa
Certified	Yes	NJ	SHW03.02000	NPW	Thermometric	[SM 2550 B]	Temperature

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Category: SHW04 – Inorganic Parameters

Status	Ellgible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	SHW04.01000	NPW	Acid Digestion/Surface and Groundwater, ICF, FLAA	[SW-846 3005A]	Metals, Total Rec and Dissolved
Certified	Yes	NJ	SHW04.01500	NPW	Acid Digestion/Aqueous Samples, ICP, FLAA	[SW-846 3010A]	Metals, Total
Certified	Yes	NJ	SHW04.33000	NPW	AA, Manual Cold Vapor	[SW-846 7470A]	Mercury - liquid waste

Category: SHW05 – Organic Parameters, Prep. / Screening

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	SHW05.01000	NPW	Separatery Funnel Extraction	[SW-846 35I0C]	Semivolatile organics
Certified	Yes	NJ	SHW05.02000	NPW	Continuous Liquid-Liquid Extraction	[SW-846 3520C]	Semivolatile organics
Certified	Yes	NJ	SHW05.07000	NPW	Purge & Trap Aqueous	[SW-846 5030B]	Volatile organics

Category: SHW07 – Organic Parameters, Chromatography/MS

Status	Ellgible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	SHW07.04016	NPW	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Benzyl chloride
Certified	Yes	NJ	SHW07.04680	NPW	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Aramite
Certified	Yes	NJ	SHW07.04775	NPW	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Dimethyl benzidine (3,3-)
Certified	Yes	NJ	SHW07.04795	NPW	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Famphur
Certified	Yes	NJ	SHW07.04800	NPW	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Hexachlorophene
Certified	Yes	NJ	SHW07.04840	NPW	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Methapyrilene
Certified	Yes	NJ	SHW07.0491S	NPW	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Phenylenediamine (1,4-)

Category: SiIW09 – Miscellaneous Parameters

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	SHW09.06000	NPW	Combustion, Titration	[SW-846 9020B, Rev. 2, 9/94]	Total organic halides (TOX)
Certified	Yes	NJ	SHW09.17000	NPW	Whcatstonc Bridge	[SW-846 9050A, Rev. 1, 12/96]	Specific conductance

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2235 RT 130
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Dayton, NJ 08810

Category: SIIW09 – Miscellaneous Parameters

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	SHW09.22000	NPW	Colorimetric, Auto, 4AAP Distillation	[SW-846 9066, Rev. 0, 9/86]	Phenols

Category: WPP01 – Microbiological Parameters

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	WPP01.02000	NPW	Membrane Filter (MF), Single Step	[SM 9222 D]	Fecal coliform
Certified	Yes	NJ	WPP01.04000	NPW	MF Single Step or Two Step	[SM 9222 B]	Total coliform
Certified	Yes	NJ	WPP01.10000	NPW	Pour Plate	[SM 9215 B]	Heterotrophic plate count

Category: WPP02 – Inorg. Parameters, Nutrients and Demands

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	WPP02.01000	NPW	Electrometric or Fhenolphthalein	[SM 2310 B(4A)]	Acidity as CaCO3
Certified	Yes	NJ	WPP02.01500	NPW	Electrometric or Color Titration	[SM 2320 B]	Alkalinity as CaCO3
Certified	Yes	NJ	WPP02.04000	NPW	Automated Phenate	[SM 4500-NH3 B+G (20th ed.)]	Ammonia
Certified	Yes	NJ	WPP02.05000	NPW	Dissolved Oxygen Depletion	[SM 5210 B]	Biochemical oxygen demand
Certified	Yes	NJ	WPP02.06000	NPW	ICP	[EPA 200.7]	Boron
Certified	Yes	NJ	WPP02.07100	NPW	Ion Chromatography	[EPA 300.0]	Bromide
Certified	Yes	NJ	WPP02.08000	NPW	Digestion, ICP	[EPA 200.7]	Calciuin
Certified	Yes	NJ	WPP02.08050	NPW	ICP/MS	[EPA 200.8]	Calcium
Certified	Yes	NJ	WPP02.09500	NPW	Dissolved Oxygen Depletion, Nitrification Inhibition	[SM 5210 B]	Carbonaceous BOD (CBOD)
Certified	Yes	NJ	WPP02.10000	NPW	Titrimetric	[SM 5220 C]	Chemical oxygen demand
Certified	Yes	NJ	WPF02.11500	NPW	Titrimetric, Mercuric Nitrate	[SM 4500-Cl C]	Chloride
Certified	Yes	NJ	WPP02.12600	NPW	Ion Chromatography	[EPA 300.0]	Chloride
Certified	Yes	NJ	WPP02.13500	NPW	Colorimetric (Platinum-Cobalt)	[SM 2120 B]	Color
Certified	Yes	NJ	WPP02.15500	NPW	Distillation, Spectrophotometric (Auto)	[EPA 335.4]	Cyanide
Certified	Yes	NJ	WPP02.16000	NPW	Manual Distillation, Titrimctr/Spectro	[SM 4500-CN C,G]	Cyanide - amenable to Cl2
Certified	Yes	NJ	WPP02.18100	NPW	Ion Chromatography	[EPA 300.0]	Fluoride
Certified	Yes	NJ	WPP02.19000	NPW	Titrimetric, EDTA	[SM 2340 B or C]	Hardness - total as CaCO3

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Category: WPP02 – Inorg. Parameters, Nutrients and Demands

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	WPP02.20100	NPW	Ca + Mg Carbonates, ICP	[EPA 200.7]	Hardness - total as CaCO3
Certified	Yes	NJ	WPP02.22500	NPW	Digestion, Distiilation, Semiautomated Digestor	[EPA 331.2]	Kjeldahl nitrogen - total
Certified	Yes	NJ	WPP02.24000	NPW	Digestion, ICP	[EPA 200.7]	Magnesium
Certified	Yes	NJ	WPP02.24050	NPW	ICP/MS	[EPA 200.8]	Magnesium
Certified	Yes	NJ	WPP02.27000	NPW	Cadmium Reduction, Automated	[EPA 353.2]	Nitrate - nitrite
Certified	Yes	NJ	WPP02.28000	NPW	Spectrophotometric, Manual	[SM 4500-NO2 B]	Nitrite
Certified	Yes	NJ	WPP02.29100	NPW	Gravimetric, Hexane Extractabie Material-LL	[EPA 1664A)	Oil & grease - hem-LL
Certified	Yes	NJ	WPP02.29200	NPW	Gravimetric, Silica Gel Treated-Hem	[EPA 1664A]	Oil & grease - sgt-non polar
Certified	Yes	NJ	WPP02.30000	NPW	Combustion or Oxidation	[SM S310 B, C or D]	Total organic cartmn (TOC)
Certified	Yes	NJ	WPP02.30500	NPW	Total Kjeldahl-N Minus Ammonia-N	[USER DEFINED EPA 351.2 - SM4500 NH3 B+G (20TH ED)]	Organic ratrogcn
Certified	Yes	NJ	WPP02.31500	NPW	Ascorbic Acid, Manual Single Reagent	[SM 4500-P, E]	Orthophosphate
Certified	Yes	NJ	WPP02.33000	NPW	Manual Distillation, Colorimetric Auto	[EPA 420.1 + .4]	Phenols
Certified	Yes	NJ	WPP02.34000	NPW	Persulfate Digestion + Manual	[EPA 365.3]	Phosphorus (total)
Certified	Yes	NJ	WPP02.36500	NPW	Digestion, ICP	[EPA 200.7]	Potassium
Certified	Yes	NJ	WPP02.36550	NPW	ICP/MS	[BPA 200.8]	Potassium
Certified	Yes	NJ	WPP02.38000	NPW	Gravimetric, 103-105 Degrees C	[SM 2540 B]	Residue - total
Certified	Yes	NJ	WPP02.38500	NPW	Gravimetric, 180 Degrees C	[SM 2540 C]	Residue - filterable (TDS)
Certified	Yes	NJ	WPP02.39000	NPW	Gravimetric, 103-105 Degrees C, Post Washing	[SM 2540 D]	Residue - nonfilterable (TSS)
Certified	Yes	NJ	WPP02.39500	NPW	Volumetric (Imhoff Cone) or Gravimetric	[SM 2540 F]	Residue - settieable
Certified	Yes	NJ	WPP02.40000	NPW	Gravimetric, 550 Degrees C	[EPA 160.4]	Residue - volatile
Certified	Yes	NJ	WPP02.40100	NPW	Gravimetric, 500 Degrees C	[SM 2540 G SM 18th Ed.]	Total, fixed, and volatile solids (SQAR)
Certified	Yes	NJ	WPP02.40500	NPW	Electrical Conductivity	[SM 2520 B]	Salinity
Certified	Yes	NJ	WPP02.41500	NPW	0.45u Filtration + Colorimetric (Manual)	[SM 4500-Si D (18/19th ed)]	Silica - dissolved
Certified	Yes	NJ	WPP02.42S00	NPW	0.45u Filtration + ICP	[EPA 200.7]	Silica - dissolved
Certified	Yes	NJ	WPP02.44000	NPW	Digestion, ICP	[EPA 200.7]	Sodium
Certified	Yes	NJ	WPP02.44050	NPW	ICP/MS	[EPA 200.8]	Sodium
Certified	Yes	NJ	WPP02.45500	NPW	Wheatstone Bridge	[SM 2510 B]	Specific conductance
Certified	Yes	NJ	WPP02.47100	NPW	Ion Chromatography	[EPA 300.0]	Sulfate
Certified	Yes	NJ	WPP02.47500	NPW	Titrimetric, Iodine	[SM 4500-S F (19/20th ed)]	Sulfides
Certified	Yes	NJ	WPP02.48500	NPW	Colorimetric (Methylene Blue)	[SM 5540 C]	Surfactants
Certified	Yes	NJ	WPP02.48510	NPW	Colorimetric (CTAS)	[SM 5540 D]	Surfactants

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2235 RT 130
BLDG B
Dayton, NJ 08810

Category: WFP02 -- Inorg. Parameters, Nutrients and Demands

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	WPP02.50000	NPW	Nephelometric	[EPA 180.1]	Turbidity

Category: WPP03 -- Analyze-Immediately Inorganic Parameters

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	WPP03.04000	NPW	DPD-FAS	[SM 4500-Cl F]	Chlorine
Certified	Yes	NJ	WPP03.07000	NPW	Winkler, Azide Modification	[SM 4500-O C]	Oxygen (dissolved)
Certified	Yes	NJ	WPP03.08000	NPW	Electrode	[SM 4500-O G]	Oxygen (dissolved)
Certified	Yes	NJ	WPP03.09000	NPW	Electrometric	[SM 4500-H B]	pH
Certified	Yes	NJ	WPP03.12000	NPW	Titrimetric, Iodine-Iodate	[SM 4500-SO3 B]	Sulfite - SO3
Certified	Yes	NJ	WPP03.14000	NPW	Thermometric	[SM 2550 B]	Temperature

Category: WPP04 -- Inorganic Parameters, Metals

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	WPP04.02000	NPW	Digestion, ICP	[EPA 200.7]	Aluminum
Certified	Yes	NJ	WPP04.02100	NPW	ICP/MS	[EPA 200.8]	Aluminum
Certified	Yes	NJ	WPP04.04500	NPW	Digestion, ICP	[EPA 200.7]	Antimony
Certified	Yes	NJ	WPP04.04600	NPW	ICP/MS	[EPA 200.8]	Antimony
Certified	Yes	NJ	WPP04.05600	NPW	Digestion, ICP	[EPA 200.7]	Arsenic
Certified	Yes	NJ	WPP04.05700	NPW	ICP/MS	[EPA 200.8]	Arsenic
Certified	Yes	NJ	WPP04.08000	NPW	Digestion, ICP	[EPA 200.7]	Barium
Certified	Yes	NJ	WPP04.08200	NPW	ICP/MS	[EPA 200.8]	Barium
Certified	Yes	NJ	WPP04.11000	NPW	Digestion, ICP	[EPA 200.7]	Beryllium
Certified	Yes	NJ	WPP04.11100	NPW	ICP/MS	[EPA 200.8]	Beryllium
Certified	Yes	NJ	WPP04.13500	NPW	Digestion, ICP	[EPA 200.7]	Cadmium
Certified	Yes	NJ	WPP04.13600	NPW	ICP/MS	[EPA 200.8]	Cadmium
Certified	Yes	NJ	WPP04.15000	NPW	0.45u Filter, Colorimetric DPC	[SM 3500-Cr D (18/19th ed)]	Chromium (VI)
Certified	Yes	NJ	WPP04.15100	NPW	0.45u Filter, Ion Chromatography	[EPA 218.6]	Chromium (VI)

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Category: WPP04 -- Inorganic Parameters, Metals

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	WPP04.18000	NPW	Digestion, ICP	[EPA 200.7]	Chromium
Certified	Yes	NJ	WPP04.18100	NPW	ICP/MS	[EPA 200.8]	Chromium
Certified	Yes	NJ	WPP04.19500	NPW	Digestion, ICP	[EPA 200.7]	Cobalt
Certified	Yes	NJ	WPP04.19600	NPW	ICP/MS	[EPA 200.8]	Cobalt
Certified	Yes	NJ	WPP04.21500	NPW	Digestion, ICP	[EPA 200.7]	Copper
Certified	Yes	NJ	WPP04.21600	NPW	ICP/MS	[EPA 200.8]	Copper
Certified	Yes	NJ	WPP04.26500	NPW	Digestion, ICP	[EPA 200.7]	Iron
Certified	Yes	NJ	WPP04.26550	NPW	ICP/MS	[EPA 200.8]	Iron
Certified	Yes	NJ	WPP04.27001	NPW	Digestion, Colorimetric (Phenanthraline)	[SM 3500-Fe B (20th ed)]	Iron, Ferrous
Certified	Yes	NJ	WPP04.28000	NPW	Digestion, ICP	[EPA 200.7]	Lead
Certified	Yes	NJ	WPP04.28100	NPW	ICP/MS	[EPA 200.8]	Lead
Certified	Yes	NJ	WPP04.31000	NPW	Digestion, ICP	[EPA 200.7]	Manganese
Certified	Yes	NJ	WPP04.31100	NPW	ICP/MS	[EPA 200.8]	Manganese
Certified	Yes	NJ	WPP04.33000	NPW	Manual Cold Vapor	[EPA 245.1]	Mercury
Certified	Yes	NJ	WPP04.33100	NPW	Cold Vapor Atomic Fluorescence Spectrometry	[EPA 245.7]	Mercury
Certified	Yes	NJ	WPP04.33200	NPW	Purge & Trap Atomic Fluorescence	[EPA 1631E]	Mercury
Certified	Yes	NJ	WPP04.35000	NPW	Digestion, ICP	[EPA 200.7]	Molybdenum
Certified	Yes	NJ	WPP04.35200	NPW	ICP/MS	[EPA 200.8]	Molybdenum
Certified	Yes	NJ	WPP04.37500	NPW	Digestion, ICP	[EPA 200.7]	Nickel
Certified	Yes	NJ	WPP04.37600	NPW	ICP/MS	[EPA 200.8]	Nickel
Certified	Yes	NJ	WPP04.45500	NPW	Digestion, ICP	[EPA 200.7]	Selenium
Certified	Yes	NJ	WPP04.45600	NPW	ICP/MS	[EPA 200.8]	Selenium
Certified	Yes	NJ	WPP04.48000	NPW	Digestion, ICP	[EPA 200.7]	Silver
Certified	Yes	NJ	WPP04.48200	NPW	ICP/MS	[EPA 200.8]	Silver
Certified	Yes	NJ	WPP04.50000	NPW	Digestion, ICP	[EPA 200.7]	Thallium
Certified	Yes	NJ	WPP04.50100	NPW	ICP/MS	[EPA 200.8]	Thallium
Certified	Yes	NJ	WPP04.51100	NPW	Digestion, ICP	[EPA 200.7]	Tin
Certified	Yes	NJ	WPP04.51200	NPW	ICP/MS	[EPA 200.8]	Tin
Certified	Yes	NJ	WPP04.52050	NPW	Digestion, ICP	[EPA 200.7]	Titanium
Certified	Yes	NJ	WPP04.52070	NPW	ICP/MS	[EPA 200.8]	Titanium
Certified	Yes	NJ	WPP04.54000	NPW	Digestion, ICP	[EPA 200.7]	Vanadium
Certified	Yes	NJ	WPP04.54100	NPW	ICP/MS	[EPA 200.8]	Vanadium

KEY: AE = Air and Emissions, BT = Biological Tissues, DW = Drinking Water, NPW = Non-Potable Water, SCM = Solid and Chemical Materials

New Jersey Department of Environmental Protection

National Environmental Laboratory Accreditation Program

ANNUAL CERTIFIED PARAMETER LIST AND CURRENT STATUS

Effective as of 02/24/2011 until 06/30/2011

Laboratory Name: ACCUTEST LABORATORIES Laboratory Number: 12129 Activity ID: NLC100009
2235 RT 130
BLDG B
Dayton, NJ 08810

Category: WPP04 – Inorganic Parameters, Metals

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	WPP04.56500	NPW	Digestion, ICP	[EPA 200.7]	Zinc
Certified	Yes	NJ	WPP04.56600	NPW	ICP/MS	[EPA 200.8]	Zinc

Category: WPP05 – Organic Parameters, Chromatography

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	WPP05.02010	NPW	Purge & Trap, GC (PID)	[EPA 602]	Benzene
Certified	Yes	NJ	WPP05.02020	NPW	Purge & Trap, GC (PID)	[EPA 602]	Chlorobenzene
Certified	Yes	NJ	WPP05.02030	NPW	Purge & Trap, GC (PID)	[EPA 602]	Dichlorobenzene (1,2-)
Certified	Yes	NJ	WPP05.02040	NPW	Purge & Trap, GC (PID)	[EPA 602]	Dichlorobenzene (1,3-)
Certified	Yes	NJ	WPP05.02050	NPW	Purge & Trap, GC (PID)	[EPA 602]	Dichlorobenzene (1,4-)
Certified	Yes	NJ	WPP05.02060	NPW	Purge & Trap, GC (PID)	[EPA 602]	Ethylbenzene
Certified	Yes	NJ	WPP05.02062	NPW	Purge & Trap, GC (PID)	[EPA 602]	Methyl tert-butyl ether
Certified	Yes	NJ	WPP05.02064	NPW	Purge & Trap, GC (PID)	[EPA 602]	Tert-butyl alcohol
Certified	Yes	NJ	WPP05.02070	NPW	Purge & Trap, GC (PID)	[EPA 602]	Toluene
Certified	Yes	NJ	WPP05.02080	NPW	Purge & Trap, GC (PID)	[EPA 602]	Xylenes (total)
Certified	Yes	NJ	WPP05.03000	NPW	Purge & Trap, GC (FID)	[EPA 603]	Acrolein
Certified	Yes	NJ	WPP05.03005	NPW	Purge & Trap, GC (FID)	[EPA 603]	Acrylonitrile
Certified	Yes	NJ	WPP05.09010	NPW	Extract/GC (ECD)	[EPA 608]	Aldrin
Certified	Yes	NJ	WPP05.09020	NPW	Extract/GC (ECD)	[EPA 608]	Alpha BHC
Certified	Yes	NJ	WPP05.09030	NPW	Exhact/GC (ECD)	[EPA 608]	Beta BHC
Certified	Yes	NJ	WPP05.09040	NPW	Extiact/GC (ECD)	[EPA 608]	Delta BHC
Certified	Yes	NJ	WPP05.09050	NPW	Extiact/GC (ECD)	[EPA 608]	Lindane (gamma BHC)
Certified	Yes	NJ	WPP05.09060	NPW	Extract/GC (ECD)	[EPA 608]	Chlordane
Certified	Yes	NJ	WPP05.09062	NPW	Extracl/GC (ECD)	[EPA 608]	Chlordane (alpha)
Certified	Yes	NJ	WPP05.09063	NPW	Extract/GC (ECD)	[EPA 608]	Chlorthme (gamma)
Applied	No	NJ	WPP05.09065	NPW	Extiact/GC (ECD)	[EPA 608]	Chlorobenzilate
Certified	Yes	NJ	WPP05.09070	NPW	Extiact/GC (ECD)	[EPA 608]	DDD (4,4'-)
Certified	Yes	NJ	WPP05.09080	NPW	Extract/GC (ECD)	[EPA 608]	DDE (4,4'-)
Certified	Yes	NJ	WPP05.09090	NPW	Extract/GC (ECD)	[EPA 608]	DDT (4,4'-)

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2235 RT 130
BLDG B
Dayton, NJ 08810

Category: WPP05 – Organic Parameters, Chromatography

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	WPP05.09100	NPW	Extract/GC (ECD)	[EPA 608]	Dieldrin
Certified	Yes	NJ	WPP05.09110	NPW	Extract/GC (ECD)	[EPA 608]	Endosulfan I
Certified	Yes	NJ	WPP05.09120	NPW	Extract/GC (ECD)	[EPA 608]	Endosulfan II
Certified	Yes	NJ	WPP05.09130	NPW	Extract/GC (ECD)	[EPA 608]	Endosulfan sulfate
Certified	Yes	NJ	WPP05.09140	NPW	Extract/GC (ECD)	[EPA 608]	Endrin
Certified	Yes	NJ	WPP05.09150	NPW	Extract/GC (ECD)	[EPA 608]	Endrin aldehyde
Certified	Yes	NJ	WPP05.09160	NPW	Extract/GC (ECD)	[EPA 608]	Endrin ketone
Certified	Yes	NJ	WPP05.09170	NPW	Extract/GC (ECD)	[EPA 608]	Heptachlor
Certified	Yes	NJ	WPP05.09180	NPW	Extract/GC (ECD)	[EPA 608]	Heptachlor epoxide
Certified	Yes	NJ	WPP05.09190	NPW	Extract/GC (ECD)	[EPA 608]	Methoxychlor
Applied	No	NJ	WPP05.09198	NPW	Exhact/GC (ECD)	[EPA 608]	Simazine
Certified	Yes	NJ	WPP05.09200	NPW	Extract/GC (ECD)	[EPA 608]	Toxaphene
Certified	Yes	NJ	WPP05.11010	NPW	Extract/GC (ECD)	[EPA 608]	PCB 1016
Certified	Yes	NJ	WPP05.11020	NPW	Extract/GC (ECD)	[EPA 608]	PCB 1221
Certified	Yes	NJ	WPP05.11030	NPW	Extract/GC (ECD)	[EPA 608]	PCB 1232
Certified	Yes	NJ	WPP05.11040	NPW	Exlract/GC (ECD)	[EPA 608]	PCB 1242
Certified	Yes	NJ	WPP05.11050	NPW	Extract/GC (ECD)	[EPA 608]	PCB 1248
Certified	Yes	NJ	WPP05.11060	NPW	Exhact/GC (ECD)	[EPA 608]	PCB 1254
Certified	Yes	NJ	WPP03.11070	NPW	Exhact/GC (ECD)	[EPA 608]	PCB 1260

Category: WPP06 -- Organic Parameters, Chromatography/MS

Status	Ellgible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Methpd	Parameter Description
Applied	No	NJ	WPP06.02001	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Amyl acetate (n-)
Applied	No	NJ	WPP06.02002	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Amyl alcohol (u-)
Certified	Yes	NJ	WPP06.02003	NPW	GC/MS, P & T, Capillaly Column	[EPA 624]	Acetone
Certified	Yes	NJ	WPP06.02007	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Acrolein
Certified	Yes	NJ	WPP06.02009	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Acrylonitrile
Certified	Yes	NJ	WPP06.02010	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Benzene
Certified	Yes	NJ	WPP06.02020	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Bromodichloromethane

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2235 RT 130
BLDG B
Dayton, NJ 08810

Category: WPP06 – Organic Parameters, Chromatography/MS

Status	Eligible to Report NJ Dota	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	WPP06.02030	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Bromoform
Certified	Yes	NJ	WPP06.02040	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Bromomethane
Certified	Yes	NJ	WPP06.02041	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Butanone (2-)
Certified	Yes	NJ	WPP06.02042	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Butyl acetate (n-)
Certified	Yes	NJ	WPP06.02045	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Carbon disulfide
Certified	Yes	NJ	WPP06.02050	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Carbon tetrachloride
Certified	Yes	NJ	WPP06.02060	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Chlorobenzene
Certified	Yes	NJ	WPP06.02070	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Chloroethane
Certified	Yes	NJ	WPP06.02080	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Chloroethyl vinyl ether (2-)
Certified	Yes	NJ	WPP06.02090	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Chloroform
Certified	Yes	NJ	WPP06.02100	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Chloromethane
Certified	Yes	NJ	WPP06.02110	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Dibromochloromethane
Certified	Yes	NJ	WPP06.02115	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Dibromoethane (1,2-) (EDB)
Certified	Yes	NJ	WPP06.02120	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Dichlorobenzene (1,2-)
Certified	Yes	NJ	WPP06.02130	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Dichlorobenzene (1,3-)
Certified	Yes	NJ	WPP06.02140	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Dichlorobenzene (1,4-)
Certified	Yes	NJ	WPP06.02145	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Dichlorodifluoromethane
Certified	Yes	NJ	WPP06.02150	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Dichloroethane (1,1-)
Certified	Yes	NJ	WPP06.02160	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Dichloroethane (1,2-)
Certified	Yes	NJ	WPP06.02170	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Dichloroetheoe (1,1-)
Certified	Yes	NJ	WPP06.02175	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Dichloroethene (cis-1,2-)
Certified	Yes	NJ	WPP06.02180	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Dichloroethene (trans-1,2-)
Certified	Yes	NJ	WPP06.02190	NPW	GC/MS, P & T, Capillary Colmnu	[EPA 624]	Dichloropropane (1,2-)
Certified	Yes	NJ	WPP06.02198	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Dietiyl ether (Ethyl etiier)
Certified	Yes	NJ	WPP06.02200	NPW	GC/MS, P & T, Capillary Coluinn	[EPA 624]	Dichloropropene (cis-1,3-)
Certified	Yes	NJ	WPP06.02210	NPW	GC/MS, P & T, Capiilary Column	[EPA 624)	Dichloropropene (trans-1,3-)
Certified	Yes	NJ	WPP06.02212	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Ethyl acetate
Certified	Yes	NJ	WPP06.02220	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Ethylbenzene
Certified	Yes	NJ	WPP06.02222	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Heptane (n-)
Certified	Yes	NJ	WPP06.02223	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Hexane (n-)
Applied	No	NJ	WPP06.02224	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Isobulyraldehyde
Applied	No	NJ	WPP06.02225	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Isopropanol

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Effective as of 02/24/2011 until 06/30/2011

Laboratory Name: ACCUTEST LABORATORIES Laboratory Number: 12129 Activity ID: NLC100009
2235 RT 130
BLDG B
Dayton, NJ 08810

Category: WPP06 -- Organic Parameters, Chromatography/MS

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Applied	No	NJ	WPP06.02226	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Isopropyl acetate
Certified	Yes	NJ	WPP06.02227	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Isopropyl ether
Certified	Yes	NJ	WPP06.02230	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Methylene chloride (Dichloromethane)
Applied	No	NJ	WPP06.02231	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Methyl formate
Certified	Yes	NJ	WPP06.02232	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Methyl tert-butyl ether
Certified	Yes	NJ	WPP06.02233	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Methyl isobutyl ketone (MIBK)
Certified	Yes	NJ	WPP06.02234	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Tert-butyl alcohol
Certified	Yes	NJ	WPP06.02235	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Tetrahydrofuran
Certified	Yes	NJ	WPP06.0223S	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Styrene
Certified	Yes	NJ	WPP06.02240	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Tetrachloroethane (1,1,2,2-)
Certified	Yes	NJ	WPP06.02250	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Tetrachloroethene
Certified	Yes	NJ	WPP06.02260	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Toluene
Certified	Yes	NJ	WPP06.02270	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Trichloroethane (1,1,1-)
Certified	Yes	NJ	WPP06.02280	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Trichloroethane (1,1,2-)
Certified	Yes	NJ	WPP06.02290	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Trichloroethene
Certified	Yes	NJ	WPP06.02300	NPW	GC/MS, P & T, Capillary Column	(EPA 624]	Trichlorofluoromethane
Certified	Yes	NJ	WPP06.02305	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Trichloro (1,1,2-) trifluoroethane (1,2,2-)
Certified	Yes	NJ	WPP06.02307	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Vinyl acetate
Certified	Yes	NJ	WPP06.02310	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Vinyl chloride
Certified	Yes	NJ	WPP06.02312	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Xylenes (total)
Certified	Yes	NJ	WPP06.02315	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Xylene (o-)
Certified	Yes	NJ	WPP06.02317	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Xylene (m- + p-)
Certified	Yes	NJ	WPP06.02325	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Hexanone (2-)
Certified	Yes	NJ	WPP06.02335	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Ethyl-tert-butyl Ether [ETBE]
Certified	Yes	NJ	WPP06.02400	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Dilsopropyl Ether [DIPE]
Certified	Yes	NJ	WPP06.02410	NPW	GC/MS, P & T, Capillary Column	[BPA 624]	Dioxane (1,4-)
Certified	Yes	NJ	WPP06.02460	NPW	GC MS, P & T, Capillary Column	[EPA 624]	Isopropylbenzene
Certified	Yes	NJ	WPP06.02510	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Naphthalene
Certified	Yes	NJ	WPP06.02570	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	tert-Amylmethyl ether [TAME]
Certified	Yes	NJ	WPP06.02650	NPW	GC/MS, P & T, Capillary Column	[EPA 624]	Trimethylbenzene (1,2,4-)
Certified	Yes	NJ	WPP06.02660	NPW	GC MS, P & T, Capillary Column	[EPA 624)	Trimethylbenzene (1,3,5-)
Certified	Yes	NJ	WPP06.03010	NPW	Extract, GC/MS	[EPA 625]	Acenaphthene

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2235 RT 130
BLDG B
Dayton, NJ 08810

Category: WPP06 – Organic Parameters, Chromatography/MS

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	WPP06.03020	NPW	Extract, GC/MS	[EPA 625]	Acenaphthylene
Certified	Yes	NJ	WPP06.03030	NPW	Extract, GC/MS	[EPA 625]	Anthracene
Certified	Yes	NJ	WPP06.03040	NPW	Extract, GC/MS	[EPA 625]	Benzo(a)anthracene
Certified	Yes	NJ	WPP06.03050	NPW	Extract, GC/MS	[EPA 625]	Benzo(b)fluomntiene
Certified	Yes	NJ	WPP06.03060	NPW	Extract, GC/MS	[EPA 625]	Benzo(k)fluoranticne
Certified	Yes	NJ	WPP06.03070	NPW	Extract, GC/MS	[EPA 625]	Benzo(a)pyrene
Certified	Yes	NJ	WPP06.03080	NPW	Extract, GC/MS	(EPA 625]	Benzo(ghi)perylene
Certified	Yes	NJ	WPP06.03090	NPW	Extract, GC/MS	[EPA 625]	Butyl benzyl phthalate
Certified	Yes	NJ	WPP06.03100	NPW	Extract, GC/MS	[EPA 625]	Bis (2-chloroethyl) ether
Certified	Yes	NJ	WPP06.03110	NPW	Extract, GC/MS	[EPA 625]	Bis (2-chlorbethoxy) methane
Certified	Yes	NJ	WPP06.03120	NPW	Extract, GC/MS	[EPA 625]	Bis (2-etiylhoxyl) phthalatc
Certified	Yes	NJ	WPP06.03130	NPW	Extract, GC/MS	[EPA 625]	Bis (2-chloroisopropyl) ether
Certified	Yes	NJ	WPP06.03140	NPW	Extract, GC/MS	[EPA 625]	Broraophenyl-phenyl ether (4-)
Certified	Yes	NJ	WPP06.03150	NPW	Exuact, GC/MS	[EPA 625]	Chloronaphthalene (2-)
Certified	Yes	NJ	WPP06.03160	NPW	Extract, GC/MS	[EPA 625]	Chlorophenyl-phenyl ether (4-)
Certified	Yes	NJ	WPP06.03170	NPW	Extract, GC/MS	[EPA 625]	Chrysene
Certified	Yes	NJ	WPP06.03178	NPW	Extract, GC/MS	[EPA 625]	Dibenz(a,h)acridine
Certified	Yes	NJ	WPP06.03180	NPW	Extract, GC/MS	[EPA 625]	Dibenzo(a,b)anthracene
Certified	Yes	NJ	WPP06.03186	NPW	Extract, GC/MS	[EPA 625]	Dibenzofuran
Certified	Yes	NJ	WPP06.03190	NPW	Extract, GC/MS	[EPA 62S]	Di-n-butyl phthalate
Certified	Yes	NJ	WPP06.03230	NPW	Extract, GC/MS	[EPA 625]	Dichlorobenzidine (3,3'-)
Certified	Yes	NJ	WPP06.03240	NPW	Extract, GC/MS	[EPA 625]	Diethyl phthalate
Certified	Yes	NJ	WPP06.03244	NPW	Extract, GC/MS	[EPA 625]	Dimethylbenz(a)anthracene (7,12-)
Certified	Yes	NJ	WPP06.03250	NPW	Extract, GC/MS	[EPA 625]	Dimethyl phthalate
Certified	Yes	NJ	WPP06.03260	NPW	Extract, GC/MS	[BPA 625]	Dinitrotoluene (2,4-)
Certified	Yes	NJ	WPP06.03270	NPW	Extract. GC/MS	[EPA 625]	Dinitrotoluene (2,6-)
Certified	Yes	NJ	WPP06.03280	NPW	Extract, GC/MS	[EPA 625]	Di-n-octyl phthalate
Certified	Yes	NJ	WPP06.03290	NPW	Extract, GC/MS	[EPA 625]	Fluoranthene
Certified	Yes	NJ	WPP06.03300	NPW	Extract, GC/MS	[EPA 625]	Fluorene
Certified	Yes	NJ	WPP06.03310	NPW	Extract, GC/MS	[EPA 625]	Hexachlorobenzene
Certified	Yes	NJ	WPP06.03320	NPW	Extract, GC/MS	[EPA 625]	Hexachlorobutadiene (1,3-)
Certified	Yes	NJ	WPP06.03330	NPW	Extract, GC/MS	[EPA 625]	Hexachloroethane

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Certified	Yes	NJ	WPP06.03340	NPW	Extract, GC/MS	[EPA 625]	Indeno(1,2,3-cd)pyrene
Certified	Yes	NJ	WPP06.03350	NPW	Extract, GC/MS	[EPA 625]	Isophorone
Certified	Yes	NJ	WPP06.03358	NPW	Extract, GC/MS	[EPA 625]	Methylhaphthalenc (2-)
Certified	Yes	NJ	WPP06.03360	NPW	Extract, GC/MS	[EPA 625]	Naphthalene
Certified	Yes	NJ	WPP06.03366	NPW	Extract, GC/MS	[EPA 625]	Chloroaniline (4-)
Certified	Yes	NJ	WPP06.03367	NPW	Extract, GC/MS	[EPA 625]	Nitroanline (2-)
Certified	Yes	NJ	WPP06.03368	NPW	Extract, GC/MS	[EPA 625]	Nitroaniline (3-)
Certified	Yes	NJ	WPP06.03369	NPW	Extract, GC/MS	[EPA 625]	Nitroaniline (4-)
Certified	Yes	NJ	WPP06.03370	NPW	Extract, GC/MS	(EPA 625]	Nitrobenzene
Certified	Yes	NJ	WPP06.03380	NPW	Extract, GC/MS	[EPA 625]	N-Nitroso-di-n-propylamine
Certified	Yes	NJ	WPP06.03390	NPW	Extract, GC/MS	[EPA 625]	Phenanthrene
Certified	Yes	NJ	WPP06.03400	NPW	Extract, GC/MS	[EPA 625]	Pyrene
Certified	Yes	NJ	WPP06.03402	NPW	Extract, GC/MS	[EPA 625]	Pentachlorobenzene
Certified	Yes	NJ	WPP06.03405	NPW	Extract, GC/MS	[EPA 625]	Tetrachlorabenzene (1,2,4,5-)
Certified	Yes	NJ	WPP06.03410	NPW	Extract, GC/MS	[EPA 625]	Trichlorobenzene (1,2,4-)
Certified	Yes	NJ	WPP06.03420	NPW	Extract, GC/MS	[EPA 625]	Methyl phenol (4-chioro-3-)
Certified	Yes	NJ	WPP06.03430	NPW	Extract, GC/MS	[EPA 625]	Chlorophenol (2-)
Certified	Yes	NJ	WPP06.03440	NPW	Extract, GC/MS	[EPA 625]	Dichlorophenol (2,4-)
Certified	Yes	NJ	WPP06.03450	NPW	Extract, GC/MS	[EPA 625]	Dimethylphenol (2,4-)
Certified	Yes	NJ	WPP06.03460	NPW	Extract, GC/MS	[EPA 625]	Dinitrophenol (2,4-)
Certified	Yes	NJ	WPP06.03470	NPW	Extract, GC/MS	[EPA 625]	Dinitrophenol (2-methyl-4,6-)
Certified	Yes	NJ	WPP06.03480	NPW	Extract, GC/MS	[EPA 625]	Nitrophenol (2-)
Certified	Yes	NJ	WPP06.03490	NPW	Extract, GC/MS	[EPA 625]	Nitrophenol (4-)
Certified	Yes	NJ	WPP06.03500	NPW	Extract, GC/MS	[EPA 625]	Pentachlorophenol
Certified	Yes	NJ	WPP06.03510	NPW	Extiact, GC/MS	(EPA 625]	Phenol
Certified	Yes	NJ	WPP06.03512	NPW	Extract, GC/MS	[EPA 625]	Tetrachlorophenol (2,3,4,6-)
Certified	Yes	NJ	WPP06.03518	NPW	Extract, GC/MS	[EPA 625]	Trichlorophenol (2,4,5-)
Certified	Yes	NJ	WPP06.03520	NPW	Extract, GC/MS	[EPA 625]	Trichlorophenol (2,4,6-)
Certified	Yes	NJ	WPP06.03530	NPW	Extract, OC/MS	[EPA 625]	Benzoic acid
Certified	Yes	NJ	WPP06.03540	NPW	Extiact, GC/MS	[EPA 625]	Methylphenol (4-)
Certified	Yes	NJ	WPP06.03550	NPW	Extiact, GC/MS	[EPA 625]	Acetophenone
Certified	Yes	NJ	WPP06.03560	NPW	Extract, GC/MS	[EPA 625]	Alpha - terpineol

KEY: AE = Air and Emissions, BT = Biological Tissues, DW = Drinking Water, NPW = Non-Potable Water, SCM = Solid and Chemical Materials

New Jersey Department of Environmental Protection

National Environmental Laboratory Accreditation Program

ANNUAL CERTIFIED PARAMETER LIST AND CURRENT STATUS

Effective as of 02/24/2011 until 06/30/2011

Laboratory Name: ACCUTEST LABORATORIES Laboratory Number: 12129 Activity ID: NLC100009
2235 RT 130
BLDG B
Dayton, NJ 08810

Category: WPP06 -- Organic Parameters, Chromatography/MS

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	WPP06.03570	NPW	Extiact, GC/MS	[EPA 625]	Aniline
Certified	Yes	NJ	WPP06.03580	NPW	Exhact, GC/MS	[EPA 625]	Benzidine
Certified	Yes	NJ	WPP06.03590	NPW	Extract, GC/MS	[EPA 625]	Carbazole
Certified	Yes	NJ	WPP06.03600	NPW	Extract, GC/MS	[EPA 625]	Dichloroanitine (2,3-)
Certified	Yes	NJ	WPP06.03605	NPW	Extract, GC/MS	[EPA 625]	Diphenylhydrazine (1,2-)
Certified	Yes	NJ	WPP06.03610	NPW	Extract, GC/MS	[EPA 625]	Metiylphenol (2-)
Certified	Yes	NJ	WPP06.03620	NPW	Extiact, GC/MS	[EPA 625]	Decane (n-)
Certified	Yes	NJ	WPP06.03660	NPW	Extract, GC/MS	[EPA 625]	Hexachlorocyclopentadiene
Certified	Yes	NJ	WPP06.03675	NPW	Extract, GC/MS	[EPA 625]	N-Nltroso-dl-n-butylamine
Certified	Yes	NJ	WPP06.03677	NPW	Extract, GC/MS	[EPA 625]	N-Nitrosodiethylamine
Certified	Yes	NJ	WPP06.03680	NPW	Extract, GC/MS	[EPA 625]	N-Nitrosodimethylamine
Certified	Yes	NJ	WPP06.03690	NPW	Exhact, GC/MS	[EPA 625]	N-Nitrosodiphenylamine
Certified	Yes	NJ	WPP06.03695	NPW	Extiact, GC/MS	[EPA 625]	N-Nitrosopyrrolidine
Certified	Yes	NJ	WPP06.03700	NPW	Extiact, GC/MS	[EPA 625]	Octadecane (n-)
Certified	Yes	NJ	WPP06.03720	NPW	Exhact, GC/MS	[EPA 625]	Pyridine
Certified	Yes	NJ	WPP06.03730	NPW	Extiact, GC/MS	[EPA 625]	Methylphenanthrene (1-)

Category: WPP07 -- Organic Parameters, ludivldual Pesticide

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	WPP07.11000	NPW	GC	[USER DEFINED EPA 608]	Beta BHC
Certified	Yes	NJ	WPP07.13000	NPW	GC	[USER DEFINED EPA 608]	Delta BHC
Certified	Yes	NJ	WPP07.20000	NPW	GC	[USER DEFINED EPA 608]	Chlordane
Certified	Yes	NJ	WPP07.45000	NPW	GC	[USER DEFINED EPA 608]	Bhdosulfim sulfate
Certified	Yes	NJ	WPP07.47000	NPW	GC	[USER DEFINED EPA 608]	Endrin
Certified	Yes	NJ	WPP07.62000	NPW	OC	[USER DEFINED EPA 608]	Methoxyohlor
Certified	Yes	NJ	WPP07.85000	NPW	GC	[USER DEFINED EPA 608]	Toxaphene

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Laboratory Name: ACCUTEST LABORATORIES Laboratory Number: 12129 Activity ID: NLC100009
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Dayton, NJ 08810

Category: SHW02 -- Characteristics of Hazardous Waste

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Descriptioa
Certified	Yes	NJ	SHW02.01000	NPW, SCM	Pensky Martens	[SW-846 1010A]	Ignitability
Certified	Yes	NJ	SHW02.03000	NPW, SCM	Aqueous Waste, Potentiometric	[SW-846 9040C]	Corrosivity - pH waste, >20% water
Certified	Yes	NJ	SHW02.06900	NPW, SCM	TCLP, Toxicity Procedure, ZHE	[SW-846 1311]	Volatile organics
Certified	Yes	NJ	SHW02.06950	NPW, SCM	TCLP, Toxicity Procedure, Shaker	[SW-846 1311]	Semivolatile organics
Certified	Yes	NJ	SHW02.07000	NPW, SCM	TCLP, Toxicity Procedure, Shaker	[SW-846 1311]	Metals
Certified	Yes	NJ	SHW02.08000	NPW, SCM	Synthetic PPT Leachate Procedure	[SW-846 1312]	Metals - organics
Certified	Yes	NJ	SHW02.09000	NPW, SCM	Multiple Extractions	[SW-846 1320]	Metals - organics

Category: SHW03 -- Analyze-Immediately Parameters

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	SHW03.01000	NPW, SCM	Aqueous, Electrometric	[SW-846 9040C]	pH

Category: SHW04 -- Inorganic Parameters

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	SHW04.05000	NPW, SCM	ICP	[SW-846 6010B] [SW-846 6010C]	Aluminum
Certified	Yes	NJ	SHW04.05500	NPW, SCM	ICP/MS	[SW-846 6020A] [SW-846 6020]	Aluminum
Certified	Yes	NJ	SHW04.06500	NPW, SCM	ICP	[SW-846 6010B] [SW-846 6010C]	Antimony
Certified	Yes	NJ	SHW04.07000	NPW, SCM	ICP/MS	[SW-846 6020A] [SW-846 6020]	Antimony
Certified	Yes	NJ	SHW04.09000	NPW, SCM	ICP	[SW-846 6010B] [SW-846 6010C]	Arsenic
Certified	Yes	NJ	SHW04.09500	NPW, SCM	ICP/MS	[SW-846 6020A] [SW-846 6020]	Arsenic
Certified	Yes	NJ	SHW04.11500	NPW, SCM	ICP	[SW-846 6010B] [SW-846 6010C]	Barium
Certified	Yes	NJ	SHW04.12000	NPW, SCM	ICP/MS	[SW-846 6020A] [SW-846 6020]	Barium
Certified	Yes	NJ	SHW04.13500	NPW, SCM	ICP	[SW-846 6010B] [SW-846 6010C]	Beryllium
Certified	Yes	NJ	SHW04.14000	NPW, SCM	ICP/MS	[SW-846 6020A] [SW-846 6020]	Beryllium
Certified	Yes	NJ	SHW04.15100	NPW, SCM	ICP	[SW-846 6010B] [SW-846 6010C]	Boron
Certified	Yes	NJ	SHW04.15500	NPW, SCM	ICP	[SW-846 6010B] [SW-846 6010C]	Cadmium
Certified	Yes	NJ	SHW04.16000	NPW, SCM	ICP/MS	[SW-846 6020A] [SW-846 6020]	Cadmium

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Category: SHW04 – Inorganic Parameters

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	SHW04.17500	NPW, SCM	ICP	[SW-846 6010B] [SW-846 6010C]	Calcium
Certified	Yes	NJ	SHW04.17505	NPW, SCM	ICP/MS	[SW-846 6020A] [SW-846 6020]	Calcium
Certified	Yes	NJ	SHW04.18500	NPW, SCM	ICP	[SW-846 6010B] [SW-846 6010C]	Chromium
Certified	Yes	NJ	SHW04.19000	NPW, SCM	ICP/MS	[SW-846 6020A] [SW-846 6020]	Chromium
Certified	Yes	NJ	SHW04.21000	NPW, SCM	Colorimetric	[SW-846 7196A]	Chromium (VI)
Certified	Yes	NJ	SHW04.22100	NPW, SCM	Ion Chromatography	[SW-846 7199]	Chromium (VI)
Certified	Yes	NJ	SHW04.22500	NPW, SCM	ICP	[SW-S46 6010B] [SW-846 6010C]	Cobalt
Certilied	Yes	NJ	SHW04.23000	NPW, SCM	ICP/MS	[SW-846 6020A] [SW-846 6020]	Cobalt
Certified	Yes	NJ	SHW04.24500	NPW, SCM	ICP	[SW-846 6010B] [SW-846 6010C]	Copper
Certified	Yes	NJ	SHW04.25000	NPW, SCM	ICP/MS	[SW-846 6020A] [SW-846 6020]	Copper
Certified	Yes	NJ	SHW04.26000	NPW, SCM	ICP	[SW-846 6010B] [SW-846 6010C]	Iron
Certified	Yes	NJ	SHW04.26005	NPW, SCM	ICP/MS	[SW-846 6020A] [SW-846 6020]	Iron
Certified	Yes	NJ	SHW04.27500	NPW, SCM	ICP	[SW-846 6010B] [SW-846 6010C]	Lead
Certified	Yes	NJ	SHW04.28000	NPW, SCM	ICP/MS	[SW-846 6020A] [SW-846 6020]	Lead
Certified	Yes	NJ	SHW04.30500	NPW, SCM	ICP	[SW-846 6010B] [SW-846 6010C]	Magnesium
Certified	Yes	NJ	SHW04.30505	NPW, SCM	ICP/MS	[SW-846 6020A] [SW-846 6020]	Magnesium
Certified	Yes	NJ	SHW04.31500	NPW, SCM	ICP	[SW-846 6010B] [SW-846 6010C]	Manganese
Certified	Yes	NJ	SHW04.31600	NPW, SCM	ICP/MS	[SW-846 6020A] [SW-846 6020]	Manganese
Certified	Yes	NJ	SHW04.34000	NPW, SCM	ICP	[SW-846 6010B] [SW-846 6010C]	Molybdenum
Certified	Yes	NJ	SHW04.34005	NPW, SCM	ICP/MS	[SW-846 6020A] [SW-846 6020]	Molybdenum
Certified	Yes	NJ	SHW04.33500	NPW, SCM	ICP	[SW-846 6010B] [SW-846 6010C]	Nickel
Certified	Yes	NJ	SHW04.36000	NPW, SCM	ICP/MS	[SW-846 6020A] [SW-846 6020]	Nickel
Certified	Yes	NJ	SHW04.38000	NPW, SCM	ICP	[SW-846 6010B] [SW-846 6010C]	Potassium
Certified	Yes	NJ	SHW04.38505	NPW, SCM	ICP/MS	[SW-846 6020A] [SW-846 6020]	Potassium
Certified	Yes	NJ	SHW04.39000	NPW, SCM	ICP	[SW-846 6010B] [SW-846 6010C]	Selenium
Certified	Yes	NJ	SHW04.40600	NPW, SCM	ICP/MS	[SW-846 6020A] [SW-846 6020]	Selenium
Certified	Yes	NJ	SHW04.41000	NPW, SCM	ICP	[SW-846 6010B] [SW-846 6010C]	Silver
Certified	Yes	NJ	SHW04.41300	NPW, SCM	ICP/MS	[SW-846 6020A] [SW-846 6020]	Silver
Certified	Yes	NJ	SHW04.43000	NPW, SCM	ICP	[SW-846 6010B] [SW-846 6010C]	Sodium
Certified	Yes	NJ	SHW04.43005	NPW, SCM	ICP/MS	[SW-846 6020A] [SW-846 6020]	Sodium
Certified	Yes	NJ	SHW04.44000	NPW, SCM	ICP	[SW-846 6010B] [SW-846 6010C]	Strontium
Applied	No	NJ	SHW04.44001	NPW, SCM	ICP/MS	[SW-846 6020A] [SW-846 6020]	Strontium

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Laboratory Name: ACCUTEST LABORATORIES Laboratory Number: 12129 Activity ID: NLC100009
2235 RT 130
BLDG B
Dayton, NJ 08810

Category: SHW04 – Inorganic Parameters

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	SHW04.45000	NPW, SCM	ICP	[SW-846 6010B] [SW-846 6010C]	Thallium
Certified	Yes	NJ	SHW04.45500	NPW, SCM	ICP/MS	[SW-846 6020A] [SW-846 6020]	Thallium
Certified	Yes	NJ	SHW04.47100	NPW, SCM	ICP	[SW-846 6010B] [SW-846 6010C]	Tin
Certified	Yes	NJ	SHW04.47105	NPW, SCM	ICP/MS	[SW-846 6020A] [SW-846 6020]	Tin
Certified	Yes	NJ	SHW04.47145	NPW, SCM	ICP	[SW-846 6010B] [SW-846 6010C]	Titanium
Applied	No	NJ	SHW04.47150	NPW, SCM	ICP/MS	[SW-846 6020A]	Titanium
Certified	Yes	NJ	SHW04.47500	NPW, SCM	ICP	[SW-846 6010B] [SW-846 6010C]	Vanadium
Certified	Yes	NJ	SHW04.47505	NPW, SCM	ICP/MS	[SW-846 6020A] [SW-846 6020]	Vanadium
Certified	Yes	NJ	SHW04.49000	NPW, SCM	ICP	[SW-846 6010B] [SW-846 6010C]	Zinc
Certified	Yes	NJ	SHW04.49500	NPW, SCM	ICP/MS	[SW-846 6020A] [SW-846 6020]	Zinc
Applied	No	NJ	SHW04.51045	NPW, SCM	ICP	[SW-846 6010B]	Zirconium

Category: SHW06 -- Organic Parameters, Chromatography

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	SHW06.02010	NPW, SCM	Microextraction, GC, ECD	[SW-846 8011, Rev. 0, 7/92]	Dibromoethane (1,2-) (EDB)
Certified	Yes	NJ	SHW06.02020	NPW, SCM	Microextraction, GC, ECD	[SW-846 8011, Rev. 0, 7/92]	Dibromo-3-chloropropane (1,2-)
Certified	Yes	NJ	SHW06.02030	NPW, SCM	Microextraction, GC, ECD	[SW-846 8011, Rev. 0, 7/92]	Trichloropropane (1,2,3-)
Certified	Yes	NJ	SHW06.03048	NPW, SCM	GC, Direct Injection or P & T, FID	[SW-846 8015B] [SW-846 8015C]	Butanol (1-)
Certified	Yes	NJ	SHW06.03050	NPW, SCM	GC, Direct Injection or P & T, FID	[SW-846 8015B] [SW-846 8015C]	Tert-butyl alcohol
Certified	Yes	NJ	SHW06.03090	NPW, SCM	GC, Direct Injection or P & T, FID	[SW-846 8015B] (SW-846 8015C]	Iso-butyl alcohol
Certified	Yes	NJ	SHW06.03142	NPW, SCM	GC, Direct Injection or P & T, FID	[SW-846 8015B] [SW-846 8015C]	Propyl Alcohol (n-)
Certified	Yes	NJ	SHW06.03145	NPW, SCM	GC, Direct Injection or P & T, FID	[SW-846 8015B] [SW-846 8015C]	Isopropyl alcohol
Certified	Yes	NJ	SHW06.03180	NPW, SCM	GC, Direct Injection or P & T, FID	[SW-846 8015B] [SW-846 8015C]	Methyl alcohol (Methanol)
Certified	Yes	NJ	SHW06.03778	NPW, SCM	GC, Direct Injection or P & T, FID	[SW-846 8013B] [SW-846 8015C]	Ethyl alcohol
Certified	Yes	NJ	SHW06.04010	NPW, SCM	GC P&T, FID	[SW-846 8015B] [SW-846 8015C]	Gasoline range organic
Certified	Yes	NJ	SHW06.04500	NPW, SCM	Extraction, GC, FID	[SW-846 8015B] [SW-846 8015C]	Diesel range organic
Certified	Yes	NJ	SHW06.04505	NPW, SCM	Extraction, GC, FID	[USER DEFINED TCEQ 1005]	Diesel range organic
Certified	Yes	NJ	SHW06.04520	NPW, SCM	Extraction, GC, FID	[OTHBR NJ-OQA-QAM-025, Rev. 7]	Petroleum Organics
Certified	Yes	NJ	SHW06.04540	NPW, SCM	Extraction, GC, FID	[OTHER NJDEP EPH 10/08, Rev. 3]	Extractabie Petroleum Hydrocarbons

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2235 RT 130
BLDG B
Dayton, NJ 08810

Category: SHW06 -- Organic Parameters, Chromatography

Status	Eilgible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	SHW06.05010	NPW, SCM	GC, Direct Ihjection or P & T, PID-HECD	[SW-846 8021B, Rev. 2, 12/96]	Benzene
Certified	Yes	NJ	SHW06.05020	NPW, SCM	GC, Direct Injection or P & T, PID-HECD	[SW-846 8021B, Rev. 2, 12/96]	Chlorobenzene
Certified	Yes	NJ	SHW06.05030	NPW, SCM	GC, Direct Injection or P & T, PED-HECD	[SW-846 8021B, Rev. 2, 12/96]	Dichlorobenzene (1,2-)
Certified	Yes	NJ	SHW06.05040	NPW, SCM	GC, Diuect Injection or P & T, PID-HBCD	[SW-846 8021B, Rev. 2, 12/96]	Dichlorobenzene (1,3-)
Certified	Yes	NJ	SHW06.05050	NPW, SCM	GC, Direct Injection or P & T, PID-HECD	[SW-846 8021B, Rev. 2, 12/96]	Dichlorobenzene (1,4-)
Certified	Yes	NJ	SHW06.05060	NPW, SCM	GC, Direct Injection or P & T, PID-HECD	[SW-846 8021B, Rev. 2, 12/96]	Ethylbenzene
Certified	Yes	NJ	SHW06.05068	NPW, SCM	GC, Direct Injection or P & T, PID-HECD	[SW-846 8021B, Rev. 2, 12/96]	Styrene
Certified	Yes	NJ	SHW06.05070	NPW, SCM	GC, Direct Injection or P & T, PID-HECD	[SW-846 8021B, Rev. 2, 12/96]	Toluene
Certified	Yes	NJ	SHW06.05080	NPW, SCM	GC, Direct hjection or P & T, PID-HECD	[SW-846 8021B, Rev. 2, 12/96]	Xylene (o-)
Certified	Yes	NJ	SHW06.05090	NPW, SCM	GC, Direct Injection or P & T, PID-HECD	[SW-846 8021B, Rev. 2, 12/96]	Xylene (m-)
Certified	Yes	NJ	SHW06.05100	NPW, SCM	GC, Diuect Injection or P & T, PID-HECD	[SW-846 8021B, Rev. 2, 12/96]	Xylene (p-)
Applied	No	NJ	SHW06.05105	NPW, SCM	GC, Direct hjection or P & T, PID-HECD	[SW-846 8021B]	Xylenes (total)
Certified	Yes	NJ	SHW06.05180	NPW, SCM	GC, Direct Injection or P & T, PID-HECD	[SW-846 8021B, Rev. 2, 12/96]	Dichloropropene (trans-1,3-)
Certified	Yes	NJ	SHW06.05240	NPW, SCM	GC, Direct hjection or P & T, PID-HECD	[SW-846 8021B, Rev. 2, 12/96]	Dichloroethene (cis-1,2-)
Certified	Yes	NJ	SHW06.05250	NPW, SCM	GC, Direct Injection or P & T, PID-HECD	[SW-846 8021B, Rev. 2, 12/96]	Dichloroethene (trans-1,2-)
Certified	Yes	NJ	SHW06.05270	NPW, SCM	GC, Direct Injection or P & T, PID-HECD	[SW-846 8021B, Rev. 2, 12/96]	Dichloropropene (cis-1,3-)
Certified	Yes	NJ	SHW06.05300	NPW, SCM	GC, Direct Injection or P & T, PID-HECD	[SW-846 8021B, Rev. 2, 12/96]	Tetrachloroethene
Certified	Yes	NJ	SHW06.05330	NPW, SCM	GC, Direct Injection or P & T, PID-HECD	[SW-846 8021B, Rev. 2, 12/96]	Trichloroethene
Certified	Yes	NJ	SHW06.05360	NPW, SCM	GC, Direct Injection or P & T, PID-HECD	[SW-846 8021B, Rev. 2, 12/96]	Methyl tert-butyl ether
Certified	Yes	NJ	SHW06.12010	NPW, SCM	GC, Extiaction, BCD or HECD, Capillary	[SW-846 8081A] [SW-846 8081B]	Aldrin
Certified	Yes	NJ	SHW06.12020	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8081A] [SW-846 8081B]	Alpha BHC
Certified	Yes	NJ	SHW06.12030	NPW, SCM	GC, Extiaction, ECD or HECD, Capiilary	[SW-846 8081A] [SW-846 8081B]	Beta BHC
Certified	Yes	NJ	SHW06.12040	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8081A] [SW-846 8081B]	Deita BHC
Certified	Yes	NJ	SHW06.12050	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8081A] [SW-846 8081B]	Lindane (gamma BHC)
Certified	Yes	NJ	SHW06.12060	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8081A] [SW-846 8081B]	Chlordane (technical)
Certified	Yes	NJ	SHW06.12070	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8081A] [SW-846 8081B]	Chlordane (alpha)
Certified	Yes	NJ	SHW06.12080	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8081A] [SW-846 8081B]	Clilordane (gamma)
Certified	Yes	NJ	SHW06.12090	NPW, SCM	GC, Extraotion, ECD or HECD, Capillary	[SW-846 8081A] [SW-846 8081B]	DDD (4,4'-)
Certified	Yes	NJ	SHW06.12100	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8081A] [SW-846 8081B]	DDE (4,4'-)
Certified	Yes	NJ	SHW06.12110	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8081A] [SW-846 8081B]	DDT (4,4'-)
Certified	Yes	NJ	SHW06.12120	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8081A] [SW-846 8081B]	Dieldrin
Certified	Yes	NJ	SHW06.12130	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8081A] [SW-846 8081B]	Endosulfan I

KEY: AE = Air and Emissions, BT = Biological Tissues, DW = Drinking Water, NPW = Non-Potable Water, SCM = Solid and Chemical Materials

New Jersey Department of Environmental Protection

National Environmental Laboratory Accreditation Program

ANNUAL CERTIFIED PARAMETER LIST AND CURRENT STATUS

Effective as of 02/24/2011 until 06/30/2011

Laboratory Name: ACCUTEST LABORATORIES Laboratory Number: 12129 Activity ID: NLC100009
2235 RT 130
BLDG B
Dayton, NJ 08810

Category: SIIW06 – Organic Parameters, Chromalography

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	SHW06.12140	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8081A] [SW-846 8081B]	Endosulfan II
Certified	Yes	NJ	SHW06.12150	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8081A] [SW-846 8081B]	Endosulfan sulfate
Certified	Yes	NJ	SHW06.12160	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8081A] [SW-846 8081B]	Endrin
Certified	Yes	NJ	SHW06.12170	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8081A] [SW-846 8081B]	Endrin aldehyde
Certified	Yes	NJ	SHW06.12180	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8081A] [SW-846 8081B]	Endrin ketone
Certified	Yes	NJ	SHW06.12190	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8081A] [SW-846 8081B]	Heptachlor
Certified	Yes	NJ	SHW06.12200	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8081A] [SW-846 8081B]	Heptachlor epoxide
Certified	Yes	NJ	SHW06.12210	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8081A] [SW-846 8081B]	Methoxychlor
Certified	Yes	NJ	SHW06.12212	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8081A] [SW-846 8081B]	Mirex
Certified	Yes	NJ	SHW06.12220	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 S0S1A] [SW-846 8081B]	Toxaphene
Certified	Yes	NJ	SHW06.13110	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8082, Rev. 0, 12/96]	PCB 1016
Certified	Yes	NJ	SHW06.13120	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8082, Rev. 0, 12/96]	PCB 1221
Certified	Yes	NJ	SHW06.13130	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8082, Rev. 0, 12/96]	PCB-1232
Certified	Yes	NJ	SHW06.13140	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8082, Rev. 0, 12/96]	PCB 1242
Certified	Yes	NJ	SHW06.13150	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8082, Rev. 0, 12/96]	PCB 1248
Certified	Yes	NJ	SHW06.13160	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8082, Rev. 0, 12/96]	PCB 1254
Certified	Yes	NJ	SHW06.13170	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8082, Rev. 0, 12/96]	PCB 1260
Applied	No	NJ	SHW06.13175	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8082A]	PCB-1262
Applied	No	NJ	SHW06.13180	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8082A]	PCB-1268
Certified	Yes	NJ	SHW06.16010	NPW, SCM	GC, Extraction or Direct Inject, FID	[SW-846 8100, Rev. 0, 9/86]	Acenaphthene
Certified	Yes	NJ	SHW06.16020	NPW, SCM	GC, Extraction or Direct Inject, FID	[SW-846 8100, Rev. 0, 9/86]	Acenaphthylene
Certified	Yes	NJ	SHW06.16030	NPW, SCM	GC, Extraction or Direct Inject, FID	[SW-846 8100, Rev. 0, 9/86]	Anthracene
Certified	Yes	NJ	SHW06.16040	NPW, SCM	GC, Extraction or Direct Inject, FID	[SW-846 8100, Rev. 0, 9/86]	Benzo(a)anthracene
Certified	Yes	NJ	SHW06.16050	NPW, SCM	GC, Extraction or Direct Inject, FID	[SW-846 8100, Rev. 0, 9/86]	Benzo(a)pyrene
Certified	Yes	NJ	SHW06.16060	NPW, SCM	GC, Extraction or Direct Inject, FID	[SW-846 8100, Rev. 0, 9/86]	Benzo(b)fluoranthene
Certified	Yes	NJ	SHW06.16070	NPW, SCM	GC, Extraction or Direct Inject, FID	[SW-846 8100, Rev. 0, 9/86]	Benzo(k)fluoranthene
Certified	Yes	NJ	SHW06.16080	NPW, SCM	GC, Extraction or Direct Inject, FID	[SW-846 8100, Rev. 0, 9/86]	Benzo(ghi)perylene
Certified	Yes	NJ	SHW06.16090	NPW, SCM	GC, Extraction or Direct Inject, FID	[SW-846 8100, Rev. 0, 9/86]	Chrysene
Certified	Yes	NJ	SHW06.16100	NPW, SCM	GC, Extraction or Direct Inject, FID	[SW-846 8100, Rev. 0, 9/86]	Dibenzo(a,h)anthracene
Certified	Yes	NJ	SHW06.16110	NPW, SCM	GC, Extraction or Direct Inject, FID	[SW-846 8100, Rev. 0, 9/86]	Fluoranthene
Certified	Yes	NJ	SHW06.16120	NPW, SCM	GC, Extraction or Direct Inject, FID	[SW-846 8100, Rev. 0, 9/86]	Fluorene
Certified	Yes	NJ	SHW06.16130	NPW, SCM	GC, Extraction or Direct Inject, FID	[SW-846 8100, Rev. 0, 9/86]	Indeno(1,2,3-cd)pyrene

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Effective as of 02/24/2011 until 06/30/2011

Laboratory Name: ACCUTEST LABORATORIES Laboratory Number: 12129 Activity ID: NLC100009
2235 RT 130
BLDG B
Dayton, NJ 08810

Category: SHW06 – Organic Parameters, Chromatography

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Methbd	Parameter Description
Certified	Yes	NJ	SHW06.16140	NPW, SCM	GC, Extraction or Direct Inject, FID	[SW-846 8100, Rev. 0, 9/86]	Naphthalene
Certified	Yes	NJ	SHW06.16150	NPW, SCM	GC, Extraction or Direct Inject, FID	[SW-846 8100, Rev. 0, 9/86]	Phenaathreue
Certified	Yes	NJ	SHW06.16160	NPW, SCM	GC, Extraction or Direct Inject, FID	[SW-846 8100, Rev. 0, 9/86]	Pyrene
Certified	Yes	NJ	SHW06.23010	NPW, SCM	GC, Extiaction, ECD, Capillary	[SW-846 8151A, Rev 1, 9/96]	Dalapon
Certified	Yes	NJ	SHW06.23020	NPW, SCM	GC, Extraction, ECD, Capillary	[SW-846 8151A, Rev 1, 9/96]	Dicamba
Certified	Yes	NJ	SHW06.23021	NPW, SCM	GC, Extraction, ECD, Capillary	[SW-846 8131A, Rev. 1, 9/96]	Dichlorprop
Certified	Yes	NJ	SHW06.23030	NPW, SCM	GC, Extraction, ECD, Capillary	[SW-846 8131A, Rev 1, 9/96]	Dinoseb
Certified	Yes	NJ	SHW06.23040	NPW, SCM	GC, Extraction, ECD, Capillary	[SW-846 8151A, Rev 1, 9/96]	D (2,4-)
Certified	Yes	NJ	SHW06.23041	NPW, SCM	GC, Extiaction, BCD, Capillary	[SW-846 8151A, Rev. 1, 9/96]	DB (2,4-)
Certified	Yes	NJ	SHW06.23050	NPW, SCM	GC, Extiaction, ECD, Capillary	[SW-846 8151A, Rev 1, 9/96]	T (2,4,5-)
Certified	Yes	NJ	SHW06.23060	NPW, SCM	GC, Extiaction, ECD, Capillary	[SW-846 8151A, Rev 1, 9/96]	TP (2,4,5-) (Silvex)
Certified	Yes	NJ	SHW06.23063	NPW, SCM	GC, Extraction, ECD, Capillary	[SW-846 8131A, Rev. 1, 9/96]	MCPA
Certllied	Yes	NJ	SHW06.23064	NPW, SCM	GC, Extraction, ECD, Capillary	[SW-846 8131A, Rev. 1, 9/96]	MCPP
Certified	Yes	NJ	SHW06.23066	NPW, SCM	GC, Extiaction, ECD, Capillary	(SW-846 8131A, Rev. 1, 9/96]	Pentachlorophenol
Certified	Yes	NJ	SHW06.23070	NPW, SCM	GC, Extiaction, ECD, Capillary	[SW-846 8151A, Rev 1, 9/96]	Picloram
Certified	Yes	NJ	SHW06.23100	NPW, SCM	GC, Headspace, FID	[OTHER J. Chrom. Sci. RSK-175]	Ethane
Certified	Yes	NJ	SHW06.23105	NPW, SCM	GC, Headspace, FID	[OTHER J. Chrom. Sci. RSK-175]	Elliene
Certified	Yes	NJ	SHW06.23110	NPW, SCM	GC, Headspace, FID	[OTHER J. Chrom. Sci. RSK-175]	Methane
Certified	Yes	NJ	SHW06.24110	NPW, SCM	Extraction, HPLC	[SW-846 8310, Rev. 0, 9/86]	Acenaphthene
Certified	Yes	NJ	SHW06.24120	NPW, SCM	Extiaction, HPLC	[SW-846 8310, Rev. 0, 9/86]	Acenaphthylene
Certified	Yes	NJ	SHW06.24130	NPW, SCM	Extraction, HPLC	[SW-846 8310, Rev. 0, 9/86]	Antiracene
Certified	Yes	NJ	SHW06.24140	NPW, SCM	Extraction, HPLC	[SW-846 8310, Rev. 0, 9/86]	Benzo(a)antluacene
Certified	Yes	NJ	SHW06.24150	NPW, SCM	Extraction, HPLC	[SW-846 8310, Rev. 0, 9/86]	Benzo(a)pyrene
Certified	Yes	NJ	SHW06.24160	NPW, SCM	Extiaction, HPLC	[SW-846 8310, Rev. 0, 9/86]	Benzo(b)fluoranthene
Certified	Yes	NJ	SHW06.24170	NPW, SCM	Extraction, HPLC	[SW-846 8310, Rev. 0, 9/86]	Benzo(ghi)perylene
Certified	Yes	NJ	SHW06.24180	NPW, SCM	Extraction, HPLC	[SW-846 8310, Rev. 0, 9/86]	Benzo(k)fluoranthene
Certified	Yes	NJ	SHW06.24190	NPW, SCM	Extiaction, HPLC	[SW-846 8310, Rev. 0, 9/86]	Chrysene
Certified	Yes	NJ	SHW06.24200	NPW, SCM	Extiaction, HPLC	[SW-846 8310, Rev. 0, 9/86]	Dibenzo(a,h)anthracene
Certified	Yes	NJ	SHW06.24210	NPW, SCM	Extiaction, HPLC	[SW-846 8310, Rev. 0, 9/86]	Fluoranthene
Certified	Yes	NJ	SHW06.24220	NPW, SCM	Extiaction, HPLC	[SW-846 8310, Rev. 0, 9/86]	Fluorene
Certified	Yes	NJ	SHW06.24230	NPW, SCM	Extraction, HPLC	[SW-846 8310, Rev. 0, 9/86]	Indeno(1,2,3-cd)pyrene
Certified	Yes	NJ	SHW06.24240	NPW, SCM	Extraction, HPLC	(SW-846 8310, Rev. 0, 9/86]	Naphthalene

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Laboratory Name: ACCUTEST LABORATORIES Laboratory Number: 12129 Activity ID: NLC100009
2235 RT 130
BLDG B
Dayton, NJ 08810

Category: SHW06 – Organic Parameters, Chromatography

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	SHW06.24250	NPW, SCM	Extraction, HPLC	[SW-846 8310, Rev. 0, 9/86]	Phenanthrene
Certified	Yes	NJ	SHW06.24260	NPW, SCM	Extraction, HPLC	[SW-846 8310, Rev. 0, 9/86]	Pyrene

Category: SHW07 – Organic Parameters, Chromatography/MS

Status	Eligible to Report NJ Data	State	Code	Matrix	Techniique Description	Approved Method	Parameter Description
Certified	Yes	NJ	SHW07.04004	NPW, SCM	GC/MS/SIM, Direct Aqueous Injection	[USER DEFINED SW-846 8260B]	Ethylene glycol
Certified	Yes	NJ	SHW07.04006	NPW, SCM	GC/MS/SIM, Direct Aqueous Injection	[USER DEFINED SW-846 8260B]	Propylene glycol
Certified	Yes	NJ	SHW07.04010	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Benzene
Certified	Yes	NJ	SHW07.04011	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Bromobenzene
Certified	Yes	NJ	SHW07.04012	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Butyl benzene (n-)
Certified	Yes	NJ	SHW07.04013	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Sec-bulylbenzene
Certified	Yes	NJ	SHW07.04014	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Tert-butylbenzene
Certified	Yes	NJ	SHW07.04020	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Chlorobenzene
Certified	Yes	NJ	SHW07.04022	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Chlorotoluene (2-)
Certified	Yes	NJ	SHW07.04023	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Chlorotoluene (4-)
Certified	Yes	NJ	SHW07.04030	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Dichlorobenzene (1,2-)
Certified	Yes	NJ	SHW07.04040	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Dichlorobenzene (1,3-)
Certified	Yes	NJ	SHW07.04050	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Dichlorobenzene (1,4-)
Certified	Yes	NJ	SHW07.04060	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Ethylbenzene
Certified	Yes	NJ	SHW07.04065	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Isopropylbenzene
Certified	Yes	NJ	SHW07.04067	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Propylbenzene (n-)
Certified	Yes	NJ	SHW07.04070	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Toluene
Certified	Yes	NJ	SHW07.04071	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Isopropyltoluene (4-)
Certified	Yes	NJ	SHW07.04072	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Trichlorobenzene (1,2,3-)
Certified	Yes	NJ	SHW07.04073	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Trimethylbenzene (1,2,4-)
Certified	Yes	NJ	SHW07.04074	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Trimethylbenzene (1,3,5-)
Certified	Yes	NJ	SHW07.04080	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Xylenes (total)
Certified	Yes	NJ	SHW07.04081	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Xylene (m-)
Certified	Yes	NJ	SHW07.04082	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Xylene (o-)

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2235 RT 130
BLDG B
Dayton, NJ 08810

Category: SHW07 – Organic Parameters, Chromatography/MS

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	SHW07.04083	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Xylene (p-)
Certified	Yes	NJ	SHW07.04087	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	tert-Amylmethyl ether [TAME]
Certified	Yes	NJ	SHW07.04088	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Allyl chloride
Certified	Yes	NJ	SHW07.04089	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Bromochloromethane
Certified	Yes	NJ	SHW07.04090	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Bromodichloromethane
Certified	Yes	NJ	SHW07.04100	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Bromoform
Certified	Yes	NJ	SHW07.04110	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Bromomethane
Certified	Yes	NJ	SHW07.04111	NPW, SCM	GC/MS, P&T, or Direct Injection, Capillary	[SW-846 8260B]	Cyclohexane
Certified	Yes	NJ	SHW07.04112	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Cyclohexanone
Certified	Yes	NJ	SHW07.04115	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Butadiene (2-chlorp-1,3-)
Certified	Yes	NJ	SHW07.04120	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Carbon tetrachloride
Certified	Yes	NJ	SHW07.04130	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Chloroethane
Certified	Yes	NJ	SHW07.04140	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Chloroethyl vinyl ether (2-)
Certified	Yes	NJ	SHW07.04150	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Chloroform
Certified	Yes	NJ	SHW07.04160	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Chloromethane
Certified	Yes	NJ	SHW07.04165	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Diethyl ether (Etiyl ether)
Certified	Yes	NJ	SHW07.04170	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Dichloropropene (trans-1,3-)
Certified	Yes	NJ	SHW07.04180	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Dibromochloromethane
Certified	Yes	NJ	SHW07.04185	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Dibromoethane (1,2-) (EDB)
Certified	Yes	NJ	SHW07.04186	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Dibromomethane
Certified	Yes	NJ	SHW07.04187	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Dibromo-3-chloropropane (1,2-)
Certified	Yes	NJ	SHW07.04190	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Dichlorodifluoromethane
Certified	Yes	NJ	SHW07.04200	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Dichloroethane (1,1-)
Certified	Yes	NJ	SHW07.04210	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Dichloroethane (1,2-)
Certified	Yes	NJ	SHW07.04220	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Dichloroethene (1,1-)
Certified	Yes	NJ	SHW07.04230	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Dichloroethene (trans-1,2-)
Certified	Yes	NJ	SHW07.04235	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Dichloroethene (cis-1,2-)
Certified	Yes	NJ	SHW07.04240	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Dichloropropane (1,2-)
Certified	Yes	NJ	SHW07.04241	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Dichloropropane (1,3-)
Certified	Yes	NJ	SHW07.04242	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Dichloropropane (2,2-)
Certified	Yes	NJ	SHW07.04249	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Dichloropropene (1,1-)
Certified	Yes	NJ	SHW07.04250	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Dichloropropene (cis-1,3-)

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New Jersey Department of Environmental Protection

National Environmental Laboratory Accreditation Program

ANNUAL CERTIFIED PARAMETER LIST AND CURRENT STATUS

Effective as of 02/24/2011 until 06/30/2011

Laboratory Name: ACCUTEST LABORATORIES Laboratory Number: 12129 Activity ID: NLC100009
2235 RT 130
BLDG B
Dayton, NJ 08810

Category: SHW07 -- Organic Parameters, Chromntography/MS

Status	Ellgible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	SHW07.04255	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Dichloro-2-butene (trans-1,4-)
Certified	Yes	NJ	SHW07.04257	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Diisopropyl Ether [DIPE]
Certified	Yes	NJ	SHW07.04258	NPW, SCM	GC/MS, P&T, or Direct hjection, Capillary	[SW-846 8260B]	Butanol (1-)
Certified	Yes	NJ	SHW07.04259	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Ethanol
Certified	Yes	NJ	SHW07.04260	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Methylene chloride (Dichloromethane)
Certified	Yes	NJ	SHW07.04265	NPW, SCM	GC/MS, P&T, or Direct Injection, Capillary	[SW-846 8260B]	Nitropropane (2-)
Certified	Yes	NJ	SHW07.04270	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Tetcachloroethane (1,1,2,2-)
Certified	Yes	NJ	SHW07.04280	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Tetrachloroethene
Certified	Yes	NJ	SHW07.04282	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Tetrahydrofuran
Certified	Yes	NJ	SHW07 04290	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Trichloroethane (1,1,1-)
Certified	Yes	NJ	SHW07.04300	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Trichloroethane (1,1,2-)
Certified	Yes	NJ	SHW07.04310	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Trichloroethene
Certified	Yes	NJ	SHW07.04320	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Trichlorofluoromethane
Certified	Yes	NJ	SHW07.04322	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Trichloro (1,1,2-) trifluoroethane (1,2,2-)
Certified	Yes	NJ	SHW07.04323	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Trichlorapropane (1,2,3-)
Certified	Yes	NJ	SHW07.04327	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Vinyl acetate
Certified	Yes	NJ	SHW07.04330	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Vinyl chloride
Certified	Yes	NJ	SHW07.04340	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Acetone
Certified	Yes	NJ	SHW07.04350	NPW, SCM	GC/MS, P & T or Direct hjection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Carbon disulfide
Certified	Yes	NJ	SHW07.04360	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Butanone (2-)
Certified	Yes	NI	SHW07.04364	NPW, SCM	GC/MS, P & T or Diect Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Ethyl-tert-bntyl Etiier [ETBE]
Certified	Yes	NJ	SHW07.04365	NPW, SCM	GC/MS, P & T or Direct hjection, Capillary	(SW-846 8260B, Rev. 2, 12/96]	Ethyl acetate
Certified	Yes	NJ	SHW07.04367	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Ethyl methacrylate
Certified	Yes	NJ	SHW07.04370	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Hexanone (2-)
Certified	Yes	NJ	SIIW07.0437I	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Methacrylonitrile
Certified	Yes	NJ	SHW07.04372	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Methyl acrylate
Certified	Yes	NJ	SHW07.04373	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Methyl methacrylate
Certified	Yea	NJ	SHW07.04374	NPW, SCM	GC/MS, P&T, or Direct Injection, Capillary	[SW-846 8260B]	Methyl acetate
Certified	Yes	NJ	SHW07.04375	NPW, SCM	GC/MS, P & T or Direct hjection, Capillary	[SW-846 S260B, Rev. 2, 12/96]	Methyl iodide
Certified	Yes	NJ	SHW07.04376	NPW, SCM	GC/MS, P & T or Diect Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Iso-butyl alcohol
Certified	Yes	NJ	SHW07.04379	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Pentachloroethane
Certified	Yes	NJ	SHW07.04380	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Pentanone (4-methyl-2-) (MIBK)

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2235 RT 130
BLDG B
Dayton, NJ 08810

Category: SHW07 -- Organic Parameters, Chromatography/MS

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	SHW07.04385	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Propionitrile
Certified	Yes	NJ	SHW07.04390	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Methyl tert-butyl ether
Certified	Yes	NJ	SHW07.04395	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Tert-butyl alcohol
Certified	Yes	NJ	SHW07.04398	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Acetonitrile
Certified	Yes	NJ	SHW07.04400	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	(SW-846 8260B, Rev. 2, 12/96]	Acrolein
Certified	Yes	NJ	SHW07.04410	NPW, SCM	GC MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Acrylonitrile
Certified	Yes	NJ	SHW07.04500	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rov. 2, 12/96]	Hexachlorobutadiene (1,3-)
Certified	Yes	NJ	SHW07.04530	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Hexachloroethane
Certified	Yes	NJ	SHW07.04535	NPW, SCM	GC/MS, P&T, or Direct Injection, Capillary	[SW-846 8260B]	Methylcyclohexane
Certified	Yes	NJ	SHW07.04540	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260C, Rev. 2, 12/96]	Naphthalene
Certified	Yes	NJ	SHW07.04550	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Styrene
Certified	Yes	NJ	SHW07.04560	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Tetrachloroethane (1,1,1,2-)
Certified	Yes	NJ	SHW07.04570	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Trichlorobenzene (1,2,4-)
Certified	Yes	NJ	SHW07.04572	NPW, SCM	GC/MS, Extract, or Direct Injection, Capillary	[SW-846 8260B]	Trimethylpentane (2,2,4-)
Certified	Yes	NJ	SHW07.04590	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Dioxane (1,4-)
Certified	Yes	NJ	SHW07.04660	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Alpha - terpineol
Certified	Yes	NJ	SHW07.04665	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Acetophenone
Certified	Yes	NJ	SHW07.04670	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Acetylaminofluorene (2-)
Certified	Yes	NJ	SHW07.04675	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Aminobiphenyl (4-)
Dropped	No	NJ	SHW07.04700	NPW, SCM	GC/MS, Extract or Dir hj, Capillary	[SW-846 8270C]	Benzyl chloride
Certified	Yes	NJ	SHW07.04702	NPW, SCM	GC/MS, Extract, or Direct Injection, Capillary	[SW-846 8270C] [SW-846 8270D]	Biphenyl (1,1'-)
Certified	Yes	NJ	SHW07.04705	NPW, SCM	GC/MS, Extract or Dir inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Chlorobenzilate
Certified	Yes	NJ	SHW07.04715	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Diallate (cis)
Certified	Yes	NJ	SHW07.04720	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Diallate (trans)
Certified	Yes	NJ	SHW07.04730	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	(SW-846 8270C] [SW-846 8270D]	Dibenz(a,h)aoridine
Certified	Yes	NJ	SHW07.04755	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] (SW-846 8270D]	Dichlorophenol (2,6-)
Certified	Yes	NJ	SHW07.04760	NPW, SCM	GC/MS, Extract or Dir hj, Capillary	[SW-846 8270C] [SW-846 8270D]	Dimethoate
Dropped	No	NJ	SHW07.04765	NPW, SCM	CC/MS, Extract or Dir Inj, Capillary	[SW-846 8270D]	Dimethylaminobenzene (N, N-)
Certified	Yes	NJ	SHW07.04767	NPW, SCM	GC/MS, Extiact or Dir hj, Capillary	[SW-846 8270C] [SW-846 8270D]	Dimethylaminoazobenzene
Certified	Yes	NJ	SHW07.04770	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Dimethylbenz(a)anthracene (7,12-)
Certified	Yes	NJ	SHW07.04780	NPW, SCM	GC/MS, Extiact or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Dinitiobenzene (1,3-)
Certified	Yes	NJ	SHW07.04785	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Dinoseb

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Laboratory Name: ACCUTEST LABORATORIES Laboratory Number: 12129 Activity ID: NLC100009
2235 RT 130
BLDG B
Dayton, NJ 08810

Category: SHW07 -- Organic Parameters, Chromatography/MS

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	SHW07.04790	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Disulfoton
Certified	Yes	NJ	SHW07.04810	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Isodrin
Certified	Yes	NJ	SHW07.04815	NPW, SCM	GC/MS, Extiact or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Isosafrole (cis-)
Certified	Yes	NJ	SHW07.04820	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Isosafrole (trans-)
Certified	Yes	NJ	SHW07.04825	NPW, SCM	GC/MS, Extiact or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Kepone
Certified	Yes	NJ	SHW07.04830	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Methanesulfonate (Ethyl-)
Certified	Yes	NJ	SHW07.04835	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Methanesulfonate (Methyl-)
Certified	Yes	NJ	SHW07.04845	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Methylcholanthrene (3-)
Certified	Yes	NJ	SHW07.04850	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Napthoquinone (1,4-)
Certified	Yes	NJ	SHW07.04855	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Napththylamine (1-)
Certified	Yes	NJ	SHW07.04860	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Napththylaraine (2-)
Certified	Yes	NJ	SHW07.04870	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	N-Nitroso-di-n-butylamioe
Certified	Yes	NJ	SHW07.04875	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	N-Nitrosomorpholine
Certified	Yes	NJ	SHW07.04880	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	N-Nitrosopiperidine
Certified	Yes	NJ	SHW07.048S5	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Parathion
Certified	Yes	NJ	SHW07.04890	NPW, SCM	GC/MS, Exhact or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Parathion methyl
Certified	Yes	NJ	SHW07.04895	NPW, SCM	GC/MS, Extract or Dir inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Pentaohlorobenzene
Certified	Yes	NJ	SHW07.04900	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270O]	Pentachloroethane
Certified	Yes	NJ	SHW07.04905	NPW, SCM	GC/MS, Extract or Dir inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Pentachloronitrobenzene
Certified	Yes	NJ	SHW07.04910	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Phenacetin
Certified	Yes	NJ	SHW07.04920	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Phenylethylamine (alpha, alpha-Dimethyl)
Certified	Yes	NJ	SHW07.04925	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Phorate
Certified	Yes	NJ	SHW07.04930	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Phosphorothioate (O,O,O-triethyl)
Certified	Yes	NJ	SHW07.04935	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] (SW-846 8270D]	Phosphorothioate (O,O-diethyl-O-2-pyrazinyl) [Tluanazin]
Certified	Yes	NJ	SHW07.04940	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Picoline (2-)
Certified	Yes	NJ	SHW07.04945	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Pronamide
Certified	Yes	NJ	SHW07.04950	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Quinoline -1-Oxide (4-Nitro)
Certified	Yes	NJ	SHW07.04955	NPW, SCM	OC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Safrole
Certified	Yes	NJ	SHW07.04975	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Tetrachlorobenzene (1,2,4,5-)
Certified	Yes	NJ	SHW07.04980	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Tetrachlorophenol (2,3,4,6-)
Certified	Yes	NJ	SHW07.04985	NPW, SCM	GC/MS, Exuact or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Toluidine (2-) (2-Methylaniline)

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Certified	Yes	NJ	SHW07.04990	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Toluidine (5-nitro-2-)
Certified	Yes	NJ	SHW07.04995	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Trinitrobenzene (1,3,5-)
Certified	Yes	NJ	SHW07.03004	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	N-Nilrosodiethylamine
Certified	Yes	NJ	SHW07.05005	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	N-Nitrosodimethylamine
Certified	Yes	NJ	SHW07.05006	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	N-Nitroso-di-n-propylamine
Certified	Yes	NJ	SHW07.05010	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	N-Nitrosodiphenylamine
Certified	Yes	NJ	SHW07.05011	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	N-Nitrosomethylethylamine
Certified	Yes	NJ	SHW07.03012	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	N-Nitrosopyrrolidine
Certified	Yes	NJ	SHW07.05020	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Diphenylamine
Certified	Yes	NJ	SHW07.05030	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Carbazole
Certified	Yes	NJ	SHW07.05038	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Benzidine
Certified	Yes	NJ	SHW07.05040	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Dichlorobenzidine (3,3'-)
Certified	Yes	NJ	SHW07.05045	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Diphenylhydrazine (1,2-)
Certified	Yes	NJ	SHW07.05048	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Aniline
Certified	Yes	NJ	SHW07.05050	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Chloraniline (4-)
Certified	Yes	NJ	SHW07.05060	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Nitroaniline (2-)
Certified	Yes	NJ	SHW07.05062	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Nitroaoiilne (3-)
Certified	Yes	NJ	SHW07.05063	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Nitroaniline (4-)
Certified	Yes	NJ	SHW07.05070	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Chloronaphthalene (2-)
Certified	Yes	NJ	SHW07.05080	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Hexachlorobenzene
Certified	Yes	NJ	SHW07.05090	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Hexachlorobutadiene (1,3-)
Certified	Yes	NJ	SHW07.05100	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Hexachlorocyclopentadiene
Certified	Yes	NJ	SHW07.05110	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Hexachloroethane
Certified	Yes	NJ	SHW07.05115	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Hexachloropropene
Certified	Yes	NJ	SHW07.05120	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Trichlorobenzene (1,2,4-)
Certified	Yes	NJ	SHW07.05130	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Bis (2-chloroethoxy) methane
Certified	Yes	NJ	SHW07.05132	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Bis (2-oliloroethyl) ether
Certified	Yes	NJ	SHW07.05140	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Bis (2-chloroisopropyl) ether
Certified	Yes	NJ	SHW07.03150	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Chlorophenyl-phenyl ether (4-)
Certified	Yes	NJ	SHW07.05160	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Bromophenyl-phenyl ether (4-)
Certified	Yes	NJ	SHW07.05170	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Dinitrotoluene (2,4-)
Certified	Yes	NJ	SHW07.05180	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Dinitrotoluene (2,6-)

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New Jersey Department of Environmental Protection

National Environmental Laboratory Accreditation Program

ANNUAL CERTIFIED PARAMETER LIST AND CURRENT STATUS

Effective as of 02/24/2011 until 06/30/2011

Laboratory Name: ACCUTEST LABORATORIES Laboratory Number: 12129 Activity ID: NLC100009
2235 RT 130
BLDG B
Dayton, NJ 08810

Category: SHW07 – Organic Parameters, Chromatography/MS

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	SHW07.05190	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Isophorone
Certified	Yes	NJ	SHW07.05200	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Nitrobenzene
Certified	Yes	NJ	SHW07.05210	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Butyl benzyl phthalate
Certified	Yes	NJ	SHW07.05220	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Bis (2-ethylhexyl) phthalate
Certified	Yes	NJ	SHW07.05230	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Diethyl phthalate
Certified	Yes	NJ	SHW07.05240	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Dimethyl phthalate
Certified	Yes	NJ	SHW07.05250	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Di-n-butyl phthalate
Certified	Yes	NJ	SHW07.05260	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Di-n-octyl phthalate
Certified	Yes	NJ	SHW07.05270	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Acenaphthene
Certified	Yes	NJ	SHW07.05280	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Anthracene
Certified	Yes	NJ	SHW07.05290	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Acenaphthylene
Certified	Yes	NJ	SHW07.05300	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Benzo(a)anthracene
Certified	Yes	NJ	SHW07.05310	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Benzo(a)pyrene
Certified	Yes	NJ	SHW07.05320	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Benzo(b)fluoranthene
Certified	Yes	NJ	SHW07.05330	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Benzo(ghi)perylene
Certified	Yes	NJ	SHW07.05340	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Benzo(k)fluoranthene
Certified	Yes	NJ	SHW07.05350	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Chrysene
Certified	Yes	NJ	SHW07.05360	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Dibenzo(a,h)anthracene
Certified	Yes	NJ	SHW07.05370	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Fluoranthene
Certified	Yes	NJ	SHW07.05380	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Fluorene
Certified	Yes	NJ	SHW07.05390	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Indeno(1,2,3-cd)pyrene
Certified	Yes	NJ	SHW07.03400	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Methylnaphthalene (2-)
Certified	Yes	NJ	SHW07.05410	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Naphthalene
Certified	Yes	NJ	SHW07.05420	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Phenanthrene
Certified	Yes	NJ	SHW07.05430	NPW, SCM	GC MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Pyrene
Certified	Yes	NJ	SHW07.05440	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Methyl phenol (4-chloro-3-)
Certified	Yes	NJ	SHW07.05450	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Chlorophenol (2-)
Certified	Yes	NJ	SHW07.05460	NPW, SCM	GC MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Dichlorophenol (2,4-)
Certified	Yes	NJ	SHW07.03470	NPW, SCM	GC MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Dimethylphenol (2,4-)
Certified	Yes	NJ	SHW07.05480	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Dinitrophenol (2,4-)
Certified	Yes	NJ	SHW07.05490	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Dinitrophenol (2-methyl-4,6-)
Certified	Yes	NJ	SHW07.05500	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	(SW-846 8270C] [SW-846 8270D]	Methylphenol (2-)

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National Environmental Laboratory Accreditation Program

ANNUAL CERTIFIED PARAMETER LIST AND CURRENT STATUS

Effective as of 02/24/2011 until 06/30/2011

Laboratory Name: ACCUTEST LABORATORIES Laboratory Number: 12129 Activity ID: NLC100009
2235 RT 130
BLDG B
Dayton, NJ 08810

Category: SHW07 – Organic Parometers, Chroraatography/MS

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	SHW07.05510	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Methylphenol (4-)
Certified	Yes	NJ	SHW07.05520	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Nitiophenol (2-)
Certified	Yes	NJ	SHW07.05530	NPW, SCM	GC/MS, Extract or Dir inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Nitrophenol (4-)
Certified	Yes	NJ	SHW07.05540	NPW, SCM	GC/MS, Extiact or Dir inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Pentachlorophenol
Certified	Yes	NJ	SHW07.05550	NPW, SCM	GC/MS, Extiact or Dir inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Phenol
Certified	Yes	NJ	SHW07.05560	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Trichlorophenol (2,4,5-)
Certified	Yes	NJ	SHW07.05570	NPW, SCM	GC/MS, Extiact or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Trichlorophenol (2,4,6-)
Certified	Yes	NJ	SHW07.05590	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Metirylphenol (3-)
Certified	Yes	NJ	SHW07.05600	NPW, SCM	GC/MS, Extiact or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Dibenzofiiran
Certified	Yes	NJ	SHW07.05691	NPW, SCM	GC/MS, Extract or Dir inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Dichlorobenzene (1,2-)
Certified	Yes	NJ	SHW07.05692	NPW, SCM	GC/MS, Extiact or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Dichlorobenzene (1,3-)
Certified	Yes	NJ	SHW07.05700	NPW, SCM	GC/MS, Extract or Dir inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Dichlorobenzene (1,4-)
Certified	Yes	NJ	SHW07.05705	NPW, SCM	GC/MS, Extiact or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Benzaldehyde
Certified	Yes	NJ	SHW07.05710	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Benzoic acid
Certified	Yes	NJ	SHW07.05720	NPW, SCM	GC/MS, Extiact or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Benzyl alcohol
Certified	Yes	NJ	SHW07.05725	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Decane (n-)
Certified	Yes	NJ	SHW07.05730	NPW, SCM	GC/MS, Extiact or Dir inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Octadecane (n-)
Certified	Yes	NJ	SHW07.05750	NPW, SCM	GC/MS, Extract or Dir inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Pyridine
Certified	Yes	NJ	SHW07.05765	NPW, SCM	GC/MS, Extract or Dir inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Caprolactam
Certified	Yes	NJ	SHW07.05990	NPW, SCM	GC/MS, Extract or Dir inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Atrazine
Certified	Yes	NJ	SHW07.05995	NPW, SCM	GC/MS, Extiact or Dir inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Hydroquinone
Certified	Yes	NJ	SHW07.07584	NPW, SCM	GC/MS/SIM, Exuact or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Benzo(a)snthracene
Certified	Yes	NJ	SHW07.07586	NPW, SCM	GC/MS/SIM, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Benzo(a)pyrene
Certified	Yes	NJ	SHW07.07588	NPW, SCM	GC/MS/SIM, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Benzo(b)fluoranthene
Certified	Yes	NJ	SHW07.07590	NPW, SCM	GC/MS/SIM, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Benzo(k)fluoranthene
Certified	Yes	NJ	SHW07.07594	NPW, SCM	GC/MS/SIM, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Dibenzo(a,h)anthracene
Certified	Yes	NJ	SHW07.07596	NPW, SCM	GC/MS/SIM, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Hexachlorobenzene
Certified	Yes	NJ	SHW07.07598	NPW, SCM	GC/MS/SIM, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Indeno(1,2,3-cd)pyrene
Certified	Yes	NJ	SHW07.07616	NPW, SCM	GC/MS/SIM, Extract or Dir Inj, Capillary	[SW-846 8270C] [SW-846 8270D]	Pentachlorophenol

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New Jersey Department of Environmental Protection

National Environmental Laboratory Accreditation Program

ANNUAL CERTIFIED PARAMETER LIST AND CURRENT STATUS

Effective as of 02/24/2011 until 06/30/2011

Laboratory Name: ACCUTEST LABORATORIES Laboratory Number: 12129 Activity ID: NLC100009
2235 RT 130
BLDG B
Dayton, NJ 08810

Category: SHW09 – Miscellaneous Parameters

Status	Eilgible to Report NJ Data	Stote	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	SHW09.02000	NPW, SCM	Distillation	[SW-846 9010C]	Cyanide
Certified	Yes	NJ	SHW09.03000	NPW, SCM	Distillation	[SW-846 9010C]	Cyanide - amenable to Cl2
Certified	Yes	NJ	SHW09.05000	NPW, SCM	Colorimetric, Automated	[SW-846 9012B, Rev. 2, 11/04]	Cyanide
Certified	Yes	NJ	SHW09.10100	NPW, SCM	Titration	[SW-846 9034, Rev. 0, 12/96]	Sulfides, acid sol. & insol.
Certified	Yes	NJ	SHW09.13050	NPW, SCM	Ion Chromatography	[SW-846 9056] [SW-846 9056A]	Sulfate
Certified	Yes	NJ	SHW09.14000	NPW, SCM	Elcctrometric	[SW-846 9040C, Rev. 3, 11/04]	pH - waste, >20% water
Certified	Yes	NJ	SHW09.19000	NPW, SCM	Infrared Spectrometry or FID	[SW-846 9060A, Rev. 1, 11/04]	Total organic carbon (TOC)
Certified	Yes	NJ	SHW09.21000	NPW, SCM	Colorimetric, Man, 4AAP Distillation	[SW-846 9065, Rev. 0, 9/86]	Phenols
Certified	Yes	NJ	SHW09.24100	NPW, SCM	Extraction & Gravimetric - LL or SPE	[SW-846 1664A, Rev. 1, 2/99]	Oil & grease - hem
Certified	Yes	NJ	SHW09.30250	NPW, SCM	Ion Chromatography	[SW-846 9056] [SW-846 9056A]	Bromide
Certified	Yes	NJ	SHW09.33100	NPW, SCM	Ion Chromatography	[SW-846 9056] [SW-846 9056A]	Chloride
Certified	Yes	NJ	SHW09.34150	NPW, SCM	Ion Chromatography	[SW-846 9056] [SW-846 9056A]	Fluoride
Certified	No	NJ	SHW09.34160	NPW, SCM	Ion Chromatography	[USER DEFINED EPA 314 (Modified fbr solid matrices)]	Perohlorate

Category: SHW04 – Inorganic Parameters

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	SHW04.03000	SCM	Acid Digestion, Soil Sediment & Sludge	[SW-846 3050B]	Metals
Certified	Yes	NJ	SHW04.03700	SCM	Chromium VI Digestion	[SW-846 3060A]	Metals
Certified	Yes	NJ	SHW04.33500	SCM	AA, Manual Cold Vapor	[SW-846 7471A] [SW-846 7471B]	Mercury - solid waste

Category: SIIW0S – Organic Parameters, Prep. / Screening

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	SHW05.03000	SCM	Soxhlet Extraction	[SW-846 3540C]	Semivolatile organics
Certified	Yes	NJ	SHW05.04200	SCM	Pressurized Fluid Extraction	[SW-846 3543] [SW-846 3545A]	Semivolatile organics
Certified	Yes	NJ	SHW05.05000	SCM	Ultrasonic Extraction	[SW-846 3550B] [SW-846 3550C]	Semivolatile organics
Certified	Yes	NJ	SHW05.06000	SCM	Waste Dilution	[SW-846 3580A]	Organics
Certified	Yes	NJ	SIIW05.07300	SCM	Closed System Purge & Trap	[SW-846 5035L]	Volatile organics - low cone.

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Laboratory Name: ACCUTEST LABORATORIES Laboratory Number: 12129 Activity ID: NLC100009
2235 RT 130
BLDG B
Dayton, NJ 08810

Category: SHW0S – Organic Parameters, Prep. / Screening

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	SHW05.07310	SCM	Methanol Extiact, Closed System P & T	[SW-846 5035H]	Volatile organics - high cone.
Certified	Yes	NJ	SHW05.10000	SCM	Cleanup-Alumina	[SW-846 3610B]	Semivolatile organics
Certified	Yes	NJ	SHW05.11000	SCM	Petroleum Waste, Cleanup Alumina	[SW-846 3611B]	Semivolatile organics
Certified	Yes	NJ	SHW05.12000	SCM	Cleanup-Florisil	[SW-846 3620B] [SW-846 3620C]	Semivolatile organics
Certified	Yes	NJ	SHW05.13000	SCM	Cleanup-Silica Gel	[SW-846 3630C, Rev. 3, 12/96]	Semivolatile organics
Certified	Yes	NJ	SHW05.14000	SCM	Cleanup-Gel Permeation	[SW-846 3640A, Rev. 1, 9/94]	Semivolatile organics
Certified	Yes	NJ	SHW05.15000	SCM	Cleanup-Acid/Base Partition	[SW-846 3650B, Rev. 2, 12/96]	Semivolatile organics
Certified	Yes	NJ	SHW05.16000	SCM	Cleanup-Sulfur Removal	[SW-846 3660B, Rev. 2, 12/96]	Semivolatile organics
Certified	Yes	NJ	SHW05.17000	SCM	Cleanup-Sulfuric Acid/KMnO4	[SW-846 3665A, Rev. 1, 12/96]	Semivolatile organics
Certified	Yes	NJ	SHW05.18000	SCM	Headspace, GC or GC/MS Screen	[SW-846 3810, Rev. 0, 9/86]	Volatile organics

Category: SHW09 – Miscellaneous Parameters

Status	Eligible to Report NJ Data	State	Code	Motrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	SHW09.08100	SCM	Extraction	[SW-846 9023, Rev. 0, 12/96]	Extractable organic halides (EOX)
Certified	Yes	NJ	SHW09.16000	SCM	Mix with Water or Calcium Chloride	[SW-846 9045C, Rev. 3, 1/95]	pH - soil and waste
Applied	No	NJ	SHW09.19100	SCM	Pyrolytic	[OTHER Lloyd Kahn]	Total organic carbon (TOC)
Certified	Yes	NJ	SHW09.25000	SCM	Extraction & Gravimetric	[SW-846 9071 B, Rev. 2, 5/99]	Oil & grease - sludge-hem
Certified	Yes	NJ	SHW09.26100	SCM	Combustion, Bomb Oxidation	[SW-846 5050, Rev. 0, 9/94]	Chlorine - total, solid waste
Certified	Yes	NJ	SHW09.28350	SCM	Bomb Calorimeter	[ASTM D-240]	Heat of combustion (BTU)
Certified	Yes	NJ	SHW09.29000	SCM	Flow-Through Paint Filter, Observation	[SW-846 9095, Rev. 0, 9/86]	Free liquid

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New Jersey Department of Environmental Protection

National Environmental Laboratory Accreditation Program

ANNUAL CERTIFIED PARAMETER LIST AND CURRENT STATUS

Effective as of 02/24/2011 until 06/30/2011

Laboratory Name: ACCUTEST LABORATORIES Laboratory Number: 12129 Activity ID: NLC100009
2235 RT 130
BLDG B
Dayton, NJ 08810

Category: SHW09 – Miscellaneous Parameters

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	SHW09.40000	SCM	Soils, Sodium Acetate	[SW-846 9081, Rev. 0, 9/86]	Cation-exchange capacity

Joseph F. Aiello, Chief

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State of New Jersey
Department of Environmental Protection

Certifies That

Alpha Analytical

Laboratory Certification ID # MA015

is hereby approved as a

Nationally Accredited Environmental Laboratory

to perform the analyses as indicated on the Annual Certified Parameter List which must accompany this certificate to be valid

having duly met the requirements of the

Regulations Governing The Certification Of Laboratories And Environmental Measurements N.J.A.C. 7:18 et. seq.

and

having been found compliant with the standards approved by the

The NELAC Institute

Expiration Date June 30, 2011

Joseph F. Aiello, Chief
Office of Quality Assurance

NJDEP is a NELAP Recognized Accreditation Body

Ttiis certificate is to be conspicuously displayed at the laboratory with the annual certified parameter list in a location on the premises visible to the public.
Consumers are urged lo verify the laboratory's current accreditation status with the State of NJ, NELAP.

New Jersey Department of Environmental Protection

National Environmental Laboratory Accreditation Program

ANNUAL CERTIFIED PARAMETER LIST AND CURRENT STATUS

Effective as of 01/03/2011 until 06/30/2011

Laboratory Name: ALPHA ANALYTICAL Laboratory Number: MA015 Activity ID: NLC100003
320 FORBES BLVD
MANSFIELD, MA 02048

Category: CAP03 -- Atmospheric Organic Parameters

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	CAP03.00180	AE	GC/MS, Canisters	[EPA TO-15]	Acetaldehyde
Certified	Yes	NJ	CAP03.00184	AE	GC/MS, Canisters	[EPA TO-15]	Acetone
Certified	Yes	NJ	CAP03.00185	AE	GC/MS, Canisters	[EPA TO-15]	Acetonitrile
Certified	Yes	NJ	CAP03.00195	AE	GC/MS, Canisters	[EPA TO-15]	Acrolein
Certified	Yes	NJ	CAP03.00210	AE	GC/MS, Canisters	[EPA TO-15]	Acrylonitrile
Certified	Yes	NJ	CAP03.00215	AE	GC/MS, Canisters	[EPA TO-15]	Allyl chloride
Certified	Yes	NJ	CAP03.00225	AE	GC/MS, Canisters	[EPA TO-15]	Benzene
Certified	Yes	NJ	CAP03.00230	AE	GC/MS, Canisters	(EPA TO-15]	Benzyl chloride
Certified	Yes	NJ	CAP03.00250	AE	GC/MS, Canisters	[EPA TO-15]	Bromodichloromethane
Certified	Yes	NJ	CAP03.00255	AE	GC/MS, Canisters	[EPA TO-15]	Bromoform
Certified	Yes	NJ	CAP03.00260	AE	GC/MS, Canisters	[EPA TO-15]	Bromomethane
Certified	Yes	NJ	CAP03.00265	AE	GC/MS, Canisters	[EPA TO-15]	Butadiene (1,3-)
Certified	Yes	NJ	CAP03.00270	AE	GC/MS, Canisters	[EPA TO-15]	Carbon disulfide
Certified	Yes	NJ	CAP03.00275	AE	GC/MS, Canisters	[EPA TO-15]	Carbon tetrachloride
Certified	Yes	NJ	CAP03.00300	AE	GC/MS, Canisters	[EPA TO-15]	Chlorobenzene
Certified	Yes	NJ	CAP03.00305	AE	GC/MS, Canisters	[EPA TO-15]	Chloroethane
Certified	Yes	NJ	CAP03.00310	AE	GC/MS, Canisters	[EPA TO-15]	Chloroform
Certified	Yes	NJ	CAP03.00315	AE	GC/MS, Canisters	[EPA TO-15]	Chloromethane
Certified	Yes	NJ	CAP03.00325	AE	GC/MS, Canisters	[EPA TO-15]	Chlorotoluene (2-)
Certified	Yes	NJ	CAP03.00335	AE	GC/MS, Canisters	[EPA TO-15]	Cyclohexane
Certified	Yes	NJ	CAP03.00342	AE	GC/MS, Canisters	[EPA TO-15]	Dibromochloromethane
Certified	Yes	NJ	CAP03.00345	AE	GC/MS, Canisters	[EPA TO-15]	Dibromo-3-chloropropane (1,2-)
Certified	Yes	NJ	CAP03.00350	AE	GC/MS, Canisters	[EPA TO-15]	Dibromoethane (1,2-) (EDB)
Certified	Yes	NJ	CAP03.00355	AE	GC/MS, Canisters	[EPA TO-15]	Dichlorobenzene (1,2-)
Certified	Yes	NJ	CAP03.00360	AE	GC/MS, Canisters	[EPA TO-15]	Dichlorobenzene (1,3-)
Certified	Yes	NJ	CAP03.00365	AE	GC/MS, Canisters	[EPA TO-15]	Dichlorobenzene (1,4-)
Certified	Yes	NJ	CAP03.00368	AE	GC/MS, Canisters	[EPA TO-15]	Dichlorodifluoromethane
Certified	Yes	NJ	CAP03.00370	AE	GC/MS, Canisters	[EPA TO-15]	Dichloroethane (1,1-)
Certified	Yes	NJ	CAP03.00375	AE	GC/MS, Canisters	[EPA TO-15]	Dichloroethane (1,2-)
Certified	Yes	NJ	CAP03.00380	AE	GC/MS, Canisters	[EPA TO-15]	Dichloroethene (1,1-)
Certified	Yes	NJ	CAP03.00384	AE	GC/MS, Canisters	[EPA TO-15]	Dichloroethene (cis-1,2-)

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New Jersey Department of Environmental Protection

National Environmental Laboratory Accreditation Program

ANNUAL CERTIFIED PARAMETER LIST AND CURRENT STATUS

Effective as of 01/03/2011 until 06/30/2011

Laboratory Name: ALPHA ANALYTICAL Laboratory Number: MA015 Activity ID: NLC100003
320 FORBES BLVD
MANSFIELD, MA 02048

Category: CAP03 -- Atmospheric Organic Parameters

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	CAP03.00385	AE	GC/MS, Canisters	[EPA TO-15]	Dichloroethene (trans-1,2-)
Certified	Yes	NJ	CAP03.00390	AE	GC/MS, Canisters	[EPA TO-15]	Dichlorofluoromethane
Certified	Yes	NJ	CAP03.00395	AE	GC/MS, Canisters	[EPA TO-15]	Dichloropropane (1,2-)
Certified	Yes	NJ	CAP03.00400	AE	GC/MS, Canisters	[EPA TO-15]	Dichloropropene (cis-1,3-)
Certified	Yes	NJ	CAP03.00401	AE	GC/MS, Canisters	[EPA TO-15]	Dichloropropene (trans-1,3-)
Certified	Yes	NJ	CAP03.00405	AE	GC/MS, Canisters	[EPA TO-15]	Dichlorotetrafluoroethane (1,2-)
Certified	Yes	NJ	CAP03.00440	AE	GC/MS, Canisters	[EPA TO-15]	Dioxane (1,4-)
Certified	Yes	NJ	CAP03.00451	AE	GC/MS, Canisters	[EPA TO-15]	Ethanol
Certified	Yes	NJ	CAP03.00452	AE	GC/MS, Canisters	[EPA TO-15]	Ethyl acetate
Certified	Yes	NJ	CAP03.00465	AE	OC/MS, Canisters	[EPA TO-15]	Ethylbenzene
Certified	Yes	NJ	CAP03.00480	AE	GC/MS, Canisters	[EPA TO-15]	Ethyltoluene (4-)
Certified	Yes	NJ	CAP03.00490	AE	GC/MS, Canisters	[EPA TO-15]	Hexachlorobutadiene (1,3-)
Certified	Yes	NJ	CAP03.00498	AE	GC/MS, Canisters	[EPA TO-15]	Hexanone (2-)
Certified	Yes	NJ	CAP03.00500	AE	GC/MS, Canisters	[EPA TO-15]	Heptane (n-)
Certified	Yes	NJ	CAP03.00505	AE	OC/MS, Canisters	[EPA TO-15]	Hexane (n-)
Certified	Yes	NJ	CAP03.00511	AE	GC/MS, Canisters	[EPA TO-15]	Isopropanol
Certified	Yes	NJ	CAP03.00515	AE	GC/MS, Canisters	[EPA TO-15]	Isopropylbenzene
Certified	Yes	NJ	CAP03.00520	AE	GC/MS, Canisters	[EPA TO-15]	Methyl alcohol (Methanol)
Certified	Yes	NJ	CAP03.00525	AE	GC/MS, Canisters	[EPA TO-15]	Methyl ethyl ketone
Certified	Yes	NJ	CAP03.00535	AE	GC/MS, Canisters	[EPA TO-15]	Methyl isobutyl ketone (MIBK)
Certified	Yes	NJ	CAP03.00550	AE	GC/MS, Canisters	[EPA TO-15]	Methyl tert-butyl ether
Certified	Yes	NJ	CAP03.00555	AE	GC/MS, Canisters	[EPA TO-15]	Methylene chloride (Dichloromethane)
Certified	Yes	NJ	CAP03.00567	AE	GC/MS, Canisters	[EPA TO-15]	Naphthalene
Certified	Yes	NJ	CAP03.00612	AE	GC/MS, Canisters	[EPA TO-15]	Propylene
Certified	Yes	NJ	CAP03.00625	AE	GC/MS, Canisters	[EPA TO-15]	Styrene
Certified	Yes	NJ	CAP03.00635	AE	GC/MS, Canisters	[EPA TO-15]	Trichlorobenzene (1,2,4-)
Certified	Yes	NJ	CAP03.00640	AE	GC/MS, Canisters	[EPA TO-15]	Trimethylbenzene (1,3,5-)
Certified	Yes	NJ	CAP03.00645	AE	GC/MS, Canisters	[EPA TO-15]	Trimethylbenzene (1,2,4-)
Certified	Yes	NJ	CAP03.00650	AE	GC/MS, Canisters	[EPA TO-15]	Trimethylpentane (2,2,4-)
Certified	Yes	NJ	CAP03.00652	AE	GC/MS, Canisters	[EPA TO-15]	Tert-butyl alcohol
Certified	Yes	NJ	CAP03.00655	AE	GC/MS, Canisters	[EPA TO-15]	Tetrachloroethane (1,1,2,2-)
Certified	Yes	NJ	CAP03.00660	AE	GC/MS, Canisters	[EPA TO-15]	Tetrachloroethene

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ANNUAL CERTIFIED PARAMETER LIST AND CURRENT STATUS

Effective as of 01/03/2011 until 06/30/2011

Laboratory Name: ALPHA ANALYTICAL Laboratory Number: MA015 Activity ID: NLC100003
320 FORBES BLVD
MANSFIELD, MA 02048

Category: CAP03 -- Atmospheric Organic Parameters

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	CAP03.00662	AE	GC/MS, Canisters	[EPA TO-15]	Tetrahydrofuran
Certified	Yes	NJ	CAP03.00665	AE	GC/MS, Canisters	[EPA TO-15]	Toluene
Certified	Yes	NJ	CAP03.00670	AE	GC/MS, Canisters	[EPA TO-15]	Trichloroethane (1,1,1-)
Certified	Yes	NJ	CAP03.00675	AE	GC/MS, Canisters	[EPA TO-15]	Trichloroethane (1,1,2-)
Certified	Yes	NJ	CAP03.00680	AE	GC/MS, Canisters	[EPA TO-15]	Trichloroethene
Certified	Yes	NJ	CAP03.00684	AE	GC/MS, Canisters	[EPA TO-15]	Trichlorofluoromethane
Certified	Yes	NJ	CAP03.00685	AE	GC/MS, Canisters	[EPA TO-15]	Trichloro (1,1,2-) trifluoroethane (1,2,2-)
Certified	Yes	NJ	CAP03.00700	AE	GC/MS, Canisters	[EPA TO-15]	Vinyl acetate
Certified	Yes	NJ	CAP03.00705	AE	GC/MS, Canisters	[EPA TO-15]	Vinyl bromide
Certified	Yes	NJ	CAP03.00710	AE	GC/MS, Canisters	[EPA TO-15]	Vinyl chloride
Certified	Yes	NJ	CAP03.00715	AE	GC/MS, Canisters	[EPA TO-15]	Xylene (m-)
Certified	Yes	NJ	CAP03.00720	AE	GC/MS, Canisters	[EPA TO-15]	Xylene (o-)
Certified	Yes	NJ	CAP03.00725	AE	GC/MS, Canisters	[EPA TO-15]	Xylene (p-)
Certified	Yes	NJ	CAP03.00730	AE	GC/MS, Canisters	[EPA TO-15]	Xylenes (total)
Applied	No	NJ	CAP03.06850	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Acetone
Applied	No	NJ	CAP03.06852	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Allyl chloride
Applied	No	NJ	CAP03.06854	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Benzene
Applied	No	NJ	CAP03.06856	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Bromodichloromethane
Applied	No	NJ	CAP03.06858	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Bromoform
Applied	No	NJ	CAP03.06860	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Bromomethane
Applied	No	NJ	CAP03.06862	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Butadiene (1,3-)
Applied	No	NJ	CAP03.06864	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Carbon disulfide
Applied	No	NJ	CAP03.06866	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Carbon tetrachloride
Applied	No	NJ	CAP03.06868	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Chlorobenzene
Applied	No	NJ	CAP03.06870	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Chloroethane
Applied	No	NJ	CAP03.06872	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Chloroform
Applied	No	NJ	CAP03.06874	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Chloromethane
Applied	No	NJ	CAP03.06876	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Chlorotoluene (2-)
Applied	No	NJ	CAP03.06878	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Cyclohexane
Applied	No	NJ	CAP03.06880	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Dibromochloromethane
Applied	No	NJ	CAP03.06882	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Dibromoethane (1,2-) (EDB)
Applied	No	NJ	CAP03.06884	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Dichlorobenzene (1,2-)

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320 FORBES BLVD
MANSFIELD, MA 02048

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Applied	No	NJ	CAP03.06886	AE	OC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Dichlorobenzene (1,3-)
Applied	No	NJ	CAP03.06888	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Dichlorobenzene (1,4-)
Applied	No	NJ	CAP03.06890	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Dichlorodifluoromethane
Applied	No	NJ	CAP03.06892	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Dichloroethane (1,1-)
Applied	No	NJ	CAP03.06894	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Dichloroethane (1,2-)
Applied	No	NJ	CAP03.06896	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Dichloroethene (1,1-)
Applied	No	NJ	CAP03.06898	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Dichloroethene (cis-1,2-)
Applied	No	NJ	CAP03.06900	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Dichloroethene (trans-1,2-)
Applied	No	NJ	CAP03.06902	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Dichloropropane (1,2-)
Applied	No	NJ	CAP03.06904	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Dichloropropene (cis-1,3-)
Applied	No	NJ	CAP03.06906	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Dichloropropene (trans-1,3-)
Applied	No	NJ	CAP03.06908	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Dichlorotetrafluoroethane (1,2-)
Applied	No	NJ	CAP03.06910	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Dioxane (1,4-)
Applied	No	NJ	CAP03.06912	AE	OC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Ethanol
Applied	No	NJ	CAP03.06914	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Ethylbenzene
Applied	No	NJ	CAP03.06916	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Ethyltoluene (4-)
Applied	No	NJ	CAP03.06918	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Heptane (n-)
Applied	No	NJ	CAP03.06920	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Hexachlorobutadiene (1,3-)
Applied	No	NJ	CAP03.06922	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Hexane (n-)
Applied	No	NJ	CAP03.06924	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Isopropanol
Applied	No	NJ	CAP03.06926	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Methylene chloride (Dichloromethane)
Applied	No	NJ	CAP03.06928	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Methyl ethyl ketone
Applied	No	NJ	CAP03.06930	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Methyl isobutyl ketone (MIBK)
Applied	No	NJ	CAP03.06932	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Methyl methacrylate
Applied	No	NJ	CAP03.06934	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Methyl tert-butyl ether
Applied	No	NJ	CAP03.06936	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Styrene
Applied	No	NJ	CAP03.06938	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Tert-butyl alcohol
Applied	No	NJ	CAP03.06940	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Tetrachloroethane (1,1,2,2-)
Applied	No	NJ	CAP03.06942	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Tetrachloroethene
Applied	No	NJ	CAP03.06944	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Tetrahydrofuran
Applied	No	NJ	CAP03.06946	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Toluene
Applied	No	NJ	CAP03.06948	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Trichlorobenzene (1,2,4-)

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320 FORBES BLVD
MANSFIELD, MA 02048

Category: CAP03 – Atmospheric Organic Parameters

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Applied	No	NJ	CAP03.06950	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Trichloroethane (1,1,1-)
Applied	No	NJ	CAP03.06952	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Trichloroethane (1,1,2-)
Applied	No	NJ	CAP03.06954	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Trichloroethene
Applied	No	NJ	CAP03.06956	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Trichlorofluoromethane
Applied	No	NJ	CAP03.06958	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Trichloro (1,1,2-) trifluoroethane (1,2,2-)
Applied	No	NJ	CAP03.06960	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Trimethylbenzene (1,2,4-)
Applied	No	NJ	CAP03.06962	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Trimethylbenzene (1,3,5-)
Applied	No	NJ	CAP03.06964	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Trimethylpentane (2,2,4-)
Applied	No	NJ	CAP03.06966	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Vinyl bromide
Applied	No	NJ	CAP03.06968	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Vinyl chloride
Applied	No	NJ	CAP03.06970	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Xylene (m- + p-)
Applied	No	NJ	CAP03.06972	AE	GC/MS, Canisters	[OTHER NJDEP-LLTO-15-3/2009]	Xylene (o-)

Category: SHW04 – Inorganic Parameters

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	LA	SHW04.47105	BT	ICP/MS	[SW-846 6020]	Tin

Category: SHW0S – Organic Parameters, Prep. / Screening

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Apphed	No	LA	SHW05.10000	BT	Cleanup-Alumina	[SW-846 3610B, Rev. 3, 12/96]	Semivolatile organics

Category: SHW07 – Organic Parameters, Chromatography/MS

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	LA	SHW07.04702	BT	GC/MS, Extract, or Direct hjection, Capillary	[SW-846 8270C]	Biphenyl (1,1'-)

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320 FORBES BLVD
MANSFIELD, MA 02048

Category: SHW04 -- Inorganic Parameters

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	LA	SHW04.44001	BT, NPW	ICP/MS	[SW-846 6020, Rev. 0, 9/94]	Stiontium
Certified	Yes	LA	SHW04.05500	BT, NPW, SCM	ICP/MS	[SW-846 6020, Rev. 0, 9/94]	Aluminum
Certified	Yes	LA	SHW04.07000	BT, NPW, SCM	ICP/MS	[SW-846 6020, Rev. 0, 9/94]	Antimony
Certified	Yes	LA	SHW04.09500	BT, NPW, SCM	ICP/MS	[SW-846 6020, Rev. 0, 9/94]	Arsenic
Certified	Yes	LA	SHW04.12000	BT, NPW, SCM	ICP/MS	[SW-846 6020, Rev. 0, 9/94]	Barium
Certified	Yes	LA	SHW04.14000	BT, NPW, SCM	ICP/MS	[SW-846 6020, Rev. 0, 9/94]	Beryllium
Certified	Yes	LA	SHW04.16000	BT, NPW, SCM	ICP/MS	[SW-846 6020, Rev. 0, 9/94]	Cadmium
Certified	Yes	LA	SHW04.17505	BT, NPW, SCM	ICP/MS	[SW-846 6020, Rev. 0, 9/94]	Calcium
Certified	Yes	LA	SHW04.19000	BT, NPW, SCM	ICP/MS	[SW-846 6020, Rev. 0, 9/94]	Chromium
Certified	Yes	LA	SHW04.23000	BT, NPW, SCM	ICP/MS	[SW-846 6020, Rev. 0, 9/94]	Cobalt
Certified	Yes	LA	SHW04.25000	BT, NPW, SCM	ICP/MS	[SW-846 6020, Rev. 0, 9/94]	Copper
Certified	Yes	LA	SHW04.26005	BT, NPW, SCM	ICP/MS	[SW-846 6020, Rev. 0, 9/94]	iron
Certified	Yes	LA	SHW04.30505	BT, NPW, SCM	ICP/MS	[SW-846 6020, Rev. 0, 9/94]	Magnesium
Certified	Yes	LA	SHW04.31600	BT, NPW, SCM	ICP/MS	[SW-846 6020, Rev. 0, 9/94]	Manganese
Certified	Yes	LA	SHW04.34005	BT, NPW, SCM	ICP/MS	[SW-846 6020, Rev. 0, 9/94]	Molybdenum
Certified	Yes	LA	SHW04.36000	BT, NPW, SCM	ICP/MS	[SW-846 6020, Rev. 0, 7/92]	Nickel
Certified	Yes	LA	SHW04.38505	BT, NPW, SCM	ICP/MS	[SW-846 6020, Rev. 0, 9/94]	Potassium
Certified	Yes	LA	SHW04.40600	BT, NPW, SCM	ICP/MS	[SW-846 6020, Rev. 0, 9/94]	Selenium
Certified	Yes	LA	SHW04.41500	BT, NPW, SCM	ICP/MS	[SW-846 6020, Rev. 0, 9/94]	Silver
Certified	Yes	LA	SHW04.45500	BT, NPW, SCM	ICP/MS	[SW-846 6020, Rev. 0, 9/94]	Thallium
Certified	Yes	LA	SHW04.47505	BT, NPW, SCM	ICP/MS	[SW-846 6020, Rev. 0, 9/94]	Vanadium
Certified	Yes	LA	SHW04.49500	BT, NPW, SCM	ICP/MS	[SW-846 6020, Rev. 0, 9/94]	Zinc

Category: SHW0S -- Organic Parameters, Prep. / Screening

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	LA	SHW05.01000	BT, NPW, SCM	Separatory Funnel Extraction	[SW-846 3510C, Rev. 3, 12/96]	Semivolatile organics
Certified	Yes	LA	SHW05.13000	BT, NPW, SCM	Cleanup-Silica Gel	[SW-846 3630C, Rev. 3, 12/96]	Semivolatile organics
Certified	Yes	LA	SHW05.14000	BT, NPW, SCM	Cleanup-Gel Permeation	[SW-846 3640A, Rev. 1, 9/94]	Semivolatile organics

KEY: AE = Air and Emissions, BT = Biological Tissues, DW = Drinking Water, NPW = Non-Potable Water, SCM = Solid and Chemical Materials

New Jersey Department of Environmental Protection

National Environmental Laboratory Accreditation Program

ANNUAL CERTIFIED PARAMETER LIST AND CURRENT STATUS

Effective as of 01/03/2011 until 06/30/2011

Laboratory Name: ALPHA ANALYTICAL Laboratory Number: MA015 Activity ID: NLC100003
320 FORBES BLVD
MANSFIELD, MA 02048

Category: SHW07 -- Organic Parameters, Chromatography/MS

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	LA	SHW07.05070	BT, NPW, SCM	GC/MS, Extract or Dir hj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Chloronaphthalene (2-)
Certified	Yes	LA	SHW07.05270	BT, NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Acenaphthene
Certified	Yes	LA	SHW07.05280	BT, NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Anthracene
Certified	Yes	LA	SHW07.05290	BT, NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Acenaphthylene
Certified	Yes	LA	SHW07.05300	BT, NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Benzo(a)anthracene
Certified	Yes	LA	SHW07.05310	BT, NPW, SCM	GC/MS, Extract or Dir hj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Benzo(a)pyrene
Certified	Yes	LA	SHW07.05320	BT, NPW, SCM	CC/MS, Exiract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Benzo(b)fluoranthene
Certified	Yes	LA	SHW07.05330	BT, NPW, SCM	GC/MS, Extiact or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Benzo(ghi)perylene
Certified	Yes	LA	SHW07.05340	BT, NPW, SCM	GC/MS, Extiact or Dir hj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Benzo(k)fluoranthene
Certified	Yes	LA	SHW07.05350	BT, NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Chrysene
Certified	Yes	LA	SHW07.05360	BT, NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Dibenzo(a,h)anthraoene
Certified	Yes	LA	SHW07.05370	BT, NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Fluoranthene
Certified	Yes	LA	SHW07.05380	BT, NPW, SCM	GC/MS, Extract pr Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Fluorene
Certified	Yes	LA	SHW07.05390	BT, NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Indeno(1,2,3-cd)pyrene
Certified	Yes	LA	SHW07.05400	BT, NPW, SCM	GC/MS, Extract or Dir hj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Methylnaphthalene (2-)
Certified	Yes	LA	SHW07.05410	BT, NPW, SCM	GC/MS, Extract or Dir hj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Naphthalene
Certified	Yes	LA	SHW07.05420	BT, NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Phenanthrene
Certified	Yes	LA	SHW07.05430	BT, NPW, SCM	GC/MS, Extract or Dir hj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Pyrene
Certified	Yes	LA	SHW07.05600	BT, NPW, SCM	GC/MS, Extract or Dir hj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Dibenzofuran

Category: SHW0S -- Organic Parameters, Prep. / Screening

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	LA	SHW0S.05220	BT, SCM	Microscale Solvent Extraction - Solids	[SW-846 3570]	Semivolatile organics

Category: SHW04 -- Inorganic Parameters

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	LA	SHW04.01500	NPW	Acid Digestion/Aqueous Samples, ICP, FLAA	[SW-846 3010A, Rev. 1, 7/92]	Metals, Total

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Laboratory Name: ALPHA ANALYTICAL Laboratory Number: MA015 Activity ID: NLC100003
320 FORBES BLVD
MANSFIELD, MA 02048

Category: SHW04 -- Inorganic Parameters

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	LA	SHW04.02000	NPW	Acid Digestion For GFAA, Aqueous	[SW-846 3020A, Rev. 1, 7/92]	Metals
Certified	Yes	LA	SHW04.02100	NPW	Acid Digestion For GFAA, Micro asst Aqueous	[SW-846 3015, Rev. 0, 9/94]	Metals
Certified	Yes	LA	SHW04.15101	NPW	ICP/MS	[SW-846 6020, Rev. 0, 9/94]	Boron

Category: SHW0S -- Organic Parameters, Prep. / Screening

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Applied	No	LA	SHW05.02000	NPW	Continuous Liquid-Liquid Extraction	[SW-846 3520C, Rev. 3, 12/96]	Semivolatile organics

Category: SHW07 -- Organic Paramcters, Chromatography/MS

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	LA	SHW07.04087	NPW	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B]	tert-Amylmethyl ether [TAME]
Certified	Yes	LA	SHW07.04187	NPW	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B]	Dibromo-3-chloropropane (1,2-)
Certified	Yes	LA	SHW07.04322	NPW	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B]	Trichloro (1,1,2-) trifluoroethane (1,2,2-)
Certified	Yes	LA	SHW07.04372	NPW	GC/MS, P & T or Direct hjection, Capillary	[SW-846 8260B]	Methyl acrylate

Category: WPP02 -- Inorg. Parameters, Nutrients and Demands

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	LA	WPP02.01500	NPW	Electrometric or Color Tihation	(SM 2320 B]	Alkalinity as CaCO3
Certified	Yes	LA	WPP02.08050	NPW	ICP/MS	[EPA 200.8]	Calcium
Certified	Yes	LA	WPP02.24050	NPW	ICP/MS	[EPA 200.8]	Magnesium
Certified	Yes	LA	WPP02.36550	NPW	ICP/MS	[EPA 200.8]	Potassium
Certified	Yes	LA	WPP02.39000	NPW	Gravimehic, 103-105 Degrees C, Post Washing	[SM 2540 D]	Residue - nonfilterable (TSS)
Certified	Yes	LA	WPP02.40100	NPW	Gravimetric, 500 Degrees C	[SM 2540 G]	Total, fixed, and volatile solids (SQAR)
Certified	Yes	LA	WPP02.44050	NPW	ICP/MS	[EPA 200.8]	Sodium
Certified	Yes	LA	WPP02.45500	NPW	Wheatstone Bridge	[EPA 120.1] [SM 2510 B]	Specific conductance

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320 FORBES BLVD
MANSFIELD, MA 02048

Category: WPP02 -- Inorg. Parameters, Nutrients and Demands

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	LA	WPP02.50000	NPW	Nephelometric	[EPA 180.1]	Turbidity

Category: WPP04 -- Inorganic Parameters, Metals

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	LA	WPP04.02100	NPW	ICP/MS	[EPA 200.8]	Aluminum
Certified	Yes	LA	WPP04.04600	NPW	ICP/MS	[EPA 200.8]	Antimony
Certified	Yes	LA	WPP04.05700	NPW	ICP/MS	[EPA 200.8]	Arsenic
Certified	Yes	LA	WPP04.08200	NPW	ICP/MS	[EPA 200.8]	Barium
Certified	Yes	LA	WPP04.11100	NPW	ICP/MS	[EPA 200.8]	Beryllium
Certified	Yes	LA	WPP04.13600	NPW	ICP/MS	[EPA 200.8]	Cadmium
Certified	Yes	LA	WPP04.18100	NPW	ICP/MS	[EPA 200.8]	Chromium
Certified	Yes	LA	WPP04.19600	NPW	ICP/MS	[EPA 200.8]	Cobalt
Certified	Yes	LA	WPP04.21600	NPW	ICP/MS	[EPA 200.8]	Copper
Certified	Yes	LA	WPP04.26550	NPW	ICP/MS	[EPA 200.8]	Iron
Certified	Yes	LA	WPP04.28100	NPW	ICP/MS	[EPA 200.8]	Lead
Certified	Yes	LA	WPP04.31100	NPW	ICP/MS	[EPA 200.8]	Manganese
Certified	Yes	LA	WPP04.33000	NPW	Manual Cold Vapor	[EPA 245.1]	Mercury
Certified	Yes	LA	WPP04.33200	NPW	Purge & Trap Atomic Fluorescence	[EPA 1631E]	Mercury
Certified	Yes	LA	WPP04.35200	NPW	ICP/MS	[EPA 200.8]	Molybdenum
Certified	Yes	LA	WPP04.37600	NPW	ICP/MS	[EPA 200.8]	Nickel
Certified	Yes	LA	WPP04.45600	NPW	ICP/MS	[EPA 200.8]	Selenium
Certified	Yes	LA	WPP04.48200	NPW	ICP/MS	[EPA 200.8]	Silver
Certified	Yes	LA	WPP04.50100	NPW	ICP/MS	[EPA 200.8]	Thallium
Certified	Yes	LA	WPP04.51200	NPW	ICP/MS	[EPA 200.8]	Tin
Certified	Yes	LA	WPP04.54100	NPW	ICP/MS	[EPA 200.8]	Vanadium
Certified	Yes	LA	WPP04.56600	NPW	ICP/MS	[EPA 200.8]	Zinc

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Laboratory Name: ALPHA ANALYTICAL Laboratory Number: MA015 Activity ID: NLC100003
320 FORBES BLVD
MANSFIELD, MA 02048

Category: SHW02 -- Characteristics of Hazardous Waste

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	LA	SHW02.03000	NPW, SCM	Aqueous Waste, Potentiometric	[SW-846 9040B, Rev. 2, 1/95]	Cortosivity - pH waste, >20% water
Certified	Yes	NJ	SHW02.08000	NPW, SCM	Synthetic PPT Leachate Procedure	[SW-846 1312]	Metals - organics

Category: SHW04 -- Inorganic Parameters

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	LA	SHW04.28000	NPW, SCM	ICP/MS	[SW-846 6020, Rev. 0, 9/94]	Lead
Certified	Yes	LA	SHW04.43005	NPW, SCM	ICP/MS	[SW-846 6020, Rev. 0, 9/94]	Sodium

Category: SHW0S -- Organic Parameters, Prep. / Screening

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	LA	SHW05.06000	NPW, SCM	Waste Dilution	[SW-846 3580A, Rev. 1, 7/92]	Organics
Certified	Yes	LA	SHW05.07000	NPW, SCM	Purge & Trap Aqueous	[SW-846 5030B, Rev. 2, 12/96]	Volatile organics
Certified	Yes	LA	SHW05.07300	NPW, SCM	Closed System Purge & Trap	[SW-846 5035L, Rev. 0, 12/96]	Volatile organics - low cone.
Certified	Yes	LA	SHW05.07310	NPW, SCM	Methanol Extract, Closed System P & T	[SW-846 5035H, Rev. 0, 12/96]	Volatile organics - high cone.
Certified	Yes	LA	SHW05.16000	NPW, SCM	Cleanup-Sulfur Removal	[SW-S46 3660B, Rev. 2, 12/96]	Semivolatile organics
Certified	Yes	LA	SHW05.17000	NPW, SCM	Cleanup-Sulfuric Acid/KMnO4	[SW-846 3665A, Rev. 1, 12/96]	Semivolatile organics

Category: SHW06 -- Organic Parameters, Chromatography

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	LA	SHW06.04500	NPW, SCM	Extraction, GC, FID	[SW-846 8015B, Rev. 2, 12/96]	Diesel range organic
Certified	Yes	LA	SHW06.12010	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8081A, Rev. 1, 12/96]	Aldrin
Certified	Yes	LA	SHW06.12020	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8081A, Rev. 1, 12/96]	Alpha BHC
Certified	Yes	LA	SHW06.12030	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8081A, Rev. 1, 12/96]	Beta BHC
Certified	Yes	LA	SHW06.12040	NPW, SCM	GC, Extiaction, ECD or HECD, Capillary	[SW-846 8081A, Rev. 1, 12/96]	Deita BHC
Certified	Yes	LA	SHW06.12050	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8081A, Rev. 1, 12/96]	Lindane (gamma BHC)

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Laboratory Name: ALPHA ANALYTICAL Laboratory Number: MA015 Activity ID: NLC100003
320 FORBES BLVD
MANSFIELD, MA 02048

Category: SHW06 -- Organic Parameters, Chromatography

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	LA	SHW06.12060	NPW, SCM	GC, Extiaction, ECD or HECD, Capillary	[SW-846 8081A, Rev. 1, 12/96]	Chlordane (technical)
Certified	Yes	LA	SHW06.12070	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8081A, Rev. 1, 12/96]	Chlordane (alpha)
Certified	Yes	LA	SHW06.12080	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8081A, Rev. 1, 12/96]	Chlordane (gamma)
Certified	Yes	LA	SHW06.12090	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8081A, Rev. 1, 12/96]	DDD (4,4'-)
Certified	Yes	LA	SHW06.12100	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8081A, Rev. 1, 12/96]	DDE (4,4'-)
Certified	Yes	LA	SHW06.12110	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8081A, Rev. 1, 12/96]	DDT (4,4'-)
Certified	Yes	LA	SHW06.12120	NPW, SCM	GC, Extraction, ECD or HBCD, Capillary	[SW-846 8081A, Rev. 1, 12/96]	Dieldrin
Certified	Yes	LA	SHW06.12130	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8081A, Rev. 1, 12/96]	Endosulfan I
Certified	Yes	LA	SHW06.12140	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	(SW-846 8081A, Rev. 1, 12/96]	Endosulfan II
Certified	Yes	LA	SHW06.12150	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	(SW-846 8081A Rev. 1, 12/96]	Endosulfan sulfate
Certified	Yes	LA	SHW06.12160	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8081A, Rev. 1, 12/96]	Endrin
Certified	Yes	LA	SHW06.12170	NPW, SCM	GC, Exoaction, ECD or HECD, Capillary	[SW-846 8081A, Rev. 1, 12/96]	Endrin aldehyde
Certified	Yes	LA	SHW06.12180	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8081A, Rev. 1, 12/96]	Endrin ketone
Certified	Yes	LA	SHW06.12190	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8081A, Rev. 1, 12/96]	Heptachlor
Certified	Yes	LA	SHW06.12200	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8081A, Rev. 1, 12/96]	Heprachlor epoxide
Certified	Yes	LA	SHW06.12210	NPW, SCM	GC, Extiaction, ECD or HECD, Capillary	(SW-846 8081A, Rev. 1, 12/96]	Methoxychlor
Certified	Yes	LA	SHW06.12220	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8081A, Rev. 1, 12/96]	Toxaphene
Certified	Yes	LA	SHW06.13110	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8082, Rev. 0, 12/96]	PCB 1016
Certified	Yes	LA	SHW06.13120	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8082, Rev. 0, 12/96]	PCB 1221
Certified	Yes	LA	SHW06.13130	NPW, SCM	OC, Extraction, ECD or HECD, Capillary	[SW-846 8082, Rev. 0, 12/96]	PCB 1232
Certified	Yes	LA	SHW06.13140	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8082, Rev. 0, 12/96]	PCB 1242
Certified	Yes	LA	SHW06.13150	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8082, Rev. 0, 12/96]	PCB 1248
Certified	Yes	LA	SHW06.13160	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	(SW-846 8082, Rev. 0, 12/96]	PCB 1254
Certified	Yes	LA	SHW06.13170	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8082, Rev. 0, 12/96]	PCB 1260
Certified	Yes	LA	SHW06.13200	NPW, SCM	GC, Extraction, ECD or HECD, Capillary	[SW-846 8082, Rev. 0, 12/96]	PCB Congeners (19)

Category: SHW07 -- Organic Parameters, Chromatography/MS

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	LA	SHW07.04010	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Benzene

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Certified	Yes	LA	SHW07.04011	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Bromobenzene
Certified	Yes	LA	SHW07.04012	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Butyl benzene (n-)
Certified	Yes	LA	SHW07.04013	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Sec-butylbenzene
Certified	Yes	LA	SHW07.04014	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	(SW-846 8260B, Rev. 2, 12/96]	Tert-butylbenzene
Certified	Yes	LA	SHW07.04020	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Chlorobenzene
Certified	Yes	LA	SHW07.04022	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B]	Chlorotoluene (2-)
Certified	Yes	LA	SHW07.04023	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B]	Chlorotoluene (4-)
Certified	Yes	LA	SHW07.04030	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Dichlorobenzene (1,2-)
Certified	Yes	LA	SHW07.04040	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Dichlorobenzene (1,3-)
Certified	Yes	LA	SHW07.04050	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Dichlorobenzene (1,4-)
Certified	Yes	LA	SHW07.04060	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Ethylbenzene
Certified	Yes	LA	SHW07.04065	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Isopropylbenzene
Certified	Yes	LA	SHW07.04067	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Propylbenzene (n-)
Certified	Yes	LA	SHW07.04070	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Toluene
Certified	Yes	LA	SHW07.04071	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Isopropyltoluene (4-)
Certified	Yes	LA	SHW07.04072	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96)	Trichlorobenzene (1,2,3-)
Certified	Yes	LA	SHW07.04073	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Trimethylbenzene (1,2,4-)
Certified	Yes	LA	SHW07.04074	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Trimethylbenzene (1,3,5-)
Certified	Yes	LA	SHW07.04080	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Xylenes (total)
Certified	Yes	LA	SHW07.04088	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Allyl chloride
Certified	Yes	LA	SHW07.04089	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Bromochloromethane
Certified	Yes	LA	SHW07.04090	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Bromodichloromethane
Certified	Yes	LA	SHW07.04100	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	(SW-846 8260B, Rev. 2, 12/96]	Bromoform
Certified	Yes	LA	SHW07.04110	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Bromomethane
Certified	Yes	LA	SHW07.04120	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	(SW-846 8260B, Rev. 2, 12/96]	Carbon tetrachloride
Certified	Yes	LA	SHW07.04130	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Chloroethane
Certified	Yes	LA	SHW07.04140	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Chloroethyl vinyl ether (2-)
Certified	Yes	LA	SHW07.04150	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Chloroform
Certified	Yes	LA	SHW07.04160	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Chloromethane
Certified	Yes	LA	SHW07.04165	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Diethyl ether (Ethyl ether)
Certified	Yes	LA	SHW07.04170	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Dichloropropene (tians-I,3-)
Certified	Yes	LA	SHW07.04180	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Dibromochloromethane

KEY: AE = Air and Emissions, BT = Biological Tissues, DW = Drinking Water, NPW = Non-Potable Water, SCM = Solid and Chemical Materials

New Jersey Department of Environmental Protection

National Environmental Laboratory Accreditation Program

ANNUAL CERTIFIED PARAMETER LIST AND CURRENT STATUS

Effective as of 01/03/2011 until 06/30/2011

Laboratory Name: ALPHA ANALYTICAL Laboratory Number: MA015 Activity ID: NLC100003
320 FORBES BLVD
MANSFIELD, MA 02048

Category: SHW07 -- Organic Parameters, Chromatography/MS

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	LA	SHW07.04185	NPW, SCM	GC/MS, P & T or Direct hjection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Dibromoethane (1,2-) (EDB)
Certified	Yes	LA	SHW07.04186	NPW, SCM	GC/MS, P & T or Direct hjection, Capillary	[SW-846 8260B, Rev. 2, 12/96)	Dibromomethane
Certified	Yes	LA	SHW07.04190	NPW, SCM	GC/MS, P & T or Direct hjection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Dichlorodifluoromethane
Certified	Yes	LA	SHW07.04200	NPW, SCM	GC/MS, P & T or Direct hjection, Capillary	(SW-846 8260B, Rev. 2, 12/96]	Dichloroethane (1,1-)
Certified	Yes	LA	SHW07.04210	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Dichloroethane (1,2-)
Certified	Yes	LA	SHW07.04220	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	(SW-846 8260B, Rev. 2, 12/96]	Dichloroethene (1,1-)
Certified	Yes	LA	SHW07.04230	NPW, SCM	GC/MS, P & T or Direct hjection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Dichloroethene (tians-1,2-]
Certified	Yes	LA	SHW07.04235	NPW, SCM	GC/MS, P & T or Direct hjection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Dichloroethene (cis-1,2-)
Certified	Yes	LA	SHW07.04240	NPW, SCM	GC/MS, P & T or Direct hjection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Dichloropropane (1,2-)
Certified	Yes	LA	SHW07.04241	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B]	Dichloropropane (1,3-)
Certified	Yes	LA	SHW07.04242	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Dichloropropane (2,2-)
Certified	Yes	LA	SHW07.04249	NPW, SCM	GC/MS, P & T or Direct hjection, Capillary	[SW-846 8260B]	Dichloropropene (1,1-)
Certified	Yes	LA	SHW07.04250	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Dichloropropene (cis-1,3-)
Certified	Yes	LA	SHW07.04259	NPW, SCM	GC/MS, P & T or Direct hjection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Ethanol
Certified	Yes	LA	SHW07.04260	NPW, SCM	GC/MS, P & T or Direct hjection, Capillary	(SW-846 8260B, Rev. 2, 12/96]	Methylene chloride (Dichloromethane)
Certified	Yes	LA	SHW07.04270	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Tetrachloroethane (1,1,2,2-)
Certified	Yes	LA	SHW07.04280	NPW, SCM	GC/MS, P & T or Direct hjection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Tetrachloroethene
Certified	Yes	LA	SHW07.04290	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Trichloroethane (1,1,1-)
Certified	Yes	LA	SHW07.04300	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Trichloroethane (1,1,2-)
Certified	Yes	LA	SHW07.04310	NPW, SCM	GC/MS, P & T or Direct hjection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Trichloroethene
Certified	Yes	LA	SHW07.04320	NPW, SCM	GC/MS, P & T or Direct hjection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Trichlorofluoromethane
Certified	Yes	LA	SHW07.04325	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	(SW-846 8260B, Rev. 2, 12/96]	Trichloropropane (1,2,3-)
Certified	Yes	LA	SHW07.04327	NPW, SCM	GC/MS, P & T or Direct hjection, Capillary	(SW-846 8260B, Rev. 2, 12/96]	Vinyl acetate
Certified	Yes	LA	SHW07.04330	NPW, SCM	GC/MS, P & T or Direct hjection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Vinyl chloride
Certified	Yes	LA	SHW07.04340	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Acetone
Certified	Yes	LA	SHW07.04350	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Carbon disulfide
Certified	Yes	LA	SHW07.04360	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Butanone (2-)
Certified	Yes	LA	SHW07.04365	NPW, SCM	GC/MS, P & T or Direct hjection, Capillary	(SW-846 8260B, Rev. 2, 12/96]	Ethyl acetate
Certified	Yes	LA	SHW07.04367	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Ethyl methacrylate
Certified	Yes	LA	SHW07.04370	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Hexanone (2-)
Certified	Yes	LA	SHW07.04376	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Iso-butyl alcohol
Certified	Yes	LA	SHW07.04380	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Pentanone (4-methyl-2-) (MIBK)

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New Jersey Department of Environmental Protection

National Environmental Laboratory Accreditation Program

ANNUAL CERTIFIED PARAMETER LIST AND CURRENT STATUS

Effective as of 01/03/2011 until 06/30/2011

Laboratory Name: ALPHA ANALYTICAL Laboratory Number: MA0I5 Activity ID: NLC100003
320 FORBES BLVD
MANSFIELD, MA 02048

Category: SHW07 -- Organic Parameters, Chromatography/MS

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	LA	SHW07.04390	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Methyl tert-butyl ether
Certified	Yes	LA	SHW07.04395	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Tert-butyl alcbhol
Certified	Yes	LA	SHW07.04398	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Acetonhrile
Certified	Yes	LA	SHW07.04400	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	(SW-846 8260B, Rev. 2, 12/96]	Acrolein
Certified	Yes	LA	SHW07.04410	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Acrylonitiile
Certified	Yes	LA	SHW07.04500	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Hexachlorobutadiene (1,3-)
Certified	Yes	LA	SHW07.04530	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Hexachloroethane
Certified	Yes	LA	SHW07.04540	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260C, Rev. 2, 12/96]	Naphthalene
Certified	Yes	LA	SHW07.04560	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96)	Tetrachloroelhane (1,1,1,2-)
Certified	Yes	LA	SHW07.04570	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Trichlorobenzene (1,2,4-)
Certified	Yes	LA	SHW07.04580	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Nitrobenzene
Certified	Yes	LA	SHW07.04590	NPW, SCM	GC/MS, P & T or Direct Injection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Dioxane (1,4-)
Certified	Yes	LA	SHW07.04665	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C]	Acetophenone
Certified	Yes	LA	SHW07.04975	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C]	Tetrachlorobenzene (1,2,4,5-)
Certified	Yes	LA	SHW07.05004	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	N-Nitiosodiethylamine
Certified	Yes	LA	SHW07.05005	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	N-Nitrosodimethylamine
Certified	Yes	LA	SHW07.05006	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	N-Nitroso-di-n-propylamine
Certified	Yes	LA	SHW07.05010	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	N-Nitrosodiphenylamine
Certified	Yes	LA	SHW07.05011	NPW, SCM	GC/MS, Extract dr Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	N-Nitiosomethylethylamine
Certified	Yes	LA	SHW07.05012	NPW, SCM	GC/MS, Extiact or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	N-Nitrosopyrrolidine
Certified	Yes	LA	SHW07.05020	NPW, SCM	GC/MS, Extract or Dir Inj, Capillay	[SW-846 8270C, Rev. 3, 12/96]	Diphenylamine
Certified	Yes	LA	SHW07.05030	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	(SW-846 8270C, Rev. 3, 12/96]	Carbazole
Certified	Yes	LA	SHW07.05038	NPW, SCM	GC/MS, Extract or Dir bij, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Benzidine
Certified	Yes	LA	SHW07.05040	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Dichiorobenzidine (3,3'-)
Certified	Yes	LA	SHW07.05048	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Aniline
Certified	Yes	LA	SHW07.05050	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Chloranlline (4-)
Certified	Yes	LA	SHW07.05060	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Nitroaniline (2-)
Certified	Yes	LA	SHW07.05062	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Nitroanlline (3-)
Certified	Yes	LA	SHW07.05063	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Nitroanlline (4-)
Certified	Yes	LA	SHW07.05080	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Hexachlorobenzene
Certified	Yes	LA	SHW07.05090	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Hexachlorobutadiene (1,3-)
Certified	Yes	LA	SHW07.05100	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Hexachlorocyclopentadiene

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New Jersey Department of Environmental Protection

National Environmental Laboratory Accreditation Program

ANNUAL CERTIFIED PARAMETER LIST AND CURRENT STATUS

Effective as of 01/03/2011 until 06/30/2011

Laboratory Name: ALPHA ANALYTICAL Laboratory Number: MA015 Activity ID: NLC100003
320 FORBES BLVD
MANSFIELD, MA 02048

Category: SHW07 -- Organic Parameters, Chromatography/MS

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	LA	SHW07.05110	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Hexachloroethane
Certified	Yes	LA	SHW07.05120	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Trichlorobenzene (1,2,4-)
Certified	Yes	LA	SHW07.05130	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	(SW-846 8270C, Rev. 3, 12/96]	Bis (2-chloroethoxy) methane
Certified	Yes	LA	SHW07.05132	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Bis (2-chlorocthyl) ether
Certified	Yes	LA	SHW07.05140	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	(SW-846 8270C, Rev. 3, 12/96]	Bis (2-chloroisopropyl] ether
Certified	Yes	LA	SHW07.05150	NPW, SCM	GC/MS, Extract or Dir hj, Capillary	(SW-846 8270C, Rev. 3, 12/96]	Chlorophenyl-phenyl ether (4-)
Certified	Yes	LA	SHW07.05160	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Bromophenyl-phenyl ether (4-)
Certified	Yes	LA	SHW07.05170	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Dinitrotoluene (2,4-)
Certified	Yes	LA	SHW07.05180	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	(SW-846 8270C, Rev. 3, 12/96]	Dinitrotoluene (2,6-)
Certified	Yes	LA	SHW07.05190	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	(SW-846 8270C, Rev. 3, 12/96]	Isophorone
Certified	Yes	LA	SHW07.05200	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Nitrobenzene
Certified	Yes	LA	SHW07.05210	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Butyl benzyl phthalate
Certified	Yes	LA	SHW07.05220	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Bis (2-ethylhexyl) phthalate
Certified	Yes	LA	SHW07.05230	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Diethyl phthalate
Certified	Yes	LA	SHW07.05240	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96)	Dimethyl phthalate
Certified	Yes	LA	SHW07.05250	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	(SW-846 8270C, Rev. 3, 12/96]	Di-n-butyl phthalate
Certified	Yes	LA	SHW07.05260	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Di-n-octyl phthalate
Certified	Yes	LA	SHW07.05440	NPW, SCM	GC/MS, Extract or Dir hj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Methyl phenol (4-chloro-3-)
Certified	Yes	LA	SHW07.05450	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Chlorophenol (2-)
Certified	Yes	LA	SHW07.05460	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	(SW-846 8270C, Rev. 3, 12/96]	Dichlorophenol (2,4-)
Certified	Yes	LA	SHW07.05470	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	(SW-846 8270C, Rev. 3, 12/96]	Dimethylphenol (2,4-)
Certified	Yes	LA	SHW07.05480	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Dinitrophenol (2,4-)
Certified	Yes	LA	SHW07.05490	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Dinitrophenol (2-methyl-4,6-)
Certified	Yes	LA	SHW07.05500	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Methylphenol (2-)
Certified	Yes	LA	SHW07.05510	NPW, SCM	GC/MS, Extract or Dir hj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Methylphenol (4-)
Certified	Yes	LA	SHW07.05520	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Nitrophenol (2-)
Certilied	Yes	LA	SHW07.05530	NPW, SCM	GC/MS, Extract or Dir hj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Nitrophenol (4-)
Certified	Yes	LA	SHW07.05540	NPW, SCM	GC/MS, Extract or Dir hj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Pentachlorophenol
Certified	Yes	LA	SHW07.05550	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Phenol
Certified	Yes	LA	SHW07.05560	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Trichlorophenol (2,4,5-)
Certified	Yes	LA	SHW07.05570	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Trichlorophenol (2,4,6-)
Certified	Yes	LA	SHW07.05590	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Methylphenol (3-)

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Effective as of 01/03/2011 until 06/30/2011

Laboratory Name: ALPHA ANALYTICAL Laboratory Number: MA015 Activity ID: NLC100003
320 FORBES BLVD
MANSFIELD, MA 02048

Category: SHW07 -- Organic Parameters, Chromatography/MS

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	LA	SHW07.05691	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Dichlorobenzene (1,2-)
Certified	Yes	LA	SHW07.05692	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Dichlorobenzene (1,3-)
Certified	Yes	LA	SHW07.05700	NPW, SCM	GC/MS, Extiact or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Dichlorobenzene (1,4-)
Certified	Yes	LA	SHW07.05710	NPW, SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Benzoic acid
Certified	Yes	LA	SHW07.05720	NPW, SCM	GC/MS, Extract or Dir hij, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Benzyl alcohol
Certified	Yes	LA	SHW07.05750	NPW, SCM	GC/MS, Extiact or Dir Inj, Capillary	[SW-846 8270C, Rev. 3, 12/96]	Pyridine

Category: SHW09 -- Miscellaneous Parameters

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	LA	SHW09.03000	NPW, SCM	Distillation	[SW-846 9010B, Rev. 2, 12/96]	Cyanide - amenable to Cl2
Certified	Yes	LA	SHW09.04100	NPW, SCM	Titrimetric/Manual Spectrophotometric	[SW-846 9014, Rev. 0, 12/96]	Cyanide

Category: SHW02 -- Characteristics of Hazardous Waste

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	LA	SHW02.07000	SCM	TCLP, Toxicity Procedure, Shaker	[SW-846 1311, Rev. 0, 7/92]	Metals

Category: SHW04 -- Inorganic Parameters

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	LA	SHW04.03000	SCM	Acid Digestion, Soil Sediment & Sludge	[SW-846 3050B, Rev. 2, 12/96]	Metals
Certified	Yes	LA	SHW04.03500	SCM	Microwave Acid Digest: Soil Sediment & Sludge	[SW-846 3051, Rev. 0, 9/94]	Metals
Certified	Yes	LA	SHW04.03700	SCM	Chromium VI Digestion	[SW-846 3060A, Rev. 1, 12/96]	Metals
Certified	Yes	LA	SHW04.21000	SCM	Colorimetric	[SW-846 7196A, Rev. 1, 7/92]	Chromium (VI)
Certified	Yes	LA	SHW04.33000	SCM	AA, Manual Cold Vapor	[SW-846 7470A, Rev. 1, 9/94)	Mercury - liquid waste
Certified	Yes	LA	SHW04.33500	SCM	AA, Manual Cold Vapor	[SW-846 7471A, Rev. 1, 9/94]	Mercury - solid waste
Certified	Yes	LA	SHW04.33800	SCM	Atomic Fluorescence	[SW-846 7474]	Mercury - soils/sediments

KEY: AE = Air and Emissions, BT = Biological Tissues, DW = Drinking Water, NPW = Non-Potable Water, SCM = Solid and Chemical Materials

New Jersey Department of Environmental Protection

National Environmental Laboratory Accreditation Program

ANNUAL CERTIFIED PARAMETER LIST AND CURRENT STATUS

Effective as of 01/03/2011 until 06/30/2011

Laboratory Name: ALPHA ANALYTICAL Laboratory Number: MA015 Activity ID: NLC100003
320 FORBES BLVD
MANSFIELD, MA 02048

Category: SHW0S -- Organic Parameters, Prep. / Screening

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	NJ	SHW05.03000	SCM	Soxhlet Extiaction	[SW-846 3540C]	Semivolatile organics
Applied	No	LA	SHW05.12000	SCM	Cleanup-Florisil	[SW-846 3620B, Rev. 2, 12/96]	Semivolatile organics

Category: SHW07 -- Organic Parameters, Chromatography/MS

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	LA	SHW07.04550	SCM	GC/MS, P & T or Direct hjection, Capillary	[SW-846 8260B, Rev. 2, 12/96]	Styrene
Certified	Yes	LA	SHW07.05045	SCM	GC/MS, Extract or Dir Inj, Capillary	[SW-846 8270C]	Diphenylhydrazine (1,2-)

Category: SHW09 -- Miscellaneous Parameters

Status	Eligible to Report NJ Data	State	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	Yes	LA	SHW09.02000	SCM	Distillation	[SW-846 9010B, Rev. 2, 12/96]	Cyanide
Certified	Yes	LA	SHW09.16000	SCM	Mix with Water or Calcium Chloride	[SW-846 9045C, Rev. 3, 1/95]	pH - soil and waste
Certified	Yes	LA	SHW09.19000	SCM	Infrared Spectrometry or FID	[SW-846 9060, Rev. 0, 9/86]	Total organic carbon (TOC)

Joseph F. Aiello, Chief

KEY: AE = Air and Emissions, BT = Biological Tissues, DW = Drinking Water, NPW = Non-Potable Water, SCM = Solid and Chemical Materials

Phillip Worby
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810

SOIL-70 Final Report

Soil/Hazardous Waste Proficiency Testing

Soil Study

Open Date: 04/19/10

Close Date: 06/03/10

Report Issued Date: 06/24/10

June 24, 2010

Phillip Worby
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810

Enclosed is your final report for ERA's SOIL-70 Proficiency Testing (PT) study. Your final report includes an evaluation of all results submitted by your laboratory to ERA.

Data Evaluation Protocols: All analytes in ERA's SOIL-70 Proficiency Testing (PT) study have been evaluated using the following tiered approach. If the analyte is listed in the most current National Environmental Laboratory Accreditation Conference (NELAC) PT Field of Testing tables, the eyaluation was completed by comparing the reported result to the acceptance limits generated using the criteria contained in the NELAC FoPT tables. If the analyte is not included in the NELAC FoPT tables, the reported result has been evaluated using the procedures outlined in ERA's Standard Operating Procedure for the Generation of Performance Acceptance Limits (SOP 0260).

Corrective Action Help: As part of your accreditation(s), you may be required to identify the root cause of any "Not Acceptable" results, implement the necessary corrective actions, and then satisfy your PT requirements by participating in a Supplemental (QuiK™ Response) or future ERA PT study. ERA's technical staff is available to help your laboratory resolve any technical issues that may be impairing your PT performance and possibly affecting your routine data quality. Our laboratory and technical staff have well over three hundred years of collective experience in performing the full range of environmental analyses. As part of our technical support, ERA offers QC samples that can be helpful in helping you work through your technical issues.

Thank you for your participation in ERA's SOIL-70 Proficiency Testing study. If you have any questions, please contact Shawn Kassner, Proficiency Testing Manager, or Curtis Wood, Director of Regulatory Affairs and Business Development, at 1-800-372-0122.

Sincerely,

Shawn Kassner
Proficiency Testing Manager

Jay R. McBurney
Quality Program Manager

attachments
smk

Report Recipient	Contact/Phone Number	Reporting Type
Minnesota	Susan Wyatt / 651-201-5323	All Analytes
New Jersey	Rachel Ellis / 609-777-1749	All Analytes
Oklahoma	David Caldwell / 405-702-1039	All Analytes
South Carolina	Carol Smith / 803-896-0992	All Analytes
West Virginia (DEP)	Daniel T. Arnold / 304-926-0499 x1341	All Analytes
Enovis	Tim Abston / 313-872-6151	All Analytes

SOIL-70 Definitions & Study Discussion

Study Dates: 04/19/10 - 06/03/10 **Report Issued: 06/24/10**

SOIL Study Definitions

The Reported Value is the value that the laboratory reported to ERA.

The ERA assigned value for the Organic Proficiency Testing Standards is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation as applicable. The ERA assigned value for the Inorganic Proficiency Testing Standards, with the exception of the TCLP Metals in Soil, is equal to the maximum amount of the parameter available in the standard by applicable EPA methodologies. The ERA assigned value for the TCLP metals is equal to the mean of ERA's internal analytical analyses. All NELAC parameters not added to a standard are given an assigned Value of "0", per the guidance issued by the NELAC Board of Directors, on December 14, 2000. Non-NELAC parameters not added to a standard may be given an assigned value of less than a minimum verified concentration as determined in the background soil for applicable EPA methodologies.

The Acceptance Limits are established per the NELAC PT program criteria or ERA's SOP for the Generation of Performance Acceptance Limits™ as applicable.

The Performance Evaluation:

Acceptable	= Reported Value falls within the Acceptance Limits.
Not Acceptable	= Reported Value falls outside the Acceptance Limits.
No Evaluation	= Reported Value cannot be evaluated.
Not Reported	= No Value reported.

The Method Description is the method the laboratory reported to ERA.

SOIL Study Discussion

ERA's SOIL-70 Proficiency Testing (PT) study has been reviewed by ERA senior management and certified compliant with the requirements of the National Environmental Laboratory Accreditation Conference (NELAC), Proficiency Testing Program Standards, Chapter 2, July 2003.

Per the requirements of the NELAC Proficiency Testing Program, a full review of all homogeneity, stability, and accuracy verification data was completed. All analytical verification data for all analytes in the Soil study standards met the acceptance criteria contained in the NELAC Proficiency Testing Program Standards, Chapter 2, July 2003. If the analyte is included in the NELAC Fields of Testing list the acceptance limits were calculated based on the NELAC Proficiency Testing Program Standards, Chapter 2, July 2003. If the analyte is not included in the NELAC Fields of Testing list, the acceptance limits were calculated using the procedures outlined in ERA's Standard Operating Procedure for the Generation of Performance Acceptance Limits (SOP 0260, Rev. 2.0).

The data submitted by participating laboratories was also examined for study anomalies. There were no anomalies observed during the statistical review of the data.

ERA's SOIL-70 Proficiency Testing study reports shall not be reproduced except in its entirety and not withoui the permission of the participating laboratory. The report must not be used by the participating laboratories to claim product endorsement any agency of the U. S. govemment.

The data contained herein are confidential and intended for your use only.

If you have any questions or concerns regarding your assessment in ERA's SOIL Proficiency Testing program, please contact Shawn Kassner, Proficiency Testing Manager, or Curtis Wood, Director of Regulatory Affairs and Business Development, at 1-800-372-0122.

ACCREDITED

Study: **SOIL-70**

ERA Customer Number: **A064801**

Laboratory Name: **Accutest Mid Atlantic**

Inorganic Results

SOIL-70 Final Complete Report

Phillip Worby
Director Corporate Quality Assurance
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810
732-329-0200

EPA ID: NJ00141
ERA Customer Number: A064801
Report Issued: 06/24/10
Study Dates: 04/19/10 - 06/03/10

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
SOIL Metals in Soil (cat# 620)							
1000	Aluminum	mg/kg	12400	10100	3600 - 13800	Acceptable	EPA 6010B
1005	Antimony	mg/kg	84.6	235	23.5 - 258	Acceptable	EPA 6010B
1010	Arsenic	mg/kg	136	167	96.4 - 184	Acceptable	EPA 6010B
1015	Barium	mg/kg	314	313	214 - 366	Acceptable	EPA 6010B
1020	Beryllium	mg/kg	144	154	104 - 172	Acceptable	EPA 6010B
1025	Boron	mg/kg	124	147	73.4 - 167	Acceptable	EPA 6010B
1030	Cadmium	mg/kg	85.6	88.5	62.3 - 108	Acceptable	EPA 6010B
1035	Calcium	mg/kg	6320	6380	4520 - 7730	Acceptable	EPA 6010B
1040	Chromium	mg/kg	178	187	118 - 217	Acceptable	EPA 6010B
1050	Cobalt	mg/kg	87.2	98.1	64.7 - 109	Acceptable	EPA 60106
1055	Copper	mg/kg	196	209	142 - 233	Acceptable	EPA 6010B
1070	Iron	mg/kg	14500	15000	3860 - 21100	Acceptable	EPA 6010B
1075	Lead	mg/kg	129	134	86.8 - 154	Acceptable	EPA 6010B
1085	Magnesium	mg/kg	3190	3170	1920 - 3930	Acceptable	EPA 6010B
1090	Manganese	mg/kg	304	313	231 - 388	Acceptable	EPA 6010B
1095	Mercury	mg/kg		8.29	3.94 - 11.4	Not Reported	
1100	Molybdenum	mg/kg	151	176	102 - 194	Acceptable	EPA 6010B
1105	Nickel	mg/kg	170	179	117 - 202	Acceptable	EPA 6010B
1125	Potassium	mg/kg	3240	3070	1720 - 3840	Acceptable	EPA 6010B
1140	Selenium	mg/kg	43.4	49.7	24.4 - 62.6	Acceptable	EPA 6010B
1150	Silver	mg/kg	55.2	62.6	36.8 - 73.6	Acceptable	EPA 6010B
1155	Sodium	mg/kg	514	544	257 - 751	Acceptable	EPA 6010B
1160	Strontium	mg/kg	214	222	144 - 263	Acceptable	EPA 6010B
1165	Thallium	mg/kg	152	168	100 - 193	Acceptable	EPA 6010B
1175	Tin	mg/kg	163	186	99.0 - 229	Acceptable	EPA 6010B
1180	Titanium	mg/kg	426	301	0.00 - 556	Acceptable	EPA 6010B
1185	Vanadium	mg/kg	144	156	96.8 - 180	Acceptable	EPA 6010B
1190	Zinc	mg/kg	211	221	144 - 268	Acceptable	EPA 6010B

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

SOIL-70 Final Complete Report

Phillip Worby
Director Corporate Quality Assurance
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810
732-329-0200

EPA ID: NJ00141
ERA Customer Number: A064801
Report Issued: 06/24/10
Study Dates: 04/19/10 - 06/03/10

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
SOIL Metals in Soil (cat# 620)							
1000	Aluminum	mg/kg	13300	10100	3600 - 13800	Acceptable	EPA 6020
1005	Antimony	mg/kg	89.2	235	23.5 - 258	Acceptable	EPA 6020
1010	Arsenic	mg/kg	136	167	96.4 - 184	Acceptable	EPA 6020
1015	Barium	mg/kg	304	313	214 - 366	Acceptable	EPA 6020
1020	Beryllium	mg/kg	138	154	104 - 172	Acceptable	EPA 6020
1025	Boron	mg/kg		147	73.4 - 167	Not Reported	
1030	Cadmium	mg/kg	84.9	88.5	62.3 - 108	Acceptable	EPA 6020
1035	Calcium	mg/kg	6680	6380	4520 - 7730	Acceptable	EPA 6020
1040	Chromium	mg/kg	187	187	118 - 217	Acceptable	EPA 6020
1050	Cobalt	mg/kg	94.7	98.1	64.7 - 109	Acceptable	EPA 6020
1055	Copper	mg/kg	199	209	142 - 233	Acceptable	EPA 6020
1070	Iron	mg/kg	15600	15000	3860 - 21100	Acceptable	EPA 6020
1075	Lead	mg/kg	126	134	86.8 - 154	Acceptable	EPA 6020
1085	Magnesium	mg/kg	3470	3170	1920 - 3930	Acceptable	EPA 6020
1090	Manganese	mg/kg	352	313	231 - 388	Acceptable	EPA 6020
1095	Mercury	mg/kg		8.29	3.94 - 11.4	Not Reported	
1100	Molybdenum	mg/kg	154	176	102 - 194	Acceptable	EPA 6020
1105	Nickel	mg/kg	169	179	117 - 202	Acceptable	EPA 6020
1125	Potassium	mg/kg	3410	3070	1720 - 3840	Acceptable	EPA 6020
1140	Selenium	mg/kg	44.1	49.7	24.4 - 62.6	Acceptable	EPA 6020
1150	Silver	mg/kg	55.8	62.6	36.8 - 73.6	Acceptable	EPA 6020
1155	Sodium	mg/kg	541	544	257 - 751	Acceptable	EPA 6020
1160	Strontium	mg/kg	217	222	144 - 263	Acceptable	EPA 6020
1165	Thallium	mg/kg	152	168	100 - 193	Acceptable	EPA 6020
1175	Tin	mg/kg	164	186	99.0 - 229	Acceptable	EPA 6020
1180	Titanium	mg/kg	419	301	0.00 - 556	Acceptable	EPA 6020
1185	Vanadium	mg/kg	154	156	96.8 - 180	Acceptable	EPA 6020
1190	Zinc	mg/kg	218	221	144 - 268	Acceptable	EPA 6020

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

SOIL-70 Final Complete Report

Phillip Worby
Director Corporate Quality Assurance
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810
732-329-0200

EPA ID: NJ00141
ERA Customer Number: A064801
Report Issued: 06/24/10
Study Dates: 04/19/10 - 06/03/10

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
SOIL Metals in Soil (cat# 620)							
1000	Aluminum	mg/kg		10100	3600 - 13800	Not Reported	
1005	Antimony	mg/kg		235	23.5 - 258	Not Reported	
1010	Arsenic	mg/kg		167	96.4 - 184	Not Reported	
1015	Barium	mg/kg		313	214 - 366	Not Reported	
1020	Beryllium	mg/kg		154	104 - 172	Not Reported	
1025	Boron	mg/kg		147	73.4 - 167	Not Reported	
1030	Cadmium	mg/kg		88.5	62.3 - 108	Not Reported	
1035	Calcium	mg/kg		6380	4520 - 7730	Not Reported	
1040	Chromium	mg/kg		187	118 - 217	Not Reported	
1050	Cobalt	mg/kg		98.1	64.7 - 109	Not Reported	
1055	Copper	mg/kg		209	142 - 233	Not Reported	
1070	Iron	mg/kg		15000	3860 - 21100	Not Reported	
1075	Lead	mg/kg		134	86.8 - 154	Not Reported	
1085	Magnesium	mg/kg		3170	1920 - 3930	Not Reported	
1090	Manganese	mg/kg		313	231 - 388	Not Reported	
1095	Mercury	mg/kg	7.2	8.29	3.94 - 11.4	Acceptable	EPA 7471A
1100	Molybdenum	mg/kg		176	102 - 194	Not Reported	
1105	Nickel	mg/kg		179	117 - 202	Not Reported	
1125	Potassium	mg/kg		3070	1720 - 3840	Not Reported	
1140	Selenium	mg/kg		49.7	24.4 - 62.6	Not Reported	
1150	Silver	mg/kg		62.6	36.8 - 73.6	Not Reported	
1155	Sodium	mg/kg		544	257 - 751	Not Reported	
1160	Strontium	mg/kg		222	144 - 263	Not Reported	
1165	Thallium	mg/kg		168	100 - 193	Not Reported	
1175	Tin	mg/kg		186	99.0 - 229	Not Reported	
1180	Titanium	mg/kg		301	0.00 - 556	Not Reported	
1185	Vanadium	mg/kg		156	96.8 - 180	Not Reported	
1190	Zinc	mg/kg		221	144 - 268	Not Reported	
SOIL Hexavalent Chromium in Soil (cat# 876)							
1045	Chromium VI	mg/kg	167	192	54.2 - 244	Acceptable	EPA 7199
SOIL Hexavalent Chromium in Soil (cat# 876)							
1045	Chromium VI	mg/kg	159	192	54.2 - 244	Acceptable	EPA 7196A

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

SOIL-70 Final Complete Report

Phillip Worby
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732-329-0200

EPA ID: NJ00141
ERA Customer Number: A064801
Report Issued: 06/24/10
Study Dates: 04/19/10 - 06/03/10

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
SOIL Metals in Sewage SludG™ (cat# 619)							
1000	Aluminum	mg/kg	15500	16400	2430 - 28800	Acceptable	EPA 6010B
1005	Antimony	mg/kg	138	261	68.1 - 287	Acceptable	EPA 6010B
1010	Arsenic	mg/kg	196	256	127 - 282	Acceptable	EPA 6010B
1015	Barium	mg/kg	735	906	121 - 1430	Acceptable	EPA 6010B
1020	Beryllium	mg/kg	103	130	43.4 - 183	Acceptable	EPA 6010B
1030	Cadmium	mg/kg	126	144	70.6 - 180	Acceptable	EPA 6010B
1035	Calcium	mg/kg	19100	21300	11600 - 28500	Acceptable	EPA 6010B
1040	Chromium	mg/kg	142	173	83.8 - 224	Acceptable	EPA 6010B
1050	Cobalt	mg/kg	34.1	40.3	23.7 - 49.2	Acceptable	EPA 6010B
1055	Copper	mg/kg	814	910	660 - 1070	Acceptable	EPA 6010B
1070	Iron	mg/kg	11500	12300	5460 - 17000	Acceptable	EPA 6010B
1075	Lead	mg/kg	158	191	96.7 - 224	Acceptable	EPA 6010B
1085	Magnesium	mg/kg	2730	3040	1760 - 3800	Acceptable	EPA 6010B
1090	Manganese	mg/kg	790	872	339 - 1290	Acceptable	EPA 6010B
1095	Mercury	mg/kg		16.6	6.22 - 24.8	Not Reported	
1100	Molybdenum	mg/kg	168	203	109 - 250	Acceptable	EPA 6010B
1105	Nickel	mg/kg	155	176	71.7 - 226	Acceptable	EPA 6010B
1125	Potassium	mg/kg	2320	2670	1420 - 3250	Acceptable	EPA 6010B
1140	Selenium	mg/kg	186	216	128 - 238	Acceptable	EPA 6010B
1150	Silver	mg/kg	81.5	105	38.9 - 139	Acceptable	EPA 6010B
1155	Sodium	mg/kg	1310	1520	710 - 2050	Acceptable	EPA 6010B
1160	Strontium	mg/kg	395	444	164 - 600	Acceptable	EPA 6010B
1165	Thallium	mg/kg	130	157	14.1 - 223	Acceptable	EPA 6010B
1185	Vanadium	mg/kg	121	161	85.1 - 194	Acceptable	EPA 6010B
1190	Zinc	mg/kg	1170	1310	834 - 1760	Acceptable	EPA 6010B

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

SOIL-70 Final Complete Report

Phillip Worby
Director Corporate Quality Assurance
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810
732-329-0200

EPA ID: NJ00141
ERA Customer Number: A064801
Report Issued: 06/24/10
Study Dates: 04/19/10 - 06/03/10

AnaL No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
SOIL Metals in Sewage SludG™ (cat# 619)							
1000	Aluminum	mg/kg	16400	16400	2430 - 28800	Acceptable	EPA 6020
1005	Antimony	mg/kg	155	261	68.1 - 287	Acceptable	EPA 6020
1010	Arsenic	mg/kg	197	256	127 - 282	Acceptable	EPA 6020
1015	Barium	mg/kg	776	906	121 - 1430	Acceptable	EPA 6020
1020	Beryllium	mg/kg	102	130	43.4 - 183	Acceptable	EPA 6020
1030	Cadmium	mg/kg	128	144	70.6 - 180	Acceptable	EPA 6020
1035	Calcium	mg/kg	21000	21300	11600 - 28500	Acceptable	EPA 6020
1040	Chromium	mg/kg	144	173	83.8 - 224	Acceptable	EPA 6020
1050	Cobalt	mg/kg	35.1	40.3	23.7 - 49.2	Acceptable	EPA 6020
1055	Copper	mg/kg	866	910	660 - 1070	Acceptable	EPA 6020
1070	Iron	mg/kg	11800	12300	5460 - 17000	Acceptable	EPA 6020
1075	Lead	mg/kg	160	191	96.7 - 224	Acceptable	EPA 6020
1085	Magnesium	mg/kg	3010	3040	1760 - 3800	Acceptable	EPA 6020
1090	Manganese	mg/kg	895	872	339 - 1290	Acceptable	EPA 6020
1095	Mercury	mg/kg		16.6	6.22 - 24.8	Not Reported	
1100	Molybdenum	mg/kg	181	203	109 - 250	Acceptable	EPA 6020
1105	Nickel	mg/kg	151	176	71.7 - 226	Acceptable	EPA 6020
1125	Potassium	mg/kg	2350	2670	1420 - 3250	Acceptable	EPA 6020
1140	Selenium	mg/kg	189	216	128 - 238	Acceptable	EPA 6020
1150	Silver	mg/kg	84.9	105	38.9 - 139	Acceptable	EPA 6020
1155	Sodium	mg/kg	1350	1520	710 - 2050	Acceptable	EPA 6020
1160	Strontium	mg/kg	419	444	164 - 600	Acceptable	EPA 6020
1165	Thallium	mg/kg	134	157	14.1 - 223	Acceptable	EPA 6020
1185	Vanadium	mg/kg	136	161	85.1 - 194	Acceptable	EPA 6020
1190	Zinc	mg/kg	1400	1310	834 - 1760	Acceptable	EPA 6020

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

SOIL-70 Final Complete Report

Phillip Worby
Director Corporate Quality Assurance
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810
732-329-0200

EPA ID: NJ00141
ERA Customer Number: A064801
Report Issued: 06/24/10
Study Dates: 04/19/10 - 06/03/10

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
SOIL Metals in Sewage SludG™ (cat# 619)							
1000	Aluminum	mg/kg		16400	2430 - 28800	Not Reported	
1005	Antimony	mg/kg		261	68.1 - 287	Not Reported	
1010	Arsenic	mg/kg		256	127 - 282	Not Reported	
1015	Barium	mg/kg		906	121 - 1430	Not Reported	
1020	Beryllium	mg/kg		130	43.4 - 183	Not Reported	
1030	Cadmium	mg/kg		144	70.6 - 180	Not Reported	
1035	Calcium	mg/kg		21300	11600 - 28500	Not Reported	
1040	Chromium	mg/kg		173	83.8 - 224	Not Reported	
1050	Cobalt	mg/kg		40.3	23.7 - 49.2	Not Reported	
1055	Copper	mg/kg		910	660 - 1070	Not Reported	
1070	Iron	mg/kg		12300	5460 - 17000	Not Reported	
1075	Lead	mg/kg		191	96.7 - 224	Not Reported	
1085	Magnesium	mg/kg		3040	1760 - 3800	Not Reported	
1090	Manganese	mg/kg		872	339 - 1290	Not Reported	
1095	Mercury	mg/kg	14.9	16.6	6.22 - 24.8	Acceptable	EPA 7471A
1100	Molybdenum	mg/kg		203	109 - 250	Not Reported	
1105	Nickel	mg/kg		176	71.7 - 226	Not Reported	
1125	Potassium	mg/kg		2670	1420 - 3250	Not Reported	
1140	Selenium	mg/kg		216	128 - 238	Not Reported	
1150	Silver	mg/kg		105	38.9 - 139	Not Reported	
1155	Sodium	mg/kg		1520	710 - 2050	Not Reported	
1160	Strontium	mg/kg		444	164 - 600	Not Reported	
1165	Thallium	mg/kg		157	14.1 - 223	Not Reported	
1185	Vanadium	mg/kg		161	85.1 - 194	Not Reported	
1190	Zinc	mg/kg		1310	834 - 1760	Not Reported	
SOIL Anions in Soil (cat# 873)							
1540	Bromide	mg/kg	60.2	72.7	50.2 - 81.6	Acceptable	EPA 9056
1575	Chloride	mg/kg	211	227	141 - 294	Acceptable	EPA 9056
1730	Fluoride	mg/kg	57.9	198	20.0 - 218	Acceptable	EPA 9056
1810	Nitrate as N	mg/kg	214	291	170 - 320	Acceptable	EPA 9056
1870	Phosphate as P	mg/kg		243	30.5 - 267	Not Reported	
2000	Sulfate	mg/kg	184	206	134 - 227	Acceptable	EPA 9056
SOIL Cyanide in Soil (cat# 621)							
1635	Cyanide, total	mg/kg	38.4	54.1	21.3 - 72.3	Acceptable	EPA 9012
1640	Reactive Cyanide	mg/kg		< 25.0		Not Reported	

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

SOIL-70 Final Complete Report

Phillip Worby
Director Corporate Quality Assurance
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810
732-329-0200

EPA ID: NJ00141
ERA Customer Number: A064801
Report Issued: 06/24/10
Study Dates: 04/19/10 - 06/03/10

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
SOIL Nutrients in Soil (cat# 869)							
1515	Ammonia as N	mg/kg		486	52.7 - 660	Not Reported	
1795	Total Kjeldahl Nitrogen	mg/kg		764	331 - 1110	Not Reported	
2040	Total Organic Carbon (TOC)	mg/kg	2050	2420	242 - 5550	Acceptable	EPA 9060
1910	Total Phosphorus	mg/kg		782	410 - 1120	Not Reported	
SOIL Corrosivity/pH in Soil (cat# 875)							
1625	Corrosivity (pH)	S.U.	7.5	7.60	7.00 - 8.20	Acceptable	EPA 9045C
SOIL Ignitability/Flashpoint (cat# 874)							
1780	Ignitability/Flashpoint	°F	138	138	121 - 155	Acceptable	EPA 1010A

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Study: **SOIL-70**

ERA Customer Number: **A064801**

Laboratory Name: **Accutest Mid Atlantic**

Organic Results

SOIL-70 Final Complete Report

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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
SOIL Volatiles in Soil (cat# 623)							
4315	Acetone	µg/kg		259	40.0 - 507	Not Reported	
4320	Acetonitrile	pg/kg		709	0.00 - 1270	Not Reported	
4325	Acrolein	µg/kg		0.00		Not Reported	
4375	Benzene	µg/kg	148	141	85.0 - 192	Acceptable	EPA 8021B
4385	Bromobenzene	µg/kg		124	86.9 - 169	Not Reported	
4395	Bromodichloromethane	µg/kg		36.8	21.5 - 52.0	Not Reported	
4400	Bromoform	µg/kg		80.6	40.4 - 120	Not Reported	
4950	Bromomethane	µg/kg		0.00		Not Reported	
4410	2-Butanone (MEK)	µg/kg		347	143 - 553	Not Reported	
5000	tert-Butyl methyl ether (MTBE)	µg/kg	0	0.00		Acceptable	EPA 8021B
4450	Carbon disulfide	µg/kg		0.00		Not Reported	
4455	Carbon tetrachloride	µg/kg		94.3	46.0 - 139	Not Reported	
4475	Chlorobenzene	µg/kg	45.2	43.2	23.3 - 59.4	Acceptable	EPA 8021B
4575	Chlorodibromomethane	µg/kg		0.00		Nol Reported	
4485	Chloroethane	µg/kg		150	73.6 - 234	Not Reported	
4500	2-Chloroethylvinylether	pg/kg		0.00		Not Reported	
4505	Chloroform	µg/kg		0.00		Not Reported	
4960	Chloromethane	µg/kg		0.00		Not Reported	
4570	1,2-Dibromo-3-chloropropane (DBCP)	µg/kg		0.00		Not Reported	
4585	1,2-Dibromoethane (EDB)	µg/kg		0.00		Not Reported	
4595	Dibromomethane	µg/kg		0.00		Not Reported	
4610	1,2-Dichlorobenzene	µg/kg	0	0.00		Acceptable	EPA 8021B
4615	1,3-Dichlorobenzene	µg/kg	74.7	70.0	25.6 - 103	Acceptable	EPA 8021B
4620	1,4-Dichlorobenzene	µg/kg	194	187	64.4 - 265	Acceptable	EPA 8021B
4625	Dichlorodifluoromethane (Freon 12)	pg/kg		0.00		Not Reported	
4630	1,1-Dichloroethane	µg/kg		112	63.5 - 162	Not Reported	
4635	1,2-Dichloroethane	µg/kg		0.00		Not Reported	
4640	1,1-Dichloroethylene	µg/kg		167	84.2 - 282	Not Reported	
4645	cis-1,2-Dichloroethylene	µg/kg	120	104	66.7 - 151	Acceptable	EPA 8021B
4700	trans-1,2-Dichloroethylene	µg/kg	130	120	71.2 - 188	Acceptable	EPA 8021B
4655	1,2-Dichloropropane	µg/kg		130	76.1 - 174	Nol Reported	
4680	cis-1,3-Dichloropropylene	µg/kg	86.8	80.8	60.3 - 107	Acceptable	EPA 8021B

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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
SOIL Volatiles in Soil (cat# 623) (Continued)							
4685	trans-1,3-Dichloropropylene	µg/kg	158	157	104 - 220	Acceptable	EPA 8021B
4765	Ethylbenzene	µg/kg	69.7	71.7	39.1 - 104	Acceptable	EPA 8021B
4860	2-Hexanone	µg/kg		363	83.6 - 602	Not Reported	
4900	Isopropylbenzene	µg/kg	0	0.00		Acceptable	EPA 8021B
4975	Methylene chloride	µg/kg		123	57.4 - 178	Not Reported	
4995	4-Methyl-2-pentanone (MIBK)	µg/kg		113	47.2 - 168	Not Reported	
5005	Naphthalene	pg/kg	89.0	85.2	40.3 - 123	Acceptable	EPA 8021B
5100	Styrene	pg/kg	0	0.00		Acceptable	EPA 8021B
5105	1,1,1,2-Tetrachloroethane	pg/kg		165	108 - 223	Not Reported	
5110	1,1,2,2-Tetrachloroethane	pg/kg		0.00		Not Reported	
5115	Tetrachloroethylene	pg/kg	193	184	83.1 - 266	Acceptable	EPA 8021B
5140	Toluene	pg/kg	85.3	84.0	48.0 - 118	Acceptable	EPA 8021B
5155	1,2,4-Trichlorobenzene	pg/kg		171	84.6 - 246	Not Reported	
5160	1,1,1-Trichloroethane	pg/kg		136	77.5 - 194	Not Reported	
5165	1,1,2-Trichloroethane	pg/kg		0.00		Not Reported	
5170	Trichloroethylene	µg/kg	148	140	72.0 - 200	Acceptable	EPA 8021B
5175	Trichlorofluoromethane	µg/kg		97.9	56.2 - 163	Not Reported	
5180	1,2,3-Trichloropropane (TCP)	µg/kg		86.4	33.5 - 144	Not Reported	
5225	Vinyl acetate	pg/kg		0.00		Not Reported	
5235	Vinyl chloride	pg/kg		0.00		Not Reported	
5260	Xylenes, total	pg/kg	125	137	66.5 - 203	Acceptable	EPA 8021B

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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
SOIL Volatiles in Soil (cat# 623)							
4315	Acetone	pg/kg	320	259	40.0 - 507	Acceptable	EPA 8260B
4320	Acetonitrile	pg/kg	548	709	0.00 - 1270	Acceptable	EPA 8260B
4325	Acrolein	pg/kg	0	0.00		Acceptable	EPA 8260B
4375	Benzene	pg/kg	122	141	85.0 - 192	Acceptable	EPA 8260B
4385	Bromobenzene	pg/kg	110	124	86.9 - 169	Acceptable	EPA 8260B
4395	Bromodichloromethane	pg/kg	37.3	36.8	21.5 - 52.0	Acceptable	EPA 8260B
4400	Bromoform	pg/kg	72.7	80.6	40.4 - 120	Acceptable	EPA 8260B
4950	Bromomethane	pg/kg	0	0.00		Acceptable	EPA 8260B
4410	2-Butanone (MEK)	pg/kg	400	347	143 - 553	Acceptable	EPA 8260B
5000	tert-Butyl methyl ether (MTBE)	pg/kg	0	0.00		Acceptable	EPA 8260B
4450	Carbon disulfide	pg/kg	0	0.00		Acceptable	EPA 8260B
4455	Carbon tetrachloride	pg/kg	101	94.3	46.0 - 139	Acceptable	EPA 8260B
4475	Chlorobenzene	pg/kg	41.2	43.2	23.3 - 59.4	Acceptable	EPA 8260B
4575	Chlorodibromomethane	pg/kg	0	0.00		Acceptable	EPA 8260B
4485	Chloroethane	pg/kg	137	150	73.6 - 234	Acceptable	EPA 8260B
4500	2-Chloroethylvinylether	pg/kg	0	0.00		Acceptable	EPA 8260B
4505	Chloroform	pg/kg	0	0.00		Acceptable	EPA 8260B
4960	Chloromethane	pg/kg	0	0.00		Acceptable	EPA 8260B
4570	1,2-Dibromo-3-chloropropane (DBCP)	pg/kg	0	0.00		Acceptable	EPA 8260B
4585	1,2-Dibromoethane (EDB)	pg/kg	0	0.00		Acceptable	EPA 8260B
4595	Dibromomethane	pg/kg	0	0.00		Acceptable	EPA 8260B
4610	1,2-Dichlorobenzene	pg/kg	0	0.00		Acceptable	EPA 8260B
4615	1,3-Dichlorobenzene	pg/kg	61.1	70.0	25.6 - 103	Acceptable	EPA 8260B
4620	1,4-Dichlorobenzene	µg/kg	135	187	64.4 - 265	Acceptable	EPA 8260B
4625	Dichlorodifluoromethane (Freon 12)	µg/kg	0	0.00		Acceptable	EPA 8260B
4630	1,1-Dichloroethane	pg/kg	107	112	63.5 - 162	Acceptable	EPA 8260B
4635	1,2-Dichloroethane	pg/kg	0	0.00		Acceptable	EPA 8260B
4640	1,1-Dichloroethylene	µg/kg	176	167	84.2 - 282	Acceptable	EPA 8260B
4645	cis-1,2-Dichloroethylene	µg/kg	101	104	66.7 - 151	Acceptable	EPA 8260B
4700	trans-1,2-Dichloroethylene	µg/kg	121	120	71.2 - 188	Acceptable	EPA 8260B
4655	1,2-Dichloropropane	µg/kg	116	130	76.1 - 174	Acceptable	EPA 8260B
4680	cis-1,3-Dichloropropylene	µg/kg	77.2	80.8	60.3 - 107	Acceptable	EPA 8260B

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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
SOIL Volatiles in Soil (cat# 623) (Continued)							
4685	trans-1,3-Dichloropropylene	µg/kg	142	157	104 - 220	Acceptable	EPA 8260B
4765	Ethylbenzene	µg/kg	60.5	71.7	39.1 - 104	Acceptable	EPA 8260B
4860	2-Hexanone	pg/kg	308	363	83.6 - 602	Acceptable	EPA 8260B
4900	Isopropylbenzene	pg/kg	0	0.00		Acceptable	EPA 82608
4975	Methylene chloride	pg/kg	107	123	57.4 - 178	Acceptable	EPA 8260B
4995	4-Methyl-2-pentanone (MIBK)	µg/kg	99.3	113	47.2 - 168	Acceptable	EPA 8260B
5005	Naphthalene	µg/kg	79.8	85.2	40.3 - 123	Acceptable	EPA 8260B
5100	Styrene	µg/kg	0	0.00		Acceptable	EPA 8260B
5105	1,1,1,2-Tetrachloroethane	µg/kg	155	165	108 - 223	Acceptable	EPA 8260B
5110	1,1,2,2-Tetrachloroethane	µg/kg	0	0.00		Acceptable	EPA 8260B
5115	Tetrachloroethylene	µg/kg	149	184	83.1 - 266	Acceptable	EPA 8260B
5140	Toluene	µg/kg	76.8	84.0	48.0 - 118	Acceptable	EPA 8260B
5155	1,2,4-Trichlorobenzene	µg/kg	140	171	84.6 - 246	Acceptable	EPA 8260B
5160	1,1,1-Trichloroethane	µg/kg	133	136	77.5 - 194	Acceptable	EPA 8260B
5165	1,1,2-Trichloroethane	µg/kg	0	0.00		Acceptable	EPA 8260B
5170	Trichloroethylene	pg/kg	130	140	72.0 - 200	Acceptable	EPA 8260B
5175	Trichlorofluoromethane	pg/kg	91.1	97.9	56.2 - 163	Acceptable	EPA 8260B
5180	1,2,3-Trichloropropane (TCP)	pg/kg	77.3	86.4	33.5 - 144	Acceptable	EPA 8260B
5225	Vinyl acetate	pg/kg	0	0.00		Acceptable	EPA 8260B
5235	Vinyl chloride	pg/kg	0	0.00		Acceptable	EPA 8260B
5260	Xylenes, total	µg/kg	119	137	66.5 - 203	Acceptable	EPA 8260B
SOIL Low-Level PAHs in Soil (cat# 625)							
5500	Acenaphthene	µg/kg	476	804	127 - 977	Acceptable	EPA 8270 SIM
5505	Acenaphthylene	µg/kg	531	888	88.8 - 1280	Acceptable	EPA 8270 SIM
5555	Anthracene	µg/kg	256	421	62.5 - 581	Acceptable	EPA 8270 SIM
5575	Benzo(a)anthracene	µg/kg	207	337	111 - 445	Acceptable	EPA 8270 SIM
5585	Benzo(b)fluoranthene	µg/kg	274	459	169 - 551	Acceptable	EPA 8270 SIM
5600	Benzo(k)fluoranthene	µg/kg	313	494	152 - 623	Acceptable	EPA 8270 SIM
5590	Benzo(g,h,i)perylene	pg/kg	235	352	35.2 - 540	Acceptable	EPA 8270 SIM
5580	Benzo(a)pyrene	pg/kg	55.9	69.6	9.64 - 96.6	Acceptable	EPA 8270 SIM
5855	Chrysene	pg/kg	116	178	40.1 - 254	Acceptable	EPA 8270 SIM
5895	Dibenz(a,h)anthracene	pg/kg	147	194	51.1 - 306	Acceptable	EPA 8270 SIM
6265	Fluoranthene	pg/kg	197	334	104 - 462	Acceptable	EPA 8270 SIM
6270	Fluorene	µg/kg	144	246	44.7 - 337	Acceptable	EPA 8270 SIM
6315	Indeno(1,2,3-cd)pyrene	µg/kg	291	465	86.2 - 673	Acceptable	EPA 8270 SIM
5005	Naphthalene	µg/kg	281	501	50.1 - 652	Acceptable	EPA 8270 SIM
6615	Phenanthrene	µg/kg	321	540	144 - 668	Acceptable	EPA 8270 SIM
6665	Pyrene	µg/kg	178	283	78.3 - 375	Acceptable	EPA 8270 SIM

ACCREDITED Lab Code 1539-01
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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
SOIL Low-Level PAHs in Soil (cat# 625)							
5500	Acenaphthene	pg/kg	390	804	127 - 977	Acceptable	EPA 8310 UV
5505	Acenaphthylene	pg/kg	452	888	88.8 - 1280	Acceptable	EPA 8310 UV
5555	Anthracene	pg/kg	254	421	62.5 - 581	Acceptable	EPA 8310 UV
5575	Benzo(a)anthracene	pg/kg	222	337	111 - 445	Acceptable	EPA 8310 UV
5585	Benzo(b)fluoranthene	pg/kg	297	459	169 - 551	Acceptable	EPA 8310 UV
5600	Benzo(k)fluoranthene	pg/kg	324	494	152 - 623	Acceptable	EPA 8310 UV
5590	Benzo(g,h,i)perylene	pg/kg	234	352	35.2 - 540	Acceptable	EPA 8310 UV
5580	Benzo(a)pyrene	pg/kg	39.6	69.6	9.64 - 96.6	Acceptable	EPA 8310 UV
5855	Chrysene	pg/kg	118	178	40.1 - 254	Acceptable	EPA 8310 UV
5895	Dibenz(a,h)anthracene	pg/kg	135	194	51.1 - 306	Acceptable	EPA 8310 UV
6265	Fluoranthene	µg/kg	223	334	104 - 462	Acceptable	EPA 8310 UV
6270	Fluorene	µg/kg	147	246	44.7 - 337	Acceptable	EPA 8310 UV
6315	Indeno(1,2,3-cd)pyrene	µg/kg	327	465	86.2 - 673	Acceptable	EPA 8310 UV
5005	Naphthalene	µg/kg	318	501	50.1 - 652	Acceptable	EPA 8310 UV
6615	Phenanthrene	µg/kg	353	540	144 - 668	Acceptable	EPA 8310 UV
6665	Pyrene	pg/kg	206	283	78.3 - 375	Acceptable	EPA 8310 UV
SOIL Low-Level PAHs in Soil (cat# 625)							
5500	Acenaphthene	pg/kg	731	804	127 - 977	Acceptable	EPA 8100
5505	Acenaphthylene	µg/kg	774	888	88.8 - 1280	Acceptable	EPA 8100
5555	Anthracene	µg/kg	343	421	62.5 - 581	Acceptable	EPA 8100
5575	Benzo(a)anthracene	µg/kg	281	337	111 - 445	Acceptable	EPA 8100
5585	Benzo(b)fluoranthene	µg/kg	392	459	169 - 551	Acceptable	EPA 8100
5600	Benzo(k)fluoranthene	pg/kg	447	494	152 - 623	Acceptable	EPA 8100
5590	Benzo(g,h,i)perylene	pg/kg	277	352	35.2 - 540	Acceptable	EPA 8100
5580	Benzo(a)pyrene	pg/kg	48.6	69.6	9.64 - 96.6	Acceptable	EPA 8100
5855	Chrysene	pg/kg	180	178	40.1 - 254	Acceptable	EPA 8100
5895	Dibenz(a,h)anthracene	pg/kg	199	194	51.1 - 306	Acceptable	EPA 8100
6265	Fluoranthene	pg/kg	309	334	104 - 462	Acceptable	EPA 8100
6270	Fluorene	pg/kg	203	246	44.7 - 337	Acceptable	EPA 8100
6315	Indeno(1,2,3-cd)pyrene	µg/kg	389	465	86.2 - 673	Acceptable	EPA 8100
5005	Naphthalene	µg/kg	400	501	50.1 - 652	Acceptable	EPA 8100
6615	Phenanthrene	pg/kg	496	540	144 - 668	Acceptable	EPA 8100
6665	Pyrene	pg/kg	260	283	78.3 - 375	Acceptable	EPA 8100

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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
SOIL Base/Neutrals and Acids in Soil (cat# 467)							
5500	Acenaphthene	pg/kg	3300	5590	1430 - 6580	Acceptable	EPA 8270C
5505	Acenaphthylene	pg/kg	1550	2490	477 - 3080	Acceptable	EPA 8270C
5145	2-Amino-1-methylbenzene (o-toluidine)	pg/kg	0	0.00		Acceptable	EPA 8270C
5545	Aniline	pg/kg	0	0.00		Acceptable	EPA 8270C
5555	Anthracene	pg/kg	1470	2240	476 - 3020	Acceptable	EPA 8270C
5595	Benzidine	pg/kg	0	0.00		Acceptable	EPA 8270C
5610	Benzoic acid	pg/kg	0	0.00		Acceptable	EPA 8270C
5575	Benzo(a)anthracene	pg/kg	1030	1900	478 - 2290	Acceptable	EPA 8270C
5585	Benzo(b)fluoranthene	pg/kg	0	0.00		Acceptable	EPA 8270C
5600	Benzo(k)fluoranthene	pg/kg	0	0.00		Acceptable	EPA 8270C
5590	Benzo(g,h,i)perylene	pg/kg	3640	6690	1440 - 8470	Acceptable	EPA 8270C
5580	Benzo(a)pyrene	pg/kg	1050	1610	365 - 2090	Acceptable	EPA 8270C
5630	Benzyl alcohol	pg/kg	0	0.00		Acceptable	EPA 8270C
5760	bis(2-Chloroethoxy)methane	pg/kg	0	0.00		Acceptable	EPA 8270C
5765	bis(2-Chloroethyl)ether	pg/kg	0	0.00		Acceptable	EPA 8270C
5780	bis(2-Chloroisopropyl)ether	pg/kg	1960	3080	308 - 3880	Acceptable	EPA 8270C
5660	4-Bromophenyl-phenylether	pg/kg	0	0.00		Acceptable	EPA 8270C
5670	Butylbenzylphthalate	pg/kg	0	0.00		Acceptable	EPA 8270C
5680	Carbazole	pg/kg	0	0.00		Acceptable	EPA 8270C
5745	4-Chloroaniline	pg/kg	0	0.00		Acceptable	EPA 8270C
5700	4-Chloro-3-methylphenol	pg/kg	5820	10000	2840 - 11500	Acceptable	EPA 8270C
5790	1-Chloronaphthalene	pg/kg		0.00		Not Reported	
5795	2-Chloronaphthalene	pg/kg	4660	7330	1690 - 8960	Acceptable	EPA 8270C
5800	2-Chlorophenol	pg/kg	1790	3150	315 - 3780	Acceptable	EPA 8270C
5825	4-Chlorophenyl-phenylether	pg/kg	4090	6350	1800 - 8370	Acceptable	EPA 8270C
5855	Chrysene	pg/kg	1090	1640	498 - 2300	Acceptable	EPA 8270C
5895	Dibenz(a,h)anthracene	µg/kg	1340	1930	307 - 2960	Acceptable	EPA 8270C
5905	Dibenzofuran	µg/kg	0	0.00		Acceptable	EPA 8270C
5925	Di-n-butylphthalate	µg/kg	0	0.00		Acceptable	EPA 8270C
4610	1,2-Dichlorobenzene	µg/kg	0	0.00		Acceptable	EPA 8270C
4615	1,3-Dichlorobenzene	µg/kg	0	0.00		Acceptable	EPA 8270C
4620	1,4-Dichlorobenzene	µg/kg	4200	8010	801 - 8810	Acceptable	EPA 8270C

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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
SOIL Base/Neutrals and Acids in Soil (cat# 467) (Continued)							
5945	3,3'-Dichlorobenzidine	µg/kg	0	0.00		Acceptable	EPA 8270C
6000	2,4-Dichlorophenol	µg/kg	6600	11900	2200 - 13600	Acceptable	EPA 8270C
6005	2,6-Dichlorophenol	µg/kg	0	0.00		Acceptable	EPA 8270C
6070	Diethylphthalate	µg/kg	6880	10800	2500 - 14600	Acceptable	EPA 8270C
6130	2,4-Dimethylphenol	pg/kg	0	0.00		Acceptable	EPA 8270C
6135	Dimethylphthalate	µg/kg	2260	3450	839 - 4630	Acceptable	EPA 8270C
6175	2,4-Dinitrophenol	pg/kg	0	6250	0.00 - 6880	Acceptable	EPA 8270C
6185	2,4-Dinitrotoluene	pg/kg	5040	8200	1700 - 11200	Acceptable	EPA 8270C
6190	2,6-Dinitrotoluene	pg/kg	6210	9070	2970 - 11200	Acceptable	EPA 8270C
6200	Di-n-octylphthalate	pg/kg	8550	11900	1870 - 17800	Acceptable	EPA 8270C
6065	bis(2-Ethylhexyl)phthalate	pg/kg	0	0.00		Acceptable	EPA 8270C
6265	Fluoranthene	pg/kg	1390	2180	661 - 2820	Acceptable	EPA 8270C
6270	Fluorene	pg/kg	0	0.00		Acceptable	EPA 8270C
6275	Hexachlorobenzene	µg/kg	5410	8900	2760 - 11000	Acceptable	EPA 8270C
4835	Hexachlorobutadiene	pg/kg	4490	7740	1140 - 8880	Acceptable	EPA 8270C
6285	Hexachlorocyclopentadiene	µg/kg	0	0.00		Acceptable	EPA 8270C
4840	Hexachloroethane	µg/kg	0	0.00		Acceptable	EPA 8270C
6315	Indeno(1,2,3-cd)pyrene	µg/kg	1420	2030	203 - 3250	Acceptable	EPA 8270C
6320	Isophorone	pg/kg	0	0.00		Acceptable	EPA 8270C
6360	4,6-Dinitro-2-methylphenol	pg/kg	0	0.00		Acceptable	EPA 8270C
6385	2-Methylnaphthalene	pg/kg	4060	6710	1520 - 7890	Acceptable	EPA 8270C
6400	2-Methylphenol	µg/kg	4560	11800	1180 - 13000	Acceptable	EPA 8270C
6410	3&4-Methylphenol	µg/kg	2950	6670	1180 - 7340	Acceptable	EPA 8270C
5005	Naphthalene	µg/kg	2060	3410	586 - 3960	Acceptable	EPA 8270C
6460	2-Nitroaniline	µg/kg	0	0.00		Acceptable	EPA 8270C
6465	3-Nitroaniline	µg/kg	0	0.00		Acceptable	EPA 8270C
6470	4-Nitroaniline	µg/kg	0	0.00		Acceptable	EPA 8270C
5015	Nitrobenzene	µg/kg	0	0.00		Acceptable	EPA 8270C
6490	2-Nitrophenol	pg/kg	6080	12000	1400 - 13400	Acceptable	EPA 8270C
6500	4-Nitrophenol	pg/kg	2780	8770	877 - 11500	Acceptable	EPA 8270C
6525	N-Nitrosodiethylamine	pg/kg	0	0.00		Acceptable	EPA 8270C
6530	N-Nitrosodimethylamine	µg/kg	4220	9190	973 - 10100	Acceptable	EPA 8270C

ACCREDITED Lab Code: 1539-01
All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

SOIL-70 Final Complete Report

Phillip Worby
Director Corporate Quality Assurance
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810
732-329-0200

EPA ID: NJ00141
ERA Customer Number: A064801
Report Issued: 06/24/10
Study Dates: 04/19/10 - 06/03/10

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
SOIL Base/Neutrals and Acids in Soil (cat# 467) (Continued)							
6535	N-Nitrosodiphenylamine	µg/kg	0	0.00		Acceptable	EPA 8270C
6545	N-Nitroso-di-n-propylamine	µg/kg	8960	13800	1950 - 18000	Acceptable	EPA 8270C
6590	Pentachlorobenzene	pg/kg	0	0.00		Acceptable	EPA 8270C
6605	Pentachlorophenol	pg/kg	2030	9060	906 - 9970	Acceptable	EPA 8270C
6615	Phenanthrene	pg/kg	1830	2850	798 - 3750	Acceptable	EPA 8270C
6625	Phenol	pg/kg	6130	11500	1150 - 13900	Acceptable	EPA 8270C
6665	Pyrene	pg/kg	2090	3170	988 - 4280	Acceptable	EPA 8270C
5095	Pyridine	µg/kg	0	0.00		Acceptable	EPA 8270C
6715	1,2,4,5-Tetrachlorobenzene	µg/kg	0	0.00		Acceptable	EPA 8270C
6735	2,3,4,6-Tetrachlorophenol	pg/kg	0	0.00		Acceptable	EPA 8270C
5155	1,2,4-Trichlorobenzene	pg/kg	0	0.00		Acceptable	EPA 8270C
6835	2,4,5-Trichlorophenol	pg/kg	2590	4550	650 - 5650	Acceptable	EPA 8270C
6840	2,4,6-Trichlorophenol	pg/kg	4870	9650	2010 - 11200	Acceptable	EPA 8270C
SOIL Organochiorine Pesticides in Soil (cat# 468)							
7025	Aldrin	pg/kg	295	399	116 - 503	Acceptable	EPA 8081A
7110	alpha-BHC	pg/kg	243	354	102 - 458	Acceptable	EPA 8081A
7115	beta-BHC	pg/kg	38.5	57.3	5.73 - 103	Acceptable	EPA 8081A
7105	delta-BHC	µg/kg	210	311	75.9 - 423	Acceptable	EPA 8081A
7120	gamma-BHC(Lindane)	µg/kg	65.8	94.5	14.6 - 143	Acceptable	EPA 8081A
7240	alpha-Chlordane	µg/kg	67.4	95.4	31.3 - 135	Acceptable	EPA 8081A
7245	gamma-Chlordane	µg/kg	149	206	83.4 - 273	Acceptable	EPA 8081A
7355	4,4'-DDD	pg/kg	119	177	51.3 - 257	Acceptable	EPA 8081A
7360	4,4'-DDE	µg/kg	210	271	95.7 - 384	Acceptable	EPA 8081A
7365	4,4'-DDT	µg/kg	53.4	84.3	16.4 - 133	Acceptable	EPA 8081A
7470	Dieldrin	µg/kg	159	266	77.0 - 310	Acceptable	EPA 8081A
7540	Endrin	µg/kg	167	229	99.9 - 326	Acceptable	EPA 8081A
7530	Endrin aldehyde	µg/kg	118	312	35.6 - 393	Acceptable	EPA 8081A
7535	Endrin ketone	µg/kg	173	328	83.7 - 452	Acceptable	EPA 8081A
7510	Endosulfan I	µg/kg	61.2	184	19.8 - 202	Acceptable	EPA 8081A
7515	Endosulfan II	pg/kg	77.0	178	28.5 - 196	Acceptable	EPA 8081A
7520	Endosulfan sulfate	pg/kg	240	488	111 - 700	Acceptable	EPA 8081A
7685	Heptachlor	pg/kg	84.9	125	35.8 - 174	Acceptable	EPA 8081A
7690	Heptachlor epoxide	pg/kg	173	240	83.8 - 323	Acceptable	EPA 8081A
7810	Methoxychlor	pg/kg	143	235	23.5 - 413	Acceptable	EPA 8081A
SOIL Chlordane in Soil (cat# 628)							
7250	Chlordane, technical	pg/kg	568	497	99.9 - 676	Acceptable	EPA 8081A
SOIL Toxaphene in Soil (cat# 627)							
8250	Toxaphene	µg/kg	875	924	92.4 - 1350	Acceptable	EPA 8081A

ACCREDITED Lab Code: 1539-01
All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

SOIL-70 Final Complete Report

Phillip Worby
Director Corporate Quality Assurance
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810
732-329-0200

EPA ID: NJ00141
ERA Customer Number: A064801
Report Issued: 06/24/10
Study Dates: 04/19/10 - 06/03/10

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
SOIL Chlorinated Acid Herbicides in Soil (cat# 626)							
8505	Acifluorfen	µg/kg		734	0.00 - 1090	Not Reported	
8530	Bentazon	µg/kg		0.00		Not Reported	
8540	Chloramben	µg/kg		362	0.00 - 398	Not Reported	
8545	2,4-D	µg/kg	152	374	37.4 - 620	Acceptable	EPA 8151A
8560	2,4-DB	µg/kg		784	0.00 - 1320	Not Reported	
8550	Dacthal diacid (DCPA)	µg/kg		0.00		Not Reported	
8555	Dalapon	pg/kg	16.1	0.00		Not Acceptable	EPA 8151A
8595	Dicamba	pg/kg	83.3	116	20.0 - 170	Acceptable	EPA 8151A
8600	3,5-Dichlorobenzoic acid	pg/kg		0.00		Not Reported	
8605	Dichlorprop	pg/kg	48.9	150	0.00 - 239	Acceptable	EPA 8151A
8620	Dinoseb	pg/kg	45.2	738	0.00 - 982	Acceptable	EPA 8151A
7775	MCPA	pg/kg	0	0.00		Acceptable	EPA 8151A
7780	MCPP	pg/kg	0	0.00		Acceptable	EPA 8151A
6500	4-Nitrophenol	pg/kg		144	35.4 - 199	Not Reported	
6605	Pentachlorophenol	pg/kg	112	477	0.00 - 678	Acceptable	EPA 8151A
8645	Picloram	pg/kg	0	0.00		Acceptable	EPA 8151A
8655	2,4,5-T	µg/kg	532	806	80.6 - 1250	Acceptable	EPA 8151A
8650	2,4,5-TP (Silvex)	µg/kg	279	433	43.3 - 722	Acceptable	EPA 8151A
SOIL PCBs in Soil (cat# 624)							
8880	Aroclor 1016	mg/kg	0	0.00		Acceptable	EPA 8082
8885	Aroclor 1221	mg/kg	0	0.00		Acceptable	EPA 8082
8890	Aroclor 1232	mg/kg	3.39	3.75	0.634 - 5.41	Acceptable	EPA 8082
8895	Aroclor 1242	mg/kg	0	0.00		Acceptable	EPA 8082
8900	Aroclor 1248	mg/kg	0	0.00		Acceptable	EPA 8082
8905	Aroclor 1254	mg/kg	0	0.00		Acceptable	EPA 8082
8910	Aroclor 1260	mg/kg	0	0.00		Acceptable	EPA 8082
SOIL Oil and Grease (O&G) in Soil (cat# 867)							
1860	n-Hexane Extractable Material(O&G)(Gravimet	mg/kg	1270	1320	386 - 2070	Acceptable	EPA 9071B
1860	n-Hexane Extractable Material(O&G)(IR)	mg/kg		1620	162 - 1780	Not Reported	
SOIL Gasoline Range Organics (GRO) in Soil (cat# 630)							
9408	Gasoline Range Organics (GRO)	mg/kg	1530	1570	286 - 2090	Acceptable	EPA 8015B
4375	Benzene in GRO	mg/kg		16.8	0.00 - 21.6	Not Reported	
4765	Ethylbenzene in GRO	mg/kg		50.4	28.6 - 62.2	Not Reported	
5140	Toluene in GRO	mg/kg		146	26.3 - 161	Not Reported	
5260	Xylenes, total in GRO	mg/kg		148	90.2 - 186	Not Reported	
SOIL Diesel Range Organics (DRO) in Soil (cat# 631)							
9369	Diesel Range Organics (DRO)	mg/kg	1560	1870	558 - 2220	Acceptable	EPA 8015B
SOIL Texas Low-Level Fuels (TPH) in Soil (cat# 478)							
2050	Total Petroleum Hydrocarbons	mg/kg	66.6	94.2	0.00 - 182	Acceptable	TNRCC 1005

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

SOIL-70 Final Complete Report

Phillip Worby
Director Corporate Quality Assurance
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810
732-329-0200

EPA ID: NJ00141
ERA Customer Number: A064801
Report Issued: 06/24/10
Study Dates: 04/19/10 - 06/03/10

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
SOIL Texas High-Level Fuels (TPH) in Soil (cat# 479)							
2050	Total Petroleum Hydrocarbons	mg/kg	1080	1360	466 - 2160	Acceptable	TNRCC 1005

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

ERA
A Waters Company

Phillip Worby
Accutest Mid Atlantic
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Dayton, NJ 08810

SOIL-72™ Final Report

Soil/Hazardous Waste Proficiency Testing

Soil Study

Open Date: 10/18/10

Close Date: 12/02/10

Report Issued Date: 12/21/10

ERA

A Waters Company

December 21, 2010

Phillip Worby
Accutest Mid Atiantic
2235 Route 130
Dayton, NJ 08810

Enclosed is your final report for ERA's SOIL-72 Proficiency Testing (PT) study. Your final report includes an evaluation of all results submitted by your laboratory to ERA.

Data Evaluation Protocols: All analytes in ERA's SOIL-72 Proficiency Testing (PT) study have been evaluated using the following tiered approach. If the analyte is listed in the most current National Environmental Laboratory Accreditation Conference (NELAC) PT Field of Testing tables, the evaluation was completed by comparing the reported result to the acceptance limits generated using the criteria contained in the NELAC FoPT tables. If the analyte is not included in the NELAC FoPT tables, the reported result has beeh evaluated using the procedures outlined in ERA's Standard Operating Procedure for the Generation of Performance Acceptance Limits (SOP 0260).

Corrective Action Help: As part of your accreditation(s), you may be required to identify the root cause of any "Not Acceptable" results, implement the necessary corrective actions, and then satisfy your PT requirements by participating in a Supplemental (QuiK™ Response) or future ERA PT study. ERA's technical staff is available to help your laboratory resolve any technical issues that may be impairing your PT performance and possibly affecting your routine data quality. Our laboratory and technical staff have well over three hundred years of collective experience in performing the full range of environmental analyses. As part of our technical support, ERA offers QC samples that can be helpful in helping you work through your technical issues.

Thank you for your participation in ERA's SOIL-72 Proficiency Testing study. If you have any questions, please contact the proficiency testing department, or myself, at 1-800-372-0122.

Sincerely,

Jay R. McBumey
Quality Program Manager

attachments
jrm

ERA

A Waters Company

Report Recipient	Contact/Phone Number	Reporting Type
Minnesota	Susan Wyatt / 651-201-5323	All Analytes
New Jersey	Rachel Ellis / 609-777-1749	All Analytes
Oklahoma	David Caldwell / 405-702-1039	All Analytes
South Carolina	Carol Smith / 803-896-0992	All Analytes
West Virginia (DEP)	Daniel T. Arnold / 304-926-0499 x1341	All Analytes
Enovis	Tim Abston / 313-872-6151	All Analytes
Laboratory Accreditation Bureau	Kelli Jannisch / 260 637 2705 ext 204	All Analytes

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SOIL-72 Definitions & Study Discussion

Study Dates: 10/18/10 - 12/02/10 **Report Issued: 12/21/10**

SOIL Study Definitions

The Reported Value is the value that the laboratory reported to ERA.

The ERA assigned value for the Organic Proficiency Testing Standards is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation as applicable. The ERA assigned value for the Inorganic Proficiency Testing Standards, with the exception of the TCLP Metals in Soil, is equal to the maximum amount of the parameter available in the standard by applicable EPA methodologies. The ERA assigned value for the TCLP metals is equal to the mean of ERA's internal analytical analyses. All NELAC parameters not added to a standard are given an assigned Value of "0", per the guidance issued by the NELAC Board of Directors, on December 14, 2000. Non-NELAC parameters not added to a standard may be given an assigned value of less than a minimum verified concentration as determined in the background soil for applicable EPA methodologies.

The Acceptance Limits are established per the NELAC PT program criteria or ERA's SOP for the Generation of Performance Acceptance Limits™ as applicable.

The Performance Evaluation:

Acceptable	= Reported Value falls within the Acceptance Limits.
Not Acceptable	= Reported Value falls outside the Acceptance Limits.
No Evaluation	= Reported Value cannot be evaluated.
Not Reported	= No Value reported.

The Method Description is the method the laboratory reported to ERA.

SOIL Study Discussion

ERA's SOIL-72 Proficiency Tesling (PT) study has been reviewed by ERA senior management and certified compliant with the requirements of the National Environmental Laboratory Accreditation Conference (NELAC), Proficiency Testing Program Standards, Chapter 2, July 2003.

Per the requirements of the NELAC Proficiency Testing Program, a full review of all homogeneity, stability and accuracy verification data was completed. All analytical verification data for all analytes in the Soil study standards met the acceptance criteria contained in the NELAC Proficiency Testing Program Standards, Chapter 2, July 2003. If the analyte is included in the NELAC Fields of Testing list, the acceptance limits were calculated based on the NELAC Proficiency Tesling Program Standards, Chapter 2, July 2003. If the analyte is not included in the NELAC Fields of Testing list, the acceptance limits were calculated using the procedures outlined in ERA's Standard Operating Procedure for the Generation of Performance Acceptance Limits (SOP 0260, Rev. 2.0).

The data submitted by participating laboratories was also examined for study anomalies. There were no anomalies observed during the statistical review of the data.

ERA's SOIL-72 Proficiency Testing study reports shall not be reproduced except in its entirety and not without the permission of the participating laboratory. The report must not be used by the participating laboratories to claim product endorsement any agency of the U. S. government.

The data contained herein are confidential and intended for your use only.

If you have any questions or concerns regarding your assessment in ERA's SOIL Proficiency Testing program, please contact Jay McBurney, Quality Program Manager, or the proficiency testing department at 1-800-372-0122.

ACCREDITED

ERA
A Waters Company

Study: SOIL-72

ERA Customer Number: A064801

Laboratory Name: Accutest Mid Atlantic

Inorganic Results

ERA
A Waters Company

SOIL-72 Final Complete Report

Phillip Worby
Director Corporate Quality Assurance
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810
732-329-0200

EPA ID: NJ00141
ERA Customer Number: A064801
Report Issued: 12/21/10
Study Dates: 10/18/10 - 12/02/10

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
SOIL Metals in Soil (cat# 620)							
1000	Aluminum	mg/kg	12300	10100	3410 - 13400	Acceptable	EPA 6010B
1005	Antimony	mg/kg	106	265	26.5 - 292	Acceptable	EPA 6010B
1010	Arsenic	mg/kg	112	133	75.9 - 146	Acceptable	EPA 6010B
1015	Barium	mg/kg	212	220	151 - 261	Acceptable	EPA 6010B
1020	Beryllium	mg/kg	90.5	97.1	65.6 - 111	Acceptable	EPA 6010B
1025	Boron	mg/kg	107	114	52.5 - 134	Acceptable	EPA 6010B
1030	Cadmium	mg/kg	80.5	89.6	58.7 - 102	Acceptable	EPA 6010B
1035	Calcium	mg/kg	7180	7020	4970 - 8430	Acceptable	EPA 6010B
1040	Chromium	mg/kg	131	129	81.6 - 152	Acceptable	EPA 6010B
1050	Cobalt	mg/kg	135	141	94.3 - 159	Acceptable	EPA 6010B
1055	Copper	mg/kg	116	132	87.4 - 146	Acceptable	EPA 6010B
1070	Iron	mg/kg	16200	15000	3760 - 20900	Acceptable	EPA 6010B
1075	Lead	mg/kg	80.0	83.4	52.3 - 100	Acceptable	EPA 6010B
1085	Magnesium	mg/kg	3010	2880	1690 - 3580	Acceptable	EPA 6010B
1090	Manganese	mg/kg	389	353	264 - 436	Acceptable	EPA 6010B
1095	Mercury	mg/kg		8.78	4.42 - 12.8	Not Reported	
1100	Molybdenum	mg/kg	64.9	77.9	40.9 - 85.7	Acceptable	EPA 6010B
1105	Nickel	mg/kg	73.3	80.6	50.6 - 91.8	Acceptable	EPA 6010B
1125	Potassium	mg/kg	3450	3300	1850 - 4080	Acceptable	EPA 6010B
1140	Selenium	mg/kg	130	144	84.6 - 170	Acceptable	EPA 6010B
1150	Silver	mg/kg	39.0	45.2	27.1 - 54.8	Acceptable	EPA 6010B
1155	Sodium	mg/kg	383	379	158 - 563	Acceptable	EPA 6010B
1160	Strontium	mg/kg	165	169	111 - 203	Acceptable	EPA 6010B
1165	Thallium	mg/kg	272	302	185 - 347	Acceptable	EPA 6010B
1175	Tin	mg/kg	138	148	76.6 - 183	Acceptable	EPA 6010B
1180	Titanium	mg/kg	403	254	0.00 - 460	Acceptable	EPA 6010B
1185	Vanadium	mg/kg	97.9	97.5	54.2 - 118	Acceptable	EPA 6010B
1190	Zinc	mg/kg	305	301	200 - 360	Acceptable	EPA 6010B

ACCREDITED

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

ERA
A Waters Company

SOIL-72 Final Complete Report

Phillip Worby
Director Corporate Quality Assurance
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810
732-329-0200

EPA ID: NJ00141
ERA Customer Number: A084801
Report Issued: 12/21/10
Study Dates: 10/18/10 - 12/02/10

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
SOIL Metals in Soil (cat# 620)							
1000	Aluminum	mg/kg		10100	3410 - 13400	Not Reported	
1005	Antimony	mg/kg		265	26.5 - 292	Not Reported	
1010	Arsenic	mg/kg		133	75.9 - 146	Not Reported	
1015	Barium	mg/kg		220	151 - 261	Not Reported	
1020	Beryllium	mg/kg		97.1	65.6 - 111	Not Reported	
1025	Boron	mg/kg		114	52.5 - 134	Not Reported	
1030	Cadmium	mg/kg		89.6	58.7 - 102	Not Reported	
1035	Calcium	mg/kg		7020	4970 - 8430	Not Reported	
1040	Chromium	mg/kg		129	81.6 - 152	Not Reported	
1050	Cobalt	mg/kg		141	94.3 - 159	Not Reported	
1055	Copper	mg/kg		132	87.4 - 146	Not Reported	
1070	Iron	mg/kg		15000	3760 - 20900	Not Reported	
1075	Lead	mg/kg		83.4	52.3 - 100	Not Reported	
1085	Magnesium	mg/kg		2880	1690 - 3580	Not Reported	
1090	Manganese	mg/kg		353	264 - 436	Not Reported	
1095	Mercury	mg/kg	8.26	8.78	4.42 - 12.8	Acceptable	EPA 7471A
1100	Molybdenum	mg/kg		77.9	40.9 - 85.7	Not Reported	
1105	Nickel	mg/kg		80.6	50.6 - 91.8	Not Reported	
1125	Potassium	mg/kg		3300	1850 - 4080	Not Reported	
1140	Selenium	mg/kg		144	84.6 - 170	Not Reported	
1150	Silver	mg/kg		45.2	27.1 - 54.8	Not Reported	
1155	Sodium	mg/kg		379	158 - 563	Not Reported	
1160	Strontium	mg/kg		169	111 - 203	Not Reported	
1165	Thallium	mg/kg		302	185 - 347	Not Reported	
1175	Tin	mg/kg		148	76.6 - 183	Not Reported	
1180	Titanium	mg/kg		254	0.00 - 460	Not Reported	
1185	Vanadium	mg/kg		97.5	54.2 - 118	Not Reported	
1190	Zinc	mg/kg		301	200 - 360	Not Reported	

ACCREDITED Lab Code: 1539-01

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

ERA
A Waters Company

SOIL-72 Final Complete Report

Phillip Worby
Director Corporate Quality Assurance
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810
732-329-0200

EPA ID: NJ00141
ERA Customer Number: A064801
Report Issued: 12/21/10
Study Dates: 10/18/10 - 12/02/10

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
SOIL Metals in Soil (cat# 620)							
1000	Aluminum	mg/kg	12400	10100	3410 - 13400	Acceptable	EPA 6020A
1005	Antimony	mg/kg	117	265	26.5 - 292	Acceptable	EPA 6020A
1010	Arsenic	mg/kg	111	133	75.9 - 146	Acceptable	EPA 6020A
1015	Barium	mg/kg	219	220	151 - 261	Acceptable	EPA 6020A
1020	Beryllium	mg/kg	96.5	97.1	65.6 - 111	Acceptable	EPA 6020A
1025	Boron	mg/kg		114	52.5 - 134	Not Reported	
1030	Cadmium	mg/kg	80.8	89.6	58.7 - 102	Acceptable	EPA 6020A
1035	Calcium	mg/kg	6610	7020	4970 - 8430	Acceptable	EPA 6020A
1040	Chromium	mg/kg	114	129	81.6 - 152	Acceptable	EPA 6020A
1050	Cobalt	mg/kg	120	141	94.3 - 159	Acceptable	EPA 6020A
1055	Copper	mg/kg	113	132	87.4 - 146	Acceptable	EPA 6020A
1070	Iron	mg/kg	15500	15000	3760 - 20900	Acceptable	EPA 6020A
1075	Lead	mg/kg	77.2	83.4	52.3 - 100	Acceptable	EPA 6020A
1085	Magnesium	mg/kg	3050	2880	1690 - 3580	Acceptable	EPA 6020A
1090	Manganese	mg/kg	356	353	264 - 436	Acceptable	EPA 6020A
1095	Mercury	mg/kg		8.78	4.42 - 12.8	Not Reported	
1100	Molybdenum	mg/kg	65.3	77.9	40.9 - 85.7	Acceptable	EPA 6020A
1105	Nickel	mg/kg	67.9	80.6	50.6 - 91.8	Acceptable	EPA 6020A
1125	Potassium	mg/kg	3350	3300	1850 - 4080	Acceptable	EPA 6020A
1140	Selenium	mg/kg	132	144	84.6 - 170	Acceptable	EPA 6020A
1150	Silver	mg/kg	41.5	45.2	27.1 - 54.8	Acceptable	EPA 6020A
1155	Sodium	mg/kg	429	379	158 - 563	Acceptable	EPA 6020A
1160	Strontium	mg/kg	164	169	111 - 203	Acceptable	EPA 6020A
1165	Thallium	mg/kg	295	302	185 - 347	Acceptable	EPA 6020A
1175	Tin	mg/kg	134	148	76.6 - 183	Acceptable	EPA 6020A
1180	Titanium	mg/kg	341	254	0.00 - 460	Acceptable	EPA 6020A
1185	Vanadium	mg/kg	92.1	97.5	54.2 - 118	Acceptable	EPA 6020A
1190	Zinc	mg/kg	271	301	200 - 360	Acceptable	EPA 6020A
SOIL Hexavalent Chromium in Soil (cat# 876)							
1045	Chromium VI	mg/kg	85.8	140	28.0 - 172	Acceptable	EPA 7196A
SOIL Hexavalent Chromium in Soil (cat# 876)							
1045	Chromium VI	mg/kg	105	140	28.0 - 172	Acceptable	EPA 7199
SOIL Anions in Soil (cat# 873)							
1540	Bromide	mg/kg	171	124	74.9 - 141	Not Acceptable	EPA 9056
1575	Chloride	mg/kg	168	181	96.1 - 239	Acceptable	EPA 9056
1730	Fluoride	mg/kg	82.6	348	34.8 - 383	Acceptable	EPA 9056
1810	Nitrate as N	mg/kg		295	143 - 324	Not Reported	
1870	Phosphate as P	mg/kg		275	27.5 - 302	Not Reported	
2000	Sulfate	mg/kg	410	421	243 - 474	Acceptable	EPA 9056

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SOIL-72 Final Complete Report

Phillip Worby
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Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810
732-329-0200

EPA ID: NJ00141
ERA Customer Number: A064801
Report Issued: 12/21/10
Study Dates: 10/18/10 - 12/02/10

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
SOIL Cyanide in Soil (cat# 621)							
1635	Cyanide, total	mg/kg	47.1	61.1	30.6 - 79.5	Acceptable	EPA 9012
1923	Reactive Cyanide	mg/kg		< 25.0		Not Reported	
SOIL Nutrients in Soil (cat# 869)							
1515	Ammonia as N	mg/kg		1140	606 - 1250	Not Reported	
1795	Total Kjeldahl Nitrogen	mg/kg		1390	644 - 1780	Not Reported	
2040	Total Organic Carbon (TOC)	mg/kg	1500	1950	195 - 4270	Acceptable	EPA 9060
1910	Total Phosphorus	mg/kg		441	44.1 - 838	Not Reported	
SOIL Corrosivity/pH in Soil (cat# 875)							
1625	Corrosivity (pH)	S.U.	7.11	7.31	6.71 - 7.91	Acceptable	EPA 9045C
SOIL Ignitability/Flashpoint (cat# 874)							
1780	Ignitability/Flashpoint	°F	114	111	94.0 - 128	Acceptable	EPA 1010A

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ERA
A Waters Company

Study: SOIL-72

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Laboratory Name: Accutest Mid Atlantic

Organic Results

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SOIL-72 Final Complete Report

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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
SOIL Volatiles in Soil (cat# 623)							
4315	Acetone	pg/kg	518	351	40.0 - 579	Acceptable	EPA 8260B
4320	Acetonitrile	µg/kg	239	343	0.00 - 473	Acceptable	EPA 8260B
4325	Acrolein	µg/kg	< 50	0.00		Acceptable	EPA 8260B
4375	Benzene	pg/kg	90.0	117	70.2 - 160	Acceptable	EPA 8260B
4385	Bromobenzene	pg/kg	136	166	93.8 - 230	Acceptable	EPA 8260B
4395	Bromodichloromethane	pg/kg	77.0	87.5	56.0 - 121	Acceptable	EPA 8260B
4400	Bromoform	pg/kg	132	158	80.2 - 234	Acceptable	EPA 8260B
4950	Bromomethane	pg/kg	< 5.0	0.00		Acceptable	EPA 8260B
4410	2-Butanone (MEK)	pg/kg	336	309	95.2 - 484	Acceptable	EPA 8260B
5000	tert-Butyl methyl ether (MTBE)	pg/kg	111	136	57.4 - 201	Acceptable	EPA 8260B
4450	Carbon disulfide	pg/kg	< 5.0	0.00		Acceptable	EPA 8260B
4455	Carbon tetrachloride	pg/kg	< 5.0	0.00		Acceptable	EPA 8260B
4475	Chlorobenzene	pg/kg	120	141	79.8 - 195	Acceptable	EPA 8260B
4575	Chlorodibromomethane	pg/kg	133	164	101 - 225	Acceptable	EPA 8260B
4485	Chloroethane	pg/kg	< 5.0	0.00		Acceptable	EPA 8260B
4500	2-Chloroethylvinylether	pg/kg	< 25	0.00		Acceptable	EPA 8260B
4505	Chloroform	pg/kg	< 5.0	0.00		Acceptable	EPA 8260B
4960	Chloromethane	pg/kg	< 5.0	0.00		Acceptable	EPA 8260B
4570	1,2-Dibromo-3-chloropropane (DBCP)	pg/kg	138	164	76.0 - 271	Acceptable	EPA 8260B
4585	1,2-Dibromoethane (EDB)	pg/kg	72.7	83.1	60.3 - 104	Acceptable	EPA 8260B
4595	Dibromomethane	pg/kg	< 5.0	0.00		Acceptable	EPA 8260B
4610	1,2-Dichlorobenzene	pg/kg	< 5.0	0.00		Acceptable	EPA 8260B
4615	1,3-Dichlorobenzene	pg/kg	140	160	62.6 - 236	Acceptable	EPA 8260B
4620	1,4-Dichlorobenzene	pg/kg	< 5.0	0.00		Acceptable	EPA 8260B
4625	Dichlorodifluoromethane (Freon 12)	pg/kg	< 5.0	0.00		Acceptable	EPA 8260B
4630	1,1-Dichloroethane	pg/kg	110	136	77.3 - 196	Acceptable	EPA 8260B
4635	1,2-Dichloroethane	pg/kg	114	141	81.6 - 195	Acceptable	EPA 8260B
4640	1,1-Dichloroethylene	pg/kg	127	127	69.8 - 206	Acceptable	EPA 8260B
4645	cis-1,2-Dichloroelhylene	pg/kg	144	160	106 - 219	Acceptable	EPA 8260B
4700	trans-1,2-Dichloroethylene	pg/kg	120	134	89.1 - 191	Acceptable	EPA 8260B
4655	1,2-Dichloropropane	pg/kg	119	154	90.0 - 206	Acceptable	EPA 8260B
4680	cis-1,3-Dichloropropylene	pg/kg	90.8	117	80.7 - 144	Acceptable	EPA 8260B

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SOIL Volatiles in Soil (cat# 623) (Continued)							
4685	Irans-1,3-Dichloropropylene	pg/kg	< 5.0	0.00		Acceptable	EPA 8260B
4765	Ethylbenzene	pg/kg	93.6	120	66.8 - 172	Acceptable	EPA 8260B
4860	2-Hexanone	pg/kg	< 5.0	0.00		Acceptable	EPA 8260B
4900	Isopropylbenzene	pg/kg	134	186	87.0 - 295	Acceptable	EPA 8260B
4975	Methylene chloride	pg/kg	116	144	67.3 - 208	Acceptable	EPA 8260B
4995	4-Methyl-2-pentanone (MIBK)	pg/kg	115	138	58.8 - 204	Acceptable	EPA 8260B
5005	Naphthalene	pg/kg	57.5	63.9	26.9 - 93.8	Acceptable	EPA 8260B
5100	Styrene	pg/kg	< 5.0	0.00		Acceptable	EPA 8260B
5105	1,1,1,2-Tetrachloroethane	pg/kg	112	131	85.5 - 178	Acceptable	EPA 8260B
5110	1,1,2,2-Tetrachloroethane	pg/kg	126	161	84.0 - 233	Acceptable	EPA 8260B
5115	Tetrachloroethylene	pg/kg	< 5.0	0.00		Acceptable	EPA 8260B
5140	Toluene	pg/kg	126	157	90.6 - 220	Acceptable	EPA 8260B
5155	1,2,4-Trichlorobenzene	pg/kg	113	142	57.4 - 230	Acceptable	EPA 8260B
5160	1,1,1-Trichloroethane	pg/kg	116	146	83.4 - 208	Acceptable	EPA 8260B
5165	1,1,2-Trichloroethane	pg/kg	123	145	84.7 - 199	Acceptable	EPA 8260B
5170	Trichloroethylene	pg/kg	124	153	78.8 - 218	Acceptable	EPA 8260B
5175	Trichlorofluoromethane	pg/kg	< 5.0	0.00		Acceptable	EPA 8260B
5180	1,2,3-Trichloropropane (TCP)	pg/kg	114	142	55.5 - 207	Acceptable	EPA 8260B
5225	Vinyl acetate	pg/kg	< 10.0	0.00		Acceptable	EPA 8260B
5235	Vinyl chloride	pg/kg	< 5.0	0.00		Acceptable	EPA 8260B
5260	Xylenes, total	pg/kg	289	359	178 - 524	Acceptable	EPA 8260B

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SOIL-72 Final Complete Report

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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
SOIL Volatiles in Soil (cat# 623)							
4315	Acetone	pg/kg		351	40.0 - 579	Not Reported	
4320	Acetonitrile	pg/kg		343	0.00 - 473	Not Reported	
4325	Acrolein	pg/kg		0.00		Not Reported	
4375	Benzene	pg/kg	113	117	70.2 - 160	Acceptable	EPA 8021B
4385	Bromobenzene	pg/kg		166	93.8 - 230	Not Reported	
4395	Bromodichloromethane	pg/kg		87.5	56.0 - 121	Not Reported	
4400	Bromoform	pg/kg		158	80.2 - 234	Not Reported	
4950	Bromomethane	pg/kg		0.00		Not Reported	
4410	2-Butanone (MEK)	pg/kg		309	95.2 - 484	Not Reported	
5000	tert-Butyl methyl ether (MTBE)	pg/kg	133	136	57.4 - 201	Acceptable	EPA 8021B
4450	Carbon disulfide	pg/kg		0.00		Not Reported	
4455	Carbon tetrachloride	pg/kg		0.00		Not Reported	
4475	Chlorobenzene	pg/kg	137	141	79.8 - 195	Acceptable	EPA 8021B
4575	Chlorodibromomethane	pg/kg		164	101 - 225	Not Reported	
4485	Chloroethane	pg/kg		0.00		Not Reported	
4500	2-Chloroethylvinylether	pg/kg		0.00		Not Reported	
4505	Chloroform	pg/kg		0.00		Not Reported	
4960	Chloromethane	pg/kg		0.00		Not Reported	
4570	1,2-Dibromo-3-chloropropane (DBCP)	pg/kg		164	76.0 - 271	Not Reported	
4585	1,2-Dibromoethane (EDB)	pg/kg		83.1	60.3 - 104	Not Reported	
4595	Dibromomethane	pg/kg		0.00		Not Reported	
4610	1,2-Dichlorobenzene	pg/kg	< 1.0	0.00		Acceptable	EPA 8021B
4615	1,3-Dichlorobenzene	pg/kg	156	160	62.6 - 236	Acceptable	EPA 8021B
4620	1,4-Dichlorobenzene	pg/kg	< 1.0	0.00		Acceptable	EPA 8021B
4625	Dichlorodifluoromethane (Freon 12)	pg/kg		0.00		Not Reported	
4630	1,1-Dichloroethane	pg/kg		136	77.3 - 196	Not Reported	
4635	1,2-Dichloroethane	pg/kg		141	81.6 - 195	Not Reported	
4640	1,1-Dichloroethylene	pg/kg		127	69.8 - 206	Not Reported	
4645	cis-1,2-Dichloroethylene	pg/kg	168	160	106 - 219	Acceptable	EPA 8021B
4700	trans-1,2-Dichloroethylene	pg/kg	131	134	89.1 - 191	Acceptable	EPA 8021B
4655	1,2-Dichloropropane	pg/kg		154	90.0 - 206	Not Reported	
4680	cis-1,3-Dichloropropylene	pg/kg	109	117	80.7 - 144	Acceptable	EPA 80218

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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
SOIL Volatiles in Soil (cat# 623) (Continued)							
4685	trans-1,3-Dichloroprppylene	pg/kg	< 1.0	0.00		Acceptable	EPA 8021B
4765	Ethylbenzene	pg/kg	115	120	66.8 - 172	Acceptable	EPA 8021B
4860	2-Hexanone	pg/kg		0.00		Not Reported	
4900	Isopropylbenzene	pg/kg	186	186	87.0 - 295	Acceptable	EPA 8021B
4975	Methylene chloride	pg/kg		144	67.3 - 208	Not Reported	
4995	4-Methyl-2-pentanone (MIBK)	pg/kg		138	58.8 - 204	Not Reported	
5005	Naphthalene	pg/kg	61.5	63.9	26.9 - 93.8	Acceptable	EPA 8021B
5100	Styrene	pg/kg	< 1.0	0.00		Acceptable	EPA 8021B
5105	1,1,1,2-Tetrachloroethane	pg/kg		131	85.5 - 178	Not Reported	
5110	1,1,2,2-Tetrachloroethane	pg/kg		161	84.0 - 233	Not Reported	
5115	Tetrachloroethylene	pg/kg	< 1.0	0.00		Acceptable	EPA 8021B
5140	Toluene	pg/kg	151	157	90.6 - 220	Acceptable	EPA 8021B
5155	1,2,4-Trichlorobenzene	pg/kg		142	57.4 - 230	Not Reported	
5160	1,1,1-Trichloroethane	pg/kg		146	83.4 - 208	Not Reported	
5165	1,1,2-Trichloroethane	pg/kg		145	84.7 - 199	Not Reported	
5170	Trichloroethylene	pg/kg	147	153	78.8 - 218	Acceptable	EPA 8021B
5175	Trichlorofluoromethane	pg/kg		0.00		Not Reported	
5180	1,2,3-Trichloropropane (TCP)	pg/kg		142	55.5 - 207	Not Reported	
5225	Vinyl acetate	pg/kg		0.00		Not Reported	
5235	Vinyl chloride	pg/kg		0.00		Not Reported	
5260	Xylenes, total	pg/kg	352	359	178 - 524	Acceptable	EPA 8021B
SOIL Low-Level PAHs in Soil (cat# 625)							
5500	Acenaphthene	pg/kg	539	746	111 - 874	Acceptable	EPA 8270 SIM
5505	Acenaphthylene	pg/kg	421	600	60.0 - 830	Acceptable	EPA 8270 SIM
5555	Anthracene	pg/kg	508	624	88.5 - 797	Acceptable	EPA 8270 SIM
5575	Benzo(a)anthracene	pg/kg	142	187	57.1 - 240	Acceptable	EPA 8270 SIM
5585	Benzo(b)fluoranthene	pg/kg	338	398	147 - 485	Acceptable	EPA 8270 SIM
5600	Benzo(k)fluoranthene	pg/kg	345	393	120 - 494	Acceptable	EPA 8270 SIM
5590	Benzo(g,h,i)perylene	pg/kg	115	141	20.0 - 205	Acceptable	EPA 8270 SIM
5580	Benzo(a)pyrene	pg/kg	173	235	42.8 - 297	Acceptable	EPA 8270 SIM
5855	Chrysene	pg/kg	143	216	45.6 - 288	Acceptable	EPA 8270 SIM
5895	Dibenz(a,h)anthracene	pg/kg	144	215	43.9 - 266	Acceptable	EPA 8270 SIM
6265	Fluoranthene	pg/kg	410	557	162 - 716	Acceptable	EPA 8270 SIM
6270	Fluorene	pg/kg	293	399	78.1 - 505	Acceptable	EPA 8270 SIM
6315	Indeno(1,2,3-cd)pyrene	pg/kg	69.4	76.2	13.6 - 126	Acceptable	EPA 8270 SIM
5005	Naphthalene	pg/kg	453	659	65.9 - 850	Acceptable	EPA 8270 SIM
6615	Phenanthrene	pg/kg	593	540	197 - 910	Acceptable	EPA 8270 SIM
6665	Pyrene	pg/kg	137	182	48.0 - 239	Acceptable	EPA 8270 SIM

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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
SOIL Low-Level PAHs in Soil (cat# 625)							
5500	Acenaphthene	pg/kg	526	746	111 - 874	Acceptable	EPA 8100
5505	Acenaphthylene	pg/kg	409	600	60.0 - 830	Acceptable	EPA 8100
5555	Anthracene	pg/kg	408	624	88.5 - 797	Acceptable	EPA 8100
5575	Benzo(a)anthracene	pg/kg	129	187	57.1 - 240	Acceptable	EPA 8100
5585	Benzo(b)fluoranthene	pg/kg	223	398	147 - 485	Acceptable	EPA 8100
5600	Benzo(k)fluoranthene	pg/kg	212	393	120 - 494	Acceptable	EPA 8100
5590	Benzo(g,h,i)perylene	pg/kg	99.4	141	20.0 - 205	Acceptable	EPA 8100
5580	Benzo(a)pyrene	pg/kg	147	235	42.8 - 297	Acceptable	EPA 8100
5855	Chrysene	pg/kg	147	216	45.6 - 288	Acceptable	EPA 8100
5895	Dibenz(a,h)anthracene	pg/kg	87.8	215	43.9 - 266	Acceptable	EPA 8100
6265	Fluoranthene	pg/kg	410	557	162 - 716	Acceptable	EPA 8100
6270	Fluorene	pg/kg	301	399	78.1 - 505	Acceptable	EPA 8100
6315	Indeno(1,2,3-cd)pyrene	pg/kg	96.9	76.2	13.6 - 126	Acceptable	EPA 8100
5005	Naphthalene	pg/kg	423	659	65.9 - 850	Acceptable	EPA 8100
6615	Phenanthrene	pg/kg	675	540	197 - 910	Acceptable	EPA 8100
6665	Pyrene	pg/kg	132	182	48.0 - 239	Acceptable	EPA 8100
SOIL Low-Level PAHs in Soil (cat# 625)							
5500	Acenaphthene	pg/kg	456	746	111 - 874	Acceptable	EPA 8310 UV
5505	Acenaphthylene	pg/kg	389	600	60.0 - 830	Acceptable	EPA 8310 UV
5555	Anthracene	pg/kg	458	624	88.5 - 797	Acceptable	EPA 8310 UV
5575	Benzo(a)anthracene	pg/kg	152	187	57.1 - 240	Acceptable	EPA 8310 UV
5585	Benzo(b)fluoranthene	pg/kg	312	398	147 - 485	Acceptable	EPA 8310 UV
5600	Benzo(k)fluoranthene	pg/kg	316	393	120 - 494	Acceptable	EPA 8310 UV
5590	Benzo(g,h,i)perylene	pg/kg	114	141	20.0 - 205	Acceptable	EPA 8310 UV
5580	Benzo(a)pyrene	pg/kg	160	235	42.8 - 297	Acceptable	EPA 8310 UV
5855	Chrysene	pg/kg	176	216	45.6 - 288	Acceptable	EPA 8310 UV
5895	Dibenz(a,h)anthracene	pg/kg	156	215	43.9 - 266	Acceptable	EPA 8310 UV
6265	Fluoranthene	pg/kg	449	557	162 - 716	Acceptable	EPA 8310 UV
6270	Fluorene	pg/kg	299	399	78.1 - 505	Acceptable	EPA 8310 UV
6315	Indeno(1,2,3-cd)pyrene	pg/kg	71.3	76.2	13.6 - 126	Acceptable	EPA 8310 UV
5005	Naphthalene	pg/kg	529	659	65.9 - 850	Acceptable	EPA 8310 UV
6615	Phenanthrene	pg/kg	569	540	197 - 910	Acceptable	EPA 8310 UV
6665	Pyrene	pg/kg	154	182	48.0 - 239	Acceptable	EPA 8310 UV

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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
SOIL Base/Neutrals and Acids in Soil (cat# 467)							
5500	Acenaphthene	pg/kg	3130	4510	1180 - 5630	Acceptable	EPA 8270C
5505	Acenaphthylene	pg/kg	< 29	0.00		Acceptable	EPA 8270C
5145	2-Amino-1-methylbenzene (o-toluidine)	pg/kg	< 140	0.00		Acceptable	EPA 8270C
5545	Aniline	pg/kg	< 57	0.00		Acceptable	EPA 8270C
5555	Anthracene	pg/kg	4270	6010	1510 - 7730	Acceptable	EPA 8270C
5595	Benzidine	pg/kg	< 570	0.00		Acceptable	EPA 8270C
5610	Benzoic acid	pg/kg	< 570	0.00		Acceptable	EPA 8270C
5575	Benzo(a)anthracene	pg/kg	2250	3460	1180 - 4750	Acceptable	EPA 8270C
5585	Benzo(b)fluoranthene	pg/kg	2760	3180	847 - 4450	Acceptable	EPA 8270C
5600	Benzo(k)fluoranthene	pg/kg	1250	1540	408 - 2070	Acceptable	EPA 8270C
5590	Benzo(g,h,i)perylene	pg/kg	3320	4950	1160 - 7030	Acceptable	EPA 8270C
5580	Benzo(a)pyrene	pg/kg	< 29	0.00		Acceptable	EPA 8270C
5630	Benzyl alcohol	pg/kg	< 57	0.00		Acceptable	EPA 8270C
5760	bis(2-Chloroethoxy)methane	pg/kg	3630	5930	1090 - 6970	Acceptable	EPA 8270C
5765	bis(2-Chloroethyl)ether	pg/kg	6720	12400	1500 - 14400	Acceptable	EPA 8270C
5780	bis(2-Chloroisopropyl)ether	pg/kg	< 57	0.00		Acceptable	EPA 8270C
5660	4-Bromophenyl-phenylether	pg/kg	7630	12700	4030 - 16600	Acceptable	EPA 8270C
5670	Butylbenzylphthalate	pg/kg	4970	11900	2810 - 17200	Acceptable	EPA 8270C
5680	Carbazole	pg/kg	< 57	0.00		Acceptable	EPA 8270C
5745	4-Chloroaniline	pg/kg	< 140	0.00		Acceptable	EPA 8270C
5700	4-Chloro-3-methylphenol	pg/kg	6890	10700	3090 - 12300	Acceptable	EPA 8270C
5790	1-Chloronaphthalene	pg/kg	< 140	0.00		Acceptable	EPA 8270C
5795	2-Chloronaphthalene	pg/kg	1370	2220	425 - 2910	Acceptable	EPA 8270C
5800	2-Chlorophenol	pg/kg	7070	11800	2020 - 13000	Acceptable	EPA 8270C
5825	4-Chlorophenyl-phenylether	pg/kg	4090	6430	1790 - 8340	Acceptable	EPA 8270C
5855	Chrysene	pg/kg	1180	1570	454 - 2110	Acceptable	EPA 8270C
5895	Dibenz(a,h)anthracene	pg/kg	1700	2010	389 - 3240	Acceptable	EPA 8270C
5905	Dibenzofuran	pg/kg	6570	10700	2880 - 13300	Acceptable	EPA 8270C
5925	Di-n-butylphthalate	pg/kg	< 57	0.00		Acceptable	EPA 8270C
4610	1,2-Dichldrobenzene	µg/kg	4230	8780	878 - 9660	Acceptable	EPA 8270C
4615	1,3-Dichlorobenzene	pg/kg	3480	8440	844 - 9280	Acceptable	EPA 8270C
4620	1,4-Dichlorobenzene	pg/kg	< 57	0.00		Acceptable	EPA 8270C

ACCREDITED

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

Phillip Worby
Director Corporate Quality Assurance
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810
732-329-0200

EPA ID: NJ00141
ERA Customer Number: A064801
Report Issued: 12/21/10
Study Dates: 10/18/10 - 12/02/10

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
SOIL Base/Neutrals and Acids in Soil (cat# 467) (Continued)							
5945	3,3'-Dichlorobenzidine	pg/kg	< 140	0.00		Acceptable	EPA 8270C
6000	2,4-Dichlorpphenol	pg/kg	< 140	0.00		Acceptable	EPA 8270C
6005	2,6-Dichlorophenol	pg/kg	3440	5900	1650 - 6490	Acceptable	EPA 8270C
6070	Diethylphthalate	pg/kg	5510	8800	1990 - 11900	Acceptable	EPA 8270C
6130	2,4-Dimethylphenol	pg/kg	< 140	0.00		Acceptable	EPA 8270C
6135	Dimethylphthalate	pg/kg	5740	8920	2660 - 11300	Acceptable	EPA 8270C
6175	2,4-Dinitrophenol	pg/kg	< 570	0.00		Acceptable	EPA 8270C
6185	2,4-Dinitrotoluene	pg/kg	3450	4950	812 - 6780	Acceptable	EPA 8270C
6190	2,6-Dinitrotoluene	pg/kg	< 57	0.00		Acceptable	EPA 8270C
6200	Di-n-octylphthalate	pg/kg	< 57	0.00		Acceptable	EPA 8270C
6065	bis(2-Ethylhexyl)phthalate	pg/kg	6330	12000	3400 - 16800	Acceptable	EPA 8270C
6265	Fluoranthene	pg/kg	5160	8300	2840 - 10800	Acceptable	EPA 8270C
6270	Fluorene	pg/kg	4070	6300	2080 - 7970	Acceptable	EPA 8270C
6275	Hexachlorobenzene	pg/kg	< 57	0.00		Acceptable	EPA 8270C
4835	Hexachlorobutadiene	pg/kg	< 29	0.00		Acceptable	EPA 8270C
6285	Hexachlorocyclopentadiene	pg/kg	< 570	0.00		Acceptable	EPA 8270C
4840	Hexachloroethane	pg/kg	5380	12800	439 - 14100	Acceptable	EPA 8270C
6315	Indeno(1,2,3-cd)pyrene	pg/kg	4180	6820	682 - 10100	Acceptable	EPA 8270C
6320	Isophorone	pg/kg	< 57	0.00		Acceptable	EPA 8270C
6360	4,6-Dinitro-2-methylphenol	pg/kg	707	6140	0.00 - 6750	Acceptable	EPA 8270C
6385	2-Methylnaphthalene	pg/kg	2150	3610	931 - 4260	Acceptable	EPA 8270C
6400	2-Methylphenol	pg/kg	4130	10000	1000 - 11000	Acceptable	EPA 8270C
6412	3&4-Methylphenol	pg/kg	5400	11500	1920 - 12600	Acceptable	EPA 8270C
5005	Naphthalene	pg/kg	1940	3330	589 - 3980	Acceptable	EPA 8270C
6460	2-Nitroaniline	pg/kg	< 140	0.00		Acceptable	EPA 8270C
6465	3-Nitroaniline	pg/kg	< 140	0.00		Acceptable	EPA 8270C
6470	4-Nitroaniline	pg/kg	< 140	0.00		Acceptable	EPA 8270C
5015	Nitrobenzene	pg/kg	< 57	0.00		Acceptable	EPA 8270C
6490	2-Nitrophenol	pg/kg	6530	10500	1200 - 11900	Acceptable	EPA 8270C
6500	4-Nitrophenol	pg/kg	2700	5040	600 - 6780	Acceptable	EPA 8270C
6525	N-Nitrosodiethylamine	pg/kg	< 140	0.00		Acceptable	EPA 8270C
6530	N-Nitrosodimethylamine	pg/kg	5040	11000	1880 - 12100	Acceptable	EPA 8270C

ACCREDITED
All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

ERA
A Waters Company

SOIL-72 FInal Complete Report

Phillip Worby
Director Corporate Quality Assurance
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810
732-329-0200

EPA ID: NJ00141
ERA Customer Number: A064801
Report Issued: 12/21/10
Study Dates: 10/18/10 - 12/02/10

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
SOIL Base/Neutrals and Acids in Soil (cat# 467) (Continued)							
6535	N-Nitrosodiphenylamine	pg/kg	< 140	0.00		Acceptable	EPA 8270C
6545	N-Nitroso-di-n-propylamine	pg/kg	6210	9100	1180 - 12200	Acceptable	EPA 8270C
6590	Pentachlorobenzene	pg/kg	< 140	0.00		Acceptable	EPA 8270C
6605	Pentachlorophenol	pg/kg	1410	3850	600 - 4310	Acceptable	EPA 8270C
6615	Phenanthrene	pg/kg	< 29	0.00		Acceptable	EPA 8270C
6625	Phenol	pg/kg	5590	8600	860 - 10500	Acceptable	EPA 8270C
6665	Pyrene	pg/kg	1560	2230	701 - 3100	Acceptable	EPA 8270C
5095	Pyridine	pg/kg	< 57	0.00		Acceptable	EPA 8270C
6715	1,2,4,5-Tetrachlorobenzene	pg/kg	< 140	0.00		Acceptable	EPA 8270C
6735	2,3,4,6-Tetrachlorophenol	pg/kg	< 140	0.00		Acceptable	EPA 8270C
5155	1,2,4-Trichlorobenzene	pg/kg	2030	3570	531 - 4210	Acceptable	EPA 8270C
6835	2,4,5-Trichlorophenol	pg/kg	5740	9900	1520 - 12000	Acceptable	EPA 8270C
6840	2,4,6-Trichlorophenol	pg/kg	3330	5460	977 - 6590	Acceptable	EPA 8270C
SOIL Organochiorine Pesticides in Soil (cat# 468)							
7025	Aldrin	pg/kg	119	181	49.8 - 232	Acceptable	EPA 8081A
7110	alpha-BHC	pg/kg	246	363	101 - 455	Acceptable	EPA 8081A
7115	beta-BHC	pg/kg	137	220	39.1 - 313	Acceptable	EPA 8081A
7105	delta-BHC	pg/kg	225	410	97.0 - 519	Acceptable	EPA 8081A
7120	gamma-BHC(Lindane)	pg/kg	300	464	124 - 564	Acceptable	EPA 8081A
7240	alpha-Chlordane	pg/kg	47.9	78.5	24.7 - 110	Acceptable	EPA 8081A
7245	gamma-Chlordane	pg/kg	135	209	80.0 - 263	Acceptable	EPA 8081A
7355	4,4'-DDD	pg/kg	257	383	130 - 500	Acceptable	EPA 8081A
7360	4,4'-DDE	pg/kg	253	322	114 - 447	Acceptable	EPA 8081A
7365	4,4'-DDT	pg/kg	111	196	43.7 - 272	Acceptable	EPA 8081A
7470	Dieldrin	pg/kg	203	326	110 - 411	Acceptable	EPA 8081A
7540	Endrin	pg/kg	60.8	95.4	29.0 - 148	Acceptable	EPA 8081A
7530	Endrin aldehyde	pg/kg	82.2	306	30.6 - 361	Acceptable	EPA 8081A
7535	Endrin ketone	pg/kg	133	351	84.7 - 457	Acceptable	EPA 8081A
7510	Endosulfan I	pg/kg	64.7	220	31.5 - 242	Acceptable	EPA 8081A
7515	Endosulfan II	pg/kg	66.6	242	40.3 - 266	Acceptable	EPA 8081A
7520	Endosulfan sulfate	pg/kg	161	439	95.0 - 608	Acceptable	EPA 8081A
7685	Heptachlor	pg/kg	226	347	97.2 - 438	Acceptable	EPA 8081A
7690	Heptachlor epoxide	pg/kg	204	315	104 - 396	Acceptable	EPA 8081A
7810	Methoxychlor	pg/kg	199	403	45.4 - 621	Acceptable	EPA 8081A
SOIL Chlordane in Soil (cat# 628)							
7250	Chlordane, technical	pg/kg	312	622	126 - 835	Acceptable	EPA 8081A
SOIL Toxaphene in Soil (cat# 627)							
8250	Toxaphene	pg/kg	560	723	72.3 - 1040	Acceptable	EPA 8081A

ACCREDITED

All analytes are included in ERA's A2LA accredilalion. Lab Code: 1539-01

ERA
A Waters Company

SOIL-72 Final Complete Report

Phillip Worby
Director Corporate Quality Assurance
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810
732-329-0200

EPA ID: NJ00141
ERA Customer Number: A064801
Report Issued: 12/21/10
Study Dates: 10/18/10 - 12/02/10

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
SOIL Chlorinated Acid Herbicides in Soil (cat# 626)							
8505	Acifluorfen	pg/kg		0.00		Not Reported	
8530	Bentazon	pg/kg		335	1.66 - 454	Not Reported	
8540	Chloramben	pg/kg		0.00		Not Reported	
8545	2,4-D	pg/kg	204	628	62.8 - 1010	Acceptable	EPA 8151A
8560	2,4-DB	pg/kg	238	980	0.00 - 1530	Acceptable	EPA 8151A
8550	Dacthal diacid (DCPA)	pg/kg		0.00		Not Reported	
8555	Dalapon	pg/kg	< 3.3	0.00		Acceptable	EPA 8151A
8595	Dicamba	pg/kg	204	309	30.9 - 523	Acceptable	EPA 8151A
8600	3,5-Dichlorobenzoic acid	pg/kg		194	0.00 - 227	Not Reported	
8605	Dichlorprop	pg/kg	< 17	113	0.00 - 177	Acceptable	EPA 8151A
8620	Dinoseb	pg/kg	55.7	612	0.00 - 868	Acceptable	EPA 8151A
7775	MCPA	pg/kg	< 1700	0.00		Acceptable	EPA 8151A
7780	MCPP	pg/kg	< 1700	0.00		Acceptable	EPA 8151A
6500	4-Nitrophenol	pg/kg	<	189	15.9 - 208	No Evaluation	EPA 8151A
6605	Pentachlorophenol	pg/kg	< 91.9	191	0.00 - 236	Acceptable	EPA 8151A
8645	Picloram	pg/kg	< 17	141	0.00 - 182	Acceptable	EPA 8151A
8655	2,4,5-T	pg/kg	237	366	36.6 - 588	Acceptable	EPA 8151A
8650	2,4,5-TP (Silvex)	pg/kg	182	242	24.2 - 357	Acceptable	EPA 8151A
SOIL PCBs in Soil (cat# 624)							
8880	Aroclor 1016	mg/kg	< .029	0.00		Acceptable	EPA 8082
8885	Aroclor 1221	mg/kg	< .029	0.00		Acceptable	EPA 8082
8890	Aroclor 1232	mg/kg	< .029	0.00		Acceptable	EPA 8082
8895	Aroclor 1242	mg/kg	7.51	12.2	3.00 - 17.5	Acceptable	EPA 8082
8900	Aroclor 1248	mg/kg	< .029	0.00		Acceptable	EPA 8082
8905	Aroclor 1254	mg/kg	< .029	0.00		Acceptable	EPA 8082
8910	Aroclor 1260	mg/kg	< .029	0.00		Acceptable	EPA 8082
SOIL Oil and Grease (O&G) in Soil (cat# 867)							
1860	n-Hexane Extractabie Material(O&G)(Gravimet	mg/kg	1220	1190	364 - 2010	Acceptable	EPA 9071B
1860	n-Hexane Extractabie Material(O&G)(IR)	mg/kg		1460	577 - 2600	Not Reported	
SOIL Gasoline Range Organics (GRO) in Soil (cat# 630)							
9408	Gasoline Range Organics (GRO)	mg/kg	315	409	40.9 - 688	Acceptable	EPA 8015B
4375	Benzene in GRO	mg/kg		4.37	0.00 - 5.21	Not Reported	
4765	Ethylbenzene in GRO	mg/kg		13.1	5.13 - 15.4	Not Reported	
5140	Toluene in GRO	mg/kg		38.1	0.00 - 41.9	Not Reported	
5260	Xylenes, total in GRO	mg/kg		38.6	9.58 - 52.2	Not Reported	
SOIL Diesel Range Organics (DRO) in Soil (cat# 631)							
9369	Diesel Range Organics (DRO)	mg/kg	568	742	174 - 932	Acceptable	EPA 8015B

ACCREDITED

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

Phillip Worby
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810

WP-180 Final Report

WatR™ Pollution Proficiency Testing

WatR™ Pollution Study

Open Date: 01/18/10

Close Date: 03/04/10

Report Issued Date: 03/23/10

March 23, 2010

Phillip Worby
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810

Enclosed is your final report for ERA's WP-180 WatR™Pollution Proficiency Testing (PT) study. Your final report includes an evaluation of all results submitted by your labpratory to ERA.

Data Evaluation Protocols: All analytes in ERA's WP-180 WatR™Pollution Proficiency Testing study have been evaluated using the following tiered approach. If the analyte is listed in the most current National Environmental Laboratory Accreditation Conference (NELAC) PT Field of Testing tables, the evaluation was completed by comparing the reported result to the acceptance limits generated using the criteria contained in the NELAC FoPT tables. If the analyte is not included in the NELAC FoPT tables, the reported result has been evaluated using the procedures outlined in ERA's Standard Operating Procedure for the Generation of Performance Acceptance Limits (SOP 0260).

Corrective Action Help: As part of your accreditation(s), you may be required to identify the root cause of any "Not Acceptable" results, implement the necessary corrective actions, and then satisfy your PT requirements by participating In a Supplemental (QuiK™ Response) or future ERA PT study. ERA's technical staff is available to help your laboratory resolve any technical issues that may be impairing your PT performance and possibly affecting your routine data quality. Our laboratory and lechnical staff have well over three hundred years of collective experience in performing the full range of environmental analyses. As part of our technical support, ERA offers QC samples that can be helpful in helping you work through your technical issues.

Thank you for your participation in ERA's WP-180 WatR™Pollution Proficiency Testing study. If you have any questions, please contact myself, or Curtis Wood, Director of Regulatory Affairs and Business Development, at 1-800-372-0122.

Sincerely,

Shawn Kassner

Shawn Kassner
Proficiency Testing Manager

Jay R. McBurney
Quality Program Manager

attachments
smk

Report Recipient	Contact/Phone Number	Reporting Type
DoD EDQW	Fred S McLean / 843-764-7266	All Analytes
Minnesota	Susan Wyatt / 651-201-5323	All Analytes
New Jersey	Rachel Ellis / 609-777-1749	All Analytes
North Carolina (WP)	Patrick Donnelly / 919-733-3908 x207	All Analytes
Ohio-VAP	Darlene Stanley / 614-644-3748	All Analytes
South Carolina	Carol Smith / 803-896-0992	All Analytes
West Virginia (DEP)	Daniel T. Arnold / 304-926-0499 x1341	All Analytes
Enovis	Tim Abston / 313-872-6151	All Analytes

WP-180 Definitions & Study Discussion

Study Dates: 01/18/10 - 03/04/10

Report Issued: 03/23/10

WP Study Definitions

The Reported Value is the value that the laboratory reported to ERA.

The ERA Assigned Values are compliant with the most current USEPA/NELAC FoPT tables. A parameter not added to the standard is given an Assigned Value of "0" per the guidelines contained in the USEPA's Criteria Document and NELAC standards.

The Acceptance Limits are established per the criteria contained in the most curreni USEPA/NELAC FoPT tables, or ERA's SOP for the Generation of Performance Acceptance Limits™ as applicable.

The Performance Evaluation:

Acceptable	= Reported Value falls within the Acceptance Limits.
Not Acceptable	= Reported Value falls outside the Acceptance Limits.
No Evaluation	= Reported Value cannot be evaluated.
Not Reported	= No Vaiue reported.

The Method Description is the method the laboratory reported to ERA.

WP Study Discussion

ERA's WP-180 WatR™Pollution Proficiency Testing study has been reviewed by ERA senior management and certified compliant with the requirements of the USEPA's National Standards for Water Proficiency Testing Studies Criteria Document (December 1998), and the criteria contained in the most current NELAC FoPT tables.

ERA's WP-180 WatR™Pollution study standards were examined for any anomalies. A full review of all homogeneity, stability and accuracy verification data was completed. All analytical verification data for all analytes met the acceptance criteria contained in the USEPA's National Criteria Document for Water Proficiency Testing Studies, December 1998, and the criteria contained in the most current NELAC FoPT tables.

The data submitted by participating laboratories was also examined for study anomalies. There were no anomalies observed during the statistical review of the data.

ERA's WP-180 WatR™Pollution study reports shall not be reproduced except in their entirety and not without the permission of the participating laboratories. The report must not be used by the participating laboratories to claim product endorsement by any agency of the U. S. government.

The data contained herein are confidential and intended for your use only.

If you have any questions or concerns regarding your assessment in ERA's WatR™Pollution Proficiency Testing program, please contact Shawn Kassner, Proficiency Testing Manager, or Curtis Wood, Director of Regulatory Affairs and Business Development, at 1-800-372-0122.

Study: **WP-180**

ERA Customer Number: **A064801**

Laboratory Name: **Accutest Mid Atlantic**

Inorganic Results

WP-180 Final Complete Report

Phillip Worby
Director Corporate Quality Assurance
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810
732-329-0200

EPA ID: NJ00141
ERA Customer Number: A064801
Report Issued: 03/23/10
Study Dates: 01/18/10 - 03/04/10

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Minerals (cat# 581)							
0027	Alkalinity as CaCO3	mg/L	55.2	55.8	48.5 - 63.1	Acceptable	SM2320B
0028	Chloride	mg/L	75.2	74.4	63.6 - 85.5	Acceptable	EPA 300.0
0020	Conductivity at 25°C	pmhos/cm	411	408	365 - 451	Acceptable	SM2510B
0029	Fluoride	mg/L	1.46	1.46	1.16 - 1.77	Acceptable	EPA 300.0
0026	Potassium	mg/L	18.9	18.9	15.5 - 22.6	Acceptable	EPA 200.7
0025	Sodium	mg/L	72.4	71.9	61.0 - 82.4	Acceptable	EPA 200.7
0030	Sulfate	mg/L	19.8	19.6	15.2 - 23.5	Acceptable	EPA 300.0
0021	Total Dissolved Solids at 180°C	mg/L	267	272	203 - 341	Acceptable	SM2540C
1950	Total Solids at 105°C	mg/L	269	283	243 - 319	Acceptable	SM2540B
WP Minerals (cat# 581)							
0027	Alkalinity as CaCO3	mg/L		55.8	48.5 - 63.1	Not Reported	
0028	Chloride	mg/L	75.2	74.4	63.6 - 85.5	Acceptable	EPA 9056
0020	Conductivity at 25°C	pmhos/cm	411	408	365 - 451	Acceptable	EPA 9050A
0029	Fluoride	mg/L	1.46	1.46	1.16 - 1.77	Acceptable	EPA 9056
0026	Potassium	mg/L	19.6	18.9	15.5 - 22.6	Acceptable	EPA 200.8
0025	Sodium	mg/L	73.6	71.9	61.0 - 82.4	Acceptable	EPA 200.8
0030	Sulfate	mg/L	19.8	19.6	15.2 - 23.5	Acceptable	EPA 9056
0021	Total Dissolved Solids at 180°C	mg/L		272	203 - 341	Not Reported	
1950	Total Solids at 105°C	mg/L	269	283	243 - 319	Acceptable	SM2540G
WP Minerals (cat# 581)							
0027	Alkalinity as CaCO3	mg/L		55.8	48.5 - 63.1	Not Reported	
0028	Chloride	mg/L	73.3	74.4	63.6 - 85.5	Acceptable	SM4500Cl- C VIS
0020	Conductivity at 25°C	pmhos/cm		408	365 - 451	Not Reported	
0029	Fluoride	mg/L		1.46	1.16 - 1.77	Not Reported	
0026	Potassium	mg/L	18.0	18.9	15.5 - 22.6	Acceptable	EPA 6010B
0025	Sodium	mg/L	70.0	71.9	61.0 - 82.4	Acceptable	EPA 6010B
0030	Sulfate	mg/L		19.6	15.2 - 23.5	Not Reported	
0021	Total Dissolved Solids at 180°C	mg/L		272	203 - 341	Not Reported	
1950	Total Solids at 105°C	mg/L		283	243 - 319	Not Reported	
WP Minerals (cat# 581)							
0027	Alkalinity as CaCO3	mg/L		55.8	48.5 - 63.1	Not Reported	
0028	Chloride	mg/L		74.4	63.6 - 85.5	Not Reported	
0020	Conductivity at 25°C	pmhos/cm		408	365 - 451	Not Reported	
0029	Fluoride	mg/L		1.46	1.16 - 1.77	Not Reported	
0026	Potassium	mg/L	19.3	18.9	15.5 - 22.6	Acceptable	EPA 6020
0025	Sodium	mg/L	74.7	71.9	61.0 - 82.4	Acceptable	EPA 6020
0030	Sulfate	mg/L		19.6	15.2 - 23.5	Not Reported	
0021	Total Dissolved Solids at 180°C	mg/L		272	203 - 341	Not Reported	
1950	Total Solids at 105°C	mg/L		283	243 - 319	Not Reported	

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

WP-180 Final Complete Report

Phillip Worby
Director Corporate Quality Assurance
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810
732-329-0200

EPA ID: NJ00141
ERA Customer Number: A064801
Report Issued: 03/23/10
Study Dates: 01/18/10 - 03/04/10

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Hardness (cat# 580)							
0072	Non-Filterable Residue (TSS)	mg/L	76.0	80.0	65.2 - 89.1	Acceptable	SM2540D
0023	Calcium	mg/L	36.2	37.3	33.2 - 42.4	Acceptable	EPA 200.7
0024	Magnesium	mg/L	15.2	15.3	13.1 - 17.6	Acceptable	EPA 200.7
1550	Calcium Hardness as CaCO3	mg/L	90.4	93.1	82.8 - 106	Acceptable	EPA 200.7
0022	Total Hardness as CaCO3	mg/L	153	156	137 - 178	Acceptable	EPA 200.7
WP Hardness (cat# 580)							
0072	Non-Filterable Residue (TSS)	mg/L		80.0	65.2 - 89.1	Not Reported	
0023	Calcium	mg/L	37.3	37.3	33.2 - 42.4	Acceptable	EPA 200.8
0024	Magnesium	mg/L	16.2	15.3	13.1 - 17.6	Acceptable	EPA 200.8
1550	Calcium Hardness as CaCO3	mg/L		93.1	82.8 - 106	Not Reported	
0022	Total Hardness as CaCO3	mg/L	160	156	137 - 178	Acceptable	SM2340C
WP Hardness (cat# 580)							
0072	Non-Filterable Residue (TSS)	mg/L		80.0	65.2 - 89.1	Not Reported	
0023	Calcium	mg/L	36.1	37.3	33.2 - 42.4	Acceptable	EPA 6010B
0024	Magnesium	mg/L	15.2	15.3	13.1 - 17.6	Acceptable	EPA 6010B
1550	Calcium Hardness as CaCO3	mg/L		93.1	82.8 - 106	Not Reported	
0022	Total Hardness as CaCO3	mg/L		156	137 - 178	Not Reported	
WP Hardness (cat# 580)							
0072	Non-Filterable Residue (TSS)	mg/L		80.0	65.2 - 89.1	Not Reported	
0023	Calcium	mg/L	36.8	37.3	33.2 - 42.4	Acceptable	EPA 6020
0024	Magnesium	mg/L	16.2	15.3	13.1 - 17.6	Acceptable	EPA 6020
1550	Calcium Hardness as CaCO3	mg/L		93.1	82.8 - 106	Not Reported	
0022	Total Hardness as CaCO3	mg/L		156	137 - 178	Not Reported	
WP pH (cat# 577)							
0019	pH	S.U.	7.22	7.24	7.04 - 7.44	Acceptable	SM4500H+ B
WP Settleable Solids (cat# 883)							
1965	Settleable Solids	mL/L	18.0	18.4	14.0 - 23.8	Acceptable	SM2540F
WP Volatile Solids (cat# 884)							
1970	Volatile Solids	mg/L	210	240	188 - 276	Acceptable	EPA 160.4
WP Volatile Solids (cat# 884)							
1970	Volatile Solids	mg/L	210	240	188 - 276	Acceptable	SM2540G
WP Simple Nutrients (cat# 584)							
0031	Ammonia as N	mg/L	8.50	10.7	7.93 - 13.3	Acceptable	SM4500NH3 G
1820	Nitrate + Nitrite as N	mg/L	20.7	21.9	17.8 - 25.4	Acceptable	EPA 353.2
0032	Nitrate as N	mg/L	20.7	21.9	17.1 - 26.4	Acceptable	EPA 353.2
0033	ortho-Phosphate as P	mg/L	2.96	2.98	2.43 - 3.55	Acceptable	SM4500P E

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WP-180 Final Complete Report

Phillip Worby
Director Corporate Quality Assurance
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2235 Route 130
Dayton, NJ 08810
732-329-0200

EPA ID: NJ00141
ERA Customer Number: A064801
Report Issued: 03/23/10
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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Complex Nutrients (cat# 579)							
0034	Total Kjeldahl Nitrogen	mg/L	8.07	8.02	5.37 - 10.5	Acceptable	EPA 351.2
0035	Total phosphorus as P	mg/L	1.49	1.39	1.09 - 1.74	Acceptable	EPA 365.3
WP Nitrite (cat# 888)							
1840	Nitrite as N	mg/L	2.16	2.11	1.77 - 2.45	Acceptable	SM4500NO2- B
WP Demand (cat# 578)							
0038	BOD	mg/L	61.3	75.3	38.0 - 113	Acceptable	SM5210B
0102	CBOD	mg/L	50.0	64.8	29.1 - 100	Acceptable	SM5210B
0036	COD	mg/L	110	122	92.0 - 141	Acceptable	SM5220C
0037	TOC	mg/L	42.0	48.2	40.2 - 55.6	Acceptable	SM5310B
WP Demand (cat# 578)							
0038	BOD	mg/L		75.3	38.0 - 113	Not Reported	
0102	CBOD	mg/L		64.8	29.1 - 100	Not Reported	
0036	COD	mg/L		122	92.0 - 141	Not Reported	
0037	TOC	mg/L	42.0	48.2	40.2 - 55.6	Acceptable	EPA 9060
WP Oil & Grease (cat# 582)							
0104	Oil & Grease (Gravimetric)	mg/L	39.7	45.0	28.3 - 55.5	Acceptable	EPA 1664A
1860	Oil & Grease (Infrared)	mg/L		55.4	36.4 - 67.0	Not Reported	
WP Trace Metals (cat# 586)							
0001	Aluminum	µg/L	1360	1410	1150 - 1660	Acceptable	EPA 200.7
0016	Antimony	µg/L	456	458	319 - 552	Acceptable	EPA 200.7
0002	Arsenic	µg/L	270	273	226 - 321	Acceptable	EPA 200.7
1015	Barium	µg/L	304	316	274 - 356	Acceptable	EPA 200.7
0003	Beryllium	µg/L	116	120	101 - 136	Acceptable	EPA 200.7
1025	Boron	µg/L	1620	1600	1300 - 1860	Acceptable	EPA 200.7
0004	Cadmium	µg/L	560	553	472 - 628	Acceptable	EPA 200.7
0006	Chromium	µg/L	823	813	709 - 919	Acceptable	EPA 200.7
0005	Cobalt	µg/L	763	744	654 - 834	Acceptable	EPA 200.7
0007	Copper	µg/L	703	764	688 - 840	Acceptable	EPA 200.7
0008	Iron	µg/L	1410	1400	1240 - 1580	Acceptable	EPA 200.7
0012	Lead	µg/L	355	367	317 - 415	Acceptable	EPA 200.7
0010	Manganese	µg/L	483	470	421 - 522	Acceptable	EPA 200.7
0074	Molybdenum	µg/L	85.6	88.5	69.8 - 106	Acceptable	EPA 200.7
0011	Nickel	µg/L	1520	1580	1420 - 1760	Acceptable	EPA 200.7
0013	Selenium	µg/L	1280	1300	1030 - 1500	Acceptable	EPA 200.7
0017	Silver	µg/L	205	209	179 - 240	Acceptable	EPA 200.7
0075	Strontium	µg/L	62.0	63.9	52.8 - 74.8	Acceptable	EPA 200.7
0018	Thallium	µg/L	516	529	426 - 635	Acceptable	EPA 200.7
0014	Vanadium	µg/L	631	664	582 - 743	Acceptable	EPA 200.7
0015	Zinc	µg/L	350	331	283 - 384	Acceptable	EPA 200.7

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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Trace Metals (cat# 586)							
0001	Aluminum	pg/L	1300	1410	1150 - 1660	Acceptable	EPA 200.8
0016	Antimony	pg/L	462	458	319 - 552	Acceptable	EPA 200.8
0002	Arsenic	pg/L	270	273	226 - 321	Acceptable	EPA 200.8
1015	Barium	pg/L	306	316	274 - 356	Acceptable	EPA 200.8
0003	Beryllium	pg/L	113	120	101 - 136	Acceptable	EPA 200.8
1025	Boron	pg/L		1600	1300 - 1860	Not Reported	
0004	Cadmium	pg/L	515	553	472 - 628	Acceptable	EPA 200.8
0006	Chromium	pg/L	783	813	709 - 919	Acceptable	EPA 200.8
0005	Cobalt	pg/L	736	744	654 - 834	Acceptable	EPA 200.8
0007	Copper	pg/L	733	764	688 - 840	Acceptable	EPA 200.8
0008	Iron	pg/L	1460	1400	1240 - 1580	Acceptable	EPA 200.8
0012	Lead	pg/L	346	367	317 - 415	Acceptable	EPA 200.8
0010	Manganese	pg/L	469	470	421 - 522	Acceptable	EPA 200.8
0074	Molybdenum	pg/L	88.9	88.5	69.8 - 106	Acceptable	EPA 200.8
0011	Nickel	pg/L	1580	1580	1420 - 1760	Acceptable	EPA 200.8
0013	Selenium	pg/L	1240	1300	1030 - 1500	Acceptable	EPA 200.8
0017	Silver	pg/L	217	209	179 - 240	Acceptable	EPA 200.8
0075	Strontium	pg/L	62.5	63.9	52.8 - 74.8	Acceptable	EPA 200.8
0018	Thallium	pg/L	503	529	426 - 635	Acceptable	EPA 200.8
0014	Vanadium	pg/L	677	664	582 - 743	Acceptable	EPA 200.8
0015	Zinc	pg/L	310	331	283 - 384	Acceptable	EPA 200.8

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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Trace Metals (cat# 586)							
0001	Aluminum	pg/L	1370	1410	1150 - 1660	Acceptable	EPA 6010B
0016	Antimony	pg/L	451	458	319 - 552	Acceptable	EPA 6010B
0002	Arsenic	pg/L	264	273	226 - 321	Acceptable	EPA 6010B
1015	Barium	pg/L	311	316	274 - 356	Acceptable	EPA 6010B
0003	Beryllium	pg/L	117	120	101 - 136	Acceptable	EPA 6010B
1025	Boron	pg/L	1590	1600	1300 - 1860	Acceptable	EPA 6010B
0004	Cadmium	pg/L	551	553	472 - 628	Acceptable	EPA 6010B
0006	Chromium	pg/L	827	813	709 - 919	Acceptable	EPA 6010B
0005	Cobalt	pg/L	770	744	654 - 834	Acceptable	EPA 6010B
0007	Copper	pg/L	708	764	688 - 840	Acceptable	EPA 6010B
0008	Iron	µg/L	1430	1400	1240 - 1580	Acceptable	EPA 6010B
0012	Lead	pg/L	352	367	317 - 415	Acceptable	EPA 6010B
0010	Manganese	pg/L	482	470	421 - 522	Acceptable	EPA 6010B
0074	Molybdenum	pg/L	89.8	88.5	69.8 - 106	Acceptable	EPA 6010B
0011	Nickel	pg/L	1530	1580	1420 - 1760	Acceptable	EPA 6010B
0013	Selenium	pg/L	1230	1300	1030 - 1500	Acceptable	EPA 6010B
0017	Silver	pg/L	200	209	179 - 240	Acceptable	EPA 6010B
0075	Strontium	pg/L	62.6	63.9	52.8 - 74.8	Acceptable	EPA 6010B
0018	Thallium	pg/L	500	529	426 - 635	Acceptable	EPA 6010B
0014	Vanadium	pg/L	635	664	582 - 743	Acceptable	EPA 6010B
0015	Zinc	pg/L	342	331	283 - 384	Acceptable	EPA 6010B

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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Trace Metals (cat# 586)							
0001	Aluminum	pg/L	1390	1410	1150 - 1660	Acceptable	EPA 6020
0016	Antimony	pg/L	452	458	319 - 552	Acceptable	EPA 6020
0002	Arsenic	pg/L	260	273	226 - 321	Acceptable	EPA 6020
1015	Barium	pg/L	312	316	274 - 356	Acceptable	EPA 6020
0003	Beryllium	pg/L	114	120	101 - 136	Acceptable	EPA 6020
1025	Boron	pg/L		1600	1300 - 1860	Not Reported	
0004	Cadmium	pg/L	529	553	472 - 628	Acceptable	EPA 6020
0006	Chromium	pg/L	822	813	709 - 919	Acceptable	EPA 6020
0005	Cobalt	pg/L	733	744	654 - 834	Acceptable	EPA 6020
0007	Copper	pg/L	749	764	688 - 840	Acceptable	EPA 6020
0008	Iron	pg/L	1390	1400	1240 - 1580	Acceptable	EPA 6020
0012	Lead	pg/L	348	367	317 - 415	Acceptable	EPA 6020
0010	Manganese	pg/L	464	470	421 - 522	Acceptable	EPA 6020
0074	Molybdenum	pg/L	88.0	88.5	69.8 - 106	Acceptable	EPA 6020
0011	Nickel	pg/L	1550	1580	1420 - 1760	Acceptable	EPA 6020
0013	Selenium	pg/L	1260	1300	1030 - 1500	Acceptable	EPA 6020
0017	Silver	pg/L	225	209	179 - 240	Acceptable	EPA 6020
0075	Strontium	pg/L	64.7	63.9	52.8 - 74.8	Acceptable	EPA 6020
0018	Thallium	pg/L	499	529	426 - 635	Acceptable	EPA 6020
0014	Vanadium	pg/L	636	664	582 - 743	Acceptable	EPA 6020
0015	Zinc	pg/L	300	331	283 - 384	Acceptable	EPA 6020
WP Mercury (cat# 574)							
0009	Mercury	pg/L	10.0	10.6	6.53 - 14.4	Acceptable	EPA 7470A
WP Mercury (cat# 574)							
0009	Mercury	pg/L	10.0	10.6	6.53 - 14.4	Acceptable	EPA 245.1
WP Hexavalent Chromium (cat# 898)							
1045	Hexavalent Chromium	pg/L	311	320	258 - 378	Acceptable	EPA 7196A
WP Hexavalent Chromium (cat# 898)							
1045	Hexavalent Chromium	pg/L	309	320	258 - 378	Acceptable	SM3500Cr **D**
WP Hexavalent Chromium (cat# 898)							
1045	Hexavalent Chromium	pg/L	304	320	258 - 378	Acceptable	EPA 7199
WP Tin & Titanium (cat# 573)							
1175	Tin	pg/L	2720	2460	1940 - 2990	Acceptable	EPA 200.7
0076	Titanium	pg/L	268	256	220 - 288	Acceptable	EPA 200.7
WP Tin & Titanium (cat# 573)							
1175	Tin	pg/L	2810	2460	1940 - 2990	Acceptable	EPA 200.8
0076	Titanium	pg/L	271	256	220 - 288	Acceptable	EPA 200.8

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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Tin & Titanium (cat# 573)							
1175	Tin	pg/L	2510	2460	1940 - 2990	Acceptable	EPA 6010B
0076	Titanium	pg/L	251	256	220 - 288	Acceptable	EPA 6010B
WP Tin & Titanium (cat# 573)							
1175	Tin	pg/L	2390	2460	1940 - 2990	Acceptable	EPA 6020
0076	Titanium	pg/L	261	256	220 - 288	Acceptable	EPA 6020
WP Color (cat# 882)							
1605	Color	PC units	30	25.0	15.0 - 35.0	Acceptable	SM2120B
WP Turbidity (cat# 893)							
2055	Turbidity	NTU	6.8	7.07	5.91 - 8.09	Acceptable	EPA 180.1
WP Total Cyanide (cat# 588)							
0071	Cyanide, total	mg/L	0.95	0.920	0.594 - 1.24	Acceptable	EPA 335.4
WP Total Phenolics (4-AAP) (cat# 589)							
0097	Phenolics, total	mg/L	0.185	0.213	0.110 - 0.316	Acceptable	EPA 420.4
WP Silica (cat# 890)							
1990	Silica as SiO2	mg/L	190	191	143 - 239	Acceptable	EPA 200.7
WP Silica (cat# 890)							
1990	Silica as SiO2	mg/L	185	191	143 - 239	Acceptable	EPA 6010B
WP Silica (cat# 890)							
1990	Silica as SiO2	mg/L	169	191	143 - 239	Acceptable	SM4500Si **D**
WP Sulfide (cat# 891)							
2005	Sulfide	mg/L	6.19	7.00	3.26 - 10.0	Acceptable	SM4500S2- F
WP Surfactants - MBAS (cat# 892)							
2025	Surfactants (MBAS)	mg/L	0.582	0.524	0.317 - 0.762	Acceptable	SM5540C
WP Acidity (cat# 885)							
1500	Acidity as CaCO3	mg/L	889	926	818 - 1020	Acceptable	SM2310B
WP Bromide (cat# 887)							
1540	Bromide	mg/L	4.56	4.68	3.98 - 5.38	Acceptable	EPA 300.0
WP Bromide (cat# 887)							
1540	Bromide	mg/L	4.56	4.68	3.98 - 5.38	Acceptable	EPA 9056
WP Total Residual Chlorine (cat# 587)							
0098	Total Residual Chlorine	mg/L	1.72	1.60	1.15 - 1.98	Acceptable	SM4500Cl F

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Study: **WP-180**

ERA Customer Number: **A064801**

Laboratory Name: **Accutest Mid Atlantic**

Microbiology Results

WP-180 Final Complete Report

Phillip *W*orby
Director Corporate Quality Assurance
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810
732-329-0200

EPA ID: **NJ00141**
ERA Customer Number: **A064801**
Report Issued: **03/23/10**
Study Dates: **01/18/10 - 03/04/10**

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP WasteWatR™ Coliform MicrobE™ (cat# 576)							
2500	Total Coliforms (MF)	CFU/100mL	695	1070	414 - 2750	Acceptable	SM9222B
2530	Fecal Coliforms (MF)	CFU/100mL	240	604	129 - 2820	Acceptable	SM9222D m FC
2525	E.coli (MF)	CFU/100mL		932	399 - 2180	Not Reported	
2500	Total Coliforms (MPN)	MPN/100mL		1300	421 - 4040	Not Reported	
2530	Fecal Coliforms (MPN)	MPN/100mL		1010	160 - 6370	Not Reported	
2525	E.coli (MPN)	MPN/100mL		1370	601 - 3110	Not Reported	

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Study: **WP-180**

ERA Customer Number: **A064801**

Laboratory Name: **Accutest Mid Atlantic**

Organic Results

WP-180 Final Complete Report

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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Volatiles (cat# 830)							
4315	Acetone	pg/L		0.00		Not Reported	
4320	Acetonitrile	pg/L		0.00		Not Reported	
4325	Acrolein	pg/L		0.00		Not Reported	
4340	Acrylonitrile	pg/L		0.00		Not Reported	
0065	Benzene	pg/L	39.3	40.1	28.6 - 51.4	Acceptable	EPA 602
0060	Bromodichloromethane	pg/L		41.1	28.9 - 55.4	Not Reported	
0062	Bromoform	pg/L		38.3	24.0 - 52.5	Not Reported	
4950	Bromomethane	pg/L		28.8	11.5 - 46.1	Not Reported	
4410	2-Butanone (MEK)	pg/L		48.9	14.2 - 76.4	Not Reported	
5000	tert-Butyl methyl ether (MTBE)	pg/L	23.0	23.9	14.1 - 35.0	Acceptable	EPA 602
4450	Carbon disulfide	pg/L		0.00		Not Reported	
0058	Carbon tetrachloride	pg/L		67.5	36.9 - 92.0	Not Reported	
0064	Chlorobenzene	pg/L	35.3	37.2	26.8 - 46.9	Acceptable	EPA 602
0061	Chlorodibromomethane	pg/L		80.0	54.8 - 106	Not Reported	
4485	Chloroethane	pg/L		0.00		Not Reported	
4500	2-Chloroethylvinylether	pg/L		0.00		Not Reported	
0055	Chloroform	pg/L		20.7	14.2 - 27.7	Not Reported	
4960	Chloromethane	pg/L		0.00		Not Reported	
4570	1,2-Dibromo-3-chloropropane (DBCP)	pg/L		0.00		Not Reported	
4585	1,2-Dibromoethane (EDB)	pg/L		0.00		Not Reported	
4595	Dibromomethane	µg/L		0.00		Not Reported	
0094	1,2-Dichlorobenzene	pg/L	68.8	69.0	47.9 - 89.5	Acceptable	EPA 602
0096	1,3-Dichlorobenzene	pg/L	26.1	27.5	18.0 - 35.5	Acceptable	EPA 602
0095	1,4-Dichlorobenzene	pg/L	10.1	9.60	5.97 - 13.5	Acceptable	EPA 602
4625	Dichlorodifluoromethane (Freon 12)	pg/L		0.00		Not Reported	
4630	1,1-Dichloroethane	pg/L		32.6	22.0 - 44.5	Not Reported	
0054	1,2-Dichloroethane	pg/L		24.2	16.7 - 32.7	Not Reported	
4640	1,1-Dichloroethylene	pg/L		0.00		Not Reported	
4645	cis-1,2-Dichloroethylene	pg/L		0.00		Not Reported	
4700	trans-1,2-Dichloroethylene	pg/L		0.00		Not Reported	
4655	1,2-Dichloropropane	pg/L		24.6	15.7 - 33.1	Not Reported	
4680	cis-1,3-Dichloropropylene	pg/L		39.4	27.6 - 51.2	Not Reported	

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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Volatiles (cat# 830) (Continued)							
4685	trans-1,3-Dichloropropylene	pg/L		62.9	40.5 - 85.1	Not Reported	
0066	Ethylbenzene	pg/L	94.4	95.3	65.9 - 120	Acceptable	EPA 602
4835	Hexachlorobutadiene	pg/L		0.00		Not Reported	
4860	2-Hexanone	pg/L		0.00		Not Reported	
0063	Methylene chloride	pg/L		24.9	15.0 - 35.8	Not Reported	
4995	4-Methyl-2-pentanone (MIBK)	pg/L		32.8	11.3 - 52.1	Not Reported	
5005	Naphthalene	pg/L		0.00		Not Reported	
5100	Styrene	pg/L		50.4	32.5 - 68.7	Not Reported	
5105	1,1,1,2-Tetrachloroethane	pg/L		43.9	28.4 - 59.1	Not Reported	
5110	1,1,2,2-Tetrachloroethane	pg/L		52.5	29.9 - 77.9	Not Reported	
0059	Tetrachloroethylene	pg/L		36.7	19.9 - 48.2	Not Reported	
0067	Toluene	pg/L	42.2	44.8	31.1 - 56.4	Acceptable	EPA 602
5155	1,2,4-Trichlorobenzene	pg/L		0.00		Not Reported	
0056	1,1,1-Trichloroethane	pg/L		31.9	20.0 - 42.5	Not Reported	
5165	1,1,2-Trichloroethane	pg/L		0.00		Not Reported	
0057	Trichloroethylene	pg/L		23.5	14.8 - 31.5	Not Reported	
5175	Trichlorofluoromethane	pg/L		33.3	13.3 - 53.3	Not Reported	
5180	1,2,3-Trichloropropane (TCP)	pg/L		0.00		Not Reported	
5225	Vinyl acetate	pg/L		0.00		Not Reported	
5235	Vinyl chloride	pg/L		0.00		Not Reported	
5260	Xylenes, total	pg/L	148	158	90.6 - 212	Acceptable	EPA 602

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

WP-180 Final Complete Report

Phillip Worby
Director Corporate Quality Assurance
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810
732-329-0200

EPA ID: NJ00141
ERA Customer Number: A064801
Report Issued: 03/23/10
Study Dates: 01/18/10 - 03/04/10

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Volatiles (cat# 830)							
4315	Acetone	pg/L		0.00		Not Reported	
4320	Acetonitrile	pg/L		0.00		Not Reported	
4325	Acrolein	pg/L		0.00		Not Reported	
4340	Acrylonitrile	pg/L		0.00		Not Reported	
0065	Benzene	pg/L	39.3	40.1	28.6 - 51.4	Acceptable	EPA 8021B
0060	Bromodichloromethane	pg/L		41.1	28.9 - 55.4	Not Reported	
0062	Bromoform	pg/L		38.3	24.0 - 52.5	Not Reported	
4950	Bromomethane	pg/L		28.8	11.5 - 46.1	Not Reported	
4410	2-Butanone (MEK)	pg/L		48.9	14.2 - 76.4	Not Reported	
5000	tert-Butyl methyl ether (MTBE)	pg/L	23.0	23.9	14.1 - 35.0	Acceptable	EPA 8021B
4450	Carbon disulfide	pg/L		0.00		Not Reported	
0058	Carbon tetrachloride	pg/L		67.5	36.9 - 92.0	Not Reported	
0064	Chlorobenzene	pg/L	35.3	37.2	26.8 - 46.9	Acceptable	EPA 8021B
0061	Chlorodibromomethane	pg/L		80.0	54.8 - 106	Not Reported	
4485	Chloroethane	pg/L		0.00		Not Reported	
4500	2-Chloroethylvinylether	pg/L		0.00		Not Reported	
0055	Chloroform	pg/L		20.7	14.2 - 27.7	Not Reported	
4960	Chloromethane	pg/L		0.00		Not Reported	
4570	1,2-Dibromo-3-chloropropane (DBCP)	pg/L		0.00		Not Reported	
4585	1,2-Dibromoethane (EDB)	pg/L		0.00		Not Reported	
4595	Dibromomethane	pg/L		0.00		Not Reported	
0094	1,2-Dichlorobenzene	pg/L	68.8	69.0	47.9 - 89.5	Acceptable	EPA 8021B
0096	1,3-Dichlorobenzene	pg/L	26.1	27.5	18.0 - 35.5	Acceptable	EPA 8021B
0095	1,4-Dichlorobenzene	pg/L	10.1	9.60	5.97 - 13.5	Acceptable	EPA 8021B
4625	Dichlorodifluoromethane (Freon 12)	pg/L		0.00		Not Reported	
4630	1,1-Dichloroethane	pg/L		32.6	22.0 - 44.5	Not Reported	
0054	1,2-Dichloroethane	pg/L		24.2	16.7 - 32.7	Not Reported	
4640	1,1-Dichloroethylene	pg/L		0.00		Not Reported	
4645	cis-1,2-Dichloroethylene	pg/L		0.00		Not Reported	
4700	trans-1,2-Dichloroethylene	pg/L		0.00		Not Reported	
4655	1,2-Dichloropropane	pg/L		24.6	15.7 - 33.1	Not Reported	
4680	cis-1,3-Dichloropropylene	pg/L		39.4	27.6 - 51.2	Not Reported	

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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Volatiles (cat# 830) (Continued)							
4685	trans-1,3-Dichloropropylene	pg/L		62.9	40.5 - 85.1	Not Reported	
0066	Ethylbenzene	pg/L	94.4	95.3	65.9 - 120	Acceptable	EPA 8021B
4835	Hexachlorobutadiene	pg/L		0.00		Not Reported	
4860	2-Hexanone	pg/L		0.00		Not Reported	
0063	Methylene chloride	pg/L		24.9	15.0 - 35.8	Not Reported	
4995	4-Methyl-2-pentanone (MIBK)	pg/L		32.8	11.3 - 52.1	Not Reported	
5005	Naphthalene	pg/L		0.00		Not Reported	
5100	Styrene	pg/L		50.4	32.5 - 68.7	Not Reported	
5105	1,1,1,2-Tetrachloroethane	pg/L		43.9	28.4 - 59.1	Not Reported	
5110	1,1,2,2-Tetrachloroethane	pg/L		52.5	29.9 - 77.9	Not Reported	
0059	Tetrachloroethylene	pg/L		36.7	19.9 - 48.2	Not Reported	
0067	Toluene	pg/L	42.2	44.8	31.1 - 56.4	Acceptable	EPA 8021B
5155	1,2,4-Trichlorobenzene	pg/L		0.00		Not Reported	
0056	1,1,1-Trichloroethane	pg/L		31.9	20.0 - 42.5	Not Reported	
5165	1,1,2-Trichloroethane	pg/L		0.00		Not Reported	
0057	Trichloroethylene	pg/L		23.5	14.8 - 31.5	Not Reported	
5175	Trichlorofluoromethane	pg/L		33.3	13.3 - 53.3	Not Reported	
5180	1,2,3-Trichloropropane (TCP)	pg/L		0.00		Not Reported	
5225	Vinyl acetate	pg/L		0.00		Not Reported	
5235	Vinyl chloride	pg/L		0.00		Not Reported	
5260	Xylenes, total	pg/L	148	158	90.6 - 212	Acceptable	EPA 8021B

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WP-180 Final Complete Report

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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Volatiles (cat# 830)							
4315	Acetone	pg/L	< 5.0	0.00		Acceptable	EPA 624
4320	Acetonitrile	pg/L	< 2.0	0.00		Acceptable	EPA 624
4325	Acrolein	pg/L	< 50	0.00		Acceptable	EPA 624
4340	Acrylonitrile	pg/L	< 10	0.00		Acceptable	EPA 624
0065	Benzene	pg/L	37.7	40.1	28.6 - 51.4	Acceptable	EPA 624
0060	Bromodichloromethane	pg/L	41.2	41.1	28.9 - 55.4	Acceptable	EPA 624
0062	Bromoform	pg/L	40.3	38.3	24.0 - 52.5	Acceptable	EPA 624
4950	Bromomethane	pg/L	29.7	28.8	11.5 - 46.1	Acceptable	EPA 624
4410	2-Butanone (MEK)	pg/L	38.4	48.9	14.2 - 76.4	Acceptable	EPA 624
5000	tert-Butyl methyl ether (MTBE)	pg/L	22.9	23.9	14.1 - 35.0	Acceptable	EPA 624
4450	Carbon disulfide	pg/L	< 1.0	0.00		Acceptable	EPA 624
0058	Carbon tetrachloride	pg/L	70.4	67.5	36.9 - 92.0	Acceptable	EPA 624
0064	Chlorobenzene	pg/L	34.8	37.2	26.8 - 46.9	Acceptable	EPA 624
0061	Chlorodibromomethane	pg/L	79.7	80.0	54.8 - 106	Acceptable	EPA 624
4485	Chloroethane	pg/L	< 1.0	0.00		Acceptable	EPA 624
4500	2-Chloroethylvinylether	pg/L	< 5.0	0.00		Acceptable	EPA 624
0055	Chloroform	pg/L	20.6	20.7	14.2 - 27.7	Acceptable	EPA 624
4960	Chloromethane	pg/L	< 1.0	0.00		Acceptable	EPA 624
4570	1,2-Dibromb-3-chloropropane (DBCP)	pg/L	< 2.0	0.00		Acceptable	EPA 624
4585	1,2-Dibromoethane (EDB)	pg/L	< 1.0	0.00		Acceptable	EPA 624
4595	Dibromomethane	pg/L	< 1.0	0.00		Acceptable	EPA 624
0094	1,2-Dichlorobenzene	pg/L	65.1	69.0	47.9 - 89.5	Acceptable	EPA 624
0096	1,3-Dichlorobenzene	pg/L	24.8	27.5	18.0 - 35.5	Acceptable	EPA 624
0095	1,4-Dichlorobenzene	pg/L	9.0	9.60	5.97 - 13.5	Acceptable	EPA 624
4625	Dichlorodifluoromethane (Freon 12)	pg/L	< 2.0	0.00		Acceptable	EPA 624
4630	1,1-Dichloroethane	pg/L	33.0	32.6	22.0 - 44.5	Acceptable	EPA 624
0054	1,2-Dichloroethane	pg/L	24.1	24.2	16.7 - 32.7	Acceptable	EPA 624
4640	1,1-Dichloroethylene	pg/L	< 1.0	0.00		Acceptable	EPA 624
4645	cis-1,2-Dichloroethylene	pg/L	< 1.0	0.00		Acceptable	EPA 624
4700	trans-1,2-Dichloroethylene	pg/L	< 1.0	0.00		Acceptable	EPA 624
4655	1,2-Dichloropropane	pg/L	22.5	24.6	15.7 - 33.1	Acceptable	EPA 624
4680	cis-1,3-Dichloropropylene	pg/L	38.6	39.4	27.6 - 51.2	Acceptable	EPA 624

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732-329-0200

EPA ID: NJ00141
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Report Issued: 03/23/10
Study Dates: 01/18/10 - 03/04/10

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Volatiles (cat# 830) (Continued)							
4685	trans-1,3-Dichloropropylene	pg/L	61.8	62.9	40.5 - 85.1	Acceptable	EPA 624
0066	Ethylbenzene	pg/L	92.0	95.3	65.9 - 120	Acceptable	EPA 624
4835	Hexachlorobutadiene	pg/L	< 5.0	0.00		Acceptable	EPA 624
4860	2-Hexanone	pg/L	< 5.0	0.00		Acceptable	EPA 624
0063	Methylene chloride	pg/L	23.2	24.9	15.0 - 35.8	Acceptable	EPA 624
4995	4-Methyl-2-pentanone (MIBK)	pg/L	32.2	32.8	11.3 - 52.1	Acceptable	EPA 624
5005	Naphthalene	pg/L	< 2.0	0.00		Acceptable	EPA 624
5100	Styrene	pg/L	50.4	50.4	32.5 - 68.7	Acceptable	EPA 624
5105	1,1,1,2-Tetrachloroethane	pg/L	44.1	43.9	28.4 - 59.1	Acceptable	EPA 624
5110	1,1,2,2-Tetrachloroethane	pg/L	49.8	52.5	29.9 - 77.9	Acceptable	EPA 624
0059	Tetrachloroethylene	pg/L	33.0	36.7	19.9 - 48.2	Acceptable	EPA 624
0067	Toluene	pg/L	41.7	44.8	31.1 - 56.4	Acceptable	EPA 624
5155	1,2,4-Trichlorobenzene	pg/L	< 2.0	0.00		Acceptable	EPA 624
0056	1,1,1-Trichloroethane	pg/L	31.7	31.9	20.0 - 42.5	Acceptable	EPA 624
5165	1,1,2-Trichloroethane	pg/L	< 1.0	0.00		Acceptable	EPA 624
0057	Trichloroethylene	pg/L	21.8	23.5	14.8 - 31.5	Acceptable	EPA 624
5175	Trichlorofluoromethane	pg/L	38.2	33.3	13.3 - 53.3	Acceptable	EPA 624
5180	1,2,3-Trichloropropane (TCP)	pg/L	< 1.0	0.00		Acceptable	EPA 624
5225	Vinyl acetate	pg/L	< 5.0	0.00		Acceptable	EPA 624
5235	Vinyl chloride	pg/L	< 1.0	0.00		Acceptable	EPA 624
5260	Xylenes, total	pg/L	156	158	90.6 - 212	Acceptable	EPA 624

ACCREDITED
All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

WP-180 Final Complete Report

Phillip Worby
Director Corporate Quality Assurance
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810
732-329-0200

EPA ID: NJ00141
ERA Customer Number: A064801
Report Issued: 03/23/10
Study Dates: 01/18/10 - 03/04/10

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Volatiles (cat# 830)							
4315	Acetone	pg/L	< 5.0	0.00		Acceptable	EPA 8260B
4320	Acetonitrile	pg/L	< 2.0	0.00		Acceptable	EPA 8260B
4325	Acrolein	pg/L	< 50	0.00		Acceptable	EPA 8260B
4340	Acrylonitrile	pg/L	< 10	0.00		Acceptable	EPA 8260B
0065	Benzene	pg/L	37.7	40.1	28.6 - 51.4	Acceptable	EPA 8260B
0060	Bromodichloromethane	pg/L	41.2	41.1	28.9 - 55.4	Acceptable	EPA 8260B
0062	Bromoform	pg/L	40.3	38.3	24.0 - 52.5	Acceptable	EPA 8260B
4950	Bromomethane	pg/L	29.7	28.8	11.5 - 46.1	Acceptable	EPA 8260B
4410	2-Butanone (MEK)	pg/L	38.4	48.9	14.2 - 76.4	Acceptable	EPA 8260B
5000	tert-Butyl methyl ether (MTBE)	pg/L	22.9	23.9	14.1 - 35.0	Acceptable	EPA 8260B
4450	Carbon disulfide	pg/L	< 1.0	0.00		Acceptable	EPA 8260B
0058	Carbon tetrachloride	pg/L	70.4	67.5	36.9 - 92.0	Acceptable	EPA 8260B
0064	Chlorobenzene	pg/L	34.8	37.2	26.8 - 46.9	Acceptable	EPA 8260B
0061	Chlorodibromomethane	pg/L	79.7	80.0	54.8 - 106	Acceptable	EPA 8260B
4485	Chloroethane	pg/L	< 1.0	0.00		Acceptable	EPA 8260B
4500	2-Chloroethylvinylether	pg/L	< 5.0	0.00		Acceptable	EPA 8260B
0055	Chloroform	pg/L	20.6	20.7	14.2 - 27.7	Acceptable	EPA 8260B
4960	Chloromethane	pg/L	< 1.0	0.00		Acceptable	EPA 8260B
4570	1,2-Dibromo-3-chlbropropane (DBCP)	pg/L	< 2.0	0.00		Acceptable	EPA 8260B
4585	1,2-Dibromoethane (EDB)	pg/L	< 1.0	0.00		Acceptable	EPA 8260B
4595	Dibromomethane	pg/L	< 1.0	0.00		Acceptable	EPA 8260B
0094	1,2-Dichlorobenzene	pg/L	65.1	69.0	47.9 - 89.5	Acceptable	EPA 8260B
0096	1,3-Dichlorobenzene	pg/L	24.8	27.5	18.0 - 35.5	Acceptable	EPA 8260B
0095	1,4-Dichlorobenzene	pg/L	9.0	9.60	5.97 - 13.5	Acceptable	EPA 8260B
4625	Dichlorodifluoromethane (Freon 12)	pg/L	< 2.0	0.00		Acceptable	EPA 8260B
4630	1,1-Dichloroethane	pg/L	33.0	32.6	22.0 - 44.5	Acceptable	EPA 8260B
0054	1,2-Dichloroethane	pg/L	24.1	24.2	16.7 - 32.7	Acceptable	EPA 8260B
4640	1,1-Dichloroethylene	pg/L	< 1.0	0.00		Acceptable	EPA 8260B
4645	cis-1,2-Dichloroethylene	pg/L	< 1.0	0.00		Acceptable	EPA 8260B
4700	trans-1,2-Dichloroethylene	pg/L	< 1.0	0.00		Acceptable	EPA 8260B
4655	1,2-Dichloropropane	pg/L	22.5	24.6	15.7 - 33.1	Acceptable	EPA 8260B
4680	cis-1,3-Dichloropropylene	pg/L	38.6	39.4	27.6 - 51.2	Acceptable	EPA 8260B

ACCREDITED Lab Code: 1539-01
All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

WP-180 Final Complete Report

Phillip Worby
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2235 Route 130
Dayton, NJ 08810
732-329-0200

EPA ID: NJ00141
ERA Customer Number: A064801
Report Issued: 03/23/10
Study Dates: 01/18/10 - 03/04/10

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Volatiles (cat# 830) (Continued)							
4685	trans-1,3-Dichloropropylene	pg/L	61.8	62.9	40.5 - 85.1	Acceptable	EPA 8260B
0066	Ethylbenzene	pg/L	92.0	95.3	65.9 - 120	Acceptable	EPA 8260B
4835	Hexachlorobutadiene	pg/L	< 5.0	0.00		Acceptable	EPA 8260B
4860	2-Hexanone	pg/L	< 5.0	0.00		Acceptable	EPA 8260B
0063	Methylene chloride	pg/L	23.2	24.9	15.0 - 35.8	Acceptable	EPA 8260B
4995	4-Methyl-2-pentanone (MIBK)	pg/L	32.2	32.8	11.3 - 52.1	Acceptable	EPA 8260B
5005	Naphthalene	pg/L	< 2.0	0.00		Acceptable	EPA 8260B
5100	Styrene	pg/L	50.4	50.4	32.5 - 68.7	Acceptable	EPA 8260B
5105	1,1,1,2-Tetrachloroethane	pg/L	44.1	43.9	28.4 - 59.1	Acceptable	EPA 8260B
5110	1,1,2,2-Tetrachloroethane	pg/L	49.8	52.5	29.9 - 77.9	Acceptable	EPA 8260B
0059	Tetrachloroethylene	pg/L	33.0	36.7	19.9 - 48.2	Acceptable	EPA 8260B
0067	Toluene	pg/L	41.7	44.8	31.1 - 56.4	Acceptable	EPA 8260B
5155	1,2,4-Trichlorobenzene	pg/L	< 2.0	0.00		Acceptable	EPA 8260B
0056	1,1,1-Trichloroethane	pg/L	31.7	31.9	20.0 - 42.5	Acceptable	EPA 8260B
5165	1,1,2-Trichloroethane	pg/L	< 1.0	0.00		Acceptable	EPA 8260B
0057	Trichloroethylene	pg/L	21.8	23.5	14.8 - 31.5	Acceptable	EPA 8260B
5175	Trichlorofluoromethane	pg/L	38.2	33.3	13.3 - 53.3	Acceptable	EPA 8260B
5180	1,2,3-Trichloropropane (TCP)	pg/L	< 1.0	0.00		Acceptable	EPA 8260B
5225	Vinyl acetate	pg/L	< 5.0	0.00		Acceptable	EPA 8260B
5235	Vinyl chloride	pg/L	< 1.0	0.00		Acceptable	EPA 8260B
5260	Xylenes, total	pg/L	156	158	90.6 - 212	Acceptable	EPA 8260B
WP Chlorinated Acid Herbicides (cat# 829)							
8505	Acifluorfen	pg/L		3.89	0.690 - 5.79	Not Reported	
8530	Bentazon	pg/L		2.56	0.256 - 4.86	Not Reported	
8540	Chloramben	pg/L		4.79	0.479 - 7.02	Not Reported	
8545	2,4-D	pg/L	3.1	6.28	0.628 - 10.2	Acceptable	EPA 8151A
8560	2,4-DB	pg/L	7.5	9.00	0.900 - 17.2	Acceptable	EPA 8151A
8550	Dacthal diacid (DCPA)	pg/L		7.65	0.765 - 13.8	Not Reported	
8555	Dalapon	pg/L	2.4	3.47	0.347 - 5.79	Acceptable	EPA 8151A
8595	Dicamba	pg/L	5.0	4.99	0.499 - 7.34	Acceptable	EPA 8151A
8600	3,5-Dichlorobenzoic acid	pg/L		5.19	1.37 - 7.70	Not Reported	
8605	Dichlorprop	pg/L	3.5	5.32	0.851 - 7.94	Acceptable	EPA 8151A
8620	Dinoseb	pg/L	3.4	5.54	0.554 - 8.61	Acceptable	EPA 8151A
7775	MCPA	pg/L	< 25	0.00		Acceptable	EPA 8151A
7780	MCPP	pg/L	< 25	0.00		Acceptable	EPA 8151A
6500	4-Nitrophenol	pg/L		3.07	0.307 - 5.16	Not Reported	
6605	Pentachlorophenol	pg/L	3.2	3.27	0.327 - 5.23	Acceptable	EPA 8151A
8645	Picloram	pg/L	5.4	7.39	0.739 - 13.2	Acceptable	EPA 8151A
8655	2,4,5-T	pg/L	2.6	2.86	0.286 - 4.48	Acceptable	EPA 8151A
8650	2,4,5-TP (Silvex)	pg/L	4.5	5.56	0.757 - 8.15	Acceptable	EPA 8151A

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WP-180 Final Complete Report

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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Chlorinated Acid Herbicides (cat# 829)							
8505	Acifluorfen	pg/L		3.89	0.690 - 5.79	Not Reported	
8530	Bentazon	pg/L		2.56	0.256 - 4.86	Not Reported	
8540	Chloramben	pg/L		4.79	0.479 - 7.02	Not Reported	
8545	2,4-D	pg/L	3.1	6.28	0.628 - 10.2	Acceptable	EPA 515.1
8560	2,4-DB	pg/L	7.5	9.00	0.900 - 17.2	Acceptable	EPA 515.1
8550	Dacthal diacid (DCPA)	pg/L		7.65	0.765 - 13.8	Not Reported	
8555	Dalapon	pg/L	2.4	3.47	0.347 - 5.79	Acceptable	EPA 515.1
8595	Dicamba	pg/L	5.0	4.99	0.499 - 7.34	Acceptable	EPA 515.1
8600	3,5-Dichlorobenzoic acid	pg/L		5.19	1.37 - 7.70	Not Reported	
8605	Dichlorprop	pg/L	3.5	5.32	0.851 - 7.94	Acceptable	EPA 515.1
8620	Dinoseb	pg/L	3.4	5.54	0.554 - 8.61	Acceptable	EPA 515.1
7775	MCPA	pg/L	< 25	0.00		Acceptable	EPA 515.1
7780	MCPP	pg/L	< 25	0.00		Acceptable	EPA 515.1
6500	4-Nitrophenol	pg/L		3.07	0.307 - 5.16	Not Reported	
6605	Pentachlorophenol	pg/L	3.2	3.27	0.327 - 5.23	Acceptable	EPA 515.1
8645	Picloram	pg/L	5.4	7.39	0.739 - 13.2	Acceptable	EPA 515.1
8655	2,4,5-T	pg/L	2.6	2.86	0.286 - 4.48	Acceptable	EPA 515.1
8650	2,4,5-TP (Silvex)	pg/L	4.5	5.56	0.757 - 8.15	Acceptable	EPA 515.1
WP PCBs in Water (cat# 832S)							
0040	Aroclor 1016	pg/L	< 0.50	0.00		Acceptable	EPA 608
8885	Aroclor 1221	pg/L	< 0.50	0.00		Acceptable	EPA 608
0042	Aroclor 1232	pg/L	< 0.50	0.00		Acceptable	EPA 608
0040	Aroclor 1242	pg/L	< 0.50	0.00		Acceptable	EPA 608
0044	Aroclor 1248	pg/L	< 0.50	0.00		Acceptable	EPA 608
0045	Aroclor 1254	pg/L	< 0.50	0.00		Acceptable	EPA 608
0046	Aroclor 1260	pg/L	2.7	2.62	1.25 - 3.47	Acceptable	EPA 608
WP PCBs in Water (cat# 832S)							
0040	Aroclor 1016	pg/L	< 0.5	0.00		Acceptable	EPA 8082
8885	Aroclor 1221	pg/L	< 0.5	0.00		Acceptable	EPA 8082
0042	Aroclor 1232	pg/L	< 0.5	0.00		Acceptable	EPA 8082
0040	Aroclor 1242	pg/L	< 0.5	0.00		Acceptable	EPA 8082
0044	Aroclor 1248	pg/L	< 0.5	0.00		Acceptable	EPA 8082
0045	Aroclor 1254	pg/L	< 0.5	0.00		Acceptable	EPA 8082
0046	Aroclor 1260	pg/L	2.7	2.62	1.25 - 3.47	Acceptable	EPA 8082
WP PCBs in Oil (cat# 835S)							
8880	Aroclor 1016	mg/kg	< 0.5	0.00		Acceptable	EPA 8082
8895	Aroclor 1242	mg/kg	20.2	32.0	5.30 - 44.2	Acceptable	EPA 8082
8905	Aroclor 1254	mg/kg	< 0.5	0.00		Acceptable	EPA 8082
8910	Aroclor 1260	mg/kg	< 0.5	0.00		Acceptable	EPA 8082

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

WP-180 Final Complete Report

Phillip Worby
Director Corporate Quality Assurance
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810
732-329-0200

EPA ID: NJ00141
ERA Customer Number: A064801
Report Issued: 03/23/10
Study Dates: 01/18/10 - 03/04/10

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Base/Neutrals (cat# 833)							
5500	Acenaphthene	pg/L	14.4	18.2	8.77 - 23.9	Acceptable	EPA 625
5505	Acenaphthylene	pg/L	14.8	19.8	6.97 - 26.0	Acceptable	EPA 625
5145	2-Amino-1-methylbenzene (o-toluidine)	pg/L	< 5.0	0.00		Acceptable	EPA 625
5545	Aniline	pg/L	< 2.0	0.00		Acceptable	EPA 625
5555	Anthracene	pg/L	40.6	58.5	25.0 - 74.0	Acceptable	EPA 625
5595	Benzidine	pg/L	< 20.0	0.00		Acceptable	EPA 625
5575	Benzo(a)anthracene	pg/L	< 1.0	0.00		Acceptable	EPA 625
5585	Benzo(b)fluoranthene	pg/L	15.6	21.8	6.58 - 31.2	Acceptable	EPA 625
5600	Benzo(k)fluoranthene	pg/L	20.2	25.6	5.37 - 40.7	Acceptable	EPA 625
5590	Benzo(g,h,i)perylene	pg/L	17.9	25.4	5.35 - 38.1	Acceptable	EPA 625
5580	Benzo(a)pyrene	pg/L	29.1	38.4	11.8 - 50.6	Acceptable	EPA 625
5630	Benzyl alcohol	pg/L	< 2.0	0.00		Acceptable	EPA 625
5660	4-Bromophenyl-phenylether	pg/L	117	133	42.8 - 177	Acceptable	EPA 625
5670	Butylbenzylphthalate	pg/L	< 2.0	0.00		Acceptable	EPA 625
5680	Carbazole	pg/L	< 2.0	0.00		Acceptable	EPA 625
5745	4-Chloroaniline	pg/L	< 2.0	0.00		Acceptable	EPA 625
5760	bis(2-Chloroethoxy)methane	pg/L	126	141	55.8 - 167	Acceptable	EPA 625
5765	bis(2-Chloroethyl)ether	pg/L	46.9	48.1	14.3 - 61.6	Acceptable	EPA 625
5780	bis(2-Chloroisopropyl)ether	pg/L	< 2.0	0.00		Acceptable	EPA 625
5790	1-Chloronaphthalene	pg/L	< 2.0	0.00		Acceptable	EPA 625
5795	2-Chloronaphthalene	pg/L	< 2.0	0.00		Acceptable	EPA 625
5825	4-Chlorophenyl-phenylether	pg/L	126	124	46.4 - 154	Acceptable	EPA 625
5855	Chrysene	pg/L	10.5	15.0	7.11 - 23.0	Acceptable	EPA 625
5895	Dibenz(a,h)anthracene	pg/L	< 1.0	0.00		Acceptable	EPA 625
5905	Dibenzofuran	pg/L	< 2.0	0.00		Acceptable	EPA 625
5925	Di-n-butylphthalate	pg/L	< 2.0	0.00		Acceptable	EPA 625
4610	1,2-Dichlorobenzene	pg/L	129	141	18.1 - 166	Acceptable	EPA 625
4615	1,3-Dichlorobenzene	pg/L	118	129	15.6 - 149	Acceptable	EPA 625
4620	1,4-Dichlorobenzene	pg/L	28.4	32.8	3.28 - 43.6	Acceptable	EPA 625
5945	3,3'-Dichlorobenzidine	pg/L	< 2.0	0.00		Acceptable	EPA 625
6070	Diethylphthalate	pg/L	< 2.0	0.00		Acceptable	EPA 625
6135	Dimethylphthalate	pg/L	128	132	13.2 - 190	Acceptable	EPA 625

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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Base/Neutrals (cat# 833) (Continued)							
6185	2,4-Dinitrotoluene	pg/L	84.9	93.2	34.3 - 116	Acceptable	EPA 625
6190	2,6-Dinitrotoluene	pg/L	141	134	56.0 - 168	Acceptable	EPA 625
6200	Di-n-octylphthalate	pg/L	< 2.0	0.00		Acceptable	EPA 625
6065	bis(2-Ethylhexyl)phthalate	pg/L	50.5	70.0	21.0 - 98.4	Acceptable	EPA 625
6265	Fluoranthene	pg/L	67.5	91.5	40.7 - 111	Acceptable	EPA 625
6270	Fluorene	pg/L	< 1.0	0.00		Acceptable	EPA 625
6275	Hexachlorobenzene	pg/L	68.2	98.6	42.9 - 121	Acceptable	EPA 625
4835	Hexachlorobutadiene	pg/L	94.3	95.4	10.6 - 115	Acceptable	EPA 625
6285	Hexachlorocyclopentadiene	pg/L	103	154	15.4 - 199	Acceptable	EPA 625
4840	Hexachloroethane	pg/L	78.8	88.9	9.22 - 105	Acceptable	EPA 625
6315	Indeno(1,2,3-cd)pyrene	pg/L	19.1	35.4	6.20 - 50.2	Acceptable	EPA 625
6320	Isophorone	pg/L	50.2	56.4	22.7 - 73.6	Acceptable	EPA 625
6385	2-Methylnaphthalene	pg/L	< 2.0	0.00		Acceptable	EPA 625
5005	Naphthalene	pg/L	93.4	116	30.5 - 138	Acceptable	EPA 625
6460	2-Nitroaniline	pg/L	< 5.0	0.00		Acceptable	EPA 625
6465	3-Nitroaniline	pg/L	< 5.0	0.00		Acceptable	EPA 625
6470	4-Nitroaniline	pg/L	< 5.0	0.00		Acceptable	EPA 625
5015	Nitrobenzene	pg/L	< 2.0	0.00		Acceptable	EPA 625
6525	N-Nitrosodiethylamine	pg/L	< 5.0	0.00		Acceptable	EPA 625
6530	N-Nitrosodimethylamine	pg/L	67.1	82.1	8.21 - 98.5	Acceptable	EPA 625
6535	N-Nitrosodiphenylamine	pg/L	< 5.0	0.00		Acceptable	EPA 625
6545	N-Nitroso-di-n-propylamine	pg/L	71.3	73.2	20.2 - 96.3	Acceptable	EPA 625
6590	Pentachlorobenzene	pg/L	< 5.0	0.00		Acceptable	EPA 625
6615	Phenanthrene	pg/L	53.0	70.8	33.4 - 86.8	Acceptable	EPA 625
6665	Pyrene	pg/L	22.3	33.5	10.8 - 49.5	Acceptable	EPA 625
5095	Pyridine	pg/L	< 2.0	0.00		Acceptable	EPA 625
6715	1,2,4,5-Tetrachlorobenzene	pg/L	< 5.0	0.00		Acceptable	EPA 625
5155	1,2,4-Trichlorobenzene	pg/L	49.5	57.4	11.4 - 71.0	Acceptable	EPA 625

ACCREDITED Lab Code: 1539-01
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WP-180 Final Complete Report

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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Base/Neutrals (cat# 833)							
5500	Acenaphthene	pg/L	14.4	18.2	8.77 - 23.9	Acceptable	EPA 8270C
5505	Acenaphthylene	pg/L	14.8	19.8	6.97 - 26.0	Acceptable	EPA 8270C
5145	2-Amino-1-methylbenzene (o-toluidine)	pg/L	< 5.0	0.00		Acceptable	EPA 8270C
5545	Aniline	pg/L	< 2.0	0.00		Acceptable	EPA 8270C
5555	Anthracene	pg/L	40.6	58.5	25.0 - 74.0	Acceptable	EPA 8270C
5595	Benzidine	pg/L	< 20.0	0.00		Acceptable	EPA 8270C
5575	Benzo(a)anthracene	pg/L	< 1.0	0.00		Acceptable	EPA 8270C
5585	Benzo(b)fluoranthene	pg/L	15.6	21.8	6.58 - 31.2	Acceptable	EPA 8270C
5600	Benzo(k)fluoranthene	pg/L	20.2	25.6	5.37 - 40.7	Acceptable	EPA 8270C
5590	Benzo(g,h,i)perylene	pg/L	17.9	25.4	5.35 - 38.1	Acceptable	EPA 8270C
5580	Benzo(a)pyrene	pg/L	29.1	38.4	11.8 - 50.6	Acceptable	EPA 8270C
5630	Benzyl alcohol	pg/L	< 2.0	0.00		Acceptable	EPA 8270C
5660	4-Bromophenyl-phenylether	pg/L	117	133	42.8 - 177	Acceptable	EPA 8270C
5670	Butylbenzylphthalate	pg/L	< 2.0	0.00		Acceptable	EPA 8270C
5680	Carbazole	pg/L	< 2.0	0.00		Acceptable	EPA 8270C
5745	4-Chloroaniline	pg/L	< 2.0	0.00		Acceptable	EPA 8270C
5760	bis(2-Chloroethoxy)methane	pg/L	126	141	55.8 - 167	Acceptable	EPA 8270C
5765	bis(2-Chloroethyl)ether	pg/L	46.9	48.1	14.3 - 61.6	Acceptable	EPA 8270C
5780	bis(2-Chloroisopropyl)ether	pg/L	< 2.0	0.00		Acceptable	EPA 8270C
5790	1-Chloronaphthalene	pg/L	< 2.0	0.00		Acceptable	EPA 8270C
5795	2-Chloronaphthalene	pg/L	< 2.0	0.00		Acceptable	EPA 8270C
5825	4-Chlorophenyl-phenylether	pg/L	126	124	46.4 - 154	Acceptable	EPA 8270C
5855	Chrysene	pg/L	10.5	15.0	7.11 - 23.0	Acceptable	EPA 8270C
5895	Dibenz(a,h)anthracene	pg/L	< 1.0	0.00		Acceptable	EPA 8270C
5905	Dibenzofuran	pg/L	< 2.0	0.00		Acceptable	EPA 8270C
5925	Di-n-butylphthalate	pg/L	< 2.0	0.00		Acceptable	EPA 8270C
4610	1,2-Dichlorobenzene	pg/L	129	141	18.1 - 166	Acceptable	EPA 8270C
4615	1,3-Dichlorobenzene	pg/L	118	129	15.6 - 149	Acceptable	EPA 8270C
4620	1,4-Dichlorobenzene	pg/L	28.4	32.8	3.28 - 43.6	Acceptable	EPA 8270C
5945	3,3'-Dichlorobenzidine	pg/L	< 2.0	0.00		Acceptable	EPA 8270C
6070	Diethylphthalate	pg/L	< 2.0	0.00		Acceptable	EPA 8270C
6135	Dimethylphthalate	pg/L	128	132	13.2 - 190	Acceptable	EPA 8270C

ACCREDITED Lab Code: 1539-01
All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

WP-180 Final Complete Report

Phillip Worby
Director Corporate Quality Assurance
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810
732-329-0200

EPA ID: NJ00141
ERA Customer Number: A064801
Report Issued: 03/23/10
Study Dates: 01/18/10 - 03/04/10

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Base/Neutrals (cat# 833) (Continued)							
6185	2,4-Dinitrotoluene	pg/L	84.9	93.2	34.3 - 116	Acceptable	EPA 8270C
6190	2,6-Dinitrotoluene	pg/L	141	134	56.0 - 168	Acceptable	EPA 8270C
6200	Di-n-octylphthalate	pg/L	< 2.0	0.00		Acceptable	EPA 8270C
6065	bis(2-Ethylhexyl)phthalate	pg/L	50.5	70.0	21.0 - 98.4	Acceptable	EPA 8270C
6265	Fluoranthene	pg/L	67.5	91.5	40.7 - 111	Acceptable	EPA 8270C
6270	Fluorene	pg/L	< 1.0	0.00		Acceptable	EPA 8270C
6275	Hexachlorobenzene	pg/L	68.2	98.6	42.9 - 121	Acceptable	EPA 8270C
4835	Hexachlorobutadiene	pg/L	94.3	95.4	10.6 - 115	Acceptable	EPA 8270C
6285	Hexachlorocyclopentadiene	pg/L	103	154	15.4 - 199	Acceptable	EPA 8270C
4840	Hexachloroethane	pg/L	78.8	88.9	9.22 - 105	Acceptable	EPA 8270C
6315	Indeno(1,2,3-cd)pyrene	pg/L	19.1	35.4	6.20 - 50.2	Acceptable	EPA 8270C
6320	Isophorone	pg/L	50.2	56.4	22.7 - 73.6	Acceptable	EPA 8270C
6385	2-Methylnaphthalene	pg/L	< 2.0	0.00		Acceptable	EPA 8270C
5005	Naphthalene	pg/L	93.4	116	30.5 - 138	Acceptable	EPA 8270C
6460	2-Nitroaniline	pg/L	< 5.0	0.00		Acceptable	EPA 8270C
6465	3-Nitroaniline	pg/L	< 5.0	0.00		Acceptable	EPA 8270C
6470	4-Nitroaniline	pg/L	< 5.0	0.00		Acceptable	EPA 8270C
5015	Nitrobenzene	pg/L	< 2.0	0.00		Acceptable	EPA 8270C
6525	N-Nitrosodiethylamine	pg/L	< 5.0	0.00		Acceptable	EPA 8270C
6530	N-Nitrosodimethylamine	pg/L	67.1	82.1	8.21 - 98.5	Acceptable	EPA 8270C
6535	N-Nitrosodiphenylamine	pg/L	< 5.0	0.00		Acceptable	EPA 8270C
6545	N-Nitroso-di-n-propylamine	pg/L	71.3	73.2	20.2 - 96.3	Acceptable	EPA 8270C
6590	Pentachlorobenzene	pg/L	< 5.0	0.00		Acceptable	EPA 8270C
6615	Phenanthrene	pg/L	53.0	70.8	33.4 - 86.8	Acceptable	EPA 8270C
6665	Pyrene	pg/L	22.3	33.5	10.8 - 49.5	Acceptable	EPA 8270C
5095	Pyridine	pg/L	< 2.0	0.00		Acceptable	EPA 8270C
6715	1,2,4,5-Tetrachlorobenzene	pg/L	< 5.0	0.00		Acceptable	EPA 8270C
5155	1,2,4-Trichlorobenzene	pg/L	49.5	57.4	11.4 - 71.0	Acceptable	EPA 8270C

ACCREDITED Lab Code: 1539-01
All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

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Director Cprpbrate Quality Assurance
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2235 Route 130
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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Acids (cat# 834)							
5610	Benzoic acid	pg/L	< 20.0	0.00		Acceptable	EPA 625
5700	4-Chloro-3-methylphenol	pg/L	52.4	61.3	22.9 - 78.9	Acceptable	EPA 625
5800	2-Chlorophenol	pg/L	77.8	108	31.4 - 136	Acceptable	EPA 625
6000	2,4-Dichlorophenol	pg/L	75.4	95.7	30.4 - 119	Acceptable	EPA 625
6005	2,6-Dichlorophenol	pg/L	134	135	46.5 - 168	Acceptable	EPA 625
6130	2,4-Dimethylphenol	pg/L	60.9	68.5	13.1 - 90.8	Acceptable	EPA 625
6360	4,6-Dinitro-2-methylphenol	pg/L	94.2	162	58.2 - 232	Acceptable	EPA 625
6175	2,4-Dinitrophenol	pg/L	85.3	138	13.8 - 190	Acceptable	EPA 625
6400	2-Methylphenol	pg/L	47.5	57.0	10.8 - 72.0	Acceptable	EPA 625
6410	4-Methylphenol	pg/L	81.9	106	10.6 - 138	Acceptable	EPA 625
6490	2-Nitrophenol	pg/L	52.2	70.5	20.0 - 89.6	Acceptable	EPA 625
6500	4-Nitrophenol	pg/L	128	148	14.8 - 199	Acceptable	EPA 625
6605	Pentachlorophenol	pg/L	82.5	151	41.4 - 209	Acceptable	EPA 625
6625	Phenol	pg/L	75.8	113	11.3 - 152	Acceptable	EPA 625
6735	2,3,4,6-Tetrachlorophenol	pg/L	95.7	153	34.4 - 206	Acceptable	EPA 625
6835	2,4,5-Trichlorophenol	pg/L	55.1	52.4	20.4 - 70.4	Acceptable	EPA 625
6840	2,4,6-Trichlorophenol	pg/L	63.3	64.5	20.6 - 83.4	Acceptable	EPA 625
WP Acids (cat# 834)							
5610	Benzoic acid	pg/L	< 20.0	0.00		Acceptable	EPA 8270C
5700	4-Chloro-3-methylphenol	pg/L	52.4	61.3	22.9 - 78.9	Acceptable	EPA 8270C
5800	2-Chlorophenol	pg/L	77.8	108	31.4 - 136	Acceptable	EPA 8270C
6000	2,4-Dichlorophenol	pg/L	75.4	95.7	30.4 - 119	Acceptable	EPA 8270C
6005	2,6-Dichlorophenol	pg/L	134	135	46.5 - 168	Acceptable	EPA 8270C
6130	2,4-Dirnethylphenol	pg/L	60.9	68.5	13.1 - 90.8	Acceptable	EPA 8270C
6360	4,6-Dinitro-2-methylphenol	pg/L	94.2	162	58.2 - 232	Acceptable	EPA 8270C
6175	2,4-Dinitrophenol	pg/L	85.3	138	13.8 - 190	Acceptable	EPA 8270C
6400	2-Methylphenol	pg/L	47.5	57.0	10.8 - 72.0	Acceptable	EPA 8270C
6410	4-Methylphenol	pg/L	81.9	106	10.6 - 138	Acceptable	EPA 8270C
6490	2-Nitrophenol	pg/L	52.2	70.5	20.0 - 89.6	Acceptable	EPA 8270C
6500	4-Nitrophenol	pg/L	128	148	14.8 - 199	Acceptable	EPA 8270C
6605	Pentachlorophenol	pg/L	82.5	151	41.4 - 209	Acceptable	EPA 8270C
6625	Phenol	pg/L	75.8	113	11.3 - 152	Acceptable	EPA 8270C
6735	2,3,4,6-Tetrachlorophenol	pg/L	95.7	153	34.4 - 206	Acceptable	EPA 8270C
6835	2,4,5-Trichlorophenol	pg/L	55.1	52.4	20.4 - 70.4	Acceptable	EPA 8270C
6840	2,4,6-Trichlorophenol	pg/L	63.3	64.5	20.6 - 83.4	Acceptable	EPA 8270C

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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Low-Level PAHs (cat# 836)							
5500	Acenaphthene	pg/L	4.78	6.64	3.38 - 7.87	Acceptable	EPA 8310 UV
5505	Acenaphthylene	pg/L	3.77	5.64	2.74 - 6.73	Acceptable	EPA 8310 UV
5555	Anthracene	µg/L	0.782	0.907	0.258 - 1.26	Acceptable	EPA 8310 UV
5575	Benzo(a)anthracene	pg/L	0.415	0.469	0.229 - 0.625	Acceptable	EPA 8310 UV
5585	Benzo(b)fluoranthene	pg/L	1.16	1.24	0.533 - 1.54	Acceptable	EPA 8310 UV
5600	Benzo(k)fluoranthene	pg/L	1.41	1.47	0.821 - 1.77	Acceptable	EPA 8310 UV
5590	Benzo(g,h,i)perylene	pg/L	1.68	1.86	0.631 - 2.43	Acceptable	EPA 8310 UV
5580	Benzo(a)pyrene	pg/L	1.64	1.74	0.740 - 2.10	Acceptable	EPA 8310 UV
5855	Chrysene	pg/L	0.297	0.338	0.182 - 0.461	Acceptable	EPA 8310 UV
5895	Dibenz(a,h)anthracene	pg/L	1.05	1.32	0.407 - 1.81	Acceptable	EPA 8310 UV
6265	Fluoranthene	pg/L	1.68	1.88	1.12 - 2.24	Acceptable	EPA 8310 UV
6270	Fluorene	pg/L	4.68	5.38	2.31 - 6.36	Acceptable	EPA 8310 UV
6315	Indeno(1,2,3-cd)pyrene	pg/L	1.44	1.53	0.699 - 1.90	Acceptable	EPA 8310 UV
5005	Naphthalene	pg/L	4.22	5.94	2.15 - 6.53	Acceptable	EPA 8310 UV
6615	Phenanthrene	pg/L	0.889	1.01	0.509 - 1.24	Acceptable	EPA 8310 UV
6665	Pyrene	pg/L	0.653	0.779	0.440 - 0.969	Acceptable	EPA 8310 UV
WP Organochlorine Pesticides (cat# 831)							
0047	Aldrin	pg/L	4.0	3.48	0.995 - 4.82	Acceptable	EPA 608
7110	alpha-BHC	pg/L	3.6	3.05	1.11 - 4.34	Acceptable	EPA 608
7115	beta-BHC	pg/L	4.5	3.93	1.60 - 5.48	Acceptable	EPA 608
7105	delta-BHC	pg/L	10.7	9.06	3.41 - 12.6	Acceptable	EPA 608
7120	gamma-BHC(Lindane)	pg/L	8.0	6.43	2.62 - 8.88	Acceptable	EPA 608
7240	alpha-Chlordane	pg/L	6.5	5.78	2.60 - 7.82	Acceptable	EPA 608
7245	gamma-Chlordane	pg/L	4.2	3.71	1.56 - 5.11	Acceptable	EPA 608
0049	4,4'-DDD	pg/L	6.8	5.80	2.16 - 8.31	Acceptable	EPA 608
0050	4,4'-DDE	pg/L	3.7	3.34	1.45 - 4.43	Acceptable	EPA 608
0051	4,4'-DDT	pg/L	1.9	1.53	0.578 - 2.33	Acceptable	EPA 608
0048	Dieldrin	pg/L	10.8	9.60	4.72 - 13.0	Acceptable	EPA 608
7540	Endrin	pg/L	5.4	4.83	1.80 - 7.28	Acceptable	EPA 608
7530	Endrin aldehyde	pg/L	7.1	5.98	1.60 - 9.30	Acceptable	EPA 608
7535	Endrin ketone	pg/L	6.7	5.49	3.02 - 7.96	Acceptable	EPA 608
7510	Endosulfan I	pg/L	11.4	13.6	4.16 - 19.9	Acceptable	EPA 608
7515	Endosulfan II	pg/L	8.9	8.69	2.79 - 11.7	Acceptable	EPA 608
7520	Endosulfan sulfate	pg/L	11.3	9.83	3.71 - 14.3	Acceptable	EPA 608
0052	Heptachlor	pg/L	4.8	4.30	1.40 - 5.91	Acceptable	EPA 608
0078	Heptachlor epoxide (beta)	pg/L	10.9	9.69	4.86 - 13.5	Acceptable	EPA 608
7810	Methoxychlor	pg/L	13.0	11.7	3.15 - 18.4	Acceptable	EPA 608

ACCREDITED
All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

WP-180 Final Complete Report

Phillip Worby
Director Corporate Quality Assurance
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810
732-329-0200

EPA ID: **NJ00141**
ERA Customer Number: **A064801**
Report Issued: **03/23/10**
Study Dates: **01/18/10 - 03/04/10**

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Organochlorine Pesticides (cat# 831)							
0047	Aldrin	pg/L	4.0	3.48	0.995 - 4.82	Acceptable	EPA 8081A
7110	alpha-BHC	pg/L	3.6	3.05	1.11 - 4.34	Acceptable	EPA 8081A
7115	beta-BHC	pg/L	4.5	3.93	1.60 - 5.48	Acceptable	EPA 8081A
7105	delta-BHC	pg/L	10.7	9.06	3.41 - 12.6	Acceptable	EPA 8081A
7120	gamma-BHC(Lindane)	pg/L	8.0	6.43	2.62 - 8.88	Acceptable	EPA 8081A
7240	alpha-Chlordane	pg/L	6.5	5.78	2.60 - 7.82	Acceptable	EPA 8081A
7245	gamma-Chlordane	pg/L	4.2	3.71	1.56 - 5.11	Acceptable	EPA 8081A
0049	4,4'-DDD	pg/L	6.8	5.80	2.16 - 8.31	Acceptable	EPA 8081A
0050	4,4'-DDE	pg/L	3.7	3.34	1.45 - 4.43	Acceptable	EPA 8081A
0051	4,4'-DDT	pg/L	1.9	1.53	0.578 - 2.33	Acceptable	EPA 8081A
0048	Dieldrin	pg/L	10.8	9.60	4.72 - 13.0	Acceptable	EPA 8081A
7540	Endrin	pg/L	5.4	4.83	1.80 - 7.28	Acceptable	EPA 8081A
7530	Endrin aldehyde	pg/L	7.1	5.98	1.60 - 9.30	Acceptable	EPA 8081A
7535	Endrin ketone	pg/L	6.7	5.49	3.02 - 7.96	Acceptable	EPA 8081A
7510	Endosulfan I	pg/L	11.4	13.6	4.16 - 19.9	Acceptable	EPA 8081A
7515	Endosulfan II	pg/L	8.9	8.69	2.79 - 11.7	Acceptable	EPA 8081A
7520	Endosulfan sulfate	pg/L	11.3	9.83	3.71 - 14.3	Acceptable	EPA 8081A
0052	Heptachlor	pg/L	4.8	4.30	1.40 - 5.91	Acceptable	EPA 8081A
0078	Heptachlor epoxide (beta)	pg/L	10.9	9.69	4.86 - 13.5	Acceptable	EPA 8081A
7810	Methoxychlor	pg/L	13.0	11.7	3.15 - 18.4	Acceptable	EPA 8081A
WP Chlordane (cat# 837)							
0053	Chlordane, technical	pg/L	17.3	17.2	6.46 - 24.8	Acceptable	EPA 608
WP Chlordane (cat# 837)							
0053	Chlordane, technical	pg/L	17.3	17.2	6.46 - 24.8	Acceptable	EPA 8081A
WP Toxaphene (cat# 838)							
8250	Toxaphene	pg/L	21.3	20.8	2.08 - 37.7	Acceptable	EPA 608
WP Toxaphene (cat# 838)							
8250	Toxaphene	pg/L	21.3	20.8	2.08 - 37.7	Acceptable	EPA 8081A
WP Total Organic Halides (TOX) (cat# 895)							
2045	Total Organic Halides (TOX)	pg/L	977	969	755 - 1120	Acceptable	EPA 9020B

ACCREDITED Lab Code: 1539-01
All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

Phillip Worby
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810

WP-186 Final Report

WatR™ Pollution Proficiency Testing

WatR™ Pollution Study

Open Date: 07/20/10

Close Date: 09/03/10

Report Issued Date: 09/24/10

September 24, 2010

Phillip Worby
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810

Enclosed is your final report for ERA's WP-186 WatR™Pollution Proficiency Testing (PT) study. Your final report includes an evaluation of all results submitted by your laboratory to ERA.

Data Evaluation Protocols: All analytes in ERA's WP-186 WatR™Pollution Proficiency Testing study have been evaluated using the following tiered approach. If the analyte is listed in the most current National Environmental Laboratory Accreditation Conference (NELAC) PT Field of Testing tables, the evaluation was completed by comparing the reported result to the acceptance limits generated using the criteria contained in the NELAC FoPT tables. If the analyte is not included in the NELAC FoPT tables, the reported result has been evaluated using the procedures outlined in ERA's Standard Operating Procedure for the Generation of Performance Acceptance Limits (SOP 0260).

Corrective Action Help: As part of your accreditation(s), you may be required to identify the root cause of any "Not Acceptable" results, implement the necessary corrective actions, and then satisfy your PT requirements by participating in a Supplemental (QuiK™ Response) or future ERA PT study. ERA's technical staff is available to help your laboratory resolve any technical issues that may be impairing your PT performance and possibly affecting your routine data quality. Our laboratory and technical staff have well over three hundred years of collective experience in performing the full range of environmental analyses. As part of our technical support, ERA offers QC samples that can be helpful in helping you work through your technical issues.

Thank ypu for your participation in ERA's WP-186 WatR™Pollution Proficiency Testing study. If you have any questions, please contact the proficiency testing department or myself at 1-800-372-0122.

Sincerely,

Jay R. McBurney
Quality Program Manager

attachments
jrm

Report Recipient	Contact/Phone Number	Reporting Type
DoD EDQW	Fred 8 McLean / 843-764-7266	All Analytes
Massachusetts	Ann Marie Allen / 978-682-5237 x 333	All Analytes
Minnesota	Susan Wyatt / 651-201-5323	All Analytes
New Jersey	Rachel Ellis / 609-777-1749	All Analytes
Ohio (WP)	Darlene Stanley / 614-644-3748	All Analytes
Oklahoma	David Caldwell / 405-702-1039	All Analytes
South Carolina	Carol Smith / 803-896-0992	All Analytes
West Virginia (DEP)	Daniel T. Arnold / 304-926-0499 x1341	All Analytes
Enovis	Tim Abston / 313-872-6151	All Analytes

WP-186 Definitions & Study Discussion

Study Dates: 07/20/10 - 09/03/10 **Report Issued: 09/24/10**

WP Study Definitions

The Reported Value is the value that the laboratory reported to ERA.

The ERA Assigned Values are compliant with the most current USEPA/NELAC FoPT tables. A parameter not added to the standard is given an Assigned Value of **"0"** per the guidelines contained in the USEPA's Criteria Document and NELAC standards.

The Acceptance Limits are established per the criteria contained in the most current USEPA/NELAC FoPT tables, or ERA's SOP for the Generation bf Performance Acceptance Limits™ as applicable.

The Performance Evaluation:

Acceptable	= Reported Value falls wilhin the Acceptance Limits.
Not Acceptable	= Reported Value falls outside the Acceptance Limits.
No Evaluation	= Reported Value cannot be evaluated.
Not Reported	= No Value reported.

The Method Description is the method the laboratory reported to ERA.

WP Study Discussion

ERA's WP-186 WatR™Pollution Proficiency Testing study has been reviewed by ERA senior management and certified compliant with the requirements of the USEPA's National Standards for Water Proficiency Testing Studies Criteria Document (December 1998), and the criteria contained in the most current NELAC FoPT fables.

ERA's WP-186 WatR™Pollution study standards were examined for any anomalies. A full review of all homogeneity, stability and accuracy verification data was completed. All analytical verification data for all analytes met the acceptance criteria contained in the USEPA's National Criteria Document for Water Proficiency Testing Studies, December 1998, and the criteria contained in the most current NELAC FoPT tables.

The data submitted by participating laboratories was also examined for study anomalies. There were no anomalies observed during the statistical review of the data.

ERA's WP-186 WatR™Pollution study reports shall not be reproduced except in their entirety and not without the permission of the participating laboratories. The report must not be used by the participating laboratories lo claim product endorsement by any agency of the U. S. government.

The data contained herein are confidential and intended for your use only.

if you have any questions or concerns regarding your assessment in ERA's WatR™Pollution Proficiency Testing program, please contact Jay McBurney, Quality Program Manager, or the proficiency testing department at 1-800-372-0122.

ACCREDITED

Study: **WP-186**

ERA Customer Number: **A064801**

Laboratory Name: **Accutest Mid Atlantic**

Inorganic Results

WP-186 Final Complete Report

Phillip Worby
Director Corporate Quality Assurance
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810
732-329-0200

EPA ID: NJ00141
ERA Customer Number: A064801
Report Issued: 09/24/10
Study Dates: 07/20/10 - 09/03/10

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Minerals (cat# 581)							
0027	Alkalinity as CaCO3	mg/L	67.1	70.8	62.2 - 78.8	Acceptable	SM2320B
0028	Chloride	mg/L	59.5	61.1	52.1 - 70.6	Acceptable	EPA 300.0
0020	Conductivity at 25°C	pmhos/cm	373	369	329 - 409	Acceptable	SM2510B
0029	Fluoride	mg/L	2.92	3.10	2.59 - 3.62	Acceptable	EPA 300.0
0026	Potassium	mg/L	16.1	16.4	13.4 - 19.6	Acceptable	EPA 200.7
0025	Sodium	mg/L	69.3	70.7	60.0 - 81.1	Acceptable	EPA 200.7
0030	Sulfate	mg/L	12.3	12.3	9.04 - 15.3	Acceptable	EPA 300.0
0021	Total Dissolved Solids at 180°C	mg/L	253	271	202 - 340	Acceptable	SM2540C
1950	Total Solids at 105°C	mg/L	275	291	251 - 327	Acceptable	SM2540G
WP Minerals (cat# 581)							
0027	Alkalinity as CaCO3	mg/L		70.8	62.2 - 78.8	Not Reported	
0028	Chloride	mg/L	59.5	61.1	52.1 - 70.6	Acceptable	EPA 9056
0020	Conductivity at 25°C	pmhos/cm	373	369	329 - 409	Acceptable	EPA 9050A
0029	Fluoride	mg/L	2.92	3.10	2.59 - 3.62	Acceptable	EPA 9056
0026	Potassium	mg/L	15.7	16.4	13.4 - 19.6	Acceptable	EPA 200.8
0025	Sodium	mg/L	69.7	70.7	60.0 - 81.1	Acceptable	EPA 200.8
0030	Sulfate	mg/L	12.3	12.3	9.04 - 15.3	Acceptable	EPA 9056
0021	Total Dissolved Solids at 1S0°C	mg/L		271	202 - 340	Not Reported	
1950	Total Solids at 105°C	mg/L		291	251 - 327	Not Reported	
WP Minerals (cat# 581)							
0027	Alkalinity as CaCO3	mg/L		70.8	62.2 - 78.8	Not Reported	
0028	Chloride	mg/L	57.5	61.1	52.1 - 70.6	Acceptable	SM4500Cl- C VIS
0020	Conductivity at 25°C	pmhos/cm		369	329 - 409	Not Reported	
0029	Fluoride	mg/L		3.10	2.59 - 3.62	Not Reported	
0026	Potassium	mg/L	15.7	16.4	13.4 - 19.6	Acceptable	EPA 6010B
0025	Sodium	mg/L	69.0	70.7	60.0 - 81.1	Acceptable	EPA 6010B
0030	Sulfate	mg/L		12.3	9.04 - 15.3	Not Reported	
0021	Total Dissolved Solids at 180°C	mg/L		271	202 - 340	Not Reported	
1950	Total Solids at 105°C	mg/L	275	291	251 - 327	Acceptable	SM2540B
WP Minerals (cat# 581)							
0027	Alkalinity as CaCO3	mg/L		70.8	62.2 - 78.8	Not Reported	
0028	Chloride	mg/L		61.1	52.1 - 70.6	Not Reported	
0020	Conductivity at 25°C	pmhos/cm		369	329 - 409	Not Reported	
0029	Fluoride	mg/L		3.10	2.59 - 3.62	Not Reported	
0026	Potassium	mg/L	15.9	16.4	13.4 - 19.6	Acceptable	EPA 6020
0025	Sodium	mg/L	70.5	70.7	60.0 - 81.1	Acceptable	EPA 6020
0030	Sulfate	mg/L		12.3	9.04 - 15.3	Not Reported	
0021	Total Dissolved Solids at 180°C	mg/L		271	202 - 340	Not Reported	
1950	Total Solids at 105°C	mg/L		291	251 - 327	Not Reported	

ACCREDITED

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

WP-186 Final Complete Report

Phillip Worby
Director Corporate Quality Assurance
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810
732-329-0200

EPA ID: NJ00141
ERA Customer Number: A064801
Report Issued: 09/24/10
Study Dates: 07/20/10 - 09/03/10

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Hardness (cat# 580)							
0072	Non-Filterable Residue (TSS)	mg/L	44.0	45.1	34.4 - 52.0	Acceptable	SM2540D
0023	Calcium	mg/L	48.4	49.8	44.4 - 56.5	Acceptable	EPA 200.7
0024	Magnesium	mg/L	20.9	21.9	18.7 - 25.1	Acceptable	EPA 200.7
1550	Calcium Hardness as CaCO3	mg/L	121	124	111 - 141	Acceptable	EPA 200.7
0022	Total Hardness as CaCO3	mg/L	204	214	188 - 245	Acceptable	SM2340C
WP Hardness (cat# 580)							
0072	Non-Filterable Residue (TSS)	mg/L		45.1	34.4 - 52.0	Not Reported	
0023	Calcium	mg/L	55.3	49.8	44.4 - 56.5	Acceptable	EPA 200.8
0024	Magnesium	mg/L	21.6	21.9	18.7 - 25.1	Acceptable	EPA 200.8
1550	Calcium Hardness as CaCO3	mg/L	121	124	111 - 141	Acceptable	SM2340B
0022	Total Hardness as CaCO3	mg/L		214	188 - 245	Not Reported	
WP Hardness (cat# 580)							
0072	Non-Filterable Residue (TSS)	mg/L		45.1	34.4 - 52.0	Not Reported	
0023	Calcium	mg/L	46.5	49.8	44.4 - 56.5	Acceptable	EPA 6010B
0024	Magnesium	mg/L	20.0	21.9	18.7 - 25.1	Acceptable	EPA 6010B
1550	Calcium Hardness as CaCO3	mg/L		124	111 - 141	Not Reported	
0022	Total Hardness as CaCO3	mg/L		214	188 - 245	Not Reported	
WP Hardness (cat# 580)							
0072	Non-Filterable Residue (TSS)	mg/L		45.1	34.4 - 52.0	Not Reported	
0023	Calcium	mg/L	54.1	49.8	44.4 - 56.5	Acceptable	EPA 6020
0024	Magnesium	mg/L	20.7	21.9	18.7 - 25.1	Acceptable	EPA 6020
1550	Calcium Hardness as CaCO3	mg/L		124	111 - 141	Not Reported	
0022	Total Hardness as CaCO3	mg/L		214	188 - 245	Not Reported	
WP pH (cat# 577)							
0019	pH	S.U.	7.10	7.11	6.91 - 7.31	Acceptable	SM4500H+ B
WP Settleable Solids (cat# 883)							
1965	Settleable Solids	mL/L	24.0	23.7	18.4 - 30.5	Acceptable	SM2540F
WP Volatile Solids (cat# 884)							
1970	Volatile Solids	mg/L	310	341	283 - 377	Acceptable	EPA 160.4
WP Volatile Solids (cat# 884)							
1970	Volatile Solids	mg/L	310	341	283 - 377	Acceptable	SM2540G
WP Simple Nutrients (cat# 584)							
0031	Ammonia as N	mg/L	13.7	16.0	11.9 - 19.8	Acceptable	SM4500NH3 G
1820	Nitrate + Nitrite as N	mg/L	30.9	28.7	23.4 - 33.3	Acceptable	EPA 353.2
0032	Nitrate as N	mg/L	30.9	28.7	22.4 - 34.6	Acceptable	EPA 353.2
0033	ortho-Phosphate as P	mg/L	3.86	3.98	3.27 - 4.72	Acceptable	SM4500P E

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

WP-186 Final Complete Report

Phillip Worby
Director Corporate Quality Assurance
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810
732-329-0200

EPA ID: NJ00141
ERA Customer Number: A064801
Report Issued: 09/24/10
Study Dates: 07/20/10 - 09/03/10

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Complex Nutrients (cat# 579)							
0034	Total Kjeldahl Nitrogen	mg/L	18.6	18.5	12.2 - 23.8	Acceptable	EPA 351.2
0035	Total phosphorus as P	mg/L	2.88	2.89	2.34 - 3.49	Acceptable	EPA 365.3
WP Nitrite (cat# 888)							
1840	Nitrite as N	mg/L	2.61	2.66	2.25 - 3.07	Acceptable	SM4500NO2- B
WP Demand (cat# 578)							
0038	BOD	mg/L	100	79.7	40.2 - 119	Acceptable	SM5210B
0102	CBOD	mg/L	77.1	68.6	30.8 - 106	Acceptable	SM5210B
0036	COD	mg/L	123	129	97.7 - 149	Acceptable	SM5220C
0037	TOC	mg/L	49.0	50.8	42.4 - 58.6	Acceptable	SM5310B
WP Demand (cat# 578)							
0038	BOD	mg/L		79.7	40.2 - 119	Not Reported	
0102	CBOD	mg/L		68.6	30.8 - 106	Not Reported	
0036	COD	mg/L		129	97.7 - 149	Not Reported	
0037	TOC	mg/L	49.0	50.8	42.4 - 58.6	Acceptable	EPA 9060
WP Oil & Grease (cat# 582)							
0104	Oil & Grease (Gravimetric)	mg/L	32.5	36.0	21.3 - 45.6	Acceptable	EPA 1664A
1860	Oil & Grease (Infrared)	mg/L		44.3	27.8 - 54.7	Not Reported	
WP Trace Metals (cat# 586)							
0001	Aluminum	pg/L	996	984	792 - 1170	Acceptable	EPA 200.7
0016	Antimony	pg/L	537	525	367 - 632	Acceptable	EPA 200.7
0002	Arsenic	pg/L	587	579	486 - 678	Acceptable	EPA 200.7
1015	Barium	pg/L	1800	1740	1510 - 1960	Acceptable	EPA 200.7
0003	Beryllium	pg/L	245	245	208 - 277	Acceptable	EPA 200.7
1025	Boron	pg/L	889	829	688 - 967	Acceptable	EPA 200.7
0004	Cadmium	pg/L	711	685	585 - 777	Acceptable	EPA 200.7
0006	Chromium	pg/L	472	448	390 - 507	Acceptable	EPA 200.7
0005	Cobalt	pg/L	1020	938	825 - 1050	Acceptable	EPA 200.7
0007	Copper	pg/L	813	833	750 - 916	Acceptable	EPA 200.7
0008	Iron	pg/L	563	519	456 - 590	Acceptable	EPA 200.7
0012	Lead	pg/L	521	496	431 - 559	Acceptable	EPA 200.7
0010	Manganese	pg/L	1140	1070	961 - 1190	Acceptable	EPA 200.7
0074	Molybdenum	pg/L	562	537	456 - 612	Acceptable	EPA 200.7
0011	Nickel	pg/L	290	276	244 - 312	Acceptable	EPA 200.7
0013	Selenium	pg/L	543	516	408 - 598	Acceptable	EPA 200.7
0017	Silver	pg/L	233	233	200 - 267	Acceptable	EPA 200.7
0075	Strontium	pg/L	53.2	50.5	41.0 - 59.8	Acceptable	EPA 200.7
0018	Thallium	µg/L	828	761	626 - 904	Acceptable	EPA 200.7
0014	Vanadium	pg/L	733	719	630 - 804	Acceptable	EPA 200.7
0015	Zinc	pg/L	806	717	616 - 825	Acceptable	EPA 200.7

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

WP-186 Final Complete Report

Phillip Worby
Director Corporate Quality Assurance
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810
732-329-0200

EPA ID: NJ00141
ERA Customer Number: A064801
Report Issued: 09/24/10
Study Dates: 07/20/10 - 09/03/10

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Trace Metals (cat# 586)							
0001	Aluminum	pg/L	995	984	792 - 1170	Acceptable	EPA 200.8
0016	Antimony	pg/L	558	525	367 - 632	Acceptable	EPA 200.8
0002	Arsenic	pg/L	577	579	486 - 678	Acceptable	EPA 200.8
1015	Barium	pg/L	1800	1740	1510 - 1960	Acceptable	EPA 200.8
0003	Beryllium	pg/L	235	245	208 - 277	Acceptable	EPA 200.8
1025	Boron	pg/L		829	688 - 967	Not Reported	
0004	Cadmium	pg/L	681	685	585 - 777	Acceptable	EPA 200.8
0006	Chromium	pg/L	450	448	390 - 507	Acceptable	EPA 200.8
0005	Cobalt	pg/L	969	938	825 - 1050	Acceptable	EPA 200.8
0007	Copper	pg/L	858	833	750 - 916	Acceptable	EPA 200.8
0008	Iron	pg/L	523	519	456 - 590	Acceptable	EPA 200.8
0012	Lead	pg/L	508	496	431 - 559	Acceptable	EPA 200.8
0010	Manganese	pg/L	1110	1070	961 - 1190	Acceptable	EPA 200.8
0074	Molybdenum	pg/L	533	537	456 - 612	Acceptable	EPA 200.8
0011	Nickel	pg/L	270	276	244 - 312	Acceptable	EPA 200.8
0013	Selenium	pg/L	508	516	408 - 598	Acceptable	EPA 200.8
0017	Silver	pg/L	238	233	200 - 267	Acceptable	EPA 200.8
0075	Strontium	pg/L	49.8	50.5	41.0 - 59.8	Acceptable	EPA 200.8
0018	Thallium	pg/L	798	761	626 - 904	Acceptable	EPA 200.8
0014	Vanadium	pg/L	737	719	630 - 804	Acceptable	EPA 200.8
0015	Zinc	pg/L	738	717	616 - 825	Acceptable	EPA 200.8

ACCREDITED Lab Code: 1539-01

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

WP-186 Final Complete Report

Phillip Worby
Director Corporate Quality Assurance
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810
732-329-0200

EPA ID: NJ00141
ERA Customer Number: A064801
Report Issued: 09/24/10
Study Dates: 07/20/10 - 09/03/10

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Descriptibn
WP Trace Metals (cat# 586)							
0001	Aluminum	pg/L	1010	984	792 - 1170	Acceptable	EPA 6020
0016	Antimony	pg/L	548	525	367 - 632	Acceptable	EPA 6020
0002	Arsenic	pg/L	572	579	486 - 678	Acceptable	EPA 6020
1015	Barium	pg/L	1790	1740	1510 - 1960	Acceptable	EPA 6020
0003	Beryllium	pg/L	241	245	208 - 277	Acceptable	EPA 6020
1025	Boron	pg/L		829	688 - 967	Not Reported	
0004	Cadmium	pg/L	694	685	585 - 777	Acceptable	EPA 6020
0006	Chromium	pg/L	461	448	390 - 507	Acceptable	EPA 6020
0005	Cobalt	pg/L	1060	938	825 - 1050	Not Acceptable	EPA 6020
0007	Copper	pg/L	822	833	750 - 916	Acceptable	EPA 6020
0008	Iron	pg/L	544	519	456 - 590	Acceptable	EPA 6020
0012	Lead	pg/L	512	496	431 - 559	Acceptable	EPA 6020
0010	Manganese	pg/L	1170	1070	961 - 1190	Acceptable	EPA 6020
0074	Molybdenum	pg/L	547	537	456 - 612	Acceptable	EPA 6020
0011	Nickel	pg/L	285	276	244 - 312	Acceptable	EPA 6020
0013	Selenium	pg/L	493	516	408 - 598	Acceptable	EPA 6020
0017	Silver	pg/L	247	233	200 - 267	Acceptable	EPA 6020
0075	Strontium	pg/L	49.9	50.5	41.0 - 59.8	Acceptable	EPA 6020
0018	Thallium	pg/L	818	761	626 - 904	Acceptable	EPA 6020
0014	Vanadium	pg/L	746	719	630 - 804	Acceptable	EPA 6020
0015	Zinc	pg/L	723	717	616 - 825	Acceptable	EPA 6020

ACCREDITED
All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

WP-186 Final Complete Report

Phillip Worby
Director Corporate Quality Assurance
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810
732-329-0200

EPA ID: NJ00141
ERA Customer Number: A064801
Report Issued: 09/24/10
Study Dates: 07/20/10 - 09/03/10

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Trace Metals (cat# 586)							
0001	Aluminum	pg/L	976	984	792 - 1170	Acceptable	EPA 6010B
0016	Antimony	pg/L	532	525	367 - 632	Acceptable	EPA 6010B
0002	Arsenic	pg/L	568	579	486 - 678	Acceptable	EPA 6010B
1015	Barium	pg/L	1790	1740	1510 - 1960	Acceptable	EPA 6010B
0003	Beryllium	pg/L	245	245	208 - 277	Acceptable	EPA 6010B
1025	Boron	pg/L	836	829	688 - 967	Acceptable	EPA 6010B
0004	Cadmium	pg/L	686	685	585 - 777	Acceptable	EPA 6010B
0006	Chromium	pg/L	464	448	390 - 507	Acceptable	EPA 6010B
0005	Cobalt	pg/L	1010	938	825 - 1050	Acceptable	EPA 6010B
0007	Copper	pg/L	811	833	750 - 916	Acceptable	EPA 6010B
0008	Iron	pg/L	563	519	456 - 590	Acceptable	EPA 6010B
0012	Lead	pg/L	481	496	431 - 559	Acceptable	EPA 6010B
0010	Manganese	pg/L	1130	1070	961 - 1190	Acceptable	EPA 6010B
0074	Molybdenum	pg/L	570	537	456 - 612	Acceptable	EPA 6010B
0011	Nickel	pg/L	268	276	244 - 312	Acceptable	EPA 6010B
0013	Selenium	pg/L	515	516	408 - 598	Acceptable	EPA 6010B
0017	Silver	pg/L	218	233	200 - 267	Acceptable	EPA 6010B
0075	Strontium	pg/L	53.1	50.5	41.0 - 59.8	Acceptable	EPA 6010B
0018	Thallium	pg/L	763	761	626 - 904	Acceptable	EPA 6010B
0014	Vanadium	pg/L	701	719	630 - 804	Acceptable	EPA 6010B
0015	Zinc	pg/L	733	717	616 - 825	Acceptable	EPA 6010B
WP Mercury (cat# 574)							
0009	Mercury	pg/L	5.85	6.54	4.04 - 8.94	Acceptable	EPA 7470A
WP Mercury (cat# 574)							
0009	Mercury	pg/L	5.85	6.54	4.04 - 8.94	Acceptable	EPA 245.1
WP Hexavalent Chromium (cat# 898)							
1045	Hexavalent Chromium	pg/L	506	546	444 - 642	Acceptable	EPA 7196A
WP Hexavalent Chromium (cat# 898)							
1045	Hexavalent Chromium	pg/L	530	546	444 - 642	Acceptable	EPA 7199
WP Hexavalent Chromium (cat# 898)							
1045	Hexavalent Chromium	pg/L	524	546	444 - 642	Acceptable	SM3500Cr **D**
WP Tin & Titanium (cat# 573)							
1175	Tin	pg/L	3770	3650	2870 - 4450	Acceptable	EPA 200.7
0076	Titanium	pg/L	174	170	146 - 192	Acceptable	EPA 200.7
WP Tin & Titanium (cat# 573)							
1175	Tin	pg/L	3790	3650	2870 - 4450	Acceptable	EPA 200.8
0076	Titanium	pg/L	170	170	146 - 192	Acceptable	EPA 200.8

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WP-186 Final Complete Report

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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Tin & Titanium (cat# 573)							
1175	Tin	pg/L	3810	3650	2870 - 4450	Acceptable	EPA 6010B
0076	Titanium	pg/L	173	170	146 - 192	Acceptable	EPA 6010B
WP Tin & Titanium (cat# 573)							
1175	Tin	pg/L	3620	3650	2870 - 4450	Acceptable	EPA 6020
0076	Titanium	pg/L	165	170	146 - 192	Acceptable	EPA 6020
WP Color (cat# 882)							
1605	Color	PC units	35	30.0	20.0 - 40.0	Acceptable	SM2120B
WP Turbidity (cat# 893)							
2055	Turbidity	NTU	4.49	5.07	4.17 - 5.90	Acceptable	EPA 180.1
WP Total Cyanide (cat# 588)							
0071	Cyanide, total	mg/L	0.743	0.739	0.464 - 1.01	Acceptable	EPA 335.4
WP Total Phenolics (4-AAP) (cat# 589)							
0097	Phenolics, total	mg/L	0.353	0.357	0.190 - 0.523	Acceptable	EPA 420.4
WP Silica (cat# 890)							
1990	Silica as SiO2	mg/L	70.4	67.9	50.9 - 84.9	Acceptable	EPA 200.7
WP Silica (cat# 890)							
1990	Silica as SiO2	mg/L	62.6	67.9	50.9 - 84.9	Acceptable	SM4500Si D
WP Sulfide (cat# 891)							
2005	Sulfide	mg/L	8.39	9.40	4.71 - 13.2	Acceptable	SM4500S2- F
WP Surfactants - MBAS (cat# 892)							
2025	Surfactants (MBAS)	mg/L	0.596	0.550	0.334 - 0.799	Acceptable	SM5540C
WP Acidity (cat# 885)							
1500	Acidity as CaCO3	mg/L	871	902	796 - 992	Acceptable	SM2310B
WP Bromide (cat# 887)							
1540	Bromide	mg/L	3.07	3.43	2.92 - 3.94	Acceptable	EPA 9056
WP Bromide (cat# 887)							
1540	Bromide	mg/L	3.07	3.43	2.92 - 3.94	Acceptable	EPA 300.0
WP Total Residual Chlorine (cat# 587)							
0098	Total Residual Chlorine	mg/L	1.54	1.35	0.969 - 1.67	Acceptable	SM4500Cl F

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

Study: **WP-186**

ERA Customer Number: **A064801**

Laboratory Name: **Accutest Mid Atlantic**

Microbiology Results

WP-186 Final Complete Report

Phillip Worby
Director Corporate Quality Assurance
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810
732-329-0200

EPA ID: NJ00141
ERA Customer Number: A064801
Report Issued: 09/24/10
Study Dates: 07/20/10 - 09/03/10

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP WasteWatR™ Coliform MicrobE™ (cat# 576)							
2500	Total Coliforms (MF)	CFU/100mL	765	561	139 - 2270	Acceptable	SM9222B
2530	Fecal Coliforms (MF)	CFU/100mL	465	319	63.0 - 1620	Acceptable	SM9222D m FC
2525	E.coli (MF)	CFU/100mL		401	70.8 - 2270	Not Reported	
2500	Total Coliforms (MPN)	MPN/100mL		881	147 - 5290	Not Reported	
2530	Fecal Coliforms (MPN)	MPN/100mL		660	58.8 - 7420	Not Reported	
2525	E.coli (MPN)	MPN/100mL		1110	461 - 2680	Not Reported	

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Study: **WP-186**

ERA Customer Number: **A064801**

Laboratory Name: **Accutest Mid Atlantic**

Organic Results

WP-186 Final Complete Report

Phillip Worby
Director Corporate Quality Assurance
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810
732-329-0200

EPA ID: NJ00141
ERA Customer Number: A064801
Report Issued: 09/24/10
Study Dates: 07/20/10 - 09/03/10

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Volatiles (cat# 830)							
4315	Acetone	pg/L	< 5.0	0.00		Acceptable	EPA 624
4320	Acetonitrile	pg/L	< 2.0	0.00		Acceptable	EPA 624
4325	Acrolein	pg/L	< 50	0.00		Acceptable	EPA 624
4340	Acrylonitrile	pg/L	< 10	0.00		Acceptable	EPA 624
0065	Benzene	pg/L	20.3	20.0	13.6 - 26.4	Acceptable	EPA 624
0060	Bromodichloromethane	pg/L	19.7	20.1	13.8 - 27.0	Acceptable	EPA 624
0062	Bromoform	pg/L	25.3	30.2	18.6 - 41.2	Acceptable	EPA 624
4950	Bromomethane	pg/L	< 1.0	0.00		Acceptable	EPA 624
4410	2-Butanone (MEK)	pg/L	110	110	32.0 - 172	Acceptable	EPA 624
5000	tert-Butyl methyl ether (MTBE)	pg/L	47.7	43.7	27.1 - 62.1	Acceptable	EPA 624
4450	Carbon disulfide	pg/L	< 1.0	0.00		Acceptable	EPA 624
0058	Carbon tetrachloride	pg/L	34.0	31.8	17.7 - 43.7	Acceptable	EPA 624
0064	Chlorobenzene	pg/L	80.6	84.7	61.1 - 106	Acceptable	EPA 624
0061	Chlorodibromomethane	pg/L	96.9	107	73.5 - 142	Acceptable	EPA 624
4485	Chloroethane	pg/L	< 1.0	0.00		Acceptable	EPA 624
4500	2-Chloroethylvinylether	pg/L	< 5.0	0.00		Acceptable	EPA 624
0055	Chloroform	pg/L	66.5	63.0	43.6 - 81.0	Acceptable	EPA 624
4960	Chloromethane	pg/L	< 1.0	0.00		Acceptable	EPA 624
4570	1,2-Dibromo-3-chloropropane (DBCP)	pg/L	< 2.0	0.00		Acceptable	EPA 624
4585	1,2-Dibromoethane (EDB)	pg/L	< 1.0	0.00		Acceptable	EPA 624
4595	Dibromomethane	pg/L	< 1.0	0.00		Acceptable	EPA 624
0094	1,2-Dichlorobenzene	pg/L	76.4	80.7	56.2 - 104	Acceptable	EPA 624
0096	1,3-Dichlorobenzene	pg/L	69.0	71.0	48.2 - 90.4	Acceptable	EPA 624
0095	1,4-Dichlorobenzene	pg/L	64.7	68.0	46.1 - 85.2	Acceptable	EPA 624
4625	Dichlorodifluoromethane (Freon 12)	pg/L	< 2.0	0.00		Acceptable	EPA 624
4630	1,1-Dichloroethane	pg/L	< 1.0	0.00		Acceptable	EPA 624
0054	1,2-Dichloroelhane	pg/L	23.5	22.7	15.7 - 30.7	Acceptable	EPA 624
4640	1,1-Dichloroethylene	pg/L	< 1.0	0.00		Acceptable	EPA 624
4645	cis-1,2-Dichloroethylene	pg/L	28.1	26.0	17.9 - 34.8	Acceptable	EPA 624
4700	trans-1,2-Dichloroethylene	pg/L	< 1.0	0.00		Acceptable	EPA 624
4655	1,2-Dichloropropane	pg/L	< 1.0	0.00		Acceptable	EPA 624
4680	cis-1,3-Dichloropropylene	pg/L	35.5	45.0	31.5 - 58.5	Acceptable	EPA 624

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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Volatiles (cat# 830) (Continued)							
4685	trans-1,3-Dichloropropylene	pg/L	< 1.0	0.00		Acceptable	EPA 624
0066	Ethylbenzene	pg/L	42.6	43.0	29.5 - 54.9	Acceptable	EPA 624
4835	Hexachlorobutadiene	pg/L	< 5.0	0.00		Acceptable	EPA 624
4860	2-Hexanone	pg/L	< 5.0	0.00		Acceptable	EPA 624
0063	Methylene chloride	pg/L	94.6	90.5	55.5 - 125	Acceptable	EPA 624
4995	4-Methyl-2-pentanone (MIBK)	pg/L	82.4	78.0	36.0 - 117	Acceptable	EPA 624
5005	Naphthalene	pg/L	26.1	32.8	11.1 - 42.6	Acceptable	EPA 624
5100	Styrene	pg/L	< 2.0	0.00		Acceptable	EPA 624
5105	1,1,1,2-Tetrachloroethane	pg/L	< 1.0	0.00		Acceptable	EPA 624
5110	1,1,2,2-Tetrachloroethane	pg/L	53.9	55.7	31.8 - 82.5	Acceptable	EPA 624
0059	Tetrachloroethylene	pg/L	44.0	45.9	25.3 - 60.1	Acceptable	EPA 624
0067	Toluene	pg/L	35.5	35.5	24.7 - 44.9	Acceptable	EPA 624
5155	1,2,4-Trichlorobenzene	pg/L	58.8	70.5	14.6 - 86.0	Acceptable	EPA 624
0056	1,1,1-Trichloroethane	pg/L	29.7	27.3	17.2 - 36.5	Acceptable	EPA 624
5165	1,1,2-Trichloroethane	pg/L	34.1	35.8	25.0 - 47.3	Acceptable	EPA 624
0057	Trichloroethylene	pg/L	72.1	69.9	44.4 - 91.1	Acceptable	EPA 624
5175	Trichlorofluoromethane	pg/L	< 2.0	0.00		Acceptable	EPA 624
5180	1,2,3-Trichloropropane (TCP)	pg/L	< 1.0	0.00		Acceptable	EPA 624
5225	Vinyl acetate	pg/L	< 5.0	0.00		Acceptable	EPA 624
5235	Vinyl chloride	pg/L	< 1.0	0.00		Acceptable	EPA 624
5260	Xylenes, total	pg/L	84.9	85.6	48.6 - 116	Acceptable	EPA 624

ACCREDITED Lab Code: 1539-01
All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

WP-186 Final Complete Report

Phillip Worby
Director Corporate Quality Assurance
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810
732-329-0200

EPA ID: NJ00141
ERA Customer Number: A064801
Report Issued: 09/24/10
Study Dates: 07/20/10 - 09/03/10

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Volatiles (cat# 830)							
4315	Acetone	pg/L	< 5.0	0.00		Acceptable	EPA 8260B
4320	Acetonitrile	pg/L	< 2.0	0.00		Acceptable	EPA 8260B
4325	Acrolein	pg/L	< 50	0.00		Acceptable	EPA 8260B
4340	Acrylonitrile	pg/L	< 10	0.00		Acceptable	EPA 8260B
0065	Benzene	pg/L	20.3	20.0	13.6 - 26.4	Acceptable	EPA 8260B
0060	Bromodichloromethane	pg/L	19.7	20.1	13.8 - 27.0	Acceptable	EPA 8260B
0062	Bromoform	pg/L	25.3	30.2	18.6 - 41.2	Acceptable	EPA 8260B
4950	Bromomethane	pg/L	< 1.0	0.00		Acceptable	EPA 8260B
4410	2-Butanone (MEK)	pg/L	110	110	32.0 - 172	Acceptable	EPA 8260B
5000	tert-Butyl methyl ether (MTBE)	pg/L	47.7	43.7	27.1 - 62.1	Acceptable	EPA 8260B
4450	Carbon disulfide	pg/L	< 1.0	0.00		Acceptable	EPA 8260B
0058	Carbon tetrachloride	pg/L	34.0	31.8	17.7 - 43.7	Acceptable	EPA 8260B
0064	Chlorobenzene	pg/L	80.6	84.7	61.1 - 106	Acceptable	EPA 8260B
0061	Chlorodibromomethane	pg/L	96.9	107	73.5 - 142	Acceptable	EPA 8260B
4485	Chloroethane	pg/L	< 1.0	0.00		Acceptable	EPA 8260B
4500	2-Chloroethylvinylether	pg/L	< 5.0	0.00		Acceptable	EPA 8260B
0055	Chloroform	pg/L	66.5	63.0	43.6 - 81.0	Acceptable	EPA 8260B
4960	Chloromethane	pg/L	< 1.0	0.00		Acceptable	EPA 8260B
4570	1,2-Dibromo-3-chloropropane (DBCP)	pg/L	< 2.0	0.00		Acceptable	EPA 8260B
4585	1,2-Dibromoethane (EDB)	pg/L	< 1.0	0.00		Acceptable	EPA 8260B
4595	Dibromomethane	pg/L	< 1.0	0.00		Acceptable	EPA 8260B
0094	1,2-Dichlorobenzene	pg/L	76.4	80.7	56.2 - 104	Acceptable	EPA 8260B
0096	1,3-Dichlorobenzene	pg/L	69.0	71.0	48.2 - 90.4	Acceptable	EPA 8260B
0095	1,4-Dichlorobenzene	pg/L	64.7	68.0	46.1 - 85.2	Acceptable	EPA 8260B
4625	Dichlorodifluoromethane (Freon 12)	pg/L	< 2.0	0.00		Acceptable	EPA 8260B
4630	1,1-Dichloroethane	pg/L	< 1.0	0.00		Acceptable	EPA 8260B
0054	1,2-Dichloroethane	pg/L	23.5	22.7	15.7 - 30.7	Acceptable	EPA 8260B
4640	1,1-Dichloroethylene	pg/L	< 1.0	0.00		Acceptable	EPA 8260B
4645	cis-1,2-Dichloroethylene	pg/L	28.1	26.0	17.9 - 34.8	Acceptable	EPA 8260B
4700	trans-1,2-Dichloroethylene	pg/L	< 1.0	0.00		Acceptable	EPA 8260B
4655	1,2-Dichloropropane	pg/L	< 1.0	0.00		Acceptable	EPA 8260B
4680	cis-1,3-Dichloropropylene	pg/L	35.5	45.0	31.5 - 58.5	Acceptable	EPA 8260B

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

Phillip Worby
Director Corporate Quality Assurance
Accutest Mid Atlantic
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EPA ID: NJ00141
ERA Customer Number: A064801
Report Issued: 09/24/10
Study Dates: 07/20/10 - 09/03/10

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Volatiles (cat# 830) (Continued)							
4685	trans-1,3-Dichloropropylene	pg/L	< 1.0	0.00		Acceptable	EPA 8260B
0066	Ethylbenzene	pg/L	42.6	43.0	29.5 - 54.9	Acceptable	EPA 8260B
4835	Hexachlorobutadiene	pg/L	< 5.0	0.00		Acceptable	EPA 8260B
4860	2-Hexanone	pg/L	< 5.0	0.00		Acceptable	EPA 8260B
0063	Methylene chloride	pg/L	94.6	90.5	55.5 - 125	Acceptable	EPA 8260B
4995	4-Methyl-2-pentanone (MIBK)	pg/L	82.4	78.0	36.0 - 117	Acceptable	EPA 8260B
5005	Naphthalene	pg/L	26.1	32.8	11.1 - 42.6	Acceptable	EPA 8260B
5100	Styrene	pg/L	< 2.0	0.00		Acceptable	EPA 8260B
5105	1,1,1,2-Tetrachloroethane	pg/L	< 1.0	0.00		Acceptable	EPA 8260B
5110	1,1,2,2-Tetrachloroethane	pg/L	53.9	55.7	31.8 - 82.5	Acceptable	EPA 8260B
0059	Tetrachloroethylene	pg/L	44.0	45.9	25.3 - 60.1	Acceptable	EPA 8260B
0067	Toluene	pg/L	35.5	35.5	24.7 - 44.9	Acceptable	EPA 8260B
5155	1,2,4-Trichlorobenzene	pg/L	58.8	70.5	14.6 - 86.0	Acceptable	EPA 8260B
0056	1,1,1-Trichloroethane	pg/L	29.7	27.3	17.2 - 36.5	Acceptable	EPA 8260B
5165	1,1,2-Trichloroethane	pg/L	34.1	35.8	25.0 - 47.3	Acceptable	EPA 8260B
0057	Trichloroethylene	pg/L	72.1	69.9	44.4 - 91.1	Acceptable	EPA 8260B
5175	Trichlorofluoromethane	pg/L	< 2.0	0.00		Acceptable	EPA 8260B
5180	1,2,3-Trichloropropane (TCP)	pg/L	< 1.0	0.00		Acceptable	EPA 8260B
5225	Vinyl acetate	pg/L	< 5.0	0.00		Acceptable	EPA 8260B
5235	Vinyl chloride	pg/L	< 1.0	0.00		Acceptable	EPA 8260B
5260	Xylenes, total	pg/L	84.9	85.6	48.6 - 116	Acceptable	EPA 8260B

ACCREDITED Lab Code: 1539-01
All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

WP-186 Final Complete Report

Phillip Worby
Director Corporate Quality Assurance
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810
732-329-0200

EPA ID: NJ00141
ERA Customer Number: A064801
Report Issued: 09/24/10
Study Dates: 07/20/10 - 09/03/10

Anal No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Volatiles (cat# 830)							
4315	Acetone	pg/L		0.00		Not Reported	
4320	Acetonitrile	pg/L		0.00		Not Reported	
4325	Acrolein	pg/L		0.00		Not Reported	
4340	Acrylonitrile	pg/L		0.00		Not Reported	
0065	Benzene	pg/L	20.2	20.0	13.6 - 26.4	Acceptable	EPA 602
0060	Bromodichloromethane	pg/L		20.1	13.8 - 27.0	Not Reported	
0062	Bromoform	pg/L		30.2	18.6 - 41.2	Not Reported	
4950	Bromomethane	pg/L		0.00		Not Reported	
4410	2-Butanone (MEK)	pg/L		110	32.0 - 172	Not Reported	
5000	tert-Butyl methyl ether (MTBE)	pg/L	42.3	43.7	27.1 - 62.1	Acceptable	EPA 602
4450	Carbon disulfide	pg/L		0.00		Not Reported	
0058	Carbon tetrachloride	pg/L		31.8	17.7 - 43.7	Not Reported	
0064	Chlorobenzene	pg/L	83.0	84.7	61.1 - 106	Acceptable	EPA 602
0061	Chlorodibromomethane	pg/L		107	73.5 - 142	Not Reported	
4485	Chloroethane	pg/L		0.00		Not Reported	
4500	2-Chloroethylvinylether	pg/L		0.00		Not Reported	
0055	Chloroform	pg/L		63.0	43.6 - 81.0	Not Reported	
4960	Chloromethane	pg/L		0.00		Not Reported	
4570	1,2-Dibromo-3-chloropropane (DBCP)	pg/L		0.00		Not Reported	
4585	1,2-Dibromoethane (EDB)	pg/L		0.00		Not Reported	
4595	Dibromomethane	pg/L		0.00		Not Reported	
0094	1,2-Dichlorobenzene	pg/L	79.3	80.7	56.2 - 104	Acceptable	EPA 602
0096	1,3-Dichlorobenzene	pg/L	69.0	71.0	48.2 - 90.4	Acceptable	EPA 602
0095	1,4-Dichlorobenzene	pg/L	63.8	68.0	46.1 - 85.2	Acceptable	EPA 602
4625	Dichlorodifluoromethane (Freon 12)	pg/L		0.00		Not Reported	
4630	1,1-Dichloroethane	pg/L		0.00		Not Reported	
0054	1,2-Dichloroethane	pg/L		22.7	15.7 - 30.7	Not Reported	
4640	1,1-Dichloroethylene	pg/L		0.00		Not Reported	
4645	cis-1,2-Dichloroethylene	pg/L		26.0	17.9 - 34.8	Not Reported	
4700	trans-1,2-Dichloroethylene	pg/L		0.00		Not Reported	
4655	1,2-Dichloropropane	pg/L		0.00		Not Reported	
4680	cis-1,3-Dichloropropylene	pg/L		45.0	31.5 - 58.5	Not Reported	

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Phillip Worby
Director Corporate Quality Assurance
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810
732-329-0200

EPA ID: NJ00141
ERA Customer Number: A064801
Report Issued: 09/24/10
Study Dates: 07/20/10 - 09/03/10

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Volatiles (cat# 830) (Continued)							
4685	trans-1,3-Dichloropropylene	pg/L		0.00		Not Reported	
0066	Ethylbenzene	pg/L	42.3	43.0	29.5 - 54.9	Acceptable	EPA 602
4835	Hexachlorobutadiene	pg/L		0.00		Not Reported	
4860	2-Hexanone	pg/L		0.00		Not Reported	
0063	Methylene chloride	pg/L		90.5	55.5 - 125	Not Reported	
4995	4-Methyl-2-pentanone (MIBK)	pg/L		78.0	36.0 - 117	Not Reported	
5005	Naphthalene	pg/L		32.8	11.1 - 42.6	Not Repprted	
5100	Styrene	pg/L		0.00		Not Reported	
5105	1,1,1,2-Tetrachloroethane	pg/L		0.00		Not Reported	
5110	1,1,2,2-Tetrachloroethane	pg/L		55.7	31.8 - 82.5	Not Reported	
0059	Tetrachloroethylene	pg/L		45.9	25.3 - 60.1	Not Reported	
0067	Toluene	pg/L	35.8	35.5	24.7 - 44.9	Acceptable	EPA 602
5155	1,2,4-Trichlorobenzene	pg/L		70.5	14.6 - 86.0	Not Reported	
0056	1,1,1-Trichlbroethane	pg/L		27.3	17.2 - 36.5	Not Reported	
5165	1,1,2-Trichloroethane	pg/L		35.8	25.0 - 47.3	Not Reported	
0057	Trichloroethylene	pg/L		69.9	44.4 - 91.1	Not Reported	
5175	Trichlorofluoromethane	pg/L		0.00		Not Reported	
5180	1,2,3-Trichloropropane (TCP)	pg/L		0.00		Not Reported	
5225	Vinyl acetate	pg/L		0.00		Not Reported	
5235	Vinyl chloride	pg/L		0.00		Not Reported	
5260	Xylenes, total	pg/L	85.3	85.6	48.6 - 116	Acceptable	EPA 602

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WP-186 Final Complete Report

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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Volatiles (cat# 830)							
4315	Acetone	pg/L		0.00		Not Reported	
4320	Acetonitrile	pg/L		0.00		Not Reported	
4325	Acrolein	pg/L		0.00		Not Reported	
4340	Acrylonitrile	pg/L		0.00		Not Reported	
0065	Benzene	pg/L	20.2	20.0	13.6 - 26.4	Acceptable	EPA 8021B
0060	Bromodichloromethane	pg/L		20.1	13.8 - 27.0	Not Reported	
0062	Bromoform	pg/L		30.2	18.6 - 41.2	Not Reported	
4950	Bromomethane	pg/L		0.00		Not Reported	
4410	2-Butanone (MEK)	pg/L		110	32.0 - 172	Not Reported	
5000	tert-Butyl methyl ether (MTBE)	pg/L	42.3	43.7	27.1 - 62.1	Acceptable	EPA 8021B
4450	Carbon disulfide	pg/L		0.00		Not Reported	
0058	Carbon tetrachloride	pg/L		31.8	17.7 - 43.7	Not Reported	
0064	Chlorobenzene	pg/L	83.0	84.7	61.1 - 106	Acceptable	EPA 8021B
0061	Chlorodibromomethane	pg/L		107	73.5 - 142	Not Reported	
4485	Chloroethane	pg/L		0.00		Not Reported	
4500	2-Chloroethylvinylether	pg/L		0.00		Not Reported	
0055	Chloroform	pg/L		63.0	43.6 - 81.0	Not Reported	
4960	Chloromethane	pg/L		0.00		Not Reported	
4570	1,2-Dibromo-3-chloropropane (DBCP)	pg/L		0.00		Not Reported	
4585	1,2-Dibromoethane (EDB)	pg/L		0.00		Not Reported	
4595	Dibromomethane	pg/L		0.00		Not Reported	
0094	1,2-Dichlorobenzene	pg/L	79.3	80.7	56.2 - 104	Acceptable	EPA 8021B
0096	1,3-Dichlorobenzene	pg/L	69.0	71.0	48.2 - 90.4	Acceptable	EPA 8021B
0095	1,4-Dichlorobenzene	pg/L	63.8	68.0	46.1 - 85.2	Acceptable	EPA 8021B
4625	Dichlorodifluoromethane (Freon 12)	pg/L		0.00		Not Reported	
4630	1,1-Dichloroethane	pg/L		0.00		Not Reported	
0054	1,2-Dichloroethane	pg/L		22.7	15.7 - 30.7	Not Reported	
4640	1,1-Dichloroethylene	pg/L		0.00		Not Reported	
4645	cis-1,2-Dichloroethylene	pg/L		26.0	17.9 - 34.8	Not Reported	
4700	trans-1,2-Dichloroethylene	pg/L		0.00		Not Reported	
4655	1,2-Dichloropropane	pg/L		0.00		Not Reported	
4680	cis-1,3-Dichloropropylene	pg/L		45.0	31.5 - 58.5	Not Reported	

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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Volatiles (cat# 830) (Continued)							
4685	trans-1,3-Dichloropropylene	pg/L		0.00		Not Reported	
0066	Ethylbenzene	pg/L	42.3	43.0	29.5 - 54.9	Acceptable	EPA 8021B
4835	Hexachlorobutadiene	pg/L		0.00		Not Reported	
4860	2-Hexanone	pg/L		0.00		Not Reported	
0063	Methylene chloride	pg/L		90.5	55.5 - 125	Not Reported	
4995	4-Methyl-2-pentanone (MIBK)	pg/L		78.0	36.0 - 117	Not Reported	
5005	Naphthalene	pg/L		32.8	11.1 - 42.6	Not Reported	
5100	Styrene	pg/L		0.00		Not Reported	
5105	1,1,1,2-Tetrachloroethane	pg/L		0.00		Not Reported	
5110	1,1,2,2-Tetrachloroethane	pg/L		55.7	31.8 - 82.5	Not Reported	
0059	Tetrachloroethylene	pg/L		45.9	25.3 - 60.1	Not Reported	
0067	Toluene	pg/L	35.8	35.5	24.7 - 44.9	Acceptable	EPA 8021B
5155	1,2,4-Trichlorobenzene	pg/L		70.5	14.6 - 86.0	Not Reported	
0056	1,1,1-Trichloroethane	pg/L		27.3	17.2 - 36.5	Not Reported	
5165	1,1,2-Trichloroethane	pg/L		35.8	25.0 - 47.3	Not Reported	
0057	Trichloroethylene	pg/L		69.9	44.4 - 91.1	Not Reported	
5175	Trichlorofluoromethane	pg/L		0.00		Not Reported	
5180	1,2,3-Trichloropropane (TCP)	pg/L		0.00		Not Reported	
5225	Vinyl acetate	pg/L		0.00		Not Reported	
5235	Vinyl chloride	pg/L		0.00		Not Reported	
5260	Xylenes, total	pg/L	85.3	85.6	48.6 - 116	Acceptable	EPA 8021B
WP Chlorinated Acid Herbicides (cat# 829)							
8505	Acifluorfen	pg/L		2.82	0.500 - 4.20	Not Reported	
8530	Bentazon	pg/L		2.40	0.240 - 4.56	Not Reported	
8540	Chloramben	pg/L		4.39	0.439 - 6.44	Not Reported	
8545	2,4-D	pg/L	2.9	5.19	0.519 - 8.50	Acceptable	EPA 8151
8560	2,4-DB	pg/L	3.1	5.39	0.539 - 10.3	Acceptable	EPA 8151
8550	Dacthal diacid (DCPA)	pg/L		4.59	0.459 - 8.30	Not Reported	
8555	Dalapon	pg/L	2.9	3.43	0.343 - 5.73	Acceptable	EPA 8151
8595	Dicamba	pg/L	3.1	3.51	0.351 - 5.26	Acceptable	EPA 8151
8600	3,5-Dichlorobenzoic acid	pg/L		5.40	1.42 - 8.01	Not Reported	
8605	Dichlorprop	pg/L	5.6	8.27	1.32 - 12.3	Acceptable	EPA 8151
8620	Dinoseb	pg/L	3.3	9.30	0.930 - 14.4	Acceptable	EPA 8151
7775	MCPA	pg/L	< 50	0.00		Acceptable	EPA 8151
7780	MCPP	pg/L	< 50	0.00		Acceptable	EPA 8151
6500	4-Nitrophenol	pg/L		5.40	0.540 - 9.08	Not Reported	
6605	Pentachlorophenol	pg/L	6.0	7.67	0.767 - 12.3	Acceptable	EPA 8151
8645	Picloram	pg/L	1.2	2.18	0.218 - 3.90	Acceptable	EPA 8151
8655	2,4,5-T	pg/L	4.4	5.50	0.550 - 8.17	Acceptable	EPA 8151
8650	2,4,5-TP (Silvex)	pg/L	4.1	6.04	0.852 - 8.82	Acceptable	EPA 8151

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WP-186 Final Complete Report

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Dayton, NJ 08810
732-329-0200

EPA ID: NJ00141
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Report Issued: 09/24/10
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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP PCBs in Water (cat# 832S)							
0040	Aroclor 1016	pg/L	< 0.50	0.00		Acceptable	EPA 608
8885	Aroclor 1221	pg/L	< 0.50	0.00		Acceptable	EPA 608
0042	Aroclor 1232	pg/L	< 0.50	0.00		Acceptable	EPA 608
0040	Aroclor 1242	pg/L	< 0.50	0.00		Acceptable	EPA 608
0044	Aroclor 1248	pg/L	< 0.50	0.00		Acceptable	EPA 608
0045	Aroclor 1254	pg/L	< 0.50	0.00		Acceptable	EPA 608
0046	Aroclor 1260	pg/L	2.4	2.62	1.25 - 3.47	Acceptable	EPA 608
WP PCBs in Water (cat# 832S)							
0040	Aroclor 1016	pg/L	< 0.50	0.00		Acceptable	EPA 8082
8885	Aroclor 1221	pg/L	< 0.50	0.00		Acceptable	EPA 8082
0042	Aroclor 1232	pg/L	< 0.50	0.00		Acceptable	EPA 8082
0040	Aroclor 1242	pg/L	< 0.50	0.00		Acceptable	EPA 8082
0044	Aroclor 1248	pg/L	< 0.50	0.00		Acceptable	EPA 8082
0045	Aroclor 1254	pg/L	< 0.50	0.00		Acceptable	EPA 8082
0046	Aroclor 1260	pg/L	2.4	2.62	1.25 - 3.47	Acceptable	EPA 8082
WP PCBs in Oil (cat# 835S)							
8880	Aroclor 1016	mg/kg	25.6	38.7	6.97 - 52.2	Acceptable	EPA 8082
8895	Aroclor 1242	mg/kg	< 2.5	0.00		Acceptable	EPA 8082
8905	Aroclor 1254	mg/kg	< 2.5	0.00		Acceptable	EPA 8082
8910	Aroclor 1260	mg/kg	< 2.5	0.00		Acceptable	EPA 8082

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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Base/Neutrals (cat# 833)							
5500	Acenaphthene	pg/L	43.7	76.7	30.8 - 91.9	Acceptable	EPA 625
5505	Acenaphthylene	pg/L	< 1.0	0.00		Acceptable	EPA 625
5145	2-Amino-1-methylbenzene (o-toluidine)	pg/L	< 5.0	0.00		Acceptable	EPA 625
5545	Aniline	pg/L	< 2.0	0.00		Acceptable	EPA 625
5555	Anthracene	pg/L	< 1.0	0.00		Acceptable	EPA 625
5595	Benzidine	pg/L	< 20	0.00		Acceptable	EPA 625
5575	Benzo(a)anthracene	pg/L	< 1.0	0.00		Acceptable	EPA 625
5585	Benzo(b)fluoranthene	pg/L	23.7	28.7	9.38 - 40.2	Acceptable	EPA 625
5600	Benzo(k)fluoranthene	pg/L	54.9	60.8	14.6 - 89.3	Acceptable	EPA 625
5590	Benzo(g,h,i)perylene	pg/L	24.7	25.4	5.35 - 38.1	Acceptable	EPA 625
5580	Benzo(a)pyrene	pg/L	< 1.0	0.00		Acceptable	EPA 625
5630	Benzyl alcohol	pg/L	< 2.0	0.00		Acceptable	EPA 625
5660	4-Bromophenyl-phenylether	pg/L	22.2	28.6	10.8 - 40.2	Acceptable	EPA 625
5670	Butylbenzylphthalate	pg/L	93.6	123	23.7 - 175	Acceptable	EPA 625
5680	Carbazole	pg/L	< 2.0	0.00		Acceptable	EPA 625
5745	4-Chloroaniline	pg/L	< 2.0	0.00		Acceptable	EPA 625
5760	bis(2-Chloroethoxy)methane	pg/L	36.3	49.5	19.3 - 60.0	Acceptable	EPA 625
5765	bis(2-Chloroethyl)ether	pg/L	116	175	46.0 - 211	Acceptable	EPA 625
5780	bis(2-Chloroisopropyl)ether	pg/L	25.9	37.6	11.2 - 49.4	Acceptable	EPA 625
5790	1-Chloronaphthalene	pg/L	< 2.0	0.00		Acceptable	EPA 625
5795	2-Chloronaphthalene	pg/L	16.7	29.8	8.47 - 37.3	Acceptable	EPA 625
5825	4-Chlorophenyl-phenylether	pg/L	73.7	120	44.9 - 149	Acceptable	EPA 625
5855	Chrysene	pg/L	29.6	34.7	14.6 - 47.6	Acceptable	EPA 625
5895	Dibenz(a,h)anthracene	pg/L	< 1.0	0.00		Acceptable	EPA 625
5905	Dibenzofuran	pg/L	21.0	32.1	12.5 - 43.6	Acceptable	EPA 625
5925	Di-n-butylphthalate	pg/L	72.2	88.4	29.2 - 117	Acceptable	EPA 625
4610	1,2-Dichlorobenzene	pg/L	39.5	93.8	11.2 - 113	Acceptable	EPA 625
4615	1,3-Dichlorobenzene	pg/L	52.3	142	17.0 - 164	Acceptable	EPA 625
4620	1,4-Dichlorobenzene	pg/L	< 2.0	0.00		Acceptable	EPA 625
5945	3,3'-Dichlorobenzidine	pg/L	< 2.0	0.00		Acceptable	EPA 625
6070	Diethylphthalate	pg/L	88.7	122	22.6 - 167	Acceptable	EPA 625
6135	Dimethylphthalate	pg/L	97.8	132	13.2 - 190	Acceptable	EPA 625

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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Base/Neutrals (cat# 833) (Continued)							
6185	2,4-Dinitrotoluene	pg/L	< 2.0	0.00		Acceptable	EPA 625
6190	2,6-Dinitrotoluene	pg/L	< 2.0	0.00		Acceptable	EPA 625
6200	Di-n-octylphthalate	pg/L	112	141	27.6 - 207	Acceptable	EPA 625
6065	bis(2-Ethylhexyl)phthalate	pg/L	64.3	81.4	24.3 - 113	Acceptable	EPA 625
6265	Fluoranthene	pg/L	45.5	57.4	26.2 - 71.9	Acceptable	EPA 625
6270	Fluorene	pg/L	44.1	66.2	27.4 - 81.3	Acceptable	EPA 625
6275	Hexachlorobenzene	pg/L	< 1.0	0.00		Acceptable	EPA 625
4835	Hexachlorobutadiene	pg/L	< 1.0	0.00		Acceptable	EPA 625
6285	Hexachlorocyclopentadiene	pg/L	94.3	179	17.9 - 230	Acceptable	EPA 625
4840	Hexachloroethane	pg/L	42.7	116	12.2 - 136	Acceptable	EPA 625
6315	Indeno(1,2,3-cd)pyrene	pg/L	< 1.0	0.00		Acceptable	EPA 625
6320	Isophorone	pg/L	65.2	105	41.1 - 135	Acceptable	EPA 625
6385	2-Methylnaphthalene	pg/L	27.6	53.4	8.89 - 67.8	Acceptable	EPA 625
5005	Naphthalene	pg/L	52.6	114	30.1 - 135	Acceptable	EPA 625
6460	2-Nitroaniline	pg/L	< 5.0	0.00		Acceptable	EPA 625
6465	3-Nitroaniline	pg/L	< 5.0	0.00		Acceptable	EPA 625
6470	4-Nitroaniline	pg/L	< 5.0	0.00		Acceptable	EPA 625
5015	Nitrobenzene	pg/L	37.6	56.0	18.1 - 69.8	Acceptable	EPA 625
6525	N-Nitrosodiethylamine	pg/L	< 5.0	0.00		Acceptable	EPA 625
6530	N-Nitrosodimethylamine	pg/L	< 2.0	0.00		Acceptable	EPA 625
6535	N-Nitrosodiphenylamine	pg/L	< 5.0	0.00		Acceptable	EPA 625
6545	N-Nitroso-di-n-propylamine	pg/L	65.9	89.2	25.8 - 115	Acceptable	EPA 625
6590	Pentachlorobenzene	pg/L	< 5.0	0.00		Acceptable	EPA 625
6615	Phenanthrene	pg/L	< 1.0	0.00		Acceptable	EPA 625
6665	Pyrene	pg/L	34.4	41.1	13.3 - 59.4	Acceptable	EPA 625
5095	Pyridine	pg/L	< 2.0	0.00		Acceptable	EPA 625
6715	1,2,4,5-Tetrachlorobenzene	pg/L	< 5.0	0.00		Acceptable	EPA 625
5155	1,2,4-Trichlorobenzene	pg/L	< 1.0	0.00		Acceptable	EPA 625

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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Base/Neutrals (cat# 833)							
5500	Acenaphthene	pg/L	43.7	76.7	30.8 - 91.9	Acceptable	EPA 8270C
5505	Acenaphthylene	pg/L	< 1.0	0.00		Acceptable	EPA 8270C
5145	2-Amino-1-methylbenzene (o-toluidine)	pg/L	< 5.0	0.00		Acceptable	EPA 8270C
5545	Aniline	pg/L	< 2.0	0.00		Acceptable	EPA 8270C
5555	Anthracene	pg/L	< 1.0	0.00		Acceptable	EPA 8270C
5595	Benzidine	pg/L	< 20	0.00		Acceptable	EPA 8270C
5575	Benzo(a)anthracene	pg/L	< 1.0	0.00		Acceptable	EPA 8270C
5585	Benzo(b)fluoranthene	pg/L	23.7	28.7	9.38 - 40.2	Acceptable	EPA 8270C
5600	Benzo(k)fluoranthene	pg/L	54.9	60.8	14.6 - 89.3	Acceptable	EPA 8270C
5590	Benzo(g,h,i)perylene	pg/L	24.7	25.4	5.35 - 38.1	Acceptable	EPA 8270C
5580	Benzo(a)pyrene	pg/L	< 1.0	0.00		Acceptable	EPA 8270C
5630	Benzyl alcohol	pg/L	< 2.0	0.00		Acceptable	EPA 8270C
5660	4-Bromophenyl-phenylether	pg/L	22.2	28.6	10.8 - 40.2	Acceptable	EPA 8270C
5670	Butylbenzylphthalate	pg/L	93.6	123	23.7 - 175	Acceptable	EPA 8270C
5680	Carbazole	pg/L	< 2.0	0.00		Acceptable	EPA 8270C
5745	4-Chloroaniline	pg/L	< 2.0	0.00		Acceptable	EPA 8270C
5760	bis(2-Chloroethoxy)methane	pg/L	36.3	49.5	19.3 - 60.0	Acceptable	EPA 8270C
5765	bis(2-Chloroethyl)ether	pg/L	116	175	46.0 - 211	Acceptable	EPA 8270C
5780	bis(2-Chloroisopropyl)ether	pg/L	25.9	37.6	11.2 - 49.4	Acceptable	EPA 8270C
5790	1-Chloronaphthalene	pg/L	< 2.0	0.00		Acceptable	EPA 8270C
5795	2-Chloronaphthalene	pg/L	16.7	29.8	8.47 - 37.3	Acceptable	EPA 8270C
5825	4-Chlorophenyl-phenylether	pg/L	73.7	120	44.9 - 149	Acceptable	EPA 8270C
5855	Chrysene	pg/L	29.6	34.7	14.6 - 47.6	Acceptable	EPA 8270C
5895	Dibenz(a,h)anthracene	pg/L	< 1.0	0.00		Acceptable	EPA 8270C
5905	Dibenzofuran	pg/L	21.0	32.1	12.5 - 43.6	Acceptable	EPA 8270C
5925	Di-n-butylphthalate	pg/L	72.2	88.4	29.2 - 117	Acceptable	EPA 8270C
4610	1,2-Dichlorobenzene	pg/L	39.5	93.8	11.2 - 113	Acceptable	EPA 8270C
4615	1,3-Dichlorobenzene	pg/L	52.3	142	17.0 - 164	Acceptable	EPA 8270C
4620	1,4-Dichlorobenzene	pg/L	< 2.0	0.00		Acceptable	EPA 8270C
5945	3,3'-Dichlorobenzidine	pg/L	< 2.0	0.00		Acceptable	EPA 8270C
6070	Diethylphthalate	pg/L	88.7	122	22.6 - 167	Acceptable	EPA 8270C
6135	Dimethylphthalate	pg/L	97.8	132	13.2 - 190	Acceptable	EPA 8270C

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

Phillip Worby
Director Corporate Quality Assurance
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810
732-329-0200

EPA ID: NJ00141
ERA Customer Number: A064801
Report Issued: 09/24/10
Study Dates: 07/20/10 - 09/03/10

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Base/Neutrals (cat# 833) (Continued)							
6185	2,4-Dinitrotoluene	pg/L	< 2.0	0.00		Acceptable	EPA 8270C
6190	2,6-Dinitrotoluene	pg/L	< 2.0	0.00		Acceptable	EPA 8270C
6200	Di-n-octylphthalate	pg/L	112	141	27.6 - 207	Acceptable	EPA 8270C
6065	bis(2-Ethylhexyl)phthalate	pg/L	64.3	81.4	24.3 - 113	Acceptable	EPA 8270C
6265	Fluoranthene	pg/L	45.5	57.4	26.2 - 71.9	Acceptable	EPA 8270C
6270	Fluorene	pg/L	44.1	66.2	27.4 - 81.3	Acceptable	EPA 8270C
6275	Hexachlorobenzene	pg/L	< 1.0	0.00		Acceptable	EPA 8270C
4835	Hexachlorobutadiene	pg/L	< 1.0	0.00		Acceptable	EPA 8270C
6285	Hexachlorocyclopentadiene	pg/L	94.3	179	17.9 - 230	Acceptable	EPA 8270C
4840	Hexachloroethane	pg/L	42.7	116	12.2 - 136	Acceptable	EPA 8270C
6315	Indeno(1,2,3-cd)pyrene	pg/L	< 1.0	0.00		Acceptable	EPA 8270C
6320	Isophorone	pg/L	65.2	105	41.1 - 135	Acceptable	EPA 8270C
6385	2-Methylnaphthalene	pg/L	27.6	53.4	8.89 - 67.8	Acceptable	EPA 8270C
5005	Naphthalene	pg/L	52.6	114	30.1 - 135	Acceptable	EPA 8270C
6460	2-Nitroaniline	pg/L	< 5.0	0.00		Acceptable	EPA 8270C
6465	3-Nitroaniline	pg/L	< 5.0	0.00		Acceptable	EPA 8270C
6470	4-Nitroaniline	pg/L	< 5.0	0.00		Acceptable	EPA 8270C
5015	Nitrobenzene	pg/L	37.6	56.0	18.1 - 69.8	Acceptable	EPA 8270C
6525	N-Nitrosodiethylamine	pg/L	< 5.0	0.00		Acceptable	EPA 8270C
6530	N-Nitrosodimethylamine	pg/L	< 2.0	0.00		Acceptable	EPA 8270C
6535	N-Nitrosodiphenylamine	pg/L	< 5.0	0.00		Acceptable	EPA 8270C
6545	N-Nitroso-di-n-propylamine	pg/L	65.9	89.2	25.8 - 115	Acceptable	EPA 8270C
6590	Pentachlorobenzene	pg/L	< 5.0	0.00		Acceptable	EPA 8270C
6615	Phenanthrene	pg/L	< 1.0	0.00		Acceptable	EPA 8270C
6665	Pyrene	pg/L	34.4	41.1	13.3 - 59.4	Acceptable	EPA 8270C
5095	Pyridine	pg/L	< 2.0	0.00		Acceptable	EPA 8270C
6715	1,2,4,5-Tetrachlorobenzene	pg/L	< 5.0	0.00		Acceptable	EPA 8270C
5155	1,2,4-Trichlorobenzene	pg/L	< 1.0	0.00		Acceptable	EPA 8270C

ACCREDITED
All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

WP-186 Final Complete Report

Phillip Worby
Director Corporate Quality Assurance
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810
732-329-0200

EPA ID: NJ00141
ERA Customer Number: A064801
Report Issued: 09/24/10
Study Dates: 07/20/10 - 09/03/10

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Acids (cat# 834)							
5610	Benzoic acid	pg/L	< 20	0.00		Acceptable	EPA 625
5700	4-Chloro-3-methylphenol	pg/L	148	176	69.6 - 226	Acceptable	EPA 625
5800	2-Chlorophenbl	pg/L	41.2	55.5	17.5 - 70.6	Acceptable	EPA 625
6000	2,4-Dichlorophenol	pg/L	83.4	99.7	31.8 - 124	Acceptable	EPA 625
6005	2,6-Dichlorophenol	pg/L	89.5	99.6	33.4 - 125	Acceptable	EPA 625
6130	2,4-Dimethylphenol	pg/L	108	133	29.1 - 174	Acceptable	EPA 625
6360	4,6-Dinitro-2-methylphenol	pg/L	113	136	47.0 - 193	Acceptable	EPA 625
6175	2,4-Dinitrophenol	pg/L	114	113	11.3 - 160	Acceptable	EPA 625
6400	2-Methylphenol	pg/L	40.7	57.0	10.8 - 72.0	Acceptable	EPA 625
6410	4-Methylphenol	pg/L	97.3	164	16.4 - 210	Acceptable	EPA 625
6490	2-Nitrophenol	pg/L	136	161	36.3 - 212	Acceptable	EPA 625
6500	4-Nitrophenol	pg/L	59.7	152	15.2 - 204	Acceptable	EPA 625
6605	Pentachlorophenol	pg/L	197	196	55.6 - 271	Acceptable	EPA 625
6625	Phenol	pg/L	48.3	159	15.9 - 213	Acceptable	EPA 625
6735	2,3,4,6-Tetrachlorophenol	pg/L	38.7	38.3	8.62 - 51.6	Acceptable	EPA 625
6835	2,4,5-Trichlorophenol	pg/L	62.3	69.0	25.8 - 90.7	Acceptable	EPA 625
6840	2,4,6-Trichlorophenol	pg/L	151	174	55.6 - 216	Acceptable	EPA 625
WP Acids (cat# 834)							
5610	Benzoic acid	pg/L	< 20	0.00		Acceptable	EPA 8270C
5700	4-Chloro-3-methylphenol	pg/L	148	176	69.6 - 226	Acceptable	EPA 8270C
5800	2-Chlorophenol	pg/L	41.2	55.5	17.5 - 70.6	Acceptable	EPA 8270C
6000	2,4-Dichlorophenol	pg/L	83.4	99.7	31.8 - 124	Acceptable	EPA 8270C
6005	2,6-Dichlorophenol	pg/L	89.5	99.6	33.4 - 125	Acceptable	EPA 8270C
6130	2,4-Dimethylphenol	pg/L	108	133	29.1 - 174	Acceptable	EPA 8270C
6360	4,6-Dinitro-2-methylphenol	pg/L	113	136	47.0 - 193	Acceptable	EPA 8270C
6175	2,4-Dinitrophenol	pg/L	114	113	11.3 - 160	Acceptable	EPA 8270C
6400	2-Methylphenol	pg/L	40.7	57.0	10.8 - 72.0	Acceptable	EPA 8270C
6410	4-Methylphenol	pg/L	97.3	164	16.4 - 210	Acceptable	EPA 8270C
6490	2-Nitrophenol	pg/L	136	161	36.3 - 212	Acceptable	EPA 8270C
6500	4-Nitrophenol	pg/L	59.7	152	15.2 - 204	Acceptable	EPA 8270C
6605	Pentachlorophenol	pg/L	197	196	55.6 - 271	Acceptable	EPA 8270C
6625	Phenol	pg/L	48.3	159	15.9 - 213	Acceptable	EPA 8270C
6735	2,3,4,6-Tetrachlorophenol	pg/L	38.7	38.3	8.62 - 51.6	Acceptable	EPA 8270C
6835	2,4,5-Trichlorophenol	pg/L	62.3	69.0	25.8 - 90.7	Acceptable	EPA 8270C
6840	2,4,6-Trichlorophenol	pg/L	151	174	55.6 - 216	Acceptable	EPA 8270C

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

WP-186 Final Complete Report

Phillip Worby
Director Corporate Quality Assurance
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810
732-329-0200

EPA ID: NJ00141
ERA Customer Number: A064801
Report Issued: 09/24/10
Study Dates: 07/20/10 - 09/03/10

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Low-Level PAHs (cat# 836)							
5500	Acenaphthene	µg/L	5.33	8.18	4.41 - 9.49	Acceptable	EPA 8310 UV
5505	Acenaphthylene	µg/L	1.72	2.52	1.05 - 3.14	Acceptable	EPA 8310 UV
5555	Anthracene	µg/L	0.607	0.762	0.214 - 1.07	Acceptable	EPA 8310 UV
5575	Benzo(a)anthracene	µg/L	0.813	0.975	0.578 - 1.14	Acceptable	EPA 8310 UV
5585	Benzo(b)fluoranthene	µg/L	0.850	0.975	0.431 - 1.24	Acceptable	EPA 8310 UV
5600	Benzo(k)fluoranthene	µg/L	1.34	1.58	0.889 - 1.90	Acceptable	EPA 8310 UV
5590	Benzo(g,h,i)perylene	µg/L	0.820	0.893	0.318 - 1.18	Acceptable	EPA 8310 UV
5580	Benzo(a)pyrene	µg/L	0.581	0.664	0.236 - 0.977	Acceptable	EPA 8310 UV
5855	Chrysene	µg/L	0.599	0.669	0.374 - 0.877	Acceptable	EPA 8310 UV
5895	Dibenz(a,h)anthracene	µg/L	1.44	1.94	0.642 - 2.56	Acceptable	EPA 8310 UV
6265	Fluoranthene	µg/L	1.26	1.59	0.941 - 1.91	Acceptable	EPA 8310 UV
6270	Fluorene	µg/L	1.85	2.40	0.900 - 3.05	Acceptable	EPA 8310 UV
6315	Indeno(1,2,3-cd)pyrene	µg/L	1.46	1.52	0.695 - 1.88	Acceptable	EPA 8310 UV
5005	Naphthalene	µg/L	4.86	7.52	2.90 - 8.27	Acceptable	EPA 8310 UV
6615	Phenanthrene	µg/L	1.09	1.38	0.702 - 1.66	Acceptable	EPA 8310 UV
6665	Pyrene	µg/L	0.666	0.849	0.484 - 1.05	Acceptable	EPA 8310 UV
WP Organochlorine Pesticides (cat# 831)							
0047	Aldrin	µg/L	1.6	2.06	0.601 - 2.87	Acceptable	EPA 608
7110	alpha-BHC	µg/L	15.2	14.3	6.56 - 19.2	Acceptable	EPA 608
7115	beta-BHC	µg/L	10.7	10.7	4.47 - 14.4	Acceptable	EPA 608
7105	delta-BHC	µg/L	2.2	2.25	0.678 - 3.17	Acceptable	EPA 608
7120	gamma-BHC(Lindane)	µg/L	3.5	3.33	1.31 - 4.70	Acceptable	EPA 608
7240	alpha-Chlordane	µg/L	1.9	1.89	0.838 - 2.69	Acceptable	EPA 608
7245	gamma-Chlordane	µg/L	6.1	6.43	2.64 - 8.73	Acceptable	EPA 608
0049	4,4'-DDD	µg/L	9.6	9.21	3.36 - 13.1	Acceptable	EPA 608
0050	4,4'-DDE	µg/L	9.9	9.76	4.36 - 12.5	Acceptable	EPA 608
0051	4,4'-DDT	µg/L	3.3	3.40	1.27 - 4.92	Acceptable	EPA 608
0048	Dieldrin	µg/L	3.0	2.89	1.37 - 4.00	Acceptable	EPA 608
7540	Endrin	µg/L	5.3	5.72	2.10 - 8.59	Acceptable	EPA 608
7530	Endrin aldehyde	µg/L	9.7	9.30	2.70 - 14.0	Acceptable	EPA 608
7535	Endrin ketone	µg/L	9.3	9.37	5.15 - 13.6	Acceptable	EPA 608
7510	Endosulfan I	µg/L	7.3	11.3	3.36 - 16.4	Acceptable	EPA 608
7515	Endosulfan II	µg/L	7.3	9.39	2.99 - 12.6	Acceptable	EPA 608
7520	Endosulfan sulfate	µg/L	9.7	9.45	3.56 - 13.8	Acceptable	EPA 608
0052	Heptachlor	µg/L	2.6	3.39	1.10 - 4.68	Acceptable	EPA 608
0078	Heptachlor epoxide (beta)	µg/L	4.6	4.41	2.16 - 6.20	Acceptable	EPA 608
7810	Methoxychlor	µg/L	5.8	5.80	1.48 - 9.31	Acceptable	EPA 608

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

WP-186 Final Complete Report

Phillip Worby
Director Corporate Quality Assurance
Accutest Mid Atlantic
2235 Route 130
Dayton, NJ 08810
732-329-0200

EPA ID: NJ00141
ERA Customer Number: A064801
Report Issued: 09/24/10
Study Dates: 07/20/10 - 09/03/10

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Organochiorine Pesticides (cat# 831)							
0047	Aldrin	pg/L	1.6	2.06	0.601 - 2.87	Acceptable	EPA 8081A
7110	alpha-BHC	pg/L	15.2	14.3	6.56 - 19.2	Acceptable	EPA 8081A
7115	beta-BHC	pg/L	10.7	10.7	4.47 - 14.4	Acceptable	EPA 8081A
7105	delta-BHC	pg/L	2.2	2.25	0.678 - 3.17	Acceptable	EPA 8081A
7120	gamma-BHC(Lindane)	pg/L	3.5	3.33	1.31 - 4.70	Acceptable	EPA 8081A
7240	alpha-Chlordane	pg/L	1.9	1.89	0.838 - 2.69	Acceptable	EPA 8081A
7245	gamma-Chlordane	pg/L	6.1	6.43	2.64 - 8.73	Acceptable	EPA 8081A
0049	4,4'-DDD	pg/L	9.6	9.21	3.36 - 13.1	Acceptable	EPA 8081A
0050	4,4'-DDE	pg/L	9.9	9.76	4.36 - 12.5	Acceptable	EPA 8081A
0051	4,4'-DDT	pg/L	3.3	3.40	1.27 - 4.92	Acceptable	EPA 8081A
0048	Dieldrin	pg/L	3.0	2.89	1.37 - 4.00	Acceptable	EPA 8081A
7540	Endrin	pg/L	5.3	5.72	2.10 - 8.59	Acceptable	EPA 8081A
7530	Endrin aldehyde	pg/L	9.7	9.30	2.70 - 14.0	Acceptable	EPA 8081A
7535	Endrin ketone	pg/L	9.3	9.37	5.15 - 13.6	Acceptable	EPA 8081A
7510	Endosulfan I	pg/L	7.3	11.3	3.36 - 16.4	Acceptable	EPA 8081A
7515	Endosulfan II	pg/L	7.3	9.39	2.99 - 12.6	Acceptable	EPA 8081A
7520	Endosulfan sulfate	pg/L	9.7	9.45	3.56 - 13.8	Acceptable	EPA 8081A
0052	Heptachlor	pg/L	2.6	3.39	1.10 - 4.68	Acceptable	EPA 8081A
0078	Heptachlor epoxide (beta)	pg/L	4.6	4.41	2.16 - 6.20	Acceptable	EPA 8081A
7810	Methoxychlor	pg/L	5.8	5.80	1.48 - 9.31	Acceptable	EPA 8081A
WP Chlordane (cat# 837)							
0053	Chlordane, technical	pg/L	3.0	3.43	1.28 - 5.01	Acceptable	EPA 608
WP Chlordane (cat# 837)							
0053	Chlordane, technical	pg/L	3.0	3.43	1.28 - 5.01	Acceptable	EPA 8081A
WP Toxaphene (cat# 838)							
8250	Toxaphene	pg/L	31.4	29.9	2.99 - 54.1	Acceptable	EPA 608
WP Toxaphene (cat# 838)							
8250	Toxaphene	pg/L	31.4	29.9	2.99 - 54.1	Acceptable	EPA 8081A
WP Total Organic Halides (TOX) (cat# 895)							
2045	Total Organic Halides (TOX)	pg/L	338	356	243 - 459	Acceptable	EPA 9020B

ACCREDITED LAB CODE 1539-01

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

ERA
A Waters Company

Amy Rice
Alpha Analytical
8 Walkup Drive
Westborough, MA 01581

WP-189 Final Report

WatR™ Pollution Proficiency Testing

WatR™ Pollution Study

Open Date: 10/08/10

Close Date: 11/22/10

Report Issued Date: 12/10/10

ERA

A Waters Company

December 10, 2010

Amy Rice
Alpha Analytical
8 Walkup Drive
Westborough, MA 01581

Enclosed is your final report for ERA's WP-189 WatR™Pollution Proficiency Testing (PT) study. Your final report includes an evaluation of all results submitted by your laboratory to ERA.

Data Evaluation Protocols: All analytes in ERA's WP-189 WatR™Pollution Proficiency Testing study have been evaluated using the following tiered approach. If the analyte is listed in the most current National Environmental Laboratory Accreditation Conference (NELAC) PT Field of Testing tables, the evaluation was completed by comparing the reported result to the acceptance limits generated using the criteria contained in the NELAC FoPT tables. If the analyte is not included in the NELAC FoPT tables, the reported result has been evaluated using the procedures outlined in ERA's Standard Operating Procedure for the Generation of Performance Acceptance Limits (SOP 0260).

Corrective Action Help: As part of your accreditation(s), you may be required to identify the root cause of any "Not Acceptable" results, implement the necessary corrective actions, and then satisfy your PT requirements by participating in a Supplemental (QuiK™ Response) or future ERA PT study. ERA's technical staff is available to help your laboratory resolve any technical issues that may be impairing your PT performance and possibly affecting your routine data quality. Our laboratory and technical staff have well over three hundred years of collective experience in performing the full range of environmental analyses. As part of our technical support, ERA offers QC samples that can be helpful in helping you work through your technical issues.

Thank you for your participation in ERA's WP-189 WatR™Pollution Proficiency Testing study. If you have any questions, please contact the proficiency testing department, or myself, at 1-800-372-0122.

Sincerely,

Jay R. McBurney
Quality Program Manager

attachments
jnn

ERA

A Waters Company

Report Recipient	Contact/Phone Number	Reporting Type
Louisiana	Paul Bergeron / 225-219-1244	All Analytes

ERA

A Waters Company

WP-189 Definitions & Study Discussion

Study Dates: 10/08/10 - 11/22/10 **Report Issued: 12/10/10**

WP Study Definitions

The Reported Value is the value that the laboratory reported to ERA.

The ERA Assigned Values are compliant with the most current USEPA/NELAC FoPT tables. A parameter not added to the standard is given an Assigned Value of "0" per the guidelines contained in the USEPA's Criteria Document and NELAC standards.

The Acceptance Limits are established per the criteria contained in the most current USEPA/NELAC FoPT tables, or ERA's SOP for the Generation of Performance Acceptance Limits™ as applicable.

The Performance Evaluation:

Acceptable	= Reported Value falls within the Acceptance Limits.
Not Acceptable	= Reported Value falls outside the Acceptance Limits.
No Evaluation	= Reported Value cannot be evaluated.
Not Reported	= No Value reported.

The Method Description is the method the laboratory reported to ERA.

WP Study Discussion

ERA's WP-189 WatR™Poliution Proficiency Testing study has been reviewed by ERA senior management and certified compliant with the requirements of the USEPA's National Standards for Water Proficiency Testing Studies Criteria Document (December 1998), and the criteria contained in the most current NELAC FoPT tables.

ERA's WP-189 WatR™Pollution study standards were examined for any anomalies. A full review of all homogeneity, stability and accuracy verification data was completed. All analytical verification data for all analytes met the acceptance criteria contained in the USEPA's National Criteria Document for Water Proficiency Testing Studies, December 1998, and the criteria contained in the most current NELAC FoPT tables.

The data submitted by participating laboratories was also examined for study anomalies. There were no anomalies observed during the statistical review of the data.

ERA's WP-189 WatR™Pollution study reports shall not be reproduced except in their entirety and not without the permission of the participating laboratories. The report must not be used by the participating laboratories to claim product endorsement by any agency of the U. S. government.

The data contained herein are confidential and intended for your use only.

If you have any questions or concems regarding your assessment in ERA's WatR™Pollution Proficiency Testing program, please contact Jay McBumey, Quality Program Manager, or the proficiency testing department, at 1-800-372-0122.

ACCREDITED

ERA
A Waters Company

Study: **WP-189**

ERA Customer Number: **W574801**

Laboratory Name: **Alpha Analytical**

Inorganic Results

ERA
A Waters Company

WP-189 Final Complete Report

Amy Rice
Quality Systems Specialist
Alpha Analytical
8 Walkup Drive
Westborough, MA 01581
508-439-5138

EPA ID: MA00030
ERA Customer Number: W574801
Report Issued: 12/10/10
Study Dates: 10/08/10 - 11/22/10

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Minerals (cat# 581)							
0027	Alkalinity as CaCO3	mg/L	110	116	103 - 128	Acceptable	SM2320B
0028	Chloride	mg/L		59.0	50.2 - 68.2	Not Reported	
0020	Conductivity at 25°C	pmhos/cm	490	490	441 - 539	Acceptable	EPA 9050A
0029	Fluoride	mg/L		2.02	1.65 - 2.40	Not Reported	
0026	Potassium	mg/L	32.6	31.5	26.0 - 37.5	Acceptable	EPA 6020A
0025	Sodium	mg/L	91.6	89.3	75.8 - 102	Acceptable	EPA 6020A
0030	Sulfate	mg/L		33.6	27.0 - 39.3	Not Reported	
0021	Total Dissolved Solids at 180°C	mg/L		398	303 - 493	Not Reported	
1950	Total Solids at 105°C	mg/L		425	379 - 468	Not Reported	
WP Hardness (cat# 580)							
0072	Non-Filterable Residue (TSS)	mg/L	58.6	52.5	41.0 - 59.9	Acceptable	SM2540D
0023	Calcium	mg/L	63.3	62.1	55.5 - 70.4	Acceptable	EPA 6020A
0024	Magnesium	mg/L	37.5	37.2	31.9 - 42.8	Acceptable	EPA 6020A
1550	Calcium Hardness as CaCO3	mg/L		155	138 - 176	Not Reported	
0022	Total Hardness as CaCO3	mg/L	312	308	270 - 352	Acceptable	EPA 6020A
WP pH (cat# 577)							
0019	pH	S.U.	6.11	6.11	5.91 - 6.31	Acceptable	EPA 9040B
WP pH (cat# 577)							
0019	pH	S.U.	6.11	6.11	5.91 - 6.31	Acceptable	SM4500H+ B

ACCREDITED

All analytes are included in ERA's A21 A accreditation. Lab Code: 1539-01

ERA
A Waters Company

WP-189 Final Complete Report

Amy Rice
Quality Systems Specialist
Alpha Analytical
8 Walkup Drive
Westborough, MA 01581
508-439-5138

EPA ID: MA00030
ERA Customer Number: W574801
Report Issued: 12/10/10
Study Dates: 10/08/10 - 11/22/10

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Trace Metals (cat# 586)							
0001	Aluminum	µg/L	2190	2180	1790 - 2540	Acceptable	EPA 6020A
0016	Antimony	µg/L	813	799	566 - 959	Acceptable	EPA 6020A
0002	Arsenic	µg/L	122	125	101 - 149	Acceptable	EPA 6020A
1015	Barium	µg/L	1070	1020	885 - 1150	Acceptable	EPA 6020A
0003	Beryllium	µg/L	510	546	464 - 617	Acceptable	EPA 6020A
1025	Boron	µg/L	1030	985	813 - 1150	Acceptable	EPA 6020A
0004	Cadmium	µg/L	342	346	295 - 393	Acceptable	EPA 6020A
0006	Chromium	µg/L	1030	945	825 - 1070	Acceptable	EPA 6020A
0005	Cobalt	µg/L	979	908	799 - 1020	Acceptable	EPA 6020A
0007	Copper	µg/L	375	342	308 - 377	Acceptable	EPA 6020A
0008	Iron	µg/L	432	402	352 - 458	Acceptable	EPA 6020A
0012	Lead	µg/L	351	349	301 - 395	Acceptable	EPA 6020A
0010	Manganese	µg/L	1040	918	824 - 1020	Not Acceptable	EPA 6020A
0074	Molybdenum	µg/L	226	216	180 - 250	Acceptable	EPA 6020A
0011	Nickel	µg/L	741	678	610 - 759	Acceptable	EPA 6020A
0013	Selenium	µg/L	112	120	91.6 - 140	Acceptable	EPA 6020A
0017	Silver	µg/L	509	472	405 - 541	Acceptable	EPA 6020A
0075	Strontium	µg/L	207	195	169 - 222	Acceptable	EPA 6020A
0018	Thallium	µg/L	364	352	274 - 430	Acceptable	EPA 6020A
0014	Vanadium	µg/L	590	547	479 - 612	Acceptable	EPA 6020A
0015	Zinc	µg/L	399	392	335 - 454	Acceptable	EPA 6020A
WP Mercury (cat# 574)							
0009	Mercury	µg/L	15.3	14.9	9.17 - 20.2	Acceptable	EPA 7470A
WP Mercury (cat# 574)							
0009	Mercury	µg/L	14.4	14.9	9.17 - 20.2	Acceptable	EPA 7474
WP Tin & Titanium (cat# 573)							
1175	Tin	µg/L	4800	4520	3560 - 5510	Acceptable	EPA 6020A
0076	Titanium	µg/L	107	110	93.7 - 125	Acceptable	EPA 6020A

A2LA ACCREDITED

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ERA
A Waters Company

Study: **WP-189**

ERA Customer Number: **W574801**

Laboratory Name: **Alpha Analytical**

Organic Results

ERA
A Waters Company

WP-189 Final Complete Report

Amy Rice
Quality Systems Specialist
Alpha Analytical
8 Walkup Drive
Westborough, MA 01581
508-439-5138

EPA ID: MA00030
ERA Customer Number: W574801
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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Volatiles (cat# 830)							
4315	Acetone	pg/L	104	83.8	16.2 - 136	Acceptable	EPA 8260B
4320	Acetonitrile	pg/L		0.00		Not Reported	
4325	Acrolein	pg/L	< 5.00	0.00		Acceptable	EPA 8260B
4340	Acrylonitrile	pg/L	< 5.00	0.00		Acceptable	EPA 8260B
0065	Benzene	pg/L	32.4	25.6	17.8 - 33.4	Acceptable	EPA 8260B
0060	Bromodichloromethane	pg/L	102	77.8	55.2 - 105	Acceptable	EPA 8260B
0062	Bromoform	pg/L	70.9	56.0	35.8 - 77.1	Acceptable	EPA 8260B
4950	Bromomethane	pg/L	20.8	21.6	8.64 - 34.6	Acceptable	EPA 8260B
4410	2-Butanone (MEK)	pg/L	< 5.00	0.00		Acceptable	EPA 8260B
5000	tert-Butyl methyl ether (MTBE)	pg/L	26.9	21.5	12.5 - 31.8	Acceptable	EPA 8260B
4450	Carbon disulfide	pg/L	< 2.00	0.00		Acceptable	EPA 8260B
0058	Carbon tetrachloride	pg/L	33.5	26.5	14.9 - 36.5	Acceptable	EPA 8260B
0064	Chlorobenzene	pg/L	101	82.6	59.6 - 103	Acceptable	EPA 8260B
0061	Chlorodibromomethane	pg/L	28.3	21.9	14.7 - 29.0	Acceptable	EPA 8260B
4485	Chloroethane	pg/L	< 2.00	0.00		Acceptable	EPA 8260B
4500	2-Chloroethylvinylether	pg/L	< 5.00	0.00		Acceptable	EPA 8260B
0055	Chloroform	pg/L	89.7	67.8	46.9 - 87.1	Not Acceptable	EPA 8260B
4960	Chloromethane	pg/L	< 5.00	0.00		Acceptable	EPA 8260B
4570	1,2-Dibromo-3-chloropropane (DBCP)	pg/L	< 5.00	0.00		Acceptable	EPA 8260B
4585	1,2-Dibromoethane (EDB)	pg/L	< 2.00	0.00		Acceptable	EPA 8260B
4595	Dibromomethane	pg/L	91.6	70.7	48.4 - 95.5	Acceptable	EPA 8260B
0094	1,2-Dichlorobenzene	pg/L	< 2.00	0.00		Acceptable	EPA 8260B
0096	1,3-Dichlorobenzene	pg/L	87.9	70.0	47.5 - 89.1	Acceptable	EPA 8260B
0095	1,4-Dichlorobenzene	pg/L	82.3	65.5	44.4 - 82.1	Not Acceptable	EPA 8260B
4625	Dichlorodifluoromethane (Freon 12)	pg/L	< 5.00	0.00		Acceptable	EPA 8260B
4630	1,1-Dichloroethane	pg/L	< 2.00	0.00		Acceptable	EPA 8260B
0054	1,2-Dichloroethane	pg/L	103	74.5	51.7 - 97.7	Not Acceptable	EPA 8260B
4640	1,1-Dichloroethylene	pg/L	43.8	33.2	17.4 - 48.4	Acceptable	EPA 8260B
4645	cis-1,2-Dichloroethylene	pg/L	35.8	27.7	19.2 - 37.0	Acceptable	EPA 8260B
4700	trans-1,2-Dichloroethylene	pg/L	< 2.00	0.00		Acceptable	EPA 8260B
4655	1,2-Dichloropropane	pg/L	< 2.00	0.00		Acceptable	EPA 8260B
4680	cis-1,3-Dichloropropylene	pg/L	35.0	29.7	20.8 - 38.6	Acceptable	EPA 8260B

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ERA
A Waters Company

WP-189 Final Complete Report

Amy Rice
Quality Systems Specialist
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508-439-5138

EPA ID: **MA00030**
ERA Customer Number: **W574801**
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Study Dates: **10/08/10 - 11/22/10**

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Volatiles (cat# 830) (Continued)							
4685	trans-1,3-Dichloropropylene	pg/L	< 2.00	0.00		Acceptable	EPA 8260B
0066	Ethylbenzene	pg/L	21.6	17.9	12.0 - 23.5	Acceptable	EPA 8260B
4835	Hexachlorobutadiene	pg/L	72.8	61.8	6.18 - 77.2	Acceptable	EPA 8260B
4860	2-Hexanone	pg/L	172	117	59.9 - 171	Not Acceptable	EPA B260B
0063	Methylene chloride	pg/L	17.8	13.8	8.20 - 20.7	Acceptable	EPA 8260B
4995	4-Methyl-2-pentanone (MIBK)	pg/L	< 5.00	0.00		Acceptable	EPA 8260B
5005	Naphthalene	pg/L	< 2.00	0.00		Acceptable	EPA 8260B
5100	Styrene	pg/L	56.4	45.3	29.4 - 61.6	Acceptable	EPA 8260B
5105	1,1,1,2-Tetrachloroethane	pg/L	< 2.00	0.00		Acceptable	EPA 8260B
5110	1,1,2,2-Tetrachloroethane	pg/L	< 2.00	0.00		Acceptable	EPA 8260B
0059	Tetrachloroethylene	pg/L	56.6	51.0	28.3 - 66.7	Acceptable	EPA 8260B
0067	Toluene	pg/L	34.0	27.4	19.1 - 34.8	Acceptable	EPA 8260B
5155	1,2,4-Trichlorobenzene	pg/L	140	104	22.9 - 124	Not Acceptable	EPA 8260B
0056	1,1,1-Trichloroethane	pg/L	38.9	30.3	19.0 - 40.4	Acceptable	EPA 8260B
5165	1,1,2-Trichloroethane	pg/L	< 2.00	0.00		Acceptable	EPA 8260B
0057	Trichloroethylene	pg/L	47.6	38.8	24.6 - 51.1	Acceptable	EPA 8260B
5175	Trichlorofluoromethane	pg/L	< 2.00	0.00		Acceptable	EPA 8260B
5180	1,2,3-Trichloropropane (TCP)	pg/L	< 2.00	0.00		Acceptable	EPA 8260B
5225	Vinyl acetate	pg/L	< 2.00	0.00		Acceptable	EPA 8260B
5235	Vinyl chloride	pg/L	29.9	22.2	8.88 - 35.5	Acceptable	EPA 8260B
5260	Xylenes, total	pg/L	< 4.00	0.00		Acceptable	EPA 8260B
WP PCBs in Water (cat# 832S)							
0040	Aroclor 1016	pg/L	< 0.200	0.00		Acceptable	EPA 8082A
8885	Aroclor 1221	pg/L	< 0.200	0.00		Acceptable	EPA 8082A
0042	Aroclor 1232	pg/L	< 0.200	0.00		Acceptable	EPA 8082A
0040	Aroclor 1242	pg/L	< 0.200	0.00		Acceptable	EPA 8082A
0044	Aroclor 1248	pg/L	4.46	4.35	1.80 - 6.13	Acceptable	EPA 8082A
0045	Aroclor 1254	pg/L	< 0.200	0.00		Acceptable	EPA 8082A
0046	Aroclor 1260	pg/L	< 0.200	0.00		Acceptable	EPA 8082A

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ERA
A Waters Company

WP-189 Final Complete Report

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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Base/Neutrals (cat# 833)							
5500	Acenaphthene	pg/L	81.2	75.4	30.3 - 90.4	Acceptable	EPA 8270C
5505	Acenaphthylene	pg/L	< 0.500	0.00		Acceptable	EPA 8270C
5145	2-Amino-1-methylbenzene (o-toluidine)	pg/L		0.00		Not Reported	
5545	Aniline	pg/L	< 0.500	0.00		Acceptable	EPA 8270C
5555	Anthracene	pg/L	118	105	44.2 - 131	Acceptable	EPA 8270C
5595	Benzidine	pg/L	< 5.00	0.00		Acceptable	EPA 8270C
5575	Benzo(a)anthracene	pg/L	80.8	68.7	31.1 - 87.3	Acceptable	EPA 8270C
5585	Benzo(b)fluoranthene	pg/L	41.3	36.4	12.5 - 50.3	Acceptable	EPA 8270C
5600	Benzo(k)fluoranthene	pg/L	47.4	40.0	9.17 - 60.6	Acceptable	EPA 8270C
5590	Benzo(g,h,i)perylene	pg/L	< 0.500	0.00		Acceptable	EPA 8270C
5580	Benzo(a)pyrene	pg/L	45.0	40.8	12.4 - 53.6	Acceptable	EPA 8270C
5630	Benzyl alcohol	pg/L	< 0.500	0.00		Acceptable	EPA 8270C
5660	4-Bromophenyl-phenylether	pg/L	222	191	60.6 - 253	Acceptable	EPA 8270C
5670	Butylbenzylphthalate	pg/L	188	150	30.8 - 212	Acceptable	EPA 8270C
5680	Carbazole	pg/L	0.940	0.00		Not Acceptable	EPA 8270C
5745	4-Chloroaniline	pg/L	< 0.500	0.00		Acceptable	EPA 8270C
5760	bis(2-Chloroethoxy)methane	pg/L	< 0.500	0.00		Acceptable	EPA 8270C
5765	bis(2-Chloroethyl)ether	pg/L	114	105	28.5 - 128	Acceptable	EPA 8270C
5780	bis(2-Chloroisopropyl)ether	pg/L	103	95.2	23.9 - 117	Acceptable	EPA 8270C
5790	1-Chloronaphthalene	pg/L		0.00		Not Reported	
5795	2-Chloronaphthalene	pg/L	41.9	38.3	11.1 - 47.4	Acceptable	EPA 8270C
5825	4-Chlorophenyl-phenylether	pg/L	184	160	59.6 - 198	Acceptable	EPA 8270C
5855	Chrysene	pg/L	19.2	24.0	10.5 - 34.2	Acceptable	EPA 8270C
5895	Dibenz(a,h)anthracene	pg/L	< 0.500	0.00		Acceptable	EPA 8270C
5905	Dibenzofuran	pg/L	43.5	39.7	15.0 - 52.6	Acceptable	EPA 8270C
5925	Di-n-butylphthalate	pg/L	< 14.0	0.00		Acceptable	EPA 8270C
4610	1,2-Dichlorobenzene	pg/L	< 0.500	0.00		Acceptable	EPA 8270C
4615	1,3-Dichlorobenzene	pg/L	32.5	32.1	4.73 - 40.0	Acceptable	EPA 8270C
4620	1,4-Dichlorobenzene	pg/L	< 0.500	0.00		Acceptable	EPA 8270C
5945	3,3'-Dichiorobenzidine	µg/L	< 0.500	0.00		Acceptable	EPA 8270C
6070	Diethylphthalate	pg/L	141	119	22.0 - 163	Acceptable	EPA 8270C
6135	Dimethylphthalate	pg/L	187	150	15.0 - 216	Acceptable	EPA 8270C

ACCREDITED Lab Code: 1539-01

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WP-189 Final Complete Report

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Anal. No.	Anaiyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Base/Neutrals (cat# 833) (Continued)							
6185	2,4-Dinitrotoluene	pg/L	138	116	43.3 - 143	Acceptable	EPA 8270C
6190	2,6-Dinitrotoluene	pg/L	189	160	67.2 - 200	Acceptable	EPA 8270C
6200	Di-n-octylphthalate	pg/L	61.2	51.3	15.5 - 78.0	Acceptable	EPA 8270C
6065	bis(2-Ethylhexyl)phthalate	pg/L	92.1	54.8	16.6 - 78.5	Not Acceptable	EPA 8270C
6265	Fluoranthene	pg/L	163	153	66.8 - 181	Acceptable	EPA 8270C
6270	Fluorene	pg/L	118	104	45.1 - 124	Acceptable	EPA 8270C
6275	Hexachlorobenzene	pg/L	95.1	80.0	34.5 - 99.0	Acceptable	EPA 8270C
4835	Hexachlorobutadiene	pg/L	74.1	67.8	6.78 - 83.9	Acceptable	EPA 8270C
6285	Hexachlorocyclopentadiene	pg/L	< 0.500	0.00		Acceptable	EPA 8270C
4840	Hexachloroethane	pg/L	151	150	15.9 - 175	Acceptable	EPA 8270C
6315	Indeno(1,2,3-cd)pyrene	pg/L	< 0.500	0.00		Acceptable	EPA 8270C
6320	Isophorone	pg/L	< 0.500	0.00		Acceptable	EPA 8270C
6385	2-Methylnaphthalene	pg/L	124	115	23.0 - 132	Acceptable	EPA 8270C
5005	Naphthalene	pg/L	< 0.500	0.00		Acceptable	EPA 8270C
6460	2-Nitroaniline	pg/L	< 0.500	0.00		Acceptable	EPA 8270C
6465	3-Nitroanlline	pg/L	< 0.500	0.00		Acceptable	EPA 8270C
6470	4-Nitroaniline	pg/L	< 0.500	0.00		Acceptable	EPA 8270C
5015	Nitrobenzene	pg/L	< 0.500	0.00		Acceptable	EPA 8270C
6525	N-Nitrosodiethylamine	pg/L		0.00		Not Reported	
6530	N-Nitrosodimethylamine	pg/L	134	170	17.0 - 198	Acceptable	EPA 8270C
6535	N-Nitrosodiphenylamine	pg/L	< 0.500	0.00		Acceptable	EPA 8270C
6545	N-Nitroso-di-n-propylamine	pg/L	143	131	40.6 - 164	Acceptable	EPA 8270C
6590	Pentachlorobenzene	pg/L		0.00		Not Reported	
6615	Phenanthrene	pg/L	49.7	40.5	20.2 - 51.8	Acceptable	EPA 8270C
6665	Pyrene	pg/L	83.9	73.3	24.2 - 101	Acceptable	EPA 8270C
5095	Pyridine	pg/L	< 0.500	0.00		Acceptable	EPA 8270C
6715	1,2,4,5-Tetrachlorobenzene	pg/L	< 0.500	0.00		Acceptable	EPA 8270C
5155	1,2,4-Trichlorobenzene	pg/L	160	150	34.2 - 176	Acceptable	EPA 8270C

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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Acids (cat# 834)							
5610	Benzoic acid	pg/L	< 2.00	0.00		Acceptable	EPA 8270C
5700	4-Chloro-3-methylphenol	pg/L	45.8	38.4	13.6 - 49.5	Acceptable	EPA 8270C
5800	2-Chlorophenol	pg/L	81.4	76.8	23.1 - 97.1	Acceptable	EPA 8270C
6000	2,4-Dichlorophenol	pg/L	84.6	77.6	24.2 - 97.8	Acceptable	EPA 8270C
6005	2,6-Dichlorophenol	pg/L		0.00		Not Reported	
6130	2,4-Dimethylphenol	pg/L	141	144	31.8 - 183	Acceptable	EPA 8270C
6360	4,6-Dinitro-2-methylphenol	pg/L	92.8	84.1	24.6 - 116	Acceptable	EPA 8270C
6175	2,4-Dinitrophenol	pg/L	159	132	13.2 - 183	Acceptable	EPA 8270C
6400	2-Methylphenol	pg/L	77.3	80.4	15.2 - 100	Acceptable	EPA 8270C
6410	4-Methylphenol	pg/L	56.7	62.2	6.22 - 82.6	Acceptable	EPA 8270C
6490	2-Nitrophenol	pg/L	97.5	88.6	23.2 - 114	Acceptable	EPA 8270C
6500	4-Nitrophenol	pg/L	62.7	106	10.6 - 144	Acceptable	EPA 8270C
6605	Pentachlorophenol	pg/L	73.7	64.4	14.1 - 89.0	Acceptable	EPA 8270C
6625	Phenol	pg/L	< 0.500	0.00		Acceptable	EPA 8270C
6735	2,3,4,6-Tetrachlorophenol	µg/L	< 0.500	0.00		Acceptable	EPA 8270C
6835	2,4,5-Trichlorophenol	µg/L	131	108	38.5 - 138	Acceptable	EPA 8270C
6840	2,4,6-Trichlorophenol	µg/L	99.9	88.4	28.2 - 112	Acceptable	EPA 8270C
WP Low-Level PAHs (cat# 836)							
5500	Acenaphthene	pg/L	4.73	6.73	3.44 - 7.97	Acceptable	EPA 8270 SIM
5505	Acenaphthylene	µg/L	5.93	8.01	4.03 - 9.46	Acceptable	EPA 8270 SIM
5555	Anthracene	µg/L	1.32	1.63	0.475 - 2.22	Acceptable	EPA 8270 SIM
5575	Benzo(a)anthracene	µg/L	0.952	1.17	0.712 - 1.34	Acceptable	EPA 8270 SIM
5585	Benzo(b)fluoranthene	pg/L	1.56	1.95	0.807 - 2.37	Acceptable	EPA 8270 SIM
5600	Benzo(k)fluoranthene	pg/L	0.781	0.857	0.444 - 1.07	Acceptable	EPA 8270 SIM
5590	Benzo(g,h,i)perylene	µg/L	1.05	1.22	0.424 - 1.60	Acceptable	EPA 8270 SIM
5580	Benzo(a)pyrene	pg/L	1.08	1.22	0.497 - 1.56	Acceptable	EPA 8270 SIM
5855	Chrysene	pg/L	0.725	0.887	0.500 - 1.15	Acceptable	EPA 8270 SIM
5895	Dibenz(a,h)anthracene	pg/L	1.05	1.27	0.388 - 1.75	Acceptable	EPA 8270 SIM
6265	Fluoranthene	µg/L	1.11	1.31	0.764 - 1.58	Acceptable	EPA 8270 SIM
6270	Fluorene	pg/L	5.38	7.20	3.17 - 8.38	Acceptable	EPA 8270 SIM
6315	Indeno(1,2,3-cd)pyrene	µg/L	1.09	1.19	0.552 - 1.49	Acceptable	EPA 8270 SIM
5005	Naphthalene	pg/L	5 11	7.42	2.85 - 8.16	Acceptable	EPA 8270 SIM
6615	Phenanthrene	µg/L	1.45	1.77	0.904 - 2.09	Acceptable	EPA 8270 SIM
6665	Pyrene	pg/L	0.760	0.948	0.547 - 1.16	Acceptable	EPA 8270 SIM

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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
WP Organochiorine Pesticides (cat# 831)							
0047	Aldrin	pg/L	6.22	5.88	1.66 - 8.11	Acceptable	EPA 8081B
7110	alpha-BHC	pg/L	9.04	7.46	3.24 - 10.2	Acceptable	EPA B081B
7115	beta-BHC	pg/L	13.7	14.6	6.13 - 19.6	Acceptable	EPA B081B
7105	delta-BHC	pg/L	17.6	14.7	5.67 - 20.5	Acceptable	EPA B0B1B
7120	gamma-BHC(Lindane)	pg/L	8.92	7.14	2.92 - 9.84	Acceptable	EPA B081B
7240	alpha-Chlordane	pg/L	5.85	5.47	2.46 - 7.41	Acceptable	EPA 80B1B
7245	gamma-Chlordane	pg/L	8.00	7.24	2.96 - 9.81	Acceptable	EPA B0B1B
0049	4,4'-DDD	pg/L	10.2	8.84	3.22 - 12.5	Acceptable	EPA 8081B
0050	4,4'-DDE	pg/L	4.06	4.53	1.99 - 5.93	Acceptable	EPA B081B
0051	4,4'-DDT	pg/L	1.98	2.00	0.753 - 2.98	Acceptable	EPA 8081B
0048	Dieldrin	µg/L	12.6	10.8	5.32 - 14.6	Acceptable	EPA 8081B
7540	Endrin	pg/L	4.99	4.01	1.52 - 6.08	Acceptable	EPA 8081B
7530	Endrin aldehyde	pg/L	10.2	8.37	2.39 - 12.7	Acceptable	EPA 8081B
7535	Endrin ketone	µg/L	6.32	5.97	3.28 - 8.66	Acceptable	EPA 8081B
7510	Endosulfan I	pg/L	7.35	8.82	2.50 - 12.7	Acceptable	EPA 8081B
7515	Endosulfan II	pg/L	6.22	6.55	2.19 - 8.90	Acceptable	EPA 8081B
7520	Endosulfan sulfate	pg/L	5.28	4.76	1.76 - 6.95	Acceptable	EPA 8081B
0052	Heptachlor	pg/L	10.2	9.06	2.93 - 12.3	Acceptable	EPA 8081B
0078	Heptachlor epoxide (beta)	pg/L	4.11	3.78	1.84 - 5.33	Acceptable	EPA 8081B
7810	Methoxychlor	µg/L	7.90	7.77	2.04 - 12.3	Acceptable	EPA 8081B
WP Chlordane (cat# 837)							
0053	Chlordane, technical	pg/L	9.20	9.66	3.62 - 14.0	Acceptable	EPA 8081B
WP Toxaphene (cat# 838)							
8250	Toxaphene	pg/L	22.9	24.9	2.49 - 45.1	Acceptable	EPA 8081B
WP Diesel Range Organics (DRO) in Water (cat# 641)							
9369	Diesel Range Organics (DRO)	pg/L	1710	2630	623 - 3410	Acceptable	EPA 8015D

ACCREDITED

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01